



CITY of CLOVIS

AGENDA • CITY COUNCIL MEETING

Council Chamber, 1033 Fifth Street, Clovis, CA 93612 (559) 324-2060
www.cityofclovis.com

July 20, 2020

6:00 PM

Council Chamber

SPECIAL NOTICE REGARDING PUBLIC PARTICIPATION DUE TO COVID-19

Given the current Shelter-in-Place Order covering the State of California and the Social Distance Guidelines issued by Federal, State, and Local Authorities, the City is implementing the following changes to participate in Council meetings until notified otherwise. The Council chambers will be open to the public but we will be implementing social distancing policies and will limit the number of people who may be in the Council chambers. Face masks are required to attend. We are encouraging residents to participate virtually following the directions below. If you are sick, please do not attend the meeting. Any member of the City Council may participate from a remote location by teleconference.

- The meeting will be webcast and accessed at: <https://cityofclovis.com/government/city-council/city-council-agendas/>

Written Comments

- Members of the public are encouraged to submit written comments at: <https://cityofclovis.com/government/city-council/city-council-agendas/> at least one (1) hour before the meeting (5:00 p.m.). You will be prompted to provide:

- Council Meeting Date
- Item Number
- Name
- Email
- Comment



- Please submit a separate form for each item you are commenting on.
- A copy of your written comment will be provided to the City Council noting the item number. If you wish to make a verbal comment, please see instructions below.
- Please specify if you would like to have your written comment read into the record. If so, your comment will be read into the record during the public comment portion when the item is heard. Any portion of your comment extending past three (3) minutes may not be read aloud due to time restrictions, but will be made part of the record of proceedings.
- Please be aware that any written comments received that do not specify a particular agenda item will be marked for the general public comment portion of the agenda.

- If a written comment is received after 5:00 p.m. on the day of the meeting, efforts will be made to provide the comment to the City Council during the meeting. However, staff cannot guarantee that written comments received after 5:00 p.m. will be provided to City Council during the meeting. All written comments received prior to the end of the meeting will be made part of the record of proceedings.

Verbal Comments

- If you wish to speak to the Council on an item by telephone, you should contact the City Clerk at (559) 324-2060 no later than 5:00 p.m. the day of the meeting.
- You will be asked to provide your name, phone number, and your email. You will be emailed instructions to log into Webex to participate in the meeting. Staff recommends participants log into the Webex at 5:30 p.m. the day of the meeting to perform an audio check.
- All callers will be placed on mute, and at the appropriate time for your comment your microphone will be unmuted.
- You will be able to speak to the Council for up to three (3) minutes.

Webex Participation

- Reasonable efforts will be made to allow written and verbal comment from a participant communicating with the host of the virtual meeting. To do so, a participant will need to chat with the host and request to make a written or verbal comment. The host will make reasonable efforts to make written and verbal comments available to the City Council. Due to the new untested format of these meetings, the City cannot guarantee that these written and verbal comments initiated via chat will occur. Participants desiring to make a verbal comment via chat will need to ensure that they accessed the meeting with audio transmission capabilities.

CALL TO ORDER

FLAG SALUTE - Councilmember Mouanoutoua

ROLL CALL

PUBLIC COMMENT

ORDINANCES AND RESOLUTIONS - With respect to the approval of resolutions and ordinances, the reading of the title shall be deemed a motion to waive a reading of the complete resolution or ordinance and unless there is a request by a Councilmember that the resolution or ordinance be read in full, further reading of the resolution or ordinance shall be deemed waived by unanimous consent of the Council.

CONSENT CALENDAR - Items considered routine in nature are to be placed upon the Consent Calendar. They will all be considered and voted upon in one vote as one item unless a Councilmember requests individual consideration. A Councilmember's vote in favor of the Consent Calendar is considered and recorded as a separate affirmative vote in favor of each action listed. Motions in favor of adoption of the Consent Calendar are deemed to include a motion to

waive the reading of any ordinance or resolution on the Consent Calendar. For adoption of ordinances, only those that have received a unanimous vote upon introduction are considered Consent items.

- [1.](#) Administration - Approval - Minutes from the July 6, 2020 Council Meeting.
- [2.](#) Administration - Approval – FY 2020-2021 Agreement between the City of Clovis and the Economic Development Corporation Serving Fresno County.
- [3.](#) Finance - Approval – Res. 20-____, A Resolution of Intention (ROI) to Annex Territory (Annexation #63) (Current APN: [558-020-05] Lot Line Adjustment: Parcel B PME 2020-004 - Northwest Corner of De Wolf and Harlan Ranch Blvd), to the Community Facilities District (CFD) 2004-1 and to Authorize the Levy of Special Taxes Therein and Setting the Public Hearing for September 8, 2020. (Continued from the July 6, 2020 meeting.)
- [4.](#) Planning and Development Services - Approval - Res. 20-____, Annexation of Miscellaneous Properties to the Landscape Maintenance District No. 1.
- [5.](#) Planning and Development Services - Approval - Bid Award for CIP 20-07, Fire Station 6 Off-site Improvements; and Authorize the City Manager to execute the contract on behalf of the City.
- [6.](#) Planning and Development Services - Approval, Res. 20-____, A request to adopt a resolution initiating an update to the policies included in the Shaw Avenue Specific Plan related to the prohibition of drive-thru uses.
- [7.](#) Planning and Development Services – Authorize the City Manager - 1. To terminate the contract with XG Communities (formerly 5 Bars) for administration of small cell sites program per Federal Communications Commission regulations; 2. To execute Master License Agreements with cellular carriers; and 3. To make minor changes to the Master Lease Agreements and Design Guidelines going forward due to ongoing technology changes.

PUBLIC HEARINGS - A public hearing is an open consideration within a regular or special meeting of the City Council, for which special notice has been given and may be required. When a public hearing is continued, noticing of the adjourned item is required as per Government Code 54955.1.

- [8.](#) Consider Introduction – Ord. 20-____, An Ordinance of the City Council of the City of Clovis: (1) amending sections 6.1.101, 6.1.301 6.1.303 and adding section 6.1.309, of chapter 6.1, of title 6, of the Clovis Municipal Code relating to the keeping of hen chickens in the City of Clovis; and (2) amending corresponding definitions in the development code, section 9.120.020, of title 9, of the Clovis Municipal Code.

Staff: George Rodriguez, Police Services Manager

Recommendation: Consider Introduction

- [9.](#) Consider items associated with approximately 52 acres of land located in the southeast area of Leonard and Barstow Avenues. Glen H. Millhollin and Darlene A. Millhollin, Trustees of the Millhollin Family Trust property owners; Bonadelle Neighborhoods, applicant; Harbour & Associates, representative.
 - a) Consider Approval - Res. 20-____, A request to approve an environmental finding of a Mitigated Negative Declaration for General Plan Amendment GPA2020-001, Prezone R2020-001, & Vesting Tentative Tract Map TM6304.

- b) Consider Approval - Res. 20-____, GPA2020-001, A request to amend the General Plan to re-designate approximately 34 acres from the Low Density Residential (2.1 to 4 DU/Ac) classification to the Medium Density Residential (4.1 to 7.0 DU/Ac) classification.
- c) Consider Introduction - Ord. 20-____, R2020-001, A request to prezone approximately 34 acres from the County AE20 (Exclusive Agricultural) Zone District to the Clovis R-1-PRD (Single-Family Planned Residential Development) and approximately 18 acres from the County AE-20 (Exclusive Agricultural) to the Clovis O (Open Space Conservation) zone district.
- d) Consider Approval - Res. 20-____, TM6304, A request to approve a vesting tentative tract map for a 217-lot single-family subdivision on approximately 34 acres of land.

Staff: Ricky Caperton, AICP, Senior Planner

Recommendation: Approve

- 10. Consider Approval - Res. 20-____, RO302, A Resolution of Application for the Annexation of the Territory known as the Shaw-Highland Northwest No. 2 Reorganization located at the northwest corner of East Shaw and Highland Avenues. Glen H. Millhollin and Darlene A. Millhollin, Trustees of the Millhollin Family Trust property owners; Bonadelle Neighborhoods, applicant; Harbour & Associates, representative.

Staff: Ricky Caperton, AICP, Senior Planner

Recommendation: Approve

- 11. Consider Approval - Res. 20-____ - Establishing Vehicle Miles Traveled (VMT) thresholds and interim guidelines for assessing traffic impacts in compliance with the provisions of Senate Bill 743 (SB 743).

Staff: Ricky Caperton, AICP, Senior Planner

Recommendation: Approve

ADMINISTRATIVE ITEMS - Administrative Items are matters on the regular City Council Agenda other than Public Hearings.

- 12. Consider Approval - Res. 20-____, Final Map Tract 6260, located at the northeast corner of Shaw Avenue and Locan Avenue (DYP 6260 LP, A California Limited Partnership).

Staff: Mike Harrison, City Engineer

Recommendation: Approve

- 13. Consider Approval – Res. 20-____, Annexation of Proposed Tract 6260, located at the northeast corner of Shaw Avenue and Locan Avenue to the Landscape Maintenance District No. 1 of the City of Clovis. (DYP 6260 LP, A California Limited Partnership).

Staff: Mike Harrison, City Engineer

Recommendation: Approve

COUNCIL ITEMS

14. Workshop – For the Clovis City Council to conduct a workshop to discuss the impact on ongoing City operations during the COVID-19 State of Emergency as declared by the Federal Government, State of California, County of Fresno, and City of Clovis; and to explore actions the City may take in response to the crisis.

a. Consider Approval - Res. 20-____, A Resolution of the City Council of the City of Clovis confirming the Director of Emergency Services' Orders.

Staff: Andrew Haussler, Economic Development Director

Recommendation: Approve

CITY MANAGER COMMENTS

COUNCIL COMMENTS

CLOSED SESSION - A “closed door” (not public) City Council meeting, allowed by State law, for consideration of pending legal matters and certain matters related to personnel and real estate transactions.

15. Government Code Section 54956.9(d)(1)
CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION
Desiree Martinez v. City of Clovis, et al.
16. Government Code Section 54956.8
CONFERENCE WITH REAL PROPERTY NEGOTIATORS
Property: Portion of City Park located at North Leonard Ave. and Harlan Ranch Blvd. (APN 558-171-20ST – portion)
Agency Negotiators: Luke Serpa, Scott Redelfs, David Wolfe, Ryan Burnett
Negotiating Parties: Harlan Ranch Community Association
Under Negotiation: Price & Terms
17. Government Code Section 54956.9(d)(1)
CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION
Brienne Glick v. City of Clovis, et. al.;
Fresno County Superior Court case # 19CECG00122

ADJOURNMENT

MEETINGS AND KEY ISSUES

Regular City Council Meetings are held at 6:00 P.M. in the Council Chamber. The following are future meeting dates:

Aug. 3, 2020 (Mon.)
Aug. 4 – Sep. 7, 2020 (Summer Recess)
Sep. 8, 2020 (Tue.)
Sep. 14, 2020 (Mon.)
Sep. 21, 2020 (Mon.)

CLOVIS CITY COUNCIL MEETING

July 6, 2020

6:00 P.M.

Council Chamber

Meeting called to order by Mayor Bessinger
Flag Salute led by Councilmember Flores

Roll Call: Present: Councilmembers Ashbeck, Flores, Mouanoutoua, Whalen
Mayor Bessinger
Absent: None

6:03 ITEM 1 - PRESENTATION OF PROCLAMATION RECOGNIZING JEFF AIELLO FOR HIS MANY ACHIEVEMENTS

City Council presented a proclamation to resident Jeff Aiello for his many achievements.

CONSENT CALENDAR – 6:12

Motion by Councilmember Ashbeck, seconded by Councilmember Flores, that the items on the Consent Calendar, except items 12 and 14, be approved, including the waiver of the reading of the ordinance.

2. Administration - Approved - Minutes from the June 15, 2020 Council Meeting.
3. Administration - Adopted - **Ord. 20-12**, R2016-10, A request to prezone from the County AE-20 (Exclusive Agricultural) Zone District to the Clovis R-1-PRD (Planned Residential Development) Zone District. (Approximately 38.50 acres of land located at the northwest corner of Shepherd and N. Clovis Avenues.) (Vote: 5-0).
4. Administration - Approved - Waive the City's Standard Bid Procedure and Enter Into an Agreement with the Community Housing Council of Fresno to Provide Housing and Budget Counseling for Implementation of the Emergency Housing Payment Program.
5. Administration - Received and Filed – Business Organization of Old Town (BOOT) Fourth Quarter Report, April through June 2020.
6. Administration - Approved – Waive Normal Purchasing Process and approve the purchase of replacement desktop computers and servers using competitively bid contracts with purchasing provisions for California State and Local government agencies.
7. Finance - Received and Filed - Investment Report for the month of March 2020.
8. Finance - Received and Filed - Treasurer's Report for the month of March 2020.
9. Finance - Received and Filed - Investment Report for the month of April 2020.
10. Finance - Received and Filed - Treasurer's Report for the month of April 2020.
11. Finance - Approved - **Res. 20-79**, Measure C Extension Local Transportation Pass Through Revenues Certification and Claim Forms for 2020-21.
13. General Services - Approval – **Res. 20-80**, Amending the FY20-21 Transit Budget to Add \$34,535.40 in Capital Expenditures; and, Approve the Receipt of Grant Fund Revenue in the Amount of \$34,535.40; and Waive the City's Usual Purchasing Procedures and Authorize Purchase of Bus Stop Shelters from Tolar Manufacturing, Inc. Utilizing Pricing from a Competitive Bid Award Through the California Association for Coordinated Transportation.

- 15. Planning and Development Services - Approval - Final Acceptance for Final Map for Tract 6068, located at the southwest corner of Shaw and Highland Avenues (DYP 6068, L.P., De Young Properties).
- 16. Planning and Development Services - Approval - Final Acceptance for Final Map for Tract 6102, located at the southwest area of Shaw and Highland Avenues (DYP 6068, L.P., De Young Properties).
- 17. Planning and Development Services - Approval - **Res. 20-81**, Partial Acceptance for Final Map for Tract 6180, located at the southwest corner of N Locan and Teague Avenues (DYP 6180, L.P., De Young Properties).
- 18. Planning and Development Services - Approval - **Res. 20-82**, Final Map Tract 6230, located at the southeast corner of Leonard and Bullard Avenues (WC Clovis 6186, LLC).
- 19. Planning and Development Services - Approval - **Res. 20-83**, Annexation of Proposed Tract 6230, located at the southeast corner of Leonard and Bullard Avenues to the Landscape Maintenance District No. 1 of the City of Clovis (WC Clovis 6186, LLC).
- 20. Planning and Development Services - Approval - Waive the City's usual purchasing procedures and authorize the City Manager to enter into a purchase agreement with Quinn Power Systems to supply an emergency generator and automatic transfer switch for CIP 17-22, Miss Winkles Pet Adoption Center Emergency Generator.
- 21. Public Utilities – Approval – **Res. 20-84**, amending the 2020-2021 Budget to fund an allocated Utility Worker position in the Public Utilities Department's Parks Maintenance section.

6:13 - CONSENT CALENDAR ITEM 12 - FINANCE - CONTINUED – **RES. 20-XX**, A RESOLUTION OF INTENTION (ROI) TO ANNEX TERRITORY (ANNEXATION #63) (CURRENT APN: [558-020-05] LOT LINE ADJUSTMENT: PARCEL B PME 2020-004 - NORTHWEST CORNER OF DE WOLF AND HARLAN RANCH BLVD), TO THE COMMUNITY FACILITIES DISTRICT (CFD) 2004-1 AND TO AUTHORIZE THE LEVY OF SPECIAL TAXES THEREIN AND SETTING THE PUBLIC HEARING FOR SEPTEMBER 8, 2020.

Mayor Bessinger indicated that this item was being pulled from consideration based of a request from staff. There being no public comment, Mayor Bessinger closed the public portion. Discussion by the Council. Motion by Councilmember Ashbeck, seconded by Councilmember Flores, for the Council to continue this item to a date uncertain. Motion carried by unanimous vote.

6:14 - CONSENT CALENDAR ITEM 14 - GENERAL SERVICES – APPROVED – WAIVE NORMAL BIDDING PROCEDURES AND ALLOW PRE-AWARD FOR NEEDLEPOINT BIPOLAR IONIZATION SYSTEMS, AND; AUTHORIZE THE CITY MANAGER TO EXECUTE THE CONTRACT ON BEHALF OF THE CITY

General Services Director Shonna Halterman provided a brief summary and was prepared for questions. Staff is recommending that Council pre-authorize the City Manager to award and execute the contract to the lowest responsible vendor, so the contractor may start and complete construction in a timely manner.

This project consists of the installation of Needlepoint Bipolar Ionization Systems (NPBI) in most City facilities. NPBI systems improve the overall indoor air quality of facilities and help

reduce the transmission of airborne diseases such as COVID-19. The NPBI system provides the most efficient air cleaning without costly maintenance and expensive filters. Installation of approximately 60 NPBI systems in the City's 59 air conditioning/heating systems is estimated not to exceed \$215,000. Staff is still receiving quotes but is requesting pre-award in order to expedite the installation. Raquel White, Central Regional Compliance Manager, Construction Industry Force Account Council (CIFAC) phoned in and raised concerns about the process being proposed by staff. Discussion by the City Council. Motion by Councilmember Ashbeck, seconded by Councilmember Mouanoutoua to approve a request to waive normal bidding procedures and allow pre-award for Needlepoint Bipolar Ionization Systems, and; Authorize the City Manager to execute the contract on behalf of the City with the added caveat of limiting the bid amount to the informal bidding amount and to bring back should that amount be exceeded. Motion carried by unanimous vote.

PUBLIC HEARINGS

6:22 ITEM 22 - APPROVED – **RES. 20-85**, RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLOVIS APPROVING THE ISSUANCE OF REVENUE BONDS BY THE CALIFORNIA MUNICIPAL FINANCE AUTHORITY IN AN AGGREGATE PRINCIPAL AMOUNT NOT TO EXCEED \$30,000,000 TO FINANCE AND REFINANCE A 75-UNIT PERMANENT SUPPORTIVE RENTAL HOUSING FACILITY FOR THE BENEFIT OF UPH BUTTERFLY GARDENS, LP, AND CERTAIN OTHER MATTERS RELATING THERETO.

Community and Economic Development Director Andy Haussler presented a report on a request to approve a resolution approving the issuance of revenue bonds by the California Municipal Finance Authority in an aggregate principal amount not to exceed \$30,000,000 to finance and refinance a 75-unit permanent supportive rental housing facility for the benefit of UPH Butterfly Gardens, LP. UPH Butterfly Gardens, LP, has requested that the CMFA issue one or more series of revenue bonds in an aggregate principal amount not to exceed \$30,000,000, including but not limited to revenue bonds issued as part of a plan to finance and refinance the acquisition, construction, improvement and equipping of a 75-unit permanent supportive rental housing facility for very low income persons experiencing homelessness and persons with disabilities, to be located at 784 W. Holland Avenue in the City of Clovis. UPH Butterfly Gardens, LP (the "Borrower"), is a limited partnership formed by Self Help Enterprises for this project. Self Help Enterprises has a long history of being a partner in affordable housing to the City of Clovis. The total construction cost of the project is estimated to be \$21,000,000. Representatives of Self Help Enterprises, UP Holdings, and Bond Legal Counsel, spoke in support and addressed questions of City Council. Discussion by the Council. Motion by Councilmember Mouanoutoua, seconded by Councilmember Ashbeck, for the City Council to approve a resolution approving the issuance of revenue bonds by the California Municipal Finance Authority in an aggregate principal amount not to exceed \$30,000,000 to finance and refinance a 75-unit permanent supportive rental housing facility for the benefit of UPH Butterfly Gardens, LP. Motion carried by unanimous vote.

ADMINISTRATIVE ITEMS

7:03 – ITEM 23 - ADOPTED - **ORD. 20-11**, R2019-009, A REQUEST TO RECONSIDER APPROVAL OF A REZONE OF APPROXIMATELY 4 ACRES OF PROPERTY LOCATED AT THE SOUTHWEST CORNER OF TEMPERANCE AND NEES AVENUES FROM THE R-A (SINGLE-FAMILY RESIDENTIAL VERY LOW DENSITY) ZONE DISTRICT TO THE C-P (PROFESSIONAL OFFICE) ZONE DISTRICT, IN ORDER TO ADDRESS THE CONDITION REQUIRING TRAIL IMPROVEMENTS ON THE WESTERN SIDE OF THE PROPERTY. BEAL PROPERTIES INC., PROPERTY OWNER/ APPLICANT.

City Planner Dave Merchan presented a report on a request to adopt Ordinance 20-11, approving a rezone of approximately 4 acres of property located at the southwest corner of Temperance and Nees Avenues to be consistent with the underlying General Plan designation of MU-BC (Mixed Use- Business Campus). (This request is to rezone the subject property from the R-A (Single-Family Residential Very Low Density) Zone District to the C-P (Professional Office) Zone District), and amending the added condition from the May 18, 2020 introduction for staff and the property owners to explore opportunities using the Fresno Irrigation District canal bank as a trail pathway on the west side of the property.

On May 18, 2020, the City Council considered the introduction of Rezone R2019-009. The applicant's request included the rezone of the subject property from the R-A to the C-P Zone District, bringing the property into consistency with the General Plan. During the public hearing, the Council discussed the need for trail connectivity along the Enterprise Canal in this area. As a result, Council approved the applicant's rezone request with the addition of a condition that requires improvement and/or contribution of the applicant's portion of a trail system adjacent to the Enterprise Canal, along the western side of the property for future connectivity to the north.

On June 15, 2020, Rezone R2019-009 was reconsidered by the Council to confirm and/or modify the trail condition as directed by Council. Council heard testimony from the applicant and the adjacent property owner to the south of the subject property specific to the various trail configurations that are feasible for this area. After discussion, Council took action to reintroduce R2019-009 with a modified trail requirement allowing for a maximum 5 feet of dedication towards the trail alignment that is to be placed adjacent to the Fresno Irrigation District (FID) canal bank. The action was approved by a 3-2 vote with Councilmembers Ashbeck and Mouanoutoua voting no. This item is returning to Council on July 6, 2020 for a second reading and adoption. Staff member Andy Haussler read into the record correspondence from resident David Angel who raised concerns about traffic and use of the property and spoke in opposition to the proposed changes. Discussion by the Council. Motion by Councilmember Whalen, seconded by Councilmember Flores, for the Council to adopt Ordinance 20-11, approving a rezone of approximately 4 acres of property located at the southwest corner of Temperance and Nees Avenues to be consistent with the underlying General Plan designation of MU-BC (Mixed Use- Business Campus). (This request is to rezone the subject property from the R-A (Single-Family Residential Very Low Density) Zone District to the C-P (Professional Office) Zone District), and amending the added condition from the May 18, 2020 introduction for staff and the property owners to explore opportunities using the Fresno Irrigation District canal bank as a trail pathway on the west side of the property. Motion carried 3-2 with Councilmembers Ashbeck and Mouanoutoua voting no.

COUNCIL ITEMS

7:10 ITEM 24 - APPROVED – CHANGE OF COUNCIL MEETING SCHEDULE.

City Manager Luke Serpa presented a report on a request to cancel the Council meeting of July 13, 2020. There being no public comment, Mayor Bessinger closed the public portion. Discussion by the Council. Motion by Councilmember Ashbeck, seconded by Councilmember Flores, for the Council to approve the cancellation of the Council meeting of July 13, 2020. Motion carried by unanimous vote.

7:15 ITEM 25 - WORKSHOP – FOR THE CLOVIS CITY COUNCIL TO CONDUCT A WORKSHOP TO DISCUSS THE IMPACT ON ONGOING CITY OPERATIONS DURING THE COVID-19 STATE OF EMERGENCY AS DECLARED BY THE FEDERAL GOVERNMENT, STATE OF CALIFORNIA, COUNTY OF FRESNO, AND CITY OF CLOVIS; AND TO EXPLORE ACTIONS THE CITY MAY TAKE IN RESPONSE TO THE CRISIS.

a. Consider Approval – Authorize the City Manager to Execute the Certification Form for Receipt of CARES Act funds from the State of California and All Related Documents.

Community and Economic Development Director Andrew Haussler presented a report on a request to authorize the City Manager to execute the Certification Form for Receipt of CARES Act funds from the State of California and All Related Documents. On July 1, 2020, the State of California released an application process for federal CARES Act funds that were allocated to the State of California. A certification form must be submitted to the State of California by July 10, 2020 with subsequent documentation of eligible COVID-19 related expenditures. The State of California has determined that the City of Clovis would be eligible for up to \$1,471,470. There being no public comment, Mayor Bessinger closed the public portion. Discussion by the Council. Motion by Councilmember Whalen, seconded by Councilmember Mouanoutoua for the Council to authorize the City Manager to execute the Certification Form for Receipt of CARES Act funds from the State of California and All Related Documents. Motion carried by unanimous vote.

CLOSED SESSION

7:20 Item 26 - Government Code Section 54956.9

CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION

Significant Exposure to Litigation Pursuant to Paragraph (2) or (3) of Subdivision (d) of Section 54956.9

1 case

Mayor Bessinger adjourned the meeting of the Council to July 20, 2020

Meeting adjourned: 7:30 p.m.

Mayor

City Clerk



CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Administration

DATE: July 20, 2020

SUBJECT: Administration - Approval – FY 2020-2021 Agreement between the City of Clovis and the Economic Development Corporation Serving Fresno County.

ATTACHMENTS: 1. 2020-2021 Agreement between the City of Clovis and the Economic Development Corporation Serving Fresno County

CONFLICT OF INTEREST

None

RECOMMENDATION

Approve and authorize the City Manager to execute the fiscal year 2020-2021 Agreement between the City of Clovis and the Economic Development Corporation Serving Fresno County (EDC) up to an amount of \$50,000.

EXECUTIVE SUMMARY

The attached agreement is between the City of Clovis and the Economic Development Corporation serving Fresno County up to an amount of \$50,000. The agreement outlines activities and responsibilities that the EDC will provide for the funding.

BACKGROUND

The Agreement continues the formalized relationship between the City and the EDC. Performance standards were adjusted in the previous contract which included a pay-for-performance incentives. These changes have been continued in the proposed contract as they have shown to be successful. The deliverables target the EDC efforts on attraction with some support work for business retention as well as building on in-depth research on medical cluster analysis completed in 2019-2020. The effort will now take the next step in targeting potential businesses to expand into Clovis to leverage recent investments in our medical community.

Attraction efforts will include data analysis to determine likely industries and subsequent businesses that are ideal for Clovis to focus on, general marketing efforts, trade show attendance if feasible, outreach to brokers, and an incentive for site tours completed for businesses looking to locate in Clovis. Retention efforts will include utilizing access to economic data the EDC has to ensure that Clovis staff is focusing on critical businesses in retention efforts, and the EDC is acting as a business resource expert. This structure allows for the City and the EDC to leverage their expertise and increase the ability of economic development efforts in Clovis.

To facilitate continued close coordination between the City and EDC, the Community and Economic Development Director sits on the Board of Directors and the Executive Committee of the EDC. The City's Community and Economic Development staff maintains a close working relationship with the EDC's Executive Director and staff.

FISCAL IMPACT

The City of Clovis will pay the EDC up to \$50,000, including performance incentives, in the 2020-2021 fiscal year in four quarterly payments contingent on submission of a quarterly report of activities to the City Council. These funds are included in the 2020-2021 City budget.

REASON FOR RECOMMENDATION

This agreement is consistent with the adopted budget, policies, goals, and objectives of the City Council. As a regional economic development organization, it is appropriate that the City collaborates with the EDC on the implementation of goals and objectives to facilitate the creation of jobs for Clovis and the region.

Approval of this agreement will allow the City to continue its coordinated approach to enhancing the City's economy and job creation efforts with the County of Fresno and other cities within the County.

ACTIONS FOLLOWING APPROVAL

After approval, the City Manager will execute the agreement; the Community and Economic Development staff will administer the agreement.

Prepared by: Andrew Haussler, Community and Economic Development Director

Reviewed by: City Manager *GH*

**AGREEMENT BETWEEN THE CITY OF CLOVIS AND THE
FRESNO COUNTY ECONOMIC DEVELOPMENT CORPORATION
FOR FISCAL YEAR 2020-2021**

WHEREAS, the City Council of the City of Clovis (City) is committed to a balanced and diversified economy as one of its most important priorities to ensure the future well-being of the citizens of Clovis.

WHEREAS, the City has invested considerable resources to encourage a location for new and expanding businesses and industries and to ensure the economic vitality of commercial areas.

WHEREAS, the Fresno County Economic Development Corporation (EDC) continues to maintain regional, national, and international marketing and promotional efforts to attract the location and expansion of businesses and industries in all of the communities within Fresno County.

WHEREAS, the State of California (State) has designated the EDC as its regional contact and referral point for businesses and industries that contact the State while seeking a location for new or expanded facilities.

WHEREAS, the City desires to secure such services, and allocates funds to the EDC for purposes of aligning additional EDC resources and staff support to assist in implementing and administering certain local economic development activities such as advocacy, marketing and promotion, and technical support for the City by the EDC toward business attraction goals to create ongoing opportunities for the City.

WHEREAS, the City seeks to enhance its support of the EDC in order to utilize the unique position the EDC maintains within the business community, and to promote economic growth in the City.

NOW, THEREFORE, the City and the EDC agree as follows:

1. The EDC agrees to assist the City in promoting the economic growth in the City by providing the following services:
 - (a) Recognize short-term and long-term impacts on businesses by COVID19 and provide informational resources and technical assistance to retain and expand existing Clovis businesses.
 - (b) For the purpose of recruiting new businesses and industries to the City, provide information to industrial and office representatives.
 - (c) Assist in the development of marketing materials to attract new investment to the City.
 - (d) Assist in marketing the City's Research and Technology Park.
 - (e) Market the City to commercial and industrial brokers, developers, site selectors, and businesses.

- (f) Distribute City economic development materials.
 - (g) Assist the City in the implementation of the City's Economic Development Strategy and the Business Retention, Expansion and Attraction Program.
 - (h) The Economic Development team will work towards fostering a closer working relationship with local business associations to enhance the accessibility of EDC's services to City employers. Level of partnership is dependent on willingness and capacity of local business associations to participate.
 - (i) Assist City points-of-contact in fully utilizing social media and online marketing tools to advance economic and community development efforts in the City.
 - (j) The EDC will inform the City of legislation important to the Economic and Community Development of the region and advocate on their behalf.
 - (k) In addition to periodic reports to the Economic Development Director and City Manager, submit quarterly status reports to the City Council, detailing the progress of the EDC and related activities.
 - (l) The EDC shall assist in identifying economic development projects on the City's behalf for inclusion in the County of Fresno's Comprehensive Economic Development Strategy (CEDS) for possible grant funding.
 - (m) The EDC agrees to provide a designated Economic Development Specialist as an EDC staff member to respond to City business attraction and expansion leads and to ensure City participation.
 - (n) As part of the Clovis Comparative Healthcare Analysis (CHA), the EDC shall complete Phase 2 of the CHA Analysis, which includes a subsequent Analysis Enhancement and Marketing/Recruitment Plan. See Exhibit A for complete project scope and details.
2. For performance of the services described in Section 1, paragraphs (a) through (m) and for measurable outcomes identified in Exhibit B, the City agrees to pay the EDC the sum of \$40,000 to be paid in four (4) quarterly installments, at the end of each quarter, with the quarter commencing July 1, 2020. In addition to the services described in Section 1 (a) through (m), the City agrees to pay the EDC ten thousand dollars (\$10,000) in one installment upon completion of the Comparative Healthcare Analysis Phase 2 identified in Section 1, paragraph (n). See Exhibit A for complete project scope and details.
3. It is understood and agreed that in the performance of this agreement the EDC is an independent contractor. The EDC shall take out and maintain Workers Compensation, State Disability, and other insurance coverage as required by law and shall in all other respects comply with applicable provisions of federal, state, and local laws, rules and regulations.

- 4. The EDC shall indemnify, hold harmless, and defend the City, its officers, agents, and employees, from all claims for money, damages, or other relief arising in any form from the performance of this agreement by the EDC, its officers, agents, or employees. The EDC shall take out and maintain for the full term of this agreement liability insurance providing protection for personal injury, wrongful death, and property damage; such insurance to be in amounts and issued by carriers acceptable to the City. The EDC shall provide the City with a Certificate of Insurance evidencing such coverage.
- 5. The funds provided EDC by the City pursuant to this agreement shall not be directly or indirectly used for any political purpose whatsoever. This prohibition includes, but is not limited to, campaigns, events, promotions, literature, lobbying or other activities for, against or on behalf of any state, local or federal legislation, issue, candidate(s) or action, whether partisan in nature or not.
- 6. As part of the annual financial audit of the books and records of the EDC by the EDC's independent auditor, the audit shall include tests for compliance with this Agreement. These tests shall be performed in conformance with generally accepted auditing standards. The auditor shall prepare a separate written report on the compliance with the provisions of this agreement. The City reserves the right to review, during normal business hours, the books and records of the EDC's expenditures which are related to the programs required by the provisions of this Agreement.

DATED: _____

DATED: _____

CITY OF CLOVIS

FRESNO COUNTY ECONOMIC
DEVELOPMENT CORPORATION

BY: _____

BY: _____

Luke Serpa, City Manager

Lee Ann Eager, CEO

ATTEST:

John Holt, City Clerk

APPROVED AS TO FORM:

City Attorney

CLOVIS COMPARATIVE HEALTHCARE ANALYSIS PHASE 2

Comparative Healthcare Analysis Enhancement

The Comparative Healthcare Analysis (CHA) was developed with the goal of using industry data to create a tiered-list of business and industry targets to be used in the EDC's attraction and expansion services on behalf of the City of Clovis. Given this general goal, the Fresno County Economic Development Corporation (EDC) designed a three-stage analysis to arrive at the final end goal resulting in a comprehensive list of industry and business targets. Stage 1 completed an updated cluster analysis for the City of Clovis, focusing on identifying what clusters, other than the Local Health Services (LHS) cluster, show economic strength that could lead to further economic growth and prosperity over the long-term. Stage 2 was then to identify the individual industry sectors (6-digit NAICS codes) that are important to the success of a growing healthcare environment by utilizing a comparative methodology with industry targets tailored to Clovis. Stage 3 was then to build upon the findings of Stage 2 and identify key business targets within each identified industry sector.

Within the early stages of the analysis, we outlined a few research questions that would need to be answered in order to achieve our intended results (See Below).

Research Questions:

- i. What industries (6-digit NAICS) and individual businesses should be targeted to advance the Local Health Services cluster in Clovis?
- ii. What are the fundamental differences in the Local Health Services cluster in Clovis comparatively to other regions?
- iii. Which industries have performed the best across the greater Healthcare environment?
- iv. What can industry purchases and inter-industry dependence in Clovis compared to the greater Healthcare environment tell us about industry growth opportunities?
- v. What other exogenous factors need to be considered to understand the actual and theoretical growth of the Local Health Services cluster, such as grants, medical institutions, patents or population dynamics and their effects on growth?

As we began to dive deeper into the analysis (particularly in Stage 2), and in discussion with City of Clovis staff, we decided to build upon our initial proposal in order to answer all pertinent research questions and capture a greater understanding of healthcare growth. While the previous proposed plan for FY19-20 would output results, utilizing a performance based analysis on the individual industry sectors could potentially leave out important aspects to the growth of the healthcare cluster. As a result, the EDC proposes a formalized methodology, or analysis enhancement, to be carried out during the first quarter of FY20-21 in order to insure that the analysis is completed in a timely and accurate manner, accounting for a greater array of variables

and their effects on the growth of the Local Health Services cluster across the United States. The updated methodology for Stage 2 is outlined below, utilizing a five-pronged approach to understanding the actual and theoretical growth of the Local Health Services cluster.

Enhanced Analysis Methodology: Five-Pronged Approach

Analysis ran across both the *similarity* and *selective* regional groups.

- i. Aggregated Differences
- ii. Aggregated Industry Dependence
- iii. Weighted Performance Metric Analysis
- iv. Import Substitution Identification
- v. Regression Analyses

Aggregated Differences – to identify and measure the fundamental differences in Local Health Services composition across the defined *similarity* and *selective* regional groups. This prong of the analysis will utilize location quotients (LQ's) to understand industry specialization, and establishment concentration to understand individual business density across both regional groups. That is, the 2019 location quotient and establishment concentrations in the City of Clovis will be subtracted from the average across both regional groups. Those industry sectors with the highest positive or negative quantitative differences will be associated with those industry sectors that are numerically the most different when compared to Clovis. Positive differences identify industry sectors that are greater in the comparison region while negative differences indicate industry sectors that are greater in the City of Clovis. As stated, this will quantitatively identify the inherent differences in industry specialization and business density within each industry sector within the Local Health Services cluster.

Aggregated Industry Dependence – using industry purchases and inter-industry dependence in order to identify potential industry growth opportunities. As industry sectors are constantly purchasing from one another, creating flows of goods, services, and capital throughout an economic system, the growth or prioritization of one industry may subsequently support the growth of a handful of other industry sectors. These industry sectors supported may arise within the same cluster or outside of that cluster, nevertheless, understanding industry purchases will help the EDC to identify industry sectors that will help support a growing healthcare cluster, and identify any industry sectors outside of the LHS that may subsequently grow from various healthcare prioritization policies. Using industry purchase matrices, often used in economic impact models (input-output models or I-O models), this prong will allow the EDC to compare the industry purchases within Clovis's economy to that of the aggregated *selective* and *similarity* regional groups. From evaluating the industry purchases across both regional groups, the EDC will have a list of industry sectors that purchase heavily from the LHS, and use purchase gaps to identify potential growth opportunities for both LHS and Non-LHS industries.

Weighted Performance Analysis – to measure industry performance, at the 6-digit NAICS level, across a set of defined metrics to identify economic strength within various LHS industries and across both regional groups. As historical growth, comparative regional advantages, and economic resilience are strong predictors of future economic success, this prong of our analysis is paramount in compiling our list of recommended industry sectors. The EDC outlined a list of 35 weighted metrics across six core areas, (i) Jobs, (ii) Industry Specialization, (iii) Gross Regional Product, (iv) Earnings, (v) Establishment Counts, and (vi) Trade, in order to rank and prioritize individual industry sectors within the LHS cluster. From comparing the industry ranks across both regional groups and Clovis, this will allow us to identify which industries are high performing across a multitude of regions across the United States and what industries are important to the economic growth and resilience of the LHS cluster.

Import Substitution Identification – to identify industry sectors that import a high percentage of goods or services to meet current demand, adjusted for Fresno County’s influence. Although import substitution is more commonly referred to when evaluating international trade, its principles can still be applied at the local level and used to identify industry sectors where demand within the region exceeds the level that is currently supplied within that region. That is, the EDC is able to use demand import and export percentages to identify any industry that is heavily imported by Clovis’s economy. Using this and controlling for the influence of other cities within Fresno County, we are then able to compile a list of industry sectors based on their total imported demand that could then be substituted with additional businesses to meet the local supply shortages or infrastructure gaps.

Regression Analyses – to analyze the relationships of typically exogenous factors such as program graduates, grants, patents and population dynamics on cluster growth, controlling for other potential factors on growth. This prong of the analysis will allow the EDC to control for other factors and understand how they affect the future growth of the Local Health Services cluster in Clovis. As stated, we will control for variables such as medical program graduates within the region to understand the connection between having a strong, educated workforce and growth; federal grant awards (since 2001) in order to understand how federal investment affects growth; and population dynamics to understand how different subsets of the population (age, substance abuse, and general health) affect growth. As we will be utilizing multivariate regressions in order to understand the effects of these variables on the growth of the Local Health Services cluster, we will then be able to make informed predictions on how the cluster will grow based on changes to any of these variables stated prior. We will likely utilize jobs added as the primary indicator of cluster growth, meaning we would then be able to forecast job growth based

on changes in program graduates/new medical schools, federal grants awarded, and changes in the population dynamics of the City of Clovis.

Our list of recommended industries will be informed by all facets of the five-pronged enhanced analysis and tailored specifically to the City of Clovis and their Local Health Services cluster.

Enhanced Analysis Methodology: Stage 3 – Individual Business Targets

Utilizing the 6-digit NAICS industries identified from Stage 2 of the analysis, the EDC will build a methodology used to identify individual business targets to focus our attraction efforts on. We will build upon a regression model used in our Business Retention and Expansion (BRE) efforts in Fresno County to predict the employment of each business in our dataset. Using a ratio of model predicted employment divided by actual employment, the EDC will then be able to separate out those businesses that are predicted to expand, and how much they are predicted to expand by, and add appropriate weights based on the industries identified from Stage 2 of the analysis. We will likely add additional weights based on how likely they are to relocate to Fresno County (Clovis in particular), based on additional variables such as distance, competition, cost of doing business, and type of business.

The existing BRE model is a strong predictor of employment as it was built upon a dataset of nearly 1.77 million businesses throughout California and our selected comparison regions. Using this same dataset, we will have a very large sample of businesses to filter through and inform our comprehensive list of business targets. Stage 2 and 3 of the enhanced analysis will be completed during Quarter 1 of FY20-21.

Healthcare Targeted Recruitment and Outreach

Upon completion of the Comparative Healthcare Analysis Enhancement discussed above, the EDC will create customized marketing material for 20 health care/medical companies identified as a potential attraction targets. The marketing material will include City demographics, labor data, anchor assets, available Clovis real estate, clovis4business.com website promotion and other pertinent data and information as approved by the City of Clovis.

The EDC will utilize traditional and digital media to promote Clovis as a competitive location for health care companies. The EDC will also provide the City of Clovis with the names and contact information of the 20 health care/medical companies identified in the Comparative Health Analysis, and will regularly report on communication between the target companies and the EDC. While focused on 20 initial targets to develop marketing collateral around, this focused approach can be replicated for additional prospective companies identified through the Comparative Healthcare Analysis.

FY 20-21 Overview of Work Product	Deliverables	FY 2020 – 2021 Target Outcomes	Status
<p>Economic Development Corporation Serving Fresno County</p> <p>Contract: \$40,000</p> <p>Comparative Healthcare Analysis Phase 2: \$10,000</p> <ul style="list-style-type: none"> - Analysis Enhancement/Completion - Marketing & Recruitment Plan <p>Staff:</p> <p>President & CEO Lee Ann Eager</p> <p>Chief Operations Officer Sherry Neil</p> <p>Vice President of Business Services Will Oliver</p>	<p>Business Retention: Staff will analyze Clovis businesses impacted by COVID-19 and incorporate into the Top 50 Analysis. Targeted businesses will be contacted by a variety of methods to educate Clovis businesses on available retention resources, such as utility rate reductions, rehiring incentives and low-cost emergency relief funding.</p> <ul style="list-style-type: none"> • Conduct Analysis to determine Top 50 companies in Clovis that should be focused on for retention and expansion. • Design COVID19 retention and recovery collateral for Top 50 Targeted Businesses and distribute to businesses city-wide regardless of industry or size. <p>New Business Recruitment: Facilitate information and conduct tours for company representatives not currently located in Clovis for the purpose of recruiting new businesses to the City of Clovis. Assist the City of Clovis in promoting future industrial areas and existing industrial sites to new clients.</p> <ul style="list-style-type: none"> • Coordinate virtual and in-person site tours for the purpose of business attraction and expansion. • Create and update marketing materials. 	<p>Top 50 targeted business analysis for expansion/retention</p>	
		<p>Respond to all City of Clovis business inquires and connect them to appropriate resources</p>	
		<p>Comparative Healthcare Analysis (HCA) Enhancement & Recruitment Plan</p>	
		<p>COVID-19 Retention & Recovery</p> <ul style="list-style-type: none"> - Draft COVID Retention & Recovery Guide with City Staff - Host 2 Virtual Retention & Recovery Resource Events - Conduct city-wide outreach to all businesses via mail and email about available resources 	
		<p>40 new business leads</p>	
		<p>20 targeted healthcare company engagements from HCA</p>	
		<p>Economic Profile Update</p>	
		<p>Incentive Brochure</p>	

	<ul style="list-style-type: none">• Support in-person or virtual commercial and industrial broker events for the City of Clovis.• Communicate leads status during monthly EDC - City of Clovis meeting. <p>Comparative Healthcare Analysis:</p> <ul style="list-style-type: none">• Build off of Phase 1 of Comparative Healthcare Analysis (CHA) and develop an analysis enhancement to account for a greater array of variables and their effects on the actual and theoretical growth of the Local Health Services cluster across the United States.• Once CHA is complete, will create exclusive marketing collateral and recruitment plans for 20 unique businesses identified by the CHA analysis including City demographics, labor data, available Clovis real estate, anchor assets, clovis4business.com website promotion and other pertinent data and information as approved by the City of Clovis.		
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CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Finance Department

DATE: July 20, 2020

SUBJECT: Finance - Approval – Res. 20-____, A Resolution of Intention (ROI) to Annex Territory (Annexation #63) (Current APN: [558-020-05] Lot Line Adjustment: Parcel B PME 2020-004 - Northwest Corner of De Wolf and Harlan Ranch Blvd), to the Community Facilities District (CFD) 2004-1 and to Authorize the Levy of Special Taxes Therein and Setting the Public Hearing for September 8, 2020. (Continued from the July 6, 2020 meeting.)

ATTACHMENTS: 1. Res. 20-____, Intention to Annex Territory to CFD
2. Annexation Map

CONFLICT OF INTEREST

None.

RECOMMENDATION

That the Council approve Res. 20-____, A Resolution of Intention to Annex Territory (Annexation #63) to Community Facilities District (CFD) 2004-1 and to Authorize the Levy of Special Taxes therein and setting the Public Hearing for September 8, 2020.

EXECUTIVE SUMMARY

Since the condition to establish a CFD was imposed on the developments being processed by the City, developments proceeding after March 8, 2004, must petition to be annexed to the existing CFD. This action is required to begin the process of annexation provided by the conditions of approval of the development entitlements.

BACKGROUND

Since the condition to establish a CFD was imposed on the developments being processed by the City, developments proceeding after March 8, 2004, must petition to be annexed to the existing CFD. Recently, a developer has submitted a petition to annex territory to the Community Facilities District 2004-1 and to include his subdivision within the District as provided by the conditions of approval of the development entitlements. To initiate the

process for annexation of territory to a CFD, the Council must approve a Resolution of Intention (ROI) to annex territory to the CFD. The ROI included with this report includes various actions necessary for the annexation to the CFD. The Rate and Method of Apportionment (RMA) referred to in the ROI is as adopted by the Council with the Resolution of Formation adopted March 8, 2004.

The area to be annexed, B PME 2020-004-Northwest Corner of De Wolf and Harlan Ranch Blvd, is shown in the attached map.

FISCAL IMPACT

No fiscal impact by this action.

REASON FOR RECOMMENDATION

All requirements to begin the process for annexation of territory to the CFD have been completed, and the Council may take action on the ROI.

ACTIONS FOLLOWING APPROVAL

The Staff will take appropriate steps to schedule the Public Hearing on the Annexation of Territory to the CFD for September 8, 2020 and will provide the notices in accordance with the law.

Prepared by: Steve Nourian, Senior Accounting Systems Technician

Reviewed by: City Manager *SN*

RESOLUTION 20-____

**RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLOVIS
APPROVING THE INTENTION TO ANNEX TERRITORY TO COMMUNITY FACILITIES
DISTRICT AND TO AUTHORIZE THE LEVY OF SPECIAL TAXES THEREIN**

**CITY OF CLOVIS
Community Facilities District No. 2004-1
(Police and Fire Services)
Annexation No. 63**

WHEREAS, this Council has conducted proceedings to establish Community Facilities District No. 2004-1 (Police and Fire Services) (the "CFD") pursuant to the Mello-Roos Community Facilities Act of 1982, as amended (the "Act"), Chapter 2.5 of Part 1 of Division 2 of Title 5, commencing at Section 53311, of the California Government Code; and

WHEREAS, under the Act, this Council, as the legislative body for the CFD, is empowered with the authority to annex territory to the CFD, and now desires to undertake proceedings to annex territory to the CFD.

NOW, THEREFORE, BE IT RESOLVED, that the City of Clovis:

- 1. Findings.** This Council hereby finds and determines that public convenience and necessity require that territory be added to the CFD.
- 2. Territory Described.** The name of the existing CFD is "Community Facilities District No. 2004-1 (Police and Fire Services)". The territory included in the existing CFD is as shown on the map thereof filed in Book 40 of Maps of Assessment and Community Facilities Districts at Page 57, in the office of the County Recorder, County of Fresno, State of California, to which map reference is hereby made. The territory now proposed to be annexed to the CFD is as shown on the Annexation Map No. 63 to the CFD, on file with the Clerk, the boundaries of which territory are hereby preliminarily approved and to which map reference is hereby made for further particulars. The City Clerk is hereby directed to cause to be recorded said Annexation Map No. 63 to the CFD, showing the territory to be annexed, in the office of the County Recorder of the County of Fresno within fifteen days of the date of adoption of this resolution.
- 3. The Services.** The types of public services financed by the CFD and pursuant to the Act consist of those of the police and fire services (the "Services") as described in Exhibit A to Resolution No. 04-33, adopted by the Council on March 8, 2004 (the "Resolution of Formation"). It is presently intended that the Facilities (and the Services) will be shared, without preference or priority, by the existing territory in the CFD and the territory proposed to be annexed to the CFD.

4. Special Tax. Except to the extent that funds are otherwise available to the CFD to pay for the Services, a special tax sufficient to pay the costs thereof is intended to be levied annually within the CFD, and collected in the same manner as ordinary *ad valorem* property taxes. The proposed rate and method of apportionment of the special tax among the parcels of real property within the CFD, as now in existence and following the annexation proposed herein, in sufficient detail to allow each landowner within the territory proposed to be annexed to the CFD to estimate the maximum amount such owner will have to pay, are described in Exhibit B attached to the Resolution of Formation, by which this reference is incorporated herein.

5. Hearing. Tuesday, September 8, 2020 at 6:00 p.m. or as soon as possible thereafter, in the City Hall, Council Chambers, 1033 Fifth Street, Clovis, California, be, and the same are hereby appointed and fixed as the time and place when and where this Council, as legislative body for the CFD, will conduct a public hearing on the annexation of territory to the CFD and consider and finally determine whether the public interest, convenience and necessity require said annexation of territory to the CFD and the levy of such special tax therein.

6. Notice. The City Clerk is hereby directed to cause notice of said public hearing to be given by publication one time in a newspaper of general circulation in the area of the CFD. The publication of said notice shall be completed at least seven (7) days before the date herein set for said hearing. The City Clerk shall also cause a copy of such notice and a copy of the Resolution of Formation to be mailed to each landowner (and to each registered voter, if any) within the territory proposed to be annexed, which notice and resolution shall be mailed at least fifteen (15) days before the date of said hearing. Such notice shall be substantially in the form specified in Section 53339.4 of the Act, with a summary form specifically authorized.

7. Annexation Contingency. Section 53316 of the Act shall apply to the proceedings of the Council for the CFD to the extent that the proceedings, if appropriate, include territory which on the date of adoption of this Resolution of Intention are not annexed to the City and which territory is proposed to be annexed to the City. This Council determines that the City has filed appropriate documents, including a “resolution of application”, with the Fresno County Local Agency Formation Commission (“LAFCO”) for the annexation of territory as therein described, which territory includes all or a portion of the lands proposed for inclusion in the boundaries of the CFD as herein described. A certificate of filing of such application has been issued by the official who is the executive officer of LAFCO, a copy of which certificate of filing is on file with the City Clerk. It is hereby specifically provided that these proceedings for the CFD, to the extent applicable to such territory subject to such LAFCO annexation to the City, shall be contingent upon and shall be completed only if the annexation of such territory to the City by LAFCO is completed. It is further provided that this Council shall not authorize the levy of the Special Tax nor cause any amended notice of special tax lien to be recorded for the territory to be annexed to the CFD unless and until such annexation proceedings through LAFCO are completed to the satisfaction of this Council.

8. Effective Date. This resolution shall take effect upon its adoption.

* * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on July 20, 2020 by the following vote, to wit.

AYES:

NOES:

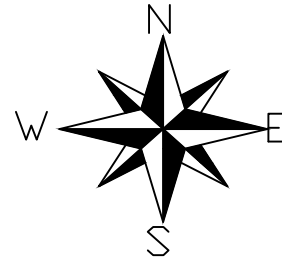
ABSENT:

ABSTAIN:

DATED: July 20, 2020

Mayor

City Clerk



LEGEND

— PARCEL

— ANNEXATION BOUNDARY

(A) CURRENT APN: [558-020-05]
LOT LINE ADJUSTMENT:
PARCEL B PME 2020-004,
CLOVIS, CA 93619

FILED IN THE OFFICE OF THE CITY CLERK THIS _____ DAY OF _____, 2020. I HEREBY CERTIFY THAT THE WITHIN MAP SHOWING PROPOSED BOUNDARIES OF ANNEXATION NO. 63 TO COMMUNITY FACILITIES DISTRICT NO. 2004-1 (POLICE AND FIRE SERVICES), CITY OF CLOVIS, COUNTY OF FRESNO, STATE OF CALIFORNIA, WAS APPROVED BY THE CITY COUNCIL OF THE CITY OF CLOVIS AT A REGULAR MEETING THEREOF, HELD ON THE 8TH DAY OF _____ SEPTEMBER, 2020, BY ITS RESOLUTION NO. 20-_____.

JOHN HOLT
CITY CLERK
CITY OF CLOVIS

FILED THIS _____ DAY OF _____, 2020, AT THE HOUR OF _____ O'CLOCK _____ M. IN THE BOOK _____ PAGE _____ OF MAPS OF ASSESSMENT AND COMMUNITY FACILITIES DISTRICTS AND AS INSTRUMENT NO. _____ IN THE OFFICE OF THE COUNTY RECORDER IN THE COUNTY OF FRESNO, STATE OF CALIFORNIA.

PAUL A. DICTOS, C.P.A. BY: DEPUTY COUNTY RECORDER
COUNTY ASSESSOR-RECORDER
COUNTY OF FRESNO
STATE OF CALIFORNIA

REFERENCE IS MADE TO THAT BOUNDARY MAP OF COMMUNITY FACILITIES DISTRICT NO 2004-1 (POLICE AND FIRE SERVICES) OF THE CITY OF CLOVIS RECORDED WITH THE FRESNO COUNTY RECORDER'S OFFICE ON FEBRUARY 19, 2004, IN BOOK 40 OF MAPS OF ASSESSMENT AND COMMUNITY FACILITIES DISTRICTS, PAGE 57.

THE LINES AND DIMENSIONS OF EACH LOT OR PARCEL SHOWN ON THIS DIAGRAM SHALL BE THOSE LINES AND DIMENSIONS AS SHOWN ON THE FRESNO COUNTY ASSESSORS MAPS FOR THOSE PARCELS LISTED.

THE FRESNO COUNTY ASSESSORS MAPS SHALL GOVERN FOR ALL DETAILS CONCERNING THE LINES AND DIMENSIONS OF SUCH LOTS OF PARCELS.

ANNEXATION MAP NO. 63

COMMUNITY FACILITIES DISTRICT NO. 2004-1
(POLICE AND FIRE SERVICES)

CITY OF CLOVIS
COUNTY OF FRESNO
STATE OF CALIFORNIA

0 250' 500'
SCALE : 1" = 500'



CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Planning and Development Services Department

DATE: July 20, 2020

SUBJECT: Planning and Development Services - Approval - Res. 20-____, Annexation of Miscellaneous Properties to the Landscape Maintenance District No. 1.

ATTACHMENTS: 1. Res. 20-____

CONFLICT OF INTEREST

None

RECOMMENDATION

For the City Council to approve Resolution 20-____ approving annexation of miscellaneous properties into City of Clovis Landscape Maintenance District (LMD) No. 1.

EXECUTIVE SUMMARY

The developers/property owners of the properties listed in Attachment A have submitted executed landscape maintenance covenants, copies of which are on file with the City Clerk, indicating consent to annexation of the subject property into the City of Clovis Landscape Maintenance District No. 1. This action will annex each of these properties into the Landscape Maintenance District so that they can be assessed for maintenance costs within their respective areas.

BACKGROUND

Council formed the original district on July 15, 1985, for the purpose of funding the maintenance of landscaped areas and parks. These properties are being brought to Council for annexation to the district as a group rather than separately in an effort to conserve staff resources and Council's time. Under the provisions of the Landscaping and Lighting Act of 1972, if all of the owners of property proposed for annexation provide written consent to annexation, then noticing, hearing, and filing of an Engineer's Report is not required.

Under the provisions of the Landscaping and Lighting Act of 1972, and in accordance with Article XIII C and Article XIII D of Proposition 218, all the owners of property proposed for

annexation have provided a written request and consent to annexation, and have executed a covenant (petition) indicating acceptance of the annual assessment.

FISCAL IMPACT

This project will add landscaped areas and will incrementally increase maintenance revenue through annual assessments from the annexed properties. Current year to date status of landscape maintenance district facilities is as follows:

	<u>Various LMD's Under Consideration</u>	<u>Year to Date</u>
LMD Landscaping added:	0.094 acres	1.394 acres
Resource needs added:	0.0094 person	0.139 person

The resource needs estimate is based on 1 person per 10 acres of landscaped area.

REASON FOR RECOMMENDATION

The property owners for the miscellaneous properties have requested or consented to annexation into the City of Clovis LMD No. 1.

ACTIONS FOLLOWING APPROVAL

The miscellaneous properties shall become a part of the City of Clovis LMD No. 1 and will be assessed next year for maintenance costs.

Prepared by: Christian Esquivias, Engineer I

Reviewed by: City Manager *JA*

RESOLUTION 20-____

**A RESOLUTION OF THE COUNCIL OF THE CITY OF CLOVIS, CALIFORNIA,
APPROVING ANNEXATION TO LANDSCAPING MAINTENANCE DISTRICT NO. 1
OF THE CITY OF CLOVIS**

WHEREAS, City of Clovis Landscape Maintenance District No. 1 ("District") was formed by Resolution No. 85-78, adopted July 15, 1985, pursuant to Part 2 of Division 15 of the Streets and Highways Code (Landscape and Lighting Act of 1972), herein the "Act"; and

WHEREAS, all of the owners of property proposed to be annexed to the District consisting of proposed developments as described in Attachment A attached hereto and incorporated herein by reference, have consented to said annexation and such annexation may be ordered without notice and hearing or filing of engineer's report, or both.

NOW, THEREFORE, IT IS RESOLVED AND ORDERED, as follows:

1. That the public interest and convenience require that certain property described in Exhibit "A" attached hereto and by reference incorporated herein be annexed into Landscape Maintenance District No. 1 of the City of Clovis for the maintenance and servicing of landscaping facilities.
2. The City Clerk shall receive and file the maps showing the boundaries of the areas annexed as set forth in Attachment A which boundaries shall be used for assessment proceedings until and unless a change of organization is approved pursuant to the Act.

* * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on July 20, 2020, by the following vote, to wit:

AYES:
NOES:
ABSENT:
ABSTAIN:

DATED: July 20, 2020

Mayor

City Clerk

Attachment A

Miscellaneous properties to be added to the Landscape Maintenance District No. 1 of the City of Clovis:

	Project Number	Address	Developer/Owner
1	Parcel Map No. 2014-03	NEC Villa and Pontiac Avenues	CAST N BLAST, LP, A California Limited Partnership
2	PM 2018-11	NEA of Powers Ave. & Locan Ave.	EL Centro Corner Petroleum LLC, A California Limited Liability Company
3	SPR 2018-005A	NEC of Willow Ave. & Alluvial Ave.	Cheu M. Lee and Ka K. Lee, Husband and Wife as Joint Tenants
4	SPR 2018-009	53 W. Herndon Avenue	Villa168, LLC, A California Limited Liability Company
5	SPR 2018-022A	525 W. Herndon Avenue	RTMA Properties, LLC, A California Limited Liability Company
6	SPR 2018-025	SWC of Herndon and N. McKelvy Avenues	Marc O'Polo Enterprises Inc., A California Corporation
7	SPR 2018-027	682 N. Pollasky Avenue	Rene A. Castaneda and Maria A. Castaneda
8	SPR 2018-028	550 N Bush Avenue	John R. Marihart and Elizabeth O. Marihart
9	SPR 2019-001	567 & 587 Park Creek Drive	Beal Properties Inc., A California Corporation
10	SPR 2019-003	1811 Shaw Avenue	Bowie Enterprises, A California Corporation
11	SPR 2019-008	566 Spruce Ave. & 586 Spruce Ave.	Beal Properties Inc., A California Corporation
12	SPR 2019-014	455 W Fir Avenue	Provost & Pritchard Engineering Group, Inc., A California Corporation
13	SPR 2019-015	662 N. Pollasky Avenue	Ross L. Wicks
14	Building Permit No. 6976-2019	385 Purdue Avenue	2M Development Corporation, A California Corporation
15	Building Permit No. 6974-2019	395 Purdue Avenue	2M Development Corporation, A California Corporation
16	SPR 2018-020	2780, 2820, & 2880 Herndon Avenues	Fresno Community Hospital and Medical Center, A California Corporation



CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Planning and Development Services Department

DATE: July 20, 2020

SUBJECT: Planning and Development Services - Approval - Bid Award for CIP 20-07, Fire Station 6 Off-site Improvements; and Authorize the City Manager to execute the contract on behalf of the City.

ATTACHMENTS: 1. Vicinity Map

CONFLICT OF INTEREST

None

RECOMMENDATION

1. For the City Council to award a contract for CIP 20-07 Fire Station 6 Off-site Improvements to Avison Construction Inc. in the amount of \$1,324,708; and
2. For the City Council to authorize the City Manager to execute the contract on behalf of the City.

EXECUTIVE SUMMARY

Staff is recommending that City Council award a contract to Avison Construction and authorize the City Manager to execute the agreement. Avison Construction Inc. was the lowest responsible bidder from a bid opening that took place on July 7, 2020.

This project will complete street and utility improvements along Loma Vista Parkway from Leonard Avenue to Encino Avenue in advance of the construction of Fire Station No. 6. The construction includes clearing, grading, aggregate base, asphalt concrete pavement, concrete sidewalk, curb return ramps, valley gutters, driveway approach, signage and striping, street lights, water mains, sewer mains, storm drain facilities on Loma Vista Parkway and Encino Avenue west of Leonard Avenue.

BACKGROUND

The following is a summary of the bid results of July 7, 2020:

BIDDERS	BASE BIDS
Avison Construction, Inc.	\$1,324,708.00
Emmett's Excavation	\$1,342,033.00
American Paving Company	\$1,393,739.00
Dave Christian Construction	\$1,486,794.00
ENGINEER'S ESTIMATE	\$1,303,000.00

All bids were examined and the bidder's submittals were found to be in order. Avison Construction Inc. is the lowest bidder. Staff has validated the lowest bidder contractor's license status.

FISCAL IMPACT

This project was budgeted in the 2020-2021 fiscal year budget. The project is supported by the street fund, reimbursements from adjacent developments, Parks fees, and Fire Impact fees.

REASON FOR RECOMMENDATION

Avison Construction Inc. is the lowest responsible bidder. There are sufficient funds available for the anticipated cost of this project.

ACTIONS FOLLOWING APPROVAL

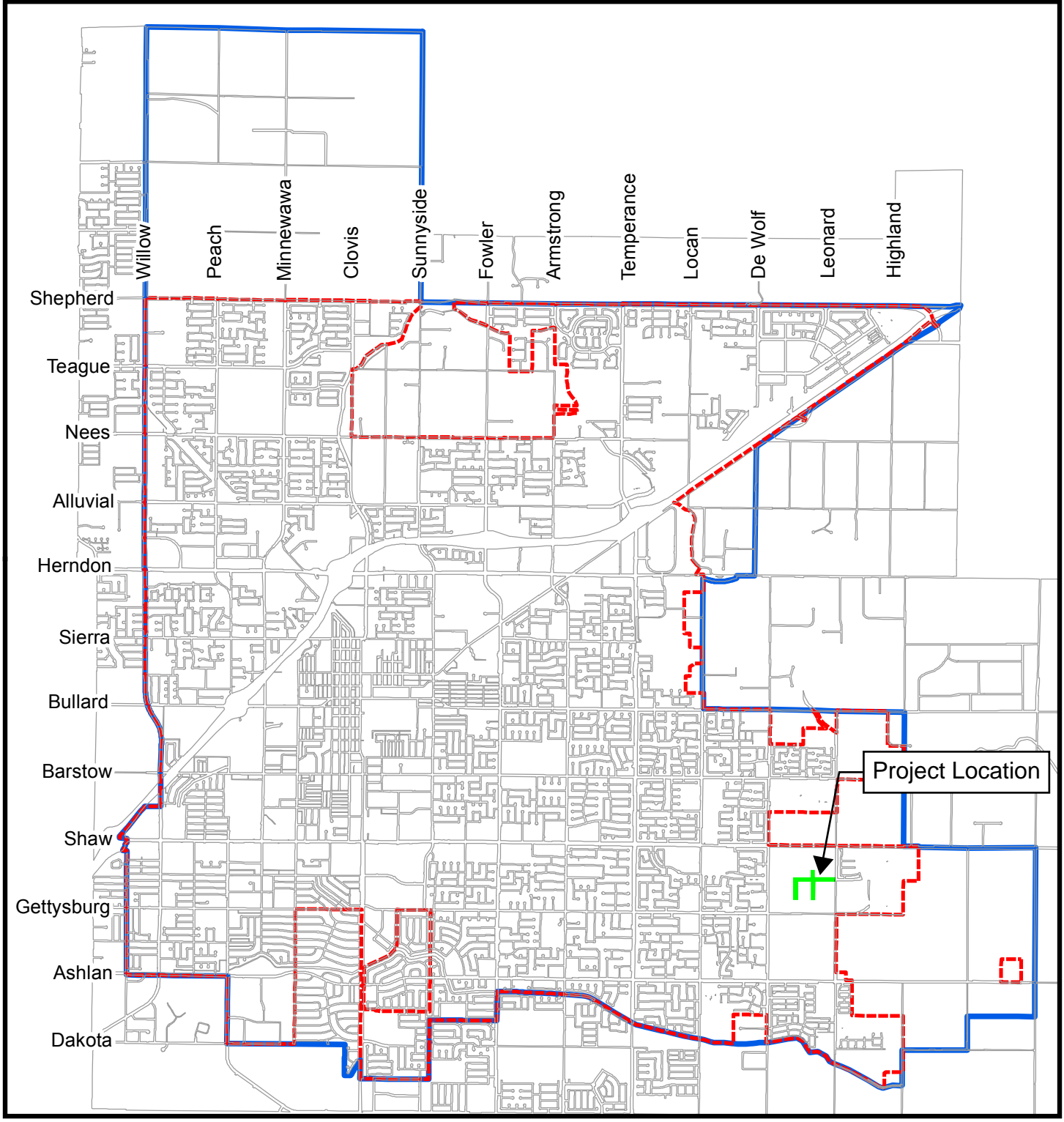
1. The contract will be prepared and executed, subject to the Contractor providing performance security that is satisfactory to the City.
2. Construction will begin approximately two (2) weeks after contract execution and shall be completed in sixty (60) working days thereafter.

Prepared by: David Gonzalez, Civil Engineer

Reviewed by: City Manager *[Signature]*

VICINITY MAP

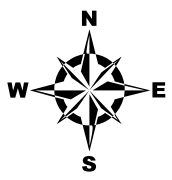
CIP 20-07 Fire Station 6 Off-site Improvements



Project Location



ATTACHMENT 1



CITY LIMITS
 SPHERE OF INFLUENCE



CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Planning and Development Services

DATE: July 20, 2020

SUBJECT: Planning and Development Services - Approval, Res. 20-____, A request to adopt a resolution initiating an update to the policies included in the Shaw Avenue Specific Plan related to the prohibition of drive-thru uses.

ATTACHMENT: 1. Res. 20-____

CONFLICT OF INTEREST

None.

RECOMMENDATION

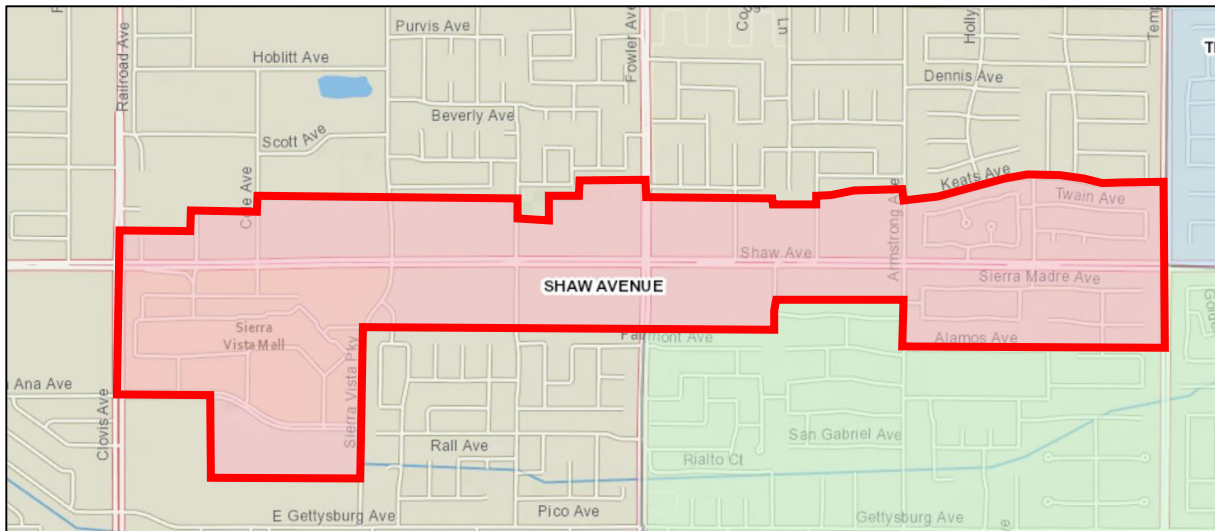
Approve a resolution initiating an update to the policies included in the Shaw Avenue Specific Plan related to the prohibition of drive-thru uses.

EXECUTIVE SUMMARY

In response to recent approvals and current interest related to drive-thru uses within the Shaw Avenue Specific Plan area (**Figure 1**), City staff is requesting Council consideration and direction of an initiation to update policies included in the Shaw Avenue Specific Plan related to the prohibition on drive-thru uses within its planning boundaries.

If Council provides direction for City staff to proceed with initiating an update to the Shaw Avenue Specific Plan, staff will analyze and bring back a formal recommendation for updated policies related to drive-thru uses within the Specific Plan boundaries. This recommendation may include the removal, addition, and/or modification of policies within the Shaw Avenue Specific Plan and will seek to balance the intent of the Specific Plan with current interest and market forces in accommodating drive-thru uses.

FIGURE 1
Shaw Avenue Specific Plan Boundaries



BACKGROUND

The Shaw Avenue Specific Plan is a guiding document for the comprehensive development that occurs within its boundaries, which includes Shaw Avenue from Clovis to Temperance Avenues. The Specific Plan originally dates to 1978, with the last substantive update adopted in 1994. Its specific purpose is to provide for a well-designed boulevard and to prevent Shaw Avenue from being developed as a continuation of the lineal commercial pattern which has become prevalent west of Clovis Avenue. To ensure that a pattern of lineal commercial development was prevented, commercial uses in this area were generally limited to development within a specific commercial center setting; drive-thru establishments and freestanding restaurants were prohibited.

In the 25-plus years since the last update of the Specific Plan, the surrounding area has developed with residential projects and neighborhood serving commercial uses. In response to changes in land use conditions and market demands over the years, the City deemed it appropriate to approve a series of exceptions to the policies that prohibited businesses with drive-thru features, such as the following:

- **April 12, 1999:** the City Council considered and approved a request for a general plan amendment to modify the Specific Plan to permit drive-thru uses for financial institutions.
- **November 7, 2005:** the City Council considered and approved a request to allow a drive-thru window for the Walgreens Pharmacy located at the southwest corner of Fowler and Shaw Avenues.
- **December 17, 2018:** the City Council considered and approved a request to allow a drive-thru car wash at the northeast corner of Fowler and Shaw Avenues, which is currently under construction.

- **March 16, 2020:** the City Council considered and approved a request to allow a drive-thru coffee kiosk and a separate future drive-thru uses at the southwest area of Fowler and Shaw Avenues.

PROPOSAL AND ANALYSIS

As stated earlier, the key objective for the Shaw Avenue Specific Plan was to limit linear extension of commercial development on Shaw east of Clovis Avenue. This objective dovetailed with the City's intent to soften the transition between urban uses on the east edge of the City and the existing and future rural residential uses that developed in the County. Notwithstanding the amendments described above, the Specific Plan has been very successful in guiding development as it was intended. Retail development is generally focused on a handful of major intersections, with residential and office-related development occupying the majority of the corridor. Generally speaking, the land use pattern within the boundary of the Shaw Avenue Specific Plan is now set, with the exception of only a few remaining properties that remain undeveloped.

Today's market conditions generally require that local and neighborhood-serving retail uses have drive-thru components as customers have become accustomed to the convenience offered by their presence. While market conditions 25-plus years ago when the Shaw Avenue Specific Plan had its last major update may not have warranted nearly as much interest in the need or desire for drive-thru uses, the current policies prohibiting drive-thru windows have significantly diminished opportunity for potential businesses that can feasibly develop what remaining vacant land is left and limit the redevelopment potential.

Considering the changes in land use patterns that have occurred, market conditions, and the accomplishment of the Specific Plan's primary goals, staff recommends that a policy adjustment to the prohibition for drive-thru facilities within the Specific Plan area be explored in more detail to determine the appropriate recommendations and/or modifications needed to reflect the current demand for drive-thru facilities. Absent this broad-base policy discussion, it is likely that individual property owners and developers will submit applications requesting relief from the drive-thru prohibition on a site-specific basis. One such application is expected to be filed by the end of July, with others being discussed at different locations along the corridor.

FISCAL IMPACT

None.

REASON FOR RECOMMENDATION

Direction by City Council for staff to initiate an amendment to the Shaw Avenue Specific Plan would allow for staff to reconsider and provide a recommendation related to the existing prohibition of drive-thru facilities within the Specific Plan area in response to the reasons identified within this staff report.

ACTIONS FOLLOWING APPROVAL

Upon approval of a resolution, staff will initiate an amendment to the Shaw Avenue Specific Plan and bring back a recommendation on any updates to current policies for Council consideration.

Prepared by: Ricky Caperton, AICP, Senior Planner

Reviewed by: City Manager *JH*

**DRAFT
RESOLUTION 20-_____**

**RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLOVIS
AUTHORIZING INITIATION OF AN AMENDMENT TO THE SHAW AVENUE SPECIFIC
PLAN BY CITY STAFF**

WHEREAS, the City of Clovis Planning and Development Services requests the City of Clovis City Council to direct staff to initiate an amendment to the Shaw Avenue Specific Plan; and

WHEREAS, City staff will initiate an amendment to the Shaw Avenue Specific Plan as it relates to the prohibition on drive-thru facilities within its planning area and bring back recommendations for any policy updates, additions, deletions, and/or other modifications to drive-thru uses.

WHEREAS, the City Council finds merit in considering an amendment to the Shaw Avenue Specific Plan; and

NOW, THEREFORE, BE IT RESOLVED, that the City of Clovis Council grants the initiation of an amendment to the Shaw Avenue Specific Plan to consider policy updates related to drive-thru facilities.

* * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on July 20, 2020, by the following vote, to wit.

- AYES:
- NOES:
- ABSENT:
- ABSTAIN:

DATED: July 20, 2020

Mayor

City Clerk



CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Planning & Development Services

DATE: July 20, 2020

SUBJECT: Planning and Development Services – Authorize the City Manager -
 1. To terminate the contract with XG Communities (formerly 5 Bars) for administration of small cell sites program per Federal Communications Commission regulations; 2. To execute Master License Agreements with cellular carriers; and 3. To make minor changes to the Master Lease Agreements and Design Guidelines going forward due to ongoing technology changes.

ATTACHMENTS: 1. XG Communities' request to terminate contract December 2, 2019
 2. Master License Agreement
 3. Design Guidelines

CONFLICT OF INTEREST

None

RECOMMENDATION

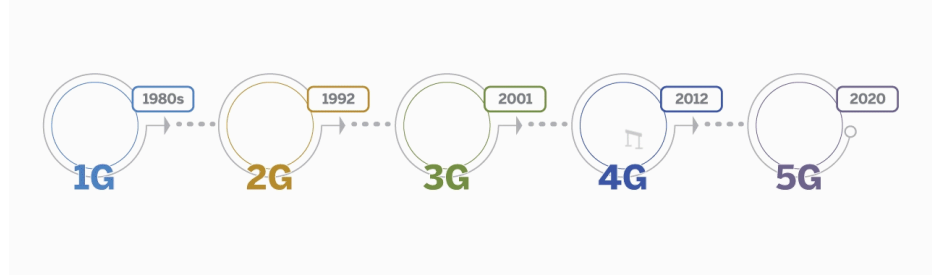
For the City Council to authorize the City Manager - 1. To terminate the contract with XG Communities (formerly 5 Bars) for administration of small cell sites program per Federal Communications Commission (FCC) regulations; 2. To execute Master License Agreements with cellular carriers; and 3. To make minor changes to the Master Lease Agreements (MLA) and Design Guidelines going forward due to ongoing technology changes.

EXECUTIVE SUMMARY

Technology companies such as AT&T and Verizon are pushing for the transition from what is termed 4G to 5G. 5G is the fifth generation of cellular technology, and it promises to greatly enhance the speed, coverage and responsiveness of wireless networks. Carriers like Verizon and AT&T have shown speeds surging past 1 gigabit per second. That's 10 to 100 times faster than your typical cellular connection, and even faster than anything you can get with a physical fiber-optic cable going into your house.

The transition from 4G to 5G will and already is requiring a significant amount of new equipment and infrastructure throughout cities across the country. Our City will be seeing a significant increase in requests to use City and PG&E assets to place small cell antennas on street light poles. The City has approximately 11,000 light poles, of which the City owns approximately 1,500, and the remainder are owned by PG&E. Approval of the MLA (**Attachment 2**) and Design Guidelines (**Attachment 3**) will put into place tools that will be used to manage how these antennas will be placed and what they may look like around the City.

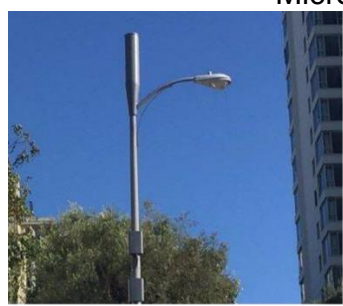
The chart below shows the evolution from 1G to 5G over the past forty years.



- 1G: 1980s – Phone calls
- 2G: 1992 – Text messaging, phone calls
- 3G: 2001 – Internet browsing, text messaging, phone calls
- 4G: 2012 – Increased bandwidth, 10X faster speeds, LTE, video streaming
- 5G: 2020 – 5-10X faster speeds, greater reliability, 100% coverage, 1,000X bandwidth, 1 millisecond latency (response time), smart cities

Below are images of what the antennas look like today:

Micro Cellular



4G



5G

As a result of FCC Order 18-133, XG Communities has requested termination of their existing contract with the City of Clovis (**Attachment 1**). XG was not able to execute any sub-license agreements with cellular carriers and therefore did not receive any revenue as a result. Both the City and XG Communities are in agreement the contract should be terminated.

Due to the rapidly changing nature of small cell wireless infrastructure and implementation needs, the MLA and Design Guidelines will be living documents frequently needing to be updated in collaboration with the wireless carriers. As a result, staff is requesting that the City Council authorize the City Manager to approve minor changes as needed to both the MLA and supporting Design Guidelines.

BACKGROUND

On September 11, 2017, the City Council granted XG (formally referred to as 5 Bars) the exclusive right to market and license wireless telecommunication facilities in the City's public right-of-way for a period of 5 years. Under this contract, all wireless vendors would be required to work directly with XG. This action was taken to reduce the administrative burden of City staff in reviewing applications for each wireless telecommunications provider for new facilities across the City, to create a new revenue source to the City, and to address restrictive legislation from the potential passing of SB 649.

On September 27, 2018, the FCC approved FCC 18-133, which set guidelines and limits for local regulation of small cell site deployment. XG Communities has since realized that their business model was no longer sustainable and has requested termination of the contract as they shift to providing consultant services for carriers. XG Communities did not yield any licenses as a result of their contract with the City and does not feel that they can successfully do so. Therefore, staff finds that the termination of the contract is in the best interest of both parties.

Staff from Engineering, Planning, Public Utilities, and Finance have worked with the major wireless carriers and PG&E since January to develop a mutually-agreed upon system to assume the scope of work from XG Communities. This includes an MLA to license sites for carriers to install their equipment (**Attachment 2**) on City owned poles. It also includes Design Guidelines that will be applied universally to any pole in the City, so that implementations are consistent with the aesthetic character of the area and that minimize visualization of any small cell site equipment (**Attachment 3**). Both the MLA and Design Guidelines have been vetted through legal counsel at Lozano Smith.

Included with the Design Guidelines is an application workflow outline. City staff held many meetings over the last few months with the carriers AT&T and Verizon and has made numerous concessions, at the carriers' request, in developing the MLA and Design Guidelines. Staff sought to be business friendly while simultaneously being mindful of how small cell sites would blend into the City landscape, be consistent with City policies, and meet aesthetic expectations.

Staff included the City of Fresno in numerous discussions to ensure that both cities' implementations would be consistent in the greater metropolitan area. This effort included participation not just from stakeholders throughout the City, but throughout each of these partner wireless companies and their various departments. City staff is prepared to conduct the plan reviews and inspections of these various elements. These provisions allow City staff to fully accommodate the scope of work previously contracted for with XG Communities.

Staff anticipates that the current plans for carriers to move from 4G technology to 5G technology in the near future will require us to meet regularly with the carriers to stay abreast of installation requirements and to refine our MLA, Design Guidelines, workflow process, and information systems accordingly. Staff is recommending the City Manager be authorized to make minor modifications as a result of these evolving technology changes. We anticipate that these minor modifications will occur as carriers adopt new equipment, or the FCC provides further direction around these installations.

FISCAL IMPACT

There is no fiscal impact. If approved, the City will administer the small cell wireless program and receive an annual \$270 per small cell license. The City will also receive additional revenue for fees associated with plan review and permitting of these sites in accordance with our existing fee schedule.

REASON FOR RECOMMENDATION

XG Communities has requested termination of their contract with the City. Staff from departments throughout the City have developed all of the necessary documents, workflow processes, and Design Guidelines to assume the scope of work formerly provided by XG Communities. The changing nature of small cell wireless infrastructure will require frequent minor changes to the MLA and Design Guidelines to be accepted and approved by the City Manager.

ACTIONS FOLLOWING APPROVAL

The City Manager will terminate the contract with XG Communities and will execute an MLA with interested wireless carriers.

Prepared by: Ryan Nelson, PDS Administrative Manager
Sean Smith, Supervising Civil Engineer

Reviewed by: City Manager *JS*



DEC 4 10 PM '19

Via FedEx

December 2, 2019

City Manager
1033 Fifth Street
Clovis, CA 93612

Re: XG / SiteSeleX Transition

Dear City Manager:

I. INTRODUCTION

There have been significant changes in legislation this past year. On September 26, 2018, the Federal Communications Commission adopted a Declaratory Ruling and Third Report and Order, WT Docket No. 17-79, FCC 180133, 33 F.C.C.R. 9088 <https://docs.fcc.gov/public/attachments/FCC-18-133A1.pdf> (the “FCC Order”), which effectively restricts the fees and other compensation that state and local governments may receive in connection with access to public rights-of-way and other municipal property by wireless service providers. On January 15, 2019, the FCC Order became effective.

In fact, the FCC Order is in full effect with shot clocks and capped asset rents with no escalators. Many cities have been contemplating changes in their ordinances, agreements, and processes in order to comply with the FCC Order and align with the carriers and attract 5G investment.

As a result of these significant changes, XG is transitioning its business model to address its new reality. XG is pivoting to a site acquisition, engineering and construction. Working closely with the carriers and jurisdictions. Unfortunately, XG can no longer economically serve cities in exchange for a rent share.

In light of the recent FCC Order, we want to present an optimal option for transition.

II. SITSESELEX

By 2025, North America is forecasted to deploy over 500,000 outdoor small cells. 5G and small cell deployment is now a reality and some markets are deploying in scale around the country. The estimated of number of sites needed are continuing to increase. Now, more than ever, it is critical for municipalities to adopt a central reservation system to keep track of City assets as carrier demands for such assets increase.

XG has worked in good faith for the past several years to market City assets. As part of that process, XG developed the SiteSeleX asset marketing and reservation platform. The value in the platform is



that it functions as a central asset repository, so that the City can maintain control of where and who will be leasing and collocating small cells on City poles.

Deloitte Consulting was an early partner with XG, responsible for development and maintenance of the SiteSeleX platform. Deloitte has made numerous functional and operational improvements to SiteSeleX and is in the process of launching the enhanced platform. As XG transitions its business, Deloitte would like the opportunity to demo the new functionality in hopes of transitioning you from SiteSeleX to the new platform and engage in a direct relationship with Deloitte or one of its affiliate partners.

III. AGREEMENTS

The City of Clovis (the “City”) and XG Communities, LLC (“XG”) entered into the Wireless Marketing Agreement (the “Marketing Agreement”). The Marketing Agreement provided that XG would furnish certain services to the City in exchange for the right to market and license the City’s infrastructure to wireless service providers, at no cost to the City, and that revenues from such licenses would be shared among the parties.

Despite mutual good faith efforts by both parties to implement the Marketing Agreement, the FCC Order fundamentally frustrated the purpose of the Marketing Agreement, leaving no way for XG to be compensated for the years’ worth of work product and services it has provided to the City.

Since the terms of the Marketing Agreement between the parties is based on XG’s compensation on a revenue share, the FCC Order’s reduction of fees which could be charged by the City rendered the financial terms in the Marketing Agreement impracticable for both XG and the City.

Therefore, XG hereby gives written notice to terminate the Marketing Agreement effective January 31, 2020 and requests the City’s consent to such termination.

Further, XG has rendered services and work product and incurred costs pursuant to the Marketing Agreement with the expectation of compensation from the City. As a direct and proximate result of the FCC Order, however, XG has suffered a significant loss. XG Architecture and Engineering has not received any compensation for the work it has done in the City or for the City.

IV. CONCLUSION

While XG is transitioning its business model to focusing on site acquisition, engineering and construction of small cells in the public right of way, we are optimistic that our close relationships with the jurisdictions, along with our carrier expertise will create a smooth and predictable process for all parties involved.

XG will be reaching out to the City under separate cover to discuss next steps to finalize transition of the Marketing Agreement, and a demonstration of the enhanced SiteSeleX platform.



Feel free to reach out to me or directly to Jack Fritz at Deloitte, jackfritz@deloitte.com.

Best regards,

Monnie McGaffigan

Monnie McGaffigan
XG Communities, LLC
949 400 5629

Cc: Jack Fritz, Deloitte
Cheryl Prout, XG Communities

City Clerk
1033 Fifth Street
Clovis, CA 93612

MASTER LICENSE AGREEMENT

THIS MASTER LICENSE AGREEMENT (“Agreement”) is made and entered into effective on _____ day of _____, 2020, by and between the **CITY OF CLOVIS**, a California municipal corporation and general law city, having a mailing address of 155 N. Sunnyside Avenue, Clovis, CA 93611 (“Licensor” or “City”), and _____ (“Licensee”) having a mailing address of _____.

1. DEFINITIONS.

A. “Approvals” means all certificates, permits, licenses and other approvals that Licensee must obtain as required by law in order for Licensee or its agents to use the Licensed Premises for the purpose intended by this Agreement.

B. “Company Facilities” means any and all Wireless Telecommunications Facilities to be installed, operated, and maintained by Licensee on the Licensed Premises.

C. “City Facilities” means any and all existing facilities, inclusive of but not limited to all buildings and improvements owned by and under the possession and control of Licensor, including but not limited to utility poles, lamp posts, other utility facilities, fences, gates, and all roof tops of all such buildings, facilities and/or improvements.

D. “Defaulting Party” means the party to this Agreement that has defaulted as provided for in Section 19 of this Agreement.

E. “Harmful Interference” means Interference that endangers the functioning of a radio navigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radio communication service operating in accordance with both International Telecommunications Union Radio Regulations and the regulations of the Federal Communications Commission.

F. “Hazardous Material” means any substance which is (i) designated, defined, classified or regulated as a hazardous substance, hazardous material, hazardous waste, pollutant or contaminant under any Environmental Law, as currently in effect or as hereafter amended or enacted, (ii) a petroleum hydrocarbon, including crude oil or any fraction thereof and all petroleum products, (iii) PCBs, (iv) lead, (v) asbestos, (vi) flammable explosives, (vii) infectious materials, or (viii) radioactive materials.

G. “Environmental Law(s)” means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Section 9601 et seq., the Resource Conservation and Recovery Act of 1976, 42 U.S.C. Section 6901 et seq., the Toxic Substances Control Act, 15 U.S.C. Section 2601 et seq., the Hazardous Materials Transportation Act, 49 U.S.C. Section 5101 et seq., and the Clean Water Act, 33 U.S.C. Section 1251 et seq., as said laws have been supplemented or amended to date, the regulations promulgated pursuant to said laws and any other federal, state or local law, statute, rule, regulation or ordinance that regulates or proscribes the use, storage, disposal, presence, clean-up, transportation or release or threatened release into the environment of Hazardous Material.

H. “Improvements” means a Wireless Telecommunications Facility(ies).

I. “Interference” means the effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radio communication system, manifested by any performance degradation, misinterpretation, or loss of information.

J. “Licensed Premises” means the property set forth in each fully executed Right of Entry Agreement executed hereunder.

K. “Licensee's Notice Address” means _____.

L. “Licensor's Notice Address” means 155 N. Sunnyside Avenue, Clovis, CA 93611.

M. “Licensor's Properties” means all those properties owned by Licensor which is subject to this License Agreement.

N. “Non-Defaulting Party” means the party to this Agreement that has not defaulted as provided for in Section 19 of this Agreement.

O. “Wireless Telecommunications Facilities” means the equipment and associated structures needed to transmit and/or receive electromagnetic signals. A Wireless Telecommunication Facility typically includes antennas, supporting structures, enclosures and/or cabinets housing associated equipment, cable, access roads and other accessory development.

2. TERM.

The Term of this Agreement shall commence on _____, 2020 and continue for the shortest of the following: (1) Ten (10) years from the above-referenced commencement date; (2) until the license for each Licensed Premise has expired; or (3) until this Agreement is otherwise terminated hereunder.

The Term of each License shall commence upon the Commencement Date of said License, as set forth in each fully executed **Exhibit A** entitled “License and Right of Entry Agreement,” and shall continue for a period of ten (10) years. The term of each License shall renew for up to four (4) five (5) year renewal terms unless either Party gives ninety (90) days’ written notice of its intent not to renew.

3. RENT/LICENSE FEES.

A. From and after the Commencement, Licensee shall pay a license fee for each of the Licensed Premises in the amount of Two Hundred and Seventy Dollars (\$270) per year, paid annually on July 1 of each year for each Licensed Premises, in accordance with Federal Communications Commission Order No. 18-133 (FCC 18-133) (the Rent).

B. The Parties acknowledge that as of the date of this Agreement, the validity of FCC 18-133 has been challenged in Federal Court and is the subject of ongoing litigation nationwide. In the event that FCC 18-133 is invalidated in any way which affects the amount which can be

charged by the City for the Licensed Premises (whether stayed, overturned, wholly or partially invalidated or otherwise limited), the Rent going forward shall be the maximum amount allowed under the then-applicable law. In the absence of any applicable law mandating a maximum, the Parties agree to meet and confer on a new Rent. If, within sixty (60) days, the Parties are unable to come to an agreement, the Rent on existing installations shall immediately be calculated based upon the following formula:

i. The Rent/License Fee shall be One Thousand Dollars (\$1000) per year each thereafter.

C. Licensee shall also pay to Licensor fees as set forth in Licensor’s master fee schedule and defined further below, for inspections of the Improvements and for rental of City infrastructure utilized by Licensee for its Improvements, including, but not limited to normal permitting fees per location and fees for rental of electric conduits.

4. OCCUPANCY RESTRICTIONS.

Occupancy of the Licensed Premises, subject to the following:

A. Licensee shall make every reasonable effort to ensure that each proposed Wireless Telecommunications Facility will not affect, detract, or impact the operation of existing Licensor facilities, particularly traffic signal control and street lighting devices.

B. Licensee shall ensure that the proposed Wireless Telecommunications Facility is not dependent on the resources dedicated to Licensor facilities unless otherwise approved by Licensor.

C. Licensee shall propose new locations for Wireless Telecommunications Facilities to Licensor. Not all Licensor facilities will be accessible due to necessary Licensor operations. However, to the extent Licensee is seeking to install its Wireless Telecommunications Facility on a Licensor pole, and the Wireless Telecommunications Facility can be accommodated by rearranging other facilities on the poles and/or replacing the pole with a stronger and/or taller pole, Licensee may utilize such pole upon written approval by Licensor; such rearrangement or replacement shall be coordinated with Licensor and/or other facility(s) owner, shall be at Licensee’s cost, and shall comport with all applicable City policies. Licensor shall have the final and absolute authority to approve or reject said locations.

In the event of damage, Licensor shall not be obligated to repair or restore the Wireless Telecommunications Facility to normal operating conditions unless Licensor is the primary and direct cause of such damage. As between Licensee and Licensor, Licensee shall bear all other costs incurred to repair or restore Wireless Telecommunications Facilities. Licensee shall make every reasonable effort during the deployment and maintenance of the Wireless Telecommunications Facilities to restore Licensor facilities in a safe and timely manner. Licensee shall be fully responsible for all damages incurred by Licensor, including but not limited to loss of revenue incurred in association therewith.

D. Licensee shall give Licensor reasonable notice (of no less than fourteen (14) days) prior to impacting Licensor facilities in a manner that is beyond the routine maintenance (including changing the frequency of the equipment and like-for-like replacement of the equipment) and

operation of Wireless Telecommunications Facilities. Provided, however, that in the event of an emergency, including but not limited failure of Licensee’s equipment, Licensee shall give such notice, if any, as is reasonable under the circumstances.

5. CONSTRUCTION, ENGINEERING, AND OTHER COSTS.

A. Licensor shall have no financial responsibility for planning, construction, and engineering costs associated with the implementation of this License Agreement.

B. Licensee shall pay appropriate City permitting fees as set forth in the Master Fee Schedule.

C. Licensee shall furnish and install its own power source independent from the Licensor for the electricity used by the Wireless Service Providers.

i. Where feasible, appropriate and desirable, Licensee may non-exclusively lease from the City excess access to power (i.e. conductor(s) and/or conduit(s)) for the purpose of providing power to Licensee’s equipment at a rate of \$400 per year per Licensed Premise, subject to the same automatic annual adjustment set forth in Section 3.B.i., in order for the City to recoup the additional operating cost associated with such access. Licensee shall be responsible for all costs and for the procurement of all approvals, permits, and inspections associated with and required for access. The Licensee understands that the City’s design for its street lighting access to power and the operating of those streetlights does not allow shared conductor(s) and/or conduit(s) use. This provision may be re-addressed at the time that the City re-designs its systems.

ii. Per State and Federal regulations, the City is not allowed to share its power for powering light fixtures on poles. Licensee shall be required to:

- a) Set a pull box for existing poles that do not have one.
- b) Update locking lids if existing concrete layer is broken for installation of equipment.
- c) Locking lids shall be keyed to City keys.
- d) Utilize striped conductor wires or label wires properly to differentiate from Licensor’s existing conductor wires.
- e) Comply with all applicable City standard specifications for like facilities and/or work.

D. Where Licensor implementations exist on poles, Licensee may only collocate where physically possible, taking into consideration possible rearrangements or replacement in accordance with Section 4.C. Licensee shall not install equipment where such installing equipment on a pole would compromise the safety of that pole (wind rating, weight bearing, etc.).

6. LICENSED PREMISES; SURVEY.

Licensee has provided Licensor with a copy of an “as-built” survey for each Licensed Premises, which shall depict and identify the boundaries of each Licensed Premises and any attendant easements.

7. ACCESS.

Licensee shall execute a Right of Entry Agreement in the form attached hereto as Exhibit A for each Licensed Premise. Conditioned upon and subject to commencement of the License Term, Licensor grants to Licensee and Licensee's employees, agents, contractors, licensees and their employees, agents, and contractors access to the Licensed Premises, for the purpose of constructing, repairing, maintaining, replacing, and removing the facility to be located upon each Licensed Premises as necessary to obtain or comply with any stipulations in the Right of Entry Agreement (Exhibit A). The Right of Entry Agreement shall be utilized for the purposes provided.

8. USE OF PROPERTY.

The Licensed Premises and the Right of Entry Agreement shall be used for the purpose of constructing, repairing, maintaining, replacing, operating, and removing the Improvements and for uses incidental thereto. All Improvements shall be constructed at no expense to Licensor. All Improvements, inclusive of security fences, shall comply with the requirements of the City Municipal Code and all other laws and regulations applicable thereto, and Licensee shall obtain all required and necessary governmental agency Approvals and permits. Licensee will maintain the Licensed Premises in a safe condition. It is the intent of the parties that Licensee's Improvements shall not constitute a fixture.

A. Maintenance and Operation. At its sole cost and expense, Licensee shall construct, install, and maintain Wireless Telecommunication Facilities on Licensor's Properties in accordance and conformity with all applicable laws, polices, guidelines, and contractual obligations to Licensor. Licensor shall not be responsible for any cost of maintaining or operating any Wireless Telecommunication Facility. If the Licensor elects, in its sole discretion, to remove or relocate the pole comprising the Licensed Premises subject to this Agreement, Licensee shall promptly remove and reinstall its Wireless Telecommunication Facility, at no cost to Licensor. In the event of pole relocation, the Licensor shall provide ninety (90) days' notice to Licensee. Licensor shall not be responsible for any damage to any Wireless Telecommunication Facility in the event that a pole falls or is knocked down, nor shall Licensor be responsible for any damage to Licensee's Wireless Telecommunication Facilities caused by a pole removal or relocation, except to the extent such damage is caused by Licensor's negligence or willful misconduct.

B. Compliance with FCC Regulations.

Licensee will operate its Wireless Telecommunications Facilities in compliance with all FCC regulations regarding Interference with the radio signal transmissions of Licensor and other third parties in or upon a City Facility, which transmissions are operated in compliance with Laws.

9. REMOVAL OF OBSTRUCTIONS.

Licensee has the right to remove obstructions from Licensor's Property, as approved by Licensor,

which approval shall be requested in writing by Licensee and shall not be unreasonably withheld, conditioned or delayed by Licensor. Potential obstructions include but are not limited to vegetation, which may encroach upon, interfere with or present a hazard to Licensee's use of the Licensed Premises Licenses. Licensee shall dispose of any materials removed.

10. HAZARDOUS MATERIALS.

Licensee's Obligation and Indemnity. Licensee shall not (either with or without negligence) cause or permit the escape, disposal or release of any Hazardous Materials on or from the Licensed Premises brought onto such premises by Licensee or persons acting under Licensee in any manner prohibited by law. Licensee shall indemnify and hold Licensor harmless from and against any and all claims, damages, fines, judgments, penalties, costs, liabilities or losses (including, without limitation, any and all sums paid for settlement of claims, attorneys' fees, and consultants' and experts' fees) from the release of any Hazardous Materials on the Licensed Premises if caused by Licensee or persons acting under Licensee.

11. REAL ESTATE TAXES.

To the extent that a possessory interest is deemed created, Licensee acknowledges that notice is and was hereby given to Licensee pursuant to California Revenue and Taxation Code Section 107.6 that use or occupancy of any public property may subject the Licensee to possessory interest taxes or other taxes levied against Licensee's right to possession, occupancy or use of any public property. Licensee shall pay all applicable (federal, state, county, city, local) excise, sales, consumer use, possessory interest, or other similar taxes required by law that are levied upon this Agreement or upon Licensee's services under this Agreement. Licensee agrees to reimburse Licensor for any documented increase in real estate or personal property taxes levied against Licensor's Property that are directly attributable to the Improvements. Licensor agrees to provide Licensee any documentation evidencing the increase and how such increase is attributable to Licensee's use. Licensee reserves the right to challenge any such assessment, and Licensor agrees to cooperate with Licensee in connection with any such challenge.

12. INSURANCE.

At all times during the performance of its Due Diligence Investigation and during the License Term, Licensee, at its sole expense, shall obtain and keep in force the required insurance as set forth in the attached **Exhibit B**. The insurance provisions shall be separate and independent from the indemnification and defense provisions between the Licensee and Licensor and shall not in any way limit the applicability, scope or obligations of the indemnification defense provisions in Section 13.

13. INDEMNIFICATION.

To the furthest extent allowed by law, Licensee shall indemnify, hold harmless and defend Licensor and each of its officers, officials, employees, agents and volunteers from any and all loss, liability, fines, penalties, forfeitures, costs and damages (whether in contract, tort or strict liability, including but not limited to personal injury, death at any time and property damage) incurred by Licensor, Licensee or any other person, and from any and all claims, demands and actions in law or equity (including attorney's fees and litigation expenses), arising or alleged to have arisen

directly or indirectly out of performance of this Agreement. Licensee's obligations under the preceding sentence shall apply regardless of whether Licensor or any of its officers, officials, employees, agents or volunteers are negligent, but shall not apply to any loss, liability, fines, penalties, forfeitures, costs or damages caused solely by the gross negligence, or caused by the willful misconduct, of Licensor or any of its officers, officials, employees, agents or volunteers. If Licensee should subcontract all or any portion of the work to be performed under this Agreement, Licensee shall require each subcontractor to indemnify, hold harmless and defend Licensor and each of its officers, officials, employees, agents and volunteers in accordance with the terms of the preceding paragraph. This section shall survive termination or expiration of this Agreement.

14. EMINENT DOMAIN.

If Licensor receives notice of a proposed taking by eminent domain of any part of the Licensed Premises, Licensor will notify Licensee of the proposed taking within five days of receiving said notice and Licensee will have the option to: (i) declare this Agreement null and void and thereafter neither party will have any liability or obligation hereunder other than payment of Rent for so long as Licensee remains in physical possession of the Licensed Premises; or (ii) remain in possession of that portion of the Licensed Premises that will not be taken, in which event there shall be an equitable adjustment in Rent on account of the portion of the Licensed Premises so taken.

15. SALE OF PROPERTY.

If during the License Term, Licensor sells all or part of Licensor's Property, of which the Licensed Premises is a part, then such sale shall be subject to this Agreement.

16. SURRENDER OF PROPERTY.

Upon expiration or termination of this Agreement, Licensee shall, within ninety (90) days, remove all above and below ground Improvements and restore the Licensed Premises to its original condition, normal wear and tear excepted, without, however, being required to replace any trees or other plants removed, or alter the then existing grading.

17. RECORDING.

Licensee shall have the right to record a memorandum of the Agreement with the Fresno County Recorder's Office. Licensor shall execute and deliver each such memorandum, for no additional consideration, promptly upon Licensee's request.

18. QUIET ENJOYMENT.

Licensor covenants that Licensee, on paying Rent and performing the covenants of this Agreement, shall peaceably and quietly have, hold and enjoy the Licensed Premises.

19. DEFAULT.

A. Notice of Default; Cure Period. If there is a default by Licensor or Licensee (the Defaulting Party) with respect to any of the provisions of this Agreement or Licensor's or Licensee's obligations under this Agreement, the other party (the Non-Defaulting Party) shall give

the Defaulting Party written notice of such default. After receipt of such written notice, the Defaulting Party shall have thirty days in which to cure any monetary default and thirty days in which to cure any non-monetary default. If a non-monetary default reasonably requires more than a thirty-day cure period, the Defaulting Party shall diligently pursue cure to completion and shall request additional time to cure from the Non-Defaulting Party. The Non-Defaulting Party shall not unreasonably withhold approval of additional time to cure. The Non-Defaulting Party may not maintain any action or effect any remedies for default against the Defaulting Party unless and until the Defaulting Party has failed to cure the same within the time periods provided in this Section.

B. Consequences of Licensee's Default. In the event that Licensor maintains any action or effects any remedies for default against Licensee resulting in Licensee's dispossession or removal, (i) the Rent shall be paid up to the date of such physical dispossession or removal and (ii) Licensor shall be entitled to recover from Licensee, in lieu of any other damages, as liquidated, final damages, a sum equal to six months' Rent which shall be calculated at the highest value of the Rent which is in effect on the date of default. In no event shall Licensee be liable to Licensor for indirect or speculative damages in connection with or arising out of any default.

C. Consequences of Licensor's Default. If Licensor is in default beyond the applicable periods set forth above in Section 19(A), Licensee may, at its option, upon written notice: (i) terminate the License, vacate the Licensed Premises and be relieved from all further obligations under this Agreement; (ii) perform the obligation(s) of Licensor specified in such notice, in which case any expenditures reasonably made by Licensee in so doing shall be deemed paid for the account of Licensor and Licensor agrees to reimburse Licensee for said expenditures upon demand; (iii) take any actions that are consistent with Licensee's rights; (iv) sue for injunctive relief, and/or (v) set-off from Rent any amount reasonably expended by Licensee as a result of such default.

20. TERMINATION.

Notwithstanding any other provision to the contrary, Licensor and Licensee shall each have the absolute right to terminate this Agreement for cause as provided herein; either Party may terminate any individual License and Right of Entry Agreement executed hereunder upon sixty (60) days' written notice to the other party with cause. Licensee may also terminate any individual License and Right of Entry Agreement executed hereunder without cause upon sixty (60) days' written notice to Licensor and removal of all Company Facilities from the License Premises subject to the License and Right of Entry Agreement being terminated.

21. AMENDMENTS.

This Agreement may be amended with the mutual agreement of the parties. All amendments hereto shall be in writing executed by the parties.

22. FORCE MAJEURE.

If an event or condition constituting a "force majeure"—including, but not limited to, an act of God, labor dispute, civil unrest, epidemic, or natural disaster—prevents or delays either the Licensor or the Licensee (Party) from performing or fulfilling an obligation under this Agreement, said Party is not in Default, under Section 19 of this Agreement, of the obligation. A delay beyond a

Party's control automatically extends the time, in an amount equal to the period of the delay, for the Party to perform the obligation under this Agreement. The Licensor and Licensee shall prepare and sign an appropriate document acknowledging any extension of time under this Section.

23. APPLICABLE LAW.

This Agreement and the performance thereof shall be governed, interpreted, construed and regulated by the laws of the State of California. The parties agree that the venue for any litigation regarding this Agreement shall be the County of Fresno, State of California.

24. ASSIGNMENT, SUBLEASE, LICENSING AND ENCUMBRANCE.

Licensee may assign this Agreement to a person or entity with demonstrated capacity to carry out Licensee's obligations under this Agreement. Licensee shall provide 30 days' prior written notice of such assignment to Licensor. Notwithstanding the foregoing, upon thirty (30) days' written notice, Licensee may assign this Agreement or its rights or obligations to (a) an affiliate or (b) in connection with the sale or other transfer of substantially all of Licensee's assets in the FCC market area where the City Facilities are located. Licensee may enter into subleases, licenses, or other authorizations (Sub-Authorizations) to allow a third party to utilize and operate from the Licensed Premises, so long as such third party is a provider of services that utilize Wireless Telecommunications Facilities. Sub-Authorizations shall not require the consent of Licensor.

25. MISCELLANEOUS.

A. Entire Agreement. Licensor and Licensee agree that this Agreement contain all of the agreements, promises and understandings between Licensor and Licensee with regard to the subject matter herein. No oral agreements, promises or understandings shall be binding upon either Licensor or Licensee in any dispute, controversy or proceeding at law. Any addition, variation or modification to this Agreement shall be void and ineffective unless made in writing and signed by the parties hereto.

B. Captions. The captions preceding the Sections of this Agreement are intended only for convenience of reference and in no way define, limit or describe the scope of this Agreement or the intent of any provision hereof.

C. Construction of Document. Licensor and Licensee acknowledge that this document shall not be construed in favor of or against the drafter by virtue of said party being the drafter and that this Agreement shall not be construed as a binding offer until signed by Licensee.

D. Notices. All notices hereunder shall be in writing and shall be given by (i) established national courier service which maintains delivery records, (ii) hand delivery, or (iii) certified or registered mail, postage prepaid, return receipt requested. Notices are effective upon receipt, or upon attempted delivery if delivery is refused or if delivery is impossible because of failure to provide reasonable means for accomplishing delivery. The notices shall be sent to Licensor at Licensor's Notice Address and to Licensee at Licensee's Notice Address.

E. Partial Invalidation. If any term of this Agreement is found to be void or invalid, then such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full

force and effect.

IN WITNESS WHEREOF, Licensor and Licensee, having read the foregoing and intending to be legally bound hereby, have executed this Agreement as of the day and year this Agreement is fully executed.

LICENSOR

LICENSEE

Luke Serpa, City Manager

By: _____
(Signature)

(Print)

_____, City Attorney
(Print)

Title: _____
(If corporation or LLC, Board Chair,
Pres. or Vice Pres.)

ATTEST:

John Holt, City Clerk

EXHIBIT A**LICENSE AND RIGHT OF ENTRY AGREEMENT
PURSUANT TO MASTER LICENSE AGREEMENT**

This License and Right of Entry Agreement (this License) is made and entered into effective on this _____ day of _____, 2020, by and between the CITY OF CLOVIS, a California municipal corporation and general law city, having a mailing address of 155 N. Sunnyside Avenue, Clovis, CA 93611 (“Licensor”), and _____ (“Licensee”).

RECITALS

A. Licensor and Licensee are parties to that certain Master License Agreement, dated _____ (the Master License Agreement), which is incorporated herein by this reference. All defined terms not otherwise defined herein, shall have the same meaning provided in the Master License Agreement.

B. Pursuant to the Master License Agreement, the parties are to enter into a License and Right of Entry Agreement for each individual License under the Master License Agreement.

C. The parties desire to enter into a License for Licensee’s use of the Licensed Premises more particularly identified and depicted in Exhibit A hereto (the Licensed Premises).

D. Licensor is the owner, either in fee or as right-of-way of the real property interest underlying the Licensed Premises.

NOW, THEREFORE, in consideration of the mutual promises, covenants and conditions contained herein, and other good and valuable consideration, the receipt and sufficiency of which is acknowledged by each of the Parties, the Parties agree as follows:

AGREEMENT

1. Recitals. Each and all of the foregoing recitals of background facts are incorporated herein by this reference as though set forth herein verbatim.

2. Purpose. Pursuant to this License, Licensee may enter upon the Licensed Premises for the purpose of constructing, repairing, maintaining, replacing, demolishing and removing its Improvements.

3. License and Right of Entry. Licensor hereby grants to Licensee and its agents, employees, contractors, subcontractors, and volunteers non-exclusive permission to enter over and across, as well as to use the Licensed Premises as is reasonable and necessary to execute the Purposes of this License set forth above.

4. Commencement Date and Term. This License shall commence on

_____ (Commencement Date) and shall continue for the period set forth in the Master License Agreement.

5. Rent. Licensee shall pay Rent as set forth in the Master License Agreement.
6. Entry at Own Risk; No Duty to Warn. Licensee and its agents, employees, contractors, subcontractors, and volunteers shall access, enter and use the Property at their own risk and peril. Licensor shall have no duty to inspect the Property (or any portion thereof) and no duty to warn of any latent or patent defect, condition or risk which may exist on the Property.
7. Liens. Licensee shall not permit to be placed against the Property, or any part thereof, any mechanics', materialmen's, contractors' or other liens (collectively, the Liens) arising out of the acts or omissions of the Licensee or its agents, employees, contractors, subcontractors, or volunteers hereunder. Licensee hereby indemnifies and agrees to hold the Licensor and the Property free and harmless from all liability for any and all such Liens, together with all costs and expenses, including, but not limited to, attorneys' fees and court costs reasonably incurred by Licensor in connection therewith.
8. Hazardous Substances. Licensee and its agents, employees, contractors, subcontractors, and volunteers shall not use, store or transport or allow the use, storage or transportation of any hazardous substances on or onto the Property.
9. Restoration of the Property. Upon the expiration or termination of this License Licensee shall, at its own cost and expense, restore the Property to the same condition in which it was prior to Licensee's entry.
10. Successors and Assigns. This License shall be binding upon and inure to the benefit of each of the parties hereto and their respective successors and assigns.
11. Permits. Prior to beginning any work, Licensee at its sole expense, shall obtain all necessary permits to use the Premises as permitted under this License.
12. All Expenses to Be Borne by Licensee. Licensee shall bear any and all costs and expenses associated with the rights granted to Licensee to use the Premises, or any unforeseen costs or expenses incurred by the City relating to Licensee's use of the Premises in the performance of this License.
13. Governing Law. This License shall be governed in accordance with the laws of the State of California.
14. Counterparts. This License may be executed in counterparts, each of which shall be deemed an original and which together shall constitute a single agreement.

[Signatures follow on the next page.]

IN WITNESS WHEREOF, Licensor and Licensee having read the foregoing and intending to be legally bound hereby, have executed this License as of the day and year this License is fully executed.

LICENSOR

LICENSEE

Luke Serpa, City Manager

By: _____
(Signature)

(Print)

_____, City Attorney
(Print)

Title: _____
(If corporation or LLC, Board Chair,
Pres. or Vice Pres.)

ATTEST:

John Holt, City Clerk

EXHIBIT B

Throughout the life of this Agreement, LICENSEE shall pay for and maintain in full force and effect all insurance as required herein with an insurance company(ies) either (i) admitted by the California Insurance Commissioner to do business in the State of California and rated no less than “A-VII” in the Best’s Insurance Rating Guide, or (ii) as may be authorized in writing by Licensor’s Risk Manager or his/her designee at any time and in his/her sole discretion, except to the extent LICENSEE elects to self-insure in accordance with this Agreement. The required policies of insurance as stated herein shall maintain limits of liability in those amounts stated therein.

If at any time during the life of the Agreement or any extension, LICENSEE or any of its subcontractors fail to maintain any required insurance in full force and effect, all services and work under this Agreement shall be discontinued immediately, and all payments due or that become due to LICENSEE shall be withheld until notice is received by Licensor that the required insurance has been restored to full force and effect and that the premiums therefore have been paid for a period satisfactory to Licensor. Any failure to maintain the required insurance shall be sufficient cause for Licensor to terminate this Agreement. No action taken by Licensor pursuant to this section shall in any way relieve LICENSEE of its responsibilities under this Agreement. The phrase “fail to maintain any required insurance” shall include, without limitation, notification received by Licensor that an insurer has commenced proceedings, or has had proceedings commenced against it, indicating that the insurer is insolvent.

The fact that insurance is obtained by LICENSEE shall not be deemed to release or diminish the liability of LICENSEE, including, without limitation, liability under the indemnity provisions of this Agreement. The duty to indemnify Licensor shall apply to all claims and liability regardless of whether any insurance policies are applicable. The policy limits do not act as a limitation upon the amount of indemnification to be provided by LICENSEE. Approval or purchase of any insurance contracts or policies shall in no way relieve from liability nor limit the liability of LICENSEE, vendors, suppliers, invitees, Licensees, subcontractors, consultants, or anyone employed directly or indirectly by any of them.

Coverage shall be at least as broad as:

1. The most current version of Insurance Services Office (ISO) Commercial General Liability Coverage Form CG 00 01, providing liability coverage arising out of your business operations. The Commercial General Liability policy shall be written on an occurrence form and shall provide coverage for “bodily injury,” “property damage” and “personal and advertising injury” with coverage for premises and operations (including the use of owned and non-owned equipment), products and completed operations, and contractual liability (including, without limitation, indemnity obligations under the Agreement, to the extent applicable under the most current version of Insurance Services Office (ISO) Commercial General Liability Coverage Form CG 00 01) with limits of liability set forth under “Limits of Insurance.”
2. The most current version of ISO *Commercial Auto Coverage Form CA 00 01,

providing liability coverage arising out of the ownership, maintenance or use of automobiles in the course of your business operations. The Automobile Policy shall be written on an occurrence form and shall provide coverage for all owned, hired, and non-owned automobiles or other licensed vehicles (Code 1- Any Auto).

3. Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance.

LIMITS OF INSURANCE

LICENSEE shall procure and maintain for the duration of the contract insurance with limits of liability set forth below.

1. Commercial General Liability
 - i. \$2,000,000 per occurrence for bodily injury and property damage;
 - ii. \$2,000,000 per occurrence for personal and advertising injury;
 - iii. \$4,000,000 aggregate for products and completed operations; and,
 - iv. \$4,000,000 general aggregate applying separately to the work performed under the Agreement.
2. Commercial Automobile Liability
 - i. \$1,000,000 per accident for bodily injury and property damage.
3. Workers' Compensation Insurance As Required By The State Of California With Statutory Limits And Employer's Liability With Limits Of Liability Of:
 - i. \$1,000,000 each accident for bodily injury;
 - ii. \$1,000,000 disease each employee; and,
 - iii. \$1,000,000 disease policy limit.
4. Property: Limits of insurance in an amount equal to the full (100%) replacement cost (without deduction for depreciation) of LICENSEE'S business property. Licensee may self-insure this risk in accordance with the terms for self-insurance herein.

UMBRELLA OR EXCESS INSURANCE

In the event Licensee purchases an Umbrella or Excess insurance policy(ies) to meet the "Limits of Insurance," this insurance policy(ies) shall "follow form" and afford no less coverage than the primary insurance policy(ies). In addition, such Umbrella or Excess insurance policy(ies) shall also apply on a primary and non-contributory basis for the benefit of the Licensor, its officers, officials, employees, agents and volunteers. Licensee may use any combination of primary and excess insurance to meet the total limits required.

DEDUCTIBLES AND SELF-INSURED RETENTIONS

Licensee shall be responsible for payment of any deductibles contained in any insurance policy(ies) required herein and Licensee shall also be responsible for payment of any self-insured retentions. Any self-insured retentions must be declared on the Certificate of Insurance

OTHER INSURANCE PROVISIONS/ENDORSEMENTS

1. Licensee shall provide at least thirty (30) calendar days' written notice to Licensor of cancellation or nonrenewal of any required coverage that is not replaced, except ten (10) days for nonpayment of premium. Upon issuance by the insurer, broker, or agent of a notice of cancellation or non-renewal, or reduction in coverage or in limits below those required by this Agreement, Licensee shall furnish Licensor with a new certificate and applicable required endorsements for such policy(ies). In the event any policy is due to expire during the work to be performed for Licensor, Licensee shall provide a new certificate, and applicable endorsements, evidencing renewal of such policy not less than ten (10) calendar days prior to the expiration date of the expiring policy.
2. The Commercial General and Automobile Liability insurance policies shall be written on an occurrence form.
3. The Commercial General and Automobile Liability insurance policies shall be include City, its officers, officials, agents, employees and volunteers as an additional insured. Licensee shall establish additional insured status for the City and for all ongoing and completed operations under the Commercial General Liability policy by use of ISO Forms or an executed manuscript insurance company endorsement providing additional insured status. The Commercial General endorsements must be as broad as that contained in ISO Forms: both CG 20 10 & CG 20 37, current versions or their equivalent.
4. The Commercial General and Automobile Liability insurance shall contain, or be endorsed to contain, that the Licensee's insurance shall be primary to and require no contribution from the City. The Commercial General Liability policy is required to include primary and non-contributory coverage in favor of the City for both the ongoing and completed operations coverage. For any claims related to this Agreement, Licensee's insurance coverage shall be primary insurance with respect to the Licensor, its officers, officials, agents, employees and volunteers. Any insurance or self-insurance maintained by the Licensor, its officers, officials, agents, employees and volunteers shall be excess of the Licensee's insurance and shall not contribute with it.
5. These coverages shall contain no special limitations on the scope of protection afforded to City, its officers, officials, employees, agents and volunteers.
6. Should any of the policies required under this Agreement provide that the defense

costs are paid within the Limits of Liability, thereby reducing the available limits by defense costs, then the requirement for the Limits of Liability of these policies will be twice the above stated limits.

7. The Workers' Compensation insurance policy shall contain, or be endorsed to contain, a waiver of subrogation as to Licensor, its officers, officials, agents, employees and volunteers.
8. The Commercial General and Automobile Liability insurance policies shall contain, or be endorsed to contain, a waiver of subrogation as to Licensor, its officers, officials, agents, employees and volunteers.
9. Notwithstanding the foregoing, Licensee shall have the right to self-insure the coverages required in this Agreement. In the event Licensee elects to self-insure its obligation to include the Licensor as an additional insured, the following provisions shall apply (in addition to those set forth in subsection (a)): (i) Licensee or its parent company shall have and continuously maintain a tangible net worth of at least one hundred million dollars (\$100,000,000.00); (ii) Licensee continuously maintains appropriate loss reserves for the amount of its self-insurance obligations under this Exhibit B, which reserves are annually approved by Ernst & Young, or any successor auditing company; (iii) Licensee shall undertake the defense of any self-insured claim for which a defense and/or coverage would have been available from the insurance company, including a defense of the Licensor, at Licensee's sole cost and expense, with counsel selected by Licensee and reasonably acceptable to Licensor; (iv) Licensee shall use its own funds to pay any claim or replace property or otherwise provide the funding which would have been available from insurance proceeds but for Licensee's election to self-insure; (v) Licensee shall pay any and all amounts due in lieu of insurance proceeds which would have been payable if Licensee had carried the insurance policies, which amounts shall be treated as insurance proceeds for all purposes under this Agreement; and (vi) All amounts which Licensee pays or is required to pay and all loss or damages resulting from risks for which Licensee has elected to self-insure shall not limit Licensee's indemnification obligations set forth in this Agreement.

PROVIDING OF DOCUMENTS

Licensee shall furnish Licensor with all certificate(s) and applicable required endorsements effecting coverage required herein. If determined by the Licensor to be compliant with this Agreement all certificates and applicable endorsements are to be received and approved by the Licensor's Risk Manager or his/her designee prior to Licensor's execution of the Agreement and before work commences. All non-ISO endorsements amending policy coverage shall be executed by a licensed and authorized agent or broker. Upon request of Licensor in connection with Licensee's denial of a claim under an insurance policy, or as required to meet insurance requirements under this Agreement, Licensee shall immediately furnish Licensor with a complete copy of any insurance policy required under this Agreement, including all endorsements, with said copy certified by the underwriter to be a true and correct copy of the original policy. This

requirement shall survive expiration or termination of this Agreement. All subcontractors working under the direction of Licensee shall also be required to provide all documents noted herein.

SUBCONTRACTORS

If Licensee subcontracts any or all of the services to be performed under this Agreement, Licensee shall require, at the discretion of the Licensor Risk Manager or designee, subcontractor(s) to enter into a separate Side Agreement with the City to provide required indemnification and insurance protection. Any required Side Agreement(s) and associated insurance documents for the subcontractors must be reviewed and preapproved by Licensor Risk Manager or designee. If no Side Agreement is able to be obtained, Licensee shall be solely responsible for ensuring that its subcontractors maintain insurance coverage at levels no less than those required by applicable law and is customary in the relevant industry. Provided, however, nothing in this section shall diminish Licensee's indemnification obligations pursuant to Section 13 of this Agreement.

City of Clovis Process for Small Cell Applications

Prior to submittal of an application for review of a Small Cell Permit, the Applicant is subject to the requirements listed below:

- A. Execute a Master License Agreement with the City of Clovis if proposing to be located on a City-owned asset.
- B. Submit a Standard Plan for review and approval.
 - a. The approved Standard Plan will expedite review of the Small Cell Permit and can be used repeatedly.
 - b. An applicant can have multiple approved Standard Plans to address the potential variations in sites.
- C. Submit and receive approval of a Reservation Plan when selecting to be located on a City owned asset.
- D. Submit a Letter of Agency when selecting to be located on a non-City owned asset.

Design Guidelines for Small Cell Applications

Note: All references within the Design Guidelines shall refer to the Director of Planning and Development Services for the City of Clovis, or their designee.

- 1) The City prefers installations on existing street light poles and existing wood poles. Applicant may propose a new pole if there is no existing infrastructure within 200 feet along the subject right-of-way that is available and technically feasible to support the small cell facility.
- 2) Attachments to traffic signal poles shall not be permitted.
- 3) Attachments to historic streetlight poles or ornamental streetlight poles shall not be permitted without City approval.
- 4) Placement of equipment shall not interfere with the visibility, operation and maintenance of traffic signals, streetlights, or cameras.
- 5) Where equipment already exists by another entity, collocation may only occur where it does not exceed safety of the structure/pole (wind rating, weight bearing, and interference with City operations or public safety).
- 6) Collocation on poles with existing City equipment will not be allowed to affect the use of the City equipment. Equipment includes, but is not limited to, emergency response facilities and signal coordination facilities.

ATTACHMENT 3

- 7) All equipment on poles shall be housed in suitable enclosures to conceal components from public view. Enclosures and equipment shall be coated in material and color matching that of the pole.
- 8) Equipment and enclosures shall be mounted as close to the pole as allowed by applicable regulation and OEM standards. They shall not extend more than 12 inches from the pole and be contained within a 30-inch diameter unless larger separation requirements are required to conform to health and safety regulations or pole owner requirements.
- 9) Where feasible, antennas shall be mounted in a concealed canister on the top of the pole. Antennas that cannot be concealed within a canister shall be colored or otherwise designed to blend with the existing structure.
- 10) Small cell facilities that are mounted on existing City-owned poles may add no more than 6 additional feet in height to the existing structure, unless otherwise approved by the Director. Small cell facilities mounted on electrical utility poles may add no more than 12 additional feet in height to the existing pole, or as otherwise required to conform to health and safety requirements, or pole owner requirements.
- 11) All cabling shall be internal to the pole, or placed in conduit the minimum size necessary to screen the cabling on the exterior of a solid pole, and painted to match the existing pole.
- 12) No exposed meter, meter pan or meter pedestal may be used unless otherwise required by the power company. Metered panels and sockets shall be mounted at 10' or higher from grade unless otherwise required by the power company or otherwise required to conform to health and safety regulations.
- 13) Cabling below radio relay units shall enter the pole with no more than a five-inch gap between bottom of each radio relay unit and the bottom of the corresponding entry hole on the pole. Conduit connection at pole entry points shall utilize the smallest fitting sizes available. Sealing compounds, if utilized, shall be tidy without excess bubbling and painted to match pole.
- 14) If drilling and cutting into poles, holes will be structurally welded and reinforced. Seams and bolts/screws at antenna and shroud assembly area shall be fabricated and installed in a manner so as to minimize their visibility (e.g. flush mounting screws) from sidewalk level.
- 15) Direct burial poles without existing conduit and a pull box at the base will be replaced with a new Type 15 pole, or an approved equivalent pole, to the City of Fresno E-1 standard.

- 16) Carrier must keep a minimum 10 feet working clearance from any overhead high voltage lines 50,000 volts and below, or as otherwise required by applicable health and safety regulations such as GO95 and OSHA, or pole owner requirements. Larger clearance shall be required for higher voltage lines in accordance with applicable health and safety regulations and pole owner requirements.
- 17) If the desired pole is not structurally capable of supporting the small wireless facility or is required to be replaced to meet electric safety codes, applicant may propose a replacement pole. Replacement poles shall be similar in material, color, and character to surrounding poles.
- 18) In instances where a pole has been knocked down, and a wireless service provider desires to propose a new small cell facility on said pole, or where said pole supports an existing small cell facility, and the City is unable to replace the knocked down pole within a timeframe acceptable to the wireless service provider, the wireless service provider has the option to replace knocked down poles in kind at their sole expense. The Replacement pole shall be deeded to the City for ownership and general maintenance. Applicant will be responsible for installation, maintenance and repair of the wireless facility elements on the replacement pole.
- 19) The mast arm height of existing light poles shall not be modified, unless otherwise approved by the Director.
- 20) The City prefers that new poles shall not exceed a maximum height of 35' as measured from the adjacent grade to the highest point on the pole and/or the pole mounted equipment. Exceptions require approval by the Director.
- 21) New poles shall be similar in material, color, and character to surrounding poles.
- 22) New poles, if they meet the specifications of the Agency, shall be deeded to the Agency for ownership and general maintenance. Applicant will be responsible for installation, maintenance and repair of the wireless facility elements on the pole.
- 23) Pole number labels, if incorrect or missing, shall be brought to the attention of the pole owner by the applicant.
- 24) Applicant to ensure any legs/handles are removed from RRUs and equipment logos are all removed.
- 25) All small wireless facilities shall contain a site identification sticker that accurately identifies the site owner/operator, the owner/operator's site name or identification number and a toll-free number to the owner/operator's network operations center. The facility may not bear any other signage or advertisements unless expressly approved by the City, required by law or

recommended under FCC, OSHA, Federal Aviation Administration or other United States governmental agencies for compliance with RF emissions regulations. Applicant shall remove all manufacturer decals and logos from the equipment. Except where in conflict with federal law or the requirements of other governmental agencies, applicant shall use decals of the smallest size and lowest visibility color.

- 26) Utilize signage (e.g. road, guide, informational signage), or other appropriate elements, in front of RRUs to reduce visibility. Placement and installation of said equipment shall not interfere with City operations or maintenance of said elements, such as but not limited to replacement or repairs.
- 27) City representatives shall have access to the power disconnect switch for maintenance to street lights. City may disconnect power without prior notice in case of emergencies, after a good faith effort is made to notify the applicant, if feasible.
- 28) All wireless carriers shall provide a phone number that is continuously manned that can be notified prior to radio power being disconnected and the contact information shall be available in any enclosures mounted on City owned poles. The contact information will be used in cases of knockdowns, planned maintenances, etc.
- 29) All new poles and ground mounted equipment shall comply with ADA requirements.
- 30) All applications shall provide an analysis of the proposed elements indicating their power demand and showing a minimal impact to the operations of the existing street light. All applications shall provide a structural analysis, sealed and signed by an appropriately registered engineer, of the existing pole indicating its ability to accommodate additional City signage of 24" by 36" in size and all proposed elements.
- 31) Microtrenching within the public right-of-way shall not be permitted.
- 32) An encroachment permit shall be obtained from the City of Clovis Construction Management division prior to commencing work within the public right-of-way.
- 33) The Director may grant an exception to any requirement in these guidelines upon demonstration by the applicant in writing, to the satisfaction of the Director, that application of a particular requirement is technically or practically infeasible or would otherwise impair or hinder a network performance objective.

Typical notes that shall be included in the Plan Set:

- All surfaces must be restored prior to cellular equipment installation begins.
- Contractor to contact City of Clovis Public Utilities Division at (559) 324-2600 to check out a locking lid key as needed.
- Replace all damaged locking lids with Lockjaw security lids using the Clovis 5 sided security bolt pattern, coarse threads and TDG (Thermally Diffused Galvanizing) coating.
- All locking lids shall be easily identified by "Street Lights" on top of the lid.
- Repair any damaged grout in pull boxes and ductseal all conduit openings.
- Vacuum pull boxes to remove dirt and debris to ensure weep hole is clear.
- Bond all metal locking lids to the Equipment Grounding Conductor (EGC).
- Use anti-seize lubricant on all locking lid bolts before tightening.
- Vaults damaged as a result of the installation of the antenna facility will be restored to City standards.
- Any cabling shall utilize striped wires and/or be labeled and easily identified by City staff. Wiring shall follow the City of Fresno E-18A standard.
- Existing Streetlight wire shall be replaced after drilling into pole. Use other colors with tracer to identify Antenna wires from City wires. Use a white wire with a yellow tracer for the neutral.
- Use fuse-able disconnect to eliminate additional fuse in hand hole.
- Use a ground bus in the disconnect to eliminate excess ground wires in hand hole.
- Pole number labels, if incorrect or missing, shall be brought to the attention of the pole owner by the applicant.
- Contact information shall be provided to the City and kept current by the Applicant. Contact information is necessary in case of a knockdown. All lock codes must be given to the City for emergencies and maintenance. Lock code shall be a combination type lock with code provided by the City.
- All new poles and ground mounted equipment shall comply with ADA requirements.

REVISION NOTES

DATE	INITIALS	APPROVAL	REVISION
6/06/2020	SKS		ADDED Note: All surfaces must be restored prior to cellular equipment installation begins.
6/23/2020	SKS		REMOVE #11 and renumber: "For Antennas other than 5G antennas, the enclosure width shall be the minimum size necessary to screen the antennas but shall not to exceed 19 inches in diameter."
6/23/2020	SKS		REVISE #30: Added "All applications shall provide a structural analysis, sealed and signed by an appropriately registered engineer, of the existing pole indicating its ability to accommodate additional City signage of 24" by 36" in size and all proposed elements." Revise "de minimus" to "minimal".
6/29/2020	SKS		REVISE: Provide a definition for Director.
6/29/2020	SKS		REVISE: Design Guidelines are applicable to both 4G and 5G applications.
6/29/2020	SKS		ADDED to Process A: "if proposing to be located on a City-owned asset."
6/29/2020	SKS		ADDED to #1: Applicant may propose a new pole if there is no existing infrastructure within 200 feet along the subject right-of-way that is available and technically feasible to support the small cell facility."
6/29/2020	SKS		REVISE #5: "Collocation" to replace "coexistence".
6/29/2020	SKS		REVISE #7: Remove "4G"
6/29/2020	SKS		REVISE #8: Added 30-inch diameter requirement.
6/29/2020	SKS		REVISE #9: Revised to provide design flexibility if a canister is not adequate concealment.
6/29/2020	SKS		REVISE #14: Replace "reduce" with "minimize".
6/29/2020	SKS		REVISE #15: Revise the standard to refer to the City of Fresno and include the ability for an approved equal.
6/29/2020	SKS		REVISE #16: Include references to GO95 and OSHA requirements.
6/29/2020	SKS		REVISE #18: Clarification for instances where a wireless service provided might choose to replace knocked down poles.
6/29/2020	SKS		REVISE #19: Add clarification and exceptions to be approved by the Director.
6/29/2020	SKS		REVISE #20: Less restrictive language.
6/29/2020	SKS		REVISE #25: Added references to other regulatory agencies.
6/29/2020	SKS		REVISE #28: Updated requirement for emergency contact information.
6/29/2020	SKS		REVISE #29: Clarified ADA requirements.
6/29/2020	SKS		REVISE #30: Replace "de minimus" with "minimal"
6/29/2020	SKS		ADDED #33: Provisions for exceptions to be granted by the Director.



CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Police Department

DATE: July 20, 2020

SUBJECT: Consider Introduction – Ord. 20-____, An Ordinance of the City Council of the City of Clovis: (1) amending sections 6.1.101, 6.1.301 6.1.303 and adding section 6.1.309, of chapter 6.1, of title 6, of the Clovis Municipal Code relating to the keeping of hen chickens in the City of Clovis; and (2) amending corresponding definitions in the development code, section 9.120.020, of title 9, of the Clovis Municipal Code.

Staff: George Rodriguez, Police Services Manager

Recommendation: Consider Introduction

ATTACHMENTS: 1. Draft Ordinance
2. Correspondence in Support (7)
3. Correspondence in Opposition (33)

CONFLICT OF INTEREST

None.

RECOMMENDATION

For the City Council to consider the introduction of an ordinance that would allow residents to own up to three (3) hen chickens as household pets.

EXECUTIVE SUMMARY

At Council's direction, the Police Department has prepared proposed revisions to the City of Clovis Municipal Code that would allow for backyard chickens and has prepared a brief report on this topic for Council discussion and consideration.

BACKGROUND

During Council comments at the May 11, 2020 Council Meeting, Councilmember Whalen requested that staff evaluate amending the City's current ordinance which bans chickens in the City limits. On June 1, 2020, the Animal Services Division presented a brief report on this topic for Council consideration and Council directed staff to prepare draft amendments to allow for backyard chickens. Staff has prepared a proposed revision of the City of Clovis Municipal Code to allow for backyard chickens (Attachment 1).

If approved, the amended ordinance would:

1. Allow for up to three (3) hen chickens;
2. Define a hen chicken as a pet;
3. Require that citizens be responsible from acquisition, to rehoming to disposal;
4. Require a minimum lot size of 5,000 square feet;
5. Not require licensing or permitting;
6. Provide restrictions that include no roosters and no commercial egg-laying operations;
7. Require enclosures to be a minimum of 15-square-feet and a maximum of 42-square-feet;
8. Require that enclosures be maintained in a clean and sanitary condition, kept free of offensive odors, kept in a rear-yard, and maintained 5 feet from a property line and at least 20 feet from any dwelling. The enclosure must be predator-proof, ventilated and easily accessible for cleaning; it must also provide protection against direct sunlight, rain, and severe or cold weather.
9. Require that all chicken feed be secured and stored in an air-tight container.

In addition to addressing chickens, staff is recommending amending the ordinance to add clarity to the total number of household pets section (Section 6.1.301) by separately stating the various limitations. Except for now allowing up to three chickens, the numbers remain the same.

FISCAL IMPACT

It can be anticipated that allowing backyard chickens in the City will increase calls for service from Animal Control. If calls for service significantly increase for backyard chickens or if Animal Control staff is not available, Community Service Officers and Police Officers will be required to manage the increased call volume. Due to this uncertainty, staff may bring this back for Council review in the future.

REASON FOR RECOMMENDATION

City Council has requested that the Police Department bring back for consideration the allowance of backyard hens in the city limits.

ACTIONS FOLLOWING APPROVAL

This Ordinance shall go into effect and be in full force from and after thirty (30) days after its final passage and adoption.

Prepared by: George Rodriguez, Police Services Manager

Reviewed by: City Manager *GR*

ORDINANCE 20-

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CLOVIS: (1) AMENDING SECTIONS 6.1.101, 6.1.301 6.1.303 AND ADDING SECTION 6.1.309, OF CHAPTER 6.1, OF TITLE 6, OF THE CLOVIS MUNICIPAL CODE RELATING TO THE KEEPING OF HEN CHICKENS IN THE CITY OF CLOVIS; AND (2) AMENDING CORRESPONDING DEFINITIONS IN THE DEVELOPMENT CODE, SECTION 9.120.020, OF TITLE 9, OF THE CLOVIS MUNICIPAL CODE

The City Council of the City of Clovis does ordain as follows:

Section 1 Section 6.1.101, of Chapter 6.1, of Title 6 of the Clovis Municipal Code is hereby amended to read as follows:

6.1.101 Designated.

(q) “Household pets” means domestic animals ordinarily permitted in a place of residence, kept for company and pleasure, such as: dogs; cats; guinea pigs; rats; rabbits; mice; canaries, cockatiels, cockatoos, finches, lorikeets, lovebirds, macaws, parakeets, parrots, toucans, and similar birds; Vietnamese potbellied pigs as provided for in this chapter; turtles; lizards and snakes as permitted in this chapter; and other similar animals generally considered to be kept as pets. **“Household pets” does not include farm animals, except for hen chickens as provided in Section 6.1.309.**

Section 2 Section 6.1.301, of Chapter 6.1, of Title 6 of the Clovis Municipal Code is hereby amended to read as follows:

6.1.301 Restriction on number of household pets.

(a) The maximum number of household pets allowed in a household or on any premises shall be as follows:

- (1) Three (3) dogs;
- (2) Three (3) cats;
- (3) Two (2) Vietnamese potbellied pigs;
- (4) Three (3) reptiles;
- (5) **Three (3) hen chickens, as provided for in section 6.1.309.**

(b) **In addition to the restrictions in subsection (a),** the combined maximum number of dogs, cats, and potbellied pigs shall not exceed three (3) animals.

(c) In addition to the restrictions in subsection (a), the combined maximum number of household pets other than dogs, cats, and potbellied pigs shall not exceed three (3) animals.

(d) In addition to the restrictions in subsections (a), (b) and (c), the combined total of all household pets shall not exceed six (6) animals.

(e) The Supervisor of Animal Services may allow the occupant of the premises to maintain additional household pets on a temporary basis, and on such terms and conditions as the Supervisor of Animal Services may require, if the Supervisor of Animal Services determines that removal of the animal(s) would be dangerous to the health and well-being of the animal(s). Additional animals may also be allowed if the zoning requirements for the premises permit the operation of a kennel and the owner or occupant has obtained the necessary permits to operate a kennel on the premises.

(f) The keeping of household pets in excess of the maximum allowed herein shall be considered to be the operation of a kennel or breeding facility and shall be subject to the City's zoning standards for kennels and breeders, which generally require that kennels and breeding facilities be located within the Rural Residential (R-A), Commercial and Light Manufacturing (C-M), or Light Manufacturing (M-1) Districts and that operators obtain a conditional use permit.

Section 3 Section 6.1.303, of Chapter 6.1, of Title 6 of the Clovis Municipal Code is hereby amended to read as follows:

6.1.303 Farm Animals.

No person shall keep or maintain any farm animals except as follows:

(a) In connection with bona fide schools, colleges, universities, research organizations, and laboratories engaged in the field of scientific research and education.

(b) On the grounds of any district agricultural fair or rodeo which may be located within the City.

(c) In a zone established by the zoning laws of the City where such animals are specifically permitted, provided there is compliance with such zoning laws relating to such animals.

(d) Hen chickens, as provided for in Sections 6.1.309 and 9.40.040.

Section 4 Section 6.1.309, of Chapter 6.1, of Title 6 of the Clovis Municipal Code is hereby added to read as follows:

6.1.309. Chickens.

Notwithstanding any prohibition against farm animals in single family residential zone districts, and except as otherwise provided for in Section 9.40.040, hen chickens shall be allowed on any premises within a single family residential zone district, subject to the following:

- (a) Property owners are only allowed to have and keep up to three (3) hen chickens.
- (b) The minimum lot size required for keeping hen chickens is 5000 square feet.
- (c) Roosters are prohibited.
- (d) Commercial egg-laying operations are prohibited.
- (e) Hen chicken owners shall be completely responsible for the acquisition of chickens, vet care, rehoming, and if necessary, proper disposal.
- (f) Chicken Enclosure Requirements:
 - (1) Must be a minimum of 15 square feet and a maximum of 42 square feet, and comply with the requirements of Section 6.1.502;
 - (2) Must be kept in a property's rear-yard;
 - (3) Must be kept at a minimum 5-foot setback from the adjoining property line;
 - (4) Must be kept at a minimum 20 feet away from any habitable area or dwelling;
 - (5) Must be maintained in a clean and sanitary condition, free from offensive odors, as described in Section 6.1.503;
 - (6) Must be predator proof, thoroughly ventilated, and easily accessible for cleaning; and
 - (7) Must provide protection against direct sunlight, rain and severe cold weather.
- (g) Chicken feed must be secured and stored in an air-tight container so that it is not accessible to other animals or attract vermin.
- (h) Chickens shall be kept within their enclosures at all times, unless under the direct supervision of their owner. Allowing chickens to free roam is prohibited.
- (i) Tenants of a property are not permitted to keep hen chickens without written approval from the property owner.

- (j) All hen chickens kept pursuant to this Section are intended to be used for egg laying, and are prohibited from being butchered or killed for consumption, as provided in Section 6.1.511.
- (k) The presence of obnoxious odors, unsanitary conditions, or excessive noise that are to a degree that annoys or disturbs the peace and comfort of a person or persons of ordinary sensitivity, are hereby declared to be a public nuisance, and may be abated as follows:
 - (1) For first time offenses, the enforcement officer should issue a warning to the owner of the animal notifying the owner of the problem and inform the owner of steps necessary to correct the problem and the consequences if the owner fails to take corrective steps.
 - (2) For second offenses, the enforcement officer may issue a first offense administrative citation or submit the matter to the City Attorney for enforcement.
 - (3) For third and subsequent offenses, the enforcement officer may issue the next level administrative citation or submit the matter to the City Attorney for enforcement.

Section 5 The definition of Household pets in Section 9.120.020, of Title 9, of the Clovis Municipal Code is hereby amended to read as follows:

9.120.020 Definitions of land uses, specialized terms, and phrases.

Household pets. Domestic animals ordinarily permitted in a place of residence, kept for company and pleasure, such as: dogs; cats; guinea pigs; rats; rabbits; mice; canaries, cockatiels, cockatoos, finches, lorikeets, lovebirds, macaws, parakeets, parrots, toucans, and similar birds; Vietnamese potbellied pigs as provided for in this chapter; turtles; lizards and snakes as permitted in this chapter; and other similar animals generally considered to be kept as pets. **“Household pets” does not include farm animals, except for hen chickens as provided in Section 6.1.309.**

Section 6 This Ordinance shall go into effect and be in full force from and after thirty (30) days after its final passage and adoption.

APPROVED:

Mayor

City Clerk

The foregoing ordinance was introduced and read at a regular meeting of the City Council held on _____, 2020, and was adopted at a regular meeting of said council held on _____, 2020, by the following vote, to wit:

AYES:

NOES:

ABSENT:

ABSTAIN:

DATED: _____, 2020

City Clerk

ATTACHMENT 2

Correspondence in Support

From: Lee Nave <leenave@earthlink.net>
Date: July 13, 2020 at 8:43:16 AM PDT
To: Andrew Haussler <andrewh@ci.clovis.ca.us>
Subject: Chickens in Backyards

I am OK approving 4 hens in a backyard.

My neighbor has some and they are only out mid day.

I find the clucking entertaining.

I hate the blowers used by all the yard people.

Chickens are not annoying like the blowers.

Lee nave

From: Kimberly Rodriguez <kimrod21@yahoo.com>
Sent: Sunday, July 5, 2020 2:33 PM
To: John Holt
Subject: Backyard Chickens

Good afternoon,

Please vote Yes, to allow backyard chickens in the city of Clovis.

Thank you for your time.

Kimberly Rodriguez
Resident of Clovis CA.

On Fri, Jul 3, 2020 at 10:15 AM -0700, "Joy Bennett" <joybecause@gmail.com> wrote:

Good morning!

As a Clovis resident, I would like to voice the opinion in favor of backyard, cooped, chickens.
Please feel free to pass this opinion to other members.

Very best,
Joy Bennett

Council Meeting Date: 2020-06-01

Item Number: 1

Name: Richard Zarandin

Email: Cylechard@att.net

Comment: Our entire family, consisting of 4 adults and 3 teenagers are in agreement and supporting the City in allowing backyard chickens.

The Zarandins

From: Melissa Gunn Aviles [<mailto:14melissagunn@gmail.com>]
Sent: Tuesday, June 16, 2020 9:18 AM
To: John Holt <johnh@ci.clovis.ca.us>
Subject: Backyard Chickens

Please allow my family to keep a small flock of hens within city limits. I've read the predictive complaints. But as a current county chicken 'tender' who needs a bigger city home, I'm hopeful to responsibly keep a small flock of hens within the city limits.

From: annabellekennedy [<mailto:annabellekennedy@yahoo.com>]
Sent: Sunday, June 28, 2020 3:12 PM
To: John Holt <johnh@ci.clovis.ca.us>
Subject: Backyard chickens

Mr. Holt:

please forward my thoughts to all the members of the city council. I would like them all to know that I think Clovis should allow backyard chickens. Backyard chickens provide educational experiences for children, fresh eggs, and they eat bugs! I think backyard chickens would be wonderful in Clovis. Please, take my thoughts into consideration when you vote on this issue.

Kind Regards,

Annabelle Kennedy

From: WAYNE MCMILLEN <wtm62@sbcglobal.net>

Date: July 13, 2020 at 12:26:03 PM PDT

To: Andrew Haussler <andrewh@ci.clovis.ca.us>

Subject: Backyard Chickens

I urge the City Council to fully support this proposal. Further I feel that up to 4 hens, be allowed, no roosters. Furthermore appropriate housing (chicken coops) be required and that keepers of fowl must register with the City. I am not supporting licensing.

During the time I lived in outside City limits I kept 6 hens all the time. They provided eggs every day and helped keep bugs out of my vegetable garden. It was not difficult to keep their housing clean and added significantly to the quality of my compost piles.

Sincerely,

Wayne McMillen

Subject: FW: Yes to Clovis Backyard Chickens

From: Stephen Dougherty <spdougherty1@comcast.net>

Date: July 14, 2020 at 7:07:18 PM PDT

To: Drew Bessinger <drewb@ci.clovis.ca.us>, Jose Flores <JoseF@ci.clovis.ca.us>, Lynne Ashbeck <LynneA@ci.clovis.ca.us>, Vong Mouanoutoua <VongM@ci.clovis.ca.us>, Bob Whalen <BobW@ci.clovis.ca.us>, Andrew Haussler <andrewh@ci.clovis.ca.us>

Cc: Monica Dougherty <mfddvm@comcast.net>

Subject: Yes to Clovis Backyard Chickens

Dear Clovis Council Members,

I encourage you to vote for allowing backyard chickens in Clovis. Before moving to Clovis years ago we kept 5 wonderful egg laying hens that provided us with fresh eggs for a long time. It was a wonderful way to teach our children how to care for and respect the animals that provide our food. It would be great to have hens again in our backyard.

Best regards,

Steve Dougherty
24 Birch Ave
Clovis, Ca 93611
209-614-6894

Monica Dougherty

Subject: FW: Yes to backyard chickens!

From: Monica Dougherty <mfloresdvm2011@gmail.com>

Date: July 14, 2020 at 5:19:25 PM PDT

To: Andrew Haussler <andrewh@ci.clovis.ca.us>

Subject: Yes to backyard chickens!

Hello!

I am writing to lend my support for backyard chickens in Clovis. Hens are quiet animals and are beneficial on many levels...great nutritious food source (especially in these trying times), they are quiet, engaging and keep the insect population down. They are also a great educational opportunity for children.

Clovis is a rural town with a rich agricultural history. It is a shame that chicken are not already allowed! Many major metro cities already allow them.

Thank you for your consideration

Monica Dougherty

ATTACHMENT 3

Correspondence in Opposition

John Holt

From: Jesus Gonzalez <jdg_1198_46@yahoo.com>
Sent: Sunday, June 7, 2020 6:36 PM
To: John Holt
Subject: backyard chicken

I have a neighbor who owns two big dogs, never clean up their daily excrement, it stinks horribly especially when raining, and you geniuses will allow raising chickens in the backyards. This is an insane idea. I am totally against this.

Respectfully,
J.D. Gonzalez

John Holt

From: Joey Palumbo <joeypalumbo@sbcglobal.net>
Sent: Wednesday, June 10, 2020 4:56 PM
To: John Holt
Subject: Back Yard Chickens

John,

I have learned that the city of Clovis is considering allowing backyard chickens in the city limits. This is a bad idea. I am speaking from experience. Shortly after moving into my home in Clovis the neighbor behind me obtained chickens. I didn't realize this until one Sunday morning around 6:00am a rooster was on my fence doing what roosters do at 6:00am crowing loudly. I also noticed I started seeing mice and rats at my home. It was very difficult to get rid of these rodents. They would keep coming back to eat the chicken feed. So even if the chickens are kept in a cage, this won't stop the rodents. I shouldn't have to deal with noise and rodent issues because my neighbor want easy access to eggs. These are farm animals and that is where they belong; on a farm. I don't believe the public safety and nuisance issues are worth having backyard chickens in the city limits. Our police have enough to deal with, we don't need them on "noisy chicken" calls. Please share this with the city counsel. Thank you for your help with my concerns.

Thank You;
Joey Palumbo
559-285-3410

John Holt

From: Jeff Boyd <jeffkboyd@gmail.com>
Sent: Monday, June 15, 2020 6:32 PM
To: John Holt
Subject: No Chickens

John,

I really don't want chickens in residential areas of Clovis. This is not a good idea.

JK Boyd

John Holt

From: Janet Ryska <ryszki5@yahoo.com>
Sent: Monday, June 15, 2020 8:49 PM
To: John Holt
Subject: Amending title 6

Good evening Mr. Holt. I am writing in opposition to amending title 6 of the Clovis Municipal code to allow backyard chickens within the city limits. I can imagine the odor, flies, and noise that it would produce. People may think it would be fun to have chickens but not properly care for them. We have enough neighbors complaining about waste from dogs and cats (just check the Nextdoor app.) lets work to keep our neighborhoods clean.

I appreciate your time!

Thank you

Janet Ryska

2725 Bellaire Ave

Clovis

Ryszki5@yahoo.com

[Sent from Yahoo Mail for iPad](#)

John Holt

From: sgshaunagerth@gmail.com
Sent: Monday, June 15, 2020 6:57 PM
To: John Holt
Subject: Backyard chickens

Please do not allow chickens! Our yards are too close together. If I wanted to be around the smell, flies, and sounds of chickens, I would have purchased land in the country. The people behind me used to have them illegally and they were constantly in my yard and trees. They even had a rooster that would wake us every morning. Not what I signed up for when purchasing in this neighborhood.

Thank you

Sent from my iPad

John Holt

From: Michael Taber <shellnmike1@yahoo.com>
Sent: Monday, June 15, 2020 9:40 PM
To: John Holt
Subject: Chickens within city limits

We are NOT in support of changes to the current city ordinance that would allow chickens within city neighborhoods. Noise and odor are two concerns but the larger concern is policing the containment of the chickens. Chickens do not fly long distances but they are able to fly high enough to jump fences and dig. They devour landscaping. The chickens that people have snuck into our neighboring streets in the past 2 years have roamed the front yards and roosted in flower bed landscaping with no oversight or control. Many of our neighborhoods within city limits are too tight and incorporate apartments, condos, gated communities. These living areas along with city living do not allow for support of a farm animal. Please vote NO to chickens within the city.

Thank you,

Mike & Shelley Taber

[Sent from Yahoo Mail on Android](#)

John Holt

From: Tim Gabrielson <sierramotorsport@att.net>
Sent: Monday, June 15, 2020 9:04 PM
To: John Holt
Subject: Backyard chickens

Hi,

I live at 3167 Twain Ave and am strongly opposed to backyard chickens. People already have a hard enough time taking care of their animals without adding the noise, smell, rats and mice that are attracted to chickens! We've lived in neighborhoods that had them and that was our experience. If I wanted chickens I would have moved to the country.

Thank you,
Tim Gabrielson

[Sent from AT&T Yahoo Mail on Android](#)

John Holt

From: mmfp1955@gmail.com
Sent: Tuesday, June 16, 2020 4:42 PM
To: John Holt
Subject: Chickens

Dear Mr Holt

As a person who used to raise chickens for eggs when I lived on acreage in clearlake, CA I can tell you, that they are noisy, they draw flies, fleas and smell. Especially if they are not cleaned up after daily and in HOT weather. Has anyone considered what happens when a chicken dies? This does happen. Do they just toss them in the trash? Are they burying them on the property? Another possible sanitation issue. On our acreage we used to be able to burn them in clearlake. This was years ago. Can they do so here? What's the procedure going to be here? Please do not allow chickens within city limits. It's going to be a filthy dirty mess that will decrease our property values. Just take a walk down the canal banks into the backyards now. They are already a mess. It will get worse. Please again do not allow chickens in city limits Thank you

Mary Piazza
1467 Bernadine Dr
Clovis,CA 93611

Sent from my T-Mobile 4G LTE device

John Holt

From: Mike Munnely <themikemunnely@gmail.com>
Sent: Tuesday, June 16, 2020 4:40 PM
To: John Holt
Subject: Backyard Chickens - Title 6

Mr. Holt,

Please let it be known that while I love eggs and chicken, I do not support backyard chickens to be allowed in residential neighborhoods. My concern is with their smell and they will attract flea-carrying rodents to our residences.

Regarding this, I am against the amendment to Title 6 of the municipal code for the City of Clovis.

Sincerely,

Mike Munnely
3227 Dennis Ave
Clovis CA 93619

John Holt

From: Arlene Tanksley <kimtanksley@comcast.net>
Sent: Tuesday, June 16, 2020 4:47 PM
To: John Holt
Subject: Vote against allowing chickens in the City of Clovis

Dear Sir:

I am writing in regard to the prospective ordinance to allow backyard chickens within the city limits of Clovis, CA. I have raised chickens myself and understand why some people would like to enjoy them as pets or for companionship or teaching aid for children. Others believe they are helping the health and welfare of chickens and believe home grown chicken eggs taste better are more nutritious and safer to consume. On the surface the issue looks pretty simple but based on the experience and studies done by cities that have already passed chicken ordinances the truth is much different and more expensive to the city than initially imagined. Chicken owners themselves have documented many of these problems or reported that although initially well-meaning, in practice they are far from following the regulations and safety practices. Following are issues that chicken owners and cities have faced since passing of their ordinances and has been well documented. Before you vote to formally adopt the ordinance, many questions need to be answered before the city commits to the financial headaches and health and safety problems other cities are facing. I have listed them here and hope you will consider each before making your decision. The most expensive to local, state and federal government are poultry borne diseases spread by backyard poultry. Although discussion of disease is long, the other issues have just as much importance and expense for the City of Clovis and I urge you to read each section as they are all questions that need to be addressed before an ordinance allowing chickens should be passed.

POULTRY BORNE DISEASES

A study was conducted with the assistance of the University of Davis Center for Animal Welfare, California Farm Bureau Association, CA Dept Food and Agriculture, California Master Gardeners (Animal Welfare Study) that asked backyard chicken owners about their knowledge and methods for rearing backyard poultry. They found that chicken owners were generally quite aware of common health conditions such as parasites. However, the relatively high percentage of backyard owners not familiar with important and highly transmissible infectious diseases, such as Avian Influenza, Histoplasmosis, Newcastle and Marek's disease, etc. This is concerning, especially taking into account the recent outbreaks that have occurred in California from backyard flocks that have ended up costing the state, counties and cities millions of dollars.

In 2002–2003, an outbreak of exotic Newcastle disease, originally confirmed in a California backyard flock, spread to commercial poultry operations in California as well as to backyard flocks in other states. This epidemic led to the depopulation of 3.16 million birds at a **cost, from discovery to eradication, of \$161 million**. Virulent Newcastle disease is a virus that affects birds with particularly lethal effects on poultry. It spreads quickly between birds but is not considered a human health threat. Its presence can be so detrimental to poultry health and the food supply that it triggers state, federal and international regulatory response. While this virus has been introduced and eradicated from more than 15 U.S. states since 1950, the largest outbreaks occurred in California in 1971-1974 and 2002-2003 following a similar pattern but with wider spread than the recent 2018-2020 outbreak. Many people assume that if humans cannot catch these diseases or if they are difficult to catch, they are not problems. However, the cities, counties and states are paying exorbitant costs for the problems backyard poultry have caused. Marek's disease causes the same threats except to the commercial turkey industry.

The recent Newcastle outbreak in Southern California ended in February 2020 but the California Veterinarian, Dr. Annette Jones, reported that after almost two weeks with no cases, the virus was found in two additional backyard flocks in the Bloomington-area. “Both flocks were showing signs of disease and laboratory results suggest that the disease may have been in at least one of the flocks for some time. The owners did not call to report disease as required and it is possible that some birds were moved off of at least one of the properties before our arrival. It's important to remember that this virus is highly contagious and lethal, so it always eventually shows up.” The delay in contacting the state and efforts to cover up the disease simply leads to a bigger problem. Birds were removed from the quarantine area, against regulations, and transported to Arizona and Utah which have caused outbreaks in those states.

Final costs have not been tallied but the Southern California outbreak of Newcastle Disease involved the work of USDA, CDFA, California Animal Health and Food Safety Lab, Riverside County, San Bernardino County, Los Angeles County, Ventura County, Alameda County, and San Diego County and city governments within those counties. City Animal Control Departments are now responsible for on-going monitoring of poultry owners. Cities have also been required to develop reporting system for bird owners, training for bird owners, surprise inspections, and develop and enforce biosafety procedures.

How will the City of Clovis plan for and cover these costs if we are faced with the same problems? Who will be responsible for citizen training, inspections, violations, and follow up? Will the present personnel be able to handle the additional load or will additional personnel be needed? If so, how will the additional personnel be paid for?

Egypt has been dealing with and failing to eradicate Avian Influenza for over a decade. It was spread through backyard poultry. The first human case of this virus was in 1997 and it has killed nearly 60% of the people who have been infected since. Egypt has been failing in the eradication of this disease and major efforts have been made to avoid spreading it to other countries. It is naïve to think because the problem is in Egypt it does not apply to us. Highly pathogenic Avian Influenza infections have been reported in U.S. domestic poultry (backyard and commercial flocks), captive wild birds, and wild birds by the U.S. Department of Agriculture (USDA) and the U.S. Department of Interior (DOI) in 21 U.S. states. In 15 states, the outbreaks originated in backyard poultry. It has not reached the disaster situation of Egypt merely due to close monitoring, rapid response and luck. Avian Influenza, also known as bird flu, is a disease in that can be transmitted back and forth between wild birds and domestic poultry such as chickens, roosters, ducks, geese, other birds and other animals through feces (droppings) and body fluids. People who have *close* contact with infected birds can get avian influenza and transmission to humans has become a very big problem in Egypt. The transmission of avian influenza to humans is low; however, once transmitted to humans it is passed more easily resulting in severe illness and death. This is what is happening in Egypt.

Like pigeon feces, chicken feces harbor a fungus called histoplasma which, when spores become in contact with humans or becomes airborne and inhaled, causes histoplasmosis. This can cause acute respiratory illness that can cause damage to the respiratory system and other organs as it progresses. I speak from personal experience when my five and eight year old children became ill with respiratory problems and bleeding ulcers from airborne fungus directly traced to bird feces in our neighbors yard in Clovis. Because of the substantial problem of regular feces disposal from backyard poultry pens many homeowners use chicken feces for fertilizer. To prevent transmission of disease manure must be composted to proper temperatures before being safely used as manure. How will this be monitored? Will the soil in backyard poultry farmers be randomly tested? Is a plan in place if a public health problem arises? Will poultry farmers be allowed to dispose of chicken feces for refuse or green waste pick up? Does this cause a hazard to sanitation workers? Are there any requirements regarding chicken feces at greenwaste or garbage dumps?

The California Animal Health and Food Safety Lab (CAHFS) at UC Davis studied the cause of death in backyard birds over the last five years. It examined 1,301 dead backyard chickens and found that a third of the

deaths were due to viral diseases like Newcastle and Marek's disease (these are the diseases that affect poultry and egg industries in Southern California.) Bacterial infections accounted for 23 percent of backyard chicken deaths. The *E. coli* bacterium was the largest cause of bacterial death found in backyard chickens. Bacteria diseases such as salmonella and *E. coli* can be easily transmitted to humans starting with direct contact with chickens and their feces and spread by the shoes and clothing of those in contact with the birds. Eggs sold or given to neighbors also carry these bacteria and can cause additional transmission.

What plan will Clovis have in place for sourcing outbreaks and responding to protect Clovis residents? Who will be responsible? What are the costs and how will these costs be paid for?

In the CAHFS poll of backyard chicken owners discussed previously, about three-quarters (73.8%) of respondents had not administered any medications (excluding vaccines), and among the few who did, the most common medications were dewormers (10.1%) and antibiotics (9.8%). Sixty-one (61%) did not vaccinate their birds. When asked about important infectious diseases, a large percentage of respondents were not familiar with avian influenza (AI) and about one-half were not familiar with Marek's disease nor were aware of vaccines for such diseases. Simple biosecurity methods can reduce the spread of such diseases if backyard poultry owners follow the protocols such as changing shoes and clothes after entering and exiting poultry areas. CAHFS found that most backyard poultry owners did not wear different clothes/shoes when simply entering the poultry area, nor change their clothes and shoes after leaving the poultry area and a majority often allowed guests into the poultry area. Almost one-half of the respondents were not aware of the risks encountered by exposing their flocks to wild birds; 44.1% had a wild bird feeder on their property and 47.6% mentioned that wild birds, rodents, or both, could access their chickens' feed and water. Most were not aware of procedures for sanitizing eggs before sharing them with neighbors; even though this information was supplied when poultry owners purchased their permit.

Will the City of Clovis be monitoring backyard flocks for outbreaks of poultry borne illnesses? Who will be doing it and how will it be paid for? What are state and federal laws concerning the source of outbreaks? If a disease outbreak is traced to Clovis backyard poultry will Clovis be financially liable for the costs if we don't have programs in place for monitoring and quarantine?

PUBLIC HEALTH:

Eggs produced in backyard flocks are not subjected to regulatory testing. The few drugs approved for use on laying hens are designed for administration to birds in large commercial operations. As a result, veterinarians often end up administering drugs in an extra-label manner that have little or no drug residue studies for those doses. According to the Animal Medicinal Drug Use Clarification Act (AMDUCA), any detectable drug residue in eggs of a hen that a veterinarian has treated, for which residue tolerance has not been established by the FDA, is a violation. If eggs are sold or given away, then it represents entry of an adulterated product into the human food chain that is also actionable. Salmonella and *E. coli* outbreaks have been reported in cities with chicken ordinances that arose from the selling and giving away of eggs from backyard chickens that have not followed required cleanliness, biosecurity handling and maintenance standards for their chickens. One of the largest complaints by chicken owners from is the lack of knowledgeable veterinary care because veterinarians do not want to take the liability. Many chicken owners do not want to shoulder the expense that usually begins at approximately \$200 per visit.

How will chicken owners be regulated? Who will monitor if eggs or chicken products are sold or given away in FDA violation? Who will do this monitoring and how will Clovis pay for it? Will veterinarians be willing to open up themselves to liability by treating chickens? Will Clovis ensure disease treatments for chickens is available? Will the City of Clovis be liable by not monitoring chicken owners and veterinarian resources?

POOP

Chicken poop is cited as the number one concern by people when considering a chicken ordinance. In the UC Davis study, when asked about cleaning practices practiced by backyard poultry owners, results were very varied: 31.1% of respondents indicated that they removed soiled litter, fecal material, or both, weekly; 30.7% when needed; 21.1% monthly; 13.8% daily; 2.5% once a year; and 0.9% never.

Will the City of Clovis set cleanliness standards for disease transmission and public nuisance from odors, flies, etc.? Will standards for pens, dropping boxes in vicinity of nests, disposal of droppings, disposal of chickens, disposal of male birds, be required? Who monitors this?

Chicken manure is very high in nitrates and phosphates. A study published in September 2019 in the Journal of Environmental Research and Public Health to determine the safety of chicken manure for land use, found that chicken manure poses a threat to water resources from nitrates and phosphates. They also found that chicken manure contained high amounts of pathogens such as bacteria fungi, helminthes, parasites and viruses; so much so, that it does not meet the standards as an organic fertilizer.

A University of Hawaii study determined that one hen will produce 130 pounds of manure in one year or 1000 hens will produce 65 tons of manure per year. The City of Sacramento passed their chicken ordinance in August 2011 and had 457 registered hens; although they found the majority of people did not register their hens. Since then, feral hens have been a city problem with 500+ chickens collected by animal control annually. Does the City have plans for how the 65+ tons of chicken feces per year will be handled? What standards will be required of poultry owners for disposal of chicken feces or composting requirements? How will these requirements be enforced? Will the ground water be monitored by the City of Clovis for changes in nitrates and phosphate levels; a risk identified in the above mentioned public health study? What measures will be taken if the ground water is affected? Who will be responsible for this? How will the costs be covered?

DEAD BIRDS

The UC Davis study determined that chicken carcass disposal methods by backyard poultry owners were mainly divided between burial on premises (40.9%), put in trash (30.7%), or “other” (16.9%). Among “other,” the most frequently cited methods were to bring the carcass to a veterinarian, or to feed it to wildlife. The respondents appeared to lack knowledge of the risks of disease transmission associated with leaving dead birds for consumption by wildlife or the burial of carcasses on their property. This gap in knowledge was similarly reflected in previous studies where biosecurity precautions were also lacking and carcass disposal methods were almost identical to the ones reported in the UC Davis survey.

A study published in the Journal of Veterinary Diagnostic Investigation studied mortality in backyard poultry in eight states. Death was mainly due to disease, bacteria, parasitic and viral organisms and predation. Cities with ordinances have found malnutrition, abuse and the killing of roosters purchased in error were also common reasons for death. What are the health risks to the public from disposal methods of dead chickens? Are there associated health risks to sanitation workers by carcasses put in the trash? What will be required for this in the ordinance? How will this be monitored? Who will do it and how will it be paid for?

ANIMAL CONTROL ISSUES:

Hens start laying eggs after about five months. Egg production, however, wanes at the age of two. Hens can live for well over a decade. Many backyard hen owners are as reluctant to keep a non-productive hen nor are they willing to eat it. Seriously, how can we eat our favorite chicken named Ethyl? The upshot has been a sharp rise in abandoned birds. In 2001, according to the Associated Press, Minneapolis’ Chicken Run Rescue fielded six calls from individuals looking to find homes for forsaken chickens. By 2012, that number reached almost 500.

Sacramento California has been dealing with the consequences of their ordinance allowing backyard chickens. Sacramento's animal shelter reported that chicken owners are not licensing their chickens nor getting permits for nor providing a dedicated coop, which costs the city money every time it has to deal with a chicken - related animal control call. The Front Street Animal Shelter in trying to address the animal control problem of abandoned poultry, reports that the lack of revenue stream means the shelter cannot adequately deal with growing populations of abandoned roosters and hens. "We've been out netting birds but the problem continues to grow. There is open space between the houses and large trees for roosting. We can't exactly go out and shoot them, and netting is time-consuming and not an efficient use of our animal control officer time." "When people get tired of their chickens, they take them out and abandon them. There are as many as 100 birds in areas with bushes and trees for roosting."

Backyard farmers soon find out that actually raising chickens can be noisy, messy, labor-intensive and expensive. The Farm Sanctuary in Watkins Glen, NY has approximately 225 former backyard chickens waiting for homes. At least 400-500 abandoned chickens are taken in each year and many are suffering from maltreatment or illness.

Who will be responsible for ensuring chicken's are licensed? Will owners of unlicensed chicken's be fined? Who will do it? How much personnel will it take and how will it be paid for?

Who will be responsible for animal control? Can our current animal control handle the added problems? If not, how will it be addressed and who will pay for it and how much will it cost?

VECTOR PROBLEMS

The Animal Control Study discussed previously, stated that backyard chicken owners reported predation as the most common cause of mortality reported; which corresponds with studies in the UK. The study reported that many urban farmers were surprised that chickens attract pests like rats, and predators including foxes, coyotes, raccoons, possum, hawks, snakes and dogs. A Google search on "What killed my chickens?" came up with 81,300,000 responses which suggests the problem is as significant as backyard farmers reported and people want to know how to handle it.

How will the increased vector problem be handled? Who will be responsible for handling it? Will the present personnel be capable of handling the additional responsibility? How much will it cost? How will it be paid for? Will there be a system set up to report the removal of dangerous vectors? How will it be paid for? If vector borne diseases or injuries to the public from contact with these vectors increase in the City of Clovis, what will be done?

HUMANE TREATMENT

An article by Lucia Wyss in 2018 on "How to Humanely Kill a Chicken" reports that chickens are killed by backyard farmers for several reasons. The usual reason is for consumption; although disease and injury and killing older chickens past their prime egg laying age are also common. Because chickens are notoriously hard to sex, some backyard farmers wind up with roosters, which are often culled and killed because they can be noisy, aggressive and illegal, and, of course, they don't lay eggs at all. The Animal Control Study reported that the killing cone (or another method involving severing the neck veins with a knife) was the method most frequently cited by study respondents (34.1%), followed by decapitation (28.9%), cervical dislocation (21.8%), and "other" (19.5%). In the "other" category, the methods most often mentioned were gunshot, gas and drowning. The American Veterinary Medical Association (AVMA) states, from a welfare perspective, the killing methods described above are all acceptable if performed correctly by a trained individual. However, some of the ones that respondents listed under "other," such as gassing using the solid form of carbon dioxide

(dry ice) or drowning, constitute serious humane concerns and are not considered acceptable by AVMA. Will the ordinance identify standards for humane treatment of chickens and determine pen and care standards? Will the ordinance require chicken culling to be done by a veterinarian? Will spot checks for compliance be made? The County of Fresno Humane Officers investigates nearly 1,000 reported abuse cases per year. Will they be responsible for addressing humane treatment of backyard chicken flocks? Will the Clovis Peace Officers be required to monitor and enforce humane standards? Can the current resources absorb the added responsibility? If not, who will and how will it be paid for?

YOUR VOTE

Is the treatment of chickens humane, safe to eat, and inexpensive as people think? The majority of chicken owners find out that it is not as easy nor worth the cost as expected. Cities with chicken ordinances have found that after the initial honeymoon period, people see the reality of the situation and tax-payers are left to clean up the problem. Build the coop, buy the feed, pay the vet, count the hours spent maintaining the coop and administering care then grab a calculator. The results? As one backyard farmer from Merced, California told an online chicken forum: "Don't tell my wife, but my eggs are costing about \$40 a dozen." When people realize this, the problems cities face start growing.

The Journal of Community Health reported on 100 cities in Colorado allowing backyard chickens. All addressed noise and smell. Few addressed any of the other problems discussed above, like disease transmission, vector problems, etc. yet they are all paying the cost associated with them. Only two cities had ordinances requiring health standards and veterinary care for chickens.

I agree backyard chickens sound like a good idea. People commonly complain, "It is my house I should be able to do what I want in my backyard." The problem is the effects of chicken farming do not stay in their backyard. Anecdotal stories from relatives and friends make backyard chickens seem inconsequential, after all, "We never had a problem." I urge you to look beyond anecdotal stories to real life facts of issues documented by cities who have passed ordinances allowing chickens. Raising chickens can be rewarding and enjoyable; however, all the issues discussed above clearly show it is a rural activity and not one in which people are living immediately adjacent to each other because the resulting risks and problems do not stop at the fence line. The expense of issues related to backyard chicken owners is paid for by every single taxpayer and can range from hundreds of thousands to millions of dollars. This is not hearsay, it is well documented and has taken many cities, counties and states by surprise.

I urge you to vote NO to passing an ordinance allowing chickens in the city limits. If you disagree, then as government representatives of Clovis taxpayer's you should address each of the problems listed above and any more identified in the process. Provide how each issue will be addressed, who will be responsible for it, how much it will cost and how will it be paid for. Base your decisions on real life data backed by proof. I think you will find it is too expensive for the City of Clovis and the rights of a small percentage of the population to own chickens impinges on the rights of all citizens of Clovis who have to deal with the extensive problems that are proven to arise, including health and safety issues, and who have to pay for it with our tax dollars.

I respectfully request that this letter be added to the public record and the issues raised address at the City Council Meeting prior to making a determining vote.

Sincerely,

Kim Tanksley

Clovis resident for 25 years.

John Holt

From: j b <byerleethree@gmail.com>
Sent: Monday, June 29, 2020 6:31 PM
To: John Holt
Subject: Chickens in clovis

Mr Holt,
Please forward to the members of Clovis city council.

I'm asking for a no vote to allow chickens in residential neighborhoods.
I have a near by neighbor who has chickens. They make a considerable amount of noise early each morning.
I've been near homes in Fresno with chickens and there are the flies and smells that go along with them.
If the chickens in my neighborhood were any closer I would be calling the animal control dept daily.
Thanks for your time

Jeff Byerlee
Clovis ca 93619

John Holt

From: Hope N. Giordano <hngio@sbcglobal.net>
Sent: Friday, June 26, 2020 6:30 PM
To: John Holt
Subject: Chickens in your backyard

I am a NO vote.

My backyard neighbors had chickens illegally until they were caught. Feathers, smell in hot weather, chicken noises (there were no roosters), increased bugs were a constant NUANCE!

If I wanted to leave in the country I would of.

Been a resident here 35yrs!

Sent from my iPhone

John Holt

From: marcy perez <perezmarcy@hotmail.com>
Sent: Monday, June 22, 2020 11:57 AM
To: John Holt
Subject: Title 6

Hello,

I am very concerned with the upcoming voting on title 6 allowing/keeping chickens in residential homes. In city livestock will increase disease, sound and odor, varmint. Most residential homes have yard lot sizes of 7500 sq ft or less. There's no room, not to mention neglectful owners. My vote is a huge no. If I wanted livestock I would of moved to the country. Please consider my opinion and share with other council members.

Thank you

Maricela Perez
2317 Polson Ave
Clovis, Ca 93611

Sent from my iPhone

John Holt

From: Sherryl L. Doss <tsdoss@icloud.com>
Sent: Monday, June 22, 2020 11:45 AM
To: John Holt
Subject: Chickens

Please Please vote NO on the 🐔
Thank you!!
Sent from my iPhone

John Holt

From: Teri Barrett <TheForce22@yahoo.com>
Sent: Saturday, June 20, 2020 3:02 PM
To: John Holt
Subject: Backyard chickens

John,

I am writing to let you know if my opposition to allowing city of Clovis residents to have backyard chickens. I do not feel there is enough space in most of the backyards and it can detrimentally affect your own property if your neighbor puts the chickens too close to your house or just plain does not take care of them properly. The smell, flies and noise that can be produced is not something I can control. Only my neighbor can control that. If I wanted to live in the country, I would live in the country. If people want to have chickens, they are free to go to the country where space is more available, the problems would be lessened, and it is legal.

Thank you,

Teri Barrett
2944 Duncan Ave
Clovis, CA 93611

Sent from my iPhone

John Holt

From: CURTIS GARCIA <garciacd@comcast.net>
Sent: Saturday, June 20, 2020 11:01 AM
To: John Holt
Subject: chickens in Clovis

Just want to say that allowing chickens is a terrible idea with any city's city limits. Chickens are classified as farmyard critters, and are not candidates for living within a city. They're noisy, they stink, and could be grounds for a lawsuit

You want to improve life? Ban free roaming cats. I don't understand why they are allowed. They come into my yard, scratch the cushions of my patio furniture, crap in my flower beds, and sometimes piss ("marking") around my front door.

Please take both of these matters to heart. Allowing either is a huge nuisance to your public.

Thank You

John Holt

From: KittyEberle <kittyeberle@sbcglobal.net>
Sent: Friday, June 19, 2020 2:18 PM
To: John Holt
Subject: OPPOSITION to backyard chickens

Hello.

I understand there is consideration to amend an ordinance that would allow for backyard chickens. I would like to take this opportunity to express my opposition to this. I share other residents concerns regarding odor, flies, noise, disease, unconstrained chickens and attraction of rodents it will create. Not to mention, the increased load on the already burdened Animal Services Division. I know proponents of the measure will cite mitigation; however, as with any/all preliminary good intentions, I can foresee a low percentage of ultimate adherence. Our neighborhoods already deal with nuisance factors such as barking dogs, unkempt properties, pet owners who don't clean up after their pets, noise issues, etc. We do not need yet another issue that detrimentally affects our quality of life.

Thank you for taking my input into consideration.

Kitty Eberle
Lifetime Clovis resident

John Holt

From: Primary Email <jrdavis299@hotmail.com>
Sent: Wednesday, June 17, 2020 7:40 AM
To: John Holt
Subject: Chickens in backyards

Mr. Holt, while I was raised in the country and have a fondness for chickens, I do not think they are appropriate for an urban setting. Maybe one as a pet. But raising chickens for eggs and meat would be a noisy smelly endeavor. And I own cats that may jump the fence and cause havoc among the chicken flock. I can just hear the outrage now. Roberta Davis

John Holt

From: ROBERT SMART <rqs7366@sbcglobal.net>
Sent: Wednesday, June 17, 2020 6:19 AM
To: John Holt
Subject: Chickens

John: Please do NOT reclassify chickens as domestic pets and allow neighbors to have chickens in their back yards in totally residential areas. Having dogs and cats seems to be more responsibility than some residents can handle concerning cleaning up after their animals. I love my neighborhood and really think that chickens would change the whole residential ambiance. I lived in the country (with a Clovis address) and didn't seem to have any problems with neighbors who had chickens – it was the risk they took considering the foothill coyotes. Please, no chickens in Clovis neighborhoods. Thank you for your attention. Linda and Robert Smart
3054 Burgan Avenue
Clovis, CA 93611

Sent from [Mail](#) for Windows 10

John Holt

From: Heather Halsey <hhalsey@gmail.com>
Sent: Tuesday, June 16, 2020 10:27 PM
To: John Holt
Subject: In opposition of backyard chickens

Hello Mr. Holt,

As a resident of Clovis, I'm writing to respectfully ask the Council to please not amend the code to allow for backyard chickens in the City of Clovis.

I live in the Liv at Loma Vista development at Ashlan & Leonard and most of our backyards are tiny. We already face issues with noise, odors and bugs from how our neighbors choose to use their backyards. If this amendment were to pass, I can only imagine these issues would become much worse in many neighborhoods.

I can honestly say that if one of my five neighbors were to have chickens in their backyard, I would not be able to live in my home peacefully due to the noise, smell and possible bugs/rodents they could bring.

Thank you for your consideration,
Heather Martinez
559-765-7414

John Holt

From: Luke Serpa
Sent: Wednesday, July 8, 2020 9:40 AM
To: John Holt
Subject: FW: Chickens

FYI

From: Daren Stemwedel [mailto:darens@gmail.com]
Sent: Wednesday, July 8, 2020 9:42 AM
To: Jacquie Pronovost <JacquieP@ci.clovis.ca.us>; Vong Mouanoutoua <VongM@ci.clovis.ca.us>; Drew Bessinger <DrewB@ci.clovis.ca.us>; Jose Flores <JoseF@ci.clovis.ca.us>; Bob Whalen <BobW@ci.clovis.ca.us>; Lynne Ashbeck <LynneA@ci.clovis.ca.us>; Luke Serpa <lukes@ci.clovis.ca.us>
Subject: Chickens

Good morning,

I recently read that the City of Clovis is considering allowing backyard chickens. Please don't. I'm sure the benefits of fresh eggs are nice, but it's neighbors who have no interest in chickens who end up paying the price when odors and noise get out of hand. I really don't want a bunch of chickens in my neighbors' yards. Raising chickens is a bit of a fad right now, and it's something that, when not done properly, creates a lot of problems. My neighbors can't even seem to care for their dogs enough to keep them from barking at all hours, let alone a flock of chickens. It's one more issue for the city to police and use up resources we don't have.

If you are going to permit chickens, please only allow them in rural residential areas, or neighborhoods with larger lots (like a half acre at least) so that they don't become a nuisance.

Thank you,

Daren Stemwedel
 1930 Serena Ave.
 Clovis, CA 93619
 559-301-7923

John Holt

From: greg Little <supertaz28@hotmail.com>
Sent: Thursday, July 9, 2020 10:51 AM
To: John Holt
Subject: Chickens in the city

To the Clovis City Council,

Please do not allow chickens in the City of Clovis. We already have too many animals and other issues to try to keep track of and handle. We do not need to add another potential issue to our already overworked and understaffed police/animal control. Our neighborhoods are mostly peaceful and should be kept that way. There is plenty of property outside the city limits for farm animals.

Concerned citizen,
Greg Little
810 Laverne Ave

John Holt

From: Andrew Haussler
Sent: Tuesday, July 14, 2020 5:03 PM
To: John Holt
Subject: Fwd: CHICKENS

Sent from my iPhone

Begin forwarded message:

From: "s.scialabba" <s.scialabba@comcast.net>
Date: July 14, 2020 at 4:57:03 PM PDT
To: Andrew Haussler <andrewh@ci.clovis.ca.us>
Subject: CHICKENS

Hello Mr. Haussler, my name is Sam Scialabba and I live at 126 W. El Paso Ave.

I am surprised that the City of Clovis would even entertain the thought of chickens being allowed in yards. If I wanted to live amongst farm animals, I would have purchased in the appropriate area for such. Chickens are not household pets, and should not be treated as such.

We have a neighbor who has any number of dogs at any one time. I am tired of barking at any time. I enjoy sitting outside and spending quiet time. Inevitably, one of the dogs will be let outside, and will begin barking. I know dogs bark, but it is annoying not to be able to enjoy this time in my own home. I cannot imagine having chickens living next to me. My grandmother had chickens, and used them as a food source back then. I recall the constant noise and mess.

My wife and I purchased a home in the appropriate area for residential living with kids and families nearby. We also would like to sell this house, when ready, and not have the value negatively impacted by barnyard animals next door. Someone in our neighborhood had chickens a number of years ago. I couldn't tell exactly where, but I could hear them every morning when I got up.

I understand some people think this is a good idea as it would be an opportunity to teach kids about food sources etc. I say take them to the country or farm areas and introduce them to that stuff.

Thank you in advance for carrying this message to the City Council on our behalf.

Sam Scialabba

John Holt

From: Andrew Haussler
Sent: Monday, July 13, 2020 5:04 PM
To: John Holt
Subject: Fwd: No Chickens!

Sent from my iPhone

Begin forwarded message:

From: Mignon Etcheverry <calg8tr@yahoo.com>
Date: July 13, 2020 at 4:58:50 PM PDT
To: Andrew Haussler <andrewh@ci.clovis.ca.us>
Subject: No Chickens!

Plain and simple

If I wanted to live in the country, I would have chosen a home in the country. Please, no chickens in the city limits!

Sent from my iPhone

John Holt

From: Andrew Haussler
Sent: Monday, July 13, 2020 9:54 AM
To: John Holt
Subject: FW: CHICKENS IN BACKYARD

Here is an e-mail on the backyard chicken ordinance.

Andy Haussler
Community & Economic Development Director
City of Clovis
1033 Fifth Street
Clovis, CA 93612
p. (559) 324-2095
f. (559) 324-2840
www.ci.clovis.ca.us



From: Barry Soliday [mailto:bjsolid@pacbell.net]
Sent: Monday, July 13, 2020 9:51 AM
To: Andrew Haussler <andrewh@ci.clovis.ca.us>
Subject: CHICKENS IN BACKYARD

Hello Andrew

As a Clovis resident, I wanted to express my opinion to be shared with the City Council that I am opposed to allowing chickens to be kept in Clovis residents backyards.

Thank you in advance

Barry Soliday

Sent from Yahoo Mail on Android

John Holt

From: Andrew Haussler
Sent: Friday, July 10, 2020 1:59 PM
To: John Holt
Subject: Fwd: Chickens

Sent from my iPhone

Begin forwarded message:

From: Kirsten Gattie <themamagat@gmail.com>
Date: July 10, 2020 at 1:53:47 PM PDT
To: Andrew Haussler <andrewh@ci.clovis.ca.us>
Subject: Chickens

Hello Andrew,

My husband and I live in the city of Clovis. We are very opposed to chickens being allowed in the city limits. They are not quiet animals and they need room to roam. It would be inhumane and noisy having chickens in the city limits.

We are becoming so permissive as a society that it makes it hard to reverse things once they're allowed. Let's do it right from the start and not allow this.

Thank you,

Brad and Kirsten Gattie

Sent from my iPhone

John Holt

From: Vong Mouanoutoua
Sent: Tuesday, June 16, 2020 2:49 PM
To: John Holt; Luke Serpa
Subject: Fw: Thank You

John:

Can we keep Mr Palmer's email and include it in comments for this item when it comes before the Council? Will that be doable?

Thank you,
 Vong

Vong Mouanoutoua
 Councilmember
 City of Clovis
 1033 Fifth St
 Clovis, CA 93612
 (559) 324-2010 Office
 Email: VongM@cityofclovis.com



From: Robert Palmer <rob-palmer@comcast.net>
Sent: Tuesday, June 16, 2020 2:42 PM
To: Vong Mouanoutoua
Subject: Re: Thank You

Vong - Thank you for your reply. I will be unable to attend council meetings for the foreseeable future as I have health conditions that require I take the utmost care to avoid a Coronavirus infection.

If my message could be read during the appropriate meeting, or at least shared with the Council members, I would appreciate it.

Thank you.

Rob Palmer
 rob-palmer@comcast.net

> On Jun 16, 2020, at 2:37 PM, Vong Mouanoutoua <VongM@ci.clovis.ca.us> wrote:

>

> Dear Mr. Palmer:

>

>

> I have received your input below re the Chicken Ordinance. I wanted to thank you for taking the time to share these thoughts with us. I hope you will be able to come the the meeting when it is on our agenda. No decision has been made yet. Citizens have come in to ask the City to look at this issue, so we directed the Staff to study the matter and bring us potential ordinances to consider. At the current time, I do not know when it will be brought before us.

>
>
> That being said, we need to hear from our residents, so that we can make a more informed decision.
>
>
> Please let us know if you have any further questions.

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>
> Respectfully,
>
> Vong

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> Request type:

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> Problem

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> Request area:

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> City council

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> Description:

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> I have heard that you are considering changing statutes to allow for raising chickens in backyards within the Clovis city limits. I tried to respond through the City Council web site, but it requires an agenda I item #, which I don't have.

>
> I am 100% against this change. People have proven to be irresponsible in owning pets, letting their cats run free (which I know is legal), free to dig in their neighbors yards; defecate throughout the neighborhood (making it the neighbor's problem to clean up) and; make all kinds of noise when in heat.

>
> As a family that has two immediate neighbors whose large, nearly permanently "outside" dogs regularly dig under and chew through our fence, endangering my family and tearing up my landscaping and defecating throughout the yard, I know how irritating and expensive neighbors pets can be. I have also found there is absolutely no way to stop this from happening, even though I have contacted the Clovis police and Animal Control on numerous occasions. They are very accommodating but freely admit there is nothing they can do.

>
> So, adding chickens to the host of already allowed domestic pets will only add to the burden shared by the neighbors of the pet owners. If history is any indication, the vast majority of people who would keep chickens will be ill informed and ill-suited for caring for the animals. It is cruel to the animals themselves and adds to tension and hostility among neighbors.

>
> Truly a bad idea.

>
> Sincerely,

>
> Robert Palmer
> 1446 Beverly Court

>
> Clovis, CA. 93611
> rob-palmer@comcast.net<mailto:rob-palmer@comcast.net>

6/16/2020

Dear Clovis City Council Members,

Before you vote to allow backyard chickens in the city limits, please consider the serious ramifications of doing so. We live in such close proximity to one another, it will have a negative effect on many people.

Foul odor (no pun intended). We already have a huge problem with people not cleaning up after their dogs. I doubt they will keep their coops maintained.

Flies.

Noise.

Disease.

Uncontained chickens. They will fly and roost in neighboring trees.

The attraction of rodents after their feed. We already have a rat problem in Clovis.

The attraction of opossums and raccoons that are known to eat eggs and young chickens. They are also known to be major carriers of fleas.

The disposal of dead chickens. They eventually stop laying. Also, if confined in a space that is too small they may fight and peck each other to death.

If this passes it will place an increased load on the already burdened Animal Services Division. We all know a lot of people will not follow the guidelines set forth.

All of these issues need in depth consideration. Chickens belong in the country, not in 7000 (and less) square foot lots. Ask yourselves, would you want neighbors on all sides of you raising chickens? There are sound reasons this has not passed in the past. We do not feel anything positive outweighs the problems this will create.

Thank you for your time and consideration.

Sincerely,

June and Erik Vehn

John Holt

From: Lance Hofer - AOL <raiderl@aol.com>
Sent: Tuesday, June 30, 2020 1:27 PM
To: John Holt
Cc: raiderl@aol.com
Subject: Backyard chickens

Sent from my iPhone

If the City Council chooses to allow backyard chickens I would highly recommend you require a permit. I worked for the Agricultural Commissioner's Office for 42 years. 37 for Fresno County and 5 for Madera County. I am now retired. Our state has just recently been declared free of Newcastle disease. Hundreds of thousands of chickens had to be destroyed. If a disease like this hits the area, backyard chicken owners should be prepared to give up their chickens for destruction in order to protect the commercial industry. I recommend a statement as such, be placed on the permit. Also, the exact number of chickens the permittee will have. This will make it easier for the county to locate all the chickens and protect the commercial industry. I would also recommend that the chicken coop be placed a minimum of 50 feet from the property line, as there will be smell and plenty of flies. Personally, I'm not big on the idea. Complaints will increase your workload. Please pass this on to the City Council. Thank you for your time.

Lance Hofer
Purvis Ave.
Clovis, California 93611

To: Members of the Clovis City Council

My name is Larry Beston. My wife and I are registered voters and moved from Ventura County in 1987 and lived in Clovis "Country" in the North Locan area until 2003 when we then moved to Clovis city not far from Buchanan high. It was time for us to enjoy Clovis residential living. Even so, we seriously considered moving out of state because of the deterioration of California State politics but ultimately decided not to because we believe that Clovis is the gem of the valley and it has been a wonderful experience for us to feel our city grow beautifully and also that we quite possibly could never duplicate what we have here. Having said this, we feel it important to cry out to the council now to abandon any thoughts of allowing chickens to be raised in our beautiful residential developments.

Here are a few reasons why:

- 1) We are city residents; not country residents. Chickens, even only 2 or 4, have significant drawbacks if they are raised in the back or side yards of neighbors homes in our neighborhoods. I should really stop right here because the paramount issue here is that chickens just don't belong in residential neighborhoods. But I will go on.
- 2) Chickens are not quiet animals. They cluck a lot. Who needs to have the peace of their backyard interrupted by chickens on the other side of the fence clucking when they lay eggs. And that is in a residential area. Not the country!
- 3) If the chicken's cages are not cleaned well EVERY SINGLE DAY the smell of the excrement is awful and could easily waft to neighbors on 3 sides of their properties. It is not hyperbole to say that owners of the chickens cannot go away for even a day or two without needing to get someone to clean up the poop. It is not debatable. We can easily see that owners will disregard this, resulting in an awful smell for neighbors to experience.
- 4) Without establishing the minimum back yard or side yard area for raising chickens, the clucking, the odor, etc. will negatively affect the residential living experience in the small yards of many Clovis homes especially with 2-4 chickens.
- 5) Without proper protection from the heat of our summers, including shade, misters, etc the chickens will die. Extended exposure to the sun when the temperatures exceed 85 degrees will kill the bird. A cruel way to treat any animal or bird. Then what? Where is the carcass dumped and what if the owner isn't home for a few days. The dead chicken(s) decay near the property fence line.
- 6) Allowing people to raise chicken will very likely result in a significant increase in complaint calls to Clovis officials. Count on it. Will there be a plan to increase the animal control staffing?
- 7) Someone suggested that raising chickens can teach youngsters where their food comes from. Please, people, You Tube videos is a better alternative than penalizing residents who want a residential environment and not the effects of farm animals living, clucking and pooping a few feet away in a neighbor's yard.

- 8) Another suggested that raising chickens is a way for young children to learn responsibility. Please! There are so many other ways to do this including but not limited

- to having a parakeet or a cockatiel in a cage in the home where temperature control protects the birds.
- 9) What happens when the novelty of raising and caring for chickens wears off and the child/children no longer want the responsibility? Will the code provide for a humane and legal way to deal with this?
 - 10) Chickens need to walk outside of the coop and not on concrete; typically grass. Is there room to do this. Is the code going to mandate how much space is needed for a couple of chickens? Is there going to be an inspection by Clovis animal control to assure neighbors that the coop fits properly in the yard and isn't positioned too close to the fence line
 - 11) What about property values and the difficulty of selling a house if a prospective buyer knows that chickens are on the other side of the property dividing fence?
 - 12) With the study being completed it seems appropriate for the citizens to have an opportunity to read the study to determine for themselves if the study is complete, unbiased and accurate enough for Council members to make a decision. It's quite possible that many people reading the study could bring up new issues to be discussed including animal rights and protection issues.

We must ask the question every single day: Why morph our wonderful neighborhoods that have been an integral part of who we are and what we have become in Clovis into craziness of country-like neighborhoods with chickens potentially strutting around on 3 sides of our house lot?

For certain this is going to be a political hot potato. Those against the ordinance change hate it. Those who want it think it's a cool idea. Thousands could be angry enough to want a ballot measure if the ordinance change occurs.

Thanks for the opportunity to express my feelings. Hopefully Clovis will remain the gem of a residential city for us to enjoy. Thanks, also to each and every elected Council member who continue to do a great job in making us proud of our city.

Sincerely,

Larry Beston
57 Minarets Ave
Clovis, Ca
559-297-0361 home phone
559-284-7252 cell phone or text

ROBERT D. HENRY
 3186 BROWNING AVENUE, CLOVIS, CA 93619
 559-298-6827
hankmail1953@gmail.com

July 7, 2020

City Council of the City of Clovis
 1033 Fifth Street
 Clovis, CA 93612

Received

JUL 10 2020

ADMN/CITYMGR

Dear Mayor and Council Members:

I am writing to urge you to vote no on the issue of allowing chickens to be raised on small residential lots within the City. The negative impacts of raising chickens far outweigh any positive aspects and allowing them within the City will require much greater demands on the City's resources and personnel. For these, and other reasons, most cities do not allow them.

I grew up out in the country and my parents raised large broods of chickens. So throughout my childhood and teen age years, I was involved in tending chickens. Please believe me, not all chickens are the innocent little pets such as recently portrayed in the Fresno Bee. The lady raising that chicken evidently has little else to do but devote her time to the chicken. How many of us do? How many of us even want to? Chickens should be viewed as other farm animals such as pigs, cows, goats and horses. They should be raised in the country where there is room for them to roam.

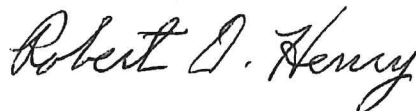
I can tell you from first-hand experience that chickens can be mean tempered, will peck and scratch you with their beaks and feet. They are noisy, clucking away non-stop during all waking hours. They excrete a large amount of fecal waste which can result in a vile smell if not kept cleaned up. They can contract diseases that are easily spread, which often result in the only solution being to destroy them. They can fly over fences if their wings are not clipped once or twice a year. They, and the eggs they lay, do attract prey animals such as foxes, coyotes, badgers, and others. Some chickens can be very cruel. I have personally witnessed chickens knock down small children and try to peck their eyes out. The typical city resident has little knowledge of what is involved in caring for chickens. It involves much more than just turning them loose in the back yard.

And speaking of turning them loose in the back yard, Clovis is becoming a City of small residential lots, which do not even have room to raise chickens, let alone the nuisance they would create for the neighbors of the chicken growers. I, and all of my immediate neighbors, live on residential lots with dimensions of 50 feet by 90 feet. There are just 10 feet between the back of my house and my rear fence line, and five feet on each side. It would be an extreme nuisance to me if my neighbors had chickens roaming in their yards. Even on a more typical sized lot with 20 to 30 feet in the back yard, the nuisance would remain. In fact, it would probably have a great enough impact to cause me to relocate.

Please do not commit the City to the additional demands on its resources and personnel. Please vote NO, and do not allow chickens on small residential lots within the City.

Sincerely yours,

Robert D. Henry



From: Chip Wipfler [mailto:chipwipfler@yahoo.com]
Sent: Wednesday, June 24, 2020 8:21 PM
To: John Holt <johnh@ci.clovis.ca.us>
Cc: Chip Wipfler <chipwipfler@yahoo.com>
Subject: Additional info on the backyard chickens proposal

Greetings John -

Would you be so kind as to send the following brief note & link to all of the City Council members as soon as is convenient?

Thank you very much.

Chip

Dear Clovis City Council - Please study the implications noted in the following article pasted below. I believe none of you would want us to face these consequences of having backyard poultry in Clovis.

Respectfully, Chip Wipfler

<https://www.eastidahonews.com/2020/06/one-person-has-died-and-465-people-have-gotten-sick-after-interacting-with-pet-poultry/>

Clovis, 7-15-2020

City Managers Office
 Att: Mr. Andrew Haussler

In Regards:

Chickens in the Back Yards
 City of Clovis

As a Resident of the beautiful City of Clovis, I like to voice my concern, as of having farm animals here, and ask, please to veto such an Idea. —
 Chickens do not belong in a city, they will smell, if not properly taken care of their coops, make noise and the Value of the House will go down, especially in an quiet Community.
 So please vote NO, to City Chickens.

Fred & Anja Hofer

Clovis, CA 93611

July 8, 2020

Clovis City Council
Attn: Lynne Ashbeck
Council Member
1033 5th St.
Clovis, CA 93612

Received

JUL 13 2020

ADMN/CITYMGR

Dear Council Member Lynne Ashbeck,

I am writing to address an amendment to a city ordinance allowing residents to have backyard chickens within the city limits. My neighbor currently has five chickens, and although I enjoy the clucking of the hens, I do not enjoy the large number of flies in my backyard near that neighbor. I do not enjoy the odor from the chickens, especially on a hot summer day, nor do I enjoy the mice/rodents and fleas that they attract. I believe chickens belong on large parcels of land for the reasons mentioned above. The homes within my neighborhood on average are 10 feet apart. The flies are a nuisance, you can imagine trying to bar-b-que or eat outside during the spring or summer. I do not live in the country for a reason. I enjoy living within Clovis' city limits because it is not the "country." Please keep farm animals outside the city limits. If Clovis residence want fresh eggs, there are local egg farms that would appreciate the business.

Thank you for your consideration,

DPTJ

A concerned Clovis resident

John Holt

From:
Sent: Monday, June 15, 2020 9:40 PM
To: John Holt
Subject: Against chickens in residential Clovis.

Please share this info anonymously as I don't want my neighbors finding out please.

Who can we contact about our concerns of the chicken idea? We are **STRONGLY AGAINST** chickens in residential areas.

- If there is only female chickens, one **at least one** will take on the role of the alpha leader and WILL crow. Chickens (female) have the ability to crow and often do crow. Our direct next door neighbor owned strictly females and they woke us up constantly at all hours. They had chickens for YEARS. They never had the proper encasement to keep them in their yard. We found chicken corpses rotting in our yard and live chickens too that we would have to walk over to the neighbor to return them. This is not an option currently as we are sheltering in place currently due to COVID- this means that if our neighbor got chickens again, we would be forced to deal with our safe space- our backyard- that's currently untouched, being contaminated with someone else's dirty chickens.
- Animal services already has a huge case load- What will the protocol for reviewing these types of chicken disturbances ? Based on the extreme stench they bring, and debris they case, and returning the chickens that jump over fences?
- What is the protocol for those that don't clean up the extreme stink that comes along with owning chickens? Or how they jump over fences constantly? *We dont feel we should have to deal with this, as it was a nuance before COVID, now we are sheltering in place and not wanting ANY thing of our neighbors in our area that we have to return...
- The city guideline used to be that if a neighbor complained you would have to get rid of them, I think that they shouldn't be allowed at all. But if they are - that this approach would be the most fair to do again- it would help to enforce people caring for the mess themselves better because of the risk of losing them...
- I just hope that there is assistance offered given as this has been an issue for us before. our neighbors ended up eating their chickens, but still have the full setup in their backyard uncleaned, so I'm sure they will get more if its allowed.
- Having lived in the country before, it is a huge reason that I was interested in a residential area home, as there was supposedly no chance of crowing chickens or roosters. I hope that the issues that they cause with sleep will be looked into, as I work a normal early morning schedule and they still woke me up middle of the nights.. I know that they put extra stress on my health by not letting me achieve a healthy sleep schedule, and I know they would effect the nurses that sleep during the day. None of us need to lose anymore sleep...
- Health risks involved in adding chickens to close proximity properties are the diseases that they can carry. I know that our family is stressed out enough currently and honestly just doesn't need anything else to worry about. Zoonotic diseases that backyard poultry may spread to humans include salmonellosis, campylobacteriosis, and **avian influenza viruses**. should be avoided until hands can be washed.
- Many people do not realize that chickens carry the bacteria on their feathers, on their feet and in their droppings. The feathers were **CONSTANTLY** in our yard when our neighbors owned chickens. Please don't bring this risk back to us. If you want to raise farm animals, please live in a farm area, reminder that we are in a residential area that shouldn't include farm conditions. The dust that their poop area creates will travel in the wind and that too poses dangers itself as you can become gravely ill from that dust alone.
- <https://www.mayoclinic.org/diseases-conditions/histoplasmosis/symptoms-causes/syc-20373495>

- <https://www.cdc.gov/salmonella/backyardpoultry-05-20/> CDC explains some of the backyard chickens can be so severe that they require hospitalization. Especially those 65 and older or with other health risks- those exact people that are currently sheltering at home, wanting their home to remain a safe space without contaminated feathers etc from chickens.
- thank you for investigating all sides of this. eggs are still readily available at the grocery store and in my opinion this is more hassle for the city to keep enforced vs its worth.
- <https://www.americanveterinarian.com/news/unregulated-backyard-chickens-pose-health-risk-study-says>
- I found a quote from an urban backyard chicken owner- While I love the idea of enhancing one's food security, taking control over some aspects of food production, and shortening the distance from farm to table, **I also think that keeping livestock on small urban lots is not ideal. It is dirty and noisy, no matter how much I tried to tell myself otherwise**, and the confinement wasn't terribly fair to the birds themselves.
- While I am strongly AGAINST backyard chickens, if they were approved there needs to be very specific rules. Like how many can a household have? Are they able to slaughter them? Or do they have to be humanely euthanized? Is there any local vets that work with chickens? Who will inspect coops? What regulations do you have for where coops can be placed? Are the chickens required to be FENCED IN with a top fencing cover - like a complete roofed cage- because they jump/fly over neighbors fences? (this is a must to keep chickens in the yards that they belong in, based on my experience)
- The smell will only be worsened in high heat, and the high heat temps are probably not safe for the poultry to live in ...
- Rodents will multiply to come and get the food that the chicken coop offers. Rats and chipmunks of sorts, that another thing the neighbors to chickens would be forced to deal with.
- Property values- lots of people are wanting to sell their houses currently and the stink and noise will definitely be considered by someone looking to purchase a home.
- If you suffer from allergies or respiratory problems, you must think very seriously about keeping birds- chickens or otherwise.
- The dander and dust created by birds is an allergen and it can occasionally cause reactions in people.
- Many people raise chicks inside their house until they are big enough to go outside- the amount of dust created is huge and anyone suffering from asthma or similar ailments will be highly stressed.
- If the allergy is mild and you want chickens anyway, a facemask will help to keep the dust from bothering you.
- **Chickens are expensive to care for.**
- “Chickens attract flies, bird mites and lice, mice, yard birds, squirrels, raccoons, dogs, coyotes, fox, mink, opossum, rats, owls, bobcats, hawks, snakes, weasels, ferrets, fishers, martens, and vandals,” says Britton Clouse. Also, a vet visit for a sick bird starts at \$50, assuming the vet even knows how to handle chickens.
- Setting up a coop with maintenance, tools, cleaning equipment, heating and cooling appliances, dishes, nets, food storage, a scale, fencing, security locks, lighting, motion detectors, monitors, cameras, and a city permit to make sure the whole thing is legal costs about \$5,000. Food, bedding, supplements, utilities, and vet care cost about \$300 more per bird, Britton Clouse says.

- <https://www.alliantcreditunion.org/money-mentor/egg-onomics-the-real-cost-of-raising-chickens> its more cost effective to BUY EGGS from the grocery store than to raise them. If a family is struggling, there is lots of food banks, churches to help but what happens when they cant afford the cost of caring for the chickens properly? Do they know how to butcher a chicken food safety-wise? Etc

Thank you for taking my concern seriously, I strongly feel that chickens being allowed will be negative for the city and the citizens. Please consider the hassles it will bring and the complaints that will come to the city to handle- we will definitely be in that same boat if our neighbors get them again, as this will strongly affect our quality of living. [REDACTED]

John Holt

From:
Sent: Monday, June 15, 2020 9:55 PM
To: John Holt
Subject: strongly AGAINST backyard chickens

please share anonymously

I have severe asthma, past cancer survivor and have autoimmune disorders. I am currently sheltering at home due to COVID high complications risk. My backyard is the only place I can hang out and get sunlight safely currently. I know a lot of my friends and family in Clovis are the same way currently about their backyard being a safe place to go outside... PLEASE don't ruin this by allowing backyard chickens as the coop dust, feathers, chickens being in our space will make our backyard a germ center. If we have dogs that didn't stay in our yard, that would be enforced- but chickens jump fences constantly, I am begging you to not make us, or anyone in a residential area have to deal with the issues that backyard chickens bring. Our direct neighbor used to have them and work me up constantly. They don't live by human hours, and the next-door neighbors work us up at 2 am and 4 am often. They did NOT just crow at sunrise- it was at odd hours. My health requires good sleep, and I don't feel someone else's pet should be able to take that away. Are we supposed to call animal control or the cops when they crow in the middle of the night? If you don't have anyone that could respond to the calls, then I would hope that, that is included in the determination of allowing them. Last summer I called animal control due to a dog being locked in a hot car, it took an hour for them to respond- because they just don't have enough people for the workload already. Chickens- Our neighbors did not care for them. Did not clean them up, did not cage them properly, did not care for them, etc. We have a rare opinion coming from a household that has already dealt with backyard chickens being next to us. There were NO positives involved. I strongly hope that they are not allowed as I feel most people will pick up the cute chicks, and be severely uneducated about the work ahead of them, or how to care for them, how much cleaning is involved -and they still smell- and the horrible creatures having chickens will attract. Please leave farm animals out in farm areas. The dust that will blow around the neighbors of chickens is a health risk, the feathers are a health risk, the poop is a health risk, the actual chickens jumping over fences is a health risk, please don't allow backyard chickens.

Thank you for taking the cities overall health into consideration this is not a ruling to be taken lightly as it can impact all of our health.

Thank you



CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Planning and Development Services

DATE: July 20, 2020

SUBJECT: Consider items associated with approximately 52 acres of land located in the southeast area of Leonard and Barstow Avenues. Glen H. Millhollin and Darlene A. Millhollin, Trustees of the Millhollin Family Trust property owners; Bonadelle Neighborhoods, applicant; Harbour & Associates, representative.

- a) Consider Approval - Res. 20-____, A request to approve an environmental finding of a Mitigated Negative Declaration for General Plan Amendment GPA2020-001, Prezone R2020-001, & Vesting Tentative Tract Map TM6304.
- b) Consider Approval - Res. 20-____, GPA2020-001, A request to amend the General Plan to re-designate approximately 34 acres from the Low Density Residential (2.1 to 4 DU/Ac) classification to the Medium Density Residential (4.1 to 7.0 DU/Ac) classification.
- c) Consider Introduction - Ord. 20-____, R2020-001, A request to prezone approximately 34 acres from the County AE20 (Exclusive Agricultural) Zone District to the Clovis R-1-PRD (Single-Family Planned Residential Development) and approximately 18 acres from the County AE-20 (Exclusive Agricultural) to the Clovis O (Open Space Conservation) zone district.
- d) Consider Approval - Res. 20-____, TM6304, A request to approve a vesting tentative tract map for a 217-lot single-family subdivision on approximately 34 acres of land.

Staff: Ricky Caperton, AICP, Senior Planner

Recommendation: Approve

- ATTACHMENTS:
1. Conditions of Approval
 2. GPA2020-001 Justification
 3. Proposed R-1-PRD Development Standards
 4. Proposed R-1-PRD Amenities
 5. Proposed Vesting Tentative Tract Map TM6304
 6. Correspondence from Commenting Agencies
 7. Correspondence from Public
 8. Planning Commission Minutes (Draft)
 9. Initial Study Mitigated Negative Declaration
 10. Draft Resolution CEQA
 11. Draft Resolution GPA2020-001
 12. Draft Ordinance R2020-001
 13. Draft Resolution TM6304

CONFLICT OF INTEREST

None.

RECOMMENDATION

Planning Commission and staff recommend that the City Council approve the following subject to the conditions of approval in **Attachment 1**:

- Approve an environmental finding of a mitigated negative declaration for General Plan Amendment GPA2020-001, Prezone R2020-001, and Vesting Tentative Tract Map TM6304;
- Approve General Plan Amendment GPA2020-001;
- Approve Prezone R2020-001;
- Approve Vesting Tentative Tract Map TM6304; and
- Make a finding of consistency that the dedication toward public right-of-way is proportionate to the development being requested.

EXECUTIVE SUMMARY

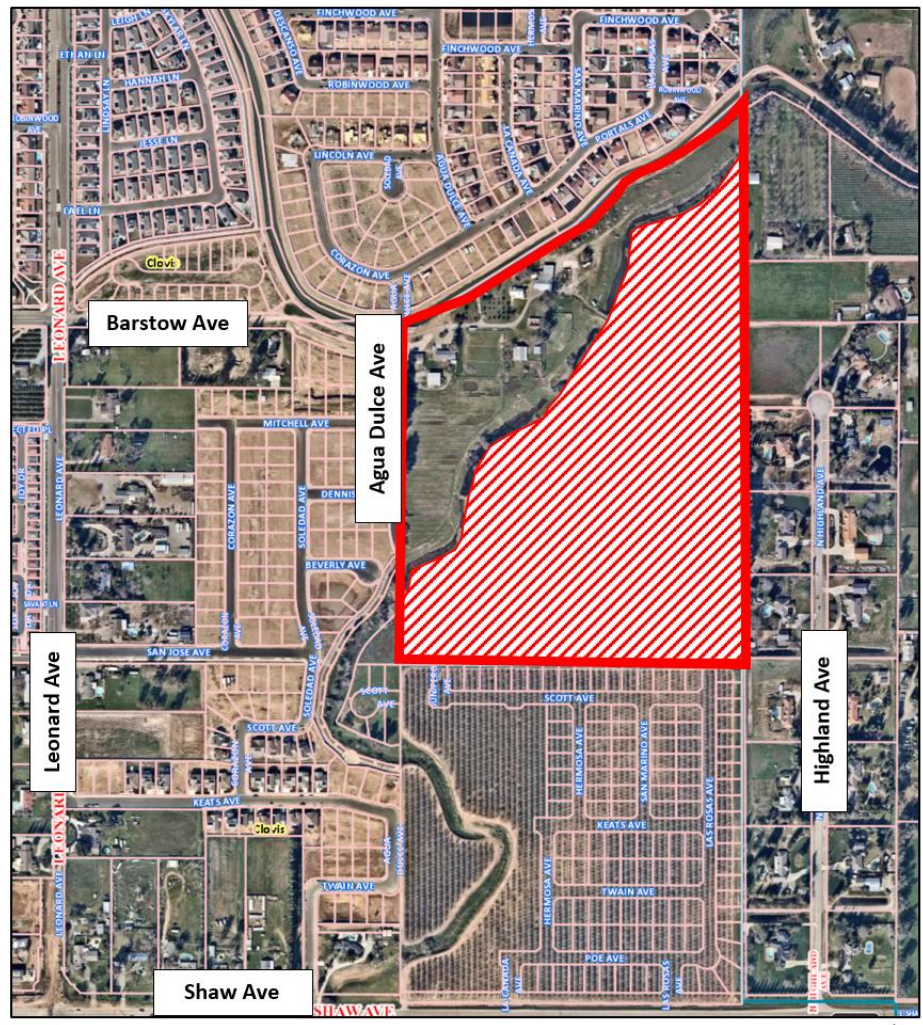
The applicant is proposing the development of a 217-lot single-family residential subdivision occupying approximately 34 acres of a total parcel size of approximately 52 acres, as shown in **Figure 1**. The remaining approximately 18 acres would not be developed as part of the proposed Project; however, would be included in the applicant's request for annexation and rezoning, which is described in more detail below. As part of the request, applications for an annexation, general plan amendment, prezone, and vesting tentative tract map have been submitted. The rezoning acreage is larger than the limits of the Project itself for purposes of creating a logical annexation boundary and because rezoning is a requisite to proposing annexation.



The general plan amendment (GPA2020-001) is a request to change the land use designation from the Low Density Residential (2.1 to 4.0) land use designation to Medium Density Residential (4.1 to 7.0 DU/Ac). The prezone (R2020-001) is a requisite for the request to annex into the Clovis City limit.

The applicant is requesting to prezone a total of approximately 52 acres, of which 34 acres are requested for the R-1-PRD (Planned Residential Development) zone district, and the remaining 18 acres for the "O" (Open Space Conservation) zone district from the County AE20 (Exclusive Agricultural) zone district.

The vesting tentative tract map (TM6304) is for the subdivision of land to be able to develop the Project site with 217 single-family homes. The Project is not proposed to include a Homeowner's Association (HOA) nor is it proposed to be gated. A recommendation of approval of this Project by the Planning Commission would allow the developer to continue processing the required entitlements.

FIGURE 1
Project Location



-  = Total Parcel (approx. 52 acres)
-  = Project Site (limits of TM6304) (approx. 34 acres)

The Planning Commission considered the Project at its June 25, 2020 meeting and adopted resolutions in support in a 4-0-1 vote (Commissioner Alma Antuna absent). Additional details summarizing the discussions at the Planning Commission meeting are provided below under the “Planning Commission Comments” section.

BACKGROUND

- General Plan Designation: Low Density Residential / Park / Open Space
- Specific Plan: Loma Vista Specific Plan
- Existing Zoning: County AE-20 (Exclusive Agricultural)
- Lot Size: Approximately 52 acres total
- Current Land Use: Rural Residential and vacant land
- Adjacent Land Uses:
 - North: Single-Family Residential
 - South: Agricultural (approved TM3123 and TM6182)
 - East: Rural Residential
 - West: Single-Family Residential (TM6181)

PROPOSAL AND ANALYSIS

The applicant requests approval of GPA2020-001, R2020-001, and TM6304 for the construction of 217 single-family homes as part of a non-gated, non-homeowner’s association planned residential development. Each of the required entitlements are described and analyzed in more detail within this report.

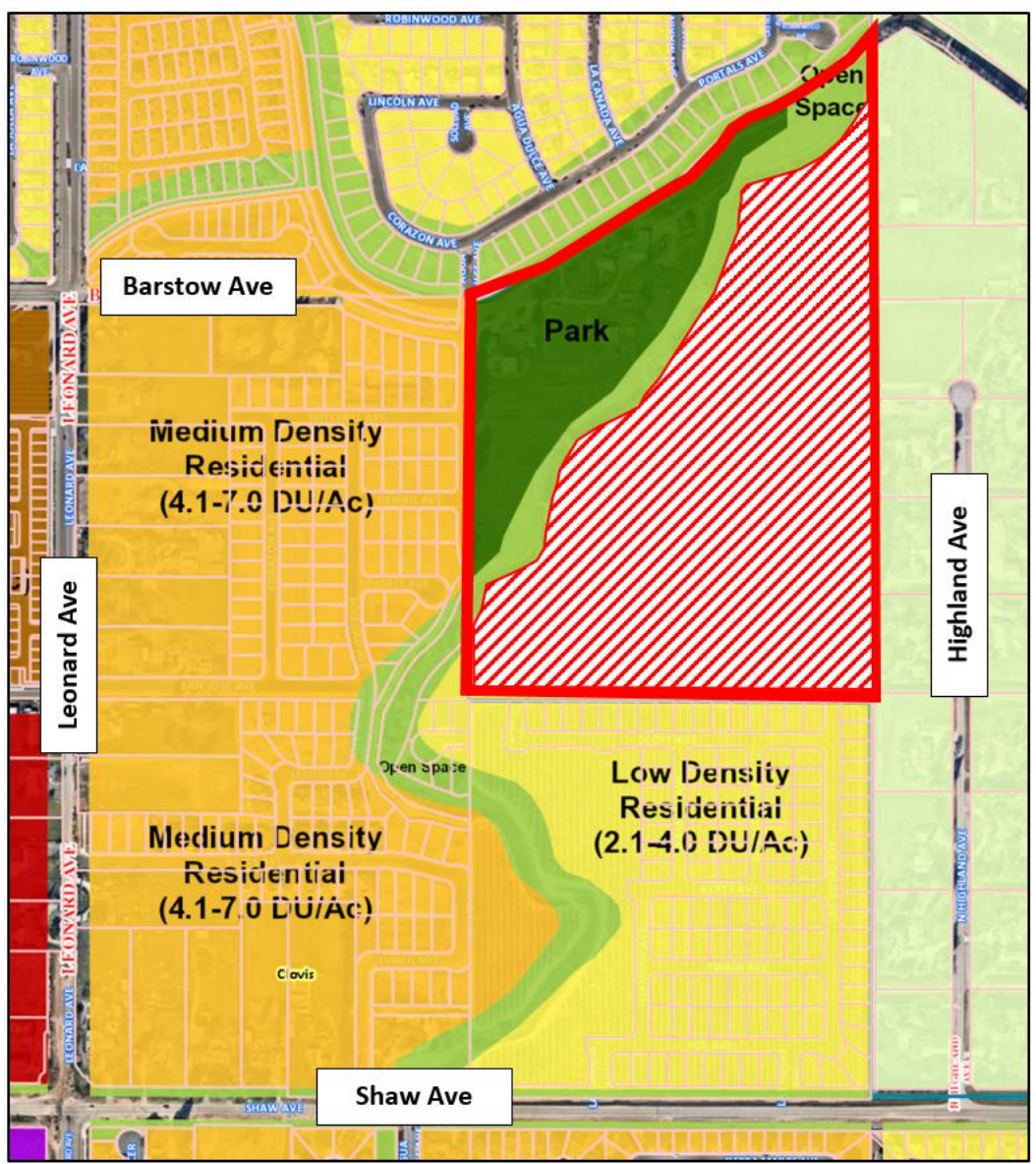
General Plan Amendment (GPA2020-001)

The applicant is requesting to amend the General Plan Land Use Diagram and the Loma Vista Specific Plan for an area currently designated as Low Density Residential (2.1 to 4.0 DU/Ac) to the Medium Density Residential (4.1 to 7.0 DU/Ac) designation. As part of the Project application, a justification letter has been provided as **Attachment 2**. This request is required for the applicant to be able to accommodate the number of units proposed by the Project. It is important to note that only an approximately 34-acre portion of the entire approximately 52-acre parcel is being proposed for re-designation under GPA2020-001. The land use designations for the remaining 18 acres would not be changed as part of this request and would remain designated as Open Space and Park, as shown in **Figure 2**.

Under the existing Low Density Residential land use designation, the Project site could support up to a maximum of 136 residential units. Under the proposed Medium Density Residential land use designation, the Project site could support up to a maximum of 238 residential units. However, the Project proposes 217 single-family lots, which is less than the maximum units allowed under the requested designation. This results in a density of approximately 6.50 DU/Ac. The Project site is surrounded by existing residential of varying densities. In general, there is a mix of rural residential, as well as newer subdivisions either approved, recently constructed, and/or under construction. North and west of the Project are recently entitled projects that have a mix of Low- and Medium-Density residential. The parcel south of the Project site has an approved tentative map under the Low Density Residential land use designation. East of the Project, along Highland Avenue, would remain in the County of Fresno and consists of rural residential properties.

Overall, the Project would be consistent with the mix of densities in the immediately surrounding area, as well as support multiple General Plan policies which call for a mix of housing types, and buildout of the Loma Vista area of the City, which is where the Project is located.

FIGURE 2
General Plan Amendment



-  = Total Parcel (approx. 52 acres)
-  = Project Site (Proposed Low Density to Medium Density Residential) (approx. 34 acres)

Prezone (R2020-001)

The applicant is requesting to prezone approximately 52 total acres from the County AE-20 (Exclusive Agricultural) zone district, of which approximately 34 acres would be prezoned to the Clovis R-1-PRD (Single-Family Residential Planned Residential Development) Zone District and the remaining approximately 18 acres to the Clovis “O” (Open Space Conservation) Zone District (**Figure 3**).

R-1-Planned Residential Development (R-1-PRD) (34 acres)

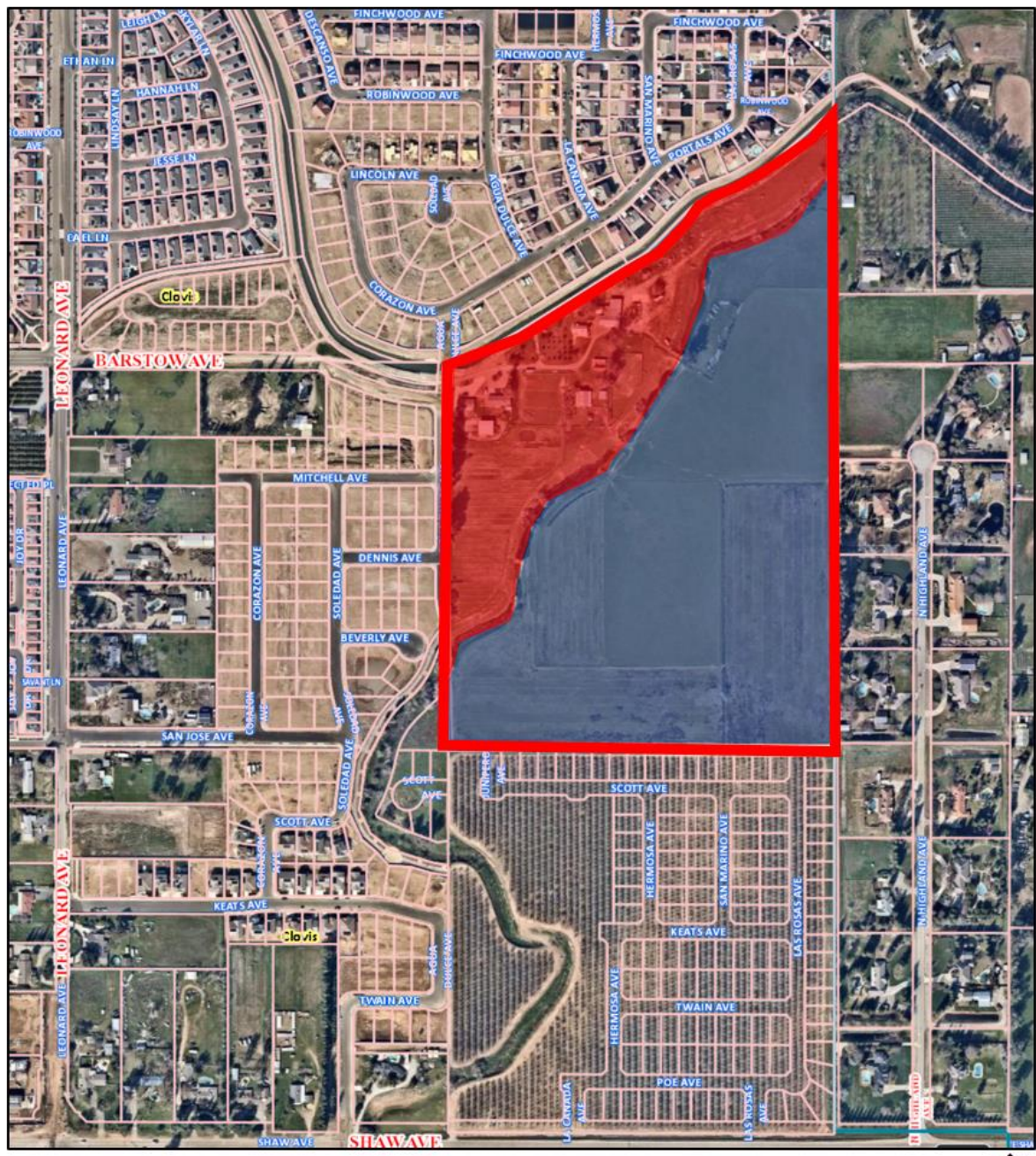
The R-1-PRD zone district would be applied to the proposed subdivision to allow for the development of 217 single-family residential units. Pursuant to state law, a prezone is required before annexation can occur.




Planned Residential Developments are allowed under Chapter 9.66, Planned Development Permits, of the Clovis Municipal Code. The purpose of Planned Development Permits is to provide a method whereby land may be designed and developed by taking advantage of modern site planning techniques thereby resulting in more efficient use of land and a better living environment than is otherwise possible through strict application of the development standards. The applicant has provided proposed development standards for individual lots, as included in **Attachment 3**, and summarized below. Of note, the applicant, in working with neighboring property owners, has agreed voluntarily to restrict lots 57, 58, 59, 64, 65, 66, 67, 68, 69, 70, and 71 to single-story homes only.

Proposed Development Standards:

Minimum Lot Area:	4,000 sq. ft.
Minimum Lot Width:	50 ft.
	35 ft. (for curved, cul-de-sac or corner lot)
Minimum Lot Depth:	80 ft.
	80 ft. (for curved, cul-de-sac or corner lot)
Maximum Lot Coverage:	65%
Maximum Height:	35 ft. (two-story homes)
	25 ft. (single-story homes)
Minimum Front Setback:	18 ft. to garage
	8 ft. to living area, porch, or projections
Minimum Side Setback:	5 ft. one side
	3 ft. other side
	8 ft. (corner/reversed corner)
Minimum Rear Yard Setback:	5 ft.
Fence Height:	6 ft. (minimum) to 8 ft. (maximum)
Accessory Structure Height:	12 ft. maximum (covered structures / accessory)
Garages:	10 ft. x 20 ft. (single-car)
	20 ft. x 20 ft. (two-car)
	10 ft. x 38 ft. (tandem)
Minimum Street Width:	50 ft. (provides for 36 ft. width curb-to-curb)
Single-Story Homes Only:	Lots 41, 42, 43, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 64, 65, 66, 67, 68, 69, 70, and 71.

FIGURE 3
Prezone



-  = Total Parcel (approx. 52 acres)
-  = County AE20 to City R-1-PRD (approx. 34 acres)
-  = County AE20 to City O (approx. 18 acres)



Parking and Driveways

Although the applicant has not yet submitted plans for residential site plan review, each unit would include a 2-car garage at a minimum size of 20 feet by 20 feet interior dimension, which is consistent with development regulations for 2-car garages. Further, each unit would have a minimum driveway length of 20 feet from back of sidewalk, which would allow additional parking areas in the driveway. Per the California Green Building Code, each home will be electric vehicle (EV) charging capable which typically includes a conduit in the garage that can accommodate a vehicle charging station.

Residential Site Plan Review

Should the Project be approved, a subsequent residential site plan review will follow this application in order to allow staff to review and memorialize landscaping, open spaces, architecture, and elevations.

Landscape

As part of the Project, the applicant will be required to install landscaping throughout the site, including the front yards of the homes and other public spaces. A separate staff level review of landscape plans will ensure compliance with the City of Clovis Water Efficient Landscape Requirement, as well as placement and location of landscaping.

Amenities

Chapter 9.66 of the Clovis Municipal Code provides for flexibility in development standards as a mechanism to accommodate new types of projects that may not otherwise comply with strict adherence to typical development standards. As part of that request, planned residential developments are required to provide amenities in proportion to the request.

In return for the reduced lot sizes, reduced setbacks, and increased lot coverage, the applicant proposes to construct a linear park near Dog Creek inclusive of a play structure and shade canopy in addition to a smaller open space area near the north end of the Project site with an informational kiosk and benches. These amenities are shown in **Attachment 4**.

Open Space Conservation (O) (18 acres)

As part of the Project, approximately 18 acres of the total 52-acre parcel would be rezoned to the "O" (Open Space Conservation) Zone District. Although this acreage is included in the Project's request for rezoning and annexation, there is no development proposed on this portion under this Project. Because the entire parcel is included in the Project, it must be rezoned as a requisite to annexation.

Under the 2014 Clovis General Plan and Loma Vista Specific Plan, this portion of the parcel is designated as Open Space and Park, and therefore the request to rezone to the Open Space Conservation Zone District would ensure a consistent zone district with the established land use designation. Although there are no immediate plans for this area, the existing rural residential use would remain. Therefore, with the exception of the rezone and annexation, no improvements would be made to this portion of the overall parcel.

Vesting Tentative Tract Map (TM6304)

The applicant is requesting approval of vesting tentative tract map TM6304 for 217 single-family lots, as well as associated infrastructure such as a network of public streets, sidewalks, a park, and other landscape features throughout the site. The map is consistent with the requirements of the Subdivision Map Act. The proposed TM6304 is provided as **Attachment 5**.

Lot Sizes

The Project proposes 217 single-family lots, as well as two (2) outlots to be used for public recreational space. The residential lots would range in size from approximately 4,000 square feet to 11,177 square feet with an average lot size of approximately 4,700 square feet.

Vehicular and Pedestrian Circulation

At full buildout, the Project would be accessible from three (3) points of ingress/egress, including a main entry along Agua Dulce Avenue, and two other (2) points of access from Shaw Avenue via Hermosa Avenue and Las Rosas Avenue. However, during the first phase of the Project, only two (2) points of access would be constructed, including the primary access via Agua Dulce Avenue, and a temporary road providing access to and from Shaw Avenue via Las Rosas Avenue. During the second phase, the other access point would be constructed (i.e. Hermosa Avenue). A vehicular bridge would be constructed spanning Dog Creek which would provide access from Agua Dulce Avenue. It is important to note that the property to the south currently has an approved vesting tentative tract map (TM6123), although it has not yet developed. Coordination between the applicant and the property owner to the south would need to occur so that the Las Rosas Avenue and Hermosa Avenue can be constructed.

The Project proposes public streets at varying widths ranging from 50 feet to 54 feet, which is consistent with City roadway width standards. The proposed streets allow for a minimum width of 36 feet from curb-to-curb, which is sufficient to accommodate vehicle parking on both sides of the street. Overall, City staff have concluded that the proposed street layout and points of access are sufficient to accommodate the traffic anticipated by the Project.

As part of the Project, pedestrian sidewalks are proposed throughout the site on all sides of the streets. Sidewalks would be constructed to City standards, which require a minimum 5 foot wide path of travel.

Thematic Elements

Branding of the Loma Vista Specific Plan with specific elements is essential to create a community and sense of place. The Project design should include a variety of materials, varying roof forms, and variety of color palette as stated in the Loma Vista Specific Plan. Thematic lighting, benches, trash receptacles, walkway treatment, and drinking fountains have also been established for the Loma Vista Specific Plan Area. Exact number and locations of these items, if applicable, shall be reviewed during the residential site plan review process. The developer will provide these details, and they will be approved by City staff in conjunction with the final map approval process with the Engineering Division.

Water and Sewer Impact

The Project's impacts to water and sewer facilities were analyzed as part of the request for a general plan amendment. Provost and Pritchard provided a summary of water impacts and concluded that the City has capacity to serve and that the infrastructure can accommodate the Project upon completion of the recommended connections. The project lies inside of the Fresno Irrigation District boundary and therefore is eligible to utilize entitled surface water from the Kings River. However, this project will pay fees to acquire additional water supplies necessary for the project demands.

Blair, Church & Flynn provided a summary of sewer impacts and concluded that the City has capacity to serve the Project. Installation of sewer lines through the proposed subdivision and outside its boundaries will be required to serve the project. As part of the Project's sewer infrastructure, the applicant shall be required to install permanent sewer infrastructure connecting to the sewer main along Shaw Avenue, which would require coordination with the property owner to the south. If a temporary lift station is proposed and approved by the City Engineer as an alternative to serve the Project, the City shall not be responsible for the maintenance and future abandonment associated with the lift station. Thus, private maintenance by a Homeowners Association or similar entity other than the applicant would be required. The City would also require a cash deposit for the future abandonment.

The City Engineer completed a review of the water and sewer analyses and concluded that the findings are adequate and that the Project can be adequately served by water and sewer.

Trails and Parks

As part of the Project, the approximately 18 acres on the western side of the Dog Creek would be rezoned to the City Open Space zone district for consistency with the existing General Plan land use designations. According to the 2014 Clovis General Plan and the Loma Vista Specific Plan, this acreage is planned for a future park and multi-purpose trail. It is important to note that the applicant would not be responsible for construction of those amenities as part of the proposed Project. However, the applicant would be subject to typical development fees (i.e. parks fee) which generally apply towards the buildout of future planned City parks. Further, the applicant would annex into the City's landscape maintenance district which is an annual assessment towards the maintenance of common landscape areas (i.e. park space) throughout the Project site.

Public Outreach

This section describes the public outreach conducted as part of the Project, including review and comments from agencies, neighborhood outreach and public comments, as well as a summary of the June 25, 2020 Planning Commission meeting.

Review and Comments from Agencies

The Project was distributed to all City Divisions as well as outside agencies, including Caltrans, Clovis Unified School District, Fresno Irrigation District, Fresno Metropolitan Flood Control District, AT&T, PG&E, San Joaquin Valley Air Pollution Control District, State Department of Fish and Wildlife, County of Fresno, and the Fresno Local Agency Formation Commission (LAFCo).

Comments received are attached only if the agency has provided concerns, conditions, or mitigation measures (see **Attachment 6**). Routine responses and comment letters are placed in the administrative record and provided to the applicant for their records.

Public Comments

A public notice was sent to area residents within 800 feet of the property boundaries prior to the Planning Commission and City Council hearings. Staff has received comments, included as **Attachment 7**.

Neighborhood Outreach

Per City policy, the applicant held two neighborhood meetings, including one on Monday, February 24, 2020, at Red Bank Elementary School, and one on Monday, July 13, 2020, at the Bonadelle Grove III Model Complex. Please note that this staff report was completed prior to the scheduled July 13th neighborhood meeting.

In addition to the two required neighborhood meetings, the applicant and staff have engaged with multiple neighbors throughout the process, including several calls, emails, and additional meetings. Of note, the applicant and staff met with a neighbor at his property on Thursday, June 18, 2020 to discuss his and other neighbors' concerns, as well as attended a neighborhood meeting on June 19, 2020 hosted by a neighboring property owner. At this meeting, there were approximately 20 neighbors. Leading up to the June 25, 2020 Planning Commission meeting, and this Council meeting, the applicant and staff have continued to engage with neighbors to address questions and concerns.

In general, the discussion points included the proposed increase in density, potential circulation and traffic impacts, as well as the height of units abutting the existing rural residential neighborhood along Highland Avenue, east of the Project site.

It is worth noting that at the time of the first neighborhood meeting (February 2020), the Project proposed 285 lots and a request to the Medium-High Density Residential (7.1 to 15.0 DU/Ac) land use designation. However, in response to neighborhood concerns, the applicant has since reduced the number of lots to 217 and is now requesting an increase in density to the Medium Density Residential (4.1 to 7.0 DU/Ac) land use designation, which is less dense than originally proposed.

In efforts to address privacy concerns, the applicant has voluntarily offered to restrict the height of units to single-story for lots 41, 42, 43, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 64, 65, 66, 67, 68, 69, 70, and 71. This restriction is reflected in the conditions of approval for the Project.

Lastly, the material of the fence along the eastern property line raised concerns by the neighbors. Per the Clovis Municipal Code the fence at this particular area would require a minimum six (6) foot high wood fence; however, neighbors requested a block/masonry wall. During discussions, the applicant agreed to split the cost of the masonry wall with the

neighbors so that half would be paid by the applicant and the other half of the cost would come from the neighboring property owners.

Planning Commission Comments

The Planning Commission considered this Project on Thursday, June 25, 2020. The Commission recommended approval of the Project by a vote of 4-0-1, with Commissioner Alma Antuna absent. In general, the Commissioners applauded the efforts of the applicant and the neighbors for working together on the addressing the concerns. While all of the concerns were not necessarily addressed, the Commissioners recognized the applicant agreed to many concessions in the process including a reduction in density, single-story lot restrictions, and the offer to pay for half of the cost of a masonry wall along the eastern property line. The draft Planning Commission minutes for the Project are provided in **Attachment 8**.

Community Facilities District

The fiscal analysis of the Southeast Urban Center Specific Plan identified possible long-term funding shortfalls in the City's operating and maintenance costs. To address this issue, the City of Clovis is implementing a Community Facilities District. Community Facilities Districts (CFD's) are a means of providing additional funding for the provision of public facilities and services for public safety, parks and recreation services, and other important municipal services in newly developing areas of the community where the City would not otherwise be able to afford to continue to provide an adequate level of service as the City continues to grow. The use of CFD's is fairly common among cities in California experiencing high rates of growth during this past decade, such as Clovis, due to significant losses of local revenue from tax shifts authorized by the State of California and the need to continue to provide an adequate level of service as growth occurs.

A condition of approval has been added to this tentative map requiring participation of this Project in the CFD.

California Environmental Quality Act (CEQA)

The City of Clovis has completed an environmental review (an assessment of the project's impact on natural and manmade environments) of the proposed Project, as required by the State of California. The City Planner has recommended approval of a mitigated negative declaration (a written statement announcing that this project will not have a significant effect on the environment). Recommendation of a proposed mitigated negative declaration does not necessarily mean this project will be approved.

The Initial Study/Mitigated Negative Declaration is provided as **Attachment 9** and the associated technical appendices can be found on the City's website (<https://cityofclovis.com/planning-and-development/planning/ceqa/>). In summary, environmental impacts were determined to be found to be less than significant with implementation of mitigation measures for Biological Resources, Cultural Resources, Geological Resources, Transportation, and Tribal Cultural Resources.

The City published notice of this public hearing in *The Business Journal* on Wednesday, July 8, 2020.

Consistency with 2014 Clovis General Plan Goals and Policies

Staff has evaluated the Project in light of the General Plan Land Use goals and policies. The following goals and policies reflect Clovis' desire to maintain Clovis' tradition of responsible planning and well managed growth to preserve the quality of life in existing neighborhoods and ensure the development of new neighborhoods with an equal quality of life. The goals and policies seek to foster more compact development patterns that can reduce the number, length, and duration of auto trips.

Goal 3: Orderly and sustainable outward growth into three Urban Centers with neighborhoods that provide a balanced mix of land uses and development types to support a community lifestyle and small town character.

Policy 3.3 **Completion of Loma Vista.** The City prioritizes the completion of Loma Vista while allowing growth to proceed elsewhere in the Clovis Planning Area in accordance with agreements with the County of Fresno and LAFCo policies.

Policy 3.5 **Fiscal sustainability.** The City shall require establishment of community facility districts, lighting and landscaping maintenance districts, special districts, and other special funding or financing tools in conjunction with or as a condition of development, building or permit approval, or annexation or sphere of influence amendments when necessary to ensure that new development is fiscally neutral or beneficial.

Goal 5: A city with housing, employment, and lifestyle opportunities for all ages and incomes of residents.

Policy 5.1 **Housing variety in developments.** The Clovis General Plan has been planned to provide a variety of housing product types suitable to each stage of a person's life. Each development should contribute to a diversity of housing sizes and types within the standards appropriate to the land use designation. This policy does not apply to projects smaller than five acres.

Policy 5.3 **Innovative housing.** Encourage innovative housing product types, including multigenerational, cooperative, and variations on live-work housing.

Policy 6.1: **Amendment criteria.** The City Council may approve amendments to the General Plan when the City Council is satisfied that the following conditions are met:

- The proposed change is and will be fiscally neutral or positive.
- The proposed change can be adequately served by public facilities and would not negatively impact service on existing development or the ability to service future development.

Consistency with Loma Vista Specific Plan Goals and Policies

In addition to conformance with many of the stated goals and policies of the 2014 Clovis General Plan, the Project is also consistent with many of the goals and policies of the Loma Vista Specific Plan. These goals and policies are identified below. The Project achieves consistency by proposing a Project that implements the orderly planned growth anticipated for this area. Further, the Project would contribute to the diversity and mix of housing product type, and will add to the character envisioned for the area.

Goal 4: Implementation of the Specific Plan. The Specific Plan will require the use of number of regulatory mechanisms for implementation. These include the following:

- Development Review Committee,
- Amendments to the General Plan and Specific Plan,
- Conditional Use Permits,
- Rezonings,
- Tentative parcel maps or tract maps,
- Site plan review, and
- Master Plans for Master Planned Communities.

Goal 5: There is to be a broad range of housing products, designs, and types in every residential project to create diversity and character.

Policy 5.1: Projects shall contribute directly to a broad range of housing types and opportunities.

Goal 6: The Specific Plan shall support a diverse community with a variety in the design of structures.

Policy 6.1: Projects shall be characterized by design features that contribute to the quality and variety of the urban environment.

Policy 7.1: Development proposals shall be evaluated on the basis of the logical extension of development and urban services from the existing developed city.

FISCAL IMPACT

None.

REASON FOR RECOMMENDATION

The proposal will provide a diversity in housing types and a quality residential environment for this area as envisioned by the General Plan, and Loma Vista Specific Plan. The Project does not substantially impact sewer, water and other public services and will contribute a proportionate share of infrastructure and open space. The proposed vesting tentative tract map is consistent with the goals and policies of the General Plan, Loma Vista Specific Plan, and Development Code. Staff therefore recommends that the City Council approve GPA2020-001, R2020-001 and TM6304, subject to the conditions of approval attached as **Attachment 1**.

For each of the requested entitlements, findings are required when considering making a decision. These findings are presented below, followed by a brief discussion on how the Project meets the finding.

General Plan Amendment GPA2020-001

The findings to consider when making a decision on a general plan amendment application include:

1. The proposed amendment is internally consistent with the goals, policies, and actions of the General Plan.

As described above under the General Plan and Loma Vista Specific Plan goals and policies, the Project meets many of the stated goals and policies of the applicable planning documents. For example, the Project would contribute to the buildout of Loma Vista, add to the mix and diversity of housing stock, and would be considered orderly development for what is envisioned in the area.

2. The proposed amendment would not be detrimental to the public interest, health, safety, convenience, or general welfare of the City.

The Project was determined not to be detrimental to the public interest, health, safety, convenience, or general welfare of the City. During review of the Project, agencies and City departments had the opportunity to review the Project to ensure consistency with City codes and regulations. Further, the Project would be adequately served by water and sewer.

3. If applicable, the parcel is physically suitable (including absence of physical constraints, access, compatibility with adjoining land uses, and provision of utilities) for the requested/anticipated project.

The Project is physically suitable for the type and intensity of Project proposed by the applicant. It is surrounded by other residential uses at varying densities, many of which are newly approved and/or constructed neighborhoods.

4. There is a compelling reason for the amendment.

The Project is consistent with the goals and policies for guiding future growth for the area, including policies and objectives of the 2014 Clovis General Plan and Loma Vista Specific Plan. For example, the Project would contribute to the buildout of Loma Vista, add to the mix and diversity of housing stock, and would be considered orderly development for what is envisioned in the area.

Rezone R2020-001

The findings to consider when making a decision on a prezone application include:

1. The proposed amendment is consistent with the goals, policies, and actions of the General Plan.

As described above under the General Plan and Loma Vista Specific Plan goals and policies, the Project meets many of the stated goals and policies of the applicable planning documents. For example, the Project would contribute to the buildout of Loma Vista, add to the mix and diversity of housing stock, and would be considered orderly development for what is envisioned in the area.

2. The proposed amendment would not be detrimental to the public interest, health, safety, convenience, or general welfare of the City.

The Project was determined not to be detrimental to the public interest, health, safety, convenience, or general welfare of the City. During review of the Project, agencies and City departments had the opportunity to review the Project to ensure consistency with City codes and regulations. Further, the Project would be adequately served by water and sewer.

3. The proposed amendment is internally consistent with other applicable provisions of the Development Code.

The Project was reviewed by other City departments and was determined to be consistent with Development Code standards, such as street widths, sidewalk width, and other provisions of the Development Code. Where inconsistencies occurred, the Project has been conditioned to meet City standards.

4. The parcel is physically suitable (including absence of physical constraints, access, compatibility with adjoining land uses, and provision of utilities) for the requested/anticipated project.

The Project is physically suitable for the type and intensity of Project proposed by the applicant. It is surrounded by other residential uses at varying densities, many of which are newly approved and/or constructed neighborhoods.

Vesting Tentative Tract Map TM6304

The findings to consider when making a decision on a tentative subdivision map application are as follows:

1. The proposed map, subdivision design, and improvements are consistent with the General Plan and any applicable specific plan.

As described above under the General Plan and Loma Vista Specific Plan goals and policies, the Project meets many of the stated goals and policies of the applicable planning documents. For example, the Project would contribute to the buildout of Loma Vista, add to the mix and diversity of housing stock, and would be considered orderly development for what is envisioned in the area.

2. The site is physically suitable for the type and proposed density of development

The Project is physically suitable for the type and intensity of Project proposed by the applicant. It is surrounded by other residential uses at varying densities, many of which are newly approved and/or constructed neighborhoods.

3. The design of the subdivision and the proposed improvements are not likely to cause substantial environmental damage or substantially and avoidably injure fish or wildlife or their habitat

As described in the Initial Study/Mitigated Negative Declaration prepared for the Project, environmental impacts were determined to be less than significant with implementation of mitigation measures.

4. The design of the subdivision or type of improvements is not likely to cause serious public health or safety problems

The Project was determined not to be detrimental to the public interest, health, safety, convenience, or general welfare of the City. During review of the Project, agencies and City departments had the opportunity to review the Project to ensure consistency with City codes and regulations. Further, the Project would be adequately served by water and sewer.

5. The design of the subdivision or the type of improvements will not conflict with easements acquired by the public at large for access through or use of property within the proposed subdivision. This finding may also be made if the review authority finds that alternate easements for access or use will be provided, and that they will be substantially equivalent to ones previously acquired by the public. This finding shall apply only to easements of record, or to easements established by judgment of a court of competent jurisdiction, and no authority is hereby granted to the review authority to determine that the public at large has acquired easements of access through or use of property within the proposed subdivision.

The Project will not conflict with easements. During final review of the Project, the City Engineer and other outside agencies would check for easements and ensure that no conflicts would occur as a result of the Project.

6. The discharge of sewage from the proposed subdivision into the community sewer system will not result in violation of existing requirements prescribed by the California Regional Water Quality Control Board.

The Project would comply with requirements for proper conveyance of sewer and water serving the site. Utility plans would be reviewed and approved by the City Engineer to ensure compliance with applicable laws.

7. The design of the subdivision provides, to the extent feasible, passive or natural heating and cooling opportunities.

The Project would comply with this condition, to the extent feasible. The Project would be subject to all current Building Code standards.

8. The proposed subdivision, its design, density, and type of development and improvements conform to the regulations of this Development Code and the regulations of any public agency having jurisdiction by law.

The Project would comply with the regulations of the Development Code. Where inconsistencies are identified, conditions of approvals have been added to ensure compliance with applicable Development Code regulations. Compliance with the Development Code would occur at various stages of plan review of the Project.

In light of court decisions, it is appropriate for the City to make findings of consistency between the required dedications and the proposed development. Every dedication condition needs to be evaluated to confirm that there is a rough proportionality, or that a required degree of connection exists between the dedication imposed and the proposed development. The City of Clovis has made a finding that the dedication of property for this Project satisfies the development's proportionate contribution to the City's circulation system. The circulation system directly benefits the subject property by providing access and transportation routes that service the site. Further, the circulation system also enhances the property's value.

ACTIONS FOLLOWING APPROVAL

The second reading of the Prezone Ordinance will be heard by the City Council at its next regular meeting and if approved, will go into effect 30 days from its passage and adoption.

Prepared by: Ricky Caperton, AICP, Senior Planner

Reviewed by: City Manager *JA*

CONDITIONS OF APPROVAL
(Revised 06-24-2020)

ATTACHMENT 1-A to 1-B

ATTACHMENT 1-A
Conditions of Approval - GPA2020-001
(revised June 24, 2020)

Planning Division Comments
(Ricky Caperton, AICP, Senior Planner – 559-324-2347)

1. Development of the single-family planned residential development shall be consistent with the General Plan Medium Density Designation (4.1 – 7.0 DU/Ac).
2. If approved, GPA2020-001 would result in a net increase in capacity of 102 allowable units on the approximately 34 acre project site by going from Low Density Residential (2.1 to 4.0 DU/Ac) to Medium Density Residential (4.1-7.0 DU/Ac). This 102 unit capacity was calculated by comparing the upper limit of the allowable Low Density range with the upper limit of the new Medium Density range. This increase in unit capacity is specifically designated to replace any loss of units that might result from the proposed Rezone R2020-003 located generally at the northeast corner of Clovis and Dakota Avenues.

ATTACHMENT 1-B
Conditions of Approval – TM6304
(revised June 24, 2020)

Planning Division Comments
(Ricky Caperton, Senior Planner – 559-324-2347)

1. Prezone R2020-001 approves an R-1-PRD (Planned Residential Development) zone district on approximately 34 acres and an O (Open Space Conservation) zone district on approximately 18 acres of the total approximately 52-acre site.
2. Rezone R2020-001 shall become effective only upon approval of General Plan Amendment GPA2020-001 by City Council.
3. This Project is subject to the development standards of the Clovis General Plan, Loma Vista Specific Plan, and/or those set forth under the R-1-PRD as part of R2020-001, upon approval by City Council.
4. The applicant shall notify all property owners within the annexation boundary and along streets where new water and sewer utilities will be constructed to determine if they wish to purchase a lateral connection per City policy.
5. The applicant shall obtain City approval in advance of temporary and permanent subdivision signs through separate sign review, consistent with the development criteria of the Clovis Municipal Code Sign Ordinance.
6. The density within TM6304 shall be consistent with the Medium Density Residential (4.1 to 7.0 DU/Ac) land use designation under GPA2020-001, upon approval by City Council.
7. Setbacks shall be measured to the exterior face of the framing of the structure. Exceptions to the setbacks are identified in §9.24.100, of the Clovis Municipal Code.
8. The developer shall construct a fence along the property line of adjacent rural residential properties that will not impact the existing and/or permitted animals.
9. All transformers for this subdivision shall be located underground. Pad mounted transformers may be considered through approval of an administrative use permit.
10. The developer shall record a Covenant regarding a “right to farm,” for adjacent property owners. Such agreement shall be disclosed to all future home buyers.
11. Landscape plans shall be reviewed and approved separately by the landscape review committee for tree and landscape type and location.

12. Prior to the submittal of civil plan review, the applicant shall submit a tree plan showing all existing trees with their variety. A tree remove/protection plan shall be reviewed and approved by the Director. Trees shall not be removed without approval from the Director.
13. Upon final recordation of this vesting tentative tract map, it shall be the applicant's responsibility to furnish to the Planning Department an electronic (PDF) copy of the original map obtained from the Fresno County Recorder's Office.
14. The applicant shall relay all conditions of approval for Vesting Tentative Tract Map TM6304 to all subsequent purchasers of individual lots, if applicable, and/or to subsequent purchasers of this entire tract map development.
15. The applicant shall record a Notice of Nonconformance dealing with any structure used for model homes where the garage is converted for the use as a sales office.
16. The applicant shall contribute a proportionate share towards the development of a "trail" system as required by the General Plan land use diagram.
17. All lighting shall be screened from direct view from the public right-of-way and adjacent residential properties.
18. All landscaping (open space and private yards) shall conform to the City of Clovis Water Efficient Landscape Ordinance.
19. The developer shall comply with all mitigation measures identified in the initial study mitigated negative declaration prepared for the Project.
20. This vesting tentative tract map is approved per **Attachment 5** of the staff report for the project.
21. As an amenity for the Project, the developer shall include a park and open space, public seating, shade structure, and playground features as shown TM6304 (**Attachment 5**) and on **Attachment 4** to the staff report for the project.
22. This Project requires the submittal and approval of a residential site plan review (RSPR). Specific color and materials of the models, walls, landscaping, and fencing will be evaluated during that review.
23. The applicant shall install pedestrian lighting along common areas. Spacing and location will be evaluated during the RSPR process.
24. Lots 41, 42, 43, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 64, 65, 66, 67, 68, 69, 70, and 71, as shown on the approved TM6304, shall be restricted to single-story units only, at a maximum height of no greater than 25 feet.

25. The developer shall construct a minimum six-foot high fence along the property lines as shown on the approved TM6304.
26. Development standards for TM6304 shall be per the R-1-PRD standards approved under R2020-001, and are as follows:

Minimum Lot Area:	4,000 sq. ft.
Minimum Lot Width:	50 ft. 35 ft. (for curved, cul-de-sac or corner lot)
Minimum Lot Depth:	80 ft. 80 ft. (for curved, cul-de-sac or corner lot)
Maximum Lot Coverage:	65%
Maximum Height:	35 ft. (two-story homes) 25 ft. (single-story homes)
Minimum Front Setback:	18 ft. to garage (20 ft. from back of sidewalk) 8 ft. to living area, porch, or projections
Minimum Side Setback:	5 ft. one side 3 ft. other side 8 ft. (corner/reversed corner)
Minimum Rear Yard Setback:	5 ft.
Fence Height:	6 ft. (minimum) to 8 ft. (maximum)
Accessory Structure Height:	12 ft. maximum (covered structures / accessory)
Garages:	10 ft. x 20 ft. (single-car) (interior clear) 20 ft. x 20 ft. (two-car) (interior clear) 10 ft. x 38 ft. (tandem) (interior clear)
Minimum Street Width:	50 ft. (provides for 36 ft. width curb-to-curb)
Single-Story Homes Only:	Lots <u>41, 42, 43, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 64, 65, 66, 67, 68, 69, 70, & 71.</u>

Fire Department Conditions
(Gary Sawhill, Department Representative - 324-2224)

Roads / Access

27. **Access from Adjacent Tracts:** Road access from Barstow thru Tract 6181 and access roads thru Tract 6123 from the south shall be completed prior to home building on this project.
28. **Two Points of Access:** Any development to this parcel will require a minimum of two (2) points of access to be reviewed and approved by the Clovis Fire Department. All required access roads shall be constructed per City of Clovis streets standards and completed prior to any occupancy of the project.
29. **Street Width:** Fire apparatus access width shall be determined by measuring from “base of curb” to “base of curb” for roadways that have curbs. When roadways do not

have curbs, the measurements shall be from the edge of the roadway surface (approved all weather surface).

30. **Street Width for Single Family Residences:** Shall comply with Clovis Fire Standard #1.1
31. **Street Width for Single Family Residences:** Minimum Access Road Width of 36 feet for Single Family Residences. Roads 36 feet or wider allow for Parking on both sides of street.
32. **Turning Radius:** All access way roads constructed shall be designed with a minimum outside turning radius of forty-five feet (45')
33. **Security Gates:** All security gates shall comply with Clovis Fire Department Gates Standard #1.5. Plans shall be submitted for review and permits issued by Fire Department prior to installation. Gates shall be inspected and tested for operation prior to any occupancy.
34. **Temporary Street Signs:** The applicant shall install temporary street signs that meet City Temporary Street Sign Standard #1.9 prior to issuance of building permits within a subdivision.
35. **All Weather Access & Water Supply:** The applicant shall provide an all-weather access road with compacted base rock and designated by signage that states "No Parking Fire Lane" per Clovis Fire Department Standard #1.2 or #1.3.
36. **Conceptual Plans Submitted:** The applicant shall provide conceptual plans for the development of adjoining property and road system.
37. **Fire Lane:** The fire lanes curbs shall be painted red as per Clovis Fire Department Standard #1.1 and identified on site plan.

Water Systems

38. **Residential Fire Hydrant:** The applicant shall install ___17___ 4 ½" x 2 ½" approved Residential Type fire hydrant(s) and "Blue Dot" hydrant locators, paint fire hydrant(s) yellow with blue top and caps, and paint the curb red as specified by the adopted Clovis Fire Department Standard #1.4. Plans shall be submitted to the Clovis Fire Department for review and approval prior to installation. The hydrant(s) shall be charged and in operation prior to any framing or combustible material being brought onto the site. Hydrants curb markings and blue dots to be completed prior to occupancy of any homes.
39. **Looped Water Main:** The applicant shall install approved looped water main capable of the necessary flow of water for adequate fire protection and approved by the Clovis

Fire Department.

Administration Department Conditions
(John Holt, Department Representative – (559) 324-2111)

40. Prior to approval, recordation or filing of an annexation, final map, or site plan, the property covered by the project shall be included within or annexed to a Community Facilities District (CFD), established by the City for the provision of public facilities and services, for which proceedings have been consummated, and shall be subject to the special tax approved with the formation or annexation to the CFD. The CFD applies only to residential projects.
41. The applicant and the property owner acknowledge and agree that if the project were not part of a CFD, the City might lack the financial resources to operate facilities and provide public services, such as police protection, fire protection, emergency medical services, park and recreation services, street maintenance and public transit. Absent the requirement for inclusion of the project within a CFD, the City might not be able to make the finding that the project is consistent with the General Plan and relevant specific plans and might not be able to make the findings supporting approval of the project as required by the Subdivision Map Act and the California Environmental Quality Act, and the City might be required to deny the application for the project.
42. The owner/developer shall notify all potential lot buyers prior to sale that this project is a part of a Community Facilities District and shall inform potential buyers of the special tax amount. Said notification shall be in a manner approved by the City. This requirement may be waived at the discretion of the City Council if, at the time of the approval, recordation or filing of the project, the City Council has determined that it is not necessary that the project be included in the CFD.
43. The applicants shall reimburse the City for any expense associated with the transition agreement for fire services with the Fresno County Fire Protection District that would apply to this proposal.

ENGINEERING / UTILITIES / SOLID WASTE DIVISION CONDITIONS
(Sean Smith, Engineering Division Representative – 324-2363)
(Paul Armendariz, Department Representative – 324-2649)

Maps and Plans

44. The conditions of this tract map are written under the assumption that all dedications and improvements have been completed by the adjacent TM 6181 development, and that these dedications and improvements have been accepted by the City. Additional conditions shall be required at the discretion of the City Engineer, if the improvements and dedications by TM 6181 have not been accepted by the City.

45. The applicant shall have a final tract map prepared, in the form prescribed by the Subdivision Map Act and City of Clovis Municipal Code. The final tract map shall be submitted to the City of Clovis Engineering Division, and should include, but not be limited to, final tract map, the current filing fee, closure calculations, current preliminary title report, legal descriptions and drawings of required dedications.
46. The applicant shall submit separately to the City of Clovis Engineering Division, a set of construction plans on 24" x 36" sheets with City standard title block for all required improvements and a current preliminary title report. These plans shall be prepared by a registered civil engineer, and shall include a grading plan, landscape plan, a site plan showing trash enclosure locations and an overall site utility plan showing locations and sizes of sewer, water, storm drain, and irrigation mains, laterals, manholes, meters, valves, hydrants, fire sprinkler services, other facilities, etc. Plan check and inspection fees per City of Clovis Resolution No. 18-61 shall be paid with the first submittal of said plans. All plans shall be submitted at or before the time the building plans are submitted to the Building Division and shall be approved by the City and all other involved agencies prior to the release of any development permits.
47. Prior to the initial submittal of the improvement plans, the applicant shall contact Sean Smith at (559) 324-2363 to setup a coordination meeting (Pre-submittal Meeting).
48. Upon approval of improvement plans, the applicant shall provide the City with the appropriate number of copies. After all improvements have been constructed and accepted by the City, the applicant shall submit to the City of Clovis Engineering Division (1) digital copy to the City in PDF format of the approved set of construction plans revised to accurately reflect all field conditions and revisions and marked "AS-BUILT" for review and approval. Upon approval of the AS-BUILTs by the City, and prior to granting of final occupancy or final acceptance, the applicant shall provide (1) digital copy to the City in PDF format.

General Provisions

49. The applicant shall pay all applicable development fees at the rate in effect at the time of payment and prior to final map approval by Council or have the fees payable directly to the City through a separate escrow account at the time of recordation of the map.
50. The applicant is advised that, pursuant to California Government Code, Section 66020, any party may protest the imposition of fees, dedications, reservations, or other exactions imposed on a development project by a local agency. Protests shall be filed in accordance with the provisions of the California Government Code and shall be filed within 90 days after conditional approval of this application is granted. The 90 day protest period for this project shall begin on the "date of approval" as indicated on the "Acknowledgment of Acceptance of Conditions" form.

51. All reimbursement requests shall be prepared and submitted in accordance with the requirements of the current version of the "Developer Reimbursement Procedures" a copy of which may be obtained at the City Engineer's Office.
52. The applicant shall install all improvements within public right-of-way and easements in accordance with the City of Clovis standards, specifications, master plans, and record drawings in effect at the time of improvement plan approval.
53. The applicant shall address all conditions, and be responsible for obtaining encroachment permits from the City of Clovis for all work performed within the City's right-of-way and easements.
54. The applicant shall submit a soils report or a waiver of soils report to the City of Clovis Engineering Division for approval by the City Engineer.
55. The applicant shall provide and pay for all geotechnical services per City policy.
56. The applicant shall comply with the requirements of the local utility, telephone, and cable companies. It shall be the responsibility of the applicant to notify the local utility, telephone, and cable companies for the removal or relocation of utility poles where necessary. The City shall not accept first submittals without proof that the applicant has provided the improvement plans and documents showing all proposed work to the utility, telephone, and cable companies. All utility vaults in which lids cannot be sloped to match proposed finished grading, local utilities have 5% max slope, shall be located in sidewalk areas with pedestrian lids so the lid slope matches sidewalk cross slope.
57. All existing overhead and new utility facilities located on-site, within alleys, or within the street right-of-way along the streets adjacent to this tract shall be undergrounded unless otherwise approved by the City Engineer.
58. The applicant shall contact and address all requirements of the United States Postal Service Clovis Office for the location and type of mailboxes to be installed. The location of the facilities shall be approved by the City Engineer prior to approval of improvement plans or any construction.
59. The applicant shall contact and address Caltrans requirements. The applicant shall be required to mitigate impacts to State Highway facilities as determined by the City Engineer.

Dedications and Street Improvements

60. The applicant shall provide right-of-way acquisition or dedicate free and clear of all encumbrances and/or improve the following streets to City standards. The street improvements shall be in accordance with the City's specific plans and shall match existing improvements. The applicant's engineer shall be responsible for verifying the type, location, and grades of existing improvements.

61. Interior Streets – Dedicate to provide for 50' or 54' of right-of-way in conformance with the City policy on street widths, and improve with curb, gutter, 5' sidewalk adjacent to the curb, drive approaches, curb return ramps, streetlights, permanent paving, and all transitional paving as needed.
62. Prior to recordation of the final map, the applicant shall obtain the right-of-way necessary to provide a paved roadway to serve as a second point of access to Shaw Avenue. The roadway shall be designed to carry 80,000-lbs. emergency vehicles.
63. Temporary Turnabouts – Dedicate to provide for a 48' radius and install 45' of permanent/temporary paving plus 3' paved swale at the south end of Hermosa Avenue.
64. Install the bridge crossing Dog Creek at Agua Dulce Avenue.
65. The applicant shall provide a dedication for a 10' public utility easement, where applicable, along all frontages or alternate widths approved by the utilities companies.
66. For new onsite ADA paths of travel that connect to the City sidewalk, the applicant shall replace enough sidewalk to provide a compliant landing with appropriate transitions to existing sidewalk grades.
67. The applicant shall not install any fences, temporary or permanent in public right-of-way.
68. The sideyard side of all corner lots shall have full width sidewalk except where planter strips or meandering sidewalk is proposed.
69. The applicant shall obtain "R Value" tests in quantity sufficient to represent all street areas, and have street structural sections designed by a registered civil engineer based on these "R Value" tests.
70. The applicant shall, at the ends of any permanent pavement abutting undeveloped property, install 2" x 6" redwood header boards that shall be placed prior to the street surfacing.
71. Standard barricades with reflectors shall be installed at ends of streets abutting undeveloped property and any other locations to be specified by the City Engineer.

Sewer

72. The applicant shall identify and abandon all septic systems to City standards.
73. The applicant shall install sanitary sewer mains of the size and in the locations indicated below, prior to occupancy. The sewer improvements shall be in accordance

with the City's master plans and shall match existing improvements. The applicant's engineer shall be responsible for verifying the size, location, and elevations of existing improvements. Any alternative routing of the mains shall require approval of the City Engineer and shall be supported by appropriate calculations.

- a. Agua Dulce Avenue – install 8" main between Dog Creek and Hermosa Avenue.
- b. Hermosa Avenue – install 8" main between Agua Dulce Avenue and Shaw Avenue.
- c. Shaw Avenue – install 8" main between Hermosa Avenue and the prolongation of the east property line.
- d. Shaw Avenue – install 10" main between the prolongation of the east property line and Leonard Avenue.
- e. Interior Streets – install 8" mains.

74. The applicant shall provide dedication of a 15' wide utility easement for all on-site sewer mains, not located in otherwise dedicated rights-of-way.

75. The applicant shall install one (1) 4" sewer service house branch to each lot within the tentative tract.

76. The applicant shall notify all property owners annexed to the City and along streets where a new sewer main will be constructed to determine if they wish to be connected to City sewer. Property owners shall work directly with the applicant regarding costs and location. The applicant shall notify property owners that sewer connection fees are required if they choose to connect.

Water

77. The applicant shall identify and abandon all water wells to City standards.

78. The applicant shall install water mains of the sizes and in the locations indicated below, and provide an adequately looped water system prior to occupancy. The water improvements shall be in accordance with the City's master plans and shall match existing improvements. The applicant's engineer shall be responsible for verifying the size, location, and elevations of existing improvements. Any alternative routing of the mains shall require approval of the City Engineer and shall be supported by appropriate calculations.

- a. Agua Dulce Avenue – install 12" main between Dog Creek and Hermosa Avenue.
- b. Hermosa Avenue – install 12" main between Agua Dulce Avenue and Shaw Avenue.
- c. Shaw Avenue – install 18" main between Hermosa Avenue and Leonard Avenue.
- d. Interior Streets – install 8" mains.

79. The applicant shall provide dedication of 15-foot wide utility easements for all on-site water mains, hydrants, blow-offs, and water meters not located in otherwise dedicated rights-of-way.
80. The applicant shall install a City standard water service to each lot of the proposed subdivision. Water services shall be grouped at property lines to accommodate automatic meter reading system, including installation of connecting conduit. The water meter shall be placed in the sidewalk and not in planters or driveways.
81. The applicant shall notify all property owners' annexed to the City and along streets where a new water main will be constructed to determine if they wish to be connected to City water. Property owners shall work directly with the applicant regarding costs and location. The applicant shall notify property owners that water connection fees are required if they choose to connect.
82. Prior to recording a final map of any phase, the applicant shall demonstrate to the satisfaction of the City Fire Chief and City Engineer that there is adequate water pressure to serve the units to be constructed. The applicant shall work with the City Engineer to determine the adequacy of water supply/pressure for the proposed development.

Recycled Water

83. The applicant shall install recycled water mains of the sizes and in the locations indicated below. The recycled water improvements shall be in accordance with the City's master plans and shall match existing improvements. All areas utilizing recycle water for irrigation shall be clearly marked on the improvement plans. The applicant's engineer shall be responsible for verifying the size, location, and elevations of existing improvements. Any alternative routing of the mains shall require approval of the City Engineer and may require appropriate calculations.
- a. Agua Dulce Avenue – install 12" main from Dog Creek to Hermosa Avenue.
 - b. Hermosa Avenue – install 12" main from Agua Dulce Avenue to the southern limit of the tract.

Grading and Drainage

84. The applicant shall contact the Fresno Metropolitan Flood Control District (FMFCD) and address all requirements, pay all applicable fees required, obtain any required NPDES permit, and implement Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology to reduce or eliminate storm water pollution. Plans for these requirements shall be included in the previously required set of construction plans, and shall be submitted to and approved by FMFCD prior to the release of any development permits.

85. Portions of the project appear to lie within a flood zone. The applicant shall comply with the requirements of the City's Municipal Code.
86. In the event permanent storm drainage facilities are not available, the applicant shall provide temporary on-site retention basins for storm water disposal and provide a cash deposit for each basin to offset the City's cost of maintaining the basins. The size and design shall be in accordance with the requirements of the City Engineer and may change based on design calculations and access requirements for maintenance. The temporary pond maintenance deposit shall be based on size, depth, expected maintenance schedule, etc. However, the property owner shall be responsible for periodic cleaning of toxic material. The temporary basin is solely for the convenience of the subdivision.
87. The owner of the property on which the temporary basin(s) are located shall backfill said basin(s) within ninety (90) days after notice is given by the City that the basin(s) are no longer needed. In the event the owner fails to backfill said basin(s) within said 90 days, the City may cause the basin to be backfilled. A lien to cover the cost of the work will be placed on the property, including the costs to prepare and enforce the lien. A covenant shall be prepared and recorded on the lot on which the basin(s) is/are located.
88. Grade differentials between lots and adjacent properties shall be adequately shown on the grading plan and shall be treated in a manner in conformance with City of Clovis Standard Drawing No. M-4 as modified by the City Council. Any retaining walls required on-site or in public right of way shall be masonry construction. All retaining walls shall be designed by a registered civil engineer.

Irrigation and Landscaping Facilities

89. All park and landscape improvements shall be installed, accepted for maintenance by the City prior to issuance of 40% of the Tract's building permits. If the improvements are not constructed on Outlots A and B for any reason within two (2) years of the recordation of the final map of Tract, City shall have the right to request from surety and receive upon City's demand, sufficient funding to complete the construction of improvements for the park. The two year period may be extended at City's sole option and discretion and upon such conditions as City shall determine.
90. The owner shall request annexation to and provide a covenant for the Landscape Maintenance District. The property owner acknowledges and agrees that such request serves as a petition pursuant to California State Proposition 218 and no further election shall be required for the establishment of the initial assessment. The assessment for each lot shall be obtained from the City for the tax year following the recordation of the final map. The estimated annual assessment per average sized lot is \$431.00, which is subject to change prior to issuance of building permit or final tract map approval and is subject to an annual change in the range of the assessment in the amount of the Consumer Price Index, U.S. City Average, All Urban Consumers

(CPI Index), plus two percent (2%). The additional landscaping enhancements that exceed the City norms and are specific benefit to the property, such as the entry feature, columns, monuments, interior median islands, round-a-bouts, special street lights, etc, if determined to be maintained by the Landscape Maintenance District, shall be maintained by an additional landscape maintenance assessment. The applicant shall provide construction costs and deposit with the City an amount equal to 50% of the value of the enhanced landscaping hardscape features, or an alternate amount approved by the City Engineer, such as columns, monuments, and special street lights, that exceeds the City norms. The applicant shall provide the City with an estimate of the annual maintenance for the special lighting and landscaping enhancements that exceeds the City norms. The owner/developer shall notify all potential lot buyers before they actually purchase a lot that this tract is a part of a Landscape Maintenance District and shall inform potential buyers of the assessment amount. Said notification shall be in a manner approved by the City. The owner/developer shall supply all pertinent materials for the Landscape Maintenance District.

91. The applicant shall comply with the City of Clovis Water Efficient Landscape Requirements Ordinance.
92. The applicant shall contact and address all requirements of the Fresno Irrigation District (FID). This may include dedicating easements, piping or relocating any existing FID canals and ditches, replacing any existing irrigation piping, concrete lining or improving any existing canals, construction or reconstruction of any canals, culverts, and bridge crossings. Plans for these requirements and improvements shall be included as in the previously required set of construction plans, and shall be submitted to and approved by FID prior to the release of any development permits or recording of the final tract map. If a FID or private irrigation line is to be abandoned, the applicant shall provide waivers from all downstream users.
93. The applicant shall indicate on construction drawings the depth, location and type of material of any existing Fresno Irrigation District's irrigation line along the proposed or existing street rights-of-way or onsite. Any existing canals shall be piped. The material of the existing pipe shall be upgraded to the proper class of rubber gasket pipe at all locations unless otherwise approved by the City Engineer.
94. The applicant shall apply to the Fresno Irrigation District (FID) for transfer of irrigation water rights to the City of Clovis, if the property has not already been removed from FID and transferred to the City. The applicant shall execute a "Request for Change of Relative Value" that can be obtained and processed through FID. The applicant shall provide a copy of the completed form to the City.
95. All existing agricultural irrigation systems either on-site or in public right of way, whether FID or privately owned, shall be identified prior to any construction activity on the site. Service to all downstream users of irrigation water shall be maintained at all times through preservation of existing facilities or, if the existing facilities are required

to be relocated, the relocation and replacement of the existing facilities. It is the intent that downstream users not bear any burden as a result of development of the site. Therefore, the applicant shall pay all costs related to modification, relocation, or repair of any existing irrigation facilities resulting from or necessitated by the development of the site. The applicant shall identify on site plans and construction plans, all existing irrigation systems and their disposition (abandonment, repair, relocation, and/or piping). The applicant shall consult with the Fresno Irrigation District for any additional requirements for lines to be abandoned, relocated, or piped. The applicant shall provide waivers from all users in order to abandon or modify any irrigation pipelines or for any service interruptions resulting from development activities.

Miscellaneous

96. The applicant shall install thirty-two (32) Loma Vista decorative street lights per the attached street light exhibit. Street lights along the major streets shall be installed on metal poles to local utility provider's standards at the locations designated by the City Engineer. Street light locations shall be shown on the utility plans submitted with the final map for approval. Street lights at future traffic signal locations shall be installed on approved traffic signal poles, including all conduits and pull boxes. Street lights along the major streets shall be owned and maintained by local utility providers. Proof of local utility provider's approval shall be provided. The applicant may install thematic lighting, as approved by the City Engineer. If the applicant chooses to install thematic lighting, the applicant shall provide a conceptual lighting plan identifying adjacent properties that may be incorporated with thematic lights to create a neighborhood effect. Thematic lighting owned by the City shall be maintained by an additional landscape maintenance assessment.
97. The applicant shall provide a Solid Waste Receptacle Locations covenant for lots located where solid waste receptacles cannot be properly serviced as determined by the Solid Waste manager. A recordable covenant shall be submitted to and approved by the City Engineer prior to final map approval.
98. Any existing section corner or property corner monuments damaged by this development shall be reset to the satisfaction of the City Engineer. A licensed land surveyor or civil engineer licensed to perform land surveying shall certify the placement of all required monumentation prior to final acceptance. Brass caps required for replacement of existing monuments shall be provided by the contractor/the applicant and approved by City prior to installation. Within five days after the final setting of all monuments has been completed, the engineer or surveyor shall give written notice to the City Engineer that the final monuments have been set. Upon payment to the engineer or surveyor for setting the final monuments, the applicant shall present to the City Engineer evidence of the payment and receipt thereof by the engineer or surveyor.
99. A deferment, modification, or waiver of any engineering conditions shall require the express written approval of the City Engineer.

100. The conditions given herein are for the entire development. Additional requirements for individual phases may be necessary pending review by the City Engineer.

Fresno Irrigation District

(Chris Lundeen, FID Representative – 233-7161 ext. 7410)

101. The Applicant shall refer to the attached Fresno Irrigation District correspondence. If the list is not attached, please contact the FID for the list of requirements.

County of Fresno Health Department Conditions

(Kevin Tsuda, County of Fresno Health Department Representative – 600-3271)

102. The Applicant shall refer to the attached Fresno County Health Department correspondence. If the list is not attached, please contact the Health Department for the list of requirements.

County of Fresno Public Works and Planning

(Thomas Kobayahsi, County of Fresno Representative – 600-4205)

103. The Applicant shall refer to the attached Fresno County Public Works and Planning correspondence. If the list is not attached, please contact the Public Works and Planning for the list of requirements.

California Department of Transportation

(Jamaica Gentry, Caltrans Representative – 488-7307)

104. The Applicant shall refer to the attached Caltrans correspondence. If the list is not attached, please contact the Caltrans for the list of requirements.

Clovis Unified School District

(Michael Johnston, CUSD Representative – 327-9000)

105. The Applicant shall refer to the attached CUSD correspondence. If the list is not attached, please contact the CUSD for the list of requirements.

San Joaquin Valley Air Pollution Control District

(Carol Flores, SJVAPCD Representative – 230-55935)

106. The Applicant shall refer to the attached SJVAPCD correspondence. If the list is not attached, please contact the SJVAPCD for the list of requirements.

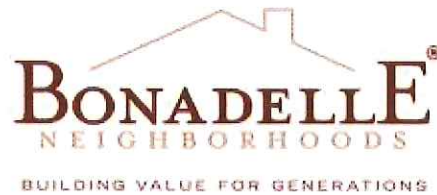
Fresno Metropolitan Flood Control District

(Mikel Meneses, FMFCD Representative – 456-3292)

107. The Applicant shall refer to the attached FMFCD correspondence. If the list is not attached, please contact the FMFCD for the list of requirements.

GPA2020-001
JUSTIFICATION

ATTACHMENT 2



June 2nd, 2020

City of Clovis
1033 Fifth Street
Clovis, Ca 93612

Attn: Ricky Caperton, AICP, Senior Planner

Re: TTM 6304

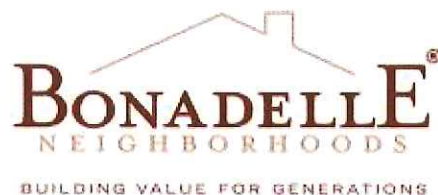
Letter of Justification

APN: 554-052-10 (portion)

Dear Mr. Caperton,

Bonadelle Neighborhoods believes the requested increase in the General Plan land use designations for this property will facilitate a considerably better implementation of the adopted Loma Vista Village Specific Plan. In addition to the supporting reasons outlined throughout this letter, Bonadelle Neighborhoods believes there are three primary reasons for justifying the requested density increase:

- The Loma Vista Specific Plan initially projected an approximate total of 10,700 number of residential units. Loma Vista is approaching near build out and there is a strong possibility it will fall short of the initial number of projected units for the overall specific plan. This property is one of the last remaining major residential parcels within Loma Vista. A slight density increase specifically to this property will provide a net benefit by helping the Loma Vista Specific Plan meet its' initial number of projected housing units at full buildout. It will allow for more effective utilization of the Loma Vista parks and trail way system while more broadly benefiting the greater city of Clovis because more residents will equate to greater utilization of retail and lifestyle centers such as the Sierra Vista Mall and Old Town Clovis. Furthermore, despite the increase in density, the project will still maintain city of Clovis standards by utilizing 18' full length driveways, sidewalks on both sides of the streets and Clovis standard 20' x 20' garages.
- A separate portion of this property is designated for a future regional Community Park that is designed to run alongside Dog Creek. By adding higher density to this portion of the property, a greater amount of homes, many being two stories, will back onto Dog Creek, the open space and trail ways. This allows for future residents to self – monitor the future park and key portions of Dog Creek. If this property remained low density residential, it would create a public safety issue because only a small number of future residents would be able to self-monitor the



future regional Community Park. Higher density creates less of a strain on Clovis law enforcement because less resources will need to be designated for monitoring this area.

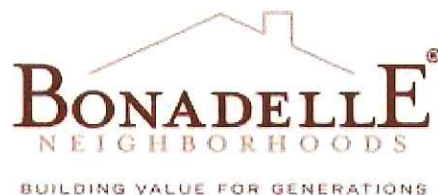
- Developing this property is an essential component to the completion of the Loma Vista Specific Plan. Unfortunately, Dog Creek transects this property and creates a very challenging and unique property layout for residential development. Low density residential is not an efficient land use for this property as opposed to the proposed one step density increase in land usage that will more efficiently maximize the property rather than creating large, awkward lots that will be difficult for home owners to maintain with odd shaped side and rear yards. Large triangular lots are also not an efficient usage of water resources.

The re-designation to increase allowable residential density on this parcel will broadly assist the City of Clovis in several other ways, including:

- The proposed higher density increase will help satisfy key State of California housing affordability and density requirements that all municipalities are required to meet statewide.
- Tract 6304 will offer two designated public open space parks, which will be design by Broussard & Associates, a local land use architect that will design these two open spaces to adhere to the character and land use priorities set forth in the Loma Vista specific plan. The first open space will be a linear park designed to run adjacent to a large portion of Dog Creek, which borders the community to the west. It will offer residents both from Tract 6304 and the surrounding community the ability to enjoy sweeping views of both Dog Creek and the future regional park. This park is designed to be easily accessible for all residents within Tract 6304 and is expected to be heavily utilized. The second park is in the northern corner of Tract 6304. This park will provide vantage points of the more remote areas of Dog Creek and the future regional park, helping Clovis law enforcement to better police this public area. The slightly higher density allows for this secondary park to be designed in its' current proposed location; larger, low density lots would have made designing a secondary park in the northern portion of this proposed map extremely prohibitive.

The proposed General Plan Amendment (G.P.A.) for this property will especially improve the Loma Vista community by better implementing the General Plan Smart Growth goals that are specifically stated in Policy 6.2, Including:

- Establishing a more pedestrian-friendly "walkable" neighborhood adjacent to the future designated regional Community Park along with two additional public parks developed within Tract 6304, which will greatly reduce vehicle trips and negative air quality impacts.
- Preserving agricultural land by increasing the number of allowable units on this urbanizing property, thus reducing the unnecessary conversion of additional agricultural land.
- Increasing the range of housing opportunities and choices by offering a cutting edge and distinct housing product type that will appeal to multiple demographics at affordable price points. The



craftsmen and farmhouse style exterior elevations will provide distinct curb appeal and will complement the craftsmen design element of the Loma Vista specific plan.

The approved General Plan has already designated a portion of this parcel for a regional Community Park, which would be considerably more efficiently served by the proposed one step up slightly higher density land usage on this portion of the property. Furthermore, the one step up slightly higher density land usage will provide for more effective use of the Loma Vista trail way system, which offers nearby points of access that would be utilized by future residents to access the nearby education centers, Loma Vista park system and growing commercial retail presence within the Loma Vista Specific Plan.

The proposed GPA would also be consistent with other existing well-planned transitions within the Loma Vista Master Plan such as the high density residential development east of the park at the center of the Loma Vista Community Center South and the higher density residential developments to the east and west of the park at the Loma Vista Community Center North. These areas effectively utilize higher density residential as a transitional buffer between lower density residential neighborhoods and existing or future planned community park sites or other Loma Vista public amenities. They also effectively utilize higher density to self-monitor public park sites and facilities. It is important to note the proposed land use designation is only a one step density increase compared to the current general plan land use designation for this parcel.

The re-designation to increase allowable residential density on this parcel will directly assist several other specifically stated General Plan and Loma Vista Specific Plan goals and policies, including:

- Promote a high-quality residential community focused around a regional Community Park and nearby the inter-connected trail way system.
- Provide orderly and sustainable outward growth into urban centers that provide a balanced mix of land uses and development types.
- Provide a city with housing, employment and lifestyle opportunities for all ages and incomes of residents by offering an affordable product type to appeal to multiple demographics of future Clovis residents.
- Facilitate the prioritization of the completion of Loma Vista by developing a property that is a challenging site to engineer.
- Provide a mix of elevations and unit sizes at the block level that will complement the craftsmen theme of the Loma Vista specific plan.
- Residential developments in Urban Centers must contribute to and become a part of a neighborhood by incorporating a central park feature, a school complex, a hierarchy of streets, pedestrian pathways or other neighborhood amenities.
- Provide innovative housing.



- Facilitate transit options by providing an integral bridge that will span Dog Creek and provide another transit alternative to interconnect Loma Vista residents to employment centers within Clovis, nearby schools, and the adjacent future regional Community Park and trail way system.
- Provide workforce housing.
- Provide greater fiscal efficiencies for public services.

To conclude, the re-designation to the slightly increased density on this property will facilitate stated General Plan goals and policies to promote land use compatibility, minimize conversion of agricultural lands to urban uses, increase community density to improve service delivery efficiencies and cost effectiveness, assist the city to meet key statewide housing mandates, create a more pedestrian friendly community, reduce vehicular trips and reduce negative air quality impacts. Additionally, the increased unit count will bring the Loma Vista specific plan closer to meeting its' initial unit projections and will improve public safety within a future regional Community Park.

Please contact me at 559.435.9700 to address any questions or comments.

Sincerely,

A handwritten signature in blue ink, which appears to read "John A. Bonadelle". The signature is fluid and cursive, with a large initial "J" and "B".

John A. Bonadelle

Director of Operations

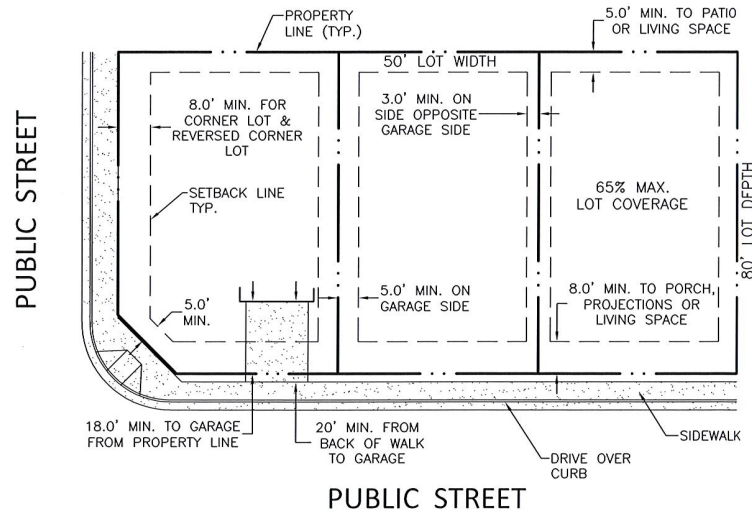
**PROPOSED R-1-PRD
DEVELOPMENT STANDARDS**

ATTACHMENT 3

Residential Land Use Development Standards

LAND USE	DEVELOPMENT STANDARDS	
SINGLE-FAMILY RESIDENTIAL	STANDARD	NOTES
	DESIGNATION	
Zone District	R-1-PRD	
GP Density Range	4.1 - 7.1 du/ac	Medium Density Residential
Dwelling Units	217	
BUILDING INTENSITY		
Minimum Lot Area	4,000 sq ft	
Minimum Lot Width	50'	
Minimum Lot Depth	80'	
Maximum Coverage	65%	
Maximum Height	35' / 25'	2 story homes / single story homes
Curved, Cul-de-sac or Corner Lot	35' / 80'	For street frontage/For lot depth
BUILDING SETBACKS		
All setbacks measured from PL.		
Front Yard	18' min / 8' min	To garage/living area, porch, or projections
Side Yard	5' min / 3' min	5' min one side / 3' min other side
Corner/Reversed Corner	8' min	
Rear Yard	5' min	
GARAGES/STREETS		
Garages	1-car 2-car	10'x20' min 20'-20" min or tandem 10'x38 min
Streets (Interior)	50' wide / 54' wide	Curb-to-curb private/public
Parking	2 spaces/unit min	2 covered spaces per unit min
ACCESSORY USES		
General list of requirements and restrictions.		
Walls/Fences	6' min - 8' high max	
Trellises	12' high max	
Covered Structures	12' high max	Covered structures and building additions are allowed subject to review by HOA committee and permitting by the City of Clovis, provided that lot coverage standards are not exceeded and that a rear yard encroachment permit is obtained if encroachment into rear yard occurs.
Accessory Buildings		

Add which lots will be restricted to single-story only.



NOT TO SCALE

PROPOSED R-1-PRD AMENITIES

ATTACHMENT 4

SITE LEGEND

- 1. Linear Park
- 2. Play Structure w/ PIP Play Surfacing and Shade Canopy
- 3. Park Benches
- 4. Dog Creek Sign Kiosk w/ Park Benches
- 5. Proposed Vehicular Bridge
- 6. 4' Tubular Steel Fence @ Park / Dog Creek Boundary
- 7. Masonry Perimeter Wall
- 8. 6' Tubular Steel Fence @ Back of Lot
- 9. Dog Creek
- 10. Future Tract 6123
- 11. Future Regional Park
- Designated Single-Story Homes Only



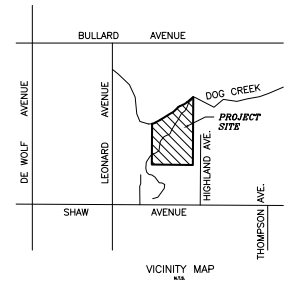
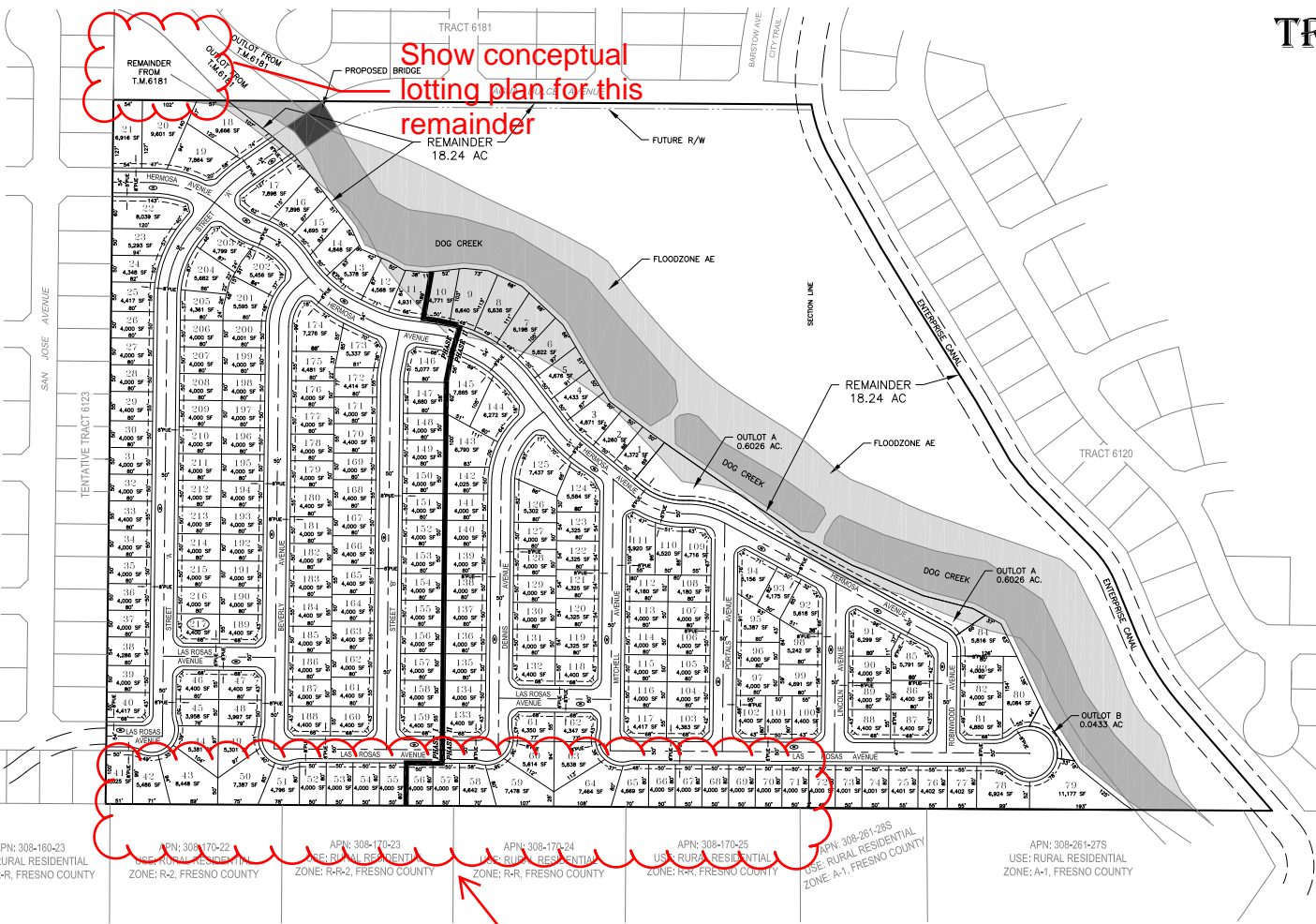
TRACT 6304
ILLUSTRATIVE SITE PLAN
BONADELLE HOMES



**PROPOSED
TM6304**

ATTACHMENT 5

VESTING
TENTATIVE SUBDIVISION MAP
OF
TRACT NO. 6304
IN THE CITY OF CLOVIS
FRESNO COUNTY, CALIFORNIA



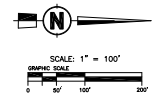
- EXISTING BUILDINGS
TO REMAIN
- EXISTING TREES
AS EXISTING TREES TO BE REMOVED
- EXISTING USE
RURAL RESIDENTIAL
- EXISTING ZONING
AE-20
- PROPOSED ZONING
R-1-PHO
- PROPOSED USE
SINGLE-FAMILY RESIDENTIAL SUBDIVISION
- SOURCE OF WATER
CITY OF CLOVIS
- SOURCE OF SEWAGE DISPOSAL
CITY OF CLOVIS
- SOURCE OF WASTE DISPOSAL
CITY OF CLOVIS
- SOURCE OF ELECTRICITY
PG&E
- SOURCE OF GAS
PG&E
- SOURCE OF CABLE T.V.
COMCAST
- SOURCE OF TELEPHONE
ATT
- ASSESSOR'S PARCEL NUMBER
554-052-10
- SITE AREA
31.72 AC (0.6026)
33.56 AC (NET)
- NUMBER OF LOTS
172 LOTS, 2 OUTLOTS, AND 1 REMAINDER
- DENSITY
6.47 DU/AC
- AVERAGE LOT SIZE
4,699 S.F.
- SITE ADDRESS
8792 E. BARTSTOWN AVENUE
CLOVIS, CA 95319
- PARK/OPEN SPACE
0.5886 ACRES REQUIRED
0.6459 ACRES PROVIDED

LEGAL DESCRIPTION:
(APN: 554-052-10)

Add note to TM6304
depicting single-story
homes only on these
lots

- NOTES:
- THIS AREA IS SUBJECT TO FLOODZONE X (UNSHADED).
 - ALL IMPROVEMENTS SHALL BE AS REQUIRED BY THE CITY OF CLOVIS TO CITY STANDARDS, AND SHALL INCLUDE SANITARY SEWER, DOMESTIC WATER, UNDERGROUND POWER, TELEPHONE, CONCRETE CURBS, GUTTERS, SIDEWALKS, PERMANENT STREET PAVEMENT STREET LIGHTS, ETC.
 - THERE SHALL BE NO GRADE DIFFERENTIALS OF GREATER THAN 4" WITHIN 200 FEET OF THE SITE UNLESS APPROVED BY THE CITY OF FRESNO DEVELOPMENT DEPARTMENT.
 - THERE ARE NO EXISTING ABOVE GROUND USES OR STRUCTURES SUCH AS BUILDINGS, WATER WELLS, POWER LINES, TOWERS, ETC., WITHIN THE PROPOSED SUBDIVISION. (EXCEPT IF SHOWN)
 - THERE ARE NO UNDERGROUND FEATURES SUCH AS WELLS, CESSPOOLS, SEWERS, COLLECTORS, STORM DRAINAGE, CUMULI SITES AND OTHER UNDERGROUND STRUCTURES WITHIN THE PROPOSED SUBDIVISION. (EXCEPT IF SHOWN)
 - THE DESIGN OF THE PROPOSED SUBDIVISION SHALL PROVIDE TO THE EXTENT FEASIBLE FOR FUTURE PASSIVE OR NATURAL HEATING OR COOLING OPPORTUNITIES AND OTHER MEASURES THAT CONSERVE NONRENEWABLE ENERGY RESOURCES AS PROVIDED IN THE SUBDIVISION MAP ACT, 79% OF THE LOTS ARE ORIENTED NORTH AND SOUTH.

- LEGEND:
- PUBLIC STREET EASEMENT NOW OFFERED FOR DEDICATION FOR PUBLIC USE
 - PROPOSED PUBLIC UTILITY EASEMENT NOW OFFERED FOR DEDICATION FOR PUBLIC USE
 - FLOODZONE AE
 - DOG CREEK
 - PROPOSED BRIDGE
- OUTLOT SCHEDULE
OUTLOTS A & B ARE FOR PUBLIC LANDSCAPING AND PUBLIC UTILITY PURPOSES



TENTATIVE TRACT MAP

Bonadole Neighborhoods

179

REVISIONS

NO.	DATE	DESCRIPTION
1		
OF		
1		

DATE: 4-22-20 SCALE: 1" = 100' DRAWN BY: SDM

CORRESPONDENCE FROM COMMENTING AGENCIES

ATTACHMENT 6

**DEPARTMENT OF TRANSPORTATION
DISTRICT 6**

1352 WEST OLIVE AVENUE
P.O. BOX 12616
FRESNO, CA 93778-2616
PHONE (559) 488-7307
FAX (559) 488-4088
TTY 711
www.dot.ca.gov



*Making Conservation
a California Way of Life.*

December 18, 2019

FRE-168-R9.909
DRC3363-2019
Millhollin Subdivision

Courtney Thongsavath
City of Clovis
1033 Fifth Street
Clovis, CA 93612

Dear Mx. Thongsavath:

Caltrans has completed its review of the proposal to develop 45.78 acres of land into a 262-lot single-family home subdivision and public park. The project site is on Barstow Avenue east of Leonard Avenue in Clovis. Consistent with Caltrans' mission to provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability, the following comments are offered:

Caltrans anticipates this development will increase demand at State Route (SR) 168 and Temperance Avenue. Previous traffic studies have identified improvements for this interchange to maintain satisfactory traffic flow. However, Caltrans recognizes the City's obligation to provide adequate housing for residents. Caltrans also recognizes the City's commitment to using vehicle miles traveled (VMT) reducing strategies in their implementation of the General Plan. Based on the General Plan, it is our expectation that this project's proximity to the Loma Vista village, and the commercial and employment centers south of SR 168 will succeed in deferring demand on the route.

If there are questions regarding these comments, please contact me at (559) 488-7307 or email Jamaica.Gentry@dot.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jamaica Gentry'.

JAMAICA GENTRY
Associate Transportation Planner
Transportation Planning - North



County of Fresno

DEPARTMENT OF PUBLIC HEALTH

December 11, 2019

LU0020410
2604

Courtney Thongsavath, Planning Intern
City of Clovis
Planning and Development Services Department
1033 Fifth Street
Clovis, CA 93612

Dear Ms. Thongsavath:

PROJECT NUMBER: **DRC3363-2019**

DRC3363-2019, A gated 262-lot SFR subdivision development with swimming pool and park.

APN: 554-052-10 ZONING: AE-20 ADDRESS: Barstow Avenue, east of Leonard Avenue

Recommended Conditions of Approval:

- Construction permits for the proposed development should be subject to assurance of sewer capacity of the Regional Wastewater Treatment Facility. Concurrence should be obtained from the California Regional Water Quality Control Board (RWQCB). For more information, contact staff at (559) 445-5116.
- Construction permits for the proposed development should be subject to assurance that the City of Clovis community water system has the capacity and quality to serve this project. Concurrence should be obtained from the State Water Resources Control Board, Division of Drinking Water-Southern Branch. For more information call (559) 447-3300.
- If the applicant proposes to use and/or store hazardous materials and/or hazardous wastes, they shall meet the requirements set forth in the California Health and Safety Code (HSC), Division 20, Chapter 6.95, and the California Code of Regulations (CCR), Title 22, Division 4.5. Any business that handles a hazardous material or hazardous waste may be required to submit a Hazardous Materials Business Plan pursuant to the California Health and Safety Code (HSC), Division 20, Chapter 6.95, Section 25507 (<http://cers.calepa.ca.gov/>). Contact the Fresno County Hazmat Compliance Program at (559) 600-3271 for more information.
- Prior to the issuance of building permits, the applicant shall submit complete pool facility plans and specifications to the Fresno County Department of Public Health, Environmental Health Division, for review and approval. The applicant shall apply for and obtain a permit to operate a public swimming pool from the Fresno County Department of Public Health, Environmental Health Division. A permit, once issued, is nontransferable. Contact the Recreational Health Program at (559) 600-3357 for more information.

Promotion, preservation and protection of the community's health

1221 Fulton Street / P. O. Box 11867, Fresno, CA 93775

(559) 600-3271 • FAX (559) 600-7629

The County of Fresno is an Equal Employment Opportunity Employer

www.co.fresno.ca.us • www.fcdph.org

- The proposed construction and/or demolition project has the potential to expose nearby residents to elevated noise levels. Consideration should be given to your City's municipal code.
- As a measure to protect ground water, all water wells and/or septic systems that exist or have been abandoned within the project area should be properly destroyed by an appropriately licensed contractor.
- Should any underground storage tank(s) be found during the project, the applicant shall apply for and secure an Underground Storage Tank Removal Permit from the Fresno County Department of Public Health, Environmental Health Division. Contact the Fresno County Hazmat Compliance Program at (559) 600-3271 for more information.

The following comments pertain to the demolition of any existing structures:

- Should the structures have an active rodent or insect infestation, the infestation should be abated prior to demolition of the structures in order to prevent the spread of vectors to adjacent properties.
- In the process of demolishing the existing structures, the contractor may encounter asbestos containing construction materials and materials coated with lead based paints.
- If asbestos containing materials are encountered, contact the San Joaquin Valley Air Pollution Control District at (559) 230-6000 for more information.
- If the structures were constructed prior to 1979 or if lead-based paint is suspected to have been used in these structures, then prior to demolition and/or remodel work the contractor should contact the following agencies for current regulations and requirements:
 - California Department of Public Health, Childhood Lead Poisoning Prevention Branch, at (510) 620-5600.
 - United States Environmental Protection Agency, Region 9, at (415) 947-8000.
 - State of California, Industrial Relations Department, Division of Occupational Safety and Health, Consultation Service (CAL-OSHA) at (559) 454-5302.

REVIEWED BY:

Kevin Tsuda

Kevin Tsuda, R.E.H.S.
Environmental Health Specialist II

(559) 600-33271

cc: Steven Rhodes- Environmental Health Division (CT. 57.01)
Lorren Smith- Applicant (lorrens@harbour-engineering.com)

Joyce Roach

From: Nakagawa, Wendy <WNakagawa@fresnocountyca.gov>
Sent: Tuesday, February 18, 2020 4:31 PM
To: Joyce Roach
Cc: Thompson, John R.; Lopez, Nadia; Spaunhurst, Brian
Subject: FW: Request for Comments for RO302, GPA2020-001, R2020-001, and TM6304
Attachments: RO302, DISTFRM.PDF; GPA2020-001, DISTFRM.PDF; R2020-001, Dist Form.pdf; TM6304, Dist Form.pdf; TM6304, APN Page.pdf; TM 6304 1-29-20.pdf; R2020-001, Rezoning Exhibit.pdf; Shaw-Highland Northwest No. 2 Reorganization Legal Description and Map.pdf; 6304 Land Use Standards Sheet - 35x60 - 1-30-20.pdf; 6304 Land Use Standards Sheet - 50x80 - 1-30-20.pdf

City of Clovis RO302, GPA2020-001, R2020-001, and TM6304 propose to annex and rezone 51-acres of land from County AE-20 Zone District to the Clovis and R-1-PRD (33-acres) and Clovis PF (18-acres) Zone districts. Subject property is located near Barstow and Highland Avenues.

There are no County-maintained roads adjacent to this parcel, but nearby County intersections and/or road segments may need to be evaluated depending on anticipated traffic generation.



Wendy Nakagawa, P.E. | Senior Engineer
 Department of Public Works and Planning | Road Maintenance and Operations Division
 2220 Tulare St. 6th Floor Fresno, CA 93721
 Main Office: (559) 600-4240 Direct: (559) 600-4265
[Your input matters! Customer Service Survey](#)

From: Joyce Roach <joycer@ci.clovis.ca.us>
Sent: Friday, February 07, 2020 11:11 AM
To: Amy Hance <AmyH@ci.clovis.ca.us>; Andrew Haussler <andrewh@ci.clovis.ca.us>; Andrew Nabors <AndrewNabors@clovisusd.k12.ca.us>; Andrew Nabors <andrewnabors@cusd.com>; Anthony Summers <Kristopher.W.Summers@usps.gov>; Arthur Negrete <arthurn@ci.clovis.ca.us>; Jimenez, Bernard <BJimenez@fresnocountyca.gov>; Brian Weldon <bw1987@att.com>; Bryan Araki <BryanA@ci.clovis.ca.us>; Chad Fischer <Chad.Fischer@waterboards.ca.gov>; Chad Fitzgerald <ChadF@ci.clovis.ca.us>; Cherie Clark <Cherie.Clark@valleyair.org>; Motta, Chris <CMotta@fresnocountyca.gov>; Christian A. Esquivias Ramirez <ChristianE@ci.clovis.ca.us>; Monfette, Christina <cmonfette@fresnocountyca.gov>; Curt Fleming <curtf@ci.clovis.ca.us>; Fey, David <dfey@fresnocountyca.gov>; Dave Padilla <dave.padilla@dot.ca.gov>; Dave Scott <ds1298@att.com>; David Gonzalez <davidg@ci.clovis.ca.us>; David Merchen <davidm@ci.clovis.ca.us>; Debbie Campbell <debbiec@fresnofloodcontrol.org>; Sidhu, Sukhdeep <ssidhu@fresnocountyca.gov>; Denise Wade <denisew@fresnofloodcontrol.org>; Denver Stairs <DenverStairs@cusd.com>; Douglas Stawarski <dougs@ci.clovis.ca.us>; Dwight Kroll <DwightK@ci.clovis.ca.us>; Eric Zetz <ericz@ci.clovis.ca.us>; FID <Engr-Review@fresnoirrigation.com>; FMFCD <developmentreview@fresnofloodcontrol.org>; Gary Sawhill <Sawhill@ci.clovis.ca.us>; Gene Abella <genea@ci.clovis.ca.us>; Geneva H. McJunkin <gr7434@att.com>; George Gonzalez <georgeg@ci.clovis.ca.us>; Uc, George <guc@fresnocountyca.gov>; Georgia Stewart <Georgia.Stewart@valleyair.org>; Gerald Conley <geraldc@ci.clovis.ca.us>; Allen, Glenn <glallen@fresnocountyca.gov>; Guillermo Vieyra <guillermov@ci.clovis.ca.us>; Iri Guerra <IriG@ci.clovis.ca.us>; Jason C. <jasonc@fresnofloodcontrol.org>; John Willow <JohnWi@ci.clovis.ca.us>; Jose Sandoval <joses@ci.clovis.ca.us>; Lara, Juan <lara@fresnocountyca.gov>; Katy Benham <KatyB@ci.clovis.ca.us>; Ken Wells <kenw@ci.clovis.ca.us>; Tsuda, Kevin <ktsuda@fresnocountyca.gov>; Lily Cha <lilyc@ci.clovis.ca.us>; Luis Murrieta <LDMQ@pge.com>; Luke Serpa

<luke@ci.clovis.ca.us>; Max Garces <MaxG@ci.clovis.ca.us>; Michael Maxwell <michaelm@fresnoflo>
 Michael Navarro <michael_navarro@dot.ca.gov>; Mike Harrison <mikeh@ci.clovis.ca.us>; Mike McLemore
 <MikeM@ci.clovis.ca.us>; Mikel Meneses <mikelm@fresnofloodcontrol.org>; Monique Chaidez <MKR4@pge.com>;
 Lopez, Nadia <nllopez@fresnocountyca.gov>; Nicholas Torstensen <nicholast@ci.clovis.ca.us>; Orlando Ramirez
 <OrlandoR@ci.clovis.ca.us>; Paul Armendariz <PaulA@ci.clovis.ca.us>; Rebecca Lucas <rebeccal@ci.clovis.ca.us>; Rick
 Fultz <rickf@ci.clovis.ca.us>; Ricky Caperton <rcaperton@ci.clovis.ca.us>; Robert J. Howard <R3Hd@pge.com>; Robert
 Villalobos <robertv@fresnofloodcontrol.org>; Ryan Burnett <RyanB@ci.clovis.ca.us>; Ryan Nelson
 <ryann@ci.clovis.ca.us>; Sarai Yanovsky <saraiy@ci.clovis.ca.us>; Scott Borsch <scottb@ci.clovis.ca.us>; Scott Redelfs
 <scottr@ci.clovis.ca.us>; Sean Smith <SeanS@ci.clovis.ca.us>; Sharla Yang <Sharla.Yang@valleyair.org>; Shawn Miller
 <ShawnM@ci.clovis.ca.us>; SJVAPCD <CEQA@valleyair.org>; Stephanie Andersen <StephanieA@ci.clovis.ca.us>; Rhodes,
 Steven <srhodes@fresnocountyca.gov>; Trina Vietty <trinav@ci.clovis.ca.us>; Wildlife CEQA <R4CEQA@wildlife.ca.gov>
Cc: Ricky Caperton <rcaperton@ci.clovis.ca.us>; Joyce Roach <joycer@ci.clovis.ca.us>
Subject: Request for Comments for RO302, GPA2020-001, R2020-001, and TM6304

CAUTION!!! - EXTERNAL EMAIL - THINK BEFORE YOU CLICK

Good morning,

Please see the attached request for comments for an annexation, general plan amendment, rezone, and tract map on the south side of Barstow Avenue, east of Leonard Avenue.

****THIS REQUEST INCLUDES AN ANNEXATION****

Thank you, and have a good weekend.



Joyce Roach | Planning Assistant
 City of Clovis | Planning Division
 1033 Fifth Street, Clovis, CA 93612
 p. 559.324.2341 | f. 559.324.2844
joycer@cityofclovis.com



County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

February 28, 2020

Ricky Caperton, Senior Planner
Planning and Development Services Department
City of Clovis
1033 Fifth Street
Clovis, CA 93612

SUBJECT: City of Clovis OAR, GPA2020-001, RO302, R2020-001, and TM6304

Dear Mr. Caperton,

The County of Fresno appreciates the opportunity to review and comment on the subject applications: General Plan Amendment Application 2020-001, Reorganization 302, Rezone Application 2020-001, and Tract Map 6304. GPA2020-001 is proposing to amend the City of Clovis General Plan for a portion of the subject parcel and change the General Plan Designation from the Low-Density Residential to Medium-High-Density Residential. RO302 is a resolution of Application for Annexation of the territory known as the Shaw-Highland Northwest Reorganization No. 2. R2020-001 requests a prezone of an approximately 51-acre site from the County of Fresno AE-20 (Exclusive Agricultural, 20-acre minimum parcel size) Zone District to the City of Clovis R-1-PRD (Single-Family Planned Residential Development) for approximately 33 acres of the site and City of Clovis P-F (Public Facilities) for approximately 18 acres of the project site. Tract Map 6304 requests a tentative tract map for a 285-lot single-family Planned Residential Development that will include private streets on an approximately 33-acre portion of the project site.

The Department of Public Health, Environmental Health Division has reviewed and offered comments regarding the subject applications. Their comments have been attached for your review.

The Design Division requires that a Traffic Impact Study (TIS) be completed and reviewed by Design staff prior to final comments being released. The Design Division has indicated that the traffic consultant has already contacted the Division to coordinate the Scope of Work for the study. Final comments on the project will be deferred until the TIS is completed. Please contact Gloria Hensley of the Design Division at (559) 600-0523, should you have any questions.

The Policy Planning Section provides this comment for review. Annexation of the subject 51-acre territory to the City requires a Notice of Intent (NOI) to be submitted to the County 30 days prior to the submission of the annexation application to the Fresno Local Agency Formation Commission (LAFCo) for a determination of consistency of the proposed annexation with the Standards of Annexation contained in the Memorandum of Understanding between the City of Clovis and the County of Fresno. The NOI must include the Resolution of Annexation, Pre-Zoning of the territory approved by the City Council, approval of the entitlements by the City (City Council or Planning Commission), and the environmental assessment conducted by the city for the project per the California Environmental Quality Act (CEQA), if applicable to the

Ricky Caperton, Senior Planner
February 28, 2020
Page 2 of 2

project. Please contact Derek Chambers of the Policy Planning Section at (559) 600-4205, should you have any questions.

If you have any questions, you may e-mail me at TKobayashi@FresnoCountyCA.gov or contact me at (559) 600-4224.

Sincerely,



Thomas Kobayashi, Planner
Development Services and Capital Projects Division

TK:ksn

G:\4360Devs&Pln\PROJSEC\PROJDOCS\Environmental\OAR\City of Clovis\GPA2020-001, RO302, R2020-001, TM6304\GPA2020-001, RO302, R2020-001, and TM6304 Comment Letter.docx

Attachment

cc. Steven E. White, Director
John R. Thompson, Assistant Director
Bernard Jimenez, Assistant Director
William M. Kettler, Development Services and Capital Projects Division
Chris Motta, Development Services and Capital Projects Division



County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

May 8, 2020

Ricky Caperton, Senior Planner
Planning and Development Services Department
City of Clovis
1033 Fifth Street
Clovis, CA 93612

SUBJECT: City of Clovis OAR, Traffic Impact Analysis for GPA2020-001, RO302, R2020-001, and TM6304

Dear Mr. Caperton,

The County of Fresno appreciates the opportunity to review and comment on the subject applications: General Plan Amendment Application 2020-001, Reorganization 302, Rezone Application 2020-001, and Tract Map 6304. GPA2020-001 is proposing to amend the City of Clovis General Plan for a portion of the subject parcel and change the General Plan Designation from the Low-Density Residential to Medium-High-Density Residential. RO302 is a resolution of Application for Annexation of the territory known as the Shaw-Highland Northwest Reorganization No. 2. R2020-001 requests a prezone of an approximately 51-acre site from the County of Fresno AE-20 (Exclusive Agricultural, 20-acre minimum parcel size) Zone District to the City of Clovis R-1-PRD (Single-Family Planned Residential Development) for approximately 33 acres of the site and City of Clovis P-F (Public Facilities) for approximately 18 acres of the project site. Tract Map 6304 requests a tentative tract map for a 285-lot single-family Planned Residential Development that will include private streets on an approximately 33-acre portion of the project site.

After review of the submitted Traffic Impact Analysis, we do not have any further comment.

If you have any questions, you may e-mail me at TKobayashi@FresnoCountyCA.gov or contact me at (559) 600-4224.

Sincerely,

Thomas Kobayashi, Planner
Development Services and Capital Projects Division

TK:

G:\4360Devs&Pln\PROJSEC\PROJDOCS\Environmental\OAR\City of Clovis\GPA2020-001, RO302, R2020-001, TM6304\TIS\GPA 2020-001, RO302, R2020-001, and TM6304 TIS Comment Letter.docx

cc: Steve E. White, Director
Bernard Jimenez, Assistant Director
John R. Thompson, Assistant Director

Ricky Caperton, Senior Planner
May 8, 2020
Page 2 of 2

William M. Kettler, Development Services and Capital Projects Division
Chris Motta, Development Services and Capital Projects Division



City of Clovis
Department of Planning and Development Services
CITY HALL - 1033 Fifth Street - Clovis, CA 93612

Distribution Date: 2/7/2020

PLANNING APPLICATION REQUEST FOR COMMENTS

Project Manager - Ricky Caperton, AICP, Senior Planner

PLEASE ROUTE TO:

- (In House)
[x] Planning Division
[x] Building Division
[x] Engineering Division
[x] Utilities Division
[x] Solid Waste Division
[x] Fire Department
[x] Police Department
[x] City Landscape Committee
[x] Legal Description Review
[] Other (Specify)
[]

- (Out-of-House)
[x] Fresno Irrigation District
[x] Fresno Metropolitan Flood Control Dist.
[x] Pacific Gas & Electric
[x] AT&T
[x] Clovis Unified School District
[x] Cal Trans
[x] SJV Unified Air Pollution Control Dist.
[x] State of California Department of Fish and Wildlife
[x] LAFCO (when annexation is involved)
[x] County of Fresno Development
[x] Fresno County Environmental Health

Item(s): Reorganization RO302 Location: South side of Barstow Avenue, east of Leonard Avenue

APN: 554-052-10 Zoning: County AE-20 General Plan: Low Density Residential, Park, Open Space

Name of Applicant: Bonadelle Neighborhoods -John A. Bonadelle Phone/Email: (559)435-9700/ jab@bonadelle.com

Applicant Address: 7030 N. Fruit Avenue, Suite #101 City: Fresno State: CA Zip: 93711

Previously Reviewed Under DRC: DRC3363-2019 Or Other Entitlement:

Project Description: RO302. A resolution of Application for the Annexation of the Territory known as the Shaw-Highland Northwest Reorganization No. 2. Millhollin Family Trust, owner; Bonadelle Neighborhoods, applicant; Harbour & Associates, representative. This request is being processed concurrently with GPA2020-001, R2020-001, and TM6304.

This item is tentatively scheduled for a public hearing to be considered by the City Council.

The attached information is circulated for your comments. Please attach your comments and recommendations in condition form and return to the project manager by 2/28/2020

Please check one below:

- [] No Comments
[] Comments Attached
[x] Comments e-mailed or saved on: 2/27/2020

RECOMMENDED CONDITIONS: Please draft conditions in final form that are acceptable to your department. They must be legible. Please phrase positively and clearly:

GOOD EXAMPLE: "1. Prior to occupancy, the developer shall install all landscaping as per the approved plans."

POOR EXAMPLE: "1. Install landscaping."

REVIEWED BY (please sign): [Signature]

PLEASE RETURN TO:
Ricky Caperton, AICP, Senior Planner
Planning and Development Services Dept.
1033 Fifth St., Clovis, CA 93612
Phone: 324-2347 Fax: 324-2844



Fresno Local Agency Formation Commission

February 27, 2020

George Gonzalez, MPA
Associate Planner
City of Clovis
1033 Fifth Street
Clovis, CA 93612

Dear Mr. Gonzalez:

Subject: Comments Regarding Concurrent Applications RO302, Tentative Map TM 6304, R2020-001, GPA2020-001 for Properties located on the south side of Barstow Avenue east of Leonard Avenue.

Thank you for the opportunity to comment on this project. From the material provided to this office, my understanding of the project description is as follows:

- TM6304, a request to approve a tentative tract map for a 285-lot single-family planned residential development for land located on the south side of Barstow Avenue, east of Leonard Avenue;
- R2020-001, a request to approve a prezone of approximately 51 acres of land located on the south side of Barstow Avenue, east of Leonard Avenue, from the County AE-20 Zone District to the Clovis R-1-PRD (33 acres) and the Clovis P-F (18 acres) Zone Districts;
- RO304 Proposed reorganization known as the Shaw-Highland Northeast Reorganization to detach approximately 154.62 acres from the subject property from the Kings River Conservation District and the Fresno County Fire Protection District and annex to the City of Clovis;
- GPA2020-001, a request to amend the Clovis General Plan for a portion of Parcel APN 554-052-10 from low density residential to medium high density residential.

The Fresno Local Agency Formation Commission (LAFCo) regulates, through approval or denial, the boundary changes proposed by local agencies or individuals. LAFCo's objectives are to:

- Encourage orderly formation and development of agencies;
- Encourage consistency with spheres of influence and recommended reorganization of agencies;
- Encourage orderly urban development and preservation of open space patterns;
- Encourage conservation of prime agricultural lands and open space areas; and
- Identify and address disadvantaged unincorporated communities.

LAFCo should be identified in the city's environmental document as a Responsible Agency under CEQA whose role is to consider changes of organizations and spheres of influence. Commission action on the annexation request should be noted in the environmental document. As a Responsible Agency, the Commission is required to review and consider the City's environmental documents prior to taking its action. A Responsible Agency complies with CEQA by considering the environmental analysis prepared by the Lead Agency and by reaching its own conclusions on whether and how to approve the project. The Commission may then make a finding that it independently reviewed and considered the information in the environmental document and that the environmental document is sufficient to support a determination on the proposed reorganization.

Unless a territory is at full build-out, LAFCo law and Commission policy require that territory be prezoned before it may be annexed to a city so that LAFCo may find that the proposed project is consistent with a city's general plan. Given the multiple proposed zone districts, please be sure to identify what land is prezoned to the appropriate zone district in the annexation proposal area.

As we have discussed, staff and the Commission will evaluate this project in light of the Commission's adopted policies and procedures, which include minimizing "creation of peninsulas and corridors, or other distortion of boundaries." It is therefore important that Clovis' application provides sufficient context as to how this proposal contributes to "planned, well ordered, efficient development patterns and service areas, and does not encourage urban sprawl."

If one or more conditions contained in the prezone resolution for the subject property or properties prevents the prezone from being effective prior to LAFCo's consideration this process can become problematic. A condition of approval is a requirement to complete a specific action by a certain time imposed by a local agency's land use approval. The timing requirements are often tied to specific action within the land development process. Conditions such as performance measures, incorporation of mitigation measures, the payment of fees, dedication of public right-of-way, and other action to be completed by the developer, may not take place by the time the application is submitted to LAFCo. If any conditions in the prezone resolution are unsatisfied, the subject territory is not correctly prezoned and the application will be deemed incomplete. This situation can be avoided by not including extraneous conditions on the project's prezone resolution. If any conditions must be added to a proposal project, consider assign them as conditions of approval

The proposal description should evaluate potential impacts to prime agricultural lands. It is understood that in order for the City to develop in a logical and orderly manner, annexation of agricultural lands is inevitable. The efficient use of this land is, therefore, of great importance to LAFCo. For example, LAFCo Policy Section 103 states, "The Commission encourages well-planned, orderly, and compact urban development patterns for all developing areas." Policy Section 104 further states, "Proposals which would conflict with the goals of maintaining the physical and economic integrity of open space lands, agricultural lands, as indicated in the City or County General Plan shall be discouraged."

With respect to how prime agricultural land is defined, the CEQA document should consider the definition of "Prime Agricultural Land" as listed within Government Code Section 56064 of the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000. *This definition differs from the California Department of Conservation's definition of Prime Farmland and may be considered to be more inclusive.*

Growth within the Clovis plan area will require the City to provide a number of different services to the area, including, fire, police, water, sewer, solid waste, parks, and other services. When an application for annexation is submitted a plan for providing services within the affected territory with the need to be submitted as part of complete application.

Thank you for the opportunity to provide comments. If you have any questions, please contact me at (559) 600-0604.

Sincerely,



Juan Lara
LAFCo Analyst II



February 25, 2020

Ricky Caperton
Planning and Development Services Dept.
1033 Fifth St.
Clovis, CA 93612

SUBJECT: TM 6304 – South side of Barstow Avenue, east of Leonard Avenue
285 Single Family Homes
APN 554-052-10

Dear Mr. Caperton:

The purpose of this letter is to provide school district information relative to the above-referenced development and to comply with Business and Professions Code section 11010, subdivision (b)(11)(A) regarding the provision of school-related information to the developer/owner and the State Department of Real Estate.

In regards to this project with GPA2020-01 the district has concern regarding the re-designation of the land located on the south side of Barstow Avenue, east of Leonard Avenue. Currently this project site has a designation of LowDensity Residential (2.1 - 4.0 DU/Ac) and Park, Open Space. The district does not feel confident in the ability to accommodate students associated with a re-designation to Medium-High Density Residential (7.1 - 15.0 DU/AC). The district would like to bring this concern to the attention of the planning department and owner/sub divider.

1. Elementary School Information:

- (a) The subject land is presently within the attendance area of the elementary school (grades K-6) listed below:

School Name: Cedarwood Elementary School
Address: 2851 Palo Alto Ave Clovis CA 93611-6831
Telephone: (559) 327-6000
Capacity: 750
Enrollment: 724 (CBEDS enrollment 2018-19 school year)

- (b) Because of projected growth in the District and the District's plans for construction of new school facilities, it is possible that (1) adjustment of school attendance areas could occur in the future such that students residing in the project area may be required to attend an elementary school other than the school listed above, and (2) students residing in the project area may attend more than one elementary school within the District during their elementary school years.

Governing Board

- Hugh Awtrey
- Christopher Casado
- Steven G. Fogg, M.D.
- Susan K. Hatmaker
- Ginny L. Hovseplan
- Elizabeth J. Sandoval
- Tiffany Stoker Madsen

Administration

- Elmear O'Farrell, Ed.D.
Superintendent
- Don Ulrich, Ed.D.
Deputy Superintendent
- Norm Anderson
Associate Superintendent
- Barry S. Jager, Jr.
Associate Superintendent
- Michael Johnston
Associate Superintendent

Ricky Caperton
 February 25, 2020
 Page 2

2. Intermediate School Information:

School Name: *Clark Intermediate*
 Address: *902 5th St Clovis CA 93612-1399*
 Telephone: *(559) 327-1500*
 Capacity: *1500*
 Enrollment: **1552** (CBEDS enrollment 2018-19 school year)

3. High School Information:

School Name: *Clovis High School*
 Address: *1055 Fowler Ave Clovis CA 93611-2099*
 Telephone: *(559) 327-1000*
 Capacity: *3000*
 Enrollment: *2738* (CBEDS enrollment 2018-19 school year)

4. Bus transportation is currently provided for grades K-6 students residing further than one mile from school and for grades 7-12 students residing further than two and one-half miles from school. Transportation will be available for students attending the above-identified elementary, intermediate and high schools in accordance with District standards in effect at the time of enrollment.
5. The District currently levies a school facilities fee of \$5.15 per square foot (as of July 1, 2019) for residential development. The fee is adjusted periodically in accordance with law. New development on the subject property will be subject to the fee in place at the time fee certificates are obtained.

The District hereby requests that the information in this letter be provided by the owner/subdivider to all prospective purchasers of property within the project.

Thank you for the opportunity to comment on the project. Please contact me if you have any questions regarding this letter.

Sincerely,



Denver Stairs
 Assistant Superintendent
 Facility Services

**FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
NOTICE OF REQUIREMENTS**

AGENDA ITEM NO. 9.

Page 1 of 5

PUBLIC AGENCY

JOYCE ROACH
DEPARTMENT OF PLANNING AND
DEVELOPMENT SERVICES
CITY OF CLOVIS
1033 FIFTH ST.
CLOVIS, CA 93612

DEVELOPER

BONADELLE NEIGHBORHOODS - JOHN A.
BONADELLE
7030 N. FRUIT AVE., SUITE#101
FRESNO, CA. 93711

PROJECT NO: **6304**

ADDRESS: **SOUTH SIDE OF BARSTOW AVE., EAST OF LEONARD AVE.**

APN: **554-052-10**

SENT: **3/11/2020**

Drainage Area(s)	Preliminary Fee(s)	Development Review Service Charge(s)	Fee(s)
DP	\$412,873.00	NOR Review	\$1,447.00 To be paid prior to release of District comments to Public Agency and Developer.
		Grading Plan Review	\$4,038.00 Amount to be submitted with first grading plan submittal.
		Storm Drain Plan Review	For amount of fee, refer to www.fresnofloodcontrol.org for form to fill out and submit with first storm drain plan submittal (blank copy attached).
Total Drainage Fee: \$412,873.00		Total Service Charge: \$5,485.00	

The proposed development will generate storm runoff which produces potentially significant environmental impacts and which must be properly discharged and mitigated pursuant to the California Environmental Quality Act and the National Environmental Policy Act. The District in cooperation with the City and County has developed and adopted the Storm Drainage and Flood Control Master Plan. Compliance with and implementation of this Master Plan by this development project will satisfy the drainage related CEQA/NEPA impact of the project mitigation requirements.

Pursuant to the District's Development Review Fee Policy, the subject project shall pay review fees for issuance of this Notice of Requirements (NOR) and any plan submittals requiring the District's reviews. The NOR fee shall be paid to the District by Developer before the Notice of Requirement will be submitted to the City. The Grading Plan fee shall be paid upon first submittal. The Storm Drain Plan fee shall be paid prior to return/pick up of first submittal.

The proposed development shall pay drainage fees pursuant to the Drainage Fee Ordinance prior to issuance of a building permit at the rates in effect at the time of such issuance. The fee indicated above is valid through 2/29/20 based on the site plan submitted to the District on 2/07/20 Contact FMFCD for a revised fee in cases where changes are made in the proposed site plan which materially alter the proposed impervious area.

Considerations which may affect the fee obligation(s) or the timing or form of fee payment:

- a.) Fees related to undeveloped or phased portions of the project may be deferrable.
- b.) Fees may be calculated based on the actual percentage of runoff if different than that typical for the zone district under which the development is being undertaken and if permanent provisions are made to assure that the site remains in that configuration.
- c.) Master Plan storm drainage facilities may be constructed, or required to be constructed in lieu of paying fees.
- d.) The actual cost incurred in constructing Master Plan drainage system facilities is credited against the drainage fee obligation.
- e.) When the actual costs incurred in constructing Master Plan facilities exceeds the drainage fee obligation, reimbursement will be made for the excess costs from future fees collected by the District from other development.
- f.) Any request for a drainage fee refund requires the entitlement cancellation and a written request addressed to the General Manager of the District within 60 days from payment of the fee. A non refundable \$300 Administration fee or 5% of the refund whichever is less will be retained without fee credit.

CL TRACT No. 6304

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
NOTICE OF REQUIREMENTS

AGENDA ITEM NO. 9.

Page 2 of 5

Approval of this development shall be conditioned upon compliance with these District Requirements.

1. a. Drainage from the site shall
 b. Grading and drainage patterns shall be as identified on Exhibit No. 1
 c. The grading and drainage patterns shown on the site plan conform to the adopted Storm Drainage and Flood Control Master Plan.

2. The proposed development shall construct and/or dedicate Storm Drainage and Flood Control Master Plan facilities located within the development or necessitated by any off-site improvements required by the approving agency:
 Developer shall construct facilities as shown on Exhibit No. 1 as MASTER PLAN FACILITIES TO BE CONSTRUCTED BY DEVELOPER.
 None required.

3. The following final improvement plans and information shall be submitted to the District for review prior to final development approval:
 Grading Plan
 Street Plan
 Storm Drain Plan
 Water & Sewer Plan
 Final Map
 Drainage Report (to be submitted with tentative map)
 Other
 None Required

4. Availability of drainage facilities:
 a. Permanent drainage service is available provided the developer can verify to the satisfaction of the City that runoff can be safely conveyed to the Master Plan inlet(s).
 b. The construction of facilities required by Paragraph No. 2 hereof will provide permanent drainage service.
 c. Permanent drainage service will not be available. The District recommends temporary facilities until permanent service is available.
 d. See Exhibit No. 2.

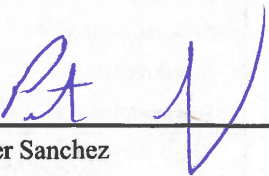
5. The proposed development:
 Appears to be located within a 100 year flood prone area as designated on the latest Flood Insurance Rate Maps available to the District, necessitating appropriate floodplain management action. (See attached Floodplain Policy.)
 Does not appear to be located within a flood prone area.

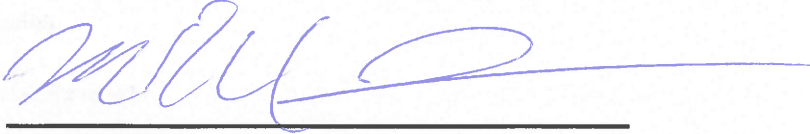
CL TRACT No. 6304

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
NOTICE OF REQUIREMENTS

CL TRACT No. 6304

6. X The subject site contains a portion of a canal or pipeline that is used to manage recharge, storm water, and/or flood flows. The existing capacity must be preserved as part of site development. Additionally, site development may not interfere with the ability to operate and maintain the canal or pipeline.
7. The Federal Clean Water Act and the State General Permits for Storm Water Discharges Associated with Construction and Industrial Activities (State General Permits) require developers of construction projects disturbing one or more acres, and discharges associated with industrial activity not otherwise exempt from National Pollutant Discharge Elimination System (NPDES) permitting, to implement controls to reduce pollutants, prohibit the discharge of waters other than storm water to the municipal storm drain system, and meet water quality standards. These requirements apply both to pollutants generated during construction, and to those which may be generated by operations at the development after construction.
- a. State General Permit for Storm Water Discharges Associated with Construction Activities, effective July 1, 2010, as amended. A State General Construction Permit is required for all clearing, grading, and disturbances to the ground that result in soil disturbance of at least one acre (or less than one acre) if part of a larger common plan of development or sale). Permittees are required to: submit a Notice of Intent and Permit Registration Documents to be covered and must pay a permit fee to the State Water Resources Control Board (State Board), develop and implement a storm water pollution prevention plan, eliminate non-storm water discharges, conduct routine site inspections, train employees in permit compliance, and complete an annual certification of compliance.
 - b. State General Permit for Storm Water Discharges Associated with Industrial Activities, April, 2014 (available at the District Office). A State General Industrial Permit is required for specific types of industries described in the NPDES regulations or by Standard Industrial Classification (SIC) code. The following categories of industries are generally required to secure an industrial permit: manufacturing; trucking; recycling; and waste and hazardous waste management. Specific exemptions exist for manufacturing activities which occur entirely indoors. Permittees are required to: submit a Notice of Intent to be covered and must pay a permit fee to the State Water Resources Control Board, develop and implement a storm water pollution prevention plan, eliminate non-storm water discharges, conduct routine site inspections, train employees in permit compliance, sample storm water runoff and test it for pollutant indicators, and annually submit a report to the State Board.
 - c. The proposed development is encouraged to select and implement storm water quality controls recommended in the Fresno-Clovis Storm Water Quality Management Construction and Post-Construction Guidelines (available at the District Office) to meet the requirements of the State General Permits, eliminate the potential for non-storm water to enter the municipal storm drain system, and where possible minimize contact with materials which may contaminate storm water runoff.
8. A requirement of the District may be appealed by filing a written notice of appeal with the Secretary of the District within ten days of the date of this Notice of Requirements.
9. The District reserves the right to modify, reduce or add to these requirements, or revise fees, as necessary to accommodate changes made in the proposed development by the developer or requirements made by other agencies.
10. X See Exhibit No. 2 for additional comments, recommendations and requirements.


Peter Sanchez
District Engineer


Mikel Meneses
Project Engineer

**FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
NOTICE OF REQUIREMENTS**

Pursuant to the District's Development Review Fee Policy, the subject project shall pay review fees in the amount identified below for Storm Drain Review. The fee shall be paid to the District by Developer with first plan submittal. Checks shall be made out to Fresno Metropolitan Flood Control District.

Application No. CL TRACT 6304

Name / Business **BONADELLE NEIGHBORHOODS - JOHN A. BONADELLE**

Project Address **SOUTH SIDE OF BARSTOW AVE., EAST OF LEONARD AVE.**

Project APN(s) **554-052-10**

Project Acres (gross) **33.65**

Please fill in the table below of proposed storm drain facilities to be constructed with this development and return completed form with first plan submittal. If you have any questions or concerns regarding the construction of facilities list, you can contact the Fresno Metropolitan Flood Control District at 559-456-3292.

Description	Qty	Unit	Price	Amount

Estimated Construction Cost _____

Fee equals lesser of

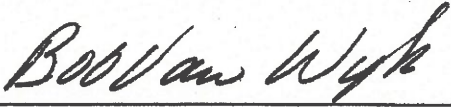
\$375.00 plus 3% of the estimated construction costs **Total (\$300.00 gross per acre) \$10,095.00**

Amount Due _____

- Storm Drain Facilities
Cost Sheet**
- 15" Concrete Pipes \$79.00 LF
 - 18" Concrete Pipes \$83.00 LF
 - 24" Concrete Pipes \$94.00 LF
 - 30" Concrete Pipes \$111.00 LF
 - 36" Concrete Pipes \$131.00 LF
 - 42" Concrete Pipes \$152.00 LF
 - 48" Concrete Pipes \$178.00 LF
 - 54" Concrete Pipes \$217.00 LF
 - 60" Concrete Pipes \$255.00 LF
 - 66" Concrete Pipes \$301.00 LF
 - 72" Concrete Pipes \$347.00 LF
 - 84" Concrete Pipes \$388.00 LF
 - 96" Concrete Pipes \$420.00 LF
 - 15" Jacked Pipes \$555.00 LF
 - 18" Jacked Pipes \$608.00 LF
 - 24" Jacked Pipes \$687.00 LF
 - 30" Jacked Pipes \$766.00 LF
 - 36" Jacked Pipes \$846.00 LF
 - 42" Jacked Pipes \$898.00 LF
 - 48" Jacked Pipes \$951.00 LF
 - 54" Jacked Pipes \$1,031.00 LF
 - 60" Jacked Pipes \$1,110.00 LF
 - 66" Jacked Pipes \$1,216.00 LF
 - 72" Jacked Pipes \$1,374.00 LF
 - 84" Jacked Pipes \$1,533.00 LF
 - Manholes \$4,600.00 EA
 - Inlets & Laterals \$4,450.00 EA
 - Outfalls \$11,500.00 EA
 - Canal Outfalls \$15,000.00 EA
 - Basin Excavation \$0.75 CY
 - IMPROVEMENTS ADJACENT
TO BASIN**
 - Fence, Pad, and Gate \$20.00 LF
 - Mowstrip \$20.00 LF
 - Arterial Paving \$82.00 LF
 - Local Paving \$53.00 LF
 - Curb and Gutter \$30.00 LF
 - Sidewalk \$60.00 LF
 - Sewer Line \$30.00 LF
 - Water Line \$31.00 LF
 - Street Lights \$65.00 LF
 - Pump Station/Intake \$500,000.00 EA

CL TRACT No. 6304

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
NOTICE OF REQUIREMENTS

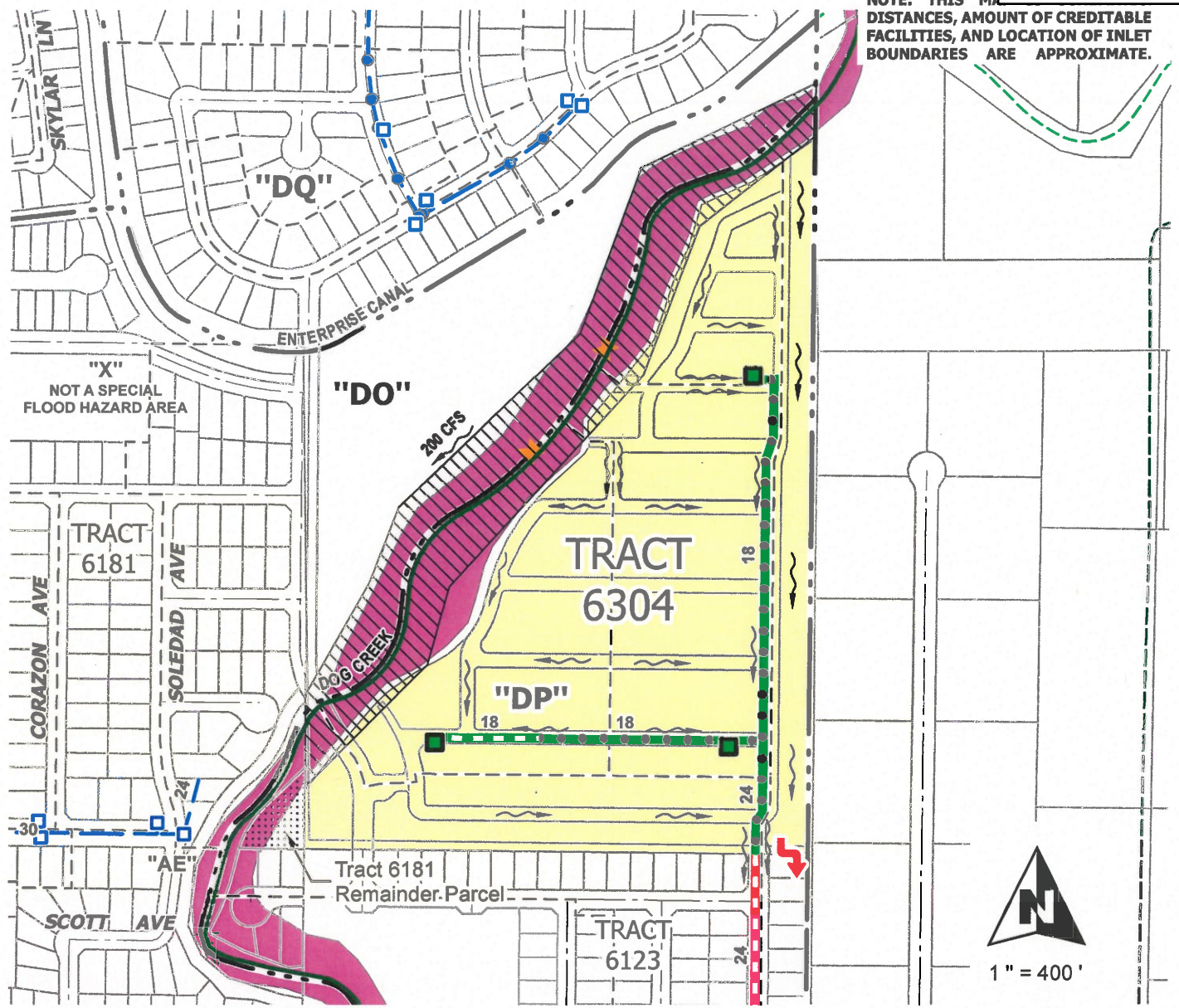
POLICY MANUAL	Date Adopted: September 11, 1981
	Date Last Amended: August 10, 2005
Classification: FLOOD PLAIN MANAGEMENT	Approved By: 
Subject: Flood Plain Policy	

Because of the relatively high velocities and volumes of flood flow associated with primary flood plains, and because the primary flood plain is responsible for passing the greatest percentage of the flood event, development located in such flood plains is subject to substantial risk, both to itself and to others as a result of the potential for blockage and diversion of flood waters. In view of these factors:

Policy:

- (1) All proposed development activity shall reference the Flood Insurance Rate Map to determine if it is located in a 100-year flood plain (special flood hazard areas inundated by a 100-year flood) "Primary Flood Plain". Any project not located within a FIRM or located in any area where the FIRM is determined to be inaccurate shall be the subject of a detailed hydrological flood hazard investigation to determine the relationship of the proposed development to the primary flood plain; and, further, to identify the calculated water surface elevation of the 100-year flood event.
- (2) The development must be properly flood proofed below the calculated water surface elevation of the 100-year flood event.
- (3) All development and/or permanent improvement activity which, if located within the primary floodway, may unduly impede, retard or change the direction of flow of water either, by itself, or by the catching or collecting of other debris or is placed where the flow of water would carry such obstruction downstream to the damage or detriment of either life or property, should not be permitted.
- (4) The development shall not cause displacement of any and all floodwaters from that portion of the flood plain to be developed.

NOTE: THIS MAP SHOWS DISTANCES, AMOUNT OF CREDITABLE FACILITIES, AND LOCATION OF INLET BOUNDARIES ARE APPROXIMATE.



LEGEND

- Creditable Facilities (Master Plan Facilities To Be Constructed By Developer) - Pipeline (Size Shown) & Inlet
- Non-Master Plan Facilities To Be Constructed By Developer (Not Eligible For Fee Credit)
- Facilities To Be Constructed By Developer Of Tract 6123
- Existing Master Plan Facilities
- Future Master Plan Facilities
- Existing Major Stream Course (Master Plan Channel)
- Existing Culvert
- Channel Easement To Be Dedicated To The District
- FEMA Flood Zone "AE"
- Inlet Boundary
- Drainage Area Boundary
- Direction Of Drainage
- Major Storm Breakover

TRACT 6304
DRAINAGE AREA "DP"

EXHIBIT NO. 1

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

Prepared by: keithr
Date: 3/6/2020
Path: K:\Autocad\DWGS\0EXHIBIT\TRACTS\6304.mxd

OTHER REQUIREMENTS
EXHIBIT NO. 2

The cost of construction of Master Plan facilities, excluding dedication of storm drainage easements, is eligible for credit against the drainage fee of the drainage area served by the facilities. A Development Agreement shall be executed with the District to effect such credit. Reimbursement provisions, in accordance with the Drainage Fee Ordinance, will be included to the extent that developer's Master Plan costs for an individual drainage area exceed the fee of said area. Should the facilities cost for such individual area total less than the fee of said area, the difference shall be paid upon demand to the City/County or District.

The Master Plan system has been designed such that during a two-year event flow will not exceed the height of the 6-inch curb. Should wedge curb (4.5 inches height) be used the same criteria shall apply whereby flow remains below the top of curb. Any extensions or pipe size increases due to meeting the requirement listed above shall be at the developer's expense.

Lot coverage must be provided to the District prior to submittal of improvement plans. The final drainage fee will be calculated commensurate with the lot coverage provided by the developer. If the lot coverage indicates a density higher than Master Planned, mitigation may be required. The lot coverage calculated by the District includes the front yard walkway, sidewalk walkway and the rear yard patio equaling an additional 6% of impervious area in addition to the City's typical lot coverage calculation.

The City of Clovis should be aware that the Tract 6181 remainder parcel, as shown on Exhibit No. 1, may not have access to future drainage service if Tract 6304 is constructed per the current site plan.

Dog Creek Channel is a natural stream course traversing the proposed development. This stream course is shown on the Storm Drainage and Flood Control Master Plan (see Exhibit No. 1). Should the developer choose to modify or relocate the channel, the developer must contact all agencies having an interest in this channel and comply with their regulations regarding the channel. These agencies may include State of California Fish and Wildlife, State of California Regional Water Quality Control Board (Section 401 of Clean Water Act), and the U.S. Army Corps of Engineers (USACE) (Section 404 of Clean Water Act). Furthermore, if a USACE Clean Water Act Section 404 permit application package is prepared, the District requests an opportunity to review the application prior to submittal.

Development No. Tract 6304

OTHER REQUIREMENTS
EXHIBIT NO. 2

The channel must be protected and preserved in its current location or an accepted relocation plan must be provided. The protection and preservation of this channel is necessary to convey upland surface runoff through the proposed development without adversely affecting other property owners and also to provide safe conveyance through the proposed development. The plans to retain or relocate this channel must be addressed in a drainage report prepared by the developer's engineer and submitted to the District for the project and include a study of any affect to the hydraulic performance of the channel.

The proposed development, as currently submitted, does not fully address the protection or relocation of the channel. As proposed, it is not clear if an adequate buffer has been provided between certain lots and the top of the bank of Dog Creek. The proposed development must provide an adequate buffer between the lots and the channel. The developer's engineer shall work with the District to determine the extents of the buffer and to revise the proposed plan if necessary.

Wherever the developer proposes Dog Creek, adequate easement widths shall be dedicated to the District prior to the approval of the Final Map. The easement shall be of sufficient width to accommodate the Master Plan flow rate and also provide adequate maintenance access. Development within the easement is prohibited. The District does not contemplate general public access within the easement.

Some thought needs to be put into both private and public channel crossings. Preferably, channel crossings will be kept at a minimum, and each crossing will require an encroachment agreement identifying the applicant as responsible for the long term maintenance and potential removal of the encroachment.

As the channel design and hydraulic study of Dog Creek could affect the lot pattern and configuration, the District will review the work of the developer's engineer to determine easement limits at the time of dedication. The channel design must be completed prior to tentative map approval to ensure the easement area is known and adequate space is allotted for the channel. It is in the developer's interests to identify the channel design as early as possible so that appropriate lot configurations are selected. The hydraulic study must reflect culverts where roads and driveways cross the channel.

Development No. Tract 6304

OTHER REQUIREMENTS
EXHIBIT NO. 2

Should the developer choose to improve the channel, the developer shall comply with the following requirements. The standard geometry parameters for Dog Creek are a minimum 16-foot wide bottom and maximum 2:1 side slopes. The channel must be designed and constructed to accommodate the flow rate of 200 cubic feet per second as identified in the Master Plan. The channel design must include hydraulic modeling using the HEC-RAS computer program. Channel design and hydraulic study must also consider the attenuation currently provided by the developer's property and not reduce the attenuation or otherwise increase conveyance to downstream properties. Should the developer choose to protect the existing channel, a hydraulic model using the HEC-RAS computer program must be completed to confirm the existing channel can accommodate the Master Plan flow rate. If the existing channel cannot accommodate the Master Plan flow rate, then the developer must improve the channel.

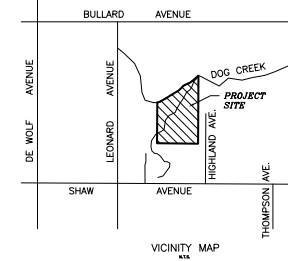
The District will accept easement dedications for the channel following completion of construction, including any mitigation obligations, and acceptance under required permits. Any proposed landscaping within the channel easement shall require (i) review and approval by the District, and (ii) maintenance by the property owner.

Dog Creek lies within the regulatory Federal Emergency Management Agency (FEMA) Floodway requiring additional processing and consideration if channel improvements are proposed. FEMA standards require that *"Any project in a floodway must be reviewed to determine if the project will increase flood heights. An engineering analysis must be conducted before a permit can be issued. The community's permit file must have a record of the results of this analysis, which can be in the form of a No-rise Certification. This No-rise Certification must be supported by technical data and signed by a registered professional engineer. The supporting technical data should be based on the standard step-backwater computer model used to develop the 100-year floodway shown on the Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM)."* The developer shall contact FEMA to obtain their requirements.

Any mapping process performed as part of the proposal shall include an additional map sheet identifying the limits of inundation from a 100-year storm event. The area of inundation shall be based upon existing topography. Approval of the proposed modification which alters the flood inundation area should be conditioned upon processing of a Letter of Map Revision with the Federal Emergency Management Agency.

Development No. Tract 6304

VESTING
TENTATIVE SUBDIVISION MAP
OF
TRACT NO. 6304
IN THE CITY OF CLOVIS
FRESNO COUNTY, CALIFORNIA

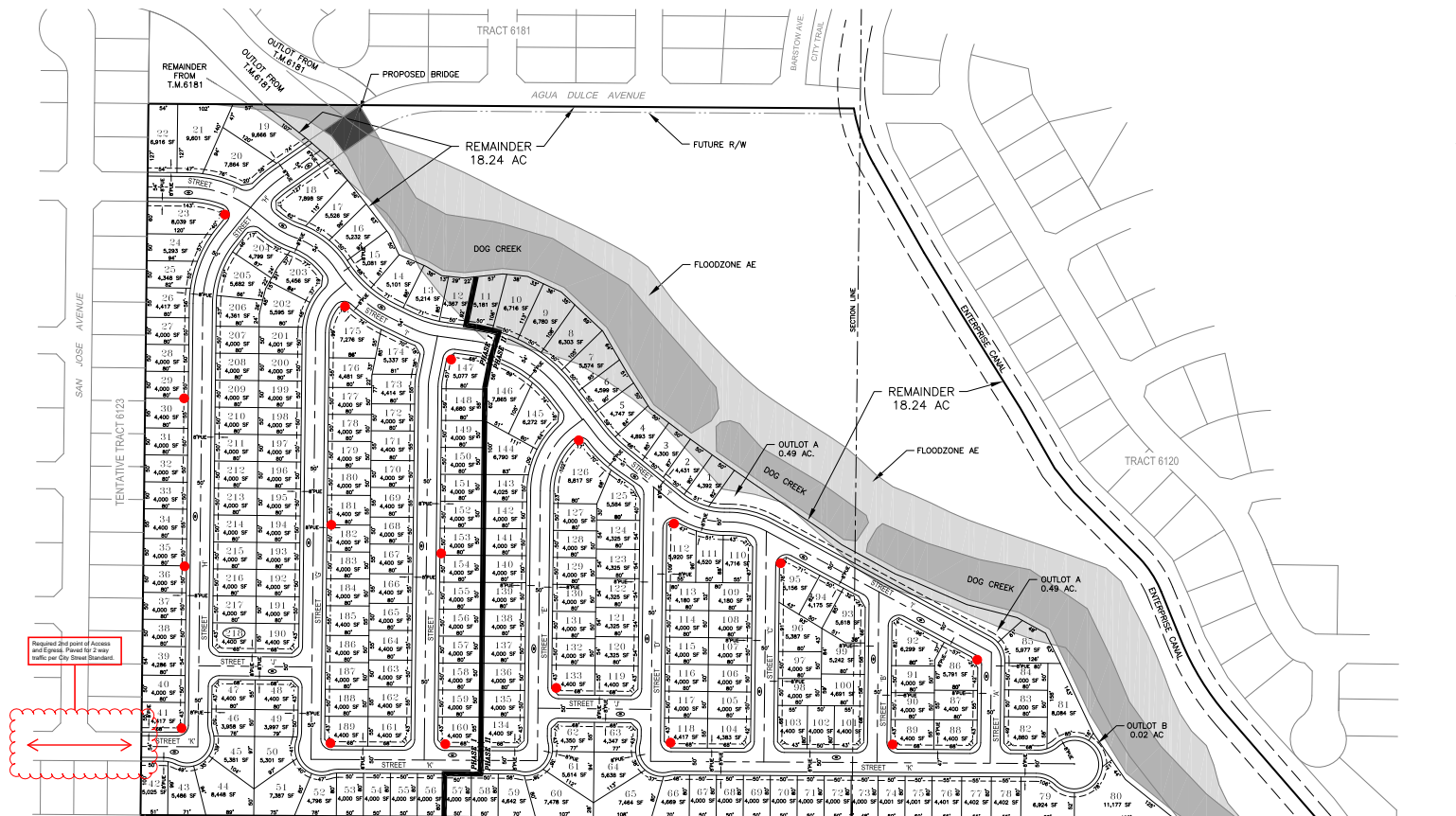


EXISTING BUILDINGS 6 BUILDINGS TO BE REMOVED	SOURCE OF ELECTRICITY PG&E
EXISTING TREES 525 EXISTING TREES TO BE REMOVED	SOURCE OF GAS PG&E
EXISTING USE RURAL RESIDENTIAL	SOURCE OF CABLE T.V. COMCAST
EXISTING ZONING R-2	SOURCE OF TELEPHONE AT&T
PROPOSED ZONING R-2	ASSESSOR'S PARCEL NUMBER 154-052-10
PROPOSED USE SINGLE FAMILY RESIDENTIAL SUBDIVISION	SITE AREA 51.77 AC. (GROSS) 35.56 AC. (NET)
SOURCE OF WATER CITY OF CLOVIS	NUMBER OF LOTS 218 LOTS, 2 OUTLOTS, AND 1 REMAINDER
SOURCE OF SEWAGE DISPOSAL CITY OF CLOVIS	DENSITY 4.50 U/LAC
SOURCE OF WASTE DISPOSAL CITY OF CLOVIS	AVERAGE LOT SIZE 4,600 SF
	SITE ADDRESS 8762 E BARSTOW AVENUE CLOVIS, CA 93619

LEGEND:

	PUBLIC STREET EASEMENT NOW OFFERED FOR DEDICATION FOR PUBLIC USE
	PROPOSED PUBLIC UTILITY EASEMENT NOW OFFERED FOR DEDICATION FOR PUBLIC USE
	FLOODZONE AE
	DOG CREEK
	PROPOSED BRIDGE

OUTLOT SCHEDULE
OUTLOTS A & B ARE FOR PUBLIC LANDSCAPING AND PUBLIC UTILITY PURPOSES



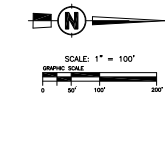
APN: 308-160-23 E: RURAL RESIDENTIAL E: R-R, FRESNO COUNTY	APN: 308-170-22 USE: RURAL RESIDENTIAL ZONE: R-2, FRESNO COUNTY	APN: 308-170-23 USE: RURAL RESIDENTIAL ZONE: RR-2, FRESNO COUNTY	APN: 308-170-24 USE: RURAL RESIDENTIAL ZONE: R-R, FRESNO COUNTY	APN: 308-170-25 USE: RURAL RESIDENTIAL ZONE: R-R, FRESNO COUNTY	APN: 308-261-28S USE: RURAL RESIDENTIAL ZONE: A-1, FRESNO COUNTY	APN: 308-261-27S USE: RURAL RESIDENTIAL ZONE: A-1, FRESNO COUNTY
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LEGAL DESCRIPTION:
(APN: 154-052-10)

PARCEL ONE
ALL THAT PORTION PARCEL 4 OF PARCEL MAP NO. 3012, ACCORDING TO THE MAP THEREOF RECORDED IN BOOK 22 OF PARCEL MAPS AT PAGE 43, FRESNO COUNTY RECORDS, BEING A PORTION OF THE SOUTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION 12, TOWNSHIP 13 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL UNITED STATES GOVERNMENT PLAT THEREOF, LYING SOUTHERLY OF THE CENTER LINE OF THE ENTERPRISE CANAL, IN THE COUNTY OF FRESNO, STATE OF CALIFORNIA, SAID CENTER LINE BEING DESCRIBED AS FOLLOWS:
BEGINNING AT A POINT ON THE EAST LINE OF THE SOUTHWEST 1/4 OF THE NORTHEAST 1/4 OF SAID SECTION 12, SAID POINT BEING NORTH OF 20° 28' EAST, 887.47 FEET FROM THE SOUTHWEST CORNER OF THE NORTHEAST 1/4 OF SAID SECTION 12; THENCE SOUTH 49° 01' 30" WEST, 261.16 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE TO THE NORTHWEST HAVING A RADIUS OF 500.00 FEET THENCE SOUTHWESTERLY, 154.01 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 17° 47' 00" THENCE SOUTH 87° 44' 18" WEST, 97.88 FEET TO THE BEGINNING OF A TANGENT CURVE 79.41 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 22° 44' 57" THENCE SOUTH 40° 04' 21" WEST, 128.34 FEET THENCE SOUTH 57° 00' WEST, 208.01 FEET; THENCE SOUTH 50° 44' WEST, 133.57 FEET; THENCE SOUTH 67° 12' WEST, 170.02 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE TO THE NORTHWEST HAVING A RADIUS OF 310.00 FEET; THENCE SOUTHWESTERLY, 109.29 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 27° 12' 00" TO THE INTERSECTION OF SAID CURVE WITH THE WEST LINE OF THE NORTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SAID SECTION 12, SAID WEST LINE ALSO BEING THE WEST LINE OF SAID PARCEL 4 AND THE WEST TERMINUS OF THE DESCRIPTION OF SAID CENTER LINE.
THIS LEGAL DESCRIPTION IS MADE PURSUANT TO THAT CERTAIN CERTIFICATE APPROVING A CERTIFICATE OF COMPLIANCE PLA 15-05(A), RECORDED DECEMBER 4, 2015 AS INSTRUMENT NO. 15-125468 OF OFFICIAL RECORDS.

PARCEL TWO:
A 60 FEET WIDE ACCESS EASEMENT OVER AND ACROSS A PORTION OF THE NORTHEAST 1/4 OF THE SOUTHWEST 1/4 OF THE NORTHEAST 1/4 OF SECTION 12, TOWNSHIP 13 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, THE CENTER LINE OF WHICH IS DESCRIBED AS FOLLOWS:
COMMENCING AT A POINT ON THE WEST LINE OF THE NORTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12, WHICH BEARS S. 07°09'00" E., 77.14 FEET FROM THE NORTHWEST CORNER THEREOF; THENCE EASTERLY ALONG A CURVE CONCAVE NORTHERLY WITH A RADIUS OF 300.00 FEET THROUGH A CENTRAL ANGLE OF 37° 38'00", AN ARC LENGTH OF 169.82 FEET; THENCE N. 57°02'00" E., 80.00 FEET; THENCE ALONG A CURVE TO THE LEFT WITH A RADIUS OF 80.00 FEET, THROUGH A CENTRAL ANGLE OF 90°00', AN ARC LENGTH OF 126.86 FEET TO A POINT ON THE CENTER LINE OF THE ENTERPRISE CANAL.

- NOTES:
- THIS AREA IS SUBJECT TO FLOODZONE X (UNSHADED).
 - ALL IMPROVEMENTS SHALL BE AS REQUIRED BY THE CITY OF CLOVIS TO CITY STANDARDS, AND SHALL INCLUDE SANITARY SEWER, CEMETIC WATER, UNDERGROUND POWER, TELEPHONE CABLES, CONCRETE CURBS, GUTTERS, SIDEWALKS, PERMANENT STREET PAVEMENT STREET LIGHTS, ETC.
 - THERE SHALL BE NO GRADE DIFFERENTIALS OF GREATER THAN 6" WITHIN 200 FEET OF THE SITE UNLESS APPROVED BY THE CITY OF FRESNO DEVELOPMENT DEPARTMENT.
 - THERE ARE NO EXISTING ABOVE GROUND USES OR STRUCTURES SUCH AS BUILDINGS, WATER WELLS, POWER LINES, TOWERS, ETC. WITHIN THE PROPOSED SUBDIVISION. (EXCEPT IF SHOWN).
 - THERE ARE NO UNDERGROUND FEATURES SUCH AS WELLS, CESSPOOLS, SEWERS, CULVERTS, STORM DRAINS, COMP SITES AND OTHER UNDERGROUND STRUCTURES WITHIN THE PROPOSED SUBDIVISION. (EXCEPT IF SHOWN).
 - THE DESIGN OF THE PROPOSED SUBDIVISION SHALL PROVIDE TO THE EXTENT FEASIBLE FOR FUTURE PASSIVE OR NATURAL HEATING OR COOLING OPPORTUNITIES AND OTHER MEASURES THAT CONSERVE NONRENEWABLE ENERGY RESOURCES AS PROVIDED IN THE SUBDIVISION MAP ACT. 79% OF THE LOTS ARE ORIENTED NORTH AND SOUTH.



TENTATIVE TRACT MAP

Bonadée Neighborhoods

10017th Avenue, Suite 200 - Clovis, CA 93619
(559) 225-7878 • Fax: (559) 225-1188 • Email: info@bonadee.com

DATE: 4-13-20 SCALE: 1" = 100' DRAWN BY: SDM

REVISIONS	NO.	DATE

204

1 OF 1

CORRESPONDENCE FROM PUBLIC

ATTACHMENT 7

From: Larry Miller <lmiller@lm-engineering.com>
Sent: Thursday, June 11, 2020 4:44 PM
To: Ricky Caperton
Subject: Re: GPA2020-001, R2020-001, TM6304

Follow Up Flag: Follow up
Flag Status: Flagged

Thanks Rick:

After a cursory review of the information related to this project, I have some questions.

What is the status of proposed development of Tract 6123 directly to the South of this project?

Is the street plan for Tract 6123 that shows in the aerial view an approved plan?

I recall that area went through the planning process several years ago and they were give time extensions.

Will the currently proposed project (GPA2020-001) be developed first followed by Tract 6123?

There is no mention in the traffic studies of the Shaw / Highland Avenue intersection or any of the proposed new streets entering the North side of Shaw. Where is that addressed?

The traffic study indicates Shaw Avenue is (or will be) a 4 lane divided street west of McCall. Since that has not happened yet, what is the anticipated schedule for widening Shaw Avenue?

Are plans complete for widening of Shaw Avenue, and if so, where are they available for review?

The proposed temporary road along the East side of Tract 6123 is problematic. What are the construction details and restrictions that will apply to this road?

This development will cut off our line of sight to Owens Mountain and our internet service as presently configured will be blocked. For our location, there are no practical alternative services to Unwired Broadband service. Mitigation will be required.

Thanks for your assistance.

Larry E. Miller
559 281-3334

On Jun 10, 2020, at 1:26 PM, Ricky Caperton <rcaperton@ci.clovis.ca.us> wrote:

Hi Mr. Miller,

Pleasure to have talked with you over the phone earlier. As we discussed, I wanted to provide some additional information as you requested. Attached is the proposed tract map, as well as a map shown below. The maximum height that would be allowed for any home would be 35 feet, although I believe the homes would be slightly less. The environmental documentation is located on the City's website (<https://cityofclovis.com/planning-and-development/planning/ceqa/>) which will have a more complete description of the proposed project. Click the link and scroll towards the bottom to RO302, GPA2020-001, R2020-001, TM6304. Let me know if you have any issues locating the documents and I'd be happy to walk you through it.

Please don't hesitate to reach out if you have any other follow up questions or concerns.

<image005.jpg>

Thank you,
Ricky

<image006.png>

Ricky Caperton, AICP | Senior Planner

City of Clovis | Planning Division
1033 Fifth Street, Clovis, CA 93612
p. 559.324.2347 | m. 559.593.5176
rcaperton@cityofclovis.com

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From: Larry Miller <lmliller@lm-engineering.com>
Sent: Wednesday, June 17, 2020 2:33 PM
To: Ricky Caperton
Cc: Ken Kemp
Subject: Re: GPA2020-001, R2020-001, TM6304

Ricky:

Has a grading and storm water drainage plan been developed at this time. Specifically, I am interested in:

1. Final grade elevations in the southeasterly part of the development. That is crucial in evaluating my Unwired Broadband microwave path clearance since the general area appears to be higher than the westerly portion of our lot..
2. What specific storm water drainage will be incorporated. In addition to the site itself, of particular interest is how will the temporary road be handled. When the land south of this project, Tract 6123, was improved for Ag use there was some discussion of drainage since that had been a natural lowland/wetland that storm water from our neighborhood drained to. On very wet years our on site basins will not handle the runoff. I understood the Ag development included drainage, but I never saw a plan of that was accomplished. If it drains South to Shaw Avenue via the swale along the east side of Tract 6123 that is another concern regarding the indicated temporary roadway. APN: 308-170-22 on Highland Avenue is at a low spot and is the most vulnerable to flooding.

I understand your wanting to put together a package responding to all of my questions, however, if possible, I would appreciate response to my questions as you are able so that I don't get everything at the last minute.

Thanks again.

Larry Miller
559 281-3334

> On Jun 16, 2020, at 2:40 PM, Ricky Caperton <rcaperton@ci.clovis.ca.us> wrote:

>

> Hi Larry,

> I haven't forgotten about this. I have a call in with John Bonadelle to clarify a couple of the points below. I'll give him another ring right now. I was trying to get all of your responses in order before replying to avoid having to send multiple emails.

>

>

> Ricky Caperton, AICP | Senior Planner

> City of Clovis | Planning Division

> p. 559.324.2347 | m. 559.593.5176

> rcaperton@cityofclovis.com

>
>
>
> -----Original Message-----
> From: LM Engineering [<mailto:lmiller@lm-engineering.com>]
> Sent: Tuesday, June 16, 2020 2:02 PM
> To: Ricky Caperton <rcaperton@ci.clovis.ca.us>
> Subject: Re: GPA2020-001, R2020-001, TM6304
>
> Hello Rick
>
> Any progress on getting the rest of this info?
> Thanks
>
> Larry Miller
>
>> On Jun 12, 2020, at 6:05 PM, Ricky Caperton <rcaperton@ci.clovis.ca.us> wrote:
>>
>> Hi Larry,
>> I'll send you an email Monday. I meant to get to it today, but the day got away from me.
>>
>> Have a good weekend.
>>
>> -Ricky
>>
>> Sent from my iPhone
>>
>> On Jun 11, 2020, at 4:44 PM, Larry Miller <lmiller@lm-engineering.com> wrote:
>>
>>
>> Thanks Rick:
>>
>> After a cursory review of the information related to this project, I have some questions.
>>
>> What is the status of proposed development of Tract 6123 directly to the South of this project?
>>
>> Is the street plan for Tract 6123 that shows in the aerial view an approved plan?
>>
>> I recall that area went through the planning process several years ago and they were give time extensions.
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>> There is no mention in the traffic studies of the Shaw / Highland Avenue intersection or any of the proposed new streets entering the North side of Shaw. Where is that addressed?
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>> The traffic study indicates Shaw Avenue is (or will be) a 4 lane divided street west of McCall. Since that has not happened yet, what is the anticipated schedule for widening Shaw Avenue?

>>
>> Are plans complete for widening of Shaw Avenue, and if so, where are they available for review?
>>
>> The proposed temporary road along the East side of Tract 6123 is problematic. What are the construction details and restrictions that will apply to this road?
>>
>> This development will cut off our line of sight to Owens Mountain and our internet service as presently configured will be blocked. For our location, there are no practical alternative services to Unwired Broadband service. Mitigation will be required.
>>
>> Thanks for your assistance.
>>
>> Larry E. Miller
>> 559 281-3334
>>
>>
>>
>> On Jun 10, 2020, at 1:26 PM, Ricky Caperton
<rcaperton@ci.clovis.ca.us<mailto:rcaperton@ci.clovis.ca.us>> wrote:
>>
>> Hi Mr. Miller,
>> Pleasure to have talked with you over the phone earlier. As we discussed, I wanted to provide some additional information as you requested. Attached is the proposed tract map, as well as a map shown below. The maximum height that would be allowed for any home would be 35 feet, although I believe the homes would be slightly less. The environmental documentation is located on the City's website (<https://cityofclovis.com/planning-and-development/planning/ceqa/>) which will have a more complete description of the proposed project. Click the link and scroll towards the bottom to RO302, GPA2020-001, R2020-001, TM6304. Let me know if you have any issues locating the documents and I'd be happy to walk you through it.
>>
>> Please don't hesitate to reach out if you have any other follow up questions or concerns.
>>
>> <image005.jpg>
>>
>> Thank you,
>> Ricky
>>
>>
>> <image006.png>
>>
>>
>> Ricky Caperton, AICP | Senior Planner City of Clovis | Planning
>> Division
>> 1033 Fifth Street, Clovis, CA 93612
>> p. 559.324.2347 | m. 559.593.5176
>> rcaperton@cityofclovis.com<mailto:rcaperton@cityofclovis.com>
>>
>>

>>
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>> disclosure by others is strictly prohibited. If you are not the
>> intended recipient (or authorized to receive for the recipient),
>> please contact the sender by reply e-mail and delete all copies of
>> this message. <TM 6304 4-22-20.pdf>
>>

From: Dawnlyn <dlsugl@aol.com>
Sent: Thursday, June 18, 2020 10:54 AM
To: Ricky Caperton
Subject: Fwd: Tract No 6304

Hi Ricky.

Forwarding the email sent to the Bonadelles regarding some remaining concerns.

Sent from my iPhone

Begin forwarded message:

From: "dlsugl2aol.com" <dlsugl@aol.com>
Date: June 17, 2020 at 9:10:20 PM PDT
To: "John@bonadelle.com" <John@bonadelle.com>
Cc: "jab@bonadelle.com" <jab@bonadelle.com>, "karenlkern@msn.com" <karenlkern@msn.com>
Subject: Tract No 6304
Reply-To: "dlsugl2aol.com" <dlsugl@aol.com>

Hello John,

To begin, we hope you and your family are and have been well these past few months. We finally socially distanced in the street with Rich and Karen Kern regarding Tract No 6304 proposal. They shared with us the updated proposal with fewer homes and larger lot sizes and that there has been a condition put in place for only single story homes behind APNS 308-170-24 and 25. We are sincere in our thank you for the revision.

That being said, we are still concerned about the infringement of a highly populated neighborhood on our rural community. We have concerns about the barrier between Tract 6304 and our properties. Is there any clarification on the height, material and aesthetic structural design of the wall along the property line? Additionally we realize the City of Clovis has standards regarding lighting in neighborhoods, yet any consideration for preserving our starry nights will be appreciated.

We intend to be at the Planning Commission meeting 06/25/2020, thought it best to contact you regarding the aforementioned concerns before the meeting.

Jeff and Dawnlynn Suglian

From: Karen Kern <karenlkern@msn.com>
Sent: Friday, June 19, 2020 1:06 PM
To: John A. Bonadelle; dlsugl2aol.com; John Bonadelle
Cc: Ricky Caperton
Subject: Re: Tract No 6304

Follow Up Flag: Follow up
Flag Status: Flagged

Dear John:

I was surprised by your reply. I have a very clear memory of a Blocklite fence for the transition wall with those homes adjacent to the proposed tract during the community meeting. The discussion related to height only and wood was never mention.

I would suggest that since we are not Clovis the standard between residential properties in Clovis does not apply. In fact, it is also contrary to the City's development standards. There is needed mitigation with the sudden transition from Rural Residential to medium to high density. The need for mitigation is greater since this proposed Tract map proposes higher densities.

Please review and consider Section 9.24.040, in particular F which reads in part "**The proposed development project shall be designed to protect adjacent land uses by promoting a compatible transition in terms of scale and character and buffering between areas of different land uses and zoning districts.**"

A wood fence does not mitigate and does not buffer. I understand that while it would be difficult to transition from our open rural properties where most enjoy sunsets a wooden fence will simply shock the senses. A Blocklite wall with greenery, such as along Shaw Ave now is more in line with a transition. It will also mitigate noise.

By cc to Ricky Caperton I request that my email be included in the package to the Clovis Planning Commission. I will attend and speak more on this issue.

Thank you

Karen L. Kern



From: John A. Bonadelle <jab@bonadelle.com>
Sent: Thursday, June 18, 2020 5:21 PM
To: dlsugl2aol.com <dlsugl@aol.com>; John Bonadelle <John@bonadelle.com>
Cc: karenkern@msn.com <karenkern@msn.com>
Subject: RE: Tract No 6304

Jeff & Dawnlynn,

Thank you for reaching out to us. We are doing well and are still adjusting to everything that has happened the last few months, we hope you and your family are doing well and staying safe too. I have outlined below answers to your questions and concerns:

- Regarding the barrier between your property and future homes developed by Bonadelle, we are conditioned to install a new wood fence along the property line. Wood fence between two residential properties is the standard in place at the city of Clovis. We would be happy to remove your existing fence (if your home has one along the property line I cannot recall) if you prefer us to remove it or we can set our new fence to have 6" of separation from your existing fence. Residential fence standards are 6' tall.
- Regarding your concern about lighting, we have in the past installed an additional street light filter that helps to reduce the illumination and direct the flow of light on street lights. I believe this should be achievable to install these shields on street lights near your home. Please keep in mind that street light locations are ultimately determined by PG&E and the city of Clovis.

I hope this information is helpful and that these additional concerns have been addressed. Please contact us if you would like to have an additional conversation and we can conduct a follow up call with you possibly this weekend or early next week.

Sincerely,

John A. Bonadelle | Director of Operations
 Bonadelle Neighborhoods | 7030 N. Fruit, #101, Fresno, Ca 93711
 O: 559.435.9700



From: dlsugl2aol.com <dlsugl@aol.com>
Sent: Wednesday, June 17, 2020 9:10 PM
To: John Bonadelle <John@bonadelle.com>
Cc: John A. Bonadelle <jab@bonadelle.com>; karenkern@msn.com
Subject: Tract No 6304

Hello John,

To begin, we hope you and your family are and have been well these past few months. We finally socially distanced in the street with Rich and Karen Kern regarding Tract No 6304 proposal. They shared with us the updated proposal with fewer homes and larger lot sizes and that there has been a condition put in place for only single story homes behind APNS 308-170-24 and 25. We are sincere in our thank you for the revision.

That being said, we are still concerned about the infringement of a highly populated neighborhood on our rural community. We have concerns about the barrier between Tract 6304 and our properties. Is there any clarification on the height, material and aesthetic structural design of the wall along the property line? Additionally we realize the City of Clovis has standards regarding lighting in neighborhoods, yet any consideration for preserving our starry nights will be appreciated.

We intend to be at the Planning Commission meeting 06/25/2020, thought it best to contact you regarding the aforementioned concerns before the meeting.

Jeff and Dawnlynn Suglian

From: Karen Kern <karenlkern@msn.com>
Sent: Friday, June 19, 2020 1:06 PM
To: John A. Bonadelle; dlsugl2aol.com; John Bonadelle
Cc: Ricky Caperton
Subject: Re: Tract No 6304

Follow Up Flag: Follow up
Flag Status: Flagged

Dear John:

I was surprised by your reply. I have a very clear memory of a Blocklite fence for the transition wall with those homes adjacent to the proposed tract during the community meeting. The discussion related to height only and wood was never mention.

I would suggest that since we are not Clovis the standard between residential properties in Clovis does not apply. In fact, it is also contrary to the City's development standards. There is needed mitigation with the sudden transition from Rural Residential to medium to high density. The need for mitigation is greater since this proposed Tract map proposes higher densities.

Please review and consider Section 9.24.040, in particular F which reads in part "The proposed development project shall be designed to **protect adjacent land uses by promoting a compatible transition in terms of scale and character and buffering between areas of different land uses and zoning districts.**"

A wood fence does not mitigate and does not buffer. I understand that while it would be difficult to transition from our open rural properties where most enjoy sunsets a wooden fence will simply shock the senses. A Blocklite wall with greenery, such as along Shaw Ave now is more in line with a transition. It will also mitigate noise.

By cc to Ricky Caperton I request that my email be included in the package to the Clovis Planning Commission. I will attend and speak more on this issue.

Thank you

Karen L. Kern



From: John A. Bonadelle <jab@bonadelle.com>
Sent: Thursday, June 18, 2020 5:21 PM
To: dlsugl2aol.com <dlsugl@aol.com>; John Bonadelle <John@bonadelle.com>
Cc: karenkern@msn.com <karenkern@msn.com>
Subject: RE: Tract No 6304

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We intend to be at the Planning Commission meeting 06/25/2020, thought it best to contact you regarding the aforementioned concerns before the meeting.

Jeff and Dawnlynn Suglian

David Merchen

From: PC Public Comments <email@cityofclovis.com>
Sent: Sunday, June 21, 2020 6:31 PM
To: David Merchen
Subject: [CAUTION SPOOFING] Planning Commission Public Comments

Planning Commission Meeting Date: 2020-06-25

Item Number: 3

Name: Richard Kern

Email: rich@pknwlaw.com

Comment: Members of the Planning Commission for the City of Clovis,

Thank you for the opportunity to submit these comments to be read into the record. I and my wife are residents living at 5390 N. Highland adjacent to the proposed Bonadelle development located on 52 acres of land located in the southeast area of Leonard and Barstow Avenues. We received notice of a presentation to be given on February 24th, 2020 at Red Bank Elementary regarding the development of single family detached homes near Barstow Avenue and Agua Dulce Avenue. Upon receipt of the notice we contacted Ricky Caperton who guided us through the process to be followed for the meeting and acquired through him a copy of the initial tentative subdivision map.

We attended the meeting and expressed concerns about the density and elevation of the new development which would abut our Highland Avenue development. Our initial concern was the fact that our 2 acre rural residential lots would not be harmonious with the new development which at the time envisioned 8 residences per acre. We were also concerned with the existence of two story homes overlooking the rural residential lots we and our neighbors had enjoyed for over 25 years.

John Bonadelle and John Bonadelle Jr. attended the meeting and addressed each of our concerns with modifications to the tentative subdivision map tract number 6304. The revisions reduced the density of the subdivision and provided that only one story homes would exist adjacent to the Highland Avenue development.

We are satisfied by the changes made by Bonadelle Neighborhoods. We found that Ricky Caperton was responsive to all of our concerns and that the Bonadelles took our concerns seriously and addressed them to our satisfaction.

Date: June 21, 2020

Time: 6:30 pm

Remote IP: 64.193.94.100

From: K Kemp <kenkemp8050@gmail.com>
Sent: Monday, June 22, 2020 2:21 PM
To: Ricky Caperton
Subject: Re: Public hearing

Dear Ricky,

Thank you again for coming to our meeting. I apologize for the heat. I requested a copy of the invitation or postcard that was sent out in February from Mr. Bonadelle. However, he was not able to find a copy. I'm assuming that he had to send a copy to the city also. Please scan it and send it to me.

Thank you,

Betty Kemp

On Mon, Jun 8, 2020 at 4:20 PM K Kemp <kenkemp8050@gmail.com> wrote:

Thanks again!

On Mon, Jun 8, 2020 at 3:55 PM Ricky Caperton <rcaperton@ci.clovis.ca.us> wrote:

Hi Betty (and Ken),

Thank you for your call. The environmental document can be located in the link below (once you click on the link, scroll to the "RO302, GPA2020-001, R2020-001, TM6304"). Please let me know if you have any questions. The agenda and staff report for the June 25th Planning Commission hearing will be published on the City's website around June 19th.

<https://cityofclovis.com/planning-and-development/planning/ceqa/>



Ricky Caperton, AICP | Senior Planner

City of Clovis | Planning Division

p. 559.324.2347 | m. 559.593.5176

rcaperton@cityofclovis.com

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Dear Ricky,

Thank you for your time and attention.

I will be planning to attend the meeting on June 25th.

Please send me the link or the information in regards to
the planned development west of my residence.

live on Highland Avenue just north of Shaw.

Thank you,

Betty Kemp

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From: K Kemp <kenkemp8050@gmail.com>
Sent: Tuesday, June 23, 2020 7:59 AM
To: Ricky Caperton
Subject: Re: Public hearing

Dear Ricky,

I appreciate your time and attention, and I recognize that you are just an employee for the City. Therefore, you may just be following protocol.

This is what the property owners noticed in regards to the postcard:

- Bonadelle's name isn't on it.
- It doesn't have a map
- You need to be familiar with the location of Agua Dulce to know what property they are referring to.

Does the City consider this a sincere attempt to notify us about the meeting?

Betty

On Tue, Jun 23, 2020 at 6:52 AM Ricky Caperton <rcaperton@ci.clovis.ca.us> wrote:

Also, no need for an apology. I'm happy to have been invited. This is all part of the public process, and it's my job to address the concerns of the neighbors to the best of my ability. Thank you for hosting.

-Ricky



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Ricky Caperton, AICP | Senior Planner

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live on Highland Avenue just north of Shaw.

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From: K Kemp <kenkemp8050@gmail.com>
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To: Ricky Caperton
Subject: Re: Public hearing

Dear Ricky,

I'm glad that you recognize that it's an issue. However, I'm thinking about all the past landowners that didn't have the benefit of realizing that this was done. I'm appalled that there hasn't been a standard established yet. This is what I'm referring to when I'm suggesting that the protocol that the city has for new residential development is flawed. Additionally, don't you have guidelines that address zoning where you have a transition from rural residential to medium density?

Finally, do you have the link yet for residents that want to attend the meeting remotely?

Betty

On Tue, Jun 23, 2020 at 2:00 PM Ricky Caperton <rcaperton@ci.clovis.ca.us> wrote:

Hi Betty,

I understand your concern and I have addressed the issue with the applicant and required them to show me a draft notice for their next neighborhood meeting to prevent the same issue. That said, our policy is that neighborhood meetings are the responsibility of the applicant and other than providing the list of addresses within the appropriate radius (in this case 800 feet), the meeting is really their responsibility. To that end, the City is working on coming up with standard guidelines to prevent this from occurring in the future. The guidelines would refine what minimum information is required on future meeting notices.

Thank you,

Ricky



Ricky Caperton, AICP | Senior Planner

City of Clovis | Planning Division

p. 559.324.2347 | m. 559.593.5176

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From: Larry Miller <lmiller@lm-engineering.com>
Sent: Tuesday, June 23, 2020 10:06 AM
To: Ricky Caperton
Cc: Steve Lee; Betty Kemp; Dawnlyn Suglian; Jose Garza; Lea Ybara; Missy Vanderwerf; Paul McKenny; Ralph Mastriano
Subject: Proposed Tract 6304: Commission Questions

Ricky:

Thank you for your input at our meeting Friday evening.

In the interest of expediting the Planning Commission hearing, we have a few more questions.

At our Friday night meeting, John Bonadelle would not commit to running the temporary Shaw Avenue access road through the orchard in Tract 6123 since his agreement with Fegundes is not finalized. The proposed temporary road adjacent to our properties is a problem, especially if we do not have any documented details or criteria for the scope of that roadway. Is there any way this can be resolved prior to the commission meeting? Would the Commission be open to considering project approval contingent on routing the roadway through the orchard at the street proposed for Tract 6123?

John Bonadelle was agreeable to building single story homes along the easterly edge of Tract 6304. Since the agenda packet presented to the commission does not reflect his commitment, how is that made a condition of approval? Will supplemental written documentation be presented to the Commission or will it be included in the developer's oral presentation and read into the official record as a condition of approval?

Page 49 of the agenda packet lists 4 separate items for consideration. Will these be considered as a single discussion item or will they be addressed separately by the Commission? If considered separately, am I correct that each person speaking will be allowed 3 minutes per item?

Please send us the list of homeowners that was given to Bonadelle Development for notification of the neighborhood meeting held in February?

Your assistance is appreciated in helping us analyze this rather complex project.

Larry Miller
559 281-3334

From: Larry Miller <lmliller@lm-engineering.com>
Sent: Tuesday, June 23, 2020 11:25 AM
To: Ricky Caperton
Cc: Steve Lee; Betty Kemp; Dawnlyn Suglian; Jose Garza; Lea Ybara; Missy Vanderwerf; Paul McKenny; Ralph Mastriano; John A. Bonadelle; Lorren Smith
Subject: Re: Proposed Tract 6304: Commission Questions

Thanks Ricky:

Two brief followup comments:

This project is not a simple one, a lot of issues to address. Three minutes per speaker for the entire project does not allow time to adequately express our concerns.

My question regarding notification was specifically for the February meeting. We know who Betty invited last Friday. For the first neighborhood meeting did the City give Bonadelle a list of names and addresses or was Bonadelle given the map you sent us and it was up to them to determine addresses?

Larry Miller
559 281-3334

On Jun 23, 2020, at 10:50 AM, Ricky Caperton <rcaperton@ci.clovis.ca.us> wrote:

Hi Larry et. al.,
Thank you for your comment and for allowing me to attend the meeting last Friday. Please see my responses below in red text. Also, I'm CC-ing John Bonadelle on this response so he can see the questions below.

<image003.png>

Ricky Caperton, AICP | Senior Planner
City of Clovis | Planning Division
p. 559.324.2347 | m. 559.593.5176
rcaperton@cityofclovis.com

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To: Ricky Caperton <rcaperton@ci.clovis.ca.us>
Cc: Steve Lee <POM9155@gmail.com>; Betty Kemp <KenKemp8050@gmail.com>;

Dawnlyn Suglian <dlsugl@aol.com>; Jose Garza <jose.garza@fcle.org>; Lea Ybara <Leaybarra1@gmail.com>; Missy Vanderwerf <Missy.a.vanderwerf@gmail.com>; Paul McKenny <paulmckenny44@gmail.com>; Ralph Mastriano <rsmralph@yahoo.com>
Subject: Proposed Tract 6304: Commission Questions

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John Bonadelle was agreeable to building single story homes along the easterly edge of Tract 6304. Since the agenda packet presented to the commission does not reflect his commitment, how is that made a condition of approval? Will supplemental written documentation be presented to the Commission or will it be included in the developer's oral presentation and read into the official record as a condition of approval? **At the time the packet and staff report were prepared, the Friday meeting had not yet taken place. To that end, if the applicant wishes to commit to single-story, he can certainly request that and I can modify the condition accordingly. Typically, however, single-story restrictions are voluntary by the applicant and not generally mandated by City staff at the onset. If the applicant chooses to place that condition on their project, I can either make that change by way of a supplement to my report and/or enter into the record during my presentation verbally.**

Page 49 of the agenda packet lists 4 separate items for consideration. Will these be considered as a single discussion item or will they be addressed separately by the Commission? If considered separately, am I correct that each person speaking

will be allowed 3 minutes per item? Generally, it's 3 minutes per project as a whole, not 3 minutes per entitlement.

Please send us the list of homeowners that was given to Bonadelle Development for notification of the neighborhood meeting held in February? I am unaware of who has that list. The neighborhood meeting was organized by Betty Kemp as I understand it. Perhaps she has the list of owners she invited. I did attach however the map of the properties that are captured within our 800 foot radius mailing list, which is consistent with our adopted City policy for noticing for General Plan Amendments.

Your assistance is appreciated in helping us analyze this rather complex project.

Larry Miller
559 281-3334

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David Merchen

From: PC Public Comments <email@cityofclovis.com>
Sent: Sunday, June 21, 2020 6:31 PM
To: David Merchen
Subject: [CAUTION SPOOFING] Planning Commission Public Comments

Planning Commission Meeting Date: 2020-06-25

Item Number: 3

Name: Richard Kern

Email: rich@pknwlaw.com

Comment: Members of the Planning Commission for the City of Clovis,

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John Bonadelle and John Bonadelle Jr. attended the meeting and addressed each of our concerns with modifications to the tentative subdivision map tract number 6304. The revisions reduced the density of the subdivision and provided that only one story homes would exist adjacent to the Highland Avenue development.

We are satisfied by the changes made by Bonadelle Neighborhoods. We found that Ricky Caperton was responsive to all of our concerns and that the Bonadelles took our concerns seriously and addressed them to our satisfaction.

Date: June 21, 2020

Time: 6:30 pm

Remote IP: 64.193.94.100

From: Paul McKenney <paulmckenney44@gmail.com>
Sent: Thursday, June 25, 2020 12:37 PM
To: John A. Bonadelle
Cc: Ricky Caperton
Subject: Re: Bonadelle Tract 6304

Good Afternoon John,

This is a follow-up email finalizing my approval for the single story homes and 50/50 split of the block retaining wall we discussed via phone earlier today for tract 6304. I have spoke with Steve Lee and Steve Bricker who have also agreed to this plan. Please let me know if you need anything further, I can be reached at (559)905-6828.

Sent from my iPhone

On Jun 24, 2020, at 9:52 PM, Paul McKenney <paulmckenney44@gmail.com> wrote:

Good Evening,

Regarding Tract 6304, I appreciate your willingness to hear and address all of my concerns.

The home count is great.

Single story homes on the lots listed is also great.

Tract 6123 is beyond my scope of concern and frankly is only conjecture as to whether your firm will even own the property in question.

The initial offer of your cost on the masonry wall is appreciated, but your offered payment equivalent to a wood fence is not what was discussed at the neighborhood meeting. We discussed a 50/50 split of the masonry wall and I will agree to the 50/50 split we discussed.

Thank you for the modification to the street lights

So to summarize, pending an agreement to a 50/50 split on the masonry wall, I am in agreement with your offer and look forward to being good neighbors.

Sincerely
Paul McKenney

Sent from my iPhone

On Jun 23, 2020, at 5:34 PM, John A. Bonadelle <jab@bonadelle.com> wrote:

Good Evening Paul,

First and foremost, thank you for the opportunity for my father and I to meet with you and your neighbors on Friday evening, June 19th to discuss our single-family community, Tract 6304 and to listen to and hopefully address your questions and feedback. We hoped you enjoyed participating in the planning process of what will become a well-designed and compatible neighborhood to yours. We further hope that we put to rest any anxiety of not knowing what will ultimately be built behind your home.

Below is a summary of what Bonadelle Neighborhoods has agreed to for Tract 6304 in an effort to address the feedback provided from the multiple meetings we have now held with your neighborhood:

- Bonadelle Neighborhoods has reduced the proposed community home count from an initial density of 285 homes down to a proposed 217 homes.
- Bonadelle Neighborhoods will only build single story homes along lots that back onto all Highland Ave. properties. We have requested that the City of Clovis make this a condition to Tract 6304 in order to memorialize this agreement. This will apply to lots 41-43, 50-59, 64-71 on the attached tract map. The single-story homes consist of only two of the four floor plans we will offer in this community.
- If Bonadelle Neighborhoods were to acquire Tract 6123, which is the current almond orchard south of Tract 6304, we would agree to build 50% single stories homes on lots backing onto Highland Ave. properties. The 50% single story restriction concept would be a collaborative effort between Bonadelle Neighborhoods and the four existing residents along Highland Ave. that back onto tract 6123 (should they wish to participate) in order to strategically select lots that would best be served for single stories and two stories in an effort to create as minimally invasive of a community as possible. Please keep in mind that our company does not own this property and we are not in escrow to acquire the property, so this commitment will only apply if our company specifically acquires the property.
- If we are contacted in a timely manner, Bonadelle Neighborhoods will construct a masonry wall at our contractor's pricing along your property line. However, we will only pay the portion of the cost equivalent to the expense of a 6' standard wood fence, which is our condition from the City of Clovis per the Clovis' building and development code. You as the home owner

would be responsible to pay the balance of the expense for the wall. Our expense to build this wall would be most likely lower per linear foot compared to the cost it would be to hire a contractor to do this work.

- Bonadelle Neighborhoods, at our additional expense, will add street light shields to street lighting within Tract 6304 in an effort to reduce the glare from future street lighting. This will need to be confirmed by Clovis Engineering and PG&E. Bonadelle Neighborhoods was previously able to apply these shields to Tract 6120 decorative street lighting in the city of Clovis.

We hope that this satisfies your concerns. If you have any additional questions or comments, please contact us directly at my email address or on our office phone line: 559-435-9700. Please note that if you are satisfied, you are not obligated to attend Thursday's Planning Commission meeting. However, if you decide to speak at the Planning Commission we would greatly appreciate if you would speak in support of the project.

Your email address was provided to me from the attendance sheet taken during our meeting or we already had your address on file from prior correspondence regarding Tract 6304. If any of your neighbors that attended the Friday meeting do not receive this email, please forward it along to them or provide them with my email address to contact me directly.

Sincerely,

John A. Bonadelle | Director of Operations
Bonadelle Neighborhoods | 7030 N. Fruit, #101, Fresno, Ca 93711
O: 559.435.9700

<image001.jpg>

<TM 6304 4-22-20.pdf>

David Merchen

From: PC Public Comments <email@cityofclovis.com>
Sent: Wednesday, June 24, 2020 7:11 PM
To: David Merchen
Subject: [CAUTION SPOOFING] Planning Commission Public Comments

Planning Commission Meeting Date: 2020-06-25
Item Number: 3
Name: Jeff and Dawnlynn
Email: dlsugl@aol.com
Comment: Please read our comments into the record.

Thank you for allowing us to submit the following comments concerning the Bonadelle residential subdivision Tract 6304 which is adjacent and parallel to the two acre parcel properties of the existing rural residential development at Shaw and Highland. My wife and I reside at 5389 N Highland. We have attended two meetings, February 24,2020, at Red Bank Elementary and June 19,2020, at the Kemp residence regarding the proposed 52 acre development. Local developers John Bonadelle, John A Bonadelle and Ricky Caperton, AICP, were present at both meetings.

We have resided at our residence for over 21 years, some of our neighbors for over 25 years. My and my wife's initial concerns centered on the high density housing originally proposed abutting our property, as well as our neighbors' properties, and the probability of two story homes overlooking our backyards and residences. The Bonadelles considered our concerns and modified the tract plan, designating a more modest medium density lot layout in addition to stipulating only single level elevations along our shared property lines per the condition to Tract 6304. We are thankful for the dialogue and resulting changes to Tract 6304. It appears to better fit the congruity and environment, to the extent that it can, of our rural setting and way of life.

In summary, we certainly prefer that our rural living remain untouched by a tract home development. Yet, the reality is land development behind our properties is inevitable. The Bonadelles appear to be willing to attempt to reduce the impact of a densely populated city neighborhood on our quiet country way of living. They are aware of our additional concerns and appear to be addressing lighting and the property line barrier between the two developments (preferably a better buffer than wood fencing) pending additional input from the City of Clovis. We appreciate the communication with John, John A and Ricky and hope to continue to have further positive and productive dialogue moving forward during the building and development processes and in addressing future concerns affecting our residences.

Jeff and Dawnlynn Suglian

Date: June 24, 2020
Time: 7:11 pm
Remote IP: 209.218.209.196

A**Presentation for:
Single Family Detached Residential Housing Development
near Barstow Ave. & Agua Dulce Ave.**

On **February 24th, 2020** the home builder will give a presentation for the proposed Single Family Detached Residential housing development near Barstow Ave. and Agua Dulce Ave.

Location: Red Bank Elementary Multipurpose Room

Time: 6 P.M.

If interested in attending, or if you have any questions, please call: 559.435.9700

Hi Betty,

I understand your concern and I have addressed the issue with the applicant and required them to show me a draft notice for their next neighborhood meeting to prevent the same issue. That said, our policy is that neighborhood meetings are the responsibility of the applicant and other than providing the list of addresses within the appropriate radius (in this case 800 feet), the meeting is really their responsibility. To that end, the City is working on coming up with standard guidelines to prevent this from occurring in the future. The guidelines would refine what minimum information is required on future meeting notices.

Thank you,

From: Stephen Lee <pom9155@gmail.com>
Sent: Thursday, July 2, 2020 8:15 AM
To: Ricky Caperton
Cc: Sean Smith; Lorren Smith; John A. Bonadelle
Subject: Re: Excess Water Drainage

This is significantly different from our earlier conversation. Let me pass this by an expert and then get back to you.

Thanks

Sent from my iPad

On Jul 2, 2020, at 8:04 AM, Ricky Caperton <rcaperton@ci.clovis.ca.us> wrote:

Hi Stephen,
Thank you for your message and follow up below. If I'm understanding your question below, drainage is meant and intended to stay on site of the property where water is draining from. Thus, in general, any excess drainage from your site [for example] should remain on your site and not flow to any neighboring properties. The homes along Highland, as you know, are in the County and as I understand it each of the properties has their own on-site drainage basin that should, in theory, have been designed and built to accommodate drainage from each of your respective properties. Thus, excess drainage from yours or your neighbors properties should not be flowing into any adjacent properties. Likewise, the Fagundes' and/or Millhollin properties should not be draining to yours.

That said, if there are issues with excess drainage during heavy rain events, it might be worth contacting either the Fresno Metropolitan Flood Control District (FMFCD) and/or the County of Fresno. Generally speaking, when/if the proposed Project is constructed and subsequently if the Fagundes property develops, those sites will undergo several rounds of review by engineers of both the City of Clovis and FMFCD to ensure that excess drainage from their properties doesn't affect your or neighbors properties.

I am CC-ing our City engineer staff as well as the applicants engineer so they're kept in the loop. They may have more detailed insight as I am not an engineer.

Hope this helps.

-Ricky

<image003.png>

Ricky Caperton, AICP | Senior Planner
City of Clovis | Planning Division
p. 559.324.2347 | m. 559.593.5176
rcaperton@cityofclovis.com

From: Stephen Lee [<mailto:pom9155@gmail.com>]
Sent: Wednesday, July 1, 2020 2:09 PM
To: Ricky Caperton <rcaperton@ci.clovis.ca.us>
Subject: Re: Excess Water Drainage

Hi Ricky,

This is Stephen Lee from 5215 N Highland Ave Clovis. I wanted to follow up with our phone conversation a couple weeks ago regarding Fagundes Track 6123. The question I asked was regarding the excess water drainage from our properties on Highland Ave. The neighbors and I have drainage basins that overflowed onto the Fagundes property during heavy rain seasons. When Mr. Fagundes planted his almonds, he made a drainage path on the east side of his property that drain our excess water from our ponding basins to Shaw Ave and then out to Dog Creek. We the subdivision is being built where is the excess water going to go. During heavy rain year, before the almonds were planted that property became a lake and then overflowed across Shaw Ave. During our discussion you mention that you would check with city engineers to see how the excess water would drain.

If you could let me know your findings, we would appreciate it.

Thank you

Sent from my iPad

On Jun 25, 2020, at 9:48 AM, Ricky Caperton
<rcaperton@ci.clovis.ca.us> wrote:

Dear Neighbors,

Please find attached the instructions to join the Council Meeting via WebEx. It is required to join the virtual meeting on a laptop/desktop computer. If your computer does not have a mic or a headset with a mic, you have the option to provide a callback number for our system to call your phone (see instructions attached).

Here is the direct link to the meeting:

<https://cityofclovis.webex.com/cityofclovis/onstage/g.php?MTID=e89fac5e731ad2e525d7a66c09fd7e286>

We will have a sound check at 5:30 PM which you are welcome to join to test your audio/microphone connection.

If you experience any technical difficulties during the sound check or the meeting, please reach out to the Host via the chat function in WebEx.

As our facilities are now open to the public, please note that you are also welcome to attend the meeting in-person if you experience any connection issues with WebEx. However, seating is limited and depending on the capacity in the Council chambers, you may be asked to wait in the lobby until we call you in. The lobby will have speakers so that the hearing can be heard.

We do ask that if attending in person that you bring masks and maintain appropriate distance. Please let me know if you have any questions and if you plan on attending in person or via WebEx so we have an indication of how many attendees we'll have.

Thank you,
Ricky

<image003.png>

Ricky Caperton, AICP | Senior Planner

City of Clovis | Planning Division
1033 Fifth Street, Clovis, CA 93612
p. 559.324.2347 | m. 559.593.5176
rcaperton@cityofclovis.com

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<WebEx View Setup.pdf>

<Planning Commission Webex Meeting Instructions.pdf>

From: thomas, tomas sullivan <sullthom@yahoo.com>
Sent: Monday, July 6, 2020 2:47 PM
To: Ricky Caperton
Subject: Bonadelle project TM6304

Follow Up Flag: Follow up
Flag Status: Flagged

I live in Grove II and there is no 'green area' in our plan for this community. Also, no thought for consideration of the urban forest.

Please do not repeat these mistakes in the next Bonadelle project!

Thank you

Tom

PLANNING COMMISSION MINUTES (DRAFT)

ATTACHMENT 8

CLOVIS PLANNING COMMISSION MINUTES
June 25, 2020

A modified meeting of the Clovis Planning Commission was called to order at 6:00 p.m. by Chair Hatcher in the Clovis Council Chamber.

Flag salute led by Chair Hatcher

Present: Commissioners Bedsted (via Webex), Cunningham, Hinkle, Chair Hatcher

Absent: Commissioner Antuna

Staff: Dave Merchen, City Planner
Orlando Ramirez, Deputy City Planner
Ricky Caperton, Senior Planner
Maria Spera, Planning Technician II
Sean Smith, Supervising Civil Engineer

MINUTES

1. The Commission approved the May 28, 2020, minutes by a vote of 4-0-1.

COMMISSION SECRETARY

Deputy City Planner Orlando Ramirez announced the July 10th celebration of PDS Director Dwight Kroll's retirement and inquired as to who among the commissioners was chosen to speak at this event. Chair Hatcher stated that Commissioner Antuna had expressed her desire to do so via email, though Commissioner Hinkle also volunteered.

City Planner Dave Merchen, in a follow-up to discussion from the previous meeting regarding limiting future rental in a single-family housing project, informed that the City had examined the issue and determined that to impose such a condition is unlawful and opens the City to actions from various parties, and that therefore such should not be considered by the City now or in the future.

City Planner Merchen informed that the City Council had echoed comments from the previous Planning Commission meeting requesting feedback on reviewing the large environmental document sections in the recent agenda packets. He provided details on changes to the packets in response to these comments as well as details on the relation between these studies and the Initial Study document, as an assurance that the Commission is not expected to read the entirety of the technical environmental studies.

PLANNING COMMISSION MEMBERS COMMENTS

Commissioner Hinkle stated that the previous meeting's discussion regarding rental control had been misunderstood, providing clarification on the actual intention behind the discussion and suggestion.

COMMUNICATIONS AND REFERRALS

Items of correspondence related to Agenda Item X-3.

BUSINESS FROM THE FLOOR

None.

CONSENT CALENDAR

None.

PUBLIC HEARINGS

3. Consider items associated with approximately 52 acres of land located in the southeast area of Leonard and Barstow Avenues. Glen H. Millhollin and Darlene A. Millhollin, Trustees of the Millhollin Family Trust, property owners; Bonadelle Neighborhoods, applicant; Harbour & Associates, representative.
 - a. Consider Approval, Res. 20-___, A request to approve an environmental finding of a Mitigated Negative Declaration for General Plan Amendment GPA2020-001, Prezone R2020-001, & Vesting Tentative Tract Map TM6304.
 - b. Consider Approval, Res. 20-___, GPA2020-001, A request to amend the General Plan to re-designate approximately 34 acres from the Low Density Residential (2.1 to 4.0 DU/Ac) classification to the Medium Density Residential (4.1 to 7.0 DU/Ac) classification.
 - c. Consider Approval, Res. 20-___, R2020-001, A request to prezone approximately 34 acres from the County AE-20 (Exclusive Agricultural) Zone District to the Clovis R-1-PRD (Single-Family Planned Residential Development) and approximately 18 acres from the County AE-20 (Exclusive Agricultural) to the Clovis O (Open Space Conservation) Zone District.
 - d. Consider Approval, Res. 20-___, TM6304, A request to approve a vesting tentative tract map for a 217-lot single-family subdivision on approximately 34 acres of land.

Senior Planner Ricky Caperton presented the staff report.

Commissioner Bedsted requested elaboration on the proposed masonry walls. Senior Planner Caperton provided an explanation regarding the masonry walls and fences.

Commissioner Cunningham sought and received confirmation that though there are lots within the flood plain, staff will work with FEMA to mitigate the risk to those properties. Supervising Civil Engineer Sean Smith further confirmed that there will be many steps taken in the process to ensure that those homes are protected.

Commissioner Hinkle inquired as to whether the reduction in home numbers for this project affects the City's RHNA numbers. Senior Planner Caperton responded in the negative.

Commissioner Hinkle inquired as to the extent of the developer's responsibility for landscaping. Senior Planner Caperton provided an explanation.

Commissioner Hinkle inquired as to the fate of the existing homes in the proposed park area, confirming that current residents would be able to sell their homes anytime to anyone. Senior Planner Caperton provided a detailed explanation.

Commissioner Hinkle referenced previous discussions regarding access from the driveway to the five-foot side yards of proposed subdivision lots and inquired as to whether the paving of this area is being considered with this project. This is a concern for him as residents leaving trash totes in driveways or the streets degrades the desired look of these subdivisions. Senior Planner Caperton responded that staff has no mechanism at this time to require such, and therefore it is the choice of the developer to pave or not.

Commissioner Hinkle inquired as to whether the temporary turnabout on the south end of Hermosa Avenue will be installed with this project or with the tract map to the south. Senior Planner Caperton responded that when the tract to the south develops, it will connect there, but that for now it will remain a stub street.

Commissioner Hinkle sought and received confirmation that the temporary access will be off of Las Rosas Avenue and that there will be some form of temporary road, regardless of the state of relations between the two developers, even if that means waiting for the development to the south to go through.

Commissioner Cunningham remarked that there appeared to be a parcel at the southwest corner of the subject area belonging to TM6181 that seemed to be in danger of becoming landlocked by TM6304. Senior Planner Caperton responded that staff and the applicant are aware of the issue and assured that there are conditions in place to ensure the parcel will have access of some kind.

At this point, the Chair opened the floor to the applicant.

John Bonadelle of 7030 N. Fruit Avenue, Suite #101, provided background on the proposed project, then John Bonadelle Senior addressed some of the issues brought up the commissioners and the matter of neighborhood outreach.

At this point, the Chair opened the floor to those in favor.

Correspondence from Jeff and Dawnlynn Suglian in support of the project was read and then placed into the record.

At this point, the Chair opened the floor to those in opposition.

Betty Kemp of 5333 N. Highland Avenue expressed gratitude to staff and the Commission for their efforts in ensuring compatibility between developments and their surroundings, then informed that one of her neighbors believes that the project has already been approved with the

process being a mere formality. She expressed dissatisfaction with the neighborhood meeting notice sent by the developer, the current lack of standards for those notices, and, as a result, the lack of viability of the first neighborhood meeting in her view, as well as with the proposed medium density of the project, preferring low density development in this area. In addition, she expressed confusion over the combination of several entitlements into a single project item, stating that it appears that the project is being rushed. She concluded by requesting a continuance of the project to provide more time for the neighbors to work with the applicant.

Larry Miller of 5157 N. Highland Avenue stated that details are easy to overlook in a project this complex, following up by informing that some of his objections were removed when the applicant stated that the project would not move forward if the temporary access through the orchard cannot be secured. He expressed dissatisfaction with the neighborhood meeting notice, the mitigated negative declaration, and the traffic study. He then provided details regarding the effect the project would have on his internet service, informing that he has been discussing the problem with the developer but there is no agreement yet. Due to the short notice to the neighbors and the unresolved issues, he requests a delay in the project.

Paul McKenney of 5277 N. Highland Avenue informed that he too did not get a notice for the neighborhood meeting, expressing his belief that the problem of the neighbors in that regard is more with the City than with the applicant. He stated that he had attended one of the meetings and that the applicant had been very helpful and cooperative, as opposed to other developers doing whatever they want no matter what.

Stephen Lee of 5215 N. Highland Avenue expressed that he had some concerns and informed that he had not been notified of the original neighborhood meeting. However, at the second meeting, the applicant making concessions was something he had not been expecting, in contradiction to a similar meeting he attended several years ago. He concluded by expressing appreciation for the applicant's efforts in working with the neighbors.

Jeff Suglian of 5389 N. Highland Avenue, author of the correspondence earlier read into the record, reiterated that though he enjoys the rural lifestyle and does not want development behind his neighborhood, he accepts that such is inevitable. He also expressed appreciation for the applicant's good faith efforts in listening to and addressing the neighborhood's concerns, and he hopes that this will continue going forward, including when future development occurs to the south.

At this point, the Chair closed the public portion.

At this point, the Chair reopened the floor to the applicant.

Mr. Bonadelle elected not to take the opportunity for rebuttal.

Commissioner Hinkle informed that he has served on the Planning Commission for eight years and that in that time, almost all projects brought for consideration have had multiple items together. He requested that Mr. Miller keep an open mind as Mr. Bonadelle works with him. He then informed the members of the public that they should be grateful to Mr. Bonadelle for working

with them and reducing the number of houses, as there are bills in committee currently in the state capitol that will take control of such development away from the cities and give it to state-appointed committees that may care more for their agenda than for the local history and lifestyle. In conclusion, he expressed gratitude to Mr. Bonadelle for working with the neighborhood, as he has seen many instances where developers would not make concessions. He is in favor of the project.

Commissioner Cunningham echoed Commissioner Hinkle, then expressed gratitude to the members of the public for attending and sharing concerns or appreciation. Though he has served on the Commission for only four years, he has in that time seen successful joint ventures between developers and neighbors, leading to everyone winning. He informed that staff will look into improving the notification process, but that going strictly by the law, Mr. Bonadelle has exceeded requirements. He detailed concessions the applicant has made, stating that those indicate a desire to be a good neighbor on the developer's part. He concluded by commending the developer on working with the neighbors and encouraging them to continue doing so.

Commissioner Bedsted assured Ms. Kemp and the other members of the public that the project's approval or denial has not been pre-decided and that the Commission wants to hear from property owners. He informed that he personally desires to see concessions from developers and surrounding property owners with projects. Though he understands that not everyone will get the outcome they desire, enough compromise can make things favorable for both parties, which he is favor of. Based on everything he has heard, the developer wants to be a partner with the neighbors and he expressed appreciation for the concessions made. He concluded by expressing his confidence that with subsequent dialogue further concessions may be made, and he is in favor of this project.

Chair Hatcher echoed her fellow commissioners in stating that a single project will often have multiple items together and that there is no foregone conclusion regarding how a vote will go. She expressed her belief that the applicant has worked hard with the neighbors and has made many concessions, whereas many projects that are more hotly contested have come before the Commission with little collaboration between applicant and neighbors. She expressed her apologies that many did not receive the first neighborhood meeting notice but also her faith that City staff will come up with set guidelines for notification. She detailed several details that were present in this project that the Commission has previously pushed for in other project. She concluded by stating that the developer has done a good job and she too is in favor of this project.

At this point, a motion was made by Commissioner Hinkle and seconded by Commissioner Cunningham to approve a finding of a Mitigated Negative Declaration for GPA2020-001, R2020-001, & TM6304. The motion was approved by a vote of 4-0-1.

At this point, a motion was made by Commissioner Hinkle and seconded by Chair Hatcher to approve GPA2020-001. The motion was approved by a vote of 4-0-1.

At this point, a motion was made by Commissioner Hinkle and seconded by Chair Hatcher to approve R2020-001. The motion was approved by a vote of 4-0-1.

At this point, a motion was made by Commissioner Hinkle and seconded by Chair Hatcher to approve TM6304. The motion was approved by a vote of 4-0-1.

OLD BUSINESS

None.

NEW BUSINESS

None.

ADJOURNMENT AT 7:38 P.M. UNTIL the Planning Commission meeting on July 23, 2020.

Amy Hatcher, Chair

INITIAL STUDY MITIGATED NEGATIVE DECLARATION

ATTACHMENT 9

Bonadelle Neighborhoods
RO302 / GPA2020-001 / R2020-001 / TM6304
Initial Study and Mitigated Negative Declaration

June 2020

PREPARED BY:

Ricky Caperton, AICP
Senior Planner
Planning & Development Services
(559) 324-2347
rcaperton@cityofclovis.com



CITY *of* **CLOVIS**

PLANNING & DEVELOPMENT
1033 FIFTH STREET • CLOVIS, CA 93612

INITIAL STUDY

This Initial Study was prepared pursuant to the California Environmental Quality Act (CEQA) Public Resources Code Sections 21000 *et seq.*, CEQA Guidelines Title 14, Section 15000 *et seq.* of the California Code of Regulations.

PROJECT TITLE: Bonadelle Neighborhoods
RO302/GPA2020-001/R2020-001/TM6304

LEAD AGENCY NAME AND ADDRESS: City of Clovis
Planning & Development Services
1033 Fifth Street
Clovis, CA 93612

CONTACT PERSON AND PHONE NUMBER: Ricky Caperton, AICP, Senior Planer
(559) 324-2347
rcaperton@cityofclovis.com

PROJECT LOCATION: SE near Leonard and Barstow Avenues
Clovis, CA 93619
APN(s): 554-052-10

PROJECT SPONSOR'S NAME AND ADDRESS: John A. Bonadelle
Bonadelle Neighborhoods
7030 N. Fruit Ave., #101
Fresno, CA 93711

LAND USE DESIGNATION: See page 9 of this Initial Study.

ZONING DESIGNATION: See page 9 of this Initial Study.

PROJECT DESCRIPTION See page 7 of this Initial Study.

SURROUNDING LAND USES AND SETTING: See page 6 of this Initial Study.

REQUIRED APPROVALS: See page 9 of this Initial Study.

HAVE CALIFORNIA NATIVE AMERICAN TRIBES REQUESTED CONSULTATION? IF SO, HAS CONSULTATION BEGUN? Yes

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A. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, as indicated by the checklist and corresponding discussion in this Initial Study.

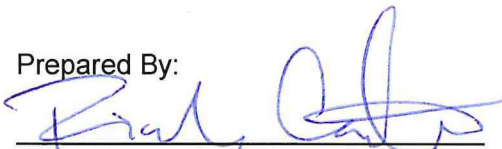
- | | | |
|--|---|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture & Forestry Resources | <input type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Energy |
| <input type="checkbox"/> Geology & Soils | <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards & Hazardous Materials |
| <input type="checkbox"/> Hydrology & Water Quality | <input type="checkbox"/> Land Use/Planning | <input type="checkbox"/> Mineral Resources |
| <input type="checkbox"/> Noise | <input type="checkbox"/> Population/Housing | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Recreation | <input checked="" type="checkbox"/> Transportation | <input checked="" type="checkbox"/> Tribal Cultural Resources |
| <input type="checkbox"/> Utilities & Service Systems | <input type="checkbox"/> Wildfire | <input type="checkbox"/> Mandatory Findings of Significance |

Determination

On the basis of this initial evaluation:

- I find that the proposed Project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.
- I find that, although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponents. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT (EIR) will be prepared.
- I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

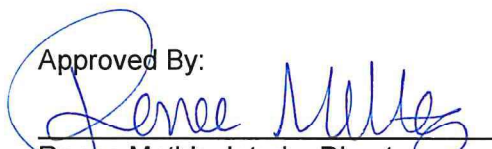
Prepared By:



Ricky Caperton, AICP, Senior Planner
City of Clovis Planning & Development Services

6-3-2020
Date

Approved By:



Renee Mathis, Interim Director
City of Clovis Planning & Development Services

6/3/2020
Date

B. PROJECT OVERVIEW

Bonadelle Neighborhoods (“Applicant”) proposes the construction of 217 single-family homes and associated site improvements (i.e. landscape, parking, sidewalks, and utilities infrastructure) on approximately 34 acres of vacant and undeveloped land near the southeast corner of Leonard and Barstow Avenues currently in the County of Fresno, California, herein referred to throughout the document as “proposed Project” and/or “Project.” It is important to note that the overall total Project area is approximately 52 acres; however, the Project itself would occupy a 34-acre portion of the total acreage. The remaining approximately 18 acres would not include development as part of this Project, although would be rezoned and annexed as part of the Project.

The Project includes a request for annexation into the City of Clovis city limit, a general plan amendment, rezone, and vesting tentative tract map, which are described in more detail below.

C. PROJECT LOCATION

As shown in Figure 1 below, the Project is located southeast of Leonard and Barstow Avenues, west of Highland Avenue (Assessor’s Parcel Number (APN) 554-052-10). As shown in Figure 1, the Project area is bisected by Dog Creek. The Project site is currently outside of the Clovis city limit, although it is within the City’s sphere of influence (SOI).

D. EXISTING SETTING

This section describes the existing conditions, surrounding conditions, as well as the General Plan land use and zoning designations.

1. EXISTING CONDITIONS

As shown in Figure 2 below, the existing site is vacant and undeveloped, consisting primarily of low-lying vegetation, grasses, shrubs, and weeds. The site is generally flat, and is bounded by existing rural residential to the east, vacant land used for agricultural to the south, a subdivision under construction to the west, as well as Dog Creek and rural residential also to the west. The overall Project area is also adjacent to the Enterprise Canal, which is situated north of the greater Project area. As a vacant site, there is currently no pedestrian, circulation, and/or utility infrastructure.

2. SURROUNDING CONDITIONS

As shown reference in Table 1 below, and shown on Figure 2, the Project site is surrounded by a mix of existing rural residential, newer residential, and residential currently under construction. Areas to the north, west, and south are within the City limit, and the Project site and the area to the east are currently within the County of Fresno jurisdiction. Although the property immediately south of the Project site is currently used for agricultural purposes, it is important to note that there is a previously approved tentative tract map and that site is planned for low density residential.

Table 1: Surrounding Land Uses

	Land Use Designation	Zoning*	Existing Land Use
North	Low Density Residential	R-1	Single Family Residential (under construction)
East	Rural Residential (Fresno County)	R-R	Rural Residential (Fresno County)
South	Low Density Residential	R-1	Undeveloped (Ag use)
West	Medium Density Residential	R-1	Single Family Residential (under construction)
*R-1 (Single-Family Residential – 6,000 square feet) R-R (Rural Residential) (County of Fresno)			

Figure 1: Project Location

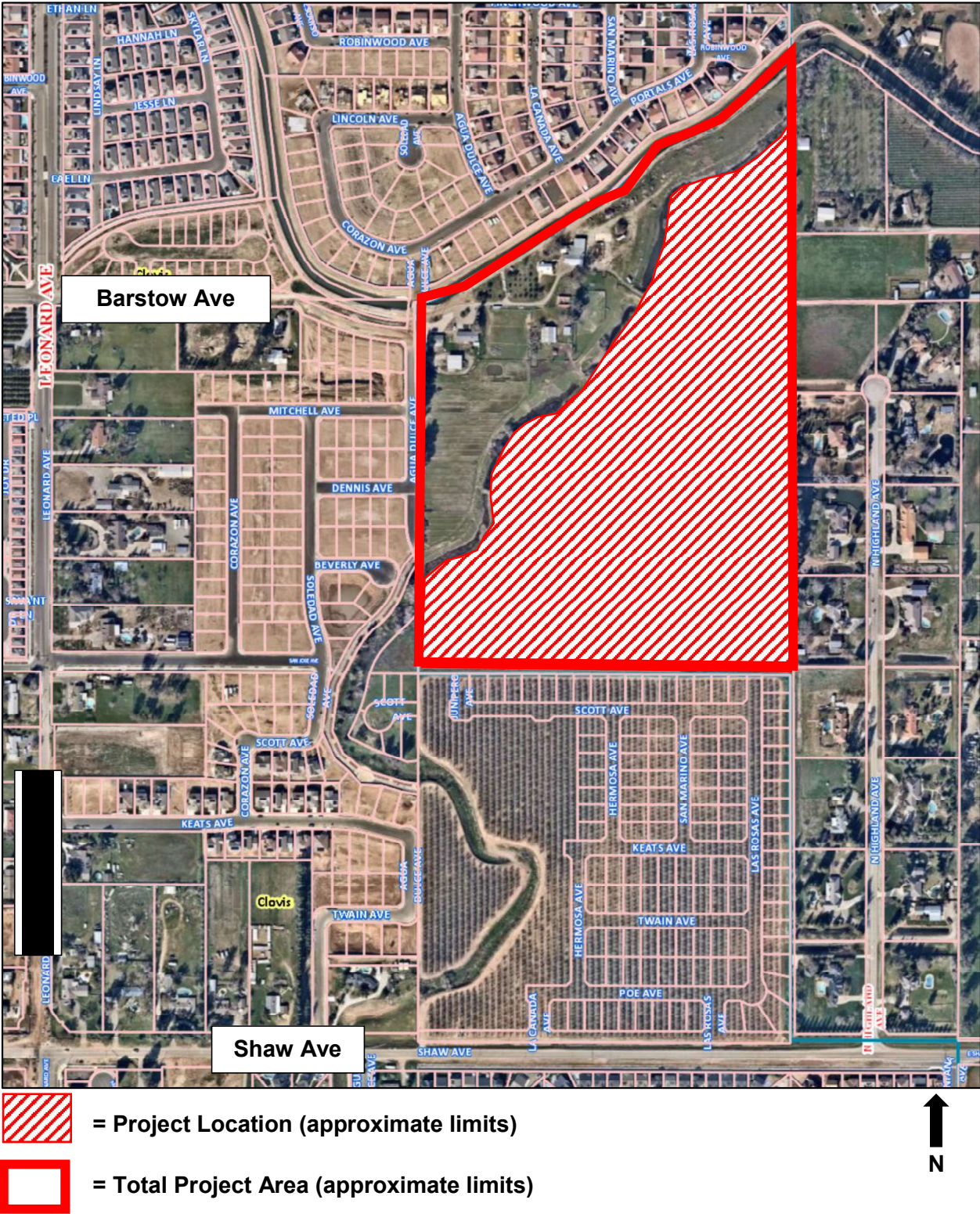
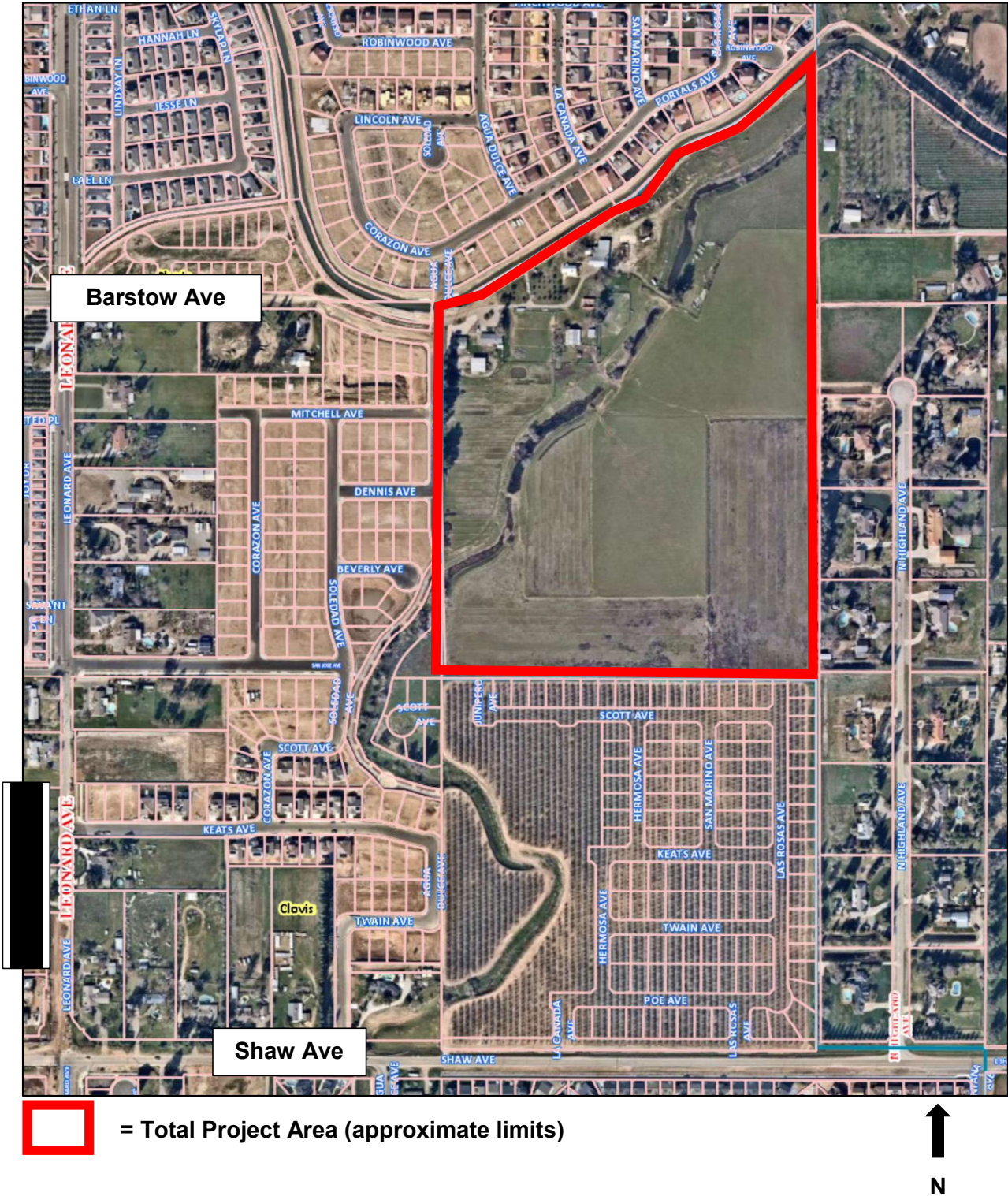


Figure 2: Aerial of Project Location



3. LAND USE DESIGNATION

As shown on Figure 3, the Project site has an existing General Plan land use designation of Low Density Residential, which allows for a density range of 2.1 to 4.0 dwelling units per acre (DU/Ac). The other remaining portion of the total Project area is designated as Park and Open Space. Those areas would not result in a change in land use designation.

According to the 2014 Clovis General Plan, the Low Density land use designation is intended for conventional single family detached houses.¹ As part of the Project, the Applicant is seeking a request to approve a general plan amendment to the Medium Density Residential land use designation, which is intended for detached and attached single family homes, patio homes, or zero lot line homes. The Medium Density Residential designation allows for a density range of 4.1 to 7.0 DU/Ac.

4. ZONING DESIGNATION

As shown on Figure 4, the Project site is currently within the County of Fresno jurisdiction and has a zoning designation of AE20 (Exclusive Agricultural District). As part of the Project, the Applicant requests a pre-zone of approximately 34 acres to the R-1-PRD (Single-Family Planned Residential Development) zone district as part of the annexation request, and the remaining approximately 18 acres to the Open Space zone district.

The R-1-PRD zone district allows for a density range between 4.1 and 15.0 DU/Ac; however, the Applicant is requesting a Medium Density Residential land use designation which would only allow for a density range of 4.1 to 7.0 DU/Ac. The Project proposes a density of approximately 6.50 DU/Ac. The 18 acre portion that would be rezoned to Open Space is to bring the remaining portion into consistency with the General Plan land use designations on that portion west of Dog Creek.

E. PROJECT DESCRIPTION

This section describes the components of the proposed Project in more detail, including site preparation, proposed structures, and on- and off-site improvements.

1. PROJECT CONSTRUCTION

The Project is anticipated to begin construction late 2020 or early 2021, and would commence over two phases with full buildout by 2024/2025. However, first occupancy is assumed to occur by the end of 2021 or early 2022. These timelines are expected; however, are only estimates and depend on other factors such as market and demand.

2. SITE PREPARATION

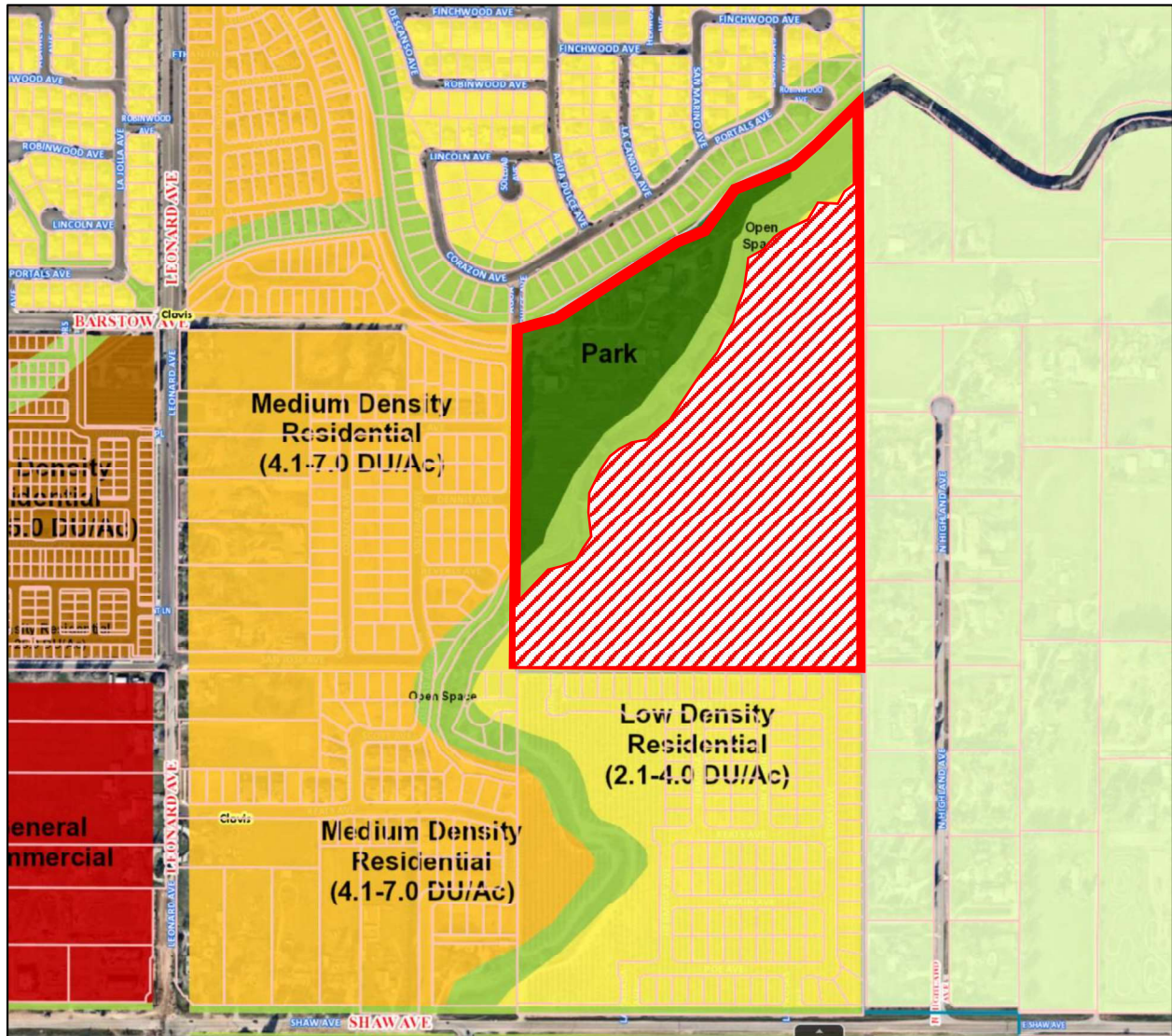
Site preparation would include typical grading activities to ensure a relatively flat surface. Part of the preparation would include the removal of any vegetation, such as grasses, shrubs, and weeds. Any trees would need to be removed. Other site preparation activities would include minor excavation for the installation of utility infrastructure, for conveyance of water, sewer, stormwater, and irrigation. There are no existing structures on the Project site, therefore, there would be no demolition of structures as part of the Project.

3. PROJECT COMPONENTS

This section describes the overall components of the Project, such as the proposed buildings, landscape, vehicle and pedestrian circulation, and utilities.

¹ 2014 City of Clovis General Plan, Land Use Element, Table LU-2, Land Use Designations, page LU-10. August 2014.

Figure 3: General Plan Land Use Designation



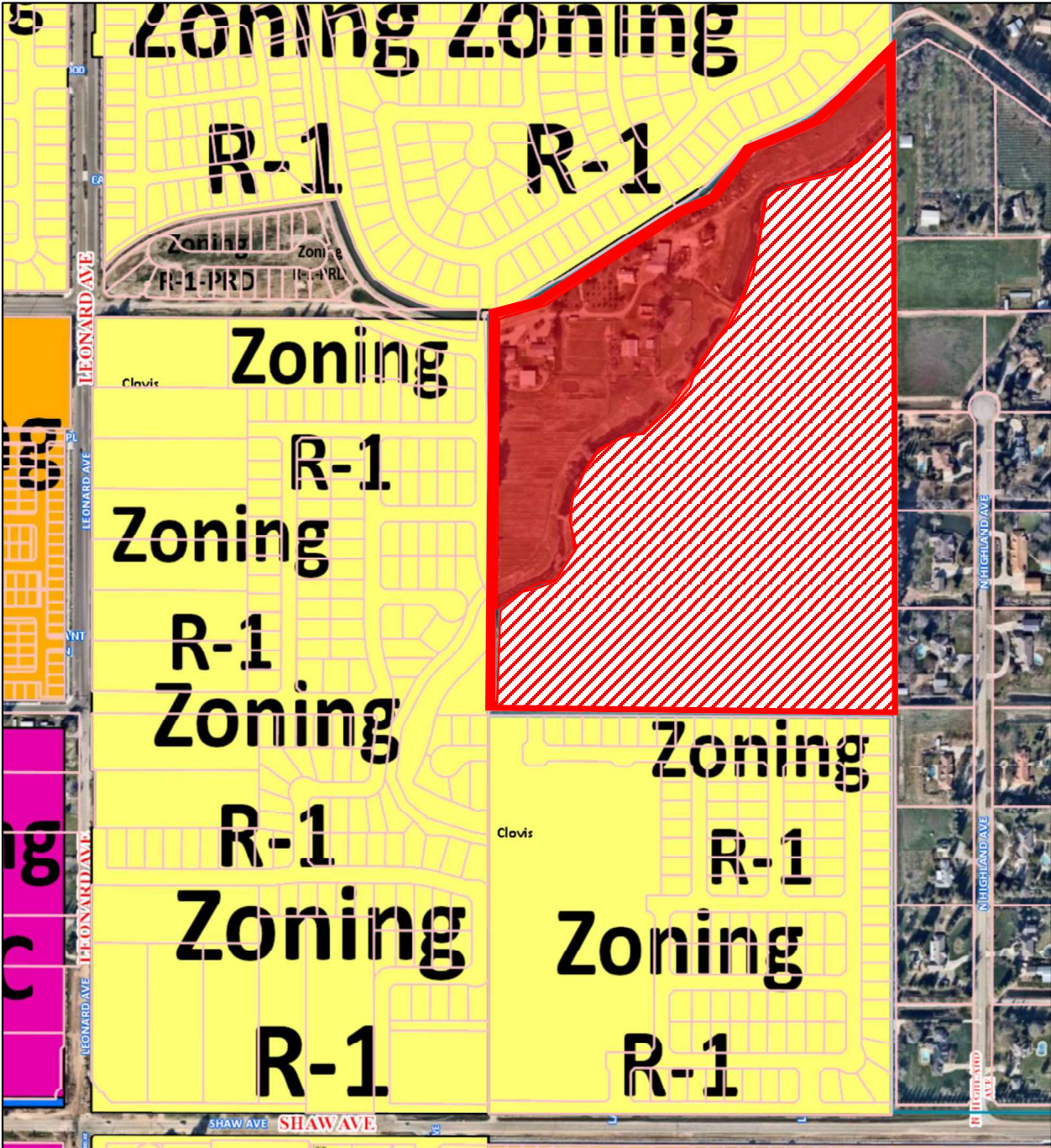
= Total Project Area (approximate limits)






= Low Density (2.1 to 4.0 DU/Ac) to Medium Density (4.1 to 7.0 DU/Ac)



Figure 4: Zoning District



-  = Total Project Area (approximate limits)
-  = County AE20 to R-1-PRD (City)
-  = County AE20 to Open Space (City)



DEMOLITION

As mentioned above under the “Site Preparation” section, there are no existing structures on the Project site, therefore, no demolition would occur. However, there would be site preparation, such as grading and clearing of vegetation.

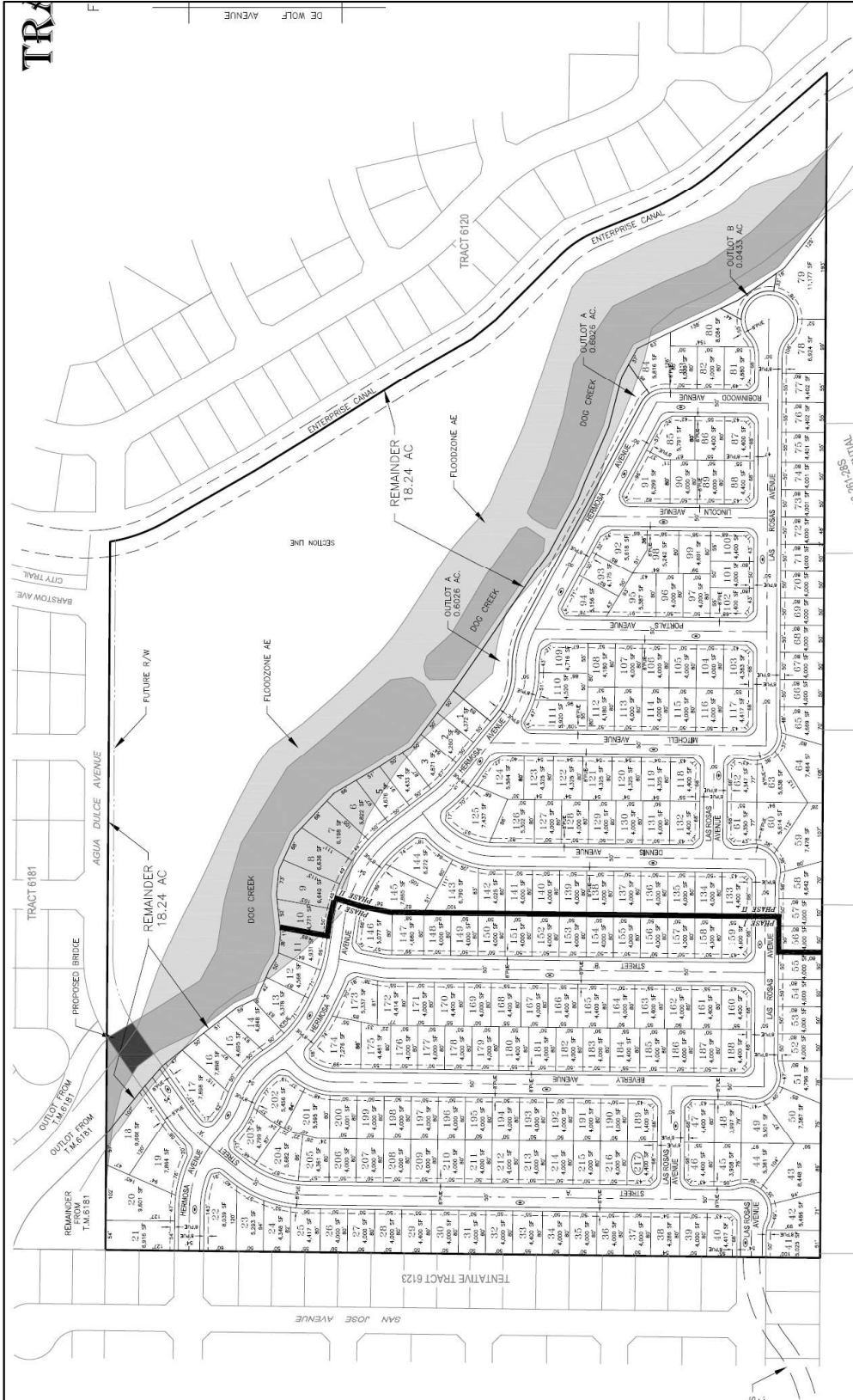
DEVELOPMENT STANDARDS

As shown in Figure 5, the Project proposes 217 single-family residential lots ranging in sizes from approximately 4,000 square-feet to 11,177 square-feet, with an average lot size of approximately 4,700 square-feet. As part of the pre-zone request to the R-1-PRD zone district, Chapter 9.66, Planned Development Permits, of the Clovis Municipal Code (CMC or Code) provides a method whereby land may be designed and developed taking advantage of modern site planning techniques resulting in a more efficient use of land and better living environment than otherwise possible through strict application of the development standards. In general, this section of the Code provides a mechanism to afford some relief to typical development standards. As such, the Applicant proposes the development standards shown in Table 2, Proposed R-1-PRD Development Standards. As part of the R-1-PRD, the Applicant would be required to submit for a Residential Site Plan Review (RSPR) to ensure the final design of the homes conform to the development standards, as well as other design standards that may apply.

Table 2: Proposed R-1-PRD Development Standards

Development Standard	Proposed Standard
Lot Area (minimum)	4,000 square feet
Lot Width (minimum)	50 feet
Lot Depth (minimum)	80 feet
Lot Coverage (maximum)	65%
Height (maximum)	35 feet
Curved, Cul-de-sac, or Corner Lot	35 feet frontage 80 feet depth
Front Yard Setback (minimum)	18 feet to garage 8 feet to living area, porch, or projections
Side Yard Setback (minimum)	5 feet one side 3 feet other side
Corner / Reversed Corner (minimum)	8 feet
Rear Yard (minimum)	5 feet
Garage (minimum)	10 feet x 20 feet for 1-car 20 feet x 20 feet for 2-car
Street Width	50 foot (36 feet curb to curb) <u>and</u> 54 foot (40 feet curb-to-curb)
Parking (minimum)	2 covered spaces per unit
Walls/Fences (minimum height) / (maximum height)	6 feet / 8 feet
Trellises (maximum height)	12 feet
Covered Structures / Accessory Structures (maximum height)	12 feet
NOTE: The Applicant has agreed to restrict lots 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, and 71 to single-story homes.	

Figure 5: Proposed Tract Map 6304



SITE CIRCULATION AND PARKING

The Project would be a non-gated community with public roadways. As shown in Figure 5, the Project includes a drive aisles between 50 feet and 54 feet in right-of-way (ROW) width which results in a curb-to-curb width of 36 feet and 40 feet, respectively. The full ROW width includes the width of the road (curb-to-curb) as well as a 7 foot sidewalk width on both sides of the street. For example, a 54 foot ROW roadway includes a 40 foot drive aisle (i.e. two 20-foot travel lanes) and 14 feet of sidewalk (i.e. 7 foot sidewalk on each side of the road).

The Project site would be accessed via two points of entry; however, would ultimately result in three (3) points of access when the property to the south develops. The primary ingress and egress would be via a bridge spanning Dog Creek from Agua Dulce Avenue that would be constructed as part of the Project. Agua Dulce Avenue is accessed via Barstow Avenue. The second point of access would occur through the south end of the site along a temporary roadway (Las Rosas Avenue) connecting to Shaw Avenue that would also be constructed as part of the Project. Upon development of the parcel south of the Project site, this temporary access would be modified/completed to its ultimate alignment, along with another access point at Hermosa Avenue. At full buildout of the proposed Project and the project south of the site (to be completed by others not part of the proposed Project), a total of three (3) points of access would be completed.

The Project includes the construction of approximately 217 single-family homes each with two-car garages. The homes would also include standard sized driveways which would also provide areas for additional uncovered parking. Although not counted as part of meeting City parking requirements, the roadways do provide sufficient space for parking along the street.

Pedestrian circulation would be provided through a network of paved walking paths throughout the site. Sidewalks would be constructed on both sides of the street and would consist of the typical width sidewalk, consistent with City sidewalk standards.

PROJECT DESIGN

It is important to note that at this stage of the process, conceptual home designs have not yet been completed. However, as part of the Project, an RSPR would be required to ensure that the design of the homes conform to the proposed standards as part of the R-1-PRD requested by the Applicant, as well as any design considerations required under the Loma Vista Specific Plan. The overall footprint, height limit, and placement of the structures would comply with the approved R-1-PRD standards; however, the color palette and design details are subject to slightly change throughout the Residential Site Plan Review RSPR. Generally speaking, the requested maximum height and setbacks are consistent with the allowable residential height limit and setbacks of residentially zoned property throughout the City of Clovis.

LANDSCAPE

The Project would include landscape throughout the site. Typically, landscaped areas would include the front yards of each home, as well as any park or open space areas part of the Project. Landscape plans are typically provided at a later date at which time the proposed landscape plans would be reviewed for compliance with the City's water efficient landscape regulations and guidelines, as well as planting palette and plant and tree locations.

UTILITIES

Utilities for the site would consist of water, sewer, electric, cable, gas, and stormwater infrastructure. Minor trenching and digging activities would be required for the installation of necessary pipelines typical of residential development. All utility plans would be required to be reviewed and approved by the appropriate agency, and/or department to ensure that installation occurs to pertinent codes and regulations.

Utilities are provided by and managed from a combination of agencies, including FID which provides the City's water supply, Fresno Metropolitan Flood Control District (FMFCD) which has responsibility for storm water management, and the City's public utilities department which provides for solid waste collection, and sewer collection services. Pacific Gas & Electric (PG&E) provides electricity and natural gas within the City of Clovis.

F. REQUIRED PROJECT APPROVALS

The City of Clovis requires the following review, permits, and/or approvals for the proposed Project; however, other approvals not listed below may be required as identified throughout the entitlement process:

- Annexation
- General Plan Amendment
- Vesting Tentative Tract Map
- Prezone
- Residential Site Plan Review
- Grading Permit
- Building Permit
- San Joaquin Unified Air Pollution Control District
- Fresno Metropolitan Flood Control District

G. TECHNICAL STUDIES

The analysis of the Project throughout this Initial Study relied in part on the technical studies listed below prepared for the Project, as well as other sources, including, but not limited to, the 2014 Clovis General Plan Environmental Impact Report (EIR), departmental staff, California Department of Conservation, and the California Department of Toxic Control Substances.

- **Appendix A:** Air Quality and Greenhouse Gas Analysis Report, March 5, 2020
- **Appendix B:** Biological Habitat Assessment, February 20, 2020
- **Appendix C:** Cultural Resources Assessment, February 14, 2020
- **Appendix D:** Traffic Impact Analysis, May 26, 2020

H. ENVIRONMENTAL CHECKLIST

This section provides an evaluation of the potential environmental impacts of the proposed project and are based on CEQA Guidelines Appendix G. For each issue area, one of four conclusions is made:

- **No Impact:** No project-related impact to the environment would occur with project development.
- **Less Than Significant Impact:** The proposed project would not result in a substantial and adverse change in the environment. This impact level does not require mitigation measures.
- **Less Than Significant with Mitigation Incorporated:** The proposed project would result in an environmental impact or effect that is potentially significant, but the incorporation of mitigation measure(s) would reduce the project-related impact to a less than significant level.
- **Potentially Significant Impact:** The proposed project would result in an environmental impact or effect that is potentially significant, and no mitigation can be identified that would reduce the impact to a less than significant level.

1. AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial effect on a scenic vista?			X	
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c. Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	
d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?			X	

ENVIRONMENTAL SETTING

The City of Clovis is located within the San Joaquin Valley. Thus, much of the City and its surrounding areas are predominately flat. As a result, on clear days, the Sierra Nevada Mountains are visible to the east depending on your location.

Aside from Sierra Nevada, there are no officially designated focal points or viewsheds within the City. However, Policy 2.3, Visual Resources, of the Open Space Element of the 2014 Clovis General Plan, requires maintaining public views of open spaces, parks, and natural features and to preserve Clovis' viewshed of the surrounding foothills.

As mentioned above in the Project Description, the site is located east of Leonard Avenue, and just south of Barstow Avenue and the Enterprise Canal. In general, the Project site is within an urbanized area of the City, surrounded by existing rural residential, and newly constructed homes, as well as homes under construction. The site is within the Loma Vista Specific Plan at its easternmost of boundary of the Specific Plan area.

DISCUSSION

- a) *Would the project have a substantial effect on a scenic vista?*

Less-Than-Significant Impact. As mentioned above, there are no officially designated scenic vistas or focal points in the City of Clovis. While the Sierra Nevada Mountains can be viewed on clear days, the Project would allow structures to be constructed at a maximum height of 35 feet. This would be consistent with the height limits of the immediately surrounding area and with the Zone District of the Project site. Further, General Plan Policy 2.3 requires that public views of open spaces, parks, and natural features be maintained. The site itself would be directly adjacent to approximately 18 acres of park space planned for the future. Therefore, because the Project would be constructed at a maximum height consistent with the area, and because there are no officially designated scenic vistas or focal points in Clovis, a **less-than-significant impact** would occur and no mitigation measures are required.

- b) *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?*

No Impact. As stated in the 2014 Clovis General Plan Environmental Impact Report (EIR), there are no Caltrans-designated scenic highways within the City of Clovis.² Further, there are no existing historical structures or rock outcroppings located on or within the immediate vicinity of the site. Therefore, the Project would result in **no impact** with regards to substantially damaging scenic resources within a State scenic highway, and no mitigation measures are required.

- c) *Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*

Less-Than-Significant Impact. As mentioned previously, the existing site is within an urbanized area surrounded by a mix of rural residential and low and medium-density residential. Immediately west of the Project site is a medium-density residential project under construction, as well as to the north. Further, there is an approved tract map south of the site. Thus, the area is characterized by a mix of residential uses at varying densities which contributes to different heights, design, and character. Further, the Project would be subject to the City's RSPR process to ensure cohesive design and character with the surrounding area. Therefore, the Project would complement and enhance the visual character of the area by resulting in a new and diverse housing type that would be of a similar scale and character of the surrounding area.

² 2014 Clovis General Plan EIR, June 2014, Page 5.1-1.

In addition, Policy 3.6 of the Land Use Element of the Clovis General Plan encourages a mix of housing types, unit sizes, and densities. The Project, as a medium-density single-family neighborhood, would contribute to the compliance of Policy 3.6 by resulting in a housing product that adds to the variety of housing stock within the City. Further, the Project would undergo Residential Site Plan Review (RSPR) which would ensure that the overall design and character is consistent and/or complements the surrounding areas. The RSPR process will ensure the Project complies with relevant design policies, such as in the Loma Vista Specific Plan, Clovis Development Code, and the General Plan. During the review, the height, color and materials are reviewed for consistency with these plans and guidelines. Consequently, a **less-than-significant** impact would occur with regards to substantially degrading the existing visual character of the site and its surroundings, and no mitigation measures are required.

- d) *Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?*

Less-Than-Significant Impact. The Project consists of an approximately 217 single-family home neighborhood. As a result of the existing site being vacant and undeveloped, the Project would result in new sources of light and glare. Light and glare from the Project would be typical of residential development, including but not limited to, sources such as exterior lighting for safety, light and glare from vehicles or from light reflecting off of surfaces such as windshields. Other sources of light would be the interior lighting of the units at night. These sources of light and glare are not typically associated with causing significant effects on the environment. Further, the site is already surrounded by existing residential uses. This existing development has contributed to the urbanization of the area, therefore, lighting and glare are already being emitted in the vicinity. Sources of existing light and glare are comprised of streetlights, exterior shopping center lighting, parking lot lighting, light and glare from vehicles going to and from the shopping center and adjacent residential development.

Although the Project would introduce new sources of light and glare, the RSPR process would ensure that the design and placement of lighting is appropriate to minimize potential light and glare impacts to surrounding properties. Further, the Project would be required to comply with Section 9.22.050, Exterior Light and Glare, of the Clovis Municipal Code (CMC or Development Code), which requires light sources to be shielded and that lighting does not spillover to adjacent properties.

Overall, through the City’s design review process and compliance with Section 9.22.050 of the Development Code, the Project would result in a **less-than-significant impact** with regard to lighting adversely affecting day or nighttime views in the area. No mitigation measures are required.

2. AGRICULTURE AND FORESTRY RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.			X	

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220 (g)) or timberland (as defined in Public Resources Code section 4526)?				X
d. Result in the loss of forest land or conversion of forest land to non-forest use?				X
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?			X	

ENVIRONMENTAL SETTING

The Project site is located on a vacant parcel south of the Enterprise Canal, east of Leonard Avenue. The site is within an urbanized area of the City and within an area previously planned for development through the Loma Vista Specific Plan and 2014 Clovis General Plan. Although the site was previously farmed, it has not been actively farmed in recent years. Currently, the site consists mostly of low-lying vegetation, shrubs, and grasses.

DISCUSSION

- a) *Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

Less-Than-Significant Impact. According to the 2016 Farmland Monitoring and Mapping Program (FMMP) maps from the California Department of Conservation,³ the Project site is considered Farmland of Local Importance, which is defined by the Department of Conservation as farmable lands within Fresno County that do meet the definitions of Prime, Statewide, or Unique farmlands. Generally, Farmland of Local Importance is or has been used for irrigated pasture, dryland farming, livestock, dairy, and grazing land.

The Project site is planned for residential use in the Loma Vista Specific Plan and the 2014 Clovis General Plan, and is not designated for farming activities. Consequently, because the site is not considered Prime, Unique, or Farmland of Statewide Importance, a **less-than-significant** impact would occur, and no mitigation measures are required.

³ Farmland Mapping and Monitoring Program, California Department of Conservation, 2016 Fresno County Map.

b) *Would the project conflict with existing zoning for agricultural use, or a Williamson Act Contract?*

No Impact. As shown on Figure 5.2-2 of the Agricultural Resources Chapter of the 2014 Clovis General Plan EIR, the Project site is not under a Williamson Act Contract. However, the Project is currently within the County of Fresno AE-20 zone district which does permit agricultural uses. The Project includes a request for annexation into the City of Clovis limit and a pre-zone request to the R-1-PRD Clovis zone district. However, the site is within the City of Clovis Sphere of Influence and was previously planned for future residential use, as well as analyzed in the Loma Vista Specific Plan EIR. If the annexation is approved and the site does become part of the City limit, then the residential use would be consistent with residential uses and not conflict with agricultural zoning. As a result, the Project would have a **less-than-significant** with regards to conflicting with existing zoning for agricultural use or a Williamson Act Contract. No mitigation measures are required.

c) *Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220 (g)) or timberland (as defined in Public Resources Code section 4526)?*

No Impact. The Project site is mostly vacant and undeveloped, thus, does not contain forest land. Further, the site is not designated for forestry or other forestry related uses. As a result, **no impact** would occur with regards to conflicts with existing zoning for, or cause rezoning of, forest land. No mitigation measures are required.

d) *Would the project result in the loss of forest land or conversion of forest land to non-forest use?*

No Impact. See discussion under Section 2c.

e) *Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?*

Less-Than-Significant Impact. Although the Project site is considered Farmland of Local Importance according to the Department of Conservation, the site is not designated for agricultural uses. Further, the existing site hasn't been used for agricultural related uses in recent years. Under the Loma Vista Specific Plan and 2014 Clovis General Plan, the site is designated and planned for residential use. Additionally, see discussion under Section 2.C related to forest land. Overall, the project would have a **less-than-significant** impact with regards to this topic and no mitigation measure are required.

3. AIR QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?			X	
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment			X	

under an applicable federal or state ambient air quality standard?				
c. Expose sensitive receptors to substantial pollutant concentrations?			X	
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

ENVIRONMENTAL SETTING

An Air Quality and Greenhouse Gas Analysis Report (AQ/GHG Report) was prepared by Mitchell Air Quality Consulting on March 5, 2020 (see Appendix A). Information in this AQ/GHG Report is used for the analysis included in both the Air Quality and Greenhouse Gas Emissions section of this Initial Study.

San Joaquin Valley Air Basin

The City of Clovis (City) is in the central portion of the San Joaquin Valley Air Basin (SJVAB). SJVAB consists of eight counties: Fresno, Kern (western and central), Kings, Tulare, Madera, Merced, San Joaquin, and Stanislaus. Air pollution from significant activities in the SJVAB includes a variety of industrial-based sources as well as on- and off-road mobile sources. These sources, coupled with geographical and meteorological conditions unique to the area, stimulate the formation of unhealthy air.

The SJVAB is approximately 250 miles long and an average of 35 miles wide. It is bordered by the Sierra Nevada in the east, the Coast Ranges in the west, and the Tehachapi mountains in the south. There is a slight downward elevation gradient from Bakersfield in the southeast end (elevation 408 feet) to sea level at the northwest end where the valley opens to the San Francisco Bay at the Carquinez Straits. At its northern end is the Sacramento Valley, which comprises the northern half of California’s Central Valley. The bowl-shaped topography inhibits movement of pollutants out of the valley (SJVAPCD 2012a).

Topography⁴

The topography of a region is important for air quality because mountains can block airflow that would help disperse pollutants, and can channel air from upwind areas that transports pollutants to downwind areas. The San Joaquin Valley Air Pollution Control District (SJVAPCD) covers the entirety of the SJVAB. The SJVAB is generally shaped like a bowl. It is open in the north and is surrounded by mountain ranges on all other sides. The Sierra Nevada mountains are along the eastern boundary (8,000 to 14,000 feet in elevation), the Coast Ranges are along the western boundary (3,000 feet in elevation), and the Tehachapi Mountains are along the southern boundary (6,000 to 8,000 feet in elevation).

Climate

The SJVAB is in a Mediterranean climate zone and is influenced by a subtropical high-pressure cell most of the year. Mediterranean climates are characterized by sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100°F in the valley.

⁴ Air Quality and Greenhouse Gas Analysis Report, Mitchell Air Quality Consulting, page 9, April 16, 2019.

The subtropical high-pressure cell is strongest during spring, summer, and fall and produces subsiding air, which can result in temperature inversions in the valley. A temperature inversion can act like a lid, inhibiting vertical mixing of the air mass at the surface.

Any emissions of pollutants can be trapped below the inversion. Most of the surrounding mountains are above the normal height of summer inversions (1,500–3,000 feet).

Winter-time high pressure events can often last many weeks, with surface temperatures often lowering into the 30°F. During these events, fog can be present and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet (SJVAPCD 2012a).

Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS, based on even greater health and welfare concerns.

These National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect “sensitive receptors,” those most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants. As shown in Table 4, Ambient Air Quality Standards for Criteria Pollutants, these pollutants are ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), coarse inhalable particulate matter (PM₁₀), fine inhalable particulate matter (PM_{2.5}), and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

In addition to the criteria pollutants, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TACs are regulated on the basis of risk rather than specification of safe levels of contamination.

Table 3: Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Primary Standard	State Standard
Ozone	1-Hour	--	0.09 ppm
	8-Hour	0.07 ppm	0.07 ppm
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide	Annual	0.053 ppm	0.03 ppm
	1-Hour	0.100 ppm	0.18 ppm
Sulfur Dioxide	Annual	0.03 ppm	--
	24-Hour	0.14 ppm	0.04 ppm
	3-Hour	0.5 ppm	
	1-Hour	0.075 ppm	0.25 ppm
PM ₁₀	Annual	--	20 ug/m ³
	24-Hour	150 ug/m ³	50 ug/m ³
PM _{2.5}	Annual	12 ug/m ³	12 ug/m ³
	24-Hour	35 ug/m ³	--
Lead	30-Day Avg.	--	1.5 ug/m ³
	3-Month Avg.	1.5 ug/m ³	--

Notes: ppm = parts per million; ug/m³ = micrograms per cubic meter.
 Source: California Air Resources Board, 2008. Ambient Air Quality Standards (4/01/08), <http://www.arb.ca.gov/aqs/aaqs2.pdf>.

Attainment Status

The air quality management plans prepared by SJVAPCD provide the framework for SJVAB to achieve attainment of the state and federal AAQS through the SIP. Areas are classified as attainment or nonattainment areas for particular pollutants, depending on whether they meet the ambient air quality standards. Severity classifications for ozone nonattainment range in magnitude from marginal, moderate, and serious to severe and extreme.

At the federal level, the SJVAPCD is designated as extreme nonattainment for the 8-hour ozone standard, attainment for PM₁₀ and CO, and nonattainment for PM_{2.5}. At the state level, the SJVAB is designated nonattainment for the 8-hour ozone, PM₁₀, and PM_{2.5} standards. The SJVAB has not attained the federal 1-hour ozone, although this standard was revoked in 2005.

DISCUSSION

- a) *Would the project conflict with or obstruct implementation of the applicable air quality plan?*

Less-Than-Significant Impact. Although the CEQA Guidelines indicate that a significant impact would occur if the Project were to conflict with or obstruct implementation of the applicable air quality plan, the SJVAPCDs 2015 Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) does not provide specific guidance on analyzing conformity with the plan. Thus, for purposes of analyzing this potential impact, the AQ/GHG Report considered impacts based on: (1) whether the Project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards; and (2) whether the Project will comply with applicable control measures in the air quality plan, primarily compliance with Regulation VIII – Fugitive PM₁₀ Prohibitions and Rule 9510 – Indirect Source Review.

In general, regional air quality impacts and attainment of standards are the result of the cumulative impacts of all emission sources within the air basin. Thus, individual projects are generally not large enough to contribute measurably to an existing violation or air quality standards alone. Therefore, in order to analyze this threshold, and because the of the region's existing nonattainment status for several pollutants, the Project would be considered to cause significant impacts if it were to generate emissions that would exceed the SJVAPCDs significance thresholds. Based on the AQ/GHG Report, the Project would not exceed these thresholds from construction and operation of the Project.⁵

- b) *Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?*

Less-Than-Significant Impact. See discussion under Section 3a above.

- c) *Would the project expose sensitive receptors to substantial pollutant concentrations?*

Less-Than-Significant Impact. Sensitive receptors are generally considered to include children, the elderly, and persons with pre-existing respiratory and cardiovascular illness. The SJVAPCD considers a sensitive receptor a location that houses or attracts children, the elderly, or people with illnesses. Examples of these receptors are considered to be hospitals, residences, schools and school facilities, and convalescent facilities. The nearest sensitive receptors to the Project site would be the existing residences adjacent to the site to the north, west, and east. Based the AQ/GHG Report, the Project would not exceed emission thresholds that would result in a significant impact⁶ based on compliance with SJVAPCD regulations and standards for construction and operation of this type of development. Therefore, a **less-than-significant** impact would occur.

- d) *Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*

Less-Than-Significant Impact. Generally, sources considered to emit odors are associated with wastewater treatment facilities, sanitary landfills, petroleum refineries, chemical manufacturing, and other industrial/manufacturing related uses. The Project is a residential use, thus, the odors associated with such use would be similar to that of the surrounding area which includes other residential uses. Overall, because the Project is a residential use, similar to existing residential uses, the types of odor that could result from the Project would not be considered an objectionable odor source. Thus, a **less-than-significant** impact would occur.

⁵ Air Quality and Greenhouse Gas Analysis Report, Mitchell Air Quality Consulting, starting on page 76, March 5, 2020.

⁶ Air Quality and Greenhouse Gas Analysis Report, Mitchell Air Quality Consulting, starting on page 89, March 5, 2020.

4. BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?			X	
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			X	
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

ENVIRONMENTAL SETTING

A biological resources report (Biological Report) was prepared by Argonaut Ecological Consulting, Inc., dated in February 20, 2020 (see Appendix B). This Biological Report included an evaluation for the presence and potential for special-status biological resources of the site.

The existing Project site is mostly vacant and undeveloped consisting of pastureland, and non-native grassland. According to the Biological Report, there are no seasonal wetlands or any other wetlands at the Project site, nor is there critical habitat. The following analysis is based in part on information provided by the Biological Report prepared by Argonaut Ecological Consulting, Inc.

DISCUSSION

- a) *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

Less-Than-Significant Impact With Mitigation. As described in the Biological Report, several habitat types were observed at the site, including pasture, ruderal/disturbed, and non-native grassland.⁷ Further, the report concluded that there is no critical habitat for any listed species within or near the study area.⁸

During field observations, wildlife activity was determined to be low, which is consistent with urbanized areas. Animal species detected included squirrels, song birds. While the report identified species that would have the highest likelihood of occurring the area, none were observed during the field visit and a search of the California Natural Diversity Database (CNDDB) did not identify the recent presence of special-status species at the site or in the immediate area. Further, the area was concluded not be within the vicinity of any known California tiger salamander breeding ponds. However, portions of the area near and at the Dog Creek may provide suitable habitat for burrowing owls and nesting birds. Although a vehicular bridge would be constructed, the appropriate permitting and protections in accordance with all applicable agencies and departments would occur to ensure the bridge is constructed adhering to the proper regulations.

⁷ Biological Analysis Report for Tract 6304 prepared by Argonaut Ecological Consultants, Inc., page 12, February 20, 2020.
⁸ Biological Analysis Report for Tract 6304 prepared by Argonaut Ecological Consultants, Inc., page 17, February 20, 2020.

With regards to special-status plants, the Biological Report concluded that while there are special-status plant species within this region of the County, the site's conditions and previous use as pastureland and grazing activities result in a very low likelihood that special-status plant species would be present.

Overall, due to the lack of presence of special-status plant and animal species, as well as the site being surrounded by existing urban development and has been previously disturbed from farming-related activities, it is not likely that the Project would have a substantial adverse effect to habitat supporting these special status species. Nevertheless, implementation of mitigation measures BIO-1 and BIO-2 would ensure that a **less-than-significant impact with mitigation** occurs.

Mitigation Measure BIO-1: Pre-Activity Surveys for Birds (raptors, migratory birds, and other protected bird species). Site disturbance shall be initiated outside of the nesting period of migratory birds and nesting raptors (generally between February 1 and August 31). If avoidance is not possible, a pre-construction survey shall be prepared by a qualified biologist to determine the presence of birds such as the burrowing owl and other protected bird species. If the biologist determines the presence of such birds, the developer shall establish a buffer zone(s) of adequate size, as determined by the biologist, to prevent disturbance of the nest until the young have fledged.

Mitigation Measure BIO-2: Avoidance and Minimization Measures for Construction Near the Dog Creek. Site development shall be designed to minimize impacts and disturbance to Dog Creek whenever possible. This shall include worker training, covering excavations near the Dog Creek to prevent the trapping of wildlife, and/or the establishment of exclusion fencing to prevent equipment from being used outside of the designated work zone.

- b) *Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?*

Less-Than-Significant Impact. As mentioned previously, the Project site is characterized primarily by pastureland and non-native grassland. Although the site is adjacent to the Dog Creek, with the exception of construction of the vehicular bridge for access, there would be minimal disturbance to the Dog Creek. Further, the bridge would be permitted accordingly with the appropriate agencies prior to construction. Therefore, the Project would not result in a substantial adverse effect with respect to this threshold, and a **less-than-significant** impact would occur. No mitigation measures are required.

- c) *Would the project have a substantial adverse effect on state or federally protected wetlands as (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

Less-Than-Significant Impact. Other than the Dog Creek, which would require a Section 404 permit and other entitlements from other agencies for the construction of the bridge, there were no wetlands identified at the site. Therefore, **less-than-significant** impact would occur.

- d) *Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Less-Than-Significant Impact With Mitigation. According to the Biological Report, the Dog Creek could serve as a wildlife corridor.⁹ While the Project does include construction of a bridge, there would be no other areas disturbed as part of the Project. Further, compliance with Mitigation Measure BIO-2, above, would ensure that disturbance to the Dog Creek is minimized during construction. Consequently, a **less-than-significant impact with mitigation** would occur.

- e) *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

Less-Than-Significant Impact. Although the Project would include development of an existing undeveloped and vacant site, the site does not indicate the presence of any sensitive habitat or wildlife features that would be significantly impacted. Although Policy 2.6 of the Open Space and Conservation Element of the General Plan calls for the protection of biological resources, the Biological Report did not identify any such resources at the site due to its location and being surrounded by urban development.

Further, the Clovis Development Code does include tree protection standards for if there are some trees that need removal during construction. Under the tree protection regulations, the applicant may be require to replace removed trees and/or pay in-lieu fees for the planting of new trees. Consequently, due to the lack of any identified sensitive species, and because the Project does not propose the immediate removal of any existing trees, the impact would be **less-than-significant** as the Project would not conflict with local policies or ordinances for protection biological resources.

- f) *Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

No Impact. The Project site is not located within an adopted or approved Habitat Conservation Plan (HCP) or other conservation plan. However, the site is within the PG&E San Joaquin Valley Operation and Maintenance HCP, although the PG&E HCP applies only to PG&E construction and maintenance activities and does not apply to the site. Overall, **no impact** would occur and no mitigation measures are required.

⁹ Biological Analysis Report for Tract 6304 prepared by Argonaut Ecological Consultants, Inc., page 20, February 20, 2020.

5. CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?				X
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		X		
c. Disturb any human remains, including those interred outside of formal cemeteries?		X		

ENVIRONMENTAL SETTING

The Project site is located on an undeveloped and vacant site previously used for farming and as pastureland. The site does not contain any structures where the Project would occur; however, there are structures west of the Dog Creek, which would not be affected by buildout of the Project.

A cultural resources assessment was prepared by Peak & Associates, Inc., on February 14, 2020 (see Appendix C). This assessment was based on information obtained at the Southern San Joaquin Valley Information Center, CSU Bakersfield, as well as a field assessment for observations.

DISCUSSION

- a) *Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?*

No Impact. According to the cultural resources assessment, the site is not within immediate proximity to any known historical resource, nor are resources that are present eligible for the California Register of Historical Resources.¹⁰ Further, the assessment concluded that while there are structures adjacent to the site, west of Dog Creek, these structures do not appear to include features that would qualify for historical preservation. Further, compliance with Policy 2.9 of the General Plan, which calls for the preservation of historical sites and buildings of state or national significance, would ensure that if there were historical resources present, they would be protected. Therefore, **no impact** would occur with regard to the Project causing a substantial adverse change in the significance of a historical resource and no mitigation measures are required.

¹⁰ Cultural Resources Assessment for TM6304, Peak & Associates, Inc., February 14, 2020, page 14.

- b) *Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?*

Less-Than-Significant Impact With Mitigation. The site is currently vacant and undeveloped, although is surrounded by existing urban and rural residential development. However, the site's ground has been previously disturbed as a result of mowing of weeds and shrubs, farming, and grazing related to agricultural uses. The cultural resources memorandum prepared for the Project concluded that the lack of historical or archaeological resources within a 0.5-mile radius, as a result of studies from other projects, would make it unlikely that the Project would encounter such resources during construction. Nevertheless, the potential remains that archeological resources could be inadvertently or accidentally uncovered during ground-disturbing activities such as trenching, digging, and the installation of utilities and other infrastructure.

Because there is the slight possibility for the accidental or inadvertent uncovering of archaeological resources during construction, Mitigation Measure CULT-1 would serve to reduce those potential impacts by requiring the stopping of any work until any found artifacts can be properly removed and inventoried by a qualified archaeologist. Therefore, the Project would result in a **less-than-significant impact with mitigation**.

Mitigation Measure CULT-1: If prehistoric or historic-era cultural or archaeological materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeologist, can evaluate the significance of the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants.

If the qualified professional archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.

If a potentially-eligible resource is encountered, then the qualified professional archaeologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met.

- c) *Would the project disturb any human remains, including those interred outside of formal cemeteries?*

Less-Than-Significant Impact With Mitigation. The site is currently vacant and undeveloped, although is surrounded by existing urban and rural residential development. However, the site's ground has been previously disturbed as a result of mowing of weeds and shrubs, farming, and grazing related to agricultural uses. The cultural resources memorandum prepared for the Project concluded that the lack of historical or archaeological resources within a 0.5-mile radius, as a result of studies from other projects, would make it unlikely that the Project would encounter such resources during construction. Nevertheless, the potential remains that human remains could be inadvertently or accidentally uncovered during ground-disturbing activities such as trenching, digging, and the installation of utilities and other infrastructure.

Because there is the slight possibility for the accidental or inadvertent uncovering of human remains during construction, Mitigation Measure CULT-2 would serve to reduce those potential impacts by requiring the stopping of any work until any found human remains can be properly removed by the County coroner and/or tribes. Therefore, the Project would result in a **less-than-significant impact with mitigation**.

Mitigation Measure CULT-2: If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (Chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the County coroner. All reports, correspondence, and determinations regarding the discovery of human remains on the project site shall be submitted to the Lead Agency.

6. ENERGY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			X	

ENVIRONMENTAL SETTING

The Project site is located on an infill site surrounded by existing urban and rural residential uses and is within the Loma Vista Specific Plan.

DISCUSSION

- a) *Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?*

Less-Than-Significant Impact. The Project proposes the construction of approximately 217 single-family homes, along with associated landscape, hardscape, and infrastructure (i.e. drive aisles, utilities, etc.). The Project would include construction activities typical of residential development, thus, is not

generally considered the type of use or intensity that would result in the unnecessary consumption of energy. The homes themselves would comply with the most recent Title 24 Green Building Standards for energy efficiency, as well as be required to comply with the latest water efficient landscape policy regulations. Further, Clovis General Plan Policy 3.4, and 3.7 of the Open Space and Conservation, calls for the use of water conserving and drought tolerant landscape, as well as energy efficient buildings. Consequently, compliance with these measures would ensure that the Project does not result in a significant impact due to the unnecessary consumption of energy and **less-than-significant** impact would occur.

- b) *Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*

Less-Than-Significant Impact. See discussion under Section 6a above.

7. GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b. Result in substantial soil erosion or the loss of topsoil?			X	
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading,			X	

subsidence, liquefaction or collapse?				
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?				X
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems where sewers are not available for the disposal of wastewater?				X
f. Directly or indirectly destroy a unique paleontological resource or unique geologic feature?		X		

ENVIRONMENTAL SETTING

The 2014 Clovis General Plan EIR identified no geologic hazards or unstable soil conditions known to exist on the Project site. Although Figure 5.6-2 of the Geology and Soils Chapter of the General Plan EIR does show a fault, the fault is located several miles east of the Project site.

DISCUSSION

- a) *Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?; ii) Strong seismic ground shaking?; iii) Seismic-related ground failure, including liquefaction?; iv) Landslides?*

Less-Than-Significant Impact. Although the Project site does not have any known faults on the site, the potential remains that seismic ground-shaking could occur from the fault located east of the Project. However, adherence to the most current California Building Codes would ensure that the structures are constructed safely and in compliance with the appropriate Building Codes. With regards to liquefaction, the 2014 General Plan EIR states that the soil types in the area are not considered conducive to liquefaction due to their high clay content or from being too coarse.¹¹ Further, the site is generally flat and therefore landslides would not occur at the Project site. Overall, due to the location away from a known fault, adherence to the most recent California Building Codes, and the flat topography, a **less-than-significant impact** would occur with regards to potential impacts from seismic activity.

- b) *Would the project result in substantial soil erosion or the loss of topsoil?*

¹¹ 2014 Clovis General Plan EIR, Chapter 5: Geology and Soils, page 5.6-3.

Less-Than-Significant Impact. Although the site is relatively flat, grading activities would be required to ensure a flat and graded surface prior to construction, which may result in the soil erosion and loss of topsoil. However, as part of the Project, grading plans are required to be submitted and approved by the City Engineer Division to ensure appropriate grading of the site. Thus, this review and approval process would ensure that a **less-than-significant** impact occur and no mitigation measures are required.

- c) *Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*

Less-Than-Significant Impact. See discussion under Section 7a.

- d) *Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating direct or indirect substantial risks to life or property?*

No Impact. According to the 2014 Clovis General Plan EIR, expansive soils are mostly present in areas along the northern edge of the non-Sphere of Influence (SOI) and the easternmost part of the Clovis non-SOI plan area. Because the Project is not within the vicinity of these areas, there would be no potential for creating direct or indirect substantial risks to life or property with regards to expansive soils. As a result, **no impact** would occur and no mitigation measures are required.

- e) *Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems where sewers are not available for the disposal of wastewater?*

No Impact. The Project does not propose the use of septic tanks, therefore, **no impact** would occur.

- f) *Would the project directly or indirectly destroy a unique paleontological resource or unique geologic feature?*

Less-Than-Significant Impact With Mitigation. The Project site has been previously disturbed, as well as the immediately surrounding areas with no known occurrences of the discovery of paleontological resources. In addition, the cultural resources memorandum concluded that the potential for uncovering of archaeological or subsurface historical deposits (i.e. paleontological resources) is unlikely. Nevertheless, the possibility remains that the inadvertent or accidental discovery could occur during ground disturbing construction activities. However, Mitigation Measure GEO-1, below, would serve to protect the accidental discovery of paleontological resources. As such, a **less-than-significant with mitigation** impact would occur.

Mitigation Measure GEO-1: If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified professional archaeologist and/or paleontologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeologist, can evaluate the significance of the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants.

If the qualified professional determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.

If a potentially-eligible resource is encountered, then the qualified professional archaeologist and/or paleontologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met.

8. GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?			X	

ENVIRONMENTAL SETTING

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHG's has been implicated as a driving force for global climate change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and anthropogenic activities which alter the composition of the global atmosphere.

Individual Projects contribute to the cumulative effects of climate change by emitting GHGs during construction and operational phases. The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. While the presence of the primary GHGs in the atmosphere are naturally occurring, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) are largely emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Carbon dioxide is the "reference gas" for climate change, meaning that emissions of GHGs are typically reported in "carbon dioxide-equivalent" measures. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs, with much greater heat-absorption potential than carbon dioxide, include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes.

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming, although there is uncertainty concerning the magnitude and rate of the warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires,

and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gases (GHG) would be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels. In 2006, California passed the California Global Warming Solutions Act of 2006 (AB 32), which requires the California Air Resources Board (CARB) to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

In April 2009, the California Office of Planning and Research published proposed revisions to the California Environmental Quality Act to address GHG emissions. The amendments to CEQA indicate the following:

- Climate action plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.
- Local governments are encouraged to quantify the greenhouse gas emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.
- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.
- New amendments include guidelines for determining methods to mitigate the effects of greenhouse gas emissions in Appendix F of the CEQA Guidelines.
- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation."
- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.
- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential.

On December 30, 2009, the Natural Resources Agency adopted the proposed amendments to the CEQA Guidelines in the California Code of Regulations.

In December 2009, the San Joaquin Valley Air Pollution Control District (SJVAPCD) adopted guidance for addressing GHG impacts in its *Guidance for Valley Land Use Agencies in Addressing GHG Impacts for New Projects Under CEQA*. The guidance relies on performance-based standards, otherwise known as Best Performance Standards (BPS), to assess significance of project-specific GHG emissions on global climate change during the environmental review process.

Projects can reduce their GHG emission impacts to a less than significant level by implementing BPS. Projects can also demonstrate compliance with the requirements of AB 32 by demonstrating that their emissions achieve a 29% reduction below “business as usual” (BAU) levels. BAU is a projected GHG emissions inventory assuming no change in existing business practices and without considering implementation of any GHG emission reduction measures.

Significance Criteria

The SJVAPCDs *Guidance for Valley Land Use Agencies in Addressing GHG Impacts for New Projects Under CEQA* provides initial screening criteria for climate change analyses, as well as draft guidance for the determination of significance.

The effects of project-specific GHG emissions are cumulative, and therefore climate change impacts are addressed as a cumulative, rather than a direct, impact. The guidance for determining significance of impacts has been developed from the requirements of AB 32. The guideline addresses the potential cumulative impacts that a project’s GHG emissions could have on climate change. Since climate change is a global phenomenon, no direct impact would be identified for an individual land development project. The following criteria are used to evaluate whether a project would result in a significant impact for climate change impacts:

- Does the project comply with an adopted statewide, regional, or local plan for reduction or mitigation of GHG emissions? If no, then
- Does the project achieve 29% GHG reductions by using approved Best Performance Standards? If no, then
- Does the project achieve AB 32 targeted 29% GHG emission reductions compared with BAU?

Projects that meet one of these guidelines would have less than significant impact on the global climate.

Because BPS have not yet been adopted and identified for specific development projects, and because neither the ARB nor the City of Clovis has not yet adopted a plan for reduction of GHG with which the Project can demonstrate compliance, the goal of 29% below BAU for emissions of GHG has been used as a threshold of significance for this analysis.

An Air Quality and Greenhouse Gas Analysis Report (AQ/GHG Report) was prepared by Mitchell Air Quality Consulting on March 5, 2020 (see Appendix A). The following analysis is based in part on the findings of that report.

DISCUSSION

- a) *Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

Less-Than-Significant Impact. The Project would include the construction and operation of approximately 217 single-family residential units. As such, GHG emissions would be produced through the construction and operational phases of the Project. However, the SJVAPCD includes regulations to reduce GHG emissions such as standards for medium and heavy duty engines and vehicles (i.e. tractors and construction equipment) that would apply to buildout of the Project. Further, compliance with Title 24 energy efficient building codes would apply, which also help to reduce GHG emissions during operation of the Project, by requiring minimum standards for insulation, energy efficiency, and window glazing, etc., which serve to maximize efficiency of new construction. Further, the Project would comply with the latest water efficient landscape standards which help to reduce energy usage. Overall, the AQ/GHG Report concluded that the Project, with implementation of required energy efficient standards, would reduce emissions versus business as usual scenarios and would exceed the minimum percentage reduction of emissions required by the State, SJVAPCD, and the Clovis General Plan EIR.¹² Therefore, a **less-than-significant** impact would occur.

- b) *Would the project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?*

Less-Than-Significant Impact. Based on the AQ/GHG Report,¹³ the Project would include several features that would minimize GHG emissions, which are consistent with project-level strategies identified by the Air Resources Board Scoping Plan and the Clovis General Plan. As indicated in the discussion above under Section 8a, the Project would result in GHG reductions that meet or exceed minimum targets by complying with the latest energy efficient standards, and water conservation. Consequently, the AQ/GHG Report found this potential impact to be **less than significant**.

9. HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	

¹² Air Quality and Greenhouse Gas Analysis Report, Mitchell Air Quality Consulting, page 111, March 5, 2020.

¹³ Air Quality and Greenhouse Gas Analysis Report, Mitchell Air Quality Consulting, starting on page 125, March 5, 2020.

c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				X
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			X	

ENVIRONMENTAL SETTING

For purposes of this chapter, the term “hazardous materials” refers to both hazardous substances and hazardous wastes. A “hazardous material” is defined in the Code of Federal Regulations (CFR) as “substance or material that is capable of posing an unreasonable risk to health, safety, and property when transported in commerce” (49 CFR 171.8). California Health and Safety Code Section 25501 defines a hazardous material as follows:

“Hazardous material” means any material that, because of its quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.

“Hazardous materials” include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. “Hazardous wastes” are defined in California Health and Safety Code Section 25141(b) as wastes that:

...because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause or significantly contribute to an increase in mortality or an increase in serious illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

The nearest school(s) to the Project site is the Reagan Educational Center, located approximately one (1.25) miles southwest of the site. The Reagan Educational Center includes Reagan Elementary School, Reyburn Intermediate School, and Clovis East High School.

DISCUSSION

- a) *Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

Less-Than-Significant Impact. The Project consists of the construction of 217 single-family homes on an existing vacant and undeveloped site. The type of hazardous materials that would be associated with the Project are those typical of residential uses, such as the use of household cleaners, landscape maintenance products, soaps, and potential pesticides (for pest control). Overall, the Project would not routinely transport, use, or dispose of hazardous materials other than those typical of residential development, which are not generally considered of the type or quantity that would pose a significant hazard to the public when used as directed. During construction, typical equipment and materials would be used that are associated with residential construction; however, any chemicals or materials would be handled, stored, disposed of, and/or transported according to applicable laws. Consequently, because the Project is not of the type of use that would routinely transport, use, or dispose of hazardous materials a **less-than-significant** impact would occur.

- b) *Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

Less-Than-Significant Impact. See discussion above under Section 9a.

- c) *Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

Less-Than-Significant Impact. As mentioned above, the Project site is located approximately one (1.25) miles from the nearest school, which is the Reagan Educational Center. Further, the Project is not of the type of use typically associated with emitting hazardous emissions or handling the type or quantity of hazardous materials such that it would pose a risk or threat to the school, or surrounding area. Therefore, a **less-than-significant** impact would occur.

d) *Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

No Impact. According the California Department of Toxic Substance Control EnviroStor Database, the Project site is not located on or within the immediate vicinity of a hazardous materials site.¹⁴ Therefore, **no impact** would occur.

e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?*

No Impact. The Project is not within an airport land use plan nor is the site within two miles of a public airport. Therefore, **no impact** would occur.

f) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

Less-Than-Significant Impact. The Project is located at a site that is surrounded by existing development. Further, the proposed road network serving the site would undergo review and approval by City staff to ensure adequate access to the site for responding to emergencies. Although the Project could result in temporary traffic detouring or closures during buildout, these delays would be temporary and would be coordinated with the City engineering department and other departments to ensure safe access to and from the area is maintained. Further, the site itself would reviewed by City departments to ensure adequate site access and circulation is provided in the event of an emergency. Overall, a **less-than-significant** impact would occur.

g) *Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?*

Less-Than-Significant Impact. The site is an infill site surrounded by urban and rural residential uses. Therefore, it is not in a location typically associated with wildfires. Although urban fires could occur, the Project would be constructed to the latest fire code standards, which would include fire sprinklers in each unit, as well as the installation of several fire hydrants throughout the site as required by the Clovis Fire Department. Further, other life safety features would be required such as smoke detectors, which would be reviewed and checked by the Fire Department to ensure proper operation prior to occupancy. Ultimately, a **less-than-significant** impact would occur.

10. HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements			X	

¹⁴ California Department of Toxic Substance Control, EnviroStor Database, https://www.envirostor.dtsc.ca.gov/public/map/?global_id=71003467, accessed on May 18, 2020.

or otherwise substantially degrade surface or ground water quality?				
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows?			X	
i) Result in substantial erosion or siltation on- or off-site?			X	
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?			X	
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X	
iv) Impede or redirect flood flows?			X	
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			X	

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	
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ENVIRONMENTAL SETTING

The Plan Area is within the drainages of three streams: Dry Creek, Dog Creek, and Redbank Slough. On the north, Dry Creek discharges into the Herndon Canal in the City of Fresno west of Clovis. South of Dry Creek, Dog Creek is a tributary of Redbank Slough, which discharges into Mill Ditch south of Clovis (USGS 2012). A network of storm drains in the City and the Plan Area discharges into 31 retention basins, most of which provide drainage for a one- to two-square-mile area. Most of the Plan Area east and northeast of the City is not in drainage areas served by retention basins. Those areas drain to streams that discharge into reservoirs, including Big Dry Creek Reservoir in the north-central part of the Plan Area and Redbank Creek Dam and Reservoir in the southeast part of the Plan Area. Fancher Creek Dam and Reservoir are near the east Plan Area boundary.

The Project is located within the Fresno Metropolitan Flood Control District (FMFCD) boundary, and subject to its standards and regulations. Detention and retention basins in the FMFCD’s flood control system are sized to accommodate stormwater from each basin’s drainage area in builtout condition. The current capacity standard for FMFCD basins is to contain runoff from six inches of rainfall during a ten-day period and to infiltrate about 75 to 80 percent of annual rainfall into the groundwater basin (Rourke 2014). Basins are highly effective at reducing average concentrations of a broad range of contaminants, including several polyaromatic hydrocarbons, total suspended solids, and most metals (FMFCD 2013). Pollutants are removed by filtration through soil, and thus don’t reach the groundwater aquifer (FMFCD 2014). Basins are built to design criteria exceeding statewide Standard Urban Stormwater Mitigation Plan (SUSMP) standards (FMFCD 2013). The urban flood control system provides treatment for all types of development—not just the specific categories of development defined in a SUSMP—thus providing greater water quality protection for surface water and groundwater than does a SUSMP.

In addition to their flood control and water quality functions, many FMFCD basins are used for groundwater recharge with imported surface water during the dry season through contracts with the Fresno Irrigation District (FID) and the cities of Fresno and Clovis; such recharge totaled 29,575 acre feet during calendar year 2012 (FMFCD 2013).

The pipeline collection system in the urban flood control system is designed to convey the peak flow rate from a two-year storm.

Most drainage areas in the urban flood control system do not discharge to other water bodies, and drain mostly through infiltration into groundwater. When necessary, FMFCD can move water from a basin in one such drainage area to a second such basin by pumping water into a street and letting water flow in curb and gutter to a storm drain inlet in an adjoining drainage area (Rourke 2014). Two FMFCD drainage areas discharge directly to the San Joaquin River, and three to an irrigation canal, without storage in a basin. Six drainage areas containing basins discharge to the San Joaquin River, and another 39 basins discharge to canals (FMFCD 2013).

A proposed development that would construct more impervious area on its project site than the affected detention/retention basin is sized to accommodate is required to infiltrate some stormwater onsite, such as through an onsite detention basin or drainage swales (Rourke 2014).

The Big Dry Creek Reservoir has a total storage capacity of about 30 thousand acre-feet (taf) and controls up to 230-year flood flows. Fancher Creek Dam and Reservoir hold up to 9.7 taf and controls up to 200-year flood flows. Redbank Creek Dam and Reservoir hold up to 1 taf and controls up to 200-year flood flows.

Groundwater

Clovis is underlain by the Kings Groundwater Basin that spans 1,530 square miles of central Fresno County and small areas of northern Kings and Tulare counties. Figure 5.9-4, Kings Groundwater Basin, shows that the basin is bounded on the north by the San Joaquin River, on the west by the Delta-Mendota and Westside Subbasins, the south by the Kings River South Fork and the Empire West Side Irrigation District, and on the east by the Sierra Nevada foothills. Depth to groundwater in 2016 ranged from 196.5 feet at the northwest City boundary to 69.5 feet at the southeast City boundary (Clovis 2016), 25 feet at the southeast SOI boundary, and about 20 feet at the eastern Plan Area boundary (FID 2013). The Kings Subbasin has been identified as critically overdrafted (Provost & Pritchard 2011).

In the Plan Area, groundwater levels are monitored by the City of Clovis and FID. The overall area has not experienced land subsidence due to groundwater pumping since the early 1900s (FID 2006). Subsidence occurs when underground water or natural resources (e.g., oil) are pumped to the extent that the ground elevation lowers. No significant land subsidence is known to have occurred in the last 50 years as a result of land development, water resources development, groundwater pumping, or oil drilling (FID 2006). The City has identified a localized area of subsidence of 0.6 feet in the vicinity of Minnewawa and Herndon Avenues within the last 14 years (Clovis 2016). Regional ground subsidence in the Plan Area was mapped as less than one foot by the US Geological Survey in 1999 (Galloway and Riley 1999). Groundwater levels in the San Joaquin Valley are forecast to hit an all-time low in 2014 (UCCHM 2014).

New development in accordance with the General Plan Update would increase the amount of impervious surface in the Plan Area, potentially affecting the amount of surface water that filters into the groundwater supply. Groundwater levels are monitored in the Plan Area by the FID and the City of Clovis. As described in the 2015 City of Clovis Urban Water Management Plan (UWMP), groundwater recharge occurs both naturally and artificially throughout the City. The Kings Groundwater Basin area is recharged through a joint effort between the Cities of Clovis and Fresno and the FID (CDWR 2006). Approximately 8,400 acre-feet per year (afy) of water are intentionally recharged into the Kings Groundwater Basin by the City of Clovis, and approximately 7,700 afy of water naturally flow into groundwater in the City's boundaries (Clovis 2011).

The FMFCD urban stormwater drainage system would provide groundwater infiltration for runoff from developed land uses in detention basins in the drainage system service area.

Projects pursuant to the proposed General Plan Update and developed outside of the FMFCD urban stormwater drainage system would be required to meet the requirements of NPDES regulations, including the implementation of BMPs to improve water retention and vegetation on project sites.

DISCUSSION

- a) *Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?*

Less-Than-Significant Impact. The Project is located on a site that was previously anticipated for the type and intensity of development that the Project proposes. Although the Project includes a request to increase density, a water and sewer study were prepared by the City and determined to have adequate capacity to serve the Project.

As with any development, existing policies and standards are required to be complied with, which are assessed during review of the entitlements. As such, the engineering department, as well as outside agencies such as the Fresno Metropolitan Flood Control District (FMFCD) review all plans to ensure that none of the water quality standards are violated and that waste discharge requirements are adhered to during construction and operation of the Project. Consequently, this process of Project review and approval would ensure that a **less-than-significant** impact occur.

- b) *Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

Less-Than-Significant Impact. The Project would not deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level due to the Project. The General Plan EIR identified a net decrease in ground water aquifer throughout the region, however, because the City's domestic water system is primarily served through surface water via existing water entitlements, the loss of aquifer is less than significant. The City has developed a surface water treatment plant (opened in June 2004) that reduces the need for pumped groundwater, and has also expanded the municipal groundwater recharge facility. The Project's impacts to groundwater are **less than significant**.

- c) *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would: (i) result in substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows?*

Less-Than-Significant Impact. The Project site is located on a site that is generally flat and surrounded by existing urban and rural residential uses. There is Dog Creek located at the western boundary of the site which would result in some disturbance related to the construction of the bridge, however, the applicant would be subject to State permitting for alteration and work within the streambed. Further, some of the infrastructure surrounding the site, such as stormdrains are already in place from existing development. The site is mostly pervious since it is currently undeveloped, and as a result, the Project would increase the amount of impervious surfaces by installing paving for roadways and sidewalks.

However, the drainage pattern would be constructed per existing policies and regulations through review of the plans by the City Engineering Department and the FMFCD to ensure the site is properly and adequately drained such that the stormdrain system is maintained and so that no flooding occurs. Consequently, this review and approval by City engineers and FMFCD would mean that the Project result in a **less-than-significant** impact.

- d) *Would the project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*

Less-Than-Significant Impact. The Project site is located on a site substantially surrounded by existing urban and rural residential uses. Due to the Central Valley's location away from the ocean, an impact from a tsunami is unlikely. However, the western half of the Project site is designated as a Federal Emergency Management Agency (FEMA) Flood Zone "AE" which is considered by FEMA as a special flood hazard area which could be subject to a 1-percent annual chance of flood. The FMFCD requires adherence to their Flood Plain Management Policy which would ensure that homes within the any flood zone are adequately protected from flood occurrence. Compliance with the FMFCD flood plain policy would ensure that result a **less-than-significant** impact would occur.

- e) *Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

Less-Than-Significant Impact. The City of Clovis is within the North Kings County Groundwater Sustainability Agency (GSA). Pursuant to the Sustainable Groundwater Management Act of 2014 (SGMA), certain regions in California are required to develop and implement a groundwater management plan that sustainably manages groundwater resources. As of the writing of this Initial Study, the North Kings County GSA has an adopted groundwater management plan, as of November 22, 2019, according to the North Kings GSA website.¹⁵ The Project would derive its water from surface water sources and does not propose or include plans for groundwater use. With regards to water quality control, the Project would be required to adhere to appropriate storm drain conveyance and the protection of water resources which would include the installation of backflow preventers. Consequently, the Project would result in a **less-than-significant** impact.

11. LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Physically divide an existing community?			X	
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			X	

ENVIRONMENTAL SETTING

The Project site is within the City’s SOI; however, outside of the existing City limit. As part of the Project, a request for annexation to the City limit was proposed by the applicant. The site is within the Loma Vista Specific Plan and was anticipated for residential development. The surrounding uses are a mix of urban residential, and rural residential. Newer residential development has either been previously approved and/or under construction surrounding the site to the north, south, and west. East of the site is within the County of Fresno and not within the City’s SOI.

DISCUSSION

- a) *Would the project physically divide an existing community?*

Less-Than-Significant Impact. Although the site is currently vacant and undeveloped, the general area is urbanized with a mix of existing residential at varying densities.

¹⁵ North Kings Groundwater Sustainability Agency, <https://www.northkingsgsa.org>, accessed on Friday, May 1, 2020.

Typically, physically dividing existing communities is associated with the construction of a new road intersecting an established area or introducing uses that are not necessarily in line with the existing uses and planned land uses of the area. However, the Project site has been previously designated in the Clovis General Plan and Loma Vista Specific Plan for residential use. Further, as part of the Project, new sidewalks, and roadways would be constructed providing greater connectivity in that area of Clovis. In addition, the Project includes a bridge across Dog Creek, which would serve the site, as well as a linkage to other surrounding development to provide better circulation.

Consequently, because the Project is the type of use previously planned for this site and the general areas, it would not physically divide an existing community. Rather, it seeks to complement and enhance the connectivity of the area with installation of a new public sidewalk and bicycle lanes. Therefore, a **less-than-significant** impact would occur and no mitigation measures are required.

- b) *Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?*

Less-Than-Significant Impact. As mentioned, the site was previously planned and anticipated for residential development. The Project is a request to construct 217 single-family homes which is consistent with the planned land use for the site. Further, as part of the Project, the remaining portions of the total acreage would be rezoned for park space, which is consistent with the 2014 Clovis General Plan and Loma Vista Specific Plan. Further, through the review and entitlement process, the Project is reviewed for compliance with applicable regulations, including those intended for avoiding or mitigation an environmental effect. For example, the Project would be required to comply applicable lighting, landscape, and noise standards, which are regulated through the Clovis Municipal Code to ensure minimal impacts to the environment as well as with neighboring properties.

As a result of the Project in complying with the land use and zoning designation, as well as the review process ensuring General Plan and other applicable policies are adhered to, the Project would result in a **less-than-significant** impact with regards to conflicting with a land use plan.

12. MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

ENVIRONMENTAL SETTING

The City of Clovis 2014 General Plan EIR defines minerals as any naturally occurring chemical elements or compounds formed from inorganic processes and organic substances.¹⁶ The 2014 General Plan EIR indicates that there are no active mines or inactive mines within the Plan Area of the City of Clovis.

DISCUSSION

- a) *Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*

No Impact. As stated above, the City of Clovis does not have any active mines or inactive mines. Further, the Project site is an infill site within the City and is not zoned, designated, or otherwise mapped for mineral resource extraction, or for having mineral resources of value to the region present on or below the surface of the site. Therefore, **no impact** would occur and no mitigation measures are required.

- b) *Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

No Impact. Please refer to the discussion under Section 12.a.

13. NOISE

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b. Generation of excessive groundborne vibration or groundborne noise levels?			X	
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X

¹⁶ 2014 Clovis General Plan EIR, Chapter 5: Mineral Resources, page 5.11-1.

ENVIRONMENTAL SETTING

The Project site is located on a vacant and undeveloped site surrounded by existing residential development. Further, the site is bound by existing roadways (Shaw, Barstow, and Leonard Avenues). As such, existing ambient noise levels are typical of that of residential uses. There is also the Enterprise Canal trail near the site to the north which portions of it will be constructed in the near future as part of previously approved projects. As such, existing ambient noise levels in the surrounding area would consist of passive and active recreation, vehicular traffic, and other common noise associated with residential uses (i.e. lawn mowers, recreation, garden equipment, etc.)

DISCUSSION

- a) *Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Less-Than Significant Impact. The Project would include development of an existing vacant and undeveloped site. Thus, the Project would result in a temporary and permanent increase in ambient noise levels as a result of construction activities. However, as mentioned above, the Project site is surrounded by existing residential development. Therefore, while the Project would introduce new ambient noise from the construction of and operation of the single-family homes, these noises would be typical of that of the surrounding area and would not represent the type of noise levels that would drastically differ from what already exists.

Further, the City of Clovis Municipal Code Section 9.22.080, Noise, sets forth noise standards for development which would need to be complied with. For example, construction would only be permitted between the hours of 7:00 a.m. and 7:00 p.m. on weekdays, and between 9 a.m. and 5:00 p.m. on weekends. However, between June 1 and September 15, construction may begin at 6 a.m. on weekdays.

The Projects proposes a minimum 6-foot high wood fence along the eastern, and southern property lines to serve as a buffer between the Project and the existing residential to the east, and future residential to the south. Properties along the Dog Creek are proposed to have a 6 foot high tubular steel fence. Properties adjacent to the neighborhood park would have a masonry wall along the side property line to buffer from noise.

Consequently, because the Project site is in an area previously planned for and already surrounded by similar uses, and because construction noise would be temporary in nature, the potential for a substantial increase in ambient or temporary noise increases is considered **less-than-significant** and no mitigation measures are required.

- b) *Would the project result in generation of excessive groundborne vibration or groundborne noise levels?*

Less-Than Significant Impact. The Project includes development of 217 single-family homes on an existing vacant and undeveloped parcel. Therefore, construction equipment typical of the development of residential homes would be utilized temporarily. This equipment could include the use of tractors, trucks, and other construction equipment, however, this type of equipment isn't typically associated with excessive groundborne vibration.

If any vibration were to occur, it's likely that it would be temporary in nature and not at levels that would significantly impact the surrounding area. Further, the Project would be required to comply with the provisions of Section 9.22.090 of the Clovis Municipal Code which requires that vibration not be

perceptible along property lines and that it shall not interfere with operations or facilities on adjoining parcels. It's important to note also that temporary construction vibration and noise is exempt from these provisions due to the fact that construction is temporary. Overall, because the type of equipment likely to be used in the development of the Project is not considered to be of the type and intensity to result in substantial vibration or groundborne noise, the impact would be **less than significant** and no mitigation measures are required.

- c) *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

No Impact. The Project is not located within the vicinity of a private airstrip or within an airport land use plan nor is the site within two miles a public airport. Therefore, **no impact** would occur.

14. POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example through extension of roads or other infrastructure)?			X	
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

ENVIRONMENTAL SETTING

The Project is located on a site previously planned for residential use in the 2014 Clovis General Plan. As mentioned in the Project Description above, the site has an existing land use designation of Low Density Residential which allows for 2.1 to 4.0 dwelling units per acre (DU/Ac) which is being proposed to increase to the Medium Density Residential land use designation allowing for a density of 4.1 to 7.0 DU/Ac. The Project proposes a density of approximately 6.50 DU/Ac.

DISCUSSION

- a) *Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example through extension of roads or other infrastructure)?*

Less-Than-Significant Impact. As mentioned, the Project would result in a density of approximately 6.5 DU/Ac which is within the Medium Density land use designation under the 2014 Clovis General Plan. While the proposed Project is at a slightly higher density than previously planned for, this small increase from the Low Density designation to Medium Density designation is not considered to be a “substantial” increase from what was previously planned. Further, unplanned population growth is typically associated with providing new services in remote areas of the City or other infrastructure that was not previously identified in the General Plan. The Project site itself as well as the surrounding areas within the City limit and SOI were planned to accommodate residential uses, thus, the infrastructure (i.e. road network, utilities, sidewalks, etc.) is already in place and/or has been recently approved through other neighboring projects, as planned for in the 2014 General Plan. Although the Project would result in new housing units and population to the site, this growth was previously planned and anticipated under the 2014 General Plan. Thus, a **less-than-significant** impact would occur and no mitigation measures are required.

- b) *Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

No Impact. The Project site is currently vacant and undeveloped. There are no existing homes, or people currently living on the site, therefore, the Project would not result in the substantial displacement of existing people or housing. Although the overall Project area does include a home on the west side of Dog Creek, other than the rezone to that property, no structures or other improvements are occurring on that portion as part of this Project. Therefore, **no impact** would occur and no mitigation measure are required.

15. PUBLIC SERVICES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:</i>				
a. Fire protection?			X	
b. Police protection?			X	
c. Schools?			X	
d. Parks?			X	
e. Other public facilities?			X	

ENVIRONMENTAL SETTING

The Project is located in an area surrounded by existing residential uses and currently lies outside of the City limit. The Project includes a request to annex to the City limit, at which time would enter into the City's service area for police, and fire protection services. As mentioned above in the Population and Housing and Land Use and Planning sections, the Project site was previously planned for residential development. The Project would be served by the Clovis Fire Department, Clovis Police Department, with mutual aid from the City of Fresno, when needed. The Project site would also be within the Clovis Unified School District.

The nearest fire station is Fire Station #4, located a short distance (approximately 3.0 miles) west of the site. The Clovis Police Department is located approximately 4 miles west of the site.

DISCUSSION

- a) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection services?*

Less-Than-Significant Impact. Although the Project would result in 217 new residential units to the area, the site is located in a relatively urbanized area. Also, the site itself is in close proximity to Fire Station's #4, which would mean that response times should be able to be maintained during calls for service. The Clovis Fire Department already serves several neighborhoods immediately adjacent to the site and would likely continue to provide adequate services to the site. As part of the entitlement process for the Project, the Clovis Fire Department will review the design and site layout to ensure adequate fire safety measures and site circulation are achieved. This would include placement of new fire hydrants in certain locations throughout the site, adequate drive widths for fire truck and emergency vehicle access, and the appropriate application of fire codes, such as installation of sprinkler systems, fire alarms, and smoke detectors. Overall, with the sites close proximity to numerous fire stations, construction that would meet the latest fire code standards, and review by the Clovis Fire Department, impacts related to effects on the performance of the Fire Department would be **less-than-significant** and no mitigation measures are required.

- b) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection services?*

Less-Than-Significant Impact. Although the Project would result in 217 new residential units to the area, the site is located in a relatively urbanized area, much of which is currently served by the Clovis Police Department. The Clovis Police Department headquarters are located at 1233 Fifth Street, which is just approximately four (4) miles from the site. As part of the entitlement process for the Project, the Clovis Police Department will review the design and site layout to ensure adequate safety measures are achieved. Lastly, the site is located in an already urbanized area serviced by the Clovis Police Department, and thus access to and from the site would be similar to existing conditions when responding to calls for services. Consequently, a **less-than-significant** impact would occur and no mitigation measures are required.

- c) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental*

facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools?

Less-Than-Significant Impact. Although the Project would result in 217 new residential units to the area, the site is located in an urbanized area within the Clovis Unified School District (CUSD). As part of the review process, CUSD is provided the opportunity to comment and work closely with the City as development is proposed. As mentioned previously, the Project site was previously planned and anticipated for Low Density Residential, as indicated in the 2014 Clovis General Plan; however, is being requested to increase to the Medium Density land use designation. As part of the process, the Project would be required to pay school fees which typically go towards the improvement and/or construction of new schools or expanding existing schools if and when needed, as determined by the CUSD. Although the CUSD provided a letter indicating a concern with the increase in density, the payment of school fees has been deemed adequate under CEQA for purposes of offsetting potential impacts to schools. Therefore, because the Project would be subject to payment of school fees which are intended to go towards the future expansion, modification, and/or construction of schools, a **less-than-significant** impact would occur and no mitigation measures are required.

- d) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks?*

Less-Than-Significant Impact. See discussion under Section 16, Recreation for the analysis related to parks.

- e) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for other public facilities?*

Less-Than-Significant Impact. Although the Project would result in 217 new residential units, residential uses have been previously planned for in the 2014 Clovis General Plan. Further, through the entitlement process, the Project would undergo review by several departments and agencies for compliance with appropriate regulations and policies. This could result in various impact fees that are intended to maintain and enhance public facilities as appropriate. While additional units may increase use of governmental facilities, such as libraries, these changes are not considered substantial since residential uses were previously planned for. Further, as technology use continues to increase and become more prevalent in daily lives, physical impacts to facilities such as public libraries are not as significant. Further, payment of the typical development fees which are intended to offset impacts to facilities, as well as project review by the different department and agencies, would result in the Project having a **less-than-significant** impact to public facilities. No mitigation measures are required.

16. RECREATION

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				

<p>a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?</p>			<p>X</p>	
<p>b. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?</p>			<p>X</p>	

ENVIRONMENTAL SETTING

The Project is located on a site surrounded by existing residential and rural residential development, as well as areas that were recently entitled for residential. The nearest park to the site is approximately 1/2 mile west of the site. The Project site is also near the location of the Loma Vista park which is currently being planned, and would be an approximately 7-acre park site approximately 3/4-mile southwest of the site.

DISCUSSION

- a) *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

Less-Than-Significant Impact. As mentioned in the Population and Housing section of this Initial Study, the Project is generally consistent with the type of development anticipated on the site. Although 217 new housing units would be constructed, therefore, adding new population to the area that may utilize parks within the surrounding area, this growth was planned for with regards to park usage throughout the city. Further, the Project itself would include landscaped areas and open space areas on-site for its residents, thereby, providing areas of recreation within the site. This includes landscaped front yards for the homes, and linear park space along Dog Creek, as well as a smaller open space area along the northern tip of the Project site. The Project is also within close proximity to the Enterprise Canal trail which would be utilized for recreational activities. The Project would also be required to comply with General Plan Policy 2.2 of the Open Space and Conservation Element which encourages the incorporation of on-site natural resources.

Overall, because the type of use was previously accounted for in the 2014 General Plan with regards to parks, and because the Project incorporates on-site open space and amenities, the Project is not likely to increase the use of existing parks such that physical deterioration would occur. Therefore, the impact would be **less-than-significant** and no mitigation measures are required.

- b) *Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?*

Less-Than-Significant Impact. The Project site itself would construct on-site open space areas and amenities for its residents. It is not likely that the Project itself would require the construction or expansion of new recreational facilities that would have an adverse physical effect on the environment. The Project would also be required to contribute a proportionate share towards the acquisition and development of future parks in order for the City to maintain its adopted ratio of providing four (4) acres of parkland per 1,000 residents, as stated in Policy 1.1 in the Open Space and Conservation Element of the 2014 General Plan, and Section 3.4.03 of the Clovis Municipal Code. As such, a **less-than-significant** impact would occur and no mitigation measures are required.

17. TRANSPORTATION

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?		X		
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?			X	
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
d. Result in inadequate emergency access?			X	

ENVIRONMENTAL SETTING

The site is in area near Leonard, Shaw, and Barstow Avenues, and would be accessed by Agua Dulce Ave via Barstow Avenue. The site is bounded by existing single-family residential to the north, east, and west, as well as by a vacant parcel to the south which has an approved tentative tract map although has not yet been constructed.

According to the 2014 Clovis General Plan Circulation Diagram in the Circulation Element (Figure C-1 of the Circulation Element), Shaw and Leonard Avenues are classified as arterial streets, and Barstow and Agua Dulce are local streets. Arterial streets are designed to move large volumes of traffic and are intended to provide a high level of mobility between freeways, expressways, and other arterials and collector roadways. Local streets are intended to provide direct access to abutting land uses and serve short distance trips within neighborhoods.

A Traffic Impact Assessment (TIA) was prepared by JLB Traffic Engineering, Inc. on May 26, 2020 (included as Appendix D of this Initial Study). The information and analysis in the following sections is based in part on the results of the TIS.

DISCUSSION

- a) *Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?*

Less-Than-Significant Impact With Mitigation. As mentioned above, the site is within a relatively urbanized area that was previously planned for residential development by 2014 Clovis General Plan. The Project proposes a density of approximately 6.5 DU/Ac which is within the allowable density range of the Medium Density land use designation. Although the existing land use designation is Low Density Residential, the Applicant requests an increase to the Medium Density land use designation.

As a result of the proposed increase, preparation of a TIA was required to assess the potential impacts to the circulation network beyond what was previously anticipated under the 2014 Clovis General Plan. The TIA studied six intersections: 1) Leonard Avenue/Bullard Avenue; 2) Leonard Avenue/Barstow Avenue; 3) DeWolf Avenue/Shaw Avenue; 4) Leonard Avenue/Shaw Avenue; 5) Thompson Avenue/Shaw Avenue; and 6) McCall Avenue/Shaw Avenue, for existing conditions, existing-plus-project conditions, near term with project conditions, and cumulative conditions to the year 2040. A discussion of each of these scenarios is included below.

Each scenario is based on the Projects a.m. and p.m. peak hour trips as determined in the TIA. According to the TIA, the Project would result in 161 trips in the a.m. peak hours of between 7 a.m. and 9 a.m. and 216 trips in the p.m. peak hours between 4 p.m. and 6 p.m., as well as a total of 2,058 daily vehicle trips.

Existing Traffic Conditions

Existing traffic volumes evaluates the existing traffic conditions without the Project. This scenario relied upon existing and historical traffic volumes and roadway conditions from traffic counts and field surveys conducted in 2017, 2019, and 2020. According to the TIA, the study intersections operate at an acceptable level of service (LOS) under existing conditions.¹⁷

Existing Plus Project Conditions

Under this scenario, traffic volumes and roadway conditions are based on the existing traffic conditions plus what the Project would add in the opening year. Because the Project includes a request to change the land use designation from Low Density Residential to Medium Density Residential, this scenario analyzed the difference in traffic volumes based on that request. As a result of the Project compared to what would be allowed by-right under the lands existing General Plan land use designation, there would be an increase in total daily trips by 793, including 62 a.m. and 83 p.m. peak hour trips. Although there would be an increase in overall traffic volumes from what was previously anticipated, all study intersections would continue to operate at an acceptable LOS under this scenario.¹⁸

Near Term Plus Project Conditions

Under this scenario, traffic volumes and roadway conditions in the near term (following opening year) with the addition of the Project. Under this scenario, the TIA determined that the intersection of Leonard and Shaw Avenues would exceed an acceptable LOS; however, implementation of Mitigation Measure TRAF-1 would reduce this impact to less than significant.¹⁹

17 Traffic Impact Assessment, Tentative Tract No. 6304, JLB Engineering, Inc., May 26, 2020, page 1.

18 Traffic Impact Assessment, Tentative Tract No. 6304, JLB Engineering, Inc., May 26, 2020, page 2.

19 Traffic Impact Assessment, Tentative Tract No. 6304, JLB Engineering, Inc., May 26, 2020, page 2.

Mitigation Measure TRAF-1: The Applicant and/or Project proponent shall contribute their proportional share of traffic impact fees for the following future improvements at the following intersection(s):

Leonard Avenue/Shaw Avenue

- Add an eastbound left-turn lane;
- Modify the eastbound left-through-right lane to a through-right lane;
- Add a westbound left-turn lane;
- Modify the westbound left-through-right lane to a through-right lane;
- Modify the northbound left-through lane to a left-turn lane;
- Stripe a northbound through lane;
- Add a southbound left-turn lane;
- Modify the southbound left-through-right lane to a through lane;
- Add a southbound right-turn lane; and
- Signalize the intersection with protective left-turn phasing in all directions.

Cumulative 2040 No Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the cumulative year 2040 without the Project. Under this scenario, the TIA determined that the intersections of Leonard Avenue and Bullard Avenue, Leonard Avenue and Barstow Avenue, DeWolf Avenue and Shaw Avenue, Thompson Avenue and Shaw Avenue, and McCall Avenue and Shaw Avenue would exceed the acceptable LOS; however, implementation of Mitigation Measure TRAF-2 would reduce this impact to less than significant.²⁰

Mitigation Measure TRAF-2: The Applicant and/or Project proponent shall contribute their proportional share of traffic impact fees for the following future improvements at the following intersection(s):

Leonard Avenue/Bullard Avenue

- Add an eastbound left-turn lane;
- Modify the eastbound left-through-right lane to a through lane;
- Add an eastbound right-turn lane;
- Add a westbound left-turn lane;
- Modify the westbound left-through-right lane to a through-right lane;
- Modify the southbound through-right lane to a through lane;
- Add a southbound right-turn lane; and
- Signalize the intersection with protective left-turn phasing in all directions.

Leonard Avenue/Barstow Avenue

- Add a westbound left-turn lane;
- Modify the westbound left-through-right lane to a through-right lane; and
- Signalize the intersection with protective left-turn phasing in all directions.

DeWolf Avenue/Shaw Avenue

- Modify the northbound through-right lane to a through lane;
- Add a northbound right-turn lane; and
- Modify the traffic signal to accommodate the added lane.

Thompson Avenue/Shaw Avenue

- Modify the northbound left-right lane to a left-turn lane;

²⁰ Traffic Impact Assessment, Tentative Tract No. 6304, JLB Engineering, Inc., May 26, 2020, page 2.

- Add a northbound right-turn lane; and
- Signalize the intersection with protective left-turn phasing in all directions.

McCall Avenue/Shaw Avenue

- Modify the westbound through-right lane to a through lane;
- Add a westbound right-turn lane;
- Add a northbound left-turn lane;
- Modify the northbound left-through-right lane to a through lane;
- Add a northbound right-turn lane;
- Add a southbound left-turn lane;
- Modify the southbound left-through-right lane to a through lane;
- Add a southbound right-turn lane; and
- Modify the traffic signal to accommodate the added lanes.

Cumulative 2040 Plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the cumulative year 2040 with the Project. Under this scenario, the TIA determined that the intersections of Leonard Avenue and Bullard Avenue, Leonard Avenue and Barstow Avenue, DeWolf Avenue and Shaw Avenue, Thompson Avenue and Shaw Avenue, and McCall Avenue and Shaw Avenue would exceed the acceptable LOS; however, implementation of Mitigation Measure TRAF-3 would reduce this impact to less than significant.²¹

Mitigation Measure TRAF-3: The Applicant and/or Project proponent shall contribute their proportional share of traffic impact fees for the following future improvements at the following intersection(s):

Leonard Avenue / Bullard Avenue

- Add an eastbound left-turn lane;
- Modify the eastbound left-through-right lane to a through lane;
- Add an eastbound right-turn lane;
- Add a westbound left-turn lane;
- Modify the westbound left-through-right lane to a through-right lane;
- Modify the southbound through-right lane to a through lane;
- Add a southbound right-turn lane; and
- Signalize the intersection with protective left-turn phasing in all directions.

Leonard Avenue / Barstow Avenue

- Add a westbound left-turn lane;
- Modify the westbound left-through-right lane to a through-right lane; and
- Signalize the intersection with protective left-turn phasing in all directions.

DeWolf Avenue / Shaw Avenue

- Modify the northbound through-right lane to a through lane;
- Add a northbound right-turn lane; and
- Modify the traffic signal to accommodate the added lanes.

Thompson Avenue / Shaw Avenue

- Modify the northbound left-right lane to a left-turn lane;
- Add a northbound right-turn lane; and

²¹ Traffic Impact Assessment, Tentative Tract No. 6304, JLB Engineering, Inc., May 26, 2020, page 2.

- Signalize the intersection with protective left-turn phasing in all directions.

McCall Avenue / Shaw Avenue

- Modify the westbound through-right lane to a through lane;
- Add a westbound right-turn lane;
- Add a northbound left-turn lane;
- Modify the northbound left-through-right lane to a through lane;
- Add a northbound right-turn lane;
- Add a southbound left-turn lane;
- Modify the southbound left-through-right lane to a through lane;
- Add a southbound right-turn lane; and
- Modify the traffic signal to accommodate the added lanes.

Queuing Analysis

A left-turn and right-turn lane queuing analysis was also performed to determine the queuing lengths at the study intersections to determine the level of impact. Based on the TIA, the existing capacity for turning movements at the study intersections is sufficient to accommodate the maximum queue of traffic with buildout of the Project.²²

Overall, the Project itself would help to facilitate improved circulation by adding vehicular and pedestrian infrastructure throughout the Project site for connectivity to adjacent areas currently under construction and/or planned for future residential development. Further, as part of conditions of approval of the Project, a vehicular bridge would be constructed over Dog Creek for access to the site. Lastly, implementation of Mitigation Measures TRAF-1 through TRAF-3 would reduce the potential for significant traffic impacts by ensuring that payment of fair share costs be assessed for future traffic control at the intersections identified above.

While the level of service at certain intersections would be slightly exacerbated with the Project, Policy 2.1 in the Circulation Element of the General Plan allows exceptions to LOS on a case-by-case basis where a project would result in other public benefits. In the case of the Project, development of an infill property at a medium density would provide a public benefit by creating a pedestrian-friendly environment on a site that is otherwise vacant and undeveloped, while providing infrastructure for that area to facilitate better vehicular and pedestrian circulation. Further, the Project includes rezoning approximately 18 acres to Open Space which is a crucial step to the eventual buildout of park space in the future. Consequently, implementation of Mitigation Measures TRAF-1 to TRAF-3 would ensure that a **less-than-significant with mitigation** impact occur.

- b) *Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?*

Less-Than-Significant Impact. Under Senate Bill 743 (SB743), starting July 2020, projects will be required to assess traffic impacts based on Vehicle Miles Traveled (VMT), which is the amount and distance of automobile travel attributable to a project, as opposed to the existing Level of Service (LOS) method, which measures vehicle delays. As such, VMT is not required to be assessed until July 2020. The Project is consistent with General Plan Policy 1.4 of the Circulation Element, which encourages infill development for the purpose of reducing VMT. Further, the City Engineer analyzed the Project and

²² Traffic Impact Assessment, Tentative Tract No. 6304, JLB Engineering, Inc., May 26, 2020, page 37.

concluded that the current and proposed improvements can accommodate the additional traffic. Overall, the Project would result in a **less-than-significant** impact.

- c) *Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

Less-Than-Significant Impact. The Project would result in a significant impact if it would include features that would create a hazard such as a sharp curve in a new roadway, or create a blind corner or result in sight distance issues from entryways. Through the entitlement process, the Project would undergo review by multiple City departments, such as planning and engineering, to ensure that the site layout conforms to existing regulations, such as the City Development Code, and other applicable codes, such as the fire code and building code. During this review, the Project would need to make the necessary corrections to ensure that no hazardous design features would result from the Project. Further, the main roadway network (i.e. Leonard Avenue, Shaw Avenue, and Barstow Avenue) was previously constructed to City roadway standards. Although new roadways would be constructed to serve the site, including a bridge over Dog Creek, this infrastructure would be reviewed by City engineering staff and building staff to ensure they are designed and constructed to applicable standards. Therefore, because the Project would undergo site plan and design review to ensure consistency and adherence to applicable design and site layout guidelines, a **less-than-significant** impact would occur.

- d) *Would the project result in inadequate emergency access?*

Less-Than-Significant Impact. The Project would include two ingress/egress access points, including the main entrance along the proposed bridge off of Agua Dulce, as well as a temporary roadway at the south end of the Project providing access to and from Shaw Avenue. As part of the Project review, the Clovis Fire Department would review all plans to ensure adequate emergency access is provided. This review includes review for adequate roadway widths, turning radii, as well as adequate access to units and accessibility to water. Consequently, because the Project plans would be required by the Clovis Municipal Code to be reviewed and approved by Clovis Fire Department and Police Department prior to construction, this impact would be **less than significant** and no mitigation measures are required.

18. TRIBAL CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?				X

<p>b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American Tribe?</p>		X		
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ENVIRONMENTAL SETTING

On September 25, 2014, Governor Jerry Brown signed Assembly Bill AB52, which intends to protect a new class of recourse under CEQA. This new class is Tribal Cultural Resources and provides an avenue to identify Tribal Cultural resources through a consultation process, similar to SB18. However, unlike SB18, where consultation is required for all General Plan and Specific Plan Amendments, AB52, applies to all projects where a Notice of Determination is filed. Furthermore, the consultation process is required to be complete prior to filing a Notice of Intent.

On February 11, 2020, consistent with AB52, invitations to consult on the Project were mailed to thirteen (13) tribes within the area. According to AB52, tribes have up to thirty (30) days to request consultation, at which time the City would set up a consultation. No requests for consultations were made during that time. Similarly, SB18 notices were sent out on the same day to allow tribes up to ninety (90) days to request consultation for the Project related to the request for General Plan amendment. No requests for consultations were made during that time.

A cultural resources assessment was prepared by Peak & Associates, Inc., on February 14, 2020 (see Appendix C). This assessment was based on information obtained at the Southern San Joaquin Valley Information Center, CSU Bakersfield, as well as a field assessment for observations.

DISCUSSION

- a) *Would the project cause a substantial adverse change to a listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?*

No Impact. As mentioned in the Project Description, the Project site is currently vacant and undeveloped. There are no existing structures or features on the site that are listed or eligible in the California Register of Historical Resources, or in a local register. As such, the Project would have **no impact** and no mitigation measures are required.

- b) *Would the project cause a substantial adverse change to a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Section 5024.1 for the purposes of this*

paragraph, the lead agency shall consider the significance of the resource to a California Native American Tribe?

Less-Than-Significant Impact With Mitigation. As mentioned above, the City invited 13 Native American tribes to consult on the Project under AB52, and no tribes requested consultation within the 30-days afforded to respond under AB52. The Project site is currently vacant and undeveloped, and would require trenching and ground-disturbing activities during construction for the installation of utility infrastructure needed to serve the Project. As described in the cultural resources report prepared for the Project, there were no known resources identified at the site. Nevertheless, the potential remains that cultural resources could be inadvertently discovered during ground-disturbing activities. However, implementation of Mitigation Measures TCR-1 and TCR-2 below would reduce potential significant impacts and ensure protection in the event of accidental discovery of any cultural resources. With Mitigation Measure TCR-1 and TCR-2, impacts would be **less-than-significant with mitigation**.

Mitigation Measure TCR-1: If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified professional archaeologist/tribal representative, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeologist, can evaluate the significance of the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants.

If the qualified professional archaeologist/tribal representative determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.

If a potentially-eligible resource is encountered, then the qualified professional archaeologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met.

Mitigation Measure TCR-2: If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (Chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the County coroner. All reports, correspondence, and determinations regarding the discovery of human remains on the project site shall be submitted to the Lead Agency.

19. UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			X	
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
c. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	
e. Comply with federal, state, and local management reduction statutes and regulations related to solid waste?			X	

ENVIRONMENTAL SETTING

Pacific Gas & Electric (PG&E) provides electricity and natural gas services in the City of Clovis. AT&T/SBC provides telephone service to the City.

The City's water supply sources include groundwater drawn from the Kings Sub-basin of the San Joaquin Valley Groundwater Basin and treated surface water from the Fresno Irrigation District (MID). Surface water is treated at the City of Clovis Surface Water Treatment Facility.

The City of Clovis provides sewer collection service to its residents and businesses. Treatment of wastewater occurs at the Fresno-Clovis Regional Wastewater Treatment Plant (RWTP). The Fresno-Clovis RWTP is operated and maintained by the City of Fresno and operates under a waste discharge requirement issued by the Central Valley Regional Water Quality Control Board. Additionally, the City of Clovis has completed a 2.8 mgd wastewater treatment/water reuse facility, which will service the City's new growth areas.

The Fresno Metropolitan Flood Control District (FMFCD) has the responsibility for storm water management within the Fresno-Clovis metropolitan area of the Project site. Stormwater runoff that is generated by land development is controlled through a system of pipelines and storm drainage detention basins.

DISCUSSION

- a) *Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*

Less-Than-Significant Impact. The Project includes construction of 217 home units. As mentioned above, the site is of the type of use that was previously anticipated for this location, thus, previously accounted for in the 2014 Clovis General Plan. Although the Project requests an increase in density from Low Density to Medium Density, as part of the review process for the Project, the water and wastewater impacts will be evaluated by the City Engineer to ensure compliance with the City's Waste Water Master Plan, as well as FMFCD, so that the Project would not exceed wastewater treatment requirements such that a new facility would be required nor would the existing treatment facility need to be expanded. Upon review and approval by the City Engineer, the Project would result in a **less-than-significant** impact.

- b) *Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?*

Less-Than-Significant Impact. The Project is of the type of development previously accounted for in the 2014 Clovis General Plan, and is on an infill site surrounded with existing urban and rural residential uses which are served adequately with City water. Because of a request to increase density and annex to the City, a water supply assessment was required and the City engineer determined that it has sufficient capacity to accommodate the Project. Further, the Project would comply with current Green Building Codes, as well as the water efficient landscape policies with regards to water conserving features. Further, the Project would be required to comply several water conserving policies, such as Policy 3.4 and 3.5 of the Open Space and Conservation Element. Overall, a **less-than-significant** impact would occur.

- c) *Would the project result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*

Less-Than-Significant Impact. Because the Project is of the type previously planned and accounted for in the 2014 Clovis General Plan, it is not likely that the Project would result in a demand that would exceed the capacity of the wastewater treatment facility. A sewer study was prepared for the Project which determined that the City's system had sufficient capacity to accommodate buildout of the Project. Further, because permanent wastewater infrastructure is not yet planned to reach the site at this time, the applicant proposed construction of a temporary lift station to be able to adequately convey wastewater to and from the site until such time it is feasible for permanent infrastructure to connect to the City

wastewater system. With construction of the lift station by the applicant/developer, the wastewater system would be adequate. For that reason, the impact would be **less than significant**.

- d) *Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?*

Less-Than-Significant. The Project would introduce new solid waste throughout construction and operation of the Project. However, the Project would be required to comply with Chapter 6.3.1, Recycling and Diversion of Construction and Demolition Debris, of the Clovis Municipal Code during construction. This section of the Clovis Municipal Code requires that a minimum of fifty percent (50%) of waste tonnage from a project be diverted from disposal, and that all new residential (and commercial) construction within the City shall submit and obtain approval for a waste management plan prior to construction activities. Compliance with these measures would ensure that the Project does not result in a significant impact during the construction phase of the Project. Further, compliance with policies in the General Plan for the reduction and recycling of solid waste would serve to reduce impacts of solid waste by promoting and encouraging the recycling of materials. Lastly, according to the California Department of Resources Recycling and Recovery (CalRecycle, the City of Clovis has exceeded their target per resident disposal rate of 4.7 pounds per day per resident, meaning that Clovis residents are actually producing less solid waste than the target set by the State.²³ Consequently, a **less-than-significant** impact would occur.

- e) *Would the project comply with federal, state, and local management reduction statutes and regulations related to solid waste?*

Less-Than-Significant. See discussion 19d above.

20. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?			X	
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?			X	
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in			X	

²³ Calrecycle, City of Clovis, <https://www2.calrecycle.ca.gov/LGCentral/DiversionProgram/JurisdictionDiversionPost2006>, accessed May 18, 2020.

temporary or ongoing impacts to the environment?				
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

ENVIRONMENTAL SETTING

The Project site is located on a site surrounded by existing urban and rural residential uses. The site’s topography is generally flat and characterized primarily by low lying shrubs and grasses.

DISCUSSION

- a) *Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?*

Less-Than-Significant Impact. The Project is located at a site that is surrounded by existing development. Further, the main road network is already in place from previous development (i.e. Shaw, Barstow, and Leonard Avenues). Although the Project could result in temporary traffic detouring or closures during buildout, these delays would be temporary and would be coordinated with the City engineering department and other departments to ensure safe access to and from the area is maintained. Further, the site itself would reviewed by City departments to ensure adequate site access and circulation is provided in the event of an emergency. Lastly, the Project would serve to increase circulation in the area and the surrounding neighborhoods by constructing a roadway throughout the site, as well as a bridge over Dog Creek providing a linkage from surrounding neighborhoods. Thus, the Project would result in greater porosity in the overall circulation system of the area which would provide increased access. Overall, a **less-than-significant** impact would occur.

- b) *Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?*

Less-Than-Significant Impact. The Project site is flat and undeveloped, surrounded by existing urban and rural residential uses. The general vicinity of the site is flat, therefore, is not of the type of topography nor in a location likely to exacerbate wildfire risks caused by winds or slopes. Further, the Project would be required to comply with the latest fire codes and would be required to include sprinklers on the interior of the homes and require installation of several hydrants throughout the site. Lastly, the site plans would undergo review by the Clovis Fire Department to ensure that all fire safety regulations are met. Therefore, a **less-than-significant** impact would occur.

- c) *Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?*

Less-Than-Significant Impact. The site is located in an area previously developed with urban and rural residential uses. As a new development, installation of a new roadway network, water lines, and power lines would be required; however, these utilities and infrastructure are typical of residential development

and would be constructed to standards of the respective agencies and departments which oversee them, as well as be required to comply all necessary plan review and permitting requirements of such departments and agencies. As such, a **less-than-significant** impact would occur.

- d) *Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*

No Impact. The City of Clovis is generally flat topography, and the site itself is in an area that is not in close proximity to hillsides such that it would expose people or structures to significant risks associated with downstream flooding or landslides as a result of runoff or post-fire slope instability. As such, **no impact** would occur.

21. MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?			X	
b. Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			X	
c. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?			X	

ENVIRONMENTAL SETTING

The Project is located on an infill site within the City of Clovis, substantially surrounded by existing development consisting residential uses.

DISCUSSION

- a) *Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?*

Less-Than-Significant Impact. As discussed above throughout the Initial Study, the Project would not result in any significant impacts with implementation of mitigation measures prescribed above. Therefore, the Project would have a **less-than-significant** impact as it would not substantially degrade the quality of the environment.

- b) *Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*

Less-Than-Significant Impact. The Project includes mitigation measures in certain topic areas identified throughout this Initial Study which would reduce potential impacts to a less-than-significant level. None of these impacts would be cumulatively considerable since most are either temporary impacts from construction or site specific. With the exception of air quality that is generally considered measurable cumulatively, the Project was found to have a less-than-significant impact through compliance with existing regulations from the SJVPACD. As such, future Projects in Clovis would be required to comply with those same regulations, ensuring adequate mitigation as development occurs. Lastly, while the Project would introduce 217 new single-family residential units to an existing vacant site, the type of use was previously planned for in the 2014 Clovis General Plan buildout. Thus, a **less-than-significant** impact would occur.

- c) *Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?*

Less-Than-Significant Impact. As discussed throughout the document, the Project would not result in a significant impact that could not be mitigated to a less-than-significant level. Therefore, a **less-than-significant** impact would occur.

I. Report Preparation

LEAD AGENCY

Ricky Caperton, AICP

Senior Planner
City of Clovis
Planning & Development Services

TECHNICAL STUDIES

Air Quality and Greenhouse Gas Analysis Report

Bonadelle Neighborhoods Tract No. 6304
Dave Mitchell, Senior Air Quality Scientist
Mitchell Air Quality Consulting

Biological Habitat Assessment

Tract 6304
Argonaut Ecological Consulting, Inc.

Cultural Resource Assessment

Bonadelle Neighborhoods Project, Tract 6304
Melinda A. Peak
Peak & Associates, Inc.

Traffic Impact Analysis

Tentative Tract No. 6304
JLB Traffic Engineering, Inc.

**DRAFT RESOLUTION
ISMND**

ATTACHMENT 10

**DRAFT
RESOLUTION 20-__**

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLOVIS APPROVING AN ENVIRONMENTAL FINDING OF A MITIGATED NEGATIVE DECLARATION FOR GENERAL PLAN AMENDMENT GPA2020-001, PREZONE R2020-001 AND VESTING TENTATIVE TRACT MAP TM6304, PURSUANT TO CEQA GUIDELINES

WHEREAS, the project proponent, Bonadelle Neighborhoods, 7030 North Fruit Avenue #101, Fresno, CA 93711, has submitted various applications including a General Plan Amendment GPA2020-001, Prezone R2020-001, and Vesting Tentative Tract Map TM6304 for property located in the southeast area of Leonard and Barstow Avenues, in the County of Fresno; and

WHEREAS, the City of Clovis (“City”) caused to be prepared an initial study (hereinafter incorporated by reference) in June 2020, for the Project to evaluate potential environmental impacts, and on the basis of that study, it was determined that no significant environmental impacts would result from this Project with mitigation measures included; and

WHEREAS, on the basis of this initial study, a mitigated negative declaration has been prepared, circulated, and made available for public comment pursuant to the California Environmental Quality Act (“CEQA”), Public Resources Code, section 21000, et seq., and Guidelines for implementation of CEQA, 14 California Code of Regulations, sections 15000, et seq.; and

WHEREAS, the City Council has independently reviewed, evaluated, and considered the CEQA analysis outlined in the staff report, initial study, mitigated negative declaration and all comments, written and oral, received from persons who reviewed the mitigated negative declaration, or otherwise commented on the Project (“Administrative Record”).

NOW, THEREFORE, BASED UPON THE ENTIRE RECORD OF THE PROCEEDINGS, THE CITY COUNCIL RESOLVES AND FINDS AS FOLLOWS:

1. The foregoing recitals are true and correct.
2. The initial study and mitigated negative declaration for the Project are adequate, reflect the City’s independent judgment and analysis, and have been completed in compliance with CEQA and the CEQA Guidelines.
3. The initial study and mitigated negative declaration were presented to the City Council and the City Council has independently reviewed, evaluated, and considered the initial study, mitigated negative declaration and all comments, written and oral, received from persons who reviewed the initial study and mitigated negative declaration, or otherwise commented on the Project in the Administrative Record prior to approving the Project.

4. On the basis of the whole record, there is no substantial evidence that the Project will have a significant effect on the environment with the mitigation measures identified in the mitigated negative declaration.
5. The mitigated negative declaration is approved and the mitigation monitoring program set forth in **Attachment A**, including the mitigation measures identified therein and as described in the mitigated negative declaration, is adopted.
6. The record of these proceedings shall be contained in the Department of Planning and Development Services located at 1033 Fifth Street, Clovis, California 93612, and the custodian of the record shall be the City Planner or other person designated by the Planning and Development Services Director.
7. The Planning and Development Services Director, or his/her designee, is authorized to file a notice of determination for the Project in accordance with CEQA and to pay any fees required for such filing.
8. The basis for the findings is detailed in the July 20, 2020 City Council staff report and the June 25, 2020 Planning Commission staff report, which are hereby incorporated by reference, the entire Administrative Record, as well as evidence and comments presented in connection with the mitigated negative declaration.

* * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on July 20, 2020, by the following vote, to wit.

AYES:
 NOES:
 ABSENT:
 ABSTAIN:

DATED: July 20, 2020

Mayor

City Clerk

**ATTACHMENT A:
Mitigation Monitoring Program
GPA2020-01/R2020-001/TM6304**

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
Biological Resources				
BIO-1	<p>Pre-Activity Surveys for Birds (raptors, migratory birds, and other protected bird species). Site disturbance shall be initiated outside of the nesting period of migratory birds and nesting raptors (generally between February 1 and August 31). If avoidance is not possible, a pre-construction survey shall be prepared by a qualified biologist to determine the presence of birds such as the burrowing owl and other protected bird species. If the biologist determines the presence of such birds, the developer shall establish a buffer zone(s) of adequate size, as determined by the biologist, to prevent disturbance of the nest until the young have fledged.</p>	City of Clovis Planning	<i>Prior to Permits and During Construction</i>	
BIO-2	<p>Avoidance and Minimization Measures for Construction Near the Dog Creek. Site development shall be designed to minimize impacts and disturbance to Dog Creek whenever possible. This shall include worker training, covering excavations near the Dog Creek to prevent the trapping of wildlife, and/or the establishment of exclusion fencing to prevent equipment from being used outside of the designated work zone.</p>			

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
Cultural Resources				
CULT-1	<p>If prehistoric or historic-era cultural or archaeological materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeologist, can evaluate the significance of the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants.</p> <p>If the qualified professional archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.</p> <p>If a potentially-eligible resource is encountered, then the qualified professional archaeologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met.</p>	City of Clovis Planning	<i>Prior to Permits and During Construction</i>	

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
	<p>If the qualified professional archaeologist and/or representatives from Table Mountain Rancheria determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.</p> <p>If a potentially-eligible resource is encountered, then the qualified professional archaeologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met.</p>			
CULT-2	<p>If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (Chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American</p>	City of Clovis Planning	<i>Prior to Permits and During Construction</i>	

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
	involvement, in the event of discovery of human remains, at the direction of the County coroner. All reports, correspondence, and determinations regarding the discovery of human remains on the project site shall be submitted to the Lead Agency.			
Geological Resources				
GEO-1	<p>If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified professional archaeologist and/or paleontologist, meeting the Secretary of the Interior’s Professional Qualification Standards for prehistoric and historic archaeologist, can evaluate the significance of the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants.</p> <p>If the qualified professional determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.</p> <p>If a potentially-eligible resource is encountered, then the qualified professional archaeologist and/or paleontologist, the Lead Agency, and the project</p>	City of Clovis Planning	<i>Prior to Permits and During Construction</i>	

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
	<p>proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met.</p>			
Transportation				
<p>TRAF-1</p>	<p>The Applicant and/or Project proponent shall contribute their proportional share of traffic impact fees for the following future improvements at the following intersection(s):</p> <p><u>Leonard Avenue/Shaw Avenue</u></p> <ul style="list-style-type: none"> • Add an eastbound left-turn lane; • Modify the eastbound left-through-right lane to a through-right lane; • Add a westbound left-turn lane; • Modify the westbound left-through-right lane to a through-right lane; • Modify the northbound left-through lane to a left-turn lane; • Stripe a northbound through lane; • Add a southbound left-turn lane; • Modify the southbound left-through-right lane to a through lane; • Add a southbound right-turn lane; and • Signalize the intersection with protective left-turn phasing in all directions. 	<p>City of Clovis Engineering</p>	<p><i>Prior to Permits</i></p>	
<p>TRAF-2</p>	<p>The Applicant and/or Project proponent shall contribute their proportional share of traffic impact fees for the following future improvements at the following intersection(s):</p> <p><u>Leonard Avenue/Bullard Avenue</u></p>	<p>City of Clovis Engineering</p>	<p><i>Prior to Permits</i></p>	

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
	<ul style="list-style-type: none"> • Add an eastbound left-turn lane; • Modify the eastbound left-through-right lane to a through lane; • Add an eastbound right-turn lane; • Add a westbound left-turn lane; • Modify the westbound left-through-right lane to a through-right lane; • Modify the southbound through-right lane to a through lane; • Add a southbound right-turn lane; and • Signalize the intersection with protective left-turn phasing in all directions. <p><u>Leonard Avenue/Barstow Avenue</u></p> <ul style="list-style-type: none"> • Add a westbound left-turn lane; • Modify the westbound left-through-right lane to a through-right lane; and • Signalize the intersection with protective left-turn phasing in all directions. <p><u>DeWolf Avenue/Shaw Avenue</u></p> <ul style="list-style-type: none"> • Modify the northbound through-right lane to a through lane; • Add a northbound right-turn lane; and • Modify the traffic signal to accommodate the added lane. <p><u>Thompson Avenue/Shaw Avenue</u></p> <ul style="list-style-type: none"> • Modify the northbound left-right lane to a left-turn lane; • Add a northbound right-turn lane; and • Signalize the intersection with protective left-turn phasing in all directions. 			

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
	<p><u>McCall Avenue/Shaw Avenue</u></p> <ul style="list-style-type: none"> • Modify the westbound through-right lane to a through lane; • Add a westbound right-turn lane; • Add a northbound left-turn lane; • Modify the northbound left-through-right lane to a through lane; • Add a northbound right-turn lane; • Add a southbound left-turn lane; • Modify the southbound left-through-right lane to a through lane; • Add a southbound right-turn lane; and • Modify the traffic signal to accommodate the added lanes. 			
TRAF-3	<p>The Applicant and/or Project proponent shall contribute their proportional share of traffic impact fees for the following future improvements at the following intersection(s):</p> <p><u>Leonard Avenue / Bullard Avenue</u></p> <ul style="list-style-type: none"> • Add an eastbound left-turn lane; • Modify the eastbound left-through-right lane to a through lane; • Add an eastbound right-turn lane; • Add a westbound left-turn lane; • Modify the westbound left-through-right lane to a through-right lane; • Modify the southbound through-right lane to a through lane; • Add a southbound right-turn lane; and • Signalize the intersection with protective left-turn phasing in all directions. 	City of Clovis Engineering	<i>Prior to Permits</i>	

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
	<p><u>Leonard Avenue / Barstow Avenue</u></p> <ul style="list-style-type: none"> • Add a westbound left-turn lane; • Modify the westbound left-through-right lane to a through-right lane; and • Signalize the intersection with protective left-turn phasing in all directions. <p><u>DeWolf Avenue / Shaw Avenue</u></p> <ul style="list-style-type: none"> • Modify the northbound through-right lane to a through lane; • Add a northbound right-turn lane; and • Modify the traffic signal to accommodate the added lanes. <p><u>Thompson Avenue / Shaw Avenue</u></p> <ul style="list-style-type: none"> • Modify the northbound left-right lane to a left-turn lane; • Add a northbound right-turn lane; and • Signalize the intersection with protective left-turn phasing in all directions. <p><u>McCall Avenue / Shaw Avenue</u></p> <ul style="list-style-type: none"> • Modify the westbound through-right lane to a through lane; • Add a westbound right-turn lane; • Add a northbound left-turn lane; • Modify the northbound left-through-right lane to a through lane; • Add a northbound right-turn lane; • Add a southbound left-turn lane; • Modify the southbound left-through-right lane to a through lane; • Add a southbound right-turn lane; and 			

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
	<ul style="list-style-type: none"> Modify the traffic signal to accommodate the added lanes. 			
Tribal Cultural Resources				
TCR-1	<p>If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified professional archaeologist/tribal representative, meeting the Secretary of the Interior’s Professional Qualification Standards for prehistoric and historic archaeologist, can evaluate the significance of the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants.</p> <p>If the qualified professional archaeologist/tribal representative determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.</p> <p>If a potentially-eligible resource is encountered, then the qualified professional archaeologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The</p>	City of Clovis Planning	<i>Prior to Permits and During Construction</i>	

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
	<p>determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met.</p> <p>If the qualified professional archaeologist and/or representatives from Table Mountain Rancheria determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.</p> <p>If a potentially-eligible resource is encountered, then the qualified professional archaeologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met.</p>			
TCR-2	<p>If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public</p>	City of Clovis Planning	<i>Prior to Permits and During Construction</i>	

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
	Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (Chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the County coroner. All reports, correspondence, and determinations regarding the discovery of human remains on the project site shall be submitted to the Lead Agency.			

**DRAFT RESOLUTION
GPA2020-001**

ATTACHMENT 11

**DRAFT
RESOLUTION 20-__**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLOVIS APPROVING
GENERAL PLAN AMENDMENT GPA2020-001 AMENDING THE 2014 CLOVIS GENERAL
PLAN LAND USE ELEMENT AND LOMA VISTA SPECIFIC PLAN FOR APPROXIMATELY
34 ACRES LOCATED IN THE SOUTHEAST AREA OF LEONARD AND BARSTOW
AVENUES**

WHEREAS, Bonadelle Neighborhoods, 7030 North Fruit Avenue #101, Fresno, CA 93711, has applied for a General Plan Amendment GPA2020-01; and

WHEREAS, the Applicant submitted an application for a general plan amendment to amend the Clovis General Plan and Loma Vista Specific Plan to change the land use designation from Low Density Residential (2.1 to 4.0 DU/Ac) to Medium Density Residential (4.1 to 7.0 DU/Ac), for approximately 34 acres of land located in the southeast area of Leonard and Barstow Avenues, in the County of Fresno, California; and

WHEREAS, the proposed General Plan Amendment GPA2020-001, was assessed under the provisions of the California Environmental Quality Act (CEQA) and the potential effects on the environment were considered by the City Council, together with comments received and public comments, and the entire public record was reviewed; and

WHEREAS, on June 25, 2020, the Planning Commission considered general plan amendment GPA2020-001; and

WHEREAS, the Planning Commission voted to recommend approval of GPA2020-001, to the City Council; and

WHEREAS, the Planning Commission's recommendations were forwarded to the City Council for consideration; and

WHEREAS, a public notice was sent out to area residents within 800 feet of said property boundaries ten days prior to said hearing; and

WHEREAS, a duly noticed hearing was held on July 20, 2020 and

WHEREAS, on July 20, 2020, the City Council considered testimony and information received at the public hearing and the oral and written reports from City staff, as well as other documents contained in the record of proceedings relating to General Plan Amendment GPA2020-001 which are maintained at the offices of the City of Clovis Department of Planning and Development Services; and

WHEREAS, the City Council considered the CEQA analysis outlined in the staff report and elsewhere in the Administrative Record which determined the approval of a Mitigated Negative Declaration pursuant to CEQA guidelines; and

WHEREAS, the Council, has reviewed and considered the staff report and all written materials submitted in connection with the request and hearing and considering the testimony presented during the public hearing; and

NOW, THEREFORE, BASED UPON THE ENTIRE RECORD OF THE PROCEEDINGS, THE CITY COUNCIL RESOLVES AND FINDS AS FOLLOWS:

- a. The proposed amendment is internally consistent with the goals, policies, and actions of the General Plan; and
- b. The proposed amendment would not be detrimental to the public interest, health, safety, convenience, or general welfare of the City; and
- c. If applicable, the parcel is physically suitable (including absence of physical constraints, access, compatibility with adjoining land uses, and provision of utilities) for the requested/anticipated project.
- d. There is a compelling reason for the amendment.
- e. The City Council does approve a mitigated negative declaration for the project, pursuant to CEQA Guidelines.

NOW, THEREFORE, BE IT RESOLVED, that the City of Clovis Council approves General Plan Amendment GPA2020-001.

* * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on July 20, 2020 by the following vote, to wit.

AYES:
 NOES:
 ABSENT:
 ABSTAIN:

 DATED:

Mayor

City Clerk

**DRAFT ORDINANCE
R2020-001**

ATTACHMENT 12

**DRAFT
ORDINANCE 20-**

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CLOVIS AMENDING AND CHANGING THE OFFICIAL ZONE MAP OF THE CITY OF CLOVIS IN ACCORDANCE WITH SECTION 9.08.020 AND 9.86.010 OF THE CLOVIS MUNICIPAL CODE TO RECLASSIFY APPROXIMATELY 52.00 ACRES OF LAND FROM THE COUNTY AE-20 (EXCLUSIVE AGRICULTURAL) ZONE DISTRICT TO THE CLOVIS R-1-PRD (SINGLE-FAMILY PLANNED RESIDENTIAL DEVELOPMENT) AND O (OPEN SPACE CONSERVATION) ZONE DISTRICTS FOR PROPERTY LOCATED IN THE SOUTHEAST AREA OF LEONARD AND BARSTOW AVENUES

LEGAL DESCRIPTION:

See Attachment A

WHEREAS, Bonadelle Neighborhoods, 7030 North Fruit Avenue #101, Fresno, CA 93711, has applied for a Prezone R2020-001; and

WHEREAS, this is a request to prezone approximately 52 total acres from the County AE20 (Exclusive Agricultural) zone district, of which approximately 34 acres would be prezoned to the Clovis R-1-PRD (Single-Family Residential Planned Residential Development) zone district and the remaining approximately 18 acres to the Clovis O (Open Space Conservation) zone district located in the southeast area of Leonard and Barstow, in the County of Fresno, California; and

WHEREAS, the proposed prezone was assessed under the provisions of the California Environmental Quality Act (CEQA) and the potential effects on the environment were considered by the Planning Commission, together with comments received and public comments, and the entire public record was reviewed; and

WHEREAS, the Planning Commission held a noticed public hearing on June 25, 2020, to consider the project approval, at which time interested persons were given opportunity to comment on the project; and

WHEREAS, the Planning Commission voted and recommended that the City Council approve Prezone R2020-001; and

WHEREAS, the Planning Commission's recommendations were forwarded to the City Council for consideration; and

WHEREAS, the City published a Notice of the City Council Public Hearing for July 20, 2020, to consider prezone R2020-001, in the Fresno Business Journal, mailed notices to area

residents within 800 feet of said property boundaries ten days prior to said hearing, and posted notice of the Public Hearing according to applicable law; and

WHEREAS, the City Council held a noticed public hearing on July 20, 2020, to consider the approval of prezone R2020-001, at which time interested persons were given opportunity to comment on the project; and

WHEREAS, on July, 2020, the City Council considered testimony and information received at the public hearing and the oral and written reports from City staff, as well as other documents contained in the record of proceedings (“Administrative Record”) relating to prezone R2020-001, which are maintained at the offices of the City of Clovis Department of Planning and Development Services; and

WHEREAS, the City Council considered the CEQA analysis outlined in the staff report and elsewhere in the Administrative Record which supports the approval of a mitigated negative declaration pursuant to CEQA guidelines; and

WHEREAS, the City Council has reviewed and considered the staff report and all written materials submitted in connection with the request and hearing and considered the testimony presented during the public hearing; and

NOW, THEREFORE, BASED UPON THE ENTIRE RECORD OF THE PROCEEDINGS, THE CITY COUNCIL RESOLVES AND FINDS AS FOLLOWS:

Section 1

1. The proposed amendment is consistent with the goals, policies, and actions of the General Plan.
2. The proposed amendment would not be detrimental to the public interest, health, safety, convenience, or general welfare of the City.
3. The parcel is physically suitable (including absence of physical constraints, access, compatibility with adjoining land uses, and provision of utilities) for the requested zoning designations and anticipated land uses/projects.
4. The City Council considered the CEQA analysis outlined in the staff report and elsewhere in the Administrative Record and approved a mitigated negative declaration for the project pursuant to CEQA guidelines.
5. The City Council does approve prezone R2020-001.

Section 2 The Official Map of the City is amended in accordance with Sections 9.8.020 and 9.86.010 of the Clovis Municipal Code by reclassification of certain land in the County of Fresno, State of California, to wit:

From County Classification AE-20 to Clovis Classification R-1-PRD (Single-Family Planned Residential Development) for the area described in Attachment A, and from the County Classification AE-20 to the Clovis Classification O (Open Space Conservation)

Section 3 This Ordinance shall go into effect and be in full force from and after thirty (30) days after its final passage and adoption.

APPROVED: July 20, 2020

Mayor

City Clerk

* * * * *

The foregoing Ordinance was introduced and read at a regular meeting of the City Council held on July 20, 2020, and was adopted at a regular meeting of said Council held on _____, by the following vote, to wit:

AYES:

NOES:

ABSENT:

ABSTAIN:

DATED:

City Clerk

**ATTACHMENT A
LEGAL DESCRIPTION**

AE-20 to "O" (Open Space Conservation)

That portion of Parcel 4 of Parcel Map No. 3012, in the County of Fresno, State of California, according to the map thereof recorded in Book 22 of Parcel Maps at Page 43, Fresno County Records, lying Southeasterly of the Enterprise Canal, in the East half of Section 12, Township 13 South, Range 21 East, Mount Diablo Base and Meridian, more particularly described as follows:

COMMENCING at the Southwest corner of said Parcel 4, said corner also being the Southwest corner of the Northeast quarter of the Southeast quarter of said Section 12; thence North 00°23'26" East, along the West line of said Parcel 4, and the West line of the Northeast quarter of the Southeast quarter of said Section 12, a distance 214.10 feet to the TRUE POINT OF BEGINNING; thence North 00°23'26" East, continuing along said West lines, a distance of 1094.92 feet, to the intersection of said West lines with the centerline of the Enterprise Canal, said intersection also being the beginning of a 310.00 foot radius, non-tangent curve, concave Northwesterly, a radial to said beginning bears South 09°24'05" East; thence, along the centerline of said Enterprise Canal the following 11 courses, [1] Northeasterly along said curve, through a central angle of 20°11'43", an arc length of 109.27 feet; [2] thence North 60°24'12" East, a distance of 190.02 feet; [3] thence North 58°36'44" East, a distance of 133.37 feet; [4] thence North 57°58'08" East, a distance of 206.01 feet; [5] thence North 60°13'48" East, a distance of 128.34 feet; [6] thence North 51°16'38" East, a distance of 56.84 feet; [7] thence North 45°04'21" East, a distance of 167.54 feet to the beginning of a 200.00 foot radius tangent curve, concave Southeasterly; [8] thence Northeasterly along said curve, through a central angle of 22°44'57", an arc length of 79.41 feet; [9] thence North 67°49'18" East, a distance of 97.88 feet, to the beginning of a 500.00 foot radius tangent curve, concave Northwesterly; [10] thence Northeasterly along said curve, through a central angle of 18°47'39", an arc length of 164.01 feet; [11] thence North 49°01'39" East, a distance of 261.16 feet to the intersection of the centerline of said Enterprise Canal and the East line of said Parcel 4, said East line also being the East line of the Southeast quarter of the Northeast quarter of said Section 12; thence South 00°20'19" West, along said East lines, a distance of 261.68 feet, to a point being North 00°20'19" East, a distance of 605.80 feet, from the East quarter corner of said Section 12; thence South 34°12'46" West, a distance of 19.83 feet; thence South 38°47'48" West, a distance of 105.32 feet; thence South 55°18'55" West, a distance of 104.62 feet; thence South 64°41'13" West, a distance of 146.51 feet; thence South 63°55'51" West, a distance of 58.90 feet; thence South 28°39'17" West, a distance of 60.17 feet; thence South 14°27'53" West, a distance of 96.39 feet; thence South 23°42'39" West, a distance of 110.63 feet; thence South 21°24'08" West, a distance of 33.28 feet; thence South 28°46'06" West, a distance of 74.35 feet; thence South 28°22'52" West, a distance of 39.18 feet; thence South 36°20'25" West, a distance of 40.98 feet; thence South 34°10'31" West, a distance of 78.09 feet; thence South 34°23'01" West, a distance of 83.34 feet; thence South 34°46'39" West, a distance of 87.23 feet; thence South 35°47'34" West, a distance of 58.11 feet; thence South 37°17'07" West, a distance of 88.89 feet; thence South 57°22'56" West, a distance of 76.84 feet; thence South 59°42'21" West, a distance of 91.08 feet; thence South 43°15'40" West, a distance of 106.00 feet; thence South 24°41'18" West, a distance of 68.98 feet; thence South 05°42'41" West, a distance of 45.90 feet; thence South 06°03'32" East, a distance of 71.84 feet; thence South 05°52'37" West, a distance of 41.86 feet; thence South 30°53'22" West, a distance of 33.91 feet; thence South 23°14'54" West, a distance of 55.13 feet; thence South 64°56'16" West, a distance of 42.28 feet; thence South 52°28'47" West, a distance of 87.12 feet; thence South 51°31'30" West, a distance of 86.09 feet; thence South 41°13'36" West, a distance of 55.70 feet; thence South 38°30'42" West, a distance of 107.74 feet to the TRUE POINT OF BEGINNING.

Containing 18.26 Acres, more or less. APN: Portion 554-052-10

AE-20 to R-1-PRD

That portion of Parcel 4 of Parcel Map No. 3012, in the County of Fresno, State of California, according to the map thereof recorded in Book 22 of Parcel Maps at Page 43, Fresno County Records, lying in the East half of Section 12, Township 13 South, Range 21 East, Mount Diablo Base and Meridian, more particularly described as follows:

BEGINNING at the Southwest corner of said Parcel 4, said corner also being the Southwest corner of the Northeast quarter of the Southeast quarter of said Section 12; thence North 00°23'26" East, along the West line of said Parcel 4, and the West line of the Northeast quarter of the Southeast quarter of said Section 12, a distance 214.10 feet; thence North 38°30'42" East, a distance of 107.74 feet; thence North 41°13'36" East, a distance of 55.70 feet; thence North 51°31'30" East, a distance of 86.09 feet; thence North 52°28'47" East, a distance of 87.12 feet; thence North 64°56'16" East, a distance of 42.28 feet; thence North 23°14'54" East, a distance of 55.13 feet; thence North 30°53'22" East, a distance of 33.91 feet; thence North 05°52'37" East, a distance of 41.86 feet; thence North 06°03'32" West, a distance of 71.84 feet; thence North 05°42'41" East, a distance of 45.90 feet; thence North 24°41'18" East, a distance of 68.98 feet; thence North 43°15'40" East, a distance of 106.00 feet; thence North 59°42'21" East, a distance of 91.08 feet; thence North 57°22'56" East, a distance of 76.84 feet; thence North 37°17'07" East, a distance of 88.89 feet; thence North 35°47'34" East, a distance of 58.11 feet; thence North 34°46'39" East, a distance of 87.23 feet; thence North 34°23'01" East, a distance of 83.34 feet; thence North 34°10'31" East, a distance of 78.09 feet; thence North 36°20'25" East, a distance of 40.98 feet; thence North 28°22'52" East, a distance of 39.18 feet; thence North 28°46'06" East, a distance of 74.35 feet; thence North 21°24'08" East, a distance of 33.28 feet; thence North 23°42'39" East, a distance of 110.63 feet; thence North 14°27'53" East, a distance of 96.39 feet; thence North 28°39'17" East, a distance of 60.17 feet; thence North 63°55'51" East, a distance of 58.90 feet; thence North 64°41'13" East, a distance of 146.51 feet; thence North 55°18'55" East, a distance of 104.62 feet; thence North 38°47'48" East, a distance of 105.32 feet; thence North 34°12'46" East, a distance of 19.83 feet to a point on the East line of said Parcel 4, said East line also being the East line of the Southeast quarter of the Northeast quarter of said Section 12, said point being North 00°20'19" East, a distance of 605.80 feet, from the East quarter corner of said Section 12; thence South 00°20'19" West, along said East lines, a distance of 605.80 feet to the East quarter corner of said Section 12; thence South 00°20'04" West, along the East line of said Parcel 4, a distance of 1319.64 feet to the Southeast corner of said Parcel 4, said corner also being the Southeast corner of the Northeast quarter of the Southeast quarter of said Section 12; thence North 89°22'38" West, along the South line of said Parcel 4, and the South line of the Northeast quarter of the Southeast quarter of said Section 12, a distance of 1319.40 feet to the **POINT OF BEGINNING**.

Containing 33.507 Acres, more or less
APN: Portion of 554-052-10

**DRAFT RESOLUTION
TM6304**

ATTACHMENT 13

**DRAFT
RESOLUTION 20-__**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLOVIS APPROVING A VESTING TENTATIVE TRACT MAP FOR A 217-LOT SINGLE-FAMILY PLANNED RESIDENTIAL DEVELOPMENT ON APPROXIMATELY 34 ACRES OF PROPERTY LOCATED AT THE SOUTHEAST AREA OF LEONARD AND BARSTOW AVENUES

WHEREAS, Bonadelle Neighborhoods, 7030 North Fruit Avenue #101, Fresno, CA 93711, has applied for a Vesting Tentative Tract Map TM6304; and

WHEREAS, Vesting Tentative Tract Map TM6304, was filed on February 7, 2020, and was presented to the Clovis Planning Commission for approval in accordance with the Subdivision Map Act of the Government of the State of California and Title 9, Chapter 2, of the Municipal Code and the City of Clovis; and

WHEREAS, the Planning Commission has considered said map on June 25, 2020, approving said map; and

WHEREAS, a public notice was sent out to area residents within 800 feet of said property boundaries twenty-one days prior to said Planning Commission hearing; and

WHEREAS, the City scheduled a noticed Public Hearing on the Project for July 20, 2020; and

WHEREAS, the City published notice of the Public Hearing in the Fresno Business Journal, mailed public notices to area residents within 800 feet of said property boundaries ten days prior to the Public Hearing, and otherwise posted notice of the Public Hearing according to applicable law; and

WHEREAS, a duly noticed hearing was held on July 20, 2020; and

WHEREAS, the City Council has given careful consideration to this map on July 20, 2020, and considered the CEQA analysis outlined in the staff report and elsewhere in the Administrative Record which supports the approval of a Mitigated Negative Declaration for the project; and

WHEREAS, the City Council has reviewed and considered the staff report and all written materials submitted in connection with the application and hearing and considered the testimony presented during the public hearing (“Administrative Record”); and

WHEREAS, this Council finds and determines that approval of said map should be conditioned on all conditions recommended by the City staff, as set forth in **Attachment A** which is on file with the City Clerk’s office.

**NOW, THEREFORE, BASED UPON THE ENTIRE RECORD OF THE PROCEEDINGS,
THE CITY COUNCIL RESOLVES AND FINDS AS FOLLOWS:**

1. The proposed map, subdivision design, and improvements are consistent with the General Plan and any applicable specific plan.
2. The site is physically suitable for the type and proposed density of development.
3. The design of the subdivision and the proposed improvements are not likely to cause substantial environmental damage or substantially and avoidably injure fish or wildlife or their habitat.
4. The design of the subdivision or type of improvements is not likely to cause serious public health or safety problems.
5. The design of the subdivision or the type of improvements will not conflict with easements acquired by the public at large for access through or use of property within the proposed subdivision. This finding may also be made if the review authority finds that alternate easements for access or use will be provided, and that they will be substantially equivalent to ones previously acquired by the public. This finding shall apply only to easements of record, or to easements established by judgment of a court of competent jurisdiction, and no authority is hereby granted to the review authority to determine that the public at large has acquired easements of access through or use of property within the proposed subdivision.
6. The discharge of sewage from the proposed subdivision into the community sewer system will not result in violation of existing requirements prescribed by the California Regional Water Quality Control Board.
7. The design of the subdivision provides, to the extent feasible, passive or natural heating and cooling opportunities.
8. The proposed subdivision, its design, density, and type of development and improvements conform to the regulations of this Development Code and the regulations of any public agency having jurisdiction by law.
9. The proposed project has been reviewed in compliance with the provisions of the California Environmental Quality Act (CEQA) and to this end the City Council approved a mitigated negative declaration for the project pursuant to CEQA guidelines.
10. Without the conditions of approval (**Attachment A** of this resolution), the City Council could not make the findings necessary for approval of vesting tentative tract map TM6304 (attached and labeled **Attachment B**).

11. The basis for the findings is detailed in the July 20, 2020, staff report, which is hereby incorporated by reference, the entire Administrative Record, as well as the evidence and comments presented during the Public Hearing.

* * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on July 20, 2020, by the following vote, to wit.

AYES:

NOES:

ABSENT:

ABSTAIN:

DATED: July 20, 2020

Mayor

City Clerk

ATTACHMENT A
Conditions of Approval

(Note: Conditions of Approval will be included in the final resolution, and may be seen in draft form as Attachment 1 to the City Council Staff Report dated July 20, 2020)

**ATTACHMENT B
TM6304**

(Note: Map will be included in the final resolution, and may be seen in draft form as Attachment 13 to the City Council Staff Report dated July 20, 2020)



CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Planning and Development Services

DATE: July 20, 2020

SUBJECT: Consider Approval - Res. 20-____, RO302, A Resolution of Application for the Annexation of the Territory known as the Shaw-Highland Northwest No. 2 Reorganization located at the northwest corner of East Shaw and Highland Avenues. Glen H. Millhollin and Darlene A. Millhollin, Trustees of the Millhollin Family Trust property owners; Bonadelle Neighborhoods, applicant; Harbour & Associates, representative.

Staff: Ricky Caperton, AICP, Senior Planner
Recommendation: Approve

ATTACHMENTS:

1. Legal and Map Description
2. Draft Resolution RO302
3. Project Area Map
4. Specific Service Plan

CONFLICT OF INTEREST

None.

RECOMMENDATION

Staff recommends the City Council approve a Resolution of Application for the Annexation of the Territory known as the Shaw-Highland Northwest No. 2 Reorganization, accepting applications and requesting the Fresno Local Agency Formation Commission (LAFCo) to proceed with reorganization.

EXECUTIVE SUMMARY

The total area of the annexation is approximately 52.00 acres located at the northwest corner of East Shaw and Highland Avenues. The Project site includes a request for General Plan Amendment GPA2020-001, Prezone R2020-001, and Vesting Tentative Tract Map TM6304, for a 217-lot non-gated single-family planned residential development.

BACKGROUND

Property Owners: 1 (Glen H Millhollin and Darlene A Millhollin, Trustees of the Millhollin Family Trust dated December 5, 2007)

Owners Consenting to Annexation: 1 (100%)

Registered Voters: 3

Acreage: 52.00 acres (approximately)

Standard Conditions of Annexation:

The City Council has established standard conditions which the City considers a baseline for most annexation projects that it considers. The City’s standard conditions for annexation are incorporated into the draft resolution, which reflect and are consistent with the requirements agreed to by the tax sharing agreement and to the timing of public services to the site. The conditions are satisfied by the development approvals granted separately for the site, and through LAFCo’s standard processing policies and guidelines.

FISCAL IMPACT

Assessed Value:

Land only:	\$ 167,116
Improvements:	\$ 166,804
Ratio of Improvements to Land	1:1 (Undeveloped)

Estimated Tax Share:

	<u>Before</u>	<u>After</u>
County:	\$ 1,105	\$ 948
City:	\$ 0	\$ 557
FCFPD: (Fresno County Fire Protection District)	\$ 384	\$ 0
KRCD: (Kings River Conservation District)	\$ 16	\$ 0

Note: the County will also receive the cash equivalent of 8% of the City’s sales/use tax for this area.

California Environmental Quality Act (CEQA)

The City of Clovis has completed an environmental review (an assessment of the project’s impact on natural and manmade environments) of the proposed Project, as required by the State of California. The City Planner has recommended approval of a mitigated negative declaration (a written statement announcing that this Project will not have a significant effect on the environment). Recommendation of a proposed mitigated negative declaration does not necessarily mean this Project will be approved. The initial study and mitigated negative declaration prepared for this Project evaluates the proposed annexation/reorganization, together with GPA2020-001, Prezone R2020-001, and Tentative Tract Map TM6304.

The environmental document is included as **Attachment 9** to the staff report for GPA 2020-001, Prezone R2020-001, and Tract Map 6304, also on the City Council's agenda for July 20, 2020.

The City published notice of this public hearing in *The Business Journal* on Wednesday, July 8, 2020.

REASON FOR RECOMMENDATION

The annexation proposed is within the City's adopted sphere of influence and is consistent with the City of Clovis' General Plan land use diagram and the Loma Vista Design Guidelines. Also, the proposed annexation is intended for urban development, as is evidenced by the approved Vesting Tentative Tract Map TM6304, covering 100 percent of the developable area.

ACTIONS FOLLOWING APPROVAL

The annexation application will be prepared and submitted to LAFCo after all materials have been submitted by the applicant, sufficient to meet the conditions for the application.

NOTICE OF HEARING

Property owners within 800 feet notified:	118
Interested individuals notified:	10

Prepared by: Ricky Caperton, AICP, Senior Planner

Reviewed by: City Manager *JH*

LEGAL AND MAP DESCRIPTION

ATTACHMENT 1

SHAW-HIGHLAND NORTHWEST REORGANIZATION NO. 2
TO BE ANNEXED TO THE CITY OF CLOVIS
AND DETACHMENT FROM THE FRESNO COUNTY FIRE PROTECTION DISTRICT
AND THE KINGS RIVER CONSERVATION DISTRICT

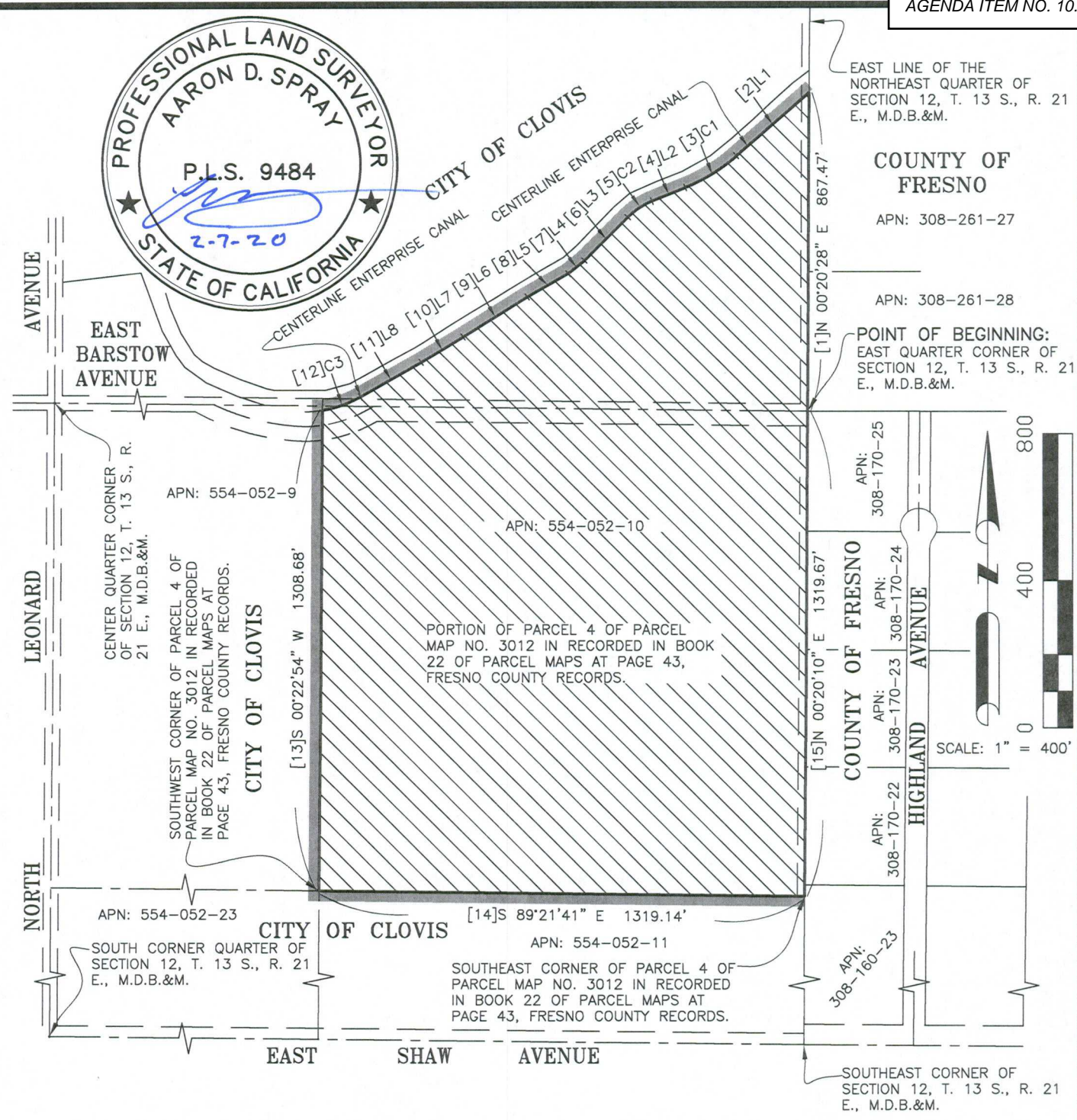
That portion of the East half of Section 12, Township 13 South, Range 21 East, Mount Diablo Base and Meridian, in the County of Fresno, State of California, also being a portion of Parcel 4 of Parcel Map No. 3012, recorded in Book 22 of Parcel Maps at Page 43, Fresno County Records, described as follows:

BEGINNING at the East quarter corner of said Section 12, said corner also being on the East line of said parcel 4; thence [1] North 00°20'28" East, along the East line of the Northeast quarter of said Section 12, and the East line of said Parcel 4, a distance of 867.47 feet to the intersection of said East line with the centerline of the Enterprise Canal, said centerline being on the existing City of Clovis limits; thence along said centerline and the existing City of Clovis limits, the following 11 courses:

thence [2] South 49°01'39" West, a distance of 261.16 feet to the beginning of a 500.00 foot radius tangent curve, concave Northwesterly; [3] thence Southwesterly, along said curve, through a central angle of 18°47'39", an arc distance of 164.01 feet; [4] thence South 67°49'18" West, a distance of 97.88 feet to the beginning of a 200.00 foot radius tangent curve, concave Southeasterly; [5] thence Southwesterly, along said curve, through a central angle of 22°44'57", an arc distance of 79.41 feet; [6] thence South 45°04'21" West, a distance of 167.54 feet; [7] thence South 51°16'38" West, a distance of 56.84 feet; [8] thence South 60°13'48" West, a distance of 128.34 feet; [9] thence South 57°58'08" West, a distance of 206.01 feet; [10] thence South 58°36'44" West, a distance of 133.37 feet; [11] thence South 60°24'12" West, a distance of 190.02 feet to the beginning of a 310.00 foot radius tangent curve, concave Northwesterly; [12] thence Southwesterly, along said curve, through a central angle of 20°11'58", an arc distance of 109.29 feet to the intersection of said curve with the West line of the Northeast quarter of the Southeast quarter of said Section 12, said line also being the West line of said Parcel 4; [13] thence South 00°22'54" West, along the West line of the Northeast quarter of the Southeast quarter of said Section 12, and the West line of said Parcel 4, also being the existing City of Clovis limits, a distance of 1308.68 feet to the Southwest corner of the Northeast quarter of the Southeast quarter of said Section 12, said corner also being the Southwest corner of said Parcel 4; [14] thence South 89°21'41" East, along the South line of the Northeast quarter of the Southeast quarter of said Section 12, and the South line of said Parcel 4, also being the existing City of Clovis limits, a distance of 1319.14 feet to the Southeast corner of the Northeast quarter of the Southeast quarter of said Section 12, said corner also being the Southeast corner of said Parcel 4; [15] thence North 00°20'10" East, leaving the existing City of Clovis limits, along the East line of the Northeast quarter of the Southeast quarter of said Section 12, and the East line of said Parcel 4, a distance of 1319.67 feet to the **POINT OF BEGINNING**.

Containing 51.766 Acres, more or less.



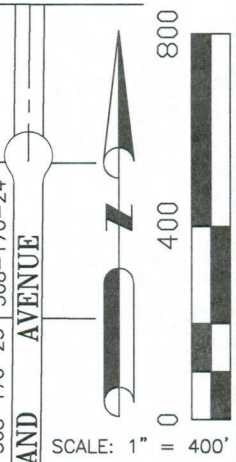


EAST LINE OF THE NORTHEAST QUARTER OF SECTION 12, T. 13 S., R. 21 E., M.D.B.&M.

COUNTY OF FRESNO
APN: 308-261-27

APN: 308-261-28

POINT OF BEGINNING:
EAST QUARTER CORNER OF SECTION 12, T. 13 S., R. 21 E., M.D.B.&M.



CURVE DATA				
CURVE	DELTA	ANGLE	RADIUS	ARC LENGTH
C1	18°47'39"		500.00'	164.01'
C2	22°44'57"		200.00'	79.41'
C3	20°11'58"		310.00'	109.29'

LINE DATA			LINE DATA		
LINE	BEARING	DISTANCE	LINE	BEARING	DISTANCE
L1	S 49°01'39" W	261.16'	L5	S 60°13'48" W	128.34'
L2	S 67°49'18" W	97.88'	L6	S 57°58'08" W	206.01'
L3	S 45°04'21" W	167.54'	L7	S 58°36'44" W	133.37'
L4	S 51°16'38" W	56.84'	L8	S 60°24'12" W	190.02'

LEGEND

AREA TO BE ANNEXED TO THE CITY OF CLOVIS.
AREA: 51.766 ACRES, +/-

EXISTING CITY LIMITS OF THE CITY OF CLOVIS.

**SHAW-HIGHLAND NORTHWEST REORGANIZATION No. 2
A PORTION OF SECTION 12, TOWNSHIP 13 SOUTH, RANGE 21
EAST, MOUNT DIABLO BASE AND MERIDIAN**

**TO BE ANNEXED TO THE CITY OF CLOVIS
AND DETACHMENT FROM FRESNO COUNTY FIRE PROTECTION
DISTRICT AND KINGS RIVER CONSERVATION DISTRICT**

PREPARED BY:
DIXON & ASSOCIATES, INC.
LAND SURVEYING
620 DEWITT, #101
CLOVIS, CALIFORNIA, 93612
PH: (559)297-4200 FAX: (559)297-4272

DATE: Feb. 4, 2020
SCALE: 1" = 400'
DWN BY: ADS
WO: 19-045/ 6304

REVISIONS:
-
-
-

DRAWING NO.
1
OF 1 SH **357**

Lot Report

Thu Jan 30 13:40:27 2020

Lot File: G:\6304\anexation\6304 ANEXATION.lot
 CRD File: G:\6304\anexation\6304 ANEXATION.crd

Lot: 1, Block: 1, Type: LOT

PNT#	Bearing	Distance	Northing	Easting
2		4681.92	27283.10	
	N 00°20'28" E	867.47		
19		5549.37	27288.26	
	S 49°01'39" W	261.16		
18		5378.13	27091.08	
Radius: 500.00 Length: 164.01 Chord: 163.28 Delta: 18°47'39"				
Chord BRG: S 58°25'28" W Rad-In: N 40°58'21" W Rad-Out: N 22°10'42" W				
Radius Pt: 17 5755.64,26763.23 Tangent: 82.75 Dir: Right				
Tangent-In: S 49°01'39" W Tangent-Out: S 67°49'18" W Tangential-In Tangential-Out				
16		5292.64	26951.98	
	S 67°49'18" W	97.88		
15		5255.69	26861.34	
Radius: 200.00 Length: 79.41 Chord: 78.89 Delta: 22°44'57"				
Chord BRG: S 56°26'49" W Rad-In: S 22°10'42" E Rad-Out: S 44°55'39" E				
Radius Pt: 14 5070.49,26936.84 Tangent: 40.23 Dir: Left				
Tangent-In: S 67°49'18" W Tangent-Out: S 45°04'21" W Tangential-In Tangential-Out				
13		5212.09	26795.60	
	S 45°04'21" W	167.54		
12		5093.77	26676.98	
	S 51°16'38" W	56.84		
11		5058.21	26632.63	
	S 60°13'48" W	128.34		
10		4994.49	26521.23	
	S 57°58'08" W	206.01		
9		4885.22	26346.58	
	S 58°36'44" W	133.37		
8		4815.76	26232.73	
	S 60°24'12" W	190.02		
7		4721.91	26067.50	
Radius: 310.00 Length: 109.29 Chord: 108.72 Delta: 20°11'58"				
Chord BRG: S 70°30'11" W Rad-In: N 29°35'48" W Rad-Out: N 09°23'50" W				
Radius Pt: 6 4991.46,25914.40 Tangent: 55.22 Dir: Right				
Tangent-In: S 60°24'12" W Tangent-Out: S 80°36'10" W Tangential-In Non Tangential-Out				
5		4685.62	25965.01	
	S 00°22'54" W	1308.68		
4		3376.97	25956.29	
	S 89°21'41" E	1319.14		
3		3362.27	27275.36	
	N 00°20'10" E	1319.67		
2		4681.92	27283.10	

Closure Error Distance> 0.0051 Error Bearing> N 60°58'42" E
Closure Precision> 1 in 1265800.8 Total Distance> 6408.84
Area: 2254914.5 Sq. Feet, 51.77 Acres

Block 1 Total Area: 2254914.5 Sq. Feet, 51.77 Acres

DRAFT RESOLUTION

ATTACHMENT 2

**DRAFT
RESOLUTION 20-__**

**A RESOLUTION OF APPLICATION BY THE CITY OF CLOVIS REQUESTING THE
FRESNO LOCAL AGENCY FORMATION COMMISSION TO TAKE PROCEEDINGS FOR
THE SHAW-HIGHLAND NORTHWEST NO. 2 REORGANIZATION**

WHEREAS, the City of Clovis desires to initiate proceedings pursuant to the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000, Division 3, commencing with Section 56000 of the California Government Code, for the reorganization; and

WHEREAS, the specific changes of organization requested are annexation to the City of Clovis and detachment from the Fresno County Fire Protection District and the Kings River Conservation District; and

WHEREAS, the territory proposed to be reorganized is uninhabited, and on this day contains 3 voters, according to information received from the County Election Officer; and

WHEREAS, a description of the boundaries of the territory is set forth in **Attachment A** attached hereto and by this reference incorporated herein; and

WHEREAS, this proposal is consistent with the sphere of influence of the affected City; and

WHEREAS, the proposal complies with the terms and standards of the tax sharing agreement between the City of Clovis and the County of Fresno; and

WHEREAS, on July 20, 2020, the City Council adopted a mitigated negative declaration for the annexation and development project of the property which is the subject of the Shaw-Highland Northwest No. 2 Reorganization; and

WHEREAS, it is desired to provide that the proposed Shaw-Highland Northwest No. 2 Reorganization be subject to the following terms and conditions:

1. The regular assessment roll shall be utilized.
2. Each new development will be required to demonstrate adequate water availability and, if necessary, will be required to drill and test a well, and to connect it to the city water system.
3. Each new development will be required to obtain sewage capacity from the trunk sewer specified by the City Engineer.

4. The provisions of Article II, Annexation by City, as agreed between the City of Clovis and the County of Fresno pursuant to the June 6, 2017, Memorandum of Understanding, as amended from time to time, regarding tax sharing shall apply.
5. The applicants shall reimburse the City for any expense associated with the transition agreement for fire services with the Fresno County Fire Protection District that would apply to this proposal.
6. A "Right-to-Farm" covenant shall be recorded for each tract map or made a condition of each tract map.
7. Pursuant to Government Code Section 56663, the City shall consent to the annexation and waive its rights to a hearing.
8. Prior to approval, recordation or filing of an annexation, tentative map, final map, parcel map, or site plan (Project), the property covered by the Project shall be included within or annexed to a Community Facilities District (CFD), established by the City for the provision of public facilities and services, for which proceedings have been consummated, and shall be subject to the special tax approved with the formation or annexation to the CFD.

The applicant and the property owner acknowledge and agree that if the Project was not part of a CFD, the City might lack the financial resources to operate facilities and provide public services, such as police protection, fire protection, emergency medical services, parks and recreation services, street maintenance, and public transit. Absent the requirement for inclusion of the Project within a CFD, the City might not be able to make the finding that the Project is consistent with the General Plan and relevant specific plans, and might not be able to make the findings supporting approval of the Project as required by the Subdivision Map Act and the California Environmental Quality Act, and the City might be required to deny the application for the Project.

The owner/developer shall notify all potential lot buyers prior to sale that this Project is a part of a Community Facilities District and shall inform potential buyers of the special tax amount. Said notification shall be in a manner approved by the City.

This requirement may be waived in the discretion of the City Council if, at the time of the approval, recordation, or filing of the Project, the City Council has determined that it is not necessary that the Project be included in the CFD.

WHEREAS, the terms and conditions above are the sole responsibility of the City of Clovis to monitor and enforce. The Fresno Local Agency Formation Commission will not be required to enforce the aforesaid terms and conditions as a responsible agency; and

WHEREAS, the reason for this proposed reorganization is to provide municipal services, local controls, and logical growth to the unincorporated area of the County that is remote from County services and undergoing urban development; and

WHEREAS, this annexation proposal is consistent with the City of Clovis' general plan land use diagram and Loma Vista Specific Plan; and

WHEREAS, the City Council has reviewed and approved the master service plan for the subject change of organization; and

NOW, THEREFORE, THE CITY COUNCIL RESOLVES AND FINDS AS FOLLOWS:

1. The annexation of property within the boundaries set forth in **Attachment A** is within and consistent with the Loma Vista Specific Plan as approved by the City Council.
2. The annexation of property within the boundaries set forth in **Attachment A** is in compliance with the Standards of Annexation as identified in the Memorandum of Understanding between the City of Clovis and the County of Fresno which is commonly referred to as the Tax Sharing Agreement.
3. This Resolution of Application is hereby adopted and approved by the City Council of the City of Clovis, and the Fresno Local Agency Formation Commission is hereby requested to take proceedings for the reorganization of the territory as described in **Attachment A**, according to the terms and conditions stated above and in the manner provided by the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000.

* * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on July 20, 2020, by the following vote, to wit.

AYES:
NOES:
ABSENT:
ABSTAIN:

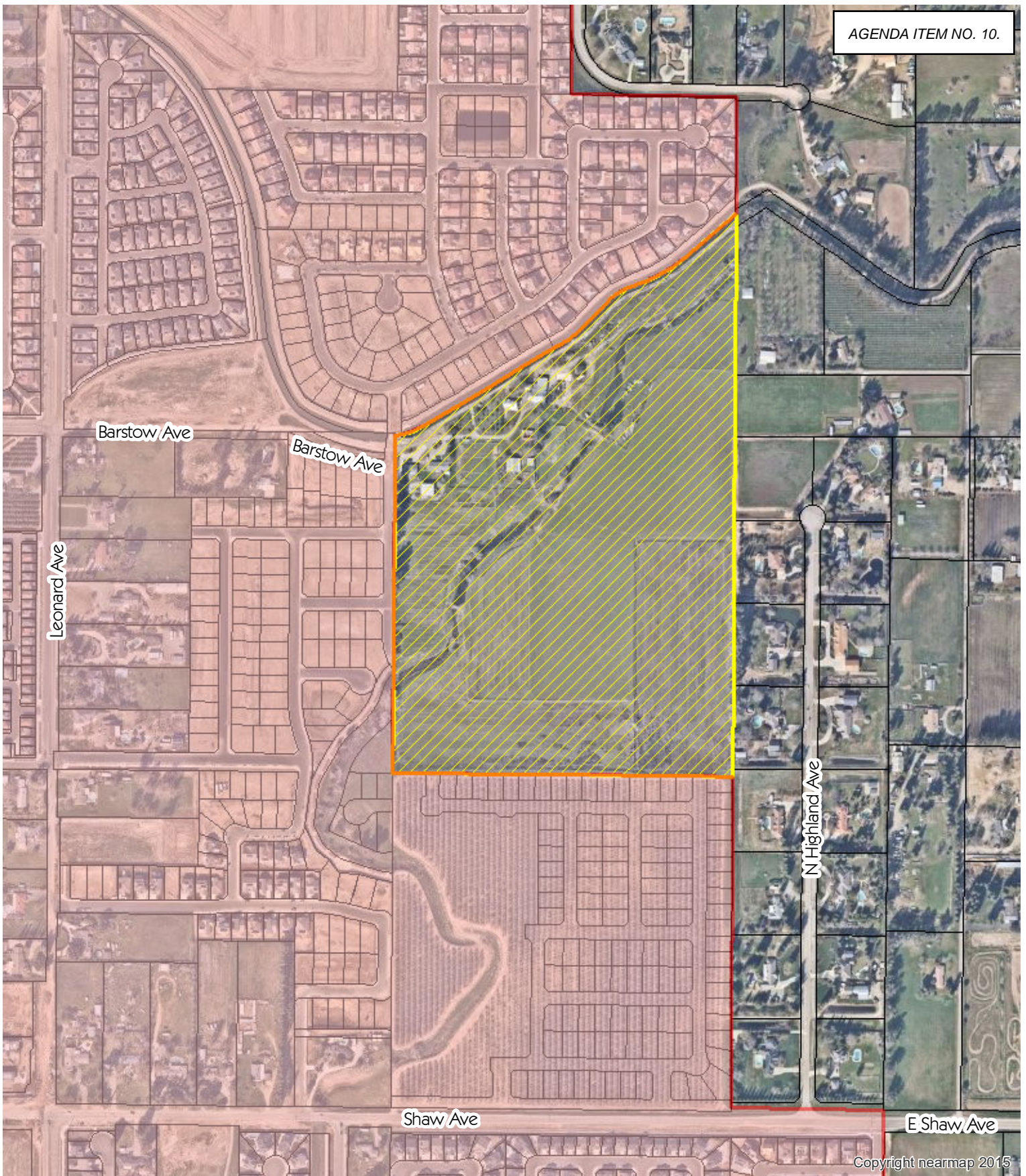
DATED: July 20, 2020

Mayor

City Clerk

PROJECT AREA MAP

ATTACHMENT 3



Copyright nearmap 2015



7/2/2020

Shaw - Highland Northwest Reorganization No. 2



City Limits



Proposed Annexation



365

1" = 50'

SERVICE PLAN

ATTACHMENT 4



CITY *of* CLOVIS

PLANNING & DEVELOPMENT

1033 FIFTH STREET • CLOVIS, CA 93612

SPECIFIC SERVICE PLAN SHAW-HIGHLAND NW No. 2 REORGANIZATION GPA2020-001, R2020-001, TM6304 AND RO302

1.1 INTRODUCTION

A Site Specific Service Plan for providing services and improvements to land being annexed to the City is required by the Fresno Local Agency Formation Commission (LAFCo). The site specific service plan provides assurance to LAFCo that newly annexed land to the City will be properly served as urban territory. The service plan also provides information to property owners, districts and interested parties who may have projects underway within the vicinity of the proposed annexation.

On June 25, 2020, the Clovis Planning Commission approved General Plan Amendment GPA2020-001, Prezone R2020-001, and Vesting Tentative Tract Map TM6304 for property located at the northwest corner of Shaw and Highland Avenues. The entitlements requested approved a 217-lot non-gated single-family planned residential development with public streets and rezoning to the Clovis R-1-PRD (Planned Residential Development) and O (Open Space Conservation) Zone Districts.

On July 20, 2020, the Clovis City Council approved General Plan Amendment GPA2020-001, Prezone R2020-001, and Vesting Tentative Tract Map TM6304 for property located at the northwest corner of Shaw and Highland Avenues. The entitlements requested approved a 217-lot non-gated single-family planned residential development with public streets and rezoning to the Clovis R-1-PRD (Planned Residential Development) and O (Open Space Conservation) Zone Districts.

On July 20, 2020, the Clovis City Council approved entitlement Reorganization RO302, requesting the Fresno Local Agency Formation Commission (LAFCo) to take proceedings for the reorganization of the territory known as the Shaw-Highland NW No. 2 Reorganization.

1.2 SERVICES EXISTING OR PROPOSED

1. Community Water Service

The Water Master Plan Update, completed in 2017, by Provost & Pritchard Consulting Group, was prepared to support the 2014 Clovis General Plan, and the development plans therein. The plan examined the feasibility of continued growth in the greater Clovis area from a water resource perspective. This included a review of existing and future demands for water from surface, groundwater, and reclaimed water. The study area corresponded with the General Plan planning area. The 2015 Urban Water Management Plan updated the water supply and demand issues identified in the 2017 Master Plan.

The City and Tarpey Village have 37 domestic water wells to provide for the needs of its residents. Some of these have wellhead treatment facilities to treat contaminated groundwater. The wells discharge water into a distribution main grid, based on a minimum of 12-inch mains, spaced at half-mile intervals. The present water storage facilities consist of one elevated tank and three ground level tanks. The total storage capacity is 7 million gallons.

The City began operations of the Surface Water Treatment Facility, located on the Enterprise Canal on the east side of Clovis, in 2004. Kings River water is supplied to the plant via Fresno Irrigation District's (FID) Enterprise Canal. This 15 million gallons per day (MGD) plant allows Clovis to serve existing users and new growth areas, while lessening the demand on groundwater. In 2014, treatment capacity at the SWTF was increased to 22.5 MGD.

In 2009, the City began operation of the Water Reuse Facility (WRF) to treat wastewater from a portion of the City's growth areas. In 2012, the City began using recycled water from this facility to irrigate public landscapes. At build-out of the system, this facility will be able to produce 8.4 MGD of recycled water.

The strategy for future water supply is termed "conjunctive use" where multiple elements are used to provide a secure long-term supply. It includes using both groundwater and treated surface water to insure a secure drought-resistant water supply with the flexibility to use surface and groundwater supplies in a cost and operationally-efficient manner. This strategy is conducive to phased development that is critical to both community approval and existing operational constraints.

Water systems for newly developed areas, such as the project site, will be financed by development fees, assessment districts, and capital facilities funding. Additional surface water supplies for certain growth areas will be financed by the Water Supply development fee.

The following water conditions have been placed on the project:

1. The applicant shall identify and abandon all water wells to City standards.
2. The applicant shall install water mains of the sizes and in the locations indicated below, and provide an adequately looped water system prior to occupancy. The water improvements shall be in accordance with the City's master plans and shall match existing improvements. The applicant's engineer shall be responsible for verifying the size, location, and elevations of existing improvements. Any alternative routing of the mains shall require approval of the City Engineer and shall be supported by appropriate calculations.
 - a. Agua Dulce Avenue – install 12" main between Dog Creek and Hermosa Avenue.
 - b. Hermosa Avenue – install 12" main between Agua Dulce Avenue and Shaw Avenue.
 - c. Shaw Avenue – install 18" main between Hermosa Avenue and Leonard Avenue.
 - d. Interior Streets – install 8" mains.
2. The applicant shall provide dedication of 15-foot wide utility easements for all on-site water mains, hydrants, blow-offs, and water meters not located in otherwise dedicated rights-of-way.
3. The applicant shall install a City standard water service to each lot of the proposed subdivision. Water services shall be grouped at property lines to accommodate automatic meter reading system, including installation of connecting conduit. The water meter shall be placed in the sidewalk and not in planters or driveways.
4. The applicant shall notify all property owners' annexed to the City and along streets where a new water main will be constructed to determine if they wish to be connected to City water. Property owners shall work directly with the applicant regarding costs and location. The applicant shall notify property owners that water connection fees are required if they choose to connect.
5. Prior to recording a final map of any phase, the applicant shall demonstrate to the satisfaction of the City Fire Chief and City Engineer that there is adequate water pressure to serve the units to be

constructed. The applicant shall work with the City Engineer to determine the adequacy of water supply/pressure for the proposed development.

2. Recycled Water

The following recycled water conditions have been placed on the project:

1. The applicant shall install recycled water mains of the sizes and in the locations indicated below. The recycled water improvements shall be in accordance with the City's master plans and shall match existing improvements. All areas utilizing recycle water for irrigation shall be clearly marked on the improvement plans. The applicant's engineer shall be responsible for verifying the size, location, and elevations of existing improvements. Any alternative routing of the mains shall require approval of the City Engineer and may require appropriate calculations.
 - a. Agua Dulce Avenue – install 12" main from Dog Creek to Hermosa Avenue.
 - b. Hermosa Avenue – install 12" main from Agua Dulce Avenue to the southern limit of the tract.

3. Wastewater

The Fresno-Clovis Regional Wastewater Treatment Facility serves the Fresno and Clovis urban area from its location southwest of the two cities. The City of Clovis owns and maintains sewer lines within the City Sphere of Influence, with the exception of the Tarpey Village area, which is maintained by the City of Fresno. The City operates the Water Reuse Facility which treats wastewater from a portion of the City and provides recycled water for use in public landscapes. This facility will be expanded as required to serve portions of the northwest and northeast growth areas. The City does not have sewer collection facilities constructed for the entire current Sphere of Influence at this time, but all areas have been master planned.

The Clovis Wastewater Master Plan Update in 2017 provided the City with a course of action with respect to wastewater service needs through the year 2035, in keeping with the Clovis General Plan.

Wastewater facilities for newly developed areas will be financed by development fees, assessment districts, and capital facilities funding.

The following sewer conditions have been placed on the project:

1. The applicant shall identify and abandon all septic systems to City standards.
2. The applicant shall install sanitary sewer mains of the size and in the locations indicated below, prior to occupancy. The sewer improvements shall be in accordance with the City's master plans and shall match existing improvements. The applicant's engineer shall be responsible for verifying the size, location, and elevations of existing improvements. Any alternative routing of the mains shall require approval of the City Engineer and shall be supported by appropriate calculations.
 - a. Agua Dulce Avenue – install 8" main between Dog Creek and Hermosa Avenue.
 - b. Hermosa Avenue – install 8" main between Agua Dulce Avenue and Shaw Avenue.
 - c. Shaw Avenue – install 8" main between Hermosa Avenue and the prolongation of the east property line.
 - d. Shaw Avenue – install 10" main between the prolongation of the east property line and Leonard Avenue.
 - e. Interior Streets – install 8" mains.
3. The applicant shall provide dedication of a 15' wide utility easement for all on-site sewer mains, not located in otherwise dedicated rights-of-way.

4. The applicant shall install one (1) 4" sewer service house branch to each lot within the tentative tract.
5. The applicant shall notify all property owners annexed to the City and along streets where a new sewer main will be constructed to determine if they wish to be connected to City sewer. Property owners shall work directly with the applicant regarding costs and location. The applicant shall notify property owners that sewer connection fees are required if they choose to connect.

3. Streets

The following street conditions have been placed on the project.

1. The applicant shall provide right-of-way acquisition or dedicate free and clear of all encumbrances and/or improve the following streets to City standards. The street improvements shall be in accordance with the City's specific plans and shall match existing improvements. The applicant's engineer shall be responsible for verifying the type, location, and grades of existing improvements.
 - a. Interior Streets – Dedicate to provide for 50' or 54' of right-of-way in conformance with the City policy on street widths, and improve with curb, gutter, 5' sidewalk adjacent to the curb, drive approaches, curb return ramps, streetlights, permanent paving, and all transitional paving as needed.
 - b. Prior to recordation of the final map, the applicant shall obtain the right-of-way necessary to provide a paved roadway to serve as a second point of access to Shaw Avenue. The roadway shall be designed to carry 80,000-lbs. emergency vehicles.
 - c. Temporary Turnabouts – Dedicate to provide for a 48' radius and install 45' of permanent/temporary paving plus 3' paved swale at the south end of Hermosa Avenue.
 - d. Install the bridge crossing Dog Creek at Agua Dulce Avenue.
2. The applicant shall provide a dedication for a 10' public utility easement, where applicable, along all frontages or alternate widths approved by the utilities companies.
3. For new onsite ADA paths of travel that connect to the City sidewalk, the applicant shall replace enough sidewalk to provide a compliant landing with appropriate transitions to existing sidewalk grades.
4. The applicant shall not install any fences, temporary or permanent in public right-of-way.
5. The sideyard side of all corner lots shall have full width sidewalk except where planter strips or meandering sidewalk is proposed.
6. The applicant shall obtain "R Value" tests in quantity sufficient to represent all street areas, and have street structural sections designed by a registered civil engineer based on these "R Value" tests.
7. The applicant shall, at the ends of any permanent pavement abutting undeveloped property, install 2" x 6" redwood header boards that shall be placed prior to the street surfacing.
8. Standard barricades with reflectors shall be installed at ends of streets abutting undeveloped property and any other locations to be specified by the City Engineer.

4. Solid Waste Collection

Refuse Collection collects and disposes of solid waste generated by residential and commercial customers located within the City. Private vendors, under City contract, collect waste from select commercial customers and recyclables and yard wastes from residential customers. For improved cost accounting and control, the Refuse Collection Unit is further organized into four sub-accounts identified as Administration, Residential, Commercial, and Community Cleanup.

Refuse Landfill conducts all operations necessary to landfill City refuse in accordance with county, state, and federal requirements. The Clovis landfill is an active Class III landfill which accepts municipal solid waste that is currently permitted through the year 2053.

Refuse Contracts provides refuse-related services to the community through contracts with private vendors. These include refuse compactor and roll-off services for larger businesses, and residential curbside recycling, and greenwaste programs.

5. Fire Protection

The Fire Department employs two primary measures in determining service for the community and future development. The first measure is distribution. "Distribution" describes station locations that allow for a rapid first-due response deployment to mitigate fire and medical aid emergencies before they result in further life/property loss. Distribution is measured by how much of the jurisdiction is covered by first due units within our adopted response time goal of arrival within 5 minutes or less 90% of the time. The second term, "concentration" is a measure of how many multiple units are within sufficient proximity to provide the necessary tools, equipment and personnel, known as an effective response force, for a large scale incident or when another unit is assigned to a concurrent emergency. An initial effective response force is one that has been determined likely to stop the escalation of a fire emergency and bring it effectively under control.

In addition to these factors, Clovis Fire has conducted several station location studies over the last ten years to ensure efficient and effective operations. Stations have generally been located in between 4.5 to 5 mile squares near major street intersections. Previous studies identified various station configurations that could serve City growth depending on the type of development and infrastructure planned for these areas. Currently, the Clovis Fire Department operates out of five fire stations located throughout the City.

In determining desired levels of resource concentration to maintain existing standards and to provide equal protection to future growth areas, the Clovis Fire Department analyzed the risk assessment, call volume, population, critical task analysis, and industry standards. Depending on the factors previously noted, the number of units needed for an initial effective response force are dispatched as defined in the Critical Task Analysis document.

Consideration for community protection must also take into account utilization of Automatic Aid Agreements that provide the closest available resources, regardless of jurisdiction. Using software programs and data from neighboring jurisdictions, fire staff are able to analyze the concentration of units revealing detailed information regarding the deployment of resources necessary to provide an effective fire fighting force within defined response time goals for a geographic area neighboring other fire protection districts.

The Emergency Services Bureau is responsible for providing the resources needed by Fire Department staff who respond daily to requests for emergency and non-emergency services from the citizens of Clovis through four divisions: Operations, Support Services, Training, and Communications. The Operations Division activities include: responding to fires, first responder medical services, mutual/automatic aid, mapping, apparatus replacement, etc. The Training Division activities include coordination of recruitment, testing and training of new employees, in-service training for all Department employees and coordinated use of the Fire Training Center. Support Services Division activities include: apparatus maintenance, facilities maintenance, station supplies, etc. The Communications Division has responsibility for

coordinating dispatch services to the Fire Department. Fire dispatch services are provided via a contract with the Fresno County Emergency Medical Services Division. Dispatch services coordinate the emergency response of all City fire resources and mutual or automatic aid resources. The Department continues to promote sound planning, economic efficiency, and effective use of the City resources while providing essential and valuable services.

The Life Safety and Enforcement Bureau is responsible for providing community risk reduction activities through two divisions: Fire Prevention and Emergency Preparedness. The Fire Prevention Division assists local businesses and building development through activities such as inspections and plan review to ensure safe occupancies comply with fire codes, standards, and local ordinances. Additional risk reduction is performed through public education where citizens learn about actions they can take to reduce their fire risk and learn emergency preparedness skills that are essential during times of crisis. Within the Bureau, the Investigations team has the responsibility to investigate all fires for cause and origin, and enforce minimum standards to safeguard life, health, property, and public welfare.

The Emergency Preparedness Division has the responsibility for preparing and carrying out emergency plans to protect property and the citizens of Clovis in case of actual or threatened conditions of disaster or extreme peril. This includes having an emergency plan in place, maintaining an Emergency Operations Center (EOC), ensuring policies and procedures are compliant with the National Incident Management System (NIMS) guidelines and exercises are conducted to evaluate system effectiveness. Within the Emergency Preparedness section are the Hazardous Materials Response Team and an Urban Search and Rescue Team. These teams are capable of responding to emergency incidents that require specialized tools, equipment, and personnel. Some funding for this division is augmented by state and federal grants.

The Fire Administration Division is responsible for supporting all department operations, administering the Accreditation program, and the development and administration of the Fire Department budget. Fire Administration provides administrative analysis, report preparation, coordination of programs, incident response data management, timekeeping, and other routine duties performed daily that support the delivery of emergency and non-emergency services. Fire Administration also identifies, writes, and manages grants to supplement funding for all Department programs.

The following fire conditions have been placed on the project:

1. Access from Adjacent Tracts: Road access from Barstow thru Tract 6181 and access roads thru Tract 6123 from the south shall be completed prior to home building on this project.
2. Two Points of Access: Any development to this parcel will require a minimum of two (2) points of access to be reviewed and approved by the Clovis Fire Department. All required access roads shall be constructed per City of Clovis streets standards and completed prior to any occupancy of the project.
3. Street Width: Fire apparatus access width shall be determined by measuring from “base of curb” to “base of curb” for roadways that have curbs. When roadways do not have curbs, the measurements shall be from the edge of the roadway surface (approved all weather surface).
4. Street Width for Single Family Residences: Shall comply with Clovis Fire Standard #1.1
5. Street Width for Single Family Residences: Minimum Access Road Width of 36 feet for Single Family Residences. Roads 36 feet or wider allow for Parking on both sides of street.
6. Turning Radius: All access way roads constructed shall be designed with a minimum outside turning radius of forty-five feet (45')

7. Security Gates: All security gates shall comply with Clovis Fire Department Gates Standard #1.5. Plans shall be submitted for review and permits issued by Fire Department prior to installation. Gates shall be inspected and tested for operation prior to any occupancy.
8. Temporary Street Signs: The applicant shall install temporary street signs that meet City Temporary Street Sign Standard #1.9 prior to issuance of building permits within a subdivision.
9. All Weather Access & Water Supply: The applicant shall provide an all-weather access road with compacted base rock and designated by signage that states "No Parking Fire Lane" per Clovis Fire Department Standard #1.2 or #1.3.
10. Conceptual Plans Submitted: The applicant shall provide conceptual plans for the development of adjoining property and road system.
11. Fire Lane: The fire lanes curbs shall be painted red as per Clovis Fire Department Standard #1.1 and identified on site plan.

6. Law Enforcement

The responsibility of the Police Department is to provide protection and police-related services to the community. The Department's mission is to do this in a manner that builds public confidence and improves the quality of life in Clovis. Police headquarters is located at the Clovis Civic Center. Currently, the Police Department has 99 sworn officers. The current ratio is 0.84 sworn officers per 1,000 residents. In accordance with the recommendations contained in the Police Department Master Service Plan, the Police Department will seek funding to achieve and maintain a ratio of 1.3 officers per 1,000 residents.

Police protection to the unincorporated areas is provided by the Fresno County Sheriff and California Highway Patrol. The City has a mutual aid assistance agreement with both agencies.

The operations of the Police Department, now and as the City grows, will be funded through the General Fund, Community Facilities District (CFD) fund, and grants. It is noted that continued annexation and development without proportionate increase in the funding of safety services will have an effect on the city's ability to maintain acceptable service levels.

The Department is organized into three major divisions, which are composed of seven budgetary sections.

7. Parks & Recreation

The Parks Section provides maintenance to City parks, trails and trail lighting, street landscaping, City trees, and numerous recreational facilities, including playgrounds and picnic sites; maintains Old Town streetscape; and provides grounds maintenance at City administrative facilities. Some of these areas are maintained by Parks personnel, while others are maintained through contracts administered by the Parks section. Parks also provides support for civic activities such as hanging banners and decorating for Christmas, Rodeo Weekend, Big Hat Days, and Farmer's Market. The Parks Section administers the Landscape Maintenance District (LMD), which provides funding for maintenance of certain parks, trails, street landscaping, streetlights, and neighborhood architectural enhancement features for areas within the Landscape Maintenance District. All City owned landscaping that is not within the LMD is funded through the General Fund.

With the approval of TM6304, the applicant is required to contribute a proportionate share to the development of a "trail" system as required by the General Plan Land Use Diagram.

8. Transit Services

The Community Services Division administers various senior citizen programs at the Clovis Senior Activity Center. The Division also administers the City's Round-Up demand-response transit program, the fixed-route Stageline transit program, and administers the City's contract with Fresno Area Express (FAX). User fees, and state and federal transit funds and grants support the transit service.

9. Storm Drainage

Storm Drain responds to significant rainfall events by providing sand bags, pumping of flooded areas, monitoring stream channels, placing warning signage, and pumping temporary storm drain basins when needed. It also provides pre-storm cleaning of drain inlets to ensure debris do not hamper proper operation of the storm drain collection system.

The following grading and drainage conditions have been placed on the project:

1. The applicant shall contact the Fresno Metropolitan Flood Control District (FMFCD) and address all requirements, pay all applicable fees required, obtain any required NPDES permit, and implement Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology to reduce or eliminate storm water pollution. Plans for these requirements shall be included in the previously required set of construction plans, and shall be submitted to and approved by FMFCD prior to the release of any development permits.
2. In the event permanent storm drainage facilities are not available, the applicant shall provide temporary on-site retention basins for storm water disposal and provide a cash deposit for each basin to offset the City's cost of maintaining the basins. The size and design shall be in accordance with the requirements of the City Engineer and may change based on design calculations and access requirements for maintenance. The temporary pond maintenance deposit shall be based on size, depth, expected maintenance schedule, etc. However, the property owner shall be responsible for periodic cleaning of toxic material. The temporary basin is solely for the convenience of the subdivision.
3. The owner of the property on which the temporary basin(s) are located shall backfill said basin(s) within ninety (90) days after notice is given by the City that the basin(s) are no longer needed. In the event the owner fails to backfill said basin(s) within said 90 days, the City may cause the basin to be backfilled. A lien to cover the cost of the work will be placed on the property, including the costs to prepare and enforce the lien. A covenant shall be prepared and recorded on the lot on which the basin(s) is/are located.
4. Grade differentials between lots and adjacent properties shall be adequately shown on the grading plan and shall be treated in a manner in conformance with City of Clovis Standard Drawing No. M-4 as modified by the City Council. Any retaining walls required on-site or in public right of way shall be masonry construction. All retaining walls shall be designed by a registered civil engineer.

10. Street Lighting

Signals and Street Lighting is responsible for maintenance of traffic signals, the cost of energy/repairs/replacements for PG&E-owned streetlights within the City, energy and materials for City-owned streetlights, and maintenance of City-owned streetlights.

The following street lighting condition has been placed on the project:

1. The applicant shall install thirty-two (32) Loma Vista decorative street lights per the attached street light exhibit. Street lights along the major streets shall be installed on metal poles to local utility provider's standards at the locations designated by the City Engineer. Street light locations shall be shown on the utility plans submitted with the final map for approval. Street lights at future traffic signal locations shall be installed on approved traffic signal poles, including all conduits and pull boxes. Street lights along the major streets shall be owned and maintained by local utility providers. Proof of local utility provider's approval shall be provided. The applicant may install thematic lighting, as approved by the City Engineer. If the applicant chooses to install thematic lighting, the applicant shall provide a conceptual lighting plan identifying adjacent properties that may be incorporated with thematic lights to create a neighborhood effect. Thematic lighting owned by the City shall be maintained by an additional landscape maintenance assessment.

11. Schools

The City of Clovis and its sphere of influence lies primarily within the Clovis Unified School District (CUSD). Only a small portion of the southwest area of the city lies in the Fresno Unified School District (FUSD). A small portion of the southeast area of the sphere of influence lies within the Sanger Unified School District (SUSD). These districts are affected by residential growth in the Clovis area. CUSD is managing the growth by financing new facilities through bonds, development fees, and state schools funding. The area of the City serviced by FUSD is fully built-out and future development within the City's sphere of influence will not affect this district.

The Project site is located within the Clovis Unified School District.

12. Other Services

Pacific Gas and Electric (PG&E) provides gas and electrical service to the City of Clovis, its sphere of influence, and Fresno County. Electrical service is supplied by underground and overhead lines routed through three substations in the greater Clovis area. The hierarchy of establishing electrical power lines from generation stations to customers is as follows: transmission distribution; sub-transmission; and service. PG&E provides gas to customers through plastic and steel underground lines. Residents not serviced by PG&E use propane fuel.

13. Financing of Services and Facilities

The City Council has established fiscal policies that govern the city's financial administration and are designed to safeguard the City's assets, provide a stable funding base, and ensure that adequate accounting data are compiled. These accounting data allow for the preparation of various accounting reports such as the annual budget and the annual year-end financial report. Following are the financial policies that provide the basis for the financial direction of the city.

- The City's budget policy states that all operating budgets shall be balanced and ongoing costs will not exceed current revenues plus available fund balance that exceeds reserve requirements. The minimum reserve for any operational fund is 10% of the budgeted expenditures with the goal for reserves of 15% of budgeted expenditures unless capital borrowing or extraordinary fiscal conditions require that higher levels of reserves be maintained. As discussed during the five-year forecast, the General Fund target reserve is now set at 25%, the current General Fund reserve is approximately 16.5%. Budgetary and purchasing controls have been instituted that ensure adherence to the adopted budget.
- The Enterprise Funds are to be fully supported by user fees and charges, and the Internal Services Funds are to be funded at appropriate levels to ensure reasonable ability to respond to unforeseen events. Annually, the City has designated a contribution of general funds to the General Government Services Fund (an Internal Service Fund) to address the building space needs for new

fire stations, safety training facilities, regional park facilities, business and industrial parks, upgrades and new technology for improved productivity, and major remodeling, repairs, or additions to existing facilities.

- The City will not issue long-term debt to cover current operations. The City will consider the issuance of long-term debt to purchase/build capital assets when those assets will benefit users over several years and it is determined that it is more equitable to spread the capital investment and financing costs of the asset to current and future users of the asset.
- Annually the City will have an independent audit of its financial records prepared by a certified public accountant pursuant to generally accepted auditing practices of the government finance industry and submit an annual financial report to the City Council by December 31 for the previous fiscal year.
- Fees for services will be charged directly to users of the services when appropriate and should cover the full cost of service delivery. Fees are to be reviewed on an annual basis to ensure that the fee is appropriate for the service provided compared to actual cost or an approved cost index.
- Development impact fees will be established to ensure that new growth pays the cost of infrastructure improvements and is not a burden to existing tax payers.
- The City will invest available cash assets in a manner consistent with the safeguards and diversity that a prudent investor would adhere to with primary emphasis on preservation of principal, sufficient liquidity to cover anticipated payment outflows, and high yields consistent with the first two goals. The City's investments will be consistent with Section 53601 of the Government Code of the State of California that identifies which types of investments are eligible for investment of public funds and the maximum percentage of an investment portfolio that is allowed for any one investment.

The City is in compliance with all of its financial policies.

14. California Environmental Quality Act (CEQA) Compliance

The City of Clovis has completed an environmental review (an assessment of the Project's impact on natural and manmade environments) of the proposed project, as required by the State of California. A Mitigated Negative Declaration was approved and adopted by the Clovis City Council.



CITY of CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Planning & Development Services

DATE: July 20, 2020

SUBJECT: Consider Approval - Res. 20-____ - Establishing Vehicle Miles Traveled (VMT) thresholds and interim guidelines for assessing traffic impacts in compliance with the provisions of Senate Bill 743 (SB 743).

Staff: Ricky Caperton, AICP, Senior Planner

Recommendation: Approve

ATTACHMENTS:

1. Res. 20-____
2. Interim Transportation Impact Analysis Guidelines
3. SB 743 Background Memo (dated March 18, 2020)
4. Technical Advisory on Evaluating Transportation Impacts in CEQA

CONFLICT OF INTEREST

None.

RECOMMENDATION

For the City Council to approve a resolution (**Attachment 1**) adopting *Interim Transportation Impact Analysis Guidelines* (**Attachment 2**) establishing vehicle miles traveled (VMT) thresholds and interim guidelines for assessing traffic impacts in compliance with provisions of Senate Bill 743 (SB 743).

EXECUTIVE SUMMARY

As of July 1, 2020, the metric by which transportation impacts are assessed pursuant to the California Environmental Quality Act (CEQA) guidelines shifted from a level of service (LOS) based analysis, to VMT analysis. In short, this means that the methodology for analyzing transportation impacts under CEQA transitioned from assessing increase in delay and congestion caused by a project to assessing the average distance traveled related to the project. To prepare for this new law, the City Council approved a request on February 18, 2020 for City staff to enter into a contract with transportation consultant Kittelson & Associates to assist staff with developing VMT transportation impact analysis guidelines. The *Interim Transportation Impact Analysis Guidelines*, provided as **Attachment 2**, are presented for Council consideration.

KEY TERMINOLOGY

Because this staff report introduces a new methodology for analyzing traffic impacts for purposes of CEQA, several new or lesser known terms will be introduced. In order to provide some context, several of these newer key terms are defined below.

- **Senate Bill 743 (SB 743):** SB 743 is the law that established (2013) changing the metric of assessing transportation impacts from level of service to vehicle miles traveled.
- **Vehicle Miles Traveled (VMT):** VMT is the term used for referring to the metric by which transportation impacts will be assessed under CEQA. VMT is expressed as an average number of miles a project will produce either per capita (residential) or per employees (non-residential). In general, the higher the VMT, the greater the impact.
- **Transportation Demand Management (TDM):** TDM is the concept of focusing on improvements to the transportation network by encouraging less reliance on single-occupancy automobile use, and focuses more on pedestrian infrastructure and increasing other modes of transportation such as public transit, biking, carpooling, and/or commuting.
- **Threshold of Significance:** Refers to a threshold by which to measure an impact in order to determine the level of impact caused by a project. Most commonly used for CEQA analysis purposes, a threshold of significance is generally the point of which an acceptable level of impact is defined, and if impacts of a project exceed that threshold, then an impact may occur.
- **Mitigation Measure:** Measures to reduce an impact. Mitigation measures can come in the form of in-lieu fees (i.e. developer pays a fee to mitigate the impact) or project improvements (i.e. developer alters the design and installs something to offset the impact). Generally, the mitigation measure should be commensurate with the type and level of significance of said impact caused by a project.
- **VMT Per Capita:** VMT per capita refers to the metric that is used for residential projects for purposes of assessing transportation impacts. VMT per capita is representative of the average number of annual miles of travel divided by the total population of a region.
- **VMT Per Employee:** VMT per employee refers to the metric that is used for non-residential projects for purposes of assessing transportation impacts of a particular non-residential use. VMT per employee is representative of the average number of annual miles of commute travel divided by the employees.
- **Governor's Office of Planning and Research (OPR):** Commonly referred to as OPR, this is the staff serving the Governor and the Cabinet as staff for long-range planning and research. OPR is responsible for the drafting of CEQA Guidelines and formulation of long-range land use goals and policies at the State level.

BACKGROUND

Under the existing CEQA Guidelines, traffic impacts have been analyzed on the basis of the amount of delay or congestion a project would cause at particular intersections, commonly referred to as level of service (LOS). Level of service is generally expressed on a scale ranging from “A” to “F” with LOS “A” resulting in the least amount of vehicle congestion, and degrading to a lower LOS as traffic congestion increases. A project’s potential to increase delay was then compared to the City’s established threshold for what is considered an “acceptable” delay, which is LOS “D” or better.

Signed into law in 2013, SB 743 established a new methodology to “*more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.*” As a result, the Governor’s Office of Planning and Research (OPR) was tasked with developing a criteria for approval by the Natural Resources Agency to update the State CEQA guidelines to incorporate a metric to more effectively measure transportation impacts for the purpose of achieving the goals of SB 743.

On December 28, 2018, the Natural Resources Agency certified and adopted the revised CEQA guidelines which included, among other changes, the updated metric for analyzing transportation impacts under CEQA. This new transportation analysis metric, known as vehicle miles traveled (VMT), goes into effect on July 1, 2020.

Analyzing VMT shifts the methodology in how traffic impacts are assessed under CEQA from a traffic delay and congestion focus (e.g. LOS) to vehicular trip- or travel-based distance (e.g. VMT) focus. Thus, as of July 1, 2020, CEQA analysis will be required to consider VMT as the primary metric for determining the potential for transportation impacts of a project. Therefore, a project may no longer be considered to have a “significant” impact under CEQA with regards to traffic congestion (i.e. increases in level of service caused by a project). Rather, a project’s potential to result in transportation impacts will be based on the average number of miles produced by the project, expressed either as VMT per capita for residential projects, or VMT per employee for non-residential projects. This concept is explained in greater detail below.

It is important to note that an analysis of LOS impacts may still be required for purposes of roadway and infrastructure planning, as well as to ensure compliance with existing General Plan policies, and the City’s existing Traffic Impact Study Guidelines (2014) for maintaining the safe movement of vehicles throughout the City. Thus, VMT is not in and of itself eliminating or replacing the need to continue analyzing LOS impacts of a project. Rather, VMT will be the metric for determining transportation impacts for CEQA purposes.

In order to better understand the shift from LOS to VMT, it’s important to first provide context and a description of the components of VMT. Those components are summarized below; however, for informational purposes and included as **Attachment 3**, an SB 743 background memorandum is provided which includes more detailed information on VMT, as well examples of what some other agencies have adopted for thresholds and methodology.

Level of Service (LOS) Methodology

In the context of CEQA, the existing methodology for analyzing transportation impacts focuses on the quantification of a project's potential to cause increases in delay (i.e. congestion) at intersections, known as level of service (LOS). Under this method, a project's vehicle trips are calculated through a traffic study or trip generation analysis expressed by a measure in the amount of delay those trips would contribute to nearby intersections. If the intersection delays increased beyond a certain level as a result of the project (i.e. threshold of significance), then an impact would occur and mitigation measures were prescribed.

Under LOS, typical mitigation measures might include contribution of fees for future traffic signals, installation of signals or stop signs, and/or the widening of streets or addition of travel and/or turning lanes. These mitigations would generally achieve the goal of reducing a project's contribution to congestion by controlling the timing or capacity of affected intersections through a new or modified traffic signal, or by widening a roadway or adding lanes, thus, reducing the project's impacts on traffic.

Vehicle Miles Traveled (VMT) Methodology

Vehicle miles traveled is a metric in which the average distance (in miles) a use generates is quantified and compared to the regional average VMT. The VMT is considered to be "tour-based," meaning that the average VMT is intended to account for a round-trip (i.e. not a one-way trip). For example, if a household generates an average VMT of 15 miles, that 15 miles theoretically accounts for a trip that may include miles traveled to the workplace, the workplace to the grocery store, then the grocery store back to home. It is important to note that VMT is expressed as an average of the total number of miles divided by the total population in a given region.

As a result of this new metric, a shift in the types of mitigation measures will need to be considered in order to reduce and/or to encourage reduction in VMT. These types of measures are typically referred to as Transportation Demand Management (TDM). TDM measures generally focus more on behavioral shifts in modes of transportation as well as enhancements to infrastructure that promote walkability, biking, transit improvements, and pedestrian infrastructure, and less on capacity inducing measures such as the widening of roadways and addition of travel lanes. In other words, TDM measures generally focus on discouraging the single-occupancy vehicle trips, as well as promoting and encouraging other modes of transportation other than vehicular travel.

Threshold of Significance

In order to adequately assess VMT, the City must have adopted thresholds by which to compare projects for purposes of determining if a project would result in a "significant" impact under CEQA. Although thresholds of significance were not explicitly established by SB 743 or OPR, the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018) published by OPR, and included as **Attachment 4**, recommends a significance threshold of projects achieving a fifteen percent (15%) reduction in VMT below that of the regional average VMT. Thresholds can either apply to both residential and non-residential uses. This percentage is thought to be reasonably achievable at the project level by the California Air Pollution Control Officer's Association (CAPCOA), as well as for

achieving consistency with statewide GHG emissions reduction goals in *California's 2017 Climate Change Scoping Plan*. Although OPR has recommended a threshold, lead agencies are able to adopt their own thresholds as long as substantial evidence is provided to demonstrate that the reduction targets and goals of SB 743 can be achieved.

Assessing Projects Using VMT

Under the current methodology for assessing transportation impacts under CEQA, a project's LOS was compared to the adopted threshold established by the City for what was considered "acceptable" congestion. This was typically achieved through a trip generation or traffic impact assessment (TIA). The City's existing LOS traffic guidelines currently require a full TIA if a project exceeds certain criteria, one of which being that the project has the potential to exceed 100 peak hour trips.

Under VMT, the general review process would be similar, although the metrics to measure impacts would differ. Using a variety of "screening" criteria, projects would first be reviewed to see if they can be "screened out" from preparing a full VMT analysis. The screening criteria are based on a variety of maps, trip thresholds, size of project, and location. If a project meets these standards, the VMT impact is presumed to be less-than-significant in which case a full traffic analysis may not be required under CEQA. However, if a project cannot be screened out, an analysis may be required to further assess the VMT impacts and determine CEQA mitigation measures (if applicable). If mitigation measures cannot sufficiently reduce the VMT to a less-than-significant level, an Environmental Impact Report (EIR) may be required in which a finding of significant and unavoidable impact may be found.

Although the existing LOS methodology for determining traffic and congestion impacts under CEQA is relatively germane to any land use type or project (i.e. residential, non-residential, capital improvement, redevelopment, etc.) based on a scale of LOS "A" to LOS "F," VMT is more complex in that different land use types may now be analyzed slightly differently. This is based on many factors including project location, existing conditions and land use types surrounding a project site, land use type, and proximity to features such as bus routes, trails, etc.

While OPR provides recommendations for residential, office, and retail land uses, there were no specific recommendations for other land use types, such as industrial, other non-residential land use types, or schools. Thus, lead agencies may develop thresholds for these other land use types or utilize a similar metric as office and/or retail.

The basic factors for VMT assessment are the regional VMT (i.e. baseline), thresholds (i.e. the percentage reduction needed to be considered to have a less than significant impact), and mitigation measures (i.e. measures required to reduce VMT).

Regional Average VMT

As mentioned above, in order to assess the potential traffic impact of a project under VMT, a regional average VMT must be established which serves as the "baseline." Because the threshold of significance is expressed as a percentage reduction from the regional average VMT, it is important to understand what the region is defined as. However, the *Technical*

Advisory on Evaluating Transportation Impacts in CEQA does not explicitly define what a “region” is. That said, lead agencies that have already adopted thresholds have gone with either a countywide and/or citywide average VMT. It is recommended that the entire Fresno County region be considered for the baseline for the City.

The average VMT per capita (i.e. for residential land use types) is 16.1 citywide, and 16.2 countywide, therefore not much of a difference. For non-residential land use (i.e. office only), the VMT per employee is 25.6.

Proposed VMT Thresholds

Although the OPR recommends projects achieve a 15% reduction in VMT from the “regional” average, lead agencies have the discretion to adopt different thresholds as long as they are supported by substantial evidence. If a lead agency chooses a different threshold, substantial evidence is required to demonstrate that the metric can support the three statutory goals; (1) reduction in greenhouse gas emissions; (2) development of multimodal transportation networks; and (3) a diversity of land uses. The significance threshold shall also align with state laws with regards to achieving GHG reduction goals.

The proposed VMT thresholds for the City are described below under the “Proposal and Analysis” section of the staff report.

VMT Mitigation Measures

Under the VMT methodology, mitigation measures to reduce transportation impacts will shift from relieving traffic congestion through capacity inducing solutions (i.e. adding lanes, road widening, and traffic signals) to more TDM-based measures aimed more on behavioral and infrastructure changes to support and/or encourage shifts in transportation modes away from single-occupancy vehicle use. Because VMT is dependent on location and proximity of residential to employment, goods and services, mitigation measures will be determined on a case-by-case basis – similarly to how standard practice is for determining mitigations under LOS.

The variety of VMT mitigation measures will likely vary much greater than typical LOS based mitigations for a couple of reasons. First, VMT mitigation measures will have a varying degree in the amount of reduction achieved based on the measure proposed comparatively to the project location and use. For example, adding a pedestrian trail may only reduce VMT by one percent (1%), whereas adding a new transit route may reduce VMT by two percent (2%). The amount of mitigation needed will depend on how great the impact is from a project and how much VMT reduction is needed to attain a less-than-significant CEQA impact. Second, several VMT mitigation measures may be needed to achieve the required level of reduction. In the previous example, a project may need to reduce the VMT by three percent (3%) in which case a pedestrian trail and bus route would need to be added. This concept of mitigation is different than LOS based measures in which a project needs to reduce congestion and the primary way to achieve that is to add or construct a physical street improvement.

Under CEQA, mitigation can, in some cases, take the form of compensation (i.e. mitigation banks, exchanges, and/or fee program). However, for consideration as adequate mitigation under CEQA, the fees need to be adopted as part of a fee program in which CEQA was prepared. This entails a fee nexus study as well to justify the fee, the programs it would fund, and the quantification of reductions. While the concept of a fee-based program for purposes of sufficiently offsetting VMT impacts is being considered and explored by many lead agencies, it has yet to be implemented on a large scale.

PROPOSAL AND ANALYSIS

This section describes the proposed *Interim Transportation Impact Analysis Guidelines (Attachment 2)*. If approved by Council, the City will begin using the guidelines upon adoption. The interim status of the guidelines is to be able to have the methodology in place and to allow continued processing of entitlements while allowing for additional time to fine-tune the guidelines, including development of a user tool that will allow staff, the public, and the development community to anticipate VMT of projects. While the user tool may not necessarily in and of itself take place of requiring or needing a transportation impact analysis, it will help to determine if one may be required.

As previously mentioned, it is important to note that while VMT will become the primary metric for analyzing transportation impacts under CEQA, LOS analysis may still be required for purposes of designing the overall roadway network and for complying with other City policies. As such, LOS may continue to be utilized for assessing transportation impacts from an infrastructure design and build function, but not for purposes of determining CEQA transportation impacts.

Interim Status, Final VMT Guidelines, and User Tool

In order to achieve compliance with SB 743 and allow projects to continue to be processed, City staff has developed, in consultation with Kittelson & Associates, interim guidelines for assessing how transportation impacts will be analyzed using VMT. The interim status is so that the guidelines can be fine-tuned and for the development of a user tool that the public, developers, and staff can use for determining anticipated VMT of a project. During the interim status, mitigation measures will be explored in more detail to determine which might be the most effective for Clovis. Although “interim,” the proposed guidelines will ensure that the City is legally compliant with SB 743. The user tool would allow for project details to be input into a formula of some type and be able to anticipate VMT. While the tool would provide a high level expected result of VMT of a project, it would not necessarily supplant the need for a formal VMT analysis.

Once the guidelines have been refined and the user tool developed, Council would be required to take action on the final guidelines which is anticipated sometime during the Fall 2020.

Interim Transportation Impact Analysis Guidelines

The *Interim Transportation Impact Analysis Guidelines (Interim TIA Guidelines)* document is intended to provide guidance to City staff, applicants, and consultants on the requirements

to evaluate transportation impacts for projects. This document identifies the framework for when and how to analyze transportation impacts utilizing VMT.

The Interim TIA Guidelines is organized into three (3) main sections, including an Introduction, CEQA-Analysis Requirements, and Local Transportation Analysis. Each of these sections are summarized below.

Section 1: Introduction

This section of the Interim TIA Guidelines provides an overview of the document, as well as summarizes the general requirements of SB 743. It also includes a discussion of what would normally be included in a transportation impact analysis, such as a CEQA analysis and a local transportation analysis. In general, the CEQA analysis portion of traffic reports would assess VMT, and the local transportation impact analysis section would include an analysis of LOS for purposes of continued compliance with General Plan policies related to traffic.

Section 2: CEQA Analysis Requirements

This section of the Interim TIA Guidelines discusses the requirements for conducting analyses for projects pursuant to CEQA. According to CEQA Guidelines Appendix G, which most commonly serves as the “environmental checklist” as the basis for CEQA analysis (i.e. preparation of Initial Studies and/or Environmental Impact Reports), a project would have a significant transportation impact if:

- It conflicts with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities;
- It conflicts with or is inconsistent with CEQA Guidelines Section 15064.3(b) (requirement to use VMT);
- It substantially increases hazards due to a geometric feature or incompatible uses; or
- It results in inadequate emergency access.

The Interim TIA Guidelines are designed to address impacts related to CEQA Guidelines Section 15064.3, Determining the Significance of Transportation Impacts. The general process for analyzing projects under VMT would include the following steps:

Step 1: Project Screening

Using the VMT screening maps, user tool (future tool to be developed), and/or based on the project size and use, determine if the project may be “screened out” and therefore assumed to have a less-than-significant impact. If a project can be screened out, with substantial evidence, then a VMT traffic impact analysis may not be required. If a project cannot be screened out, a VMT traffic impact report may be required to further determine the existing and potential for VMT impacts based on the project size, location, and/or proposed use.

The Interim TIA Guidelines identify five (5) screening criteria, including 1) small projects; 2) affordable housing; 3) local-serving retail; 4) projects near high-quality transit areas; and 5)

projects located in low VMT areas. Each of these screening criterion are briefly summarized below, and described in greater detail in Section 2.1.1, Project Screening, in the *Interim Transportation Impact Analysis Guidelines* included as **Attachment 2** to this staff report.

- *Small Projects*: Projects that generate fewer than 500 vehicle trips per day.
- *Affordable Housing*: Residential projects with 100% deed restricted affordable housing.
- *Local-Serving Retail*: Projects that are locally serving retail with 100,000 square feet of gross floor or less. The determination of local-serving retail considers factors such as location, and goods and services the retail would provide. The City may request a market study as substantial evidence to determine if a project may be screened out under this criteria.
- *High-Quality Transit Area*: Project near high-quality transit areas, as defined by the State, may be screened out. Generally, these are areas served by public transit with at least 15-minute headways during peak hour times of travel. Although most of Clovis would not qualify for this, there is a portion of west Clovis where the Fresno Area Express (FAX) bus system meets this criteria.
- *Low VMT Areas*: Residential and employment projects that area proposed in areas that generate below the City's VMT thresholds may be screened out. The screening maps identify these areas.

Step 2: Significance Impact Thresholds

If a project cannot be "screened out" based on the screening criteria, projects would be required to prepare a VMT traffic analysis. This analysis would determine the level of VMT impact a project may have, and ultimately the level of mitigation measures required to reduce those impacts. The proposed VMT thresholds are summarized below, and described in greater detail in Section 2.1.2, Significant Impact Thresholds, in the *Interim Transportation Impact Analysis Guidelines* included as **Attachment 2** to this staff report.

The proposed VMT impact thresholds for the City are as follows:

- *Residential*: A 13% reduction below existing average VMT/capita in Fresno County.
- *Office*: A 13% reduction below existing average VMT/employee in Fresno County.
- *Retail*: No net increase in total VMT.
- *Other Land Uses*: Determined on a case-by-case basis, supported by substantial evidence.
- *Mixed Use Projects*: Evaluate each component of a mixed-use and apply the significance threshold for each land use type.

For determining the VMT reduction, a projects potential VMT is calculated and compared to the regional average VMT, in this case Fresno County region. For residential projects, the regional average VMT was determined to be 16.1 VMT/capita. Therefore, in order for a residential project to be considered to have less-than-significant traffic impacts under CEQA, the project may not exceed 14.1 VMT/capita – which is a 13% reduction from the regional average.

For office uses, the regional average was determined to be 25.6 VMT/employee. Therefore, for an office project to be considered to have a less-than-significant traffic impact under CEQA, the project may not exceed 22.3 VMT/employee.

Step 3: Mitigation Measures

If after Step 2 a project cannot meet the City VMT threshold, mitigation measures may be required to reduce the traffic impact to a level as close to the threshold as possible. If the threshold cannot be reached, then the project may result in a significant VMT impact. As mentioned earlier in the staff report, mitigation measures under VMT will likely be different than those typically required to mitigation LOS (i.e. congestion based) impacts.

FISCAL IMPACT

None. However, failure to comply with SB 743 regulations would expose the City to potential for litigation and financial loss, as well as cause delays in the processing of entitlement applications.

REASON FOR RECOMMENDATION

Staff has concluded that the guidelines will continue to allow for the processing of entitlements while being in compliance with the provisions of SB 743. The proposed thresholds will allow for the continued implementation of the General Plan, as well as maintaining compliance with VMT analysis for CEQA analysis.

Staff recommends the City Council to approve a resolution adopting *Interim Transportation Impact Analysis Guidelines* for assessing traffic impacts in compliance with provisions of SB 743.

ACTIONS FOLLOWING APPROVAL

No further action is required. However, upon completion of the user tool and final version of the VMT guidelines, staff will present those for action by City Council.

Prepared by: Ricky Caperton, AICP, Senior Planner

Reviewed by: City Manager 

DRAFT RESOLUTION

ATTACHMENT 1

**DRAFT
RESOLUTION 20-_____**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLOVIS
ADOPTING INTERIM TRANSPORTATION IMPACT ANALYSIS GUIDELINES
PURSUANT TO THE CALIFORNIA ENVIRONMENTAL QUALITY ACT FOR
ASSESSING TRAFFIC IMPACTS IN COMPLIANCE WITH THE PROVISIONS
OF SENATE BILL 743**

WHEREAS, California Senate Bill 743, signed into law in 2013, required the establishment of a new methodology for evaluating project transportation impacts under the California Environmental Quality Act (“CEQA”). In that regard, on December 28, 2018, the Governor’s Office of Planning and Research and the Natural Resources Agency certified and adopted revised CEQA guidelines which included an updated metric for analyzing transportation impacts known as vehicle miles traveled (“VMT”), which became effective July 1, 2020; and

WHEREAS, the City hired a consultant to prepare local VMT implementing procedures (“Guidelines”); and

WHEREAS, the adoption of the Guidelines is allowed by CEQA under Public Resources Code section 21082 and CEQA Guidelines section 15022, which specifically authorizes public agencies to adopt procedures for implementing provisions of CEQA; and

WHEREAS, the City’s consultant analyzed SB 743, the State VMT requirements found in CEQA Guidelines section 15064.3, and consulted with Fresno County Council of Governments in preparing the local Guidelines; and

WHEREAS, the Guidelines include specific thresholds and screening criteria to evaluate project impacts using Vehicle Miles Traveled (VMT) in compliance with the provisions of SB 743; and

WHEREAS, the Guidelines are proposed to be adopted on an interim basis to satisfy the July 1, 2020 compliance deadline, with final Guidelines anticipated to be completed in the Fall of 2020; and

WHEREAS, the City published notice of a public hearing in the Business Journal of the City’s intent to adopt the Guidelines; and

WHEREAS, the Guidelines are exempt from CEQA pursuant to CEQA Guidelines section 15061(B)(3) because the Guidelines merely establish the process for evaluating transportation impacts on future projects under CEQA, and by themselves do not have the potential for causing a significant impact on the environment. Future projects will still be evaluated under CEQA; and

WHEREAS, the Guidelines provide for the orderly and consistent implementation of the General Plan in accordance with CEQA and SB 743.

NOW, THEREFORE, BE IT RESOLVED, that the City Council adopts the foregoing recitals as true and correct and resolves as follows:

1. Adopts the City of Clovis Interim Transportation Impact Analysis Guidelines (**Attachment 2**) as local CEQA procedures for assessing transportation impacts.

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on July 20, 2020, by the following vote, to wit:

AYES:

NOES:

ABSENT:

ABSTAIN:

DATED: July 20, 2020

Mayor

City Clerk

INTERIM TRANSPORTATION IMPACT ANALYSIS GUIDELINES

ATTACHMENT 2

INTERIM TRANSPORTATION IMPACT ANALYSIS GUIDELINES

City of Clovis, CA



July 14, 2020

1. INTRODUCTION

The Interim Transportation Impact Analysis Guidelines document provides guidance to City of Clovis (City) staff, applicants, and consultants on the requirements to evaluate transportation impacts for projects in the city for the purpose of determining impacts under the California Environmental Quality Act (CEQA). The Interim Transportation Impact Analysis Guidelines are intended to:

- promote conformance with applicable City and State regulations;
- provide evaluation consistent with CEQA;
- ensure consistency in preparation of studies by applicants and consultants; and
- provide predictability in content for City staff and the public in reviewing studies.

Although these guidelines are intended to be comprehensive, not all aspects of every transportation analysis can be addressed within this framework. City staff reserve the right to use judgement to request exemptions and/or to modify requirements for specific projects at the time of the review application.

1.1. BACKGROUND

The Interim Transportation Impact Analysis Guidelines specifically address the requirements of California Senate Bill 743 (SB 743) which mandates specific types of CEQA analysis of transportation projects, effective July 1, 2020.

1.1.1. SB 743 Requirements

Prior to implementation of SB 743, CEQA transportation analyses of individual projects typically determined impacts on the circulation system in terms of roadway delay (i.e., congestion) and/or capacity usage at specific locations, such as street intersections or freeway segments. Senate Bill 743, signed into law in September 2013, requires changes to the guidelines for CEQA transportation analysis. The changes include the elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining transportation impacts. The purpose of SB 743 is to promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.

Under SB 743, a project's effect on automobile delay shall not constitute a significant environmental impact under CEQA. Therefore, LOS and other similar vehicle delay or capacity metrics may no longer serve as transportation impact metrics for CEQA analysis. The California Office of Planning and Research (OPR) has updated the CEQA Guidelines and provided a final technical advisory (December 2018), which recommends vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts under CEQA. The California Natural Resources Agency certified and adopted the CEQA Guidelines including the Guidelines section implementing SB 743. The changes have been approved by the Office of the Administrative Law and took effect on July 1, 2020.

LOS analysis is still appropriate and necessary to determine consistency with General Plan policies as they relate to LOS. More specifically, Appendix G of the CEQA Guidelines asks whether a project would “conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.” As the City’s currently adopted 2014 General Plan Circulation Element includes a LOS standard, in order to ensure that a project is consistent with the General Plan policy, a LOS analysis may be required at the request of the City Engineer to determine necessary roadway infrastructure improvements and capacity. Any improvements necessary to ensure LOS standards are met may be required as part of the project entitlement.

1.1.2. Local Transportation Analysis

It shall be noted that revisions to CEQA transportation analysis requirements do not preclude the application of local general plan policies, municipal and zoning codes, conditions of approval, or any other planning requirements through a city’s planning approval process to ensure adequate operation of the transportation system in terms of transportation congestion measures related to vehicular delay and roadway capacity. As such, the City of Clovis continues to apply congestion-related transportation impact analysis and conditions or requirements for land development projects through planning approval processes outside of the CEQA Guidelines in order to continue implementation of Clovis General Plan policies. These requirements are discussed in Section 3, Local Transportation Analysis.

1.2. TRANSPORTATION IMPACT ANALYSIS REPORTS

This document provides guidance for the two types of analysis that normally comprise a Transportation Impact Analysis (TIA) report:

1. CEQA Analysis
2. Local Transportation Analysis

Not all projects will require all components of a CEQA analysis and a local transportation analysis. For example, a project could meet the screening criteria for being located in a high-quality transit area and be exempt from the preparation of a detailed CEQA VMT analysis. Such a project may only be required to provide a local transportation analysis. Conversely, a project may require a VMT analysis, but not necessarily require a local transportation analysis. Thus, the final scope of the Transportation Impact Analysis would need to be determined by the City.

1.2.1. CEQA Analysis

A CEQA analysis of transportation impacts consists of evaluation measures including conflicts with circulation policies, VMT, hazards, and emergency access. The quantitative methodology, significance thresholds, and mitigation measures for conducting the transportation analysis in

accordance with the requirements of SB 743 are primarily based on VMT metrics. The CEQA analysis is part of the environmental review process and must meet CEQA requirements.

1.2.2. Local Transportation Analysis

The City can require that local non-CEQA analysis address traffic operations, safety issues and needed project design features related to a proposed land use project, as well as analyze site access and internal circulation. The local transportation analysis may be used to assess transportation impacts in relation to the City's policies in the General Plan and other planning documents.

2. CEQA ANALYSIS REQUIREMENTS

This section discusses the requirements for conducting analyses for projects under environmental review, consistent with requirements from SB 743. Under CEQA, a lead agency has the authority to determine its own significance thresholds and methodologies for technical analysis, taking into account its own development patterns, policy goals and context. Lead agencies can make their own specific decisions regarding methodology and thresholds, presuming their choices are supported by substantial evidence.

The CEQA Appendix G Environmental Checklist Form identifies the following four impact types for transportation:

- a) Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?
- b) Would the project conflict with or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b) (requirement to use VMT)?
- c) Would the project substantially increase hazards due to a geometric feature or incompatible uses?
- d) Would the project result in inadequate emergency access?

Consistent with State CEQA Guidelines section 15064.3, the City of Clovis has adopted thresholds of significance to determine when a project will have a significant transportation impact based on VMT. The City has developed screening criteria to streamline the analysis for projects that meet certain criteria, referred to as Project Screening, as further described below in Section 2.1.1.

2.1. LAND USE PROJECTS

This section provides information for analyzing individual land use projects, including the process to aid in deciding if a detailed VMT analysis is needed for a land use project. Figure 1 presents a flow chart depicting how a land use project would be analyzed under VMT-based metrics.

2.1.1. Project Screening

A project will require a detailed VMT analysis unless it meets at least one of the City's five screening criteria:

1. Small projects
2. Provision of affordable housing
3. Local-serving retail
4. Project located in a High-Quality Transit Area (HQTA)
5. Project located in low VMT area

Figure 1: Land Use Projects VMT Analysis

LAND USE PROJECTS VMT ANALYSIS FLOW CHART

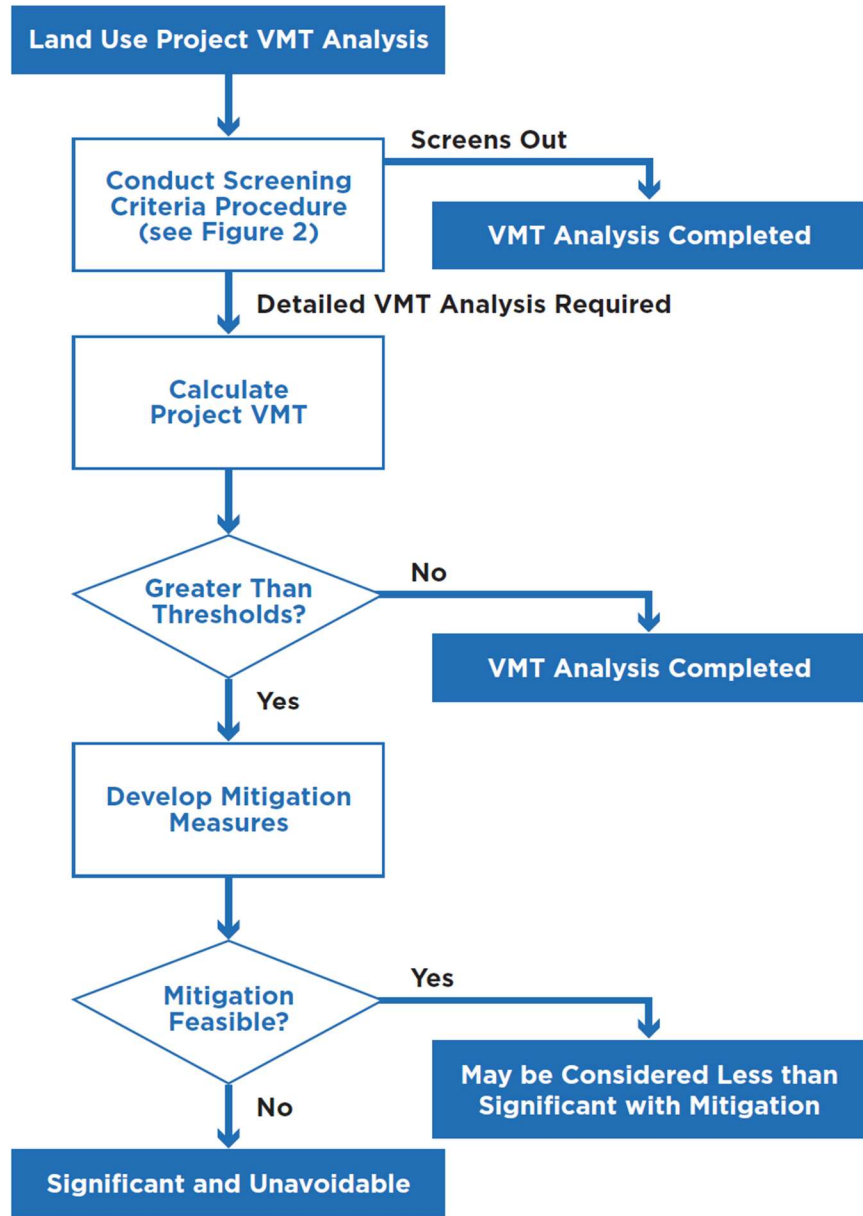
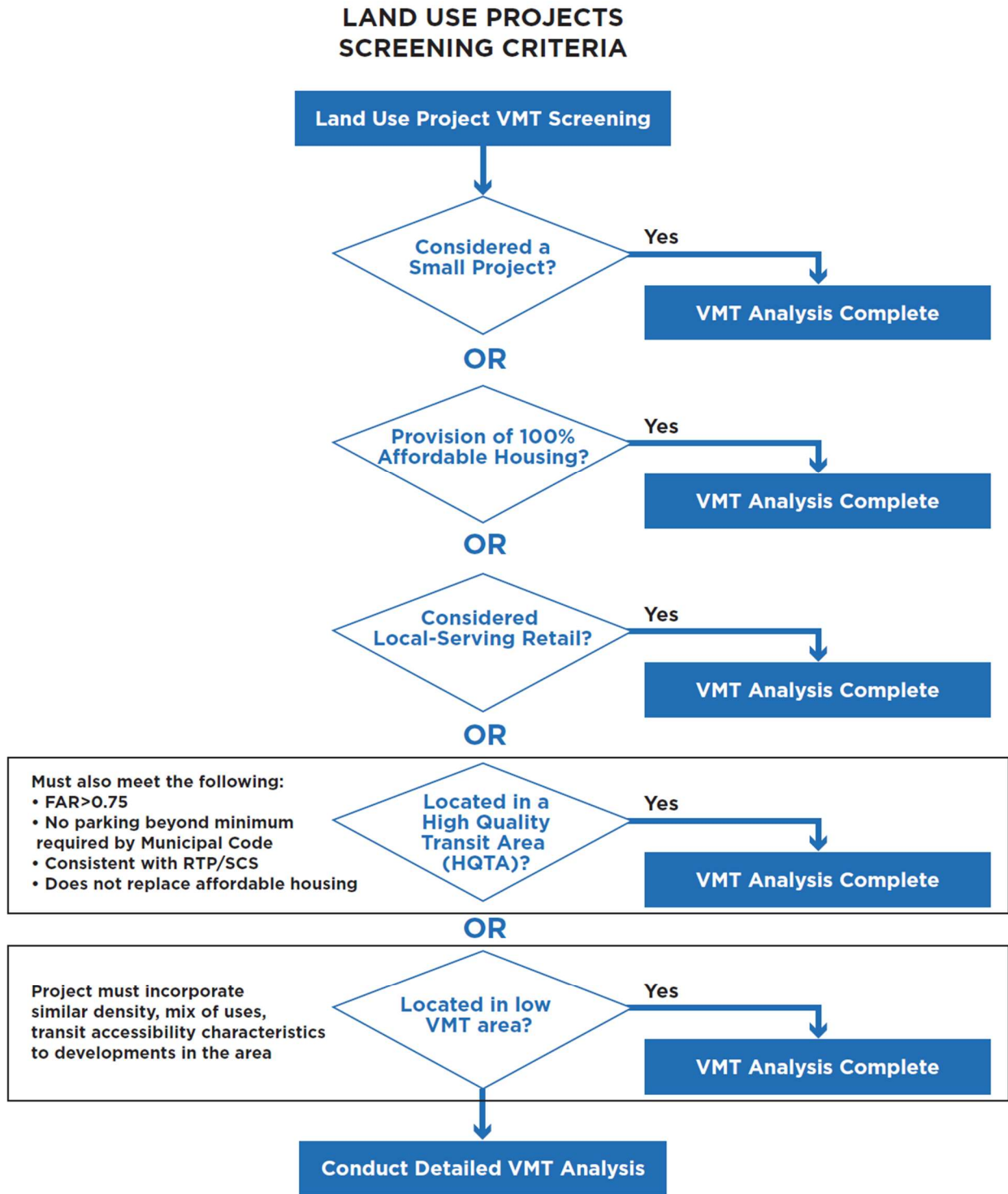


Figure 2 presents a chart depicting how a land use project would be analyzed under the proposed screening criteria. A project that meets at least one of the screening criteria could have a less-than-significant VMT impact due to project or location characteristics.

Figure 2: Land Use Projects Screening Criteria Flow Chart



2.1.1.1. Small Projects

Projects that generate or attract fewer than 500 vehicle trips per day are presumed to cause a less-than-significant VMT impact. Projects that typically generate 500 vehicle daily trips are shown in Table 1.

Table 1: Sample Small Projects (less than 500 daily trips)

Land Use Type	Number of Units/ Square Feet
Single Family Residential	53 Dwelling Units
Townhome/Attached Residential	68 Dwelling Units
Retail	13,250 SF
Light Industrial	100,800 SF

Note: calculated trip rates from the ITE *Trip Generation Manual*, 10th Edition.

2.1.1.2. Affordable Housing

Affordable housing is designated as housing for sale or for rent below market rate. Residential projects in high quality transit areas with a high proportion of affordable housing are presumed to have a less-than-significant transportation impact. Projects can only be screened out if they are located in an area supported by a quality walking and biking network with nearby retail and employment opportunities. If a project contains less than 100 percent affordable housing, the portion that is affordable should be screened out of a detailed VMT analysis.

2.1.1.3. Local-Serving Retail and Public Facilities

Projects that are local-serving retail with 100,000 square feet gross floor area or less are presumed to have a less-than-significant impact. This applies to the entirety of a retail project; for a mixed-use project, this screening criteria should be applied to the retail/commercial component separately to determine if that portion of the project screens out of a detailed VMT analysis.

The determination of local-serving retail is based on location, the characteristics of the project and the vicinity of the site, as well as the envisioned goods and services the retail development would provide. Generally, local-serving retail primarily provides goods and services that most people need on a regular basis and be located close to where people live. Groceries, medicines, fast food and casual restaurants, fitness and beauty services are typical goods and services provided by local-serving retail centers.

The City may require that a project applicant provide a market analysis to demonstrate that the project meets the characteristics of a local-serving retail development based on the goods and services provided relative to the geographic location, the customer base, and other nearby retail uses.

Public services (e.g., police, fire stations, public utilities, neighborhood parks¹) do not generally generate substantial amounts of trips and VMT. Instead, these land uses are often built to support other nearby land uses (e.g., office and residential). Therefore, these land uses can be presumed to have less-than-significant impacts on VMT. However, this presumption would not apply if the project is sited in a location that requires employees or visitors to travel substantial distances and may require a detailed VMT analysis.

2.1.1.4. High-Quality Transit Area (HQT)

Projects that are located in a high-quality transit area would not require a detailed VMT analysis. However, this presumption does not apply if the project:

- has a floor area ratio (FAR) of less than 0.75;
- includes substantially more parking for use by residents, customers, or employees of the project than required by the City (per Section 9.32.040 of the Municipal Code) such that it discourages use of alternative modes (transit, biking, walking) by promoting auto ownership and making driving very convenient;
- is inconsistent with the applicable Fresno Council of Governments (Fresno COG) Sustainable Communities Strategy (SCS), as determined by the City; or
- replaces affordable residential units with a smaller number of moderate- or high-income residential units.

A map of the existing High-Quality Transit Areas in the city is provided in Attachment A.

2.1.1.5. Project Located in Low VMT Areas

Residential and employment projects that are proposed in areas that generate VMT below adopted City thresholds are presumed to have a less-than-significant VMT impact and thus can be screened out. The City provides screening maps based on transportation analysis zones (TAZs) and results from the Fresno COG travel model. The following types of projects may be screened out of detailed VMT analysis using these criteria:

- Residential projects proposed in TAZs with total daily resident-based VMT per capita that is 13 percent less than the existing average baseline level for Fresno County
- Office or the employment portions of other non-residential uses with total daily employee-based VMT per employee that is 13 percent less than the existing average baseline level for Fresno County

The TAZs that fall into these categories are shown in green in the maps provided in Attachment B.

¹ For the purpose of conducting VMT analyses, neighborhood parks are defined as typically including playground equipment, playfields, and picnic facilities; ranging in size of up to 30 acres; and serving as social and recreational focal points for neighborhoods.

2.1.1.6. Consistency with RTP/SCS

If a proposed project is inconsistent with the adopted Fresno COG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), the City will evaluate whether that inconsistency may result in a significant impact on transportation. Therefore, projects that are inconsistent with the RTP/SCS would not qualify for screening out of a detailed VMT analysis.

2.1.2. Significant Impact Thresholds

For projects which do not meet any of the screening criteria, the City of Clovis has adopted VMT thresholds for land use development based on a review of long-range plans and policies for the City and for the metropolitan planning organization for the region, Fresno COG.² Fresno COG³ has set a goal to reduce greenhouse gas (GHG) emissions by 13 percent per capita by 2035 as a target for the Fresno region. The intent of SB 743 is to bring CEQA transportation analyses into closer alignment with other statewide policies regarding GHG, complete streets, and smart growth. Therefore, using a threshold of 13 percent below average VMT for residential and office projects is consistent with established regional GHG emission goals.

The OPR technical advisory recommends comparing a project's estimated VMT per capita or VMT per employee to average values on a regional or citywide basis. For retail projects, total VMT within the area affected by the project is measured.

The significance thresholds and specific VMT metrics used to indicate a significant transportation impact are described by land use type in Table 2.

2.1.3. VMT Analysis Methodology

Projects that do not meet the screening criteria must include a detailed evaluation of the VMT generated by the project.

2.1.3.1. Regional Average VMT

Regional average VMT per capita and VMT per employee values are determined using the Fresno COG regional travel model. The travel demand model is a set of mathematical procedures and equations that represent the variety of transportation choices that people make, and how those choices result in trips on the transportation network. The Fresno COG regional travel model is an activity-based model that simulates the County's population, based on detailed Census data, and

² SB 375 Greenhouse Emission Reduction Target for the Fresno County Region, Fresno Council of Governments, April 25, 2017.

³ SB 375 Greenhouse Emission Reduction Target for the Fresno County Region, Fresno Council of Governments, April 25, 2017.

models the daily activity patterns of each simulated individual along with resulting travel demand. The OPR guidelines recommend using a tour-based approach whenever possible.

The daily activity patterns in the travel model are based on a statistical analysis of a household travel survey, where a representative sample of households were asked to track all daily activities and trips by all members of their household. A simulated travel tour might consist of, for example, travel from the home to the gym to work to supermarket to home in a typical weekday. The travel model was calibrated to these surveyed travel patterns, and also validated by its ability to replicate counted traffic volumes, transit ridership, and total Fresno County VMT from the Highway Performance Measurement System (HPMS) which is based on traffic counts.

The VMT per capita includes all trips made by residents, including their trips while away from home, but does not include trips visiting residences (e.g., trips made by delivery vans). The regional average VMT per capita is calculated by summing the vehicle mileage (excluding trips made by transit, bicycle or walking) for all trips made by Fresno County residents, and dividing by the county population.

The VMT per employee includes trips made by employees to and from their workplaces, including trips to and from points other than the employees' homes, but does not include visitors to the employment sites. The regional average VMT per employee is calculated by summing the vehicle mileage (excluding trips made by transit, bicycle or walking) for all trips made by Fresno County employees, and dividing by the total number of employees in the county.

2.1.3.2. VMT per Capita or per Employee

For residential or employment land uses where VMT per capita or VMT per employee are used to determine impacts, the following analysis methods are available:

- The VMT per capita or VMT per employee may be looked up using the latest screening maps (Attachment B) and the TAZ (or TAZs) containing the project site.
- If the value for the TAZ is zero or significantly different compared to the values in surrounding TAZs due to a lack of land use data in the existing condition for the project TAZ, the City may allow the VMT per capita or VMT per employee to be based on an average of surrounding adjacent TAZs.
- If a proposed project affects the balance of residential and non-residential land uses in an area and is a relatively large project, it is recommended that the Fresno COG model be rerun to include the proposed project, and that the VMT per capita and VMT per employee be recalculated.

2.1.3.3. Exclusion of Truck VMT

It shall be noted that SB 743 does not apply to goods movement (i.e., trucks). Section 15064.3 of the CEQA Guidelines states that VMT for transportation impacts refers to "... the amount and distance of automobile travel...". Therefore, the VMT associated with trucks and the movement of

goods is not required to be analyzed and mitigated for the evaluation of transportation impacts under CEQA. Projects that generate a substantial amount of truck traffic also generate automobile trips, and project-related automobile trips would be subject to VMT analysis and mitigation. The VMT for all vehicles, including heavy trucks related to a project, will still be calculated as input for air quality, GHG, noise and energy impact analyses to be evaluated in non-transportation parts of the environmental analysis. The local transportation analysis requires an evaluation of truck traffic in terms of roadway and intersection operations, as discussed in Section 3.

Table 2: Impact Thresholds by Land Use Type

Land Use Type	Impact Threshold
Residential	<p>A proposed project exceeding a level of 13 percent below existing average VMT per capita in Fresno County.</p> <p>Regional Average: 16.1 VMT/capita Impact Threshold: 14.1 VMT/capita</p>
Office	<p>A proposed project exceeding a level of 13 percent below existing average VMT per employee in Fresno County.</p> <p>Regional Average: 25.6 VMT/employee Impact Threshold: 22.3 VMT/employee</p>
Retail	<p>A net increase in total VMT. The total VMT for the region without and with the project is calculated. The difference between the two scenarios is the net change in total VMT that is attributable to the project.</p>
Other land uses	<p>The City will make a determination of the applicable thresholds on a case-by-case basis based on the land use type, project description, and setting. Research and development, medical offices, assisted living, and industrial projects may be evaluated similar to office projects using the VMT per employee metric. Projects such as religious institutions, regional parks, hotels, private schools and medical offices may be evaluated using the net VMT criteria similar to retail projects.</p>
Mixed-Use Projects	<p>Evaluate each component of a mixed-use project independently and apply the significance threshold for each land use type. Alternatively, the evaluation would apply only the project’s dominant use.</p>

2.1.4. Redevelopment Projects

If a project results in a net decrease in overall VMT, it may be presumed that the project would result in a less-than-significant impact.

If a project replaces existing uses and leads to a net overall increase in VMT compared to the previous uses, then the thresholds for the new land uses should apply. If net VMT increases, then the appropriate VMT metrics and thresholds should be applied. For example, if a residential project replaces an office project resulting in a net increase in VMT, then the project's VMT per capita should be compared with the thresholds for residential projects. If the project is a mixed-use project, then the recommended approach for analyzing mixed-use projects should be applied to analyze each individual use.

2.1.5. Land Use Plans

For land use plans such as specific plans, community plans, and general plan updates, consistent with OPR's recommendations, the City requires comparing the applicable VMT thresholds (such as VMT per capita and/or VMT per employee) described in Section 2.1.3 under existing conditions with the applicable VMT metrics for the expected horizon year for the land use plan. If there is a net increase in the applicable VMT metrics under horizon year conditions, then the project will have a significant impact.

2.1.6. Cumulative Impacts

Per Section 15064 (h) (1) of the CEQA code, "when assessing whether a cumulative effect requires an Environmental Impact Report (EIR), the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable."

Generally, an analysis of cumulative impacts falls under two categories:

1. VMT per capita or per employee
2. Total VMT

These are described below.

2.1.6.1. VMT per Capita or per Employee

For land uses evaluated under an efficiency metric (VMT per capita for residential or VMT per employee for office/employment), if a project falls below the threshold, it would also result in less-than-significant cumulative impacts. In other words, a project that falls below an efficiency-based threshold would have no cumulative impact distinct from the project impact.

2.1.6.2. Total VMT

For land uses evaluated using total VMT (e.g., retail, hotels, etc.), when absolute VMT metrics (such as total VMT recommended for retail and transportation projects) are used, a cumulative VMT

impact analysis may be appropriate. Projects must demonstrate consistency with the City of Clovis General Plan to address cumulative impacts. A determination for consistency with the General Plan or RTP/SCS would be made by the City Engineer and based on factors such as density, design and consistency with the City's General Plan goals and policies. Inconsistencies may be identified if the proposed land use quantities are beyond the designation for the project site in the General Plan or RTP/SCS, in which case the project may result in higher VMT compared to the applicable plan.

If a project is consistent with the General Plan or RTP/SCS, it will be considered as part of the cumulative condition to meet the General Plan's long-range transportation goals, and therefore will result in a less-than-significant cumulative impact. If a project is not consistent with the General Plan, a cumulative impact analysis will be required to determine if the project would result in a net increase in VMT.

2.1.7. Mitigation

If a project would result in significant impacts, CEQA requires feasible mitigation measures to be implemented to reduce or mitigate an impact. Mitigation includes⁴:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action
- (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- (e) Compensating for the impact by replacing or providing substitute resources or environments, including through permanent protection of such resources in the form of conservation easements

For VMT impacts, a combination of measures from several VMT reduction strategies may be implemented: project characteristics, multimodal improvements, parking, and Transportation Demand Management (TDM). VMT is reduced by implementing strategies that reduce the number of automobile trips generated by the project, shift more trips from automobile to non-automobile modes, and/or reduce the distances that people drive. Generally, these reductions can be achieved by the implementation of TDM strategies.

TDM strategies are designed to change travel behavior in order to reduce the demand for roadway travel and increase the overall efficiency of a local or regional transportation system. This is accomplished by encouraging mode shifts away from the Single Occupant Vehicle (SOV) and auto trips away from peak periods. TDM strategies typically involve some form of incentives for employers and residents in order to reduce driving and encourage transit, walking, biking, and

⁴ According to CEQA code Section 15370

carpooling. These incentives can include, but are not limited to, supplying transit passes, rideshare programs, parking cash out, and guaranteed ride home programs. The implementation of TDM measures outcomes include increased transit use and non-motorized travel, reduced VMT, reduced roadway congestion, and reduced parking demand.

Measures to reduce VMT have been documented by several sources. Sources most commonly referenced include the California Air Resources Board (CARB) list of transportation and land use strategies for reducing greenhouse gas emissions;⁵ the California Pollution Control Officers Association (CAPCOA) report on quantifying the greenhouse gas mitigation measures;⁶ and the San Diego Association of Governments (SANDAG) Mobility Management VMT Reduction Calculator Tool – Design Document. The City recommends the use of these sources to select and apply mitigation measures and appropriate VMT reductions. The project applicant will be required to provide evidence for identifying specific values for mitigations to demonstrate the quantification in reduction of VMT to a level that would be less than significant. The mitigation measures included in the CAPCOA report are included in Attachment D. The mitigation measures included from SANDAG are included in Attachment E.

Projects for which impacts are determined to be significant are required to propose a list of VMT reduction measures and document the associated percentage of VMT reduction supported by substantial evidence. Project VMT is calculated by applying the percentage in reduction. Project VMT is then compared to the threshold of significance to evaluate the project's CEQA transportation impact. The City will review and approve the proposed mitigation and the calculated percentage in VMT reduction.

VMT mitigation fees, mitigation banks, and mitigation exchange programs are potential future methods for handling mitigation. Cities have been exploring the establishment of programs such as mitigation banking and VMT exchanges. VMT exchange banks allow program-level mitigation to take place for projects located in high-VMT areas where mitigation at the project level alone may not be effective. A considerable amount of effort is needed to set up these types of fee programs, which are implemented in advance and independent of the environmental review for a specific land development project. As a first step, the City will need to identify mitigation strategies that are feasible for the City or individual projects to implement. This can include determining the physical feasibility of infrastructure projects or determining the implementation feasibility of programs that would contribute to development of regional pedestrian, bicycle/scooter, and transit projects and possibly TDM actions aimed at changing travel behavior.

⁵ <https://ww3.arb.ca.gov/cc/sb375/policies/policies.htm>

⁶ Quantifying Greenhouse Gas Mitigation Measures, California Pollution Control Officers Association 2010.

2.2. TRANSPORTATION PROJECTS

This section provides information for analyzing transportation projects on roads within the City's jurisdiction.

2.2.1. Determining Need for Detailed VMT Analysis

The City of Clovis requires an analysis of transportation projects if they are expected to increase VMT, primarily projects that encourage the use of single-occupancy automobile such as the addition of through travel lanes. However, transportation projects that have already been specifically analyzed in a citywide plan (such as a General Plan update) may be exempt from a detailed VMT analysis. This exemption may be granted if the necessary VMT analysis and potential mitigations have already been calculated and identified at the plan level.

Conversely, projects that would likely not lead to an increase in vehicle travel and which promote use of transit and active transportation, should not require a VMT analysis. Project types that would likely not lead to a substantial or measurable increase in vehicle travel and generally should not require a VMT analysis include:

- road rehabilitation
- safety projects
- auxiliary lanes less than one mile in length
- turning lanes
- conversion to managed or transit lanes
- road diets
- removal or relocation of parking spaces
- addition of non-motorized, transit, and active transportation facilities

A full list is provided in Attachment C.

This approach is consistent with the intent of SB 743 in that it streamlines VMT-reducing projects and thoroughly assesses and mitigates, as appropriate, projects that have the potential to increase VMT.

2.2.2. Thresholds for Transportation Projects

Projects that have already been included and evaluated in the General Plan or the RTP/SCS are presumed to have a less-than-significant impact.

For projects that have not been included in the General Plan or RTP/SCS or are modifications and replacements, any growth in VMT attributable to the transportation project could result in a significant impact. For example, a transportation project that replaces a project included in the General Plan and would generate less VMT compared to the project included in the General Plan would have a less than significant impact. Projects not included in the General Plan or RTP/SCS would have a significant impact if they cause a net increase in VMT.

2.2.3. VMT Analysis Methodology and Tools

For transportation projects (e.g., those that increase vehicular throughput or are not included in a citywide plan) that require a detailed VMT analysis, the City should require analysis using the most current travel demand model (i.e., Fresno COG model) to estimate changes to citywide VMT due to rerouted trips. To capture long-term effects, an induced demand assessment using the following formula should be required:

$$[\% \text{ increase in lane miles}] \times [\text{existing VMT}] \times [\text{elasticity}] = [\text{VMT resulting from the project}]$$

The City requires total VMT in the city as the appropriate VMT metric, with the impact threshold being any increase in total VMT. The analysis shall be performed for the long-range horizon year, normally 20 years out. This approach would discourage induced demand impacts by requiring that a baseline level of VMT in the city not be exceeded.

2.2.4. Mitigation for Transportation Projects

Mitigation measures for transportation projects generally seek to reduce VMT by discouraging single-passenger automobile travel or through funding TDM measures. The following potential mitigation measures for transportation projects are listed as examples for consideration:

- Tolling new lanes to encourage carpooling and fund transit improvements
- Converting existing general-purpose lanes to HOV or HOT lanes
- Implementing or funding off-site travel demand management
- Implementing Intelligent Transportation Systems (ITS) strategies to improve passenger throughput on existing lanes

The City may pursue other mitigation measures supported by substantial evidence.

3. LOCAL TRANSPORTATION ANALYSIS

3.1. PURPOSE

A local transportation analysis (LTA) may be required for land use projects, in addition to the CEQA analysis, to evaluate the effects of a development project on the circulation network, primarily on local access and circulation in the proximity of a project site. The LTA ensures that the project provides safe connections for cyclists, pedestrians, and transit users. This analysis is required to address operational and safety potential issues for all transportation modes, and to identify improvements needed with project implementation and consistent with City policies.

These guidelines are provided to establish general procedures and requirements for the preparation of LTAs associated with development within the city of Clovis. The City recognizes that every development project and analysis context is unique. Therefore, emphasis is placed on the term “guidelines,” and not every aspect of the guideline is necessarily applicable to all projects. These guidelines are intended as a checklist for analysis preparers to ensure common analysis items are not overlooked. They are not intended to be prescriptive to the point of eliminating professional judgment.

3.1.1. Thresholds for LTA Preparation

Unless waived by the City Engineer, an LTA will be required by the City to adequately assess the impacts of development projects on the existing and/or planned street system when the following thresholds are met:

1. When project-generated traffic is expected to be greater than 100 vehicle trips during any peak hour
2. When a project includes a General Plan Amendment (GPA) which changes the use to a designation that has a potential to generate a higher number of vehicle trips than the existing, or originally planned land use designation
3. When the project traffic will substantially affect an intersection or roadway segment already identified as operating at an unacceptable level of service
4. When the project will substantially change the offsite transportation system or connection to it, as determined by the City Engineer

An LTA requires updating when two or more years with no activity have passed since the preparation of the analysis. After two years with no activity, an LTA is considered antiquated and irrelevant. For cases in which a master LTA was prepared for a large development, the specific phases will generally not require supplemental analyses if the master LTA analyzed the large development in phases and the specific phases are consistent with the master LTA.

3.2. STUDY AREA

The intersections and roadway segments to be covered by the LTA will be determined on a case-by-case basis and shall be sufficient in size to include existing and planned streets and intersections that may be impacted by the proposed development. The scope of the LTA, including the study area, proposed trip distribution, and trip generation, shall be reviewed and approved by the Traffic Engineering Manager or designee prior to preparation of the study.

The following guidelines determine the extents of the study area for local transportation analysis:

- Pedestrian, bicycle and transit facilities within a half-mile distance from the project site boundary
- All intersections of major streets that would provide direct access to the project
- All signalized intersections within one-half mile of the project site boundary where the project would add 50 or more peak hour trips, and signalized intersections beyond one-half mile where the project would add 100 or more peak hour trips
- All unsignalized intersections within a half-mile of the project site boundary where the project would add more than 50 peak hour trips

Local transportation analyses shall provide sufficient detail regarding existing pedestrian, bicycle, and transit facilities. This could include identification of deficient facilities, existing and planned bicycle facilities, and existing and planned transit routes and facilities.

3.2.1. Coordination with Caltrans

The LTA and/or City staff shall consult with the State of California Department of Transportation (Caltrans) to determine traffic impacts on Caltrans' State facilities. This consultation should include a request to Caltrans for their concurrence with the scope of analysis for Caltrans' State facilities, or a recommendation from Caltrans for specific modifications to the scope. This analysis must follow the most current Caltrans guidance to analyze transportation impacts from development projects on the State highway system. The consultation should also include a review of recommendations to reduce any impacts to Caltrans' State facilities.

3.2.2. Coordination with Other Agencies

The LTA preparer and/or City staff shall consult with the City of Fresno and/or Fresno County to determine the levels of significance with regard to traffic impacts on Fresno or County roadway facilities. Correspondence with the neighboring agencies shall be provided to the City Engineering Department.

If a consultant is performing work in an adjacent agency and is analyzing circulation and transportation facilities and infrastructure within one mile of the City of Clovis sphere of influence, City of Clovis City Engineer should be contacted for review of the scope of work, as well as receive a completed document for comment.

3.3. LEVELS OF SERVICE

All city intersections and roadway segments shall operate at a LOS D or better under the near-term conditions, unless a finding of overriding consideration was adopted in the General Plan EIR. Under long-term conditions, all city intersections and roadway segments shall operate at a LOS D or better, except for the roadway segments adopted in the General Plan EIR to operate at LOS E or F. Exceptions to this standard may be allowed on a case-by-case basis where lower levels of service would result in other public benefits, such as:

- Preserving agriculture or open space land
- Preserving the rural/historic character of a neighborhood
- Preserving or creating a pedestrian-friendly environment in Old Town or mixed-use village districts
- Avoiding adverse impacts to pedestrians, cyclists, and transit riders
- Where right-of-way constraints would make capacity expansion infeasible

3.3.1. Level of Service Methodologies

The LOS shall be based on average delay for signalized and unsignalized intersections and service volume tables (such as those prepared by the Florida Department of Transportation) for roadway segments. Average delay for study intersections shall be summarized in a table. The traffic analysis methodologies for the facility types indicated below will be accepted without prior consultation:

3.3.1.1. Signalized Intersections

Analysis of signalized intersections shall use the most current edition of the Highway Capacity Manual (HCM) using Synchro, Vistro, Highway Capacity Software (HCS), or other software approved by the City Traffic Engineer.

The procedures in the Highway Capacity Manual do not explicitly address operations of closely spaced signalized intersections. Under such conditions, several unique characteristics must be considered, including spill-back potential from the downstream intersection to the upstream intersection, effects of downstream queues on upstream saturation flow rate, and unusual platoon dispersion or compression between intersections. An example of such closely spaced operations is signalized ramp terminals at urban interchanges. Queue intersections between closely spaced intersections may seriously distort the procedures in the HCM. In this case, simulation of the study area may be necessary, as determined by the City Engineer.

3.3.1.2. Unsignalized Intersections

Analysis of unsignalized intersections shall use the most current edition of the HCM and Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) using Synchro, Vistro, HCS, or other software approved by the City Engineer.

3.3.1.3. Signal Warrants

Analysis of signal warrants shall apply the current MUTCD Signal Warrants.

3.3.1.4. Roundabouts

The SIDRA software does not account for the chaining of two roundabouts and the queues associated between the roundabouts. Simulation with proper assumptions is the only way to ensure this analysis is performed correctly. The consultant shall discuss methodology with City staff prior to performing the work for roundabout analysis. The consultant will need a conceptual design of the roundabout for the analysis. The analysis should reflect United States and Clovis/Fresno driver behavior.

3.3.1.5. LOS Analysis Default Values

While the City of Clovis does not officially advocate the use of any software, Synchro is the software used by City staff. The analysis shall use the latest published version of the HCM. The LOS analysis at study intersections shall be conducted using the following default values as applicable:

- Use of signal timing plans, if available. If not available, then:
 - Minimum split time for protected left-turn phase shall not be less than 12 seconds.
 - Minimum pedestrian times should be satisfied on all phases with pedestrian phase for signals modeled as coordinated signals.
 - For study intersections modeled as actuated uncoordinated signals, the intersections shall be evaluated with at least 10 pedestrian calls per hour in the Existing plus Project and Long-Range conditions, if pedestrian projections are not available.
 - If existing cycle lengths are available, they should be utilized. In instances where existing cycle lengths are not available, LOS calculations should be conducted using the natural cycle lengths. The cycle lengths should remain constant for comparison purposes, unless the project is changing the character of the intersection and it is noted in the report.
 - In instances where signalized intersections are coordinated, coordinated cycle lengths should be determined based on the natural cycle lengths of the coordinated signals and shall be used for evaluation purposes.
 - Minimum All-Red time(s) shall equal 1.0 seconds (2.0 seconds when dual left turn lanes are used).
 - Minimum Yellow time shall equal 3.5 seconds, or greater based on the approach speeds (3.0 seconds for left turn phases).
- Where existing traffic volumes are collected and peak hour factors are available, then LOS calculations for Existing Condition scenarios and the Near-Term scenarios should use available counted peak hour factors, provided that the traffic counts are included in

the Appendix. For all Cumulative scenarios and Existing Conditions where peak hour factors are not available, default factors per the HCM shall be used and shall be consistent throughout the Cumulative scenarios and peak hours.

- Existing storage lengths shall be entered as input data if LOS calculations are conducted using Synchro.
- All assumptions and defaults used shall have proper citation and justification for their use in the LTA.

3.4. TRAFFIC ANALYSIS SCENARIOS

The following scenarios shall be included in the LTA:

- A. For projects requiring a General Plan Amendment, intersection LOS analysis and calculation worksheets, as well as figures showing turning volumes and lane configurations, shall be included in the report for the following traffic scenarios:
 - a) Existing Conditions – Current year traffic volumes and peak hour LOS analysis
 - b) Existing plus Project Conditions – Trip generation and trip distribution added to the previous scenario and LOS analysis
 - c) Near-Term Analysis (Existing plus Approved and Pending Projects plus Proposed Project Conditions) – Trip generation and trip distribution added to the previous scenario and LOS analysis
 - d) Cumulative Long-Range Conditions – Long-Range conditions (20 years from existing conditions and/or consistent with the latest Fresno COG model)
 - e) Cumulative Long-Range Conditions – Project traffic added to the previous scenario
 - f) If any phasing is to take place, then such phasing should be studied at its appropriate build out year in addition to the above scenarios.
 - g) Trip traces to affected Caltrans freeway interchanges shall be performed for the current General Plan land use and the land use proposed per the GPA.
- B. For projects with planned land uses consistent with the General Plan, intersection LOS analysis and calculation worksheets, as well as figures showing turning volumes, shall be included in the report for the following traffic scenarios:
 - a) Existing Conditions – Current year traffic volumes and peak hour LOS analysis
 - b) Existing plus Project Conditions – Trip generation and trip distribution added to the previous scenario and LOS analysis
 - c) Near-Term Analysis (Existing plus Approved and Pending Projects plus Proposed Project Conditions) – Trip generation and trip distribution added to the previous scenario and LOS analysis
 - d) If any phasing is to take place, then such phasing should be studied at its appropriate build out year in addition to the above scenarios.
 - e) Trip distribution to affected Caltrans freeway interchanges shall be performed for the proposed project.

"No Project" scenarios do not require analyses for improvements. For the proposed project, no physical improvements shall be assumed to be implemented unless there is a Capital Improvement Project already identified and fully funded. If the improvement is identified in an impact fee program and the improvement is fully funded, then that improvement can be assumed under Cumulative Analysis scenarios. However, the "project" may be conditioned with constructing the assumed improvement.

3.4.1. Cumulative Traffic Volumes

Cumulative Long-Range Conditions traffic volumes shall be projected based on the method documented by the Fresno COG model steering committee using procedures such as the increment method. The methodology for developing the forecasts shall be clearly documented in the report. Information from model runs provided by Fresno COG shall be included in the Appendix.

The following scenarios shall be requested from Fresno COG staff to perform this forecasting correctly:

- Current Year Model Run (Existing Conditions Model),
- Cumulative Long-Range No Project Model Run (Cumulative Conditions Model),
- Cumulative Long-Range Project SelectZone FRATAR Model Run, and
- Near-Term Opening Year Model Run, if necessary.

In order to correctly use the model to forecast Cumulative volumes, consultants should contact Fresno COG staff and/or review the Fresno COG webpage.

Consultants should work with Fresno COG staff to prepare a model scope of work request for a basic LTA, and if the analysis is more involved, it may need additional information. The minimum will include reviewing the existing land uses assumed in the model; potentially splitting the TAZs as necessary to more accurately reflect driveways and land uses; and reviewing roadway circulation in the model near the project site. If the consultant is not familiar with the Fresno COG model and the assumptions and information that went into validating the model, the consultant is encouraged to schedule some time with the Fresno COG staff to become an expert on the model as the information provided from the model is the basis for the analysis. The consultant will be accountable for the information provided by Fresno COG.

The consultant should also provide, in the Appendix, the request for modeling services to Fresno COG and the response provided by Fresno COG when the data is returned. An email response from Fresno COG staff is sufficient.

All assumptions shall have proper citation and justification for their use in the LTA.

3.5. TRAFFIC COUNTS

Traffic counts should be collected and included in the Appendix. Available existing counts can be used if they are less than twelve (12) months old and the traffic volumes have not been significantly changed due to more recent development in the vicinity. The City Engineer or the designee shall approve all requests to use other available traffic counts.

Common rules for conducting traffic counts include, but are not limited to, the following:

- Peak hour turning movement volumes shall be conducted on Tuesdays, Wednesdays, or Thursdays during weeks not containing a holiday. Counts shall be conducted in favorable weather conditions.
- Counts shall be collected when schools and colleges are in session, but not during the first two weeks that the schools and colleges are in session. Counts collected when schools and colleges are not in session shall be approved by the City Engineer, including a methodology for adding historical school traffic volumes into the analysis.
- Counts shall be collected during AM (7:00 a.m. to 9:00 a.m.) and PM (4:00 p.m. to 6:00 p.m.) peak periods, unless otherwise specified (such as midday or weekend peak periods).
- Counts should include the peak hour factor calculation.
- A qualified traffic analyst shall observe each study intersection during peak hours of analysis and document their observations such as lane utilization, delay, queue lengths in the field, adjacent intersection queues affecting study intersection capacity, etc.

3.6. TRIP GENERATION

Trip generation should be based on one or more of the following:

- Institute of Transportation Engineers (ITE) Trip Generation Manual (most current edition)
 - Rates should be calculated using the average weight or weighted average formula when applicable.
 - Special consideration should be given for ITE rates based on old data or a small sample and may require additional data collection to determine the appropriate trip generation.
- New rates should be generated using community examples for uses not updated or included in the ITE Trip Generation Manual.
- No pass-by trip reductions are allowed unless justified and approved by the City Engineer.
- All assumptions shall have proper citation and justification for their use in the LTA.

Projected daily trips, AM and PM peak hour trips for the approved, pending and proposed project shall be summarized in a table. Trip generation rates, factors and source, as well as the totals for

the inbound and outbound trips shall also be provided in a table. Trip generation should be summarized in a table form similar to the one below:

Proposed Trip Generation for Weekday

Land Use	Size	Daily		A.M. Peak Hour			P.M. Peak Hour		
		Rate	Trips	Rate In/Out	Trips In/Out	Trips Total	Rate In/Out	Trips In/Out	Trips Total
Retail	4 ksf	120	480	4 60/40	12/8	19	13.25 50/50	26/26	53
Townhomes	32 Apts	7.5	240	10 35/65	8/16	24	0.75 65/35	16/8	24
Senior	100 Units	3.6	360	12 40/60	17/26	43	0.43 60/40	26/170	43
Total Trips			1080		37/49	86		68/52	120

3.7. TRIP DISTRIBUTION

Trip distribution shall be based on existing travel patterns, locations of complimentary land uses, and/or information derived from the Fresno COG travel model such as a “select zone” analysis.

A figure illustrating the percentage of peak hour traffic going to and from various destinations along the transportation network shall be provided. A figure illustrating peak hour project-only trips at the driveways, study intersections, and roadway segments shall be provided based on the trip distribution. If the trip distribution is different between Existing, Near-Term, and Cumulative conditions, then a figure needs to be provided for each different trip distribution with supporting discussion and justification.

The travel model should be used for a general trip distribution to and from the north, south, east, and west directions; however, the project trips should be manually distributed to the driveways, intersections, and roadway segments. The travel model should not be relied upon to distribute project trips to specific intersection and driveway turn movements.

For General Plan Amendments, the local transportation analysis shall include a trip distribution to affected Caltrans freeway interchanges for both the current General Plan land use and the proposed land use per the GPA. All assumptions shall have proper citation and justification for their use.

3.8. APPROVED AND PENDING PROJECTS

Approved and pending projects located within the vicinity of the project (i.e., developments generating vehicle trips that would impact study intersections and/or roadway segments) or as determined by the City Engineer, that can reasonably be expected to be in place by the project's build out year must be included in the analysis. Related projects shall include all approved, pending,

or constructed projects that are not occupied at the time of the existing traffic counts. A list of approved and pending projects shall be submitted to the Engineering Division for review and approval along with the scope of work. Engineering staff will work with consultants to develop the list if necessary.

A table summarizing the approved and pending projects with their locations, and trip generation shall be provided. If conditional use permit/parcel map/tract numbers are available, then they should be provided in the table. Pending projects are defined as those projects that have been accepted for processing by the City of Clovis Planning and Development Department.

Capital Improvement Projects (CIP) should be identified and documented with funding source and anticipated completion year. City Engineering staff should be contacted for information on CIP projects near a given project.

3.9. SITE ACCESS AND CIRCULATION

Site access and circulation analysis shall be conducted, and recommendations shall be included in the local transportation analysis to address safe and acceptable traffic operations. A figure illustrating the proposed site plan with proposed primary access points should be provided. Discussion on the location and distance of the access points from nearby intersections shall also be provided. The proposed site plan shall illustrate access points and peak hour project-only trips at the access points. For projects that are anticipated to generate truck traffic, truck operations shall also be evaluated to ensure adequacy of site design to satisfy truck loading demand on-site and within the vicinity of the project site, and to ensure that traffic operations on roadways and intersection are satisfactory.

The local transportation analysis should calculate anticipated queues and minimum required throat depth (MRTD) at the project access points and summarize these in a table. The analysis should also evaluate the proposed site plan for sight distance and other unsafe traffic conditions and provide recommendations to mitigate them.

The local transportation analysis shall also conceptually address safe pedestrian paths of travel from:

- residential developments to school sites;
- public streets to commercial and residential areas; and
- nearby bus stops to project sites.

3.10. QUEUING AT STUDY INTERSECTIONS

Queuing analysis for study intersections shall be conducted and documented in the local transportation analysis based on the LOS calculations. Recommendations for queues under existing conditions or projected to exceed the available storage shall be provided. Recommendations such

as, but not limited to, extending existing storage and adding exclusive turn lanes and innovative techniques shall be considered and recommended.

3.11. TRAFFIC OPERATIONS THRESHOLDS

For study signalized intersections, a traffic operations issue is identified if the addition of the traffic generated from the proposed project results in any one of the following:

- Triggers a signalized intersection operating at acceptable LOS to operate at unacceptable levels of service
- Increases the average delay for a study signalized intersection that is already operating at unacceptable LOS

Unsignalized intersections should maintain a Level of Service no worse than LOS D. Unsignalized intersections may include all-way stop, or two-way stop controlled. The delay for unsignalized intersections should be computed as follows:

- All-way stop-controlled – use average delay
- Two-way stop-controlled – use worst approach delay

For unsignalized study intersections, an adverse traffic operations issue is identified if the addition of the traffic generated from the proposed project results in any one of the following:

- Triggers an unsignalized intersection operating at acceptable LOS to operate at unacceptable levels of service (from E or better to F) and meet the signal warrants criteria
- Increases the applicable delay for an unsignalized study intersection that is already operating at unacceptable LOS and meets the signal warrant criteria

Improvements to unsignalized intersections may include a change of traffic control, including yield control, traffic circle/roundabout, or a traffic signal. The CA MUTCD states that if one or more of the criteria for signal warrants is met, an engineering study is required to evaluate other factors to determine if an intersection must be signalized. When analyzed, the peak hour and 8-hour traffic signal warrants should be used to determine if a traffic signal is recommended to improve the adverse effects identified at an unsignalized intersection. Additionally, if a project is near a school or a downtown area with substantial pedestrian activity, then the City may require additional warrants to be evaluated such as pedestrian, accident history, etc. The City reserves the right to determine if a warranted signal will be installed.

3.12. ANALYSIS DISCUSSION

The local transportation analysis should discuss conclusions regarding the transportation issues caused by the proposed project on the roadway system. If the traffic generated by this and other projects requires improvements that are not covered by current impact fees, then the project's fair

share percentage shall be calculated using peak-hour volumes and provided in the local transportation analysis.

For all recommendations to increase the number of travel lanes on a street or at an intersection as an improvement, the report must clearly identify the impacts associated with such a change, such as whether or not additional right of way will be required and whether it is feasible to acquire the right of way based on the level of development of the adjacent land and buildings, if any. All improvements should be reviewed in the field to make sure that they can be accommodated. If they cannot be accommodated or are not feasible, those findings need to be included in the local transportation analysis.

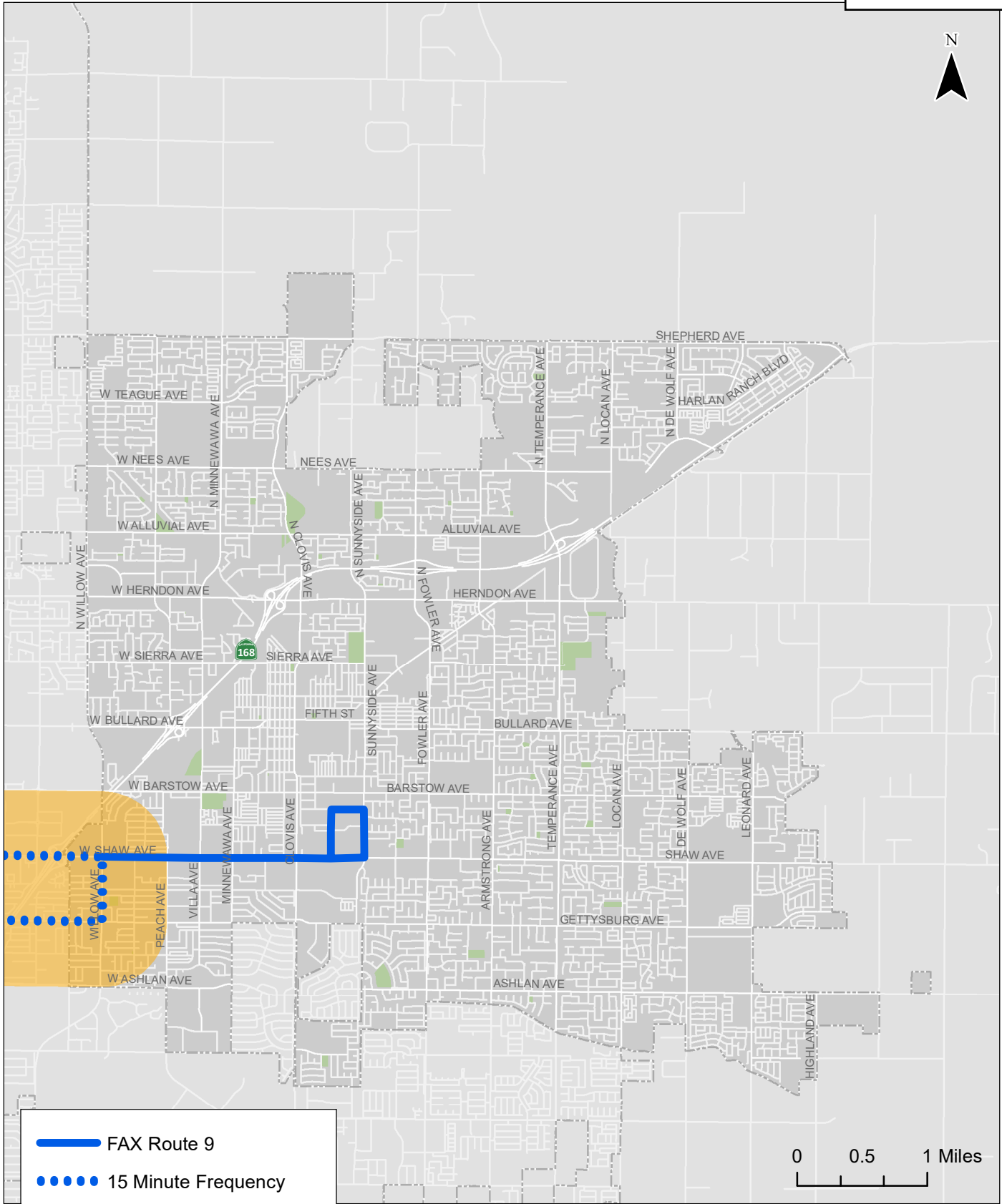
The local transportation analysis should discuss other possible adverse impacts on traffic. Examples of such impacts include:





- the limited visibility of access points on curved roadways
- the need for pavement widening to provide left-turn and right-turn lanes at access points into the proposed project
- the impact of increased traffic volumes on local residential streets
- the need for road realignment to improve sight distance

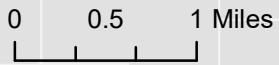
Projects which propose to amend the City's General Plan Land Use and substantially increase potential traffic generation must provide an analysis of the project at current planned land use versus proposed land use in the build out condition for the project area, including future cumulative conditions. The purpose of such analysis is to provide decision makers with the understanding of the planned circulation network's ability to accommodate additional traffic generation caused by the proposed General Plan Land Use amendments.

The LTA shall be provided as an electronic PDF copy to the City of Clovis City Engineer, according to the report format presented in Attachment F.

Attachment A: High Quality Transit Areas Map



-  FAX Route 9
-  15 Minute Frequency
-  High Quality Transit Area
-  City Boundary



**Existing High Quality Transit Areas
City of Clovis VMT Implementation**

**Figure
A1**

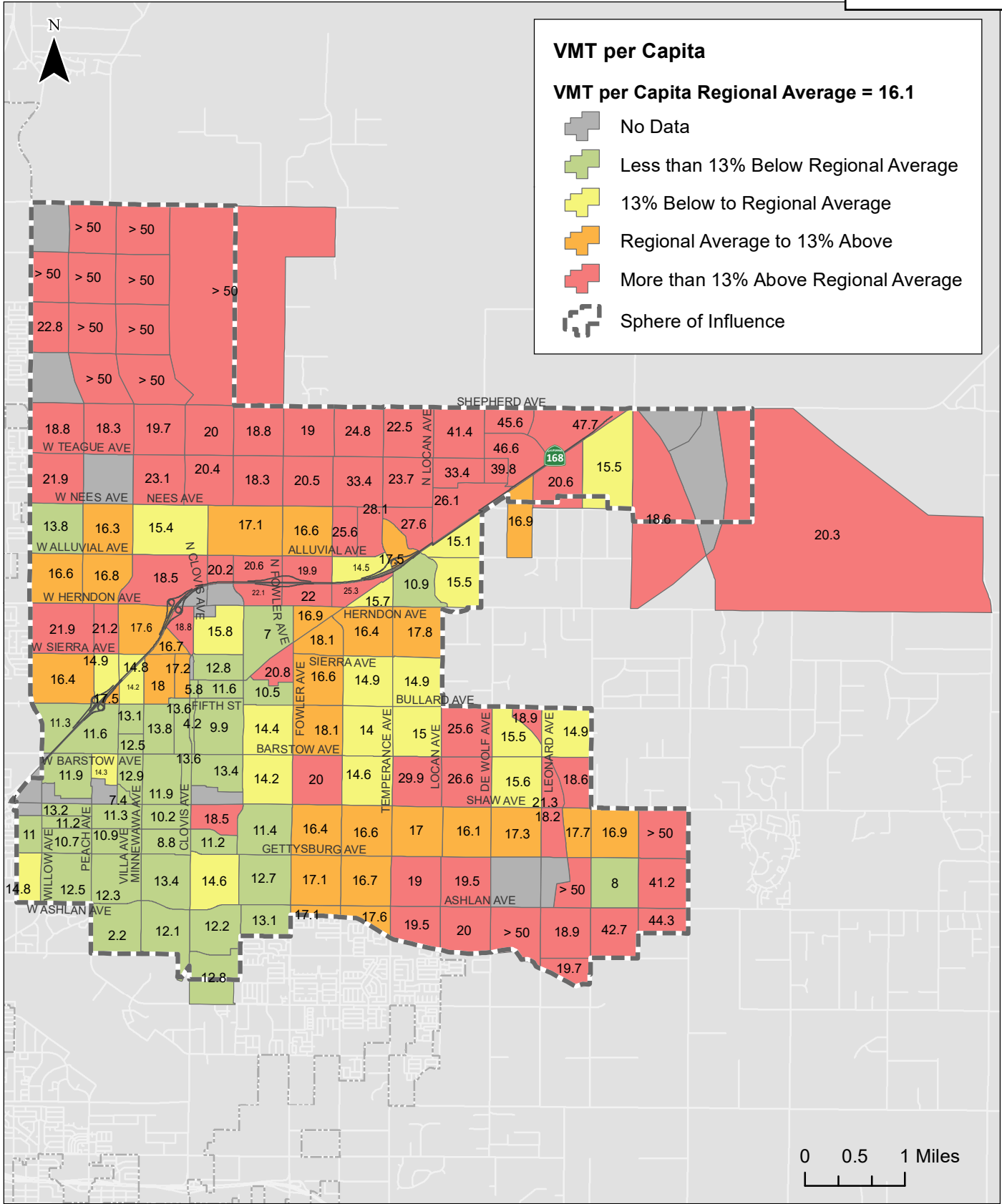
H:\2424727 - Ceres SSAR\p\gis\High_Quality_Transit - v3.mxd - gcransky - 8/14 AM 7/14/2020

Attachment B: VMT Screening Maps

VMT per Capita

VMT per Capita Regional Average = 16.1

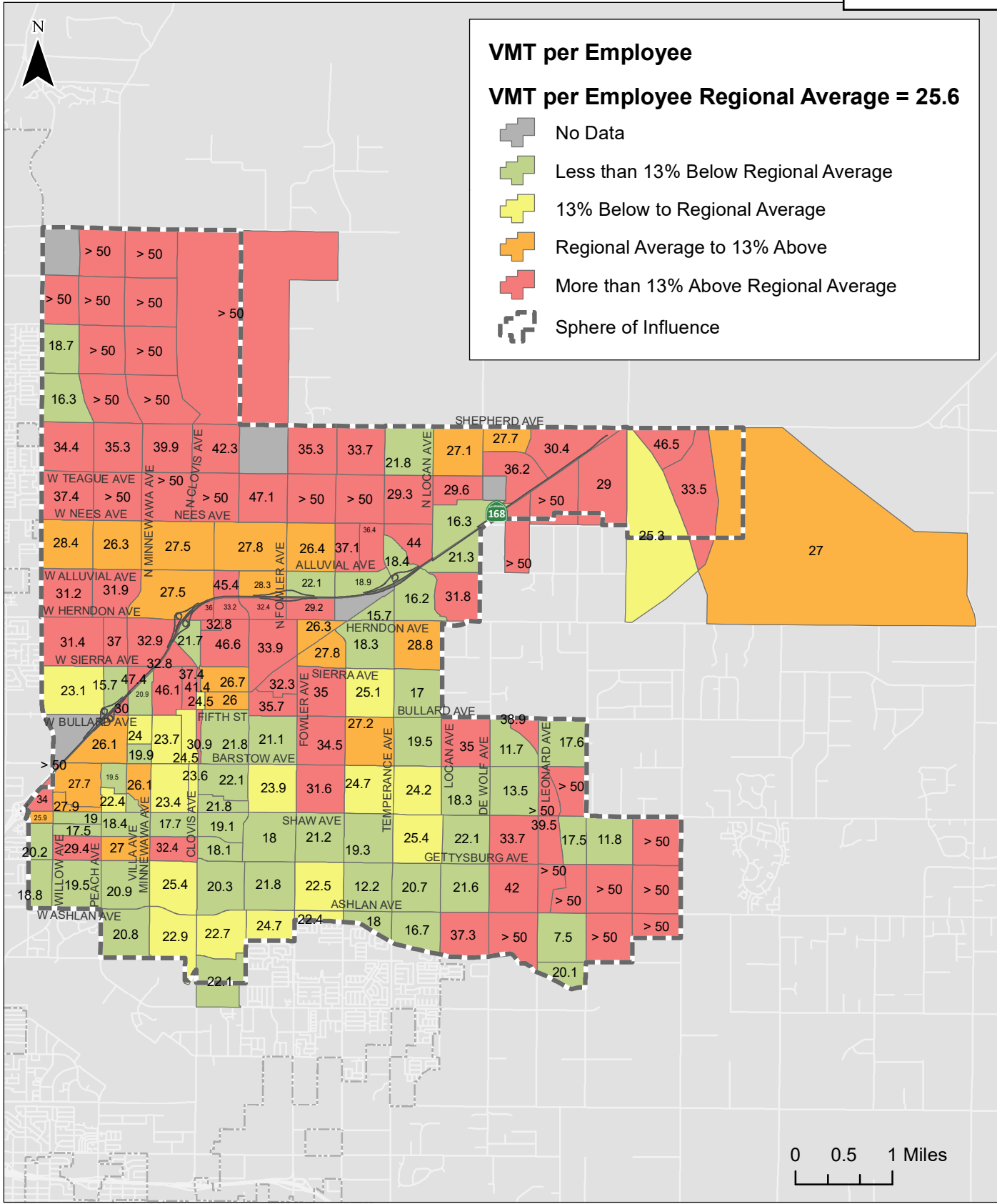
- No Data
- Less than 13% Below Regional Average
- 13% Below to Regional Average
- Regional Average to 13% Above
- More than 13% Above Regional Average
- Sphere of Influence



Existing VMT Per Capita (2019)
City of Clovis VMT Implementation

Figure B1

H:\2424913 - City of Clovis VMT Implementation\gis\Clovis_VMTpercapa_(2019).mxd - gersky - 8:17 AM 7/14/2020



Existing VMT Per Employee (2019)
City of Clovis VMT Implementation

Figure
B2

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Attachment C: VMT-Reducing Transportation Projects

VMT-Reducing Transportation Projects

Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets (e.g., highways; roadways; bridges; culverts; Transportation Management System field elements such as cameras, message signs, detection, or signals; tunnels; transit systems; and assets that serve bicycle and pedestrian facilities) and that do not add additional motor vehicle capacity

Roadside safety devices or hardware installation such as median barriers and guardrails

Roadway shoulder enhancements to provide “breakdown space,” dedicated space for use only by transit vehicles, to provide bicycle access, or to otherwise improve safety, but which will not be used as automobile vehicle travel lanes

Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety

Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left, right, and U-turn pockets, two-way left turn lanes, or emergency breakdown lanes that are not utilized as through lanes

Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit

Conversion of existing general purpose lanes (including ramps) to managed lanes or transit lanes, or changing lane management in a manner that would not substantially increase vehicle travel

Addition of a new lane that is permanently restricted to use only by transit vehicles

Reduction in number of through lanes

Grade separation to separate vehicles from rail, transit, pedestrians or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., HOV, HOT, or trucks) from general vehicles

Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features

Installation of traffic metering systems, detection systems, cameras, changeable message signs and other electronics designed to optimize vehicle, bicycle, or pedestrian flow

Timing of signals to optimize vehicle, bicycle, or pedestrian flow

Installation of roundabouts or traffic circles

Installation or reconfiguration of traffic calming devices

Adoption of or increase in tolls

Addition of tolled lanes, where tolls are sufficient to mitigate VMT increase

Initiation of new transit service

VMT-Reducing Transportation Projects

Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes

Removal or relocation of off-street or on-street parking spaces

Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs)

Addition of traffic wayfinding signage

Rehabilitation and maintenance projects that do not add motor vehicle capacity

Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way

Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve non-motorized travel

Installation of publicly available alternative fuel/charging infrastructure

Addition of passing lanes, truck climbing lanes, or truck brake-check lanes in rural areas that do not increase overall vehicle capacity along the corridor

Attachment D:CAPCOA Mitigation Measures

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- C. Transportation Methods
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- E. Select Data Tables

Chapter 6: Understanding and Using the Fact Sheets

This chapter of the Report explains how the quantification of individual strategies is presented in Fact Sheets, how those fact sheets are designed and organized, and how to use them. This chapter also explains how and why mitigation measures have been grouped, and provides detailed discussion of how to apply the quantification methods when more than one strategy is being applied to the same project. A summary of the range of effectiveness for different measures is also provided for general information purposes, in table form, however it is very important that those generalized ranges NOT be used in place of the more specific quantification methods for the measure as detailed in the measure Fact Sheet. Finally, at the end of the Chapter there are step-by-step instructions on using the Fact Sheets, including an example.

Mitigation Strategies and Fact Sheets:

Accurate and reliable quantification depends on properly identifying the important variables that affect the emissions from an activity or source, and from changes to that activity or source. In order to provide a clear summary of those variables and usable instructions on how to find and apply the data needed, we have designed a Fact Sheet format to present each strategy or measure.

Types of Mitigation Strategies: There are three different types of mitigation strategies described in Chapter 7: Quantified measures, Best Management Practices, and General Plan strategies.

Quantified Measures: Quantified measures are fully quantified, project-level mitigation strategies. They are presented in categories where the nature of the underlying emissions sources are the same; the categories are discussed under “Organization of Fact Sheets” below. In addition, the measures may either stand alone, or be considered in connection with one or more other measures (that is, “grouped”). Groups of measures are always within a category; more detailed explanation is provided in “Grouping of Strategies” below. The majority of the strategies in this Report are fully Quantified Measures, and a strategy may be assumed to be of this type unless the Fact Sheet notes otherwise.

Best Management Practices: Several strategies are denoted as Best Management Practice (BMP). These measures are of two types. The first type of BMPs are quantifiable and describe methods that can be used to quantify the GHG mitigation reductions provided the project Applicant can provide substantial evidence supporting the values needed to quantify the reduction. These are listed as BMPs since there is not adequate literature at this time to generalize the mitigation measure reductions. However, the project Applicant may be able to provide the site specific information necessary to quantify a reduction. The second type of BMPs do not have methods for quantifying GHG mitigation reductions. These measures have preliminary evidence suggesting they will reduce GHG emissions if implemented, however, at this time adequate literature and methodologies are not available to quantify these reductions or

they involve life-cycle GHG emission benefits. The measures are encouraged to be implemented nonetheless. Local Agencies may decide to provide incentives to encourage implementation of these measures.

General Plan Strategies: The measures listed under the General Plan category are measures that will have the most benefit when implemented at a General Plan level, but are not quantifiable or applicable at the project specific level. While on a project basis some of these measures may not be quantifiable, at the General Plan level they may be quantified under the assumption that this will be implemented on a widespread basis. Local Agencies may decide to provide incentives or allocate the General Plan level reductions to specific projects by weighting the overall effect by the number of projects the General Plan reduction would apply to.

Introduction to the Fact Sheets: This Report presents the quantification of each mitigation measure in a Fact Sheet format. Each Fact Sheet includes: a detailed summary of each measure's applicability; the calculation inputs for the specific project; the baseline emissions method; the mitigation calculation method and associated assumptions; a discussion of the calculation and an example calculation; and finally a summary of the preferred and alternative literature sources for measure efficacy. The Fact Sheets are found in Chapter 7.

Layout of the Fact Sheets: Each Fact Sheet describes one mitigation measure. The mitigation measure has a unique number and is provided at the bottom of each page in that measure's Fact Sheet. This will assist the end user in determining where a mitigation measure fact sheet begins and ends while still preserving consecutive page numbers in the overall Report.

At the top of each Fact Sheet, the name of the measure category appears on the left, and the subcategory on the right. Cross-references to prior CAPCOA documents appear at the top left, below the category name. Specifically, measures labeled CEQA #: are from the *CAPCOA 2008 CEQA & Climate Change*¹ and measures labeled MP#: are from the *CAPCOA 2009 Model Policies for Greenhouse Gases in General Plans*². This cross-referencing is also included in the list of measures at the beginning of Chapter 7, and is intended to allow the user to move easily between the documents. The measure number is at the bottom of the page, on the right-hand side.

The fact sheets begin with a measure description. This description includes two critical components:

- (1) Specific language regarding the measure implementation – which should be consistent with the implementation method suggested by the project Applicant; and

¹ Available online at <http://www.capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-White-Paper.pdf>

² Available online at <http://www.capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-ModelPolicies-6-12-09-915am.pdf>

(2) A discussion of key support strategies that are required for the reported range of effectiveness.

Appendices with additional calculations and assumptions for some of the fact sheets are provided at the end of this document. Default assumptions should be carefully reviewed for project applicability. Appendix B details the methodologies that should be used to calculate baseline GHG emissions for a project.

Organization of the Fact Sheets – Categories and Subcategories: The Fact Sheets are organized by general emission category types as follows:

- Energy
- Transportation
- Water
- Landscape Equipment
- Solid Waste
- Vegetation
- Construction
- Miscellaneous Categories
- General Plans

Several of these main categories are split into subcategories, for ease of understanding how to properly address the effects of combining the measures. Strategies are organized into categories and subcategories where they affect similar types of emissions sources. As an example, the category of “Energy” includes measures that reduce emissions associated with energy generation and use. Within that category, there are subcategories of measures that address “Building Energy Use,” “Alternative Energy,” and “Lighting,” each with one or more measures in it. The measures in the subcategory are closely related to each other.

Categories and subcategories for the measures are illustrated in Charts 6-1 and 6-2, below. Chart 6-1 shows all of the measure categories EXCEPT the Transportation category, including their subcategories; note that not all categories have subcategories. Measures in the Transportation category are shown in Chart 6-2. There are a number of subcategories associated with the Transportation category. As shown in Chart 6-2, the primary measures in each subcategory are indicated in bold type, and the measures shown in normal type are either support measures, or they are explicitly “grouped” measures.

It is important to note that subcategories are NOT the same as “grouped” measures / strategies. The grouping of strategies connotes a specific relationship, and is explained in the next section, below.

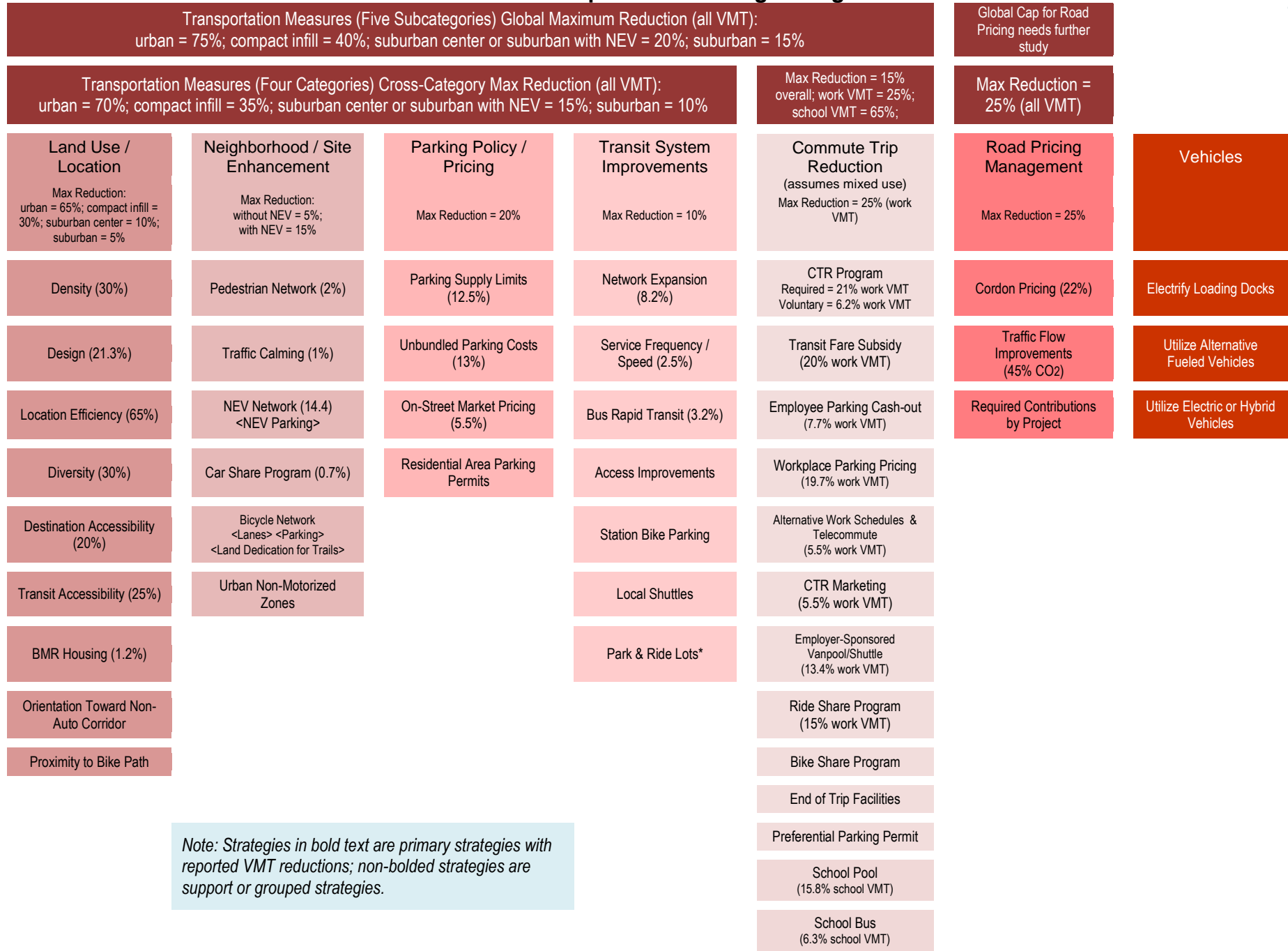
Understanding and Using the Fact Sheets

Chart 6-1: Non-Transportation Strategies Organization

Energy			Water		Area Landscaping	Solid Waste	Vegetation	Construction	Miscellaneous	General Plans
BE	AE	LE	WSW	WUW	A	SW	V	C	Misc	GP
Building Energy	Alternative Energy	Lighting	Water Supply	Water Use	Landscaping Equipment	Solid Waste	Vegetation	Construction	Miscellaneous	General Plans
Exceed Title 24	Onsite Renewable Energy	Install High Efficacy Lighting	Adopt a Water Conservation Strategy		Prohibit gas Powered Landscape Equipment	Institute or Extend Recycling & Composting Services	Plant Urban Trees	Use Alternative Fuels for Construction Equipment	Establish Carbon Sequestration	Fund Incentives for Energy Efficiency
OR										
Install Energy Efficient Appliances	Utilize Combined Heat & Power	Limit Outdoor Lighting	Use Reclaimed Water	Install Low-Flow Fixtures	Implement Lawnmower Exchange Program Reduction: Grouped	Recycle Demolished Construction Material	New Vegetated Open Space	Use Electric or Hybrid Construction Equipment	Establish Off-site Mitigation	Establish a Local Farmer's Market
Install Programmable Thermostats Reduction: Grouped	Establish Methane Recovery	Replace Traffic Lights with LED Reduction: Additional	Use Graywater	Design Water-Efficient Landscapes	Electric Yard Equipment Compatibility Reduction Grouped			Limit Construction Equipment Idling	Implement an Innovative Strategy	Establish Community Gardens
Obtain 3rd Party Commissioning Reduction: Grouped			Use Locally Sourced Water	Use Water-Efficient Irrigation				Institute a Heavy-Duty Off-Road Vehicle Plan	Use Local and Sustainable Building Materials	Plant Urban Shade Trees
				Reduce Turf				Implement a Construction Vehicle Inventory Tracking System	Require BMP in Agriculture and Animal Operations	Implement Strategies to Reduce Urban Heat-Island Effect
				Plant Native or Drought-Resistant Vegetation					Require Environmentally Responsible Purchasing	

Note: Strategies in bold text are primary strategies with reported VMT reductions; non-bolded strategies are support or grouped strategies.

Chart 6-2: Transportation Strategies Organization



Note: Strategies in bold text are primary strategies with reported VMT reductions; non-bolded strategies are support or grouped strategies.

Grouping of Strategies

Strategies noted as “grouped” are separately documented in individual Fact Sheets but must be paired with other strategies within the category. When these “grouped” strategies are implemented together, the combination will result in either an enhancement to the primary strategy by improving its effectiveness or a non-negligible reduction in effectiveness that would not occur without the combination.

Rules for Combining Strategies or Measures

Mitigation measures or strategies are frequently implemented together with other measures. Often, combining measures can lead to better emission reductions than implementing a single measure by itself. Unfortunately, the effects of combining the measures are not always as straightforward as they might at first appear. When more and more measures are implemented to mitigate a particular source of emissions, the benefit of each additional measure diminishes. If it didn't, some odd results would occur. For example, if there were a series of measures that each, independently, was predicted to reduce emissions from a source by 10%, and if the effect of each measure was independent of the others, then implementing ten measures would reduce all of the emissions; and what would happen with the eleventh measure? Would the combination reduce 110% of the emissions? No. In fact, each successive measure is slightly less effective than predicted when implemented on its own.

On the other hand, some measures enhance the performance of a primary measure when they are combined. This Report includes a set of rules that govern different ways of combining measures. The rules depend on whether the measures are in the *same* category, or different categories. Remember, the categories include: Energy, Transportation, Water, Landscape Equipment, Solid Waste, Vegetation, Construction, Miscellaneous Categories, and General Plans.

Combinations Between Categories: The following procedures must be followed when combining mitigation measures that fall in separate categories. In order to determine the overall reduction in GHG emissions compared to the baseline emissions, the relative magnitude of emissions between the source categories needs to be considered. To do this, the user should determine the percent contribution made by each individual category to the overall baseline GHG emissions. This percent contribution by a category should be multiplied by the reduction percentages from mitigation measures in that category to determine the scaled GHG emission reductions from the measures in that category. This is done for each category to be combined. The scaled GHG emissions for each category can then be added together to give a total GHG reduction for the combined measures in all of the categories.

For example, consider a project whose total GHG emissions come from the following categories: transportation (50%), building energy use (40%), water (6%), and other (4%). This project implements a transportation mitigation measure that results in a 10% reduction in VMT. The project also implements mitigation measures that result in a 30% reduction in water usage. The overall reduction in GHG emissions is as follows:

Reduction from Transportation: $0.50 \times 0.10 = 0.05$ or 5%
 Reduction from Water: $0.06 \times 0.30 = 0.018$ or 1.8%

Total Reduction: $5\% + 1.8\% = 6.8\%$

This example illustrates the importance of the magnitude of a source category and its influence on the overall GHG emission reductions.

The percent contributions from source categories will vary from project to project. In a commercial-only project it may not be unusual for transportation emissions to represent greater than 75% of all GHG emissions whereas for a residential or mixed use project, transportation emissions would be below 50%.

Combinations Within Categories: The following procedures must be followed when combining mitigation measures that fall within the same category.

Non-Transportation Combinations: When combining non-transportation subcategories, the total amount of reductions for that category should not exceed 100% except for categories that would result in additional excess capacity that can be used by others, but which the project wants to take credit for (subject to approval of the reviewing agency). This may include alternative energy generation systems tied into the grid, vegetation measures, and excess graywater or recycled water generated by the project and used by others. These excess emission reductions may be used to offset other categories of emissions, with approval of the agency reviewing the project. In these cases of excess capacity, the quantified amounts of excess emissions must be carefully verified to ensure that any credit allowed for these additional reductions is truly surplus.

Category Maximum- Each category has a maximum allowable reduction for the combination of measures in that category. It is intended to ensure that emissions are not double counted when measures within the category are combined. Effectiveness levels for multiple strategies within a subcategory (as denoted by a column in the appropriate chart, above) may be multiplied to determine a combined effectiveness level up to a maximum level. This should be done first to mitigation measures that are a source reduction followed by those that are a reduction to emission factors. Since the combination of mitigation measures and independence of mitigation measures are both complicated, this Report recommends that mitigation measure reductions within a category be multiplied unless a project applicant can provide substantial evidence indicating that emission reductions are independent of one another. This will take the following form:

$$\text{GHG emission reduction for category} = 1 - [(1-A) \times (1-B) \times (1-C)]$$

Where:

A, B and C = Individual mitigation measure reduction percentages for the strategies to be combined in a given category.

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Global Maximum- A separate maximum, referred to as a global maximum level, is also provided for a combination across subcategories. Effectiveness levels for multiple strategies across categories may also be multiplied to determine a combined effectiveness level up to global maximum level.

For example, consider a project that is combining 3 mitigation strategies from the water category. This project will install low-flow fixtures (measure WUW-1), use water-efficient irrigation (measure WUW-4, and reduce turf (measure WUW-5). Reductions from these measures will be:

- low-flow fixtures 20% or 0.20 (A)
- water efficient irrigation 10% or 0.10 (B)
- turf reductions 20% or 0.20 (C)

To combine measures within a category, the reductions would be

$$\begin{aligned}
 &= 1-[(1-A) \times (1-B) \times (1-C)] \\
 &= 1-[(1-.20) \times (1-.10) \times (1-.20)] \\
 &= 1-[(0.8) \times (0.9) \times (.8)] \\
 &= 1-0.576 = 0.424 \\
 &= 42.4\%
 \end{aligned}$$

Transportation Combinations: The interactions between the various categories of transportation-related mitigation measures is complex and sometimes counter-intuitive. Combining these measures can have a substantive impact on the quantification of the associated emission reductions. In order to safeguard the accuracy and reliability of the methods, while maintaining their ease of use, the following rules have been developed and should be followed when combining transportation-related mitigation measures. The rules are presented by sub-category, and reference Chart 6-2 Transportation Strategies Organization. The maximum reduction values also reflect the highest reduction levels justified by the literature. The chart indicates maximum reductions for individual mitigation measures just below the measure name.

Cross-Category Maximum- A cross-category maximum is provided for any combination of land use, neighborhood enhancements, parking, and transit strategies (columns A-D in Chart 6-1, with the maximum shown in the top row). The total project VMT reduction across these categories should be capped at these levels based on empirical evidence.³ Caps are provided for the location/development type of the project. VMT reductions may be multiplied across the four categories up to this maximum. These include:

- Urban: 70% VMT
- Compact Infill: 35%
- Suburban Center (or Suburban with NEV): 15%
- Suburban: 10% (note that projects with this level of reduction must include a diverse land use mix, workforce housing, and project-specific transit; limited empirical evidence is available)

(See blue box, pp. 58-59.)

³ As reported by Holtzclaw, et al for the State of California.

As used in this Report, location settings are defined as follows:

Urban: A project located within the central city and may be characterized by multi-family housing, located near office and retail. Downtown Oakland and the Nob Hill neighborhood in San Francisco are examples of the typical urban area represented in this category. The urban maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average (assumed analogous to an ITE baseline) for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Central Berkeley	-48%
San Francisco	-49%
Pacific Heights (SF)	-79%
North Beach (SF)	-82%
Mission District (SF)	-75%
Nob Hill (SF)	-63%
Downtown Oakland	-61%

The average reflects a range of 48% less VMT/capita (Central Berkeley) to 82% less VMT/capita (North Beach, San Francisco) compared to the statewide average. The urban locations listed above have the following characteristics:

- o Location relative to the regional core: these locations are within the CBD or less than five miles from the CBD (downtown Oakland and downtown San Francisco).
- o Ratio or relationship between jobs and housing: jobs-rich (jobs/housing ratio greater than 1.5)
- o Density character
 - typical building heights in stories: six stories or (much) higher
 - typical street pattern: grid
 - typical setbacks: minimal
 - parking supply: constrained on and off street
 - parking prices: high to the highest in the region
- o Transit availability: high quality rail service and/or comprehensive bus service at 10 minute headways or less in peak hours

Compact infill: A project located on an existing site within the central city or inner-ring suburb with high-frequency transit service. Examples may be community redevelopment areas, reusing abandoned sites, intensification of land use at established transit stations, or converting underutilized or older industrial buildings. Albany and the Fairfax area of Los Angeles are examples of typical compact infill area as used here. The compact infill maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Franklin Park, Hollywood	-22%
Albany	-25%
Fairfax Area, Los Angeles	-29%
Hayward	-42%

The average reflects a range of 22% less VMT/capita (Franklin Park, Hollywood) to 42% less VMT/capita (Hayward) compared to the statewide average. The compact infill locations listed above have the following characteristics:

- o Location relative to the regional core: these locations are typically 5 to 15 miles outside a regional CBD
- o Ratio or relationship between jobs and housing: balanced (jobs/housing ratio ranging from 0.9 to 1.2)
- o Density character
 - typical building heights in stories: two to four stories
 - typical street pattern: grid
 - typical setbacks: 0 to 20 feet
 - parking supply: constrained
 - parking prices: low to moderate
- o Transit availability: rail service within two miles, or bus service at 15 minute peak headways or less

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As used in this Report, additional location settings are defined as follows:

Suburban Center: A project typically involving a cluster of multi-use development within dispersed, low-density, automobile dependent land use patterns (a suburb). The center may be an historic downtown of a smaller community that has become surrounded by its region's suburban growth pattern in the latter half of the 20th Century. The suburban center serves the population of the suburb with office, retail and housing which is denser than the surrounding suburb. The suburban center maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Sebastopol	0%
San Rafael (Downtown)	-10%
San Mateo	-17%

The average reflects a range of 0% less VMT/capita (Sebastopol) to 17% less VMT/capita (San Mateo) compared to the statewide average. The suburban center locations listed above have the following characteristics:

- Location relative to the regional core: these locations are typically 20 miles or more from a regional CBD
- Ratio or relationship between jobs and housing: balanced
- Density character
 - typical building heights in stories: two stories
 - typical street pattern: grid
 - typical setbacks: 0 to 20 feet
 - parking supply: somewhat constrained on street; typically ample off-street
 - parking prices: low (if priced at all)
- Transit availability: bus service at 20-30 minute headways and/or a commuter rail station

While all three locations in this category reflect a suburban "downtown," San Mateo is served by regional rail (Caltrain) and the other locations are served by bus transit only. Sebastopol is located more than 50 miles from downtown San Francisco, the nearest urban center. San Rafael and San Mateo are located 20 miles from downtown San Francisco.

Suburban: A project characterized by dispersed, low-density, single-use, automobile dependent land use patterns, usually outside of the central city (a suburb). Suburbs typically have the following characteristics:

- Location relative to the regional core: these locations are typically 20 miles or more from a regional CBD
- Ratio or relationship between jobs and housing: jobs poor
- Density character
 - typical building heights in stories: one to two stories
 - typical street pattern: curvilinear (cul-de-sac based)
 - typical setbacks: parking is generally placed between the street and office or retail buildings; large-lot residential is common
 - parking supply: ample, largely surface lot-based
 - parking prices: none
- Transit availability: limited bus service, with peak headways 30 minutes or more

The maximum reduction provided for this category assumes that regardless of the measures implemented, the project's distance from transit, density, design, and lack of mixed use destinations will keep the effect of any strategies to a minimum.

Global Maximum- A global maximum is provided for any combination of land use, neighborhood enhancements, parking, transit, and commute trip reduction strategies (the first five columns in the organization chart). This excludes reductions from road-pricing measurements which are discussed separately below. The total project VMT reduction across these categories, which can be combined through multiplication, should be capped

at these levels based on empirical evidence.⁴ Maximums are provided for the location/development type of the project. The Global Maximum values can be found in the top row of Chart 6-2.

These include:

- Urban: 75% VMT
- Compact Infill: 40% VMT
- Suburban Center (or Suburban with NEV): 20%
- Suburban: 15% (limited empirical evidence available)

Specific Rules for Subcategories within Transportation- Because of the unique interactions of measures within the Transportation Category, each subcategory has additional rules or criteria for combining measures.

❖ **Land Use/Location Strategies – Maximum Reduction Factors:** Land use measures apply to a project area with a radius of ½ mile. If the project area under review is greater than this, the study area should be divided into subareas of radii of ½ mile, with subarea boundaries determined by natural “clusters” of integrated land uses within a common watershed. If the project study area is smaller than ½ mile in radius, other land uses within a ½ mile radius of the key destination point in the study area (i.e. train station or employment center) should be included in design, density, and diversity calculations. Land use measures are capped based on empirical evidence for location setting types as follows:⁵

- Urban: 65% VMT
- Compact Infill: 30% VMT
- Suburban Center: 10% VMT
- Suburban: 5% VMT

❖ **Neighborhood/Site Enhancements Strategies – Maximum Reduction Factors:** The neighborhood/site enhancements category is capped at 12.7% VMT reduction (with Neighborhood Electric Vehicles (NEVs)) and 5% without NEVs based on empirical evidence (for NEVs) and the multiplied combination of the non-NEV measures.

❖ **Parking Strategies – Maximum Reduction Factors:** Parking strategies should be implemented in one of two combinations:

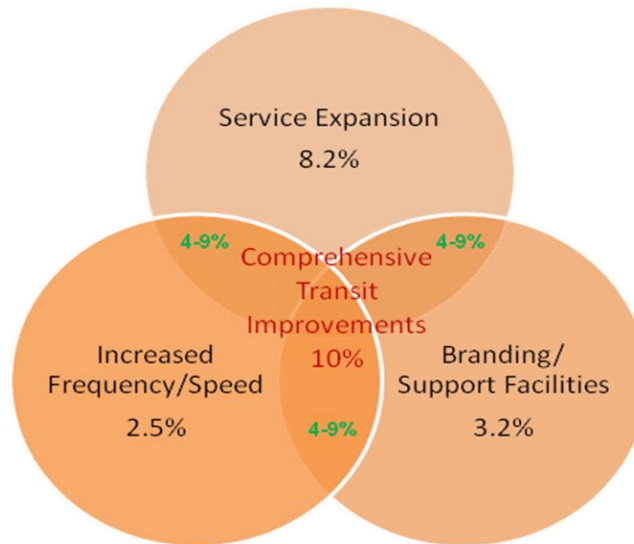
- Limited (reduced) off-street supply ratios plus residential permit parking and priced on-street parking (to limit spillover), or
- Unbundled parking plus residential permit parking and priced on-street parking (to limit spillover).

⁴ As reported by Holtzclaw, et al for the State of California. Note that CTR strategies must be converted to overall VMT reductions (from work-trip VMT reductions) before being combined with strategies in other categories.

⁵ As reported for California locations in Holtzclaw, et al. “Location Efficiency: Neighborhood and Socioeconomic Characteristics Determine Auto Ownership and Use – Studies in Chicago, Los Angeles, and San Francisco.” *Transportation Planning and Technology*, 2002, Vol. 25, pp. 1–27.

Note: The reduction maximum of 20% VMT reflects the combined (multiplied) effect of unbundled parking and priced on-street parking.

- ❖ Transit System Strategies – Maximum Reduction Factors: The 10% VMT reduction maximum for transit system improvements reflects the combined (multiplied) effect of network expansion and service frequency/speed enhancements. A comprehensive transit improvement would receive this type of reduction, as shown in the center overlap in the Venn diagram, below.



- ❖ Commuter Trip Reductions (CTR) Strategies – Maximum Reduction Factors: The most effective commute trip reduction measures combine incentives, disincentives, and mandatory monitoring, often through a transportation demand management (TDM) ordinance. Incentives encourage a particular action, for example parking cash-out, where the employee receives a monetary incentive for not driving to work, but is not punished for maintaining status quo. Disincentives establish a penalty for a status quo action. An example is workplace parking pricing, where the employee is now monetarily penalized for driving to work. The 25% maximum for work-related VMT applies to comprehensive CTR programs. TDM strategies that include only incentives, only disincentives, and/or no mandatory monitoring, should have a lower total VMT reduction than those with a comprehensive approach. Support strategies to strengthen CTR programs include guaranteed-ride-home, taxi vouchers, and message boards/marketing materials. A 25% reduction in work-related VMT is assumed equivalent to a 15% reduction in overall project VMT for the purpose of the global maximum; this can be adjusted for project-specific land use mixes.

Two school-related VMT reduction measures are also provided in this category. The maximum reduction for these measures should be 65% of school-related VMT based on the literature.

- ❖ Road Pricing/Management Strategies – Maximum Reduction Factors: Cordon pricing is the only strategy in this category with an expected VMT reduction potential. Other forms of road pricing would be applied at a corridor or region-wide level rather than as mitigation applied to an individual development project. No domestic case studies are available for cordon pricing, but international studies suggest a VMT reduction maximum of 25%. A separate, detailed, and project-specific study should be conducted for any project where road pricing is proposed as a VMT reduction measure.

Additional Rules for Transportation Measures- There are also restrictions on the application of measures in rural applications, and application to baseline, as follows:

- ❖ Rural Application: Few empirical studies are available to suggest appropriate VMT reduction caps for strategies implemented in rural areas. Strategies likely to have the largest VMT reduction in rural areas include vanpools, telecommute or alternative work schedules, and master planned communities (with design and land use diversity to encourage intra-community travel). NEV networks may also be appropriate for larger scale developments. Because of the limited empirical data in the rural context, project-specific VMT reduction estimates should be calculated.
- ❖ Baseline Application: As discussed in previous sections of this report, VMT reductions should be applied to a baseline VMT expected for the project, based on the Institute of Transportation Engineers’ 8th Edition *Trip Generation Manual* and associated typical trip distance for each land use type. Where trip generation rates and project VMT provided by the project Applicant are derived from another source, the VMT reductions must be adjusted to reflect any “discounts” already applied.

Range of Effectiveness of Mitigation Measures

The following charts provide the range of effectiveness for the quantified mitigation measures. Each chart shows one category of measures, with subcategories identified. The charts also show the basis for the quantification, and indicate applicable groupings. IMPORTANT: these ranges are approximate and should NOT be used in lieu of the specific quantification method provided in the fact sheet for each measure. Restrictions on combining measures must be observed.

Table 6-1: Energy Category

Energy						
Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
Building Energy Use	BE-1	Buildings exceed Title 24 Building Envelope Energy Efficiency Standards by X% (X is equal to the percentage improvement selected for the project)			For a 10% improvement over 2008 Title 24: Non-Residential electricity use: 0.2-5.5%; natural gas use: 0.7-10% Residential electricity use: 0.3-2.6%; natural gas use: 7.5-9.1%	
	BE-2	Install Programmable Thermostat Timers	X		BMP	
	BE-3	Obtain Third-party HVAC Commissioning and Verification of Energy Savings	X	BE-1	BMP	
	BE-4	Install Energy Efficient Appliances			Residential building: 2-4% Grocery Stores: 17-22%	Appliance Electricity Use
	BE-5	Install Energy Efficient Boilers			1.2-18.4%	Fuel Use
Alternative Energy Generation	AE-1	Establish Onsite Renewable Energy Systems-Generic			0-100%	
	AE-2	Establish Onsite Renewable Energy Systems-Solar Power			0-100%	
	AE-3	Establish Onsite Renewable Energy Systems-Wind Power			0-100%	
	AE-4	Utilize a Combined Heat and Power System			0-46%	
	AE-5	Establish Methane Recovery in Landfills			73-77%	
	AE-6	Establish Methane Recovery in Wastewater Treatment Plants			95-97%	
Lighting	LE-1	Install Higher Efficacy Public Street and Area Lighting			16-40%	Outdoor Lighting Electricity Use
	LE-2	Limit Outdoor Lighting Requirements	X		BMP	
	LE-3	Replace Traffic Lights with LED Traffic Lights			90%	Traffic Light Electricity Use

Table 6-2: Transportation Category

Transportation						
Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
Land Use / Location	LUT-1	Increase Density			1.5-30.0%	VMT
	LUT-2	Increase Location Efficiency			10-65%	VMT
	LUT-3	Increase Diversity of Urban and Suburban Developments (Mixed Use)			9-30%	VMT
	LUT-4	Incr. Destination Accessibility			6.7-20%	VMT
	LUT-5	Increase Transit Accessibility			0.5-24.6%	VMT
	LUT-6	Integrate Affordable and Below Market Rate Housing			0.04-1.20%	VMT
	LUT-7	Orient Project Toward Non-Auto Corridor			NA	
	LUT-8	Locate Project near Bike Path/Bike Lane			NA	
	LUT-9	Improve Design of Development			3.0-21.3%	VMT
Neighborhood / Site Design	SDT-1	Provide Pedestrian Network Improvements			0-2%	VMT
	SDT-2	Traffic Calming Measures			0.25-1.00%	VMT
	SDT-3	Implement a Neighborhood Electric Vehicle (NEV) Network			0.5-12.7%	VMT
	SDT-4	Urban Non-Motorized Zones		SDT-1	NA	
	SDT-5	Incorporate Bike Lane Street Design (on-site)		LUT-9	NA	
	SDT-6	Provide Bike Parking in Non-Residential Projects		LUT-9	NA	
	SDT-7	Provide Bike Parking in Multi-Unit Residential Projects		LUT-9	NA	
	SDT-8	Provide EV Parking		SDT-3	NA	
	SDT-9	Dedicate Land for Bike Trails		LUT-9	NA	
Parking Policy / Pricing	PDT-1	Limit Parking Supply			5-12.5%	
	PDT-2	Unbundle Parking Costs from Property Cost			2.6-13%	
	PDT-3	Implement Market Price Public Parking (On-Street)			2.8-5.5%	
	PDT-4	Require Residential Area Parking Permits		PDT-1, 2 & 3	NA	

Transportation - continued						
Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
Trip Reduction Programs	TRT-1	Implement Voluntary CTR Programs			1.0-6.2%	Commute VMT
	TRT-2	Implement Mandatory CTR Programs – Required Implementation/Monitoring			4.2-21.0%	Commute VMT
	TRT-3	Provide Ride-Sharing Programs			1-15%	Commute VMT
	TRT-4	Implement Subsidized or Discounted Transit Prog.			0.3-20.0%	Commute VMT
	TRT-5	Provide End of Trip Facilities		TRT-1, 2 & 3	NA	
	TRT-6	Telecommuting and Alternative Work Schedules			0.07-5.50%	Commute VMT
	TRT-7	Implement Commute Trip Reduction Marketing			0.8-4.0%	Commute VMT
	TRT-8	Implement Preferential Parking Permit Program		TRT-1, 2 & 3	NA	
	TRT-9	Implement Car-Sharing Program			0.4-0.7%	VMT
	TRT-10	Implement School Pool Program			7.2-15.8%	School VMT
	TRT-11	Provide Employer-Sponsored Vanpool/Shuttle			0.3-13.4%	Commute VMT
	TRT-12	Implement Bike-Sharing Program		SDT-5, LUT-9	NA	
	TRT-13	Implement School Bus Program			38-63%	School VMT
	TRT-14	Price Workplace Parking			0.1-19.7%	Commute VMT
	TRT-15	Implement Employee Parking “Cash-Out”			0.6-7.7%	Commute VMT

Transportation - continued

Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
Transit System Improvements	TST-1	Provide a Bus Rapid Transit System			0.02-3.2%	VMT
	TST-2	Implement Transit Access Improvements		TST-3, TST-4	NA	
	TST-3	Expand Transit Network			0.1-8.2%	VMT
	TST-4	Increase Transit Service Frequency/Speed			0.02-2.5%	VMT
	TST-5	Provide Bike Parking Near Transit		TST-3, TST-4	NA	
	TST-6	Provide Local Shuttles		TST-3, TST-4	NA	
Road Pricing / Management	RPT-1	Implement Area or Cordon Pricing			7.9-22.0%	VMT
	RPT-2	Improve Traffic Flow			0-45%	VMT
	RPT-3	Require Project Contributions to Transportation Infrastructure Improvement Projects		RPT-2, TST-1 to 6	NA	
	RPT-4	Install Park-and-Ride Lots		RPT-1, TRT-11, TRT-3, TST-1 to 6	NA	
Vehicles	VT-1	Electrify Loading Docks and/or Require Idling-Reduction Systems			26-71%	Truck Idling Time
	VT-2	Utilize Alternative Fueled Vehicles			Varies	
	VT-3	Utilize Electric or Hybrid Vehicles			0.4-20.3%	Fuel Use

Table 6-3: Water Category

Water						
Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
Water Supply	WSW-1	Use Reclaimed Water			up to 40% for Northern California up to 81% for Southern California	Outdoor Water Use
	WSW-2	Use Gray Water			0-100%	Outdoor Water Use
	WSW-3	Use Locally-Sourced Water Supply			0-60% for Northern and Central California; 11-75% for Southern California	Indoor and Outdoor Water Use
Water Use	WUW-1	Install Low-Flow Water Fixtures.			Residential: 20% Non-Residential: 17-31%	Indoor Water Use
	WUW-2	Adopt a Water Conservation Strategy.			varies	
	WUW-3	Design Water-Efficient Landscapes			0-70%	Outdoor Water Use
	WUW-4	Use Water-Efficient Landscape Irrigation Systems			6.1%	Outdoor Water Use
	WUW-5	Reduce Turf in Landscapes and Lawns			varies	
	WUW-6	Plant Native or Drought-Resistant Trees and Vegetation			BMP	

Table 6-4: Area Landscaping

Area Landscaping						
Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
Area Landscaping	A-1	Prohibit Gas Powered Landscape Equipment.			LADWP: 2.5-46.5% PG&E: 64.1-80.3% SCE: 49.5-72.0% SDGE: 38.5-66.3% SMUD: 56.3-76.0%	Fuel Use
	A-2	Implement Lawnmower Exchange Program			BMP	
	A-3	Electric Yard Equipment Compatibility		A-1 or A-2	BMP	

Table 6-5: Solid Waste Category

Solid Waste						
Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
Solid Waste	SW-1	Institute or Extend Recycling and Composting Services			BMP	
	SW-2	Recycle Demolished Construction Material			BMP	

Table 6-6: Vegetation Category

Vegetation						
Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
Vegetation	V-1	Urban Tree Planting		GP-4	varies	
	V-2	Create new vegetated open space.			varies	

Table 6-7: Construction Category

Construction						
Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
Construction	C-1	Use Alternative Fuels for Construction Equipment			0-22%	Fuel Use
	C-2	Use Electric and Hybrid Construction Equipment			2.5-80%	Fuel Use
	C-3	Limit Construction Equipment Idling beyond Regulation Requirements			varies	
	C-4	Institute a Heavy-Duty Off-Road Vehicle Plan		Any C	BMP	
	C-5	Implement a Vehicle Inventory Tracking System		Any C	BMP	

Table 6-8: Miscellaneous Category

Miscellaneous						
Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
Miscellaneous	Misc-1	Establish a Carbon Sequestration Project			varies	
	Misc-2	Establish Off-Site Mitigation			varies	
	Misc-3	Use Local and Sustainable Building Materials	x		BMP	
	Misc-4	Require Best Management Practices in Agriculture and Animal Operations	x		BMP	
	Misc-5	Require Environmentally Responsible Purchasing	x		BMP	
	Misc-6	Implement an Innovative Strategy for GHG Mitigation	x		BMP	

Table 6-9: General Plans

General Plan Strategies						
Category	Measure Number	Strategy	BMP	Grouped With #	Range of Effectiveness	
					Percent Reduction in GHG Emissions	Basis
General Plans	GP-1	Fund Incentives for Energy Efficiency	x		BMP	
	GP-2	Establish a Local Farmer's Market	x		BMP	
	GP-3	Establish Community Gardens	x		BMP	
	GP-4	Plant Urban Shade Trees	x	V-1	BMP	
	GP-5	Implement Strategies to Reduce Urban Heat-Island Effect	x		BMP	

Applicability of Quantification Fact Sheets Outside of California

In order to apply the quantification methods in this Report to projects located outside of California, the assumptions and methods in the baseline methodology and in the Fact Sheets should be reviewed prior to applying them. First, evaluate the basis for use metrics and emission factors for applicability outside of California. The Report references various sources for use metrics and emission factors; if these are California-specific, the method should be evaluated to determine if these same use metrics and emission factors are applicable to the project area. If they are not applicable, factors appropriate for the project area should be substituted in the baseline and project methods. Key factors to consider are climate zone⁶, precipitation, building standards, end-user behavior, and transportation environment (land use and transportation characteristics). Use metrics likely to vary outside of California include:

- Building Energy Use
- Water Use
- Vehicle Trip Lengths and Vehicle Miles Traveled
- Building Standards
- Waste Disposal Rates
- Landscape Equipment Annual Usage

Emission factors relate the use metric to carbon intensity to estimate GHG emissions. Depending on the type of emission factor, these values may or may not change based on location. For instance, the emission factor for combustion of a specific amount of fuel does not typically change; however the engine mix may change by location, and fuel use by those engines may be different. Other emission factors are regionally dependent and alternative sources should be investigated. Emission factors likely to vary outside of California include:

- Electricity associated with water and wastewater supply and treatment
- Carbon intensity of electricity supplied
- Fleet and model year distribution of vehicles which influences emission factors

The user should be able to adjust the methodologies to: (1) calculate the baseline for a given mitigation measure; and then (2) incorporate the appropriate data and assumptions into the calculations for the emission mitigation associated with the measure.

There is at least one mitigation measure that will not be applicable outside of California unless adjustments are made by substituting location-specific factors in the baseline methodology: the improvement beyond Title 24 (BE-1) is not applicable outside of California since buildings outside California would be subject to different building codes. The project Applicant may be able to estimate a baseline energy use for building envelope systems under other building standards and estimate the change in energy use for improvements to building envelope systems using building energy software or literature surveys.

⁶ Climate zones are specific geographic areas of similar climatic characteristics, including temperature, weather, and other factors which affect building energy use. The California Energy Commission identified 16 Forecasting Climate Zones (FCZs) within California.

How to Use a Fact Sheet to Quantify a Project

This section provides step-by-step instructions and an example regarding how a fact sheet can be used. After choosing the appropriate fact sheet(s), follow these general steps. Steps may need to be adjusted for different types of fact sheets.

Step 1: Does this fact sheet apply?
Carefully read the measure’s description and applicability to ensure that you are using the correct fact sheet.

Step 2: Is the measure “grouped”?
Check Tables 6-1 to 6-9 to see if the measure is “grouped” with other measures. If it is, then all measures in the group must be implemented together.

Step 3: Review defaults
Review the default assumptions in the fact sheet.

Step 4: Data inputs
Determine the type of data and data sources necessary. Refer to Appendix B and other suggested documents.

Step 5: Calculate baseline emissions
Calculate baseline emissions using formulas provided in the fact sheet.

Step 6: Percent reductions
If applicable, calculate the percent reduction for the specific action in the measure.

Step 7: Quantify reductions
Quantify emission reductions for a particular mitigation measure using the provided formula.

Step 8: Grouped measures
If you are using a mitigation measure that is grouped with another measure, refer to Tables 6-1 to 6-9 and complete the calculations for all measures that are grouped together for a particular mitigation strategy.

Step 9: Multiple measures
See Chapter 6 for how to combine reductions from multiple measures.

IMPORTANT: Clearly document information such as data sources, data used, and calculations.

Example:

The following is an example calculation for a building project that will use Fact Sheet 2.1.1 - *Exceed Title 24 Building Envelope Energy Efficiency Standards by X%*. In this example, a large office building is being built, and it will be designed to do 10% more than Title 24 standards for both electricity and natural gas.

➤ **Step 1 – Does this fact sheet apply?**

The project and fact sheet have been reviewed, and YES, this fact sheet is appropriate to use to estimate reductions from the project.

- **Step 2 - Is the measure “grouped”?**
NO, this is a measure that does not have to be done with other measures.
- **Step 3 – Review defaults**
Default assumptions and emission factors have been reviewed and used, as appropriate.
- **Steps 4 – Data inputs**
The table below shows the data needed for the example, the sample data input, and the source of the sample data. Make sure the data use the units specified in the equation. *

Data for Fact Sheet 2.1.1 Example		
Data Needed	Input	Source of Data
Project type	Commercial land use = Large Office	User Input
Size	100,000 sq. ft	User Input
Climate Zone	1	From Figure BE 1.1
Electricity Intensity _{baseline}	8.32 kWh/SF/yr	From Fact Sheet 2.1.1
Utility Provider	PG&E	User Input
Emission Factor _{Electricity}	2.08E-4 MT CO ₂ e/kWh	Fact Sheet 2.1.1
Natural Gas Intensity _{baseline}	18.16 kBtu/SF/yr	From Fact Sheet 2.1.1
Emission Factor _{NaturalGas}	5.32E-5 MT CO ₂ e/therm	From Fact Sheet 2.1.1
% Reduction Commitment	10% over 2008 Title 24 Standards	User Input

- **Step 5 – Calculate baseline emissions**
Once all necessary information has been obtained, use the equation provided to determine the baseline emissions. Round results to the nearest MT.
 - ⇒ $\text{GHG Emissions Baseline}_{\text{Electricity}} = \text{Electricity Intensity}_{\text{Baseline}} \times \text{Size} \times \text{Emission Factor}_{\text{Electricity}}$

$$= 8.32 \text{ kWh/SF/yr} \times 100,000 \text{ SF} \times (2.08\text{E-}4 \text{ MT CO}_2\text{e/kWh})$$

$$= \mathbf{173 \text{ MT CO}_2\text{e/yr [Baseline GHG Emissions for Electricity]}$$
 - ⇒ $\text{GHG Emissions Baseline}_{\text{Natural Gas}} = \text{Natural Gas Intensity}_{\text{Baseline}} \times \text{Size} \times \text{Emission Factor}_{\text{Natural Gas}}$

$$= 18.16 \text{ kBtu/SF/yr} \times 100,000 \text{ SF} \times (5.32\text{E-}5 \text{ MT CO}_2\text{e/kBtu})$$

$$= \mathbf{97 \text{ MT CO}_2\text{e/yr [Baseline GHG Emissions for Natural Gas]}$$
 - ⇒ $\text{GHG Emissions}_{\text{Baseline}} = \text{GHG Emissions Baseline}_{\text{Electricity}} + \text{GHG Emissions Baseline}_{\text{Natural Gas}}$

$$= 173 \text{ MT CO}_2\text{e/yr} + 97 \text{ MT CO}_2\text{e/yr}$$

$$= \mathbf{270 \text{ MT CO}_2\text{e/yr}}$$
- **Step 6 – Percent reductions**

Understanding Fact Sheets

Now calculate the percent GHG emission reduction based on the stated improvement goal. In this example the goal is a 10% reduction over Title 24 Energy Efficiency Standards. See Table BE-1.1 for data used for this step.

⇒ Reduction_{Electricity} from 1% over 2008 Title 24 Standards = 0.20%
 Reduction_{NaturalGas} from 1% over 2008 Title 24 Standards = 1.00%

From Table BE-1.1

⇒ Multiply the Percent Factor from Table BE-1.1 by the Percent Reduction Commitment (10% for this example)

Reduction in GHG emissions from electricity generation:

= 0.20% x 10
 = 2%

Reduction Percentage X 10% goal

Reduction in GHG emissions from natural gas combustion:

= 1% x 10
 = 10%

Reduction Percentage X 10% goal

➤ Step 7 – Quantify reductions

Using the percent reductions, the emission reductions can be calculated, as shown below.

⇒ Total Building GHG emissions = GHG Emissions Baseline_{Electricity} x (Reduction_{Electricity})
 + GHG Emissions Baseline_{NaturalGas} x (Reduction_{NaturalGas})

= 173 MT CO₂e/yr x $\frac{(100\% - 2\%)}{100}$ + 97 MT CO₂e/yr x $\frac{(100\% - 10\%)}{100}$
 = **257 MT CO₂e/yr**

Net reductions are the difference between the baseline emissions and the emissions calculated above for what will occur with this strategy implemented.

⇒ Net reductions = Baseline – Total Building GHG Emissions

= 270 MT CO₂e/yr - 257 MT CO₂e/yr
 = **13 MT CO₂e/yr**

This shows that a 10% improvement in energy consumption over 2008 Title 24 Standards from electricity and natural gas will result in a GHG reduction of 13 MT CO₂e/yr.

➤ **Step 8 – Grouped measures**

In this example, the measure is not grouped. For grouped measures, refer to Tables 6-1 to 6-9 in Chapter 6 for how to combine reductions.

➤ **Step 9 – Multiple measures**

See “Rules for Combining Strategies or Measures” section in Chapter 6 for how to add reductions from multiple measures

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1.0 Introduction

Chapter 7 is made up of a series of Fact Sheets. Each sheet summarizes the quantification methodology for a specific mitigation measure. As described in Chapter 6, the measures are grouped into Categories, and, in some cases, into subcategories. For information about the development of the Fact Sheets, please see Chapter 4. For a discussion of specific quantification issues in select measure categories or subcategories, please refer to Chapter 5. Chapter 6 provides a detailed explanation of the organization and layout of the Fact Sheets, including rules that govern the quantification of measures that have been, or will be, implemented in combination.

In order to facilitate navigation through, and the use of, the Fact Sheets, they have been color coded to reflect the Category the measure is in, and if applicable, the subcategory. The color scheme is shown in Charts 6-1 and 6-2, and also in Table 7-1 (below).

The colored bar at the top of each Fact Sheet corresponds to the Category color as shown in Charts 6-1 and 6-2, and in Table 7-1; the Category name is shown in the colored bar at the left hand margin. The second colored bar, immediately below the first one, shows the name of the subcategory, if any, and corresponds to subcategory color in those charts and tables. The subcategory name appears at the right hand margin.

At the left hand margin, below the Category name, is a cross-reference to the corresponding measure in the previous two CAPCOA reports (*CEQA and GHG*; and *Model Policies for GHG in General Plans*). The term “MP#” refers to a measure in the Model Policies document. The term CEQA# refers to a measure in the CEQA and GHG report.

At the bottom of the page is a colored bar that corresponds to the Category, and, where applicable, there is a colored box at the right hand margin, contiguous with the colored bar. This color of the box corresponds to the subcategory, where applicable. The box contains the measure number.

The layout of information in each Fact Sheet is covered in detail in Chapter 6.

Table 7-1, below, provides an index and cross-reference for the measure Fact Sheets. It is color-coded, as explained above, and may be used as a key to more quickly and easily navigate through the Fact Sheets

Table 7-1: Measure Index & Cross Reference

Section	Category	Page #	Measure #	BMP	MP #	CEQA #
2.0	Energy	85				
2.1	Building Energy Use	85				
2.1.1	Buildings Exceed Title 24 Building Envelope Energy Efficiency Standards By X%	85	BE-1		EE-2	MM-E6
2.1.2	Install Programmable Thermostat Timers	99	BE-2	x	EE-2	-
2.1.3	Obtain Third-party HVAC Commissioning and Verification of Energy Savings	101	BE-3	x	EE-2	-
2.1.4	Install Energy Efficient Appliances	103	BE-4		EE-2.1.6	MM E-19
2.1.5	Install Energy Efficient Boilers	111	BE-5		-	-
2.2	Lighting	115				
2.2.1	Install Higher Efficacy Public Street and Area Lighting	115	LE-1		EE-2.1.5	-
2.2.2	Limit Outdoor Lighting Requirements	119	LE-2	x	EE-2.3	-
2.2.3	Replace Traffic Lights with LED Traffic Lights	122	LE-3		EE-2.1.5	-
2.3	Alternative Energy Generation	125				
2.3.1	Establish Onsite Renewable Energy Systems-Generic	125	AE-1		AE-2.1	MM E-5
2.3.2	Establish Onsite Renewable Energy Systems-Solar Power	128	AE-2		AE-2.1	MM E-5
2.3.3	Establish Onsite Renewable Energy Systems-Wind Power	132	AE-3		AE-2.1	MM E-5
2.3.4	Utilize a Combined Heat and Power System	135	AE-4		AE-2	-
2.3.5	Establish Methane Recovery in Landfills	143	AE-5		WRD-1	-
2.3.6	Establish Methane Recovery in Wastewater Treatment Plants	149	AE-6			
3.0	Transportation	155				
3.1	Land Use/Location	155				
3.1.1	Increase Density	155	LUT-1		LU-1.5 & LU-2.1.8	MM D-1 & D-4
3.1.2	Increase Location Efficiency	159	LUT-2		LU-3.3	-
3.1.3	Increase Diversity of Urban and Suburban Developments (Mixed Use)	162	LUT-3		LU-2	MM D-9 & D-4
3.1.4	Increase Destination Accessibility	167	LUT-4		LU-2.1.4	MM D-3
3.1.5	Increase Transit Accessibility	171	LUT-5		LU-1,LU-4	MM D-2
3.1.6	Integrate Affordable and Below Market Rate Housing	176	LUT-6		LU-2.1.8	MM D-7
3.1.7	Orient Project Toward Non-Auto Corridor	179	LUT-7		LU-4.2	LUT-3
3.1.8	Locate Project near Bike Path/Bike Lane	181	LUT-8		-	LUT-4
3.1.9	Improve Design of Development	182	LUT-9		-	-
3.2	Neighborhood/Site Enhancements	186				
3.2.1	Provide Pedestrian Network Improvements	186	SDT-1		LU-4	MM-T-6
3.2.2	Provide Traffic Calming Measures	190	SDT-2		LU-1.6	MM-T-8
3.2.3	Implement a Neighborhood Electric Vehicle (NEV) Network	194	SDT-3		TR-6	MM-D-6
3.2.4	Create Urban Non-Motorized Zones	198	SDT-4		LU-3.2.1 & 4.1.4	SDT-1
3.2.5	Incorporate Bike Lane Street Design (on-site)	200	SDT-5		TR-4.1	LUT-9
3.2.6	Provide Bike Parking in Non-Residential Projects	202	SDT-6		TR-4.1	MM T-1
3.2.7	Provide Bike Parking with Multi-Unit Residential Projects	204	SDT-7		TR-4.1.2	MM T-3
3.2.8	Provide Electric Vehicle Parking	205	SDT-8		TR-5.4	MM T-17 & E-11
3.2.9	Dedicate Land for Bike Trails	206	SDT-9		TR-4.1	LUT-9
3.3	Parking Policy/Pricing	207				
3.3.1	Limit Parking Supply	207	PDT-1		LU-1.7 & LU-2.1.1.4	-
3.3.2	Unbundle Parking Costs from Property Cost	210	PDT-2		LU-1.7	-
3.3.3	Implement Market Price Public Parking (On-Street)	213	PDT-3		-	-
3.3.4	Require Residential Area Parking Permits	217	PDT-4		-	PDT-1, PDT-2, PDT-3

Section	Category	Page #	Measure #	BMP	MP #	CEQA #
3.4	Commute Trip Reduction Programs	218				
3.4.1	Implement Commute Trip Reduction Program - Voluntary	218	TRT-1		-	-
	Implement Commute Trip Reduction Program – Required					
3.4.2	Implementation/Monitoring	223	TRT-2		MO-3.1	T-19
3.4.3	Provide Ride-Sharing Programs	227	TRT-3		MO-3.1	-
3.4.4	Implement Subsidized or Discounted Transit Program	230	TRT-4		MO-3.1	-
						TRT-1, TRT-2,
3.4.5	Provide End of Trip Facilities	234	TRT-5		MO-3.2	TRT-3
3.4.6	Encourage Telecommuting and Alternative Work Schedules	236	TRT-6		TR-3.5	-
3.4.7	Implement Commute Trip Reduction Marketing	240	TRT-7		-	-
						TRT-1, TRT-2,
3.4.8	Implement Preferential Parking Permit Program	244	TRT-8		TR-3.1	TRT-3
3.4.9	Implement Car-Sharing Program	245	TRT-9		-	-
3.4.10	Implement a School Pool Program	250	TRT-10		-	-
3.4.11	Provide Employer-Sponsored Vanpool/Shuttle	253	TRT-11		MO-3.1	-
3.4.12	Implement Bike-Sharing Programs	256	TRT-12		-	SDT-5, LUT-9
3.4.13	Implement School Bus Program	258	TRT-13		TR-3.4	-
3.4.14	Price Workplace Parking	261	TRT-14		-	-
3.4.15	Implement Employee Parking “Cash-Out”	266	TRT-15		TR-5.3	MM T-9
3.5	Transit System Improvements	270				
3.5.1	Provide a Bus Rapid Transit System	270	TST-1		-	MS-G3
3.5.2	Implement Transit Access Improvements	275	TST-2		LU-3.4.3	TST-3, TST-4
3.5.3	Expand Transit Network	276	TST-3		-	MS-G3
3.5.4	Increase Transit Service Frequency/Speed	280	TST-4		-	MS-G3
3.5.5	Provide Bike Parking Near Transit	285	TST-5		TR-4.1.4	TST-3, TST-4
3.5.6	Provide Local Shuttles	286	TST-6			TST-3, TST-4
3.6	Road Pricing/Management	287				
3.6.1	Implement Area or Cordon Pricing	287	RPT-1		TR-3.6	-
					TR-2.1,	
3.6.2	Improve Traffic Flow	291	RPT-2		TR-2.2	-
	Required Project Contributions to Transportation Infrastructure Improvement					RPT-2, TST-1 to
3.6.3	Projects	297	RPT-3		-	6
3.6.4		298				RPT-1, TRT-11,
	Install Park-and-Ride Lots		RPT-4		TR-1	TRT-3, TST-1 to
						6
3.7	Vehicles	300				
3.7.1	Electrify Loading Docks and/or Require Idling-Reduction Systems	300	VT-1		TR-6	-
3.7.2	Utilize Alternative Fueled Vehicles	304	VT-2		-	MM T-21
3.7.3	Utilize Electric or Hybrid Vehicles	309	VT-3		-	MM T-20
4.0	Water	332				
4.1	Water Supply	332				
4.1.1	Use Reclaimed Water	332	WSW-1		COS-1.3	MS-G-8
4.1.2	Use Gray Water	336	WSW-2		COS-2.3	-
4.1.3	Use Locally Sourced Water Supply	341	WSW-3		-	-
4.2	Water Use	347				
4.2.1	Install Low-Flow Water Fixtures	347	WUW-1		EE-2.1.6; COS 2.2	MM-E23
4.2.2	Adopt a Water Conservation Strategy	362	WUW-2		COS-1.	MS-G-8
4.2.3	Design Water-Efficient Landscapes	365	WUW-3		COS-2.1	-
4.2.4	Use Water-Efficient Landscape Irrigation Systems	372	WUW-4		COS-3.1	MS-G-8
4.2.5	Reduce Turf in Landscapes and Lawns	376	WUW-5		-	-
4.2.6	Plant Native or Drought-Resistant Trees and Vegetation	381	WUW-6	x	COS-3.1	MM D-16

Section	Category	Page #	Measure #	BMP	MP #	CEQA #
5.0	Area Landscaping	384				
5.1	Landscaping Equipment	384				
5.1.1	Prohibit Gas Powered Landscape Equipment.	384	A-1		-	-
5.1.2	Implement Lawnmower Exchange Program	389	A-2	x	EE-4.2	MM D-13 A-1 or A-2; MM D-14
5.1.3	Electric Yard Equipment Compatibility	391	A-3	x	MO-2.4	D-14
6.0	Solid Waste	392				
6.1	Solid Waste	392				
6.1.1	Institute or Extend Recycling and Composting Services	401	SW-1	x	WRD-2	MM D-14
6.1.2	Recycle Demolished Construction Material	402	SW-2	x	WRD-2.3	MM C-4
7.0	Vegetation	402				
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Transportation

CEQA# MM D-1 & D-4

MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

3.0 Transportation

3.1 Land Use/Location

3.1.1 Increase Density

Range of Effectiveness: 0.8 – 30.0% vehicle miles traveled (VMT) reduction and therefore a 0.8 – 30.0% reduction in GHG emissions.

Measure Description:

Designing the Project with increased densities, where allowed by the General Plan and/or Zoning Ordinance reduces GHG emissions associated with traffic in several ways. Density is usually measured in terms of persons, jobs, or dwellings per unit area. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. This strategy also provides a foundation for implementation of many other strategies which would benefit from increased densities. For example, transit ridership increases with density, which justifies enhanced transit service.

The reductions in GHG emissions are quantified based on reductions to VMT. The relationship between density and VMT is described by its elasticity. According to a recent study published by Brownstone, et al. in 2009, the elasticity between density and VMT is 0.12. Default densities are based on the typical suburban densities in North America which reflects the characteristics of the ITE Trip Generation Manual data used in the baseline estimates.

Measure Applicability:

- Urban and suburban context
 - Negligible impact in a rural context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Transportation

CEQA# MM D-1 & D-4

MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

Inputs:

The following information needs to be provided by the Project Applicant:

- Number of housing units per acre or jobs per job acre

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B \text{ [not to exceed 30\%]}$$

Where:

A = Percentage increase in housing units per acre or jobs per job acre³³ = (number of housing units per acre or jobs per job acre – number of housing units per acre or jobs per job acre for typical ITE development) / (number of housing units per acre or jobs per job acre for typical ITE development) For small and medium sites (less than ½ mile in radius) the calculation of housing and jobs per acre should be performed for the development site as a whole, so that the analysis does not erroneously attribute trip reduction benefits to measures that simply shift jobs and housing within the site with no overall increase in site density. For larger sites, the analysis should address the development as several ½-mile-radius sites, so that shifts from one area to another would increase the density of the receiving area but reduce the density of the donating area, resulting in trip generation rate decreases and increases, respectively, which cancel one another.

B = Elasticity of VMT with respect to density (from literature)

Detail:

- A: [not to exceed 500% increase]
 - If housing: (Number of housing units per acre – 7.6) / 7.6
(See Appendix C for detail)
 - If jobs: (Number of jobs per acre – 20) / 20
(See Appendix C for detail)
- B: 0.07 (Boarnet and Handy 2010)

Assumptions:

Data based upon the following references:

- Boarnet, Marlon and Handy, Susan. 2010. “DRAFT Policy Brief on the Impacts of Residential Density Based on a Review of the Empirical Literature.” <http://arb.ca.gov/cc/sb375/policies/policies.htm>; Table 1.

³³ This value should be checked first to see if it exceeds 500% in which case A = 500%.

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CEQA# MM D-1 & D-4

MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ³⁴
CO ₂ e	1.5-30% of running
PM	1.5-30% of running
CO	1.5-30% of running
NO _x	1.5-30% of running
SO ₂	1.5-30% of running
ROG	0.9-18% of total

Discussion:

The VMT reductions for this strategy are based on changes in density versus the typical suburban residential and employment densities in North America (referred to as “ITE densities”). These densities are used as a baseline to mirror those densities reflected in the ITE Trip Generation Manual, which is the baseline method for determining VMT.

There are two separate maxima noted in the fact sheet: a cap of 500% on the allowable percentage increase of housing units or jobs per acre (variable A) and a cap of 30% on % VMT reduction. The rationale for the 500% cap is that there are diminishing returns to any change in environment. For example, it is reasonably doubtful that increasing residential density by a factor of six instead of five would produce any additional change in travel behavior. The purpose for the 30% cap is to limit the influence of any single environmental factor (such as density). This emphasizes that community designs that implement multiple land use strategies (such as density, design, diversity, etc.) will show more of a reduction than relying on improvements from a single land use factor.

Example:

Sample calculations are provided below for housing:

$$\begin{aligned} \text{Low Range \% VMT Reduction (8.5 housing units per acre)} \\ = (8.5 - 7.6) / 7.6 * 0.07 = 0.8\% \end{aligned}$$

$$\text{High Range \% VMT Reduction (60 housing units per acre)}$$

$$= \frac{60 - 7.6}{7.6} = 6.9 \text{ or } 690\% \text{ Since greater than } 500\%, \text{ set to } 500\%$$

$$= 500\% \times 0.07 = 0.35 \text{ or } 35\% \text{ Since greater than } 30\%, \text{ set to } 30\%$$

³⁴ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

CEQA# MM D-1 & D-4

MP# LU-1.5 & LU-2.1.8

LUT-1

Land Use / Location

Sample calculations are provided below for jobs:

$$\begin{aligned} \text{Low Range \% VMT Reduction (25 jobs per acre)} \\ = (25 - 20) / 20 * 0.12 = 3\% \end{aligned}$$

$$\begin{aligned} \text{High Range \% VMT Reduction (100 jobs per acre)} \\ = \frac{100 - 20}{20} = 4 \text{ or } 400\% \\ = 400\% \times 0.12 = 0.48 \text{ or } 48\% \text{ Since greater than } 30\%, \text{ set to } 30\% \end{aligned}$$

Preferred Literature:

- -0.07 = elasticity of VMT with respect to density

Boarnet and Handy's detailed review of existing literature highlighted three individual studies that used the best available methods for analyzing data for individual households. These studies provided the following elasticities: -0.12 - Brownstone (2009), -0.07 - Bento (2005), and -0.08 - Fang (2008). To maintain a conservative estimate of the impacts of this strategy, the lower elasticity of -0.07 is used in the calculations.

Alternative Literature:

- -0.05 to -0.25 = elasticity of VMT with respect to density

The *TRB Special Report 298* literature suggests that doubling neighborhood density across a metropolitan area might lower household VMT by about 5 to 12 percent, and perhaps by as much as 25 percent, if coupled with higher employment concentrations, significant public transit improvements, mixed uses, and other supportive demand management measures.

Alternative Literature References:

TRB, 2009. *Driving and the Built Environment*, Transportation Research Board Special Report 298. <http://onlinepubs.trb.org/Onlinepubs/sr/sr298.pdf> . Accessed March 2010. (p. 4)

Other Literature Reviewed:

None

Transportation

MP# LU-3.3 **LUT-2** Land Use / Location

3.1.2 Increase Location Efficiency

Range of Effectiveness: 10-65% vehicle miles traveled (VMT) reduction and therefore 10-65% reduction in GHG emissions

Measure Description:

This measure is not intended as a separate strategy but rather a documentation of empirical data to justify the “cap” for all land use/location strategies. The location of the Project relative to the type of urban landscape such as being located in an urban area, infill, or suburban center influences the amount of VMT compared to the statewide average. This is referred to as the location of efficiency since there are synergistic benefits to these urban landscapes.

To receive the maximum reduction for this location efficiency, the project will be located in an urban area/ downtown central business district. Projects located on brownfield sites/infill areas receive a lower, but still significant VMT reduction. Finally, projects in suburban centers also receive a reduction for their efficient location. Reductions are based on the typical VMT of a specific geographic area relative to the average VMT statewide.

Measure Applicability:

- Urban and suburban context
- Negligible impact in a rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

- VMT = vehicle miles traveled
- EF_{running} = emission factor for running emissions

Inputs:

- No inputs are needed. VMT reduction ranges are based on the geographic location of the project within the region.

Mitigation Method:

% VMT reduction =

Transportation

MP# LU-3.3 **LUT-2** Land Use / Location

- Urban: 65% (representing VMT reductions for the average urban area in California versus the statewide average VMT)
- Compact Infill: 30% (representing VMT reductions for the average compact infill area in California versus the statewide average VMT)
- Suburban Center: 10% (representing VMT reductions for the average suburban center in California versus the statewide average VMT)

Assumptions:

Data based upon the following references:

- Holtzclaw, et al. 2002. "Location Efficiency: Neighborhood and Socioeconomic Characteristics Determine Auto Ownership and Use – Studies in Chicago, Los Angeles, and Chicago." *Transportation Planning and Technology*, Vol. 25, pp. 1–27.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ³⁵
CO ₂ e	10-65% of running
PM	10-65% of running
CO	10-65% of running
NOx	10-65% of running
SO ₂	10-65% of running
ROG	6-39% of total

Discussion:

Example:

N/A – no calculations needed

Alternative Literature:

- 13-72% reduction in VMT for infill projects

Preferred Literature:

Holtzclaw, et al., [1] studied relationships between auto ownership and mileage per car and neighborhood urban design and socio-economic characteristics in the Chicago, Los

³⁵ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

MP# LU-3.3

LUT-2

Land Use / Location

Angeles, and San Francisco metro areas. In all three regions, average annual vehicle miles traveled is a function of density, income, household size, and public transit, as well as pedestrian and bicycle orientation (to a lesser extent). The annual VMT for each neighborhood was reviewed to determine empirical VMT reduction “caps” for this report. These location-based caps represent the average and maximum reductions that would likely be expected in urban, infill, suburban center, and suburban locations.

Growing Cooler looked at 10 studies which have considered the effects of regional location on travel and emissions generated by individual developments. The studies differ in methodology and context but they tend to yield the same conclusion: infill locations generate substantially lower VMT per capita than do greenfield locations, ranging from 13 - 72% lower VMT.

Literature References:

- [1] Holtzclaw, et al. 2002. “Location Efficiency: Neighborhood and Socioeconomic Characteristics Determine Auto Ownership and Use – Studies in Chicago, Los Angeles, and Chicago.” *Transportation Planning and Technology*, Vol. 25, pp. 1–27.
- [2] Ewing, et al, 2008. *Growing Cooler – The Evidence on Urban Development and Climate Change*. Urban Land Institute. (p.88, Figure 4-30)

Other Literature Reviewed:

None

Transportation

CEQA# MM D-9 & D-4

LUT-3

Land Use / Location

MP# LU-2

3.1.3 Increase Diversity of Urban and Suburban Developments (Mixed Use)

Range of Effectiveness: 9-30% vehicle miles traveled (VMT) reduction and therefore 9-30% reduction in GHG emissions.

Measure Description:

Having different types of land uses near one another can decrease VMT since trips between land use types are shorter and may be accommodated by non-auto modes of transport. For example when residential areas are in the same neighborhood as retail and office buildings, a resident does not need to travel outside of the neighborhood to meet his/her trip needs. A description of diverse uses for urban and suburban areas is provided below.

Urban:

The urban project will be predominantly characterized by properties on which various uses, such as office, commercial, institutional, and residential, are combined in a single building or on a single site in an integrated development project with functional interrelationships and a coherent physical design. The mixed-use development should encourage walking and other non-auto modes of transport from residential to office/commercial/institutional locations (and vice versa). The residential units should be within ¼-mile of parks, schools, or other civic uses. The project should minimize the need for external trips by including services/facilities for day care, banking/ATM, restaurants, vehicle refueling, and shopping.

Suburban:

The suburban project will have at least three of the following on site and/or offsite within ¼-mile: Residential Development, Retail Development, Park, Open Space, or Office. The mixed-use development should encourage walking and other non-auto modes of transport from residential to office/commercial locations (and vice versa). The project should minimize the need for external trips by including services/facilities for day care, banking/ATM, restaurants, vehicle refueling, and shopping.

Measure Applicability:

- Urban and suburban context
- Negligible impact in a rural context (unless the project is a master-planned community)
- Appropriate for mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

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LUT-3

Land Use / Location

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of each land use type in the project (to calculate land use index)

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Land Use} * B \text{ [not to exceed 30\%]}$$

Where

Land Use = Percentage increase in land use index versus single use development
= (land use index – 0.15)/0.15 (see Appendix C for detail)

Land use index = -a / ln(6)

(from [2])

$$a = \sum_{i=1}^6 a_i \times \ln(a_i)$$

a_i = building floor area of land use i / total square feet of area considered

○

residential

○

○

○

○

○

○

a₁ = single family

a₂ = multifamily residential

a₃ = commercial

a₄ = industrial

a₅ = institutional

a₆ = park

if land use is not present and a_i is equal to 0, set a_i equal to 0.01

B

with respect to land use index (0.09 from [1])

increase

= elasticity of VMT

not to exceed 500%

Transportation

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MP# LU-2

LUT-3

Land Use / Location

Assumptions:

Data based upon the following references:

- [1] Ewing, R., and Cervero, R., "Travel and the Built Environment - A Meta-Analysis." *Journal of the American Planning Association*, <to be published> (2010). Table 4.
- [2] Song, Y., and Knaap, G., "Measuring the effects of mixed land uses on housing values." *Regional Science and Urban Economics* 34 (2004) 663-680. (p. 669)
http://urban.csuohio.edu/~sugie/papers/RSUE/RSUE2005_Measuring%20the%20effects%20of%20mixed%20land%20use.pdf

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ³⁶
CO ₂ e	9-30% of running
PM	9-30% of running
CO	9-30% of running
NO _x	9-30% of running
SO ₂	9-30% of running
ROG	5.4-18% of total

Discussion:

In the above calculation, a land use index of 0.15 is used as a baseline representing a development with a single land use (see Appendix C for calculations).

There are two separate maxima noted in the fact sheet: a cap of 500% on the allowable percentage increase of land use index (variable A) and a cap of 30% on % VMT reduction. The rationale for the 500% cap is that there are diminishing returns to any change in environment. For example, it is reasonably doubtful that increasing the land use index by a factor of six instead of five would produce any additional change in travel behavior. The purpose for the 30% cap is to limit the influence of any single environmental factor (such as diversity). This emphasizes that community designs that implement multiple land use strategies (such as density, design, diversity, etc.) will show more of a reduction than relying on improvements from a single land use factor.

³⁶ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

CEQA# MM D-9 & D-4

MP# LU-2

LUT-3

Land Use / Location

Example:

Sample calculations are provided below:

90% single family homes, 10% commercial

- Land use index = $-[0.9 \ln(0.9) + 0.1 \ln(0.1) + 4 \cdot 0.01 \ln(0.01)] / \ln(6) = 0.3$
- Low Range % VMT Reduction = $(0.3 - 0.15) / 0.15 \cdot 0.09 = 9\%$

1/6 single family, 1/6 multi-family, 1/6 commercial, 1/6 industrial, 1/6 institutional, 1/6 parks

- Land use index = $-[6 \cdot 0.17 \ln(0.17)] / \ln(6) = 1$
- High Range % VMT Reduction (land use index = 1)
- Land use = $(1 - 0.15) / 0.15 = 5.6$ or 566%. Since this is greater than 500%, set to 500%.
- % VMT Reduction = $(5 \times 0.09) = 0.45$ or 45%. Since this is greater than 30%, set to 30%.

Preferred Literature:

- -0.09 = elasticity of VMT with respect to land use index

The land use (or entropy) index measurement looks at the mix of land uses of a development. An index of 0 indicates a single land use while 1 indicates a full mix of uses. Ewing's [1] synthesis looked at a total of 10 studies, where none controlled for self-selection³⁷. The weighted average elasticity of VMT with respect to the land use mix index is -0.09. The methodology for calculating the land use index is described in Song and Knaap [2].

Alternative Literature:

- Vehicle trip reduction = $[1 - (\text{ABS}(1.5 \cdot h - e) / (1.5 \cdot h + e)) - 0.25] / 0.25 \cdot 0.03$

Where :

h = study area housing units, and

e = study area employment.

Nelson\Nygaard's report [3] describes a calculation adapted from Criterion and Fehr & Peers [4]. The formula assumes an "ideal" housing balance of 1.5 jobs per household and a baseline diversity of 0.25. The maximum trip reduction with this method is 9%.

³⁷ Self selection occurs when residents or employers that favor travel by non-auto modes choose locations where this type of travel is possible. They are therefore more inclined to take advantage of the available options than a typical resident or employee might otherwise be.

Transportation

CEQA# MM D-9 & D-4

MP# LU-2

LUT-3**Land Use / Location**

Alternative Literature References:

[3] Nelson\Nygaard, 2005. Crediting Low-Traffic Developments (p.12).

<http://www.montgomeryplanning.org/transportation/documents/TripGenerationAnalysisUrbemIS.pdf>

[4] Criterion Planner/Engineers and Fehr & Peers Associates (2001). Index 4D Method. *A Quick-Response Method of Estimating Travel Impacts from Land-Use Changes*. Technical Memorandum prepared for US EPA, October 2001.

Other Literature Reviewed:

None

Transportation

CEQA# MM D-3

LUT-4

Land Use / Location

MP# LU-2.1.4

3.1.4 Increase Destination Accessibility

Range of Effectiveness: 6.7 – 20% vehicle miles traveled (VMT) reduction and therefore 6.7-20% reduction in GHG emissions.

Measure Description:

The project will be located in an area with high accessibility to destinations. Destination accessibility is measured in terms of the number of jobs or other attractions reachable within a given travel time, which tends to be highest at central locations and lowest at peripheral ones. The location of the project also increases the potential for pedestrians to walk and bike to these destinations and therefore reduces the VMT.

Measure Applicability:

- Urban and suburban context
- Negligible impact in a rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Distance to downtown or major job center

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Center Distance} * B \text{ [not to exceed 30\%]}$$

Where

Transportation

CEQA# MM D-3
MP# LU-2.1.4

LUT-4

Land Use / Location

Center Distance = Percentage decrease in distance to downtown or major job center versus typical ITE suburban development = (distance to downtown/job center for typical ITE development – distance to downtown/job center for project) / (distance to downtown/job center for typical ITE development)

Center Distance = 12 - Distance to downtown/job center for project) / 12
See Appendix C for detail

B = Elasticity of VMT with respect to distance to downtown or major job center (0.20 from [1])

Assumptions:

Data based upon the following references:

[1] Ewing, R., and Cervero, R., "Travel and the Built Environment - A Meta-Analysis." Journal of the American Planning Association, <to be published> (2010). Table 4.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ³⁸
CO ₂ e	6.7 – 20% of running
PM	6.7 – 20% of running
CO	6.7 – 20% of running
NO _x	6.7 – 20% of running
SO ₂	6.7 – 20% of running
ROG	4 – 12% of total

Discussion:

The VMT reductions for this strategy are based on changes in distance to key destinations versus the standard suburban distance in North America. This distance is used as a baseline to mirror the distance to destinations reflected in the land uses for the ITE Trip Generation Manual, which is the baseline method for determining VMT.

The purpose for the 30% cap on % VMT reduction is to limit the influence of any single environmental factor (such as destination accessibility). This emphasizes that community designs that implement multiple land use strategies (such as density,

³⁸ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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Land Use / Location

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design, diversity, destination, etc.) will show more of a reduction than relying on improvements from a single land use factor.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (8 miles to downtown/job center) = $\frac{12-8}{12} \times 0.20 = 6.7\%$
- High Range % VMT Reduction (0.1 miles to downtown/job center) = $\frac{12-0.1}{12} \times 0.20 = 20.0\%$

Preferred Literature:

- -0.20 = elasticity of VMT with respect to job accessibility by auto
- -0.20 = elasticity of VMT with respect to distance to downtown

The Ewing and Cervero report [1] finds that VMT is strongly related to measures of accessibility to destinations. The weighted average elasticity of VMT with respect to job accessibility by auto is -0.20 (looking at five total studies). The weighted average elasticity of VMT with respect to distance to downtown is -0.22 (looking at four total studies, of which one controls for self selection³⁹).

Alternative Literature:

- 10-30% reduction in vehicle trips

The VTPI literature [2] suggests a 10-30% reduction in vehicle trips for “smart growth” development practices that result in more compact, accessible, multi-modal communities where travel distances are shorter, people have more travel options, and it is possible to walk and bicycle more.

Alternative Literature References:

[2] Litman, T., 2009. “Win-Win Emission Reduction Strategies.” Victoria Transport Policy Institute (VTPI). Website: <http://www.vtpi.org/wwclimate.pdf>. Accessed March 2010. (p. 7, Table 3)

³⁹ Self selection occurs when residents or employees that favor travel by non-auto modes choose locations where this type of travel is possible. They are therefore more inclined to take advantage of the available options than a typical resident or employee might otherwise be.

Transportation

CEQA# MM D-3
MP# LU-2.1.4

LUT-4

Land Use / Location

Other Literature Reviewed:

None

Transportation

CEQA# MM D-2

MP# LU-1,LU-4

LUT-5

Land Use / Location

3.1.5 Increase Transit Accessibility

Range of Effectiveness: 0.5 – 24.6% VMT reduction and therefore 0.5-24.6% reduction in GHG emissions.⁴⁰

Measure Description:

Locating a project with high density near transit will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT. A project with a residential/commercial center designed around a rail or bus station, is called a transit-oriented development (TOD). The project description should include, at a minimum, the following design features:

- A transit station/stop with high-quality, high-frequency bus service located within a 5-10 minute walk (or roughly ¼ mile from stop to edge of development), and/or
 - A rail station located within a 20 minute walk (or roughly ½ mile from station to edge of development)
- Fast, frequent, and reliable transit service connecting to a high percentage of regional destinations
- Neighborhood designed for walking and cycling

In addition to the features listed above, the following strategies may also be implemented to provide an added benefit beyond what is documented in the literature:

- Mixed use development [LUT-3]
- Traffic calmed streets with good connectivity [SDT-2]
- Parking management strategies such as unbundled parking, maximum parking requirements, market pricing implemented to reduce amount of land dedicated to vehicle parking [see PPT-1 through PPT-7]

Measure Applicability:

- Urban and suburban context
- Appropriate in a rural context if development site is adjacent to a commuter rail station with convenient rail service to a major employment center
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Baseline Method:

⁴⁰ Transit vehicles may also result in increases in emissions that are associated with electricity production or fuel use. The Project Applicant should consider these potential additional emissions when estimating mitigation for these measures.

Transportation

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LUT-5

Land Use / Location

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Distance to transit station in project

Mitigation Method:

$$\% \text{ VMT} = \text{Transit} * B \text{ [not to exceed 30\%]}$$

Where

Transit = Increase in transit mode share = % transit mode share for project - % transit mode share for typical ITE development (1.3% as described in Appendix C)

% transit mode share for project (see Table)

Distance to transit	Transit mode share calculation equation (where x = distance of project to transit)
0 – 0.5 miles	-50*x + 38
0.5 to 3 miles	-4.4*x + 15.2
> 3 miles	no impact
Source: Lund et al, 2004; Fehr & Peers 2010 (see Appendix C for calculation detail)	

B = adjustments from transit ridership increase to VMT (0.67, see Appendix C for detail)

Assumptions:

Data based upon the following references:

[1] Lund, H. and R. Cervero, and R. Willson (2004). *Travel Characteristics of Transit-Oriented Development in California*. (p. 79, Table 5-25)

Transportation

CEQA# MM D-2

MP# LU-1,LU-4

LUT-5

Land Use / Location

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁴¹
CO ₂ e	0.5 – 24.6% of running
PM	0.5 – 24.6% of running
CO	0.5 – 24.6% of running
NO _x	0.5 – 24.6% of running
SO ₂	0.5 – 24.6% of running
ROG	0.3 – 14.8% of total

Discussion:

The purpose for the 30% cap on % VMT reduction is to limit the influence of any single environmental factor (such as transit accessibility). This emphasizes that community designs that implement multiple land use strategies (such as density, design, diversity, transit accessibility, etc.) will show more of a reduction than relying on improvements from a single land use factor.

Example:

Sample calculations are provided below for a rail station:

- Low Range % VMT Reduction (3 miles from station) = $[(-4.4 \times 3 + 15.2) - 1.3\%] \times 0.67 = 0.5\%$
- High Range % VMT Reduction (0 miles from station) = $[(-50 \times 0 + 38) - 1.3\%] \times 0.67 = 24.6\%$

Preferred Literature:

- 13 to 38% transit mode share (residents in TODs with ½ mile of rail station)
- 5 to 13% transit mode share (residents in TODs from ½ mile to 3 miles of rail station)

The *Travel Characteristics* report [1] surveyed TODs and surrounding areas in San Diego, Los Angeles, San Jose, Sacramento, and Bay Area regions. Survey sites are all located in non-central business district locations, are within walking distance of a transit station with rail service headways of 15 minutes or less, and were intentionally developed as TODs.

⁴¹ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

CEQA# MM D-2
MP# LU-1,LU-4

LUT-5

Land Use / Location

Alternative Literature:

Alternate:

- -0.05 = elasticity of VMT with respect to distance to nearest transit stop

Ewing and Cervero's meta-analysis [2] provides this weighted average elasticity based on six total studies, of which one controls for self-selection. The report does not provide the range of distances where this elasticity is valid.

Alternate:

- 5.9 – 13.3% reduction in VMT

The Bailey, et al. 2008 report [3] predicted a reduction of household daily VMT of 5.8 miles for a location next to a rail station and 2.6 miles for a location next to a bus station. Using the report's estimate of 43.75 daily average miles driven, the estimated reduction in VMT for rail accessibility is 13.3% (5.8/43.75) and for bus accessibility is 5.9% (2.6/43.75).

Alternate:

- 15% reduction in vehicle trips
- 2 to 5 times higher transit mode share

TCRP Report 128 [4] concludes that transit-oriented developments, compared to typical developments represented by the *ITE Trip Generation Manual*, have 47% lower vehicle trip rates and have 2 to 5 times higher transit mode share. *TCRP Report 128* notes that the *ITE Trip Generation Manual* shows 6.67 daily trips per unit while detailed counts of 17 residential TODs resulted in 3.55 trips per unit (a 47% reduction in vehicle trips). This study looks at mid-rise and high-rise apartments at the residential TOD sites. A more conservative comparison would be to look at the *ITE Trip Generation Manual* rates for high-rise apartments, 4.2 trips per unit. This results in a 15% reduction in vehicle trips.

Alternative Literature References:

- [2] Ewing, R., and Cervero, R., "Travel and the Built Environment - A Meta-Analysis." *Journal of the American Planning Association*, <to be published> (2010). Table 4.
- [3] Bailey, L., Mokhtarian, P.L., & Little, A. (2008). "The Broader Connection between Public Transportation, Energy Conservation and Greenhouse Gas Reduction." ICF International. (Table 4 and 5)
- [4] TCRP, 2008. *TCRP Report 128 - Effects of TOD on Housing, Parking, and Travel*. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_128.pdf (p. 11, 69).

Transportation

CEQA# MM D-2
MP# LU-1,LU-4

LUT-5

Land Use / Location

Other Literature Reviewed:

None

Transportation

CEQA# MM D-7
MP# LU-2.1.8

LUT-6

Land Use / Location

3.1.6 Integrate Affordable and Below Market Rate Housing

Range of Effectiveness: 0.04 – 1.20% vehicle miles traveled (VMT) reduction and therefore 0.04-1.20% reduction in GHG emissions.

Measure Description:

Income has a statistically significant effect on the probability that a commuter will take transit or walk to work [4]. BMR housing provides greater opportunity for lower income families to live closer to jobs centers and achieve jobs/housing match near transit. It also addresses to some degree the risk that new transit oriented development would displace lower income families. This strategy potentially encourages building a greater percentage of smaller units that allow a greater number of families to be accommodated on infill and transit-oriented development sites within a given building footprint and height limit. Lower income families tend to have lower levels of auto ownership, allowing buildings to be designed with less parking which, in some cases, represents the difference between a project being economically viable or not.

Residential development projects of five or more dwelling units will provide a deed-restricted low-income housing component on-site.

Measure Applicability:

- Urban and suburban context
- Negligible impact in a rural context unless transit availability and proximity to jobs/services are existing characteristics
- Appropriate for residential and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

VMT = vehicle miles traveled

for running emissions

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of units in project that are deed-restricted BMR housing

Transportation

CEQA# MM D-7

MP# LU-2.1.8

LUT-6

Land Use / Location

Mitigation Method:

% VMT Reduction = 4% * Percentage of units in project that are deed-restricted BMR housing [1]

Assumptions:

Data based upon the following references:

[1] Nelson\Nygaard, 2005. Crediting Low-Traffic Developments (p.15).

<http://www.montgomeryplanning.org/transportation/documents/TripGenerationAnalysisUsingURBEMIS.pdf>

Criterion Planner/Engineers and Fehr & Peers Associates (2001). Index 4D Method. *A Quick-Response Method of Estimating Travel Impacts from Land-Use Changes*. Technical Memorandum prepared for US EPA, October 2001.

Holtzclaw, John; Clear, Robert; Dittmar, Hank; Goldstein, David; and Haas, Peter (2002), "Location Efficiency: Neighborhood and Socio-Economic Characteristics Determine Auto Ownership and Use – Studies in Chicago, Los Angeles and San Francisco", *Transportation Planning and Technology*, 25 (1): 1-27.

All trips affected are assumed average trip lengths to convert from percentage vehicle trip reduction to VMT reduction (%VT = %VMT)

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁴²
CO ₂ e	0.04 – 1.20% of running
PM	0.04 – 1.20% of running
CO	0.04 – 1.20% of running
NO _x	0.04 – 1.20% of running
SO ₂	0.04 – 1.20% of running
ROG	0.024 – 0.72% of total

Discussion:

At a low range, 1% BMR housing is assumed. At a medium range, 15% is assumed (based on the requirements of the San Francisco BMR Program[5]). At a high range, the San Francisco program is doubled to reach 30% BMR. Higher percentages of BMR are possible, though not discussed in the literature or calculated.

⁴² The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

CEQA# MM D-7

MP# LU-2.1.8

LUT-6

Land Use / Location

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction = $4\% * 1\% = 0.04\%$
- High Range % VMT Reduction = $4\% * 30\% = 1.20\%$

Preferred Literature:

Nelson\Nygaard [1] provides a 4% reduction in vehicle trips for each deed-restricted BMR unit. This is calculated from Holtzclaw [3], with the following assumptions: 12,000 average annual VMT per vehicle, \$33,000 median per capita income (2002 figures per CA State Department of Finance), and average income in BMR units 25% below median. With a coefficient of -0.0565 (estimate for VMT/vehicle as a function of \$/capita) from [3], the VMT reduction is $0.0565 * 33,000 * 0.25 / 12,000 = 4\%$.

Alternative Literature:

- 50% greater transit school trips than higher income households

Fehr & Peers [6] developed Direct Ridership Models to predict the Bay Area Rapid Transit (BART) ridership activity. One of the objectives of this assessment was to understand the land use and system access factors that influence commute period versus off-peak travel on BART. The analysis focused on the Metropolitan Transportation Commission 2000 Bay Area Travel Survey [7], using the data on household travel behavior to extrapolate relationships between household characteristics and BART mode choice. The study found that regardless of distance from BART, lower income households generate at least 50% higher BART use for school trips than higher income households. More research would be needed to provide more applicable information regarding other types of transit throughout the state.

Other Literature Reviewed:

[4] Bento, Antonio M., Maureen L. Cropper, Ahmed Mushfiq Mobarak, and Katja Vinha. 2005. "The Effects of Urban Spatial Structure on Travel Demand in the United States." *The Review of Economics and Statistics* 87,3: 466-478. (cited in Measure Description section)

[5] San Francisco BMR Program: http://www.ci.sf.ca.us/site/moh_page.asp?id=48083 (p.1) (cited in Discussion section).

[6] Fehr & Peers. *Access BART*. 2006.

[7] BATS. 2000. 2000 Bay Area Travel Survey.

Transportation

MP# LU-4.2

LUT-7

Land Use / Location

3.1.7 Orient Project Toward Non-Auto Corridor

Range of Effectiveness: Grouped strategy. [See LUT-3]

Measure Description:

A project that is designed around an existing or planned transit, bicycle, or pedestrian corridor encourages alternative mode use. For this measure, the project is oriented towards a planned or existing transit, bicycle, or pedestrian corridor. Setback distance is minimized.

The benefits of Orientation toward Non-Auto Corridor have not been sufficiently quantified in the existing literature. This measure is most effective when applied in combination of multiple design elements that encourage this use. There is not sufficient evidence that this measure results in non-negligible trip reduction unless combined with measures described elsewhere in this report, including neighborhood design, density and diversity of development, transit accessibility and pedestrian and bicycle network improvements. Therefore, the trip reduction percentages presented below should be used only as reasonableness checks. They may be used to assess whether, when applied to projects oriented toward non-auto corridors, analysis of all of those other development design factors presented in this report produce trip reductions at least as great as the percentages listed below.

Measure Applicability:

- Urban or suburban context; may be applicable in a master-planned rural community
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Alternative Literature:

Alternate:

- 0.25 – 0.5% reduction in vehicle miles traveled (VMT)

The Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions attributes 0.5% reduction for a project oriented towards an *existing* corridor. A 0.25% reduction is attributed for a project oriented towards a *planned* corridor. The planned transit, bicycle, or pedestrian corridor must be in a General Plan, Community Plan, or similar plan.

Alternate:

- 0.5% reduction in VMT per 1% improvement in transit frequency
- 0.5% reduction in VMT per 10% increase in transit ridership

Transportation

MP# LU-4.2

LUT-7

Land Use / Location

The *Center for Clean Air Policy (CCAP) Guidebook* [2] attributes a 0.5 % reduction per 1% improvement in transit frequency. Based on a case study presented in the CCAP report, a 10% increase in transit ridership would result in a 0.5% reduction. (This information is based on a TIAX review for SMAQMD).

The sources cited above reflect existing guidance rather than empirical studies.

Alternative Literature References:

[1] Sacramento Metropolitan Air Quality Management District (SMAQMD).

“Recommended Guidance for Land Use Emission Reductions.”

<http://www.airquality.org/ceqa/GuidanceLUEmissionReductions.pdf>

[2] Center for Clean Air Policy (CCAP). *Transportation Emission Guidebook*.

http://www.ccap.org/safe/guidebook/guide_complete.html

TIAX Results of 2005 Literature Search Conducted by TIAX on behalf of SMAQMD

Other Literature Reviewed:

None

Transportation

LUT-8

Land Use / Location

3.1.8 Locate Project near Bike Path/Bike Lane

Range of Effectiveness: Grouped strategy. [See LUT-4]

Measure Description:

A Project that is designed around an existing or planned bicycle facility encourages alternative mode use. The project will be located within 1/2 mile of an existing Class I path or Class II bike lane. The project design should include a comparable network that connects the project uses to the existing offsite facilities.

This measure is most effective when applied in combination of multiple design elements that encourage this use. Refer to Increase Destination Accessibility (LUT-4) strategy. The benefits of Proximity to Bike Path/Bike Lane are small as a standalone strategy. The strategy should be grouped with the Increase Destination Accessibility strategy to increase the opportunities for multi-modal travel.

Measure Applicability:

- Urban or suburban context; may be applicable in a rural master planned community
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Alternative Literature:

Alternate:

- 0.625% reduction in vehicle miles traveled (VMT)

As a rule of thumb, the *Center for Clean Air Policy (CCAP) Guidebook* [1] attributes a 1% to 5% reduction associated with comprehensive bicycle programs. Based on the CCAP guidebook, the TIAX report allots 2.5% reduction for all bicycle-related measures and a 1/4 of that for this measure alone. (This information is based on a TIAX review for SMAQMD).

Alternative Literature References:

[1] Center for Clean Air Policy (CCAP). *Transportation Emission Guidebook*. http://www.ccap.org/safe/guidebook/guide_complete.html; TIAX Results of 2005 Literature Search Conducted by TIAX on behalf of SMAQMD.

Other Literature Reviewed:

None

Transportation

LUT-8

Land Use / Location

3.1.9 Improve Design of Development

Range of Effectiveness: 3.0 – 21.3% vehicle miles traveled (VMT) reduction and therefore 3.0-21.3% reduction in GHG emissions.

Measure Description:

The project will include improved design elements to enhance walkability and connectivity. Improved street network characteristics within a neighborhood include street accessibility, usually measured in terms of average block size, proportion of four-way intersections, or number of intersections per square mile. Design is also measured in terms of sidewalk coverage, building setbacks, street widths, pedestrian crossings, presence of street trees, and a host of other physical variables that differentiate pedestrian-oriented environments from auto-oriented environments.

Measure Applicability:

- Urban and suburban context
- Negligible impact in a rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled
for running emissions

VMT = vehicle miles
EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Number of intersections per square mile

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Intersections} * B$$

Where

Transportation

LUT-8

Land Use / Location

Intersections = Percentage increase in intersections versus a typical ITE suburban development

$$= \frac{\text{Intersections per square mile of project} - \text{Intersections per square mile of typical ITE suburban development}}{\text{Intersections per square mile of typical ITE suburban development}}$$

$$= \frac{\text{Intersections per square mile of project} - 36}{36}$$

See Appendix C for detail [not to exceed 500% increase]

B = Elasticity of VMT with respect to percentage of intersections (0.12 from [1])

Assumptions:

Data based upon the following references:

[1] Ewing, R., and Cervero, R., "Travel and the Built Environment - A Meta-Analysis." *Journal of the American Planning Association*, <to be published> (2010). Table 4.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁴³
CO ₂ e	3.0 – 21.3% of running
PM	3.0 – 21.3% of running
CO	3.0 – 21.3% of running
NO _x	3.0 – 21.3% of running
SO ₂	3.0 – 21.3% of running
ROG	1.8 – 12.8% of total

Discussion:

The VMT reductions for this strategy are based on changes in intersection density versus the standard suburban intersection density in North America. This standard density is used as a baseline to mirror the density reflected in the *ITE Trip Generation Manual*, which is the baseline method for determining VMT.

The calculations in the Example section look at a low and high range of intersection densities. The low range is simply a slightly higher density than the typical ITE

⁴³ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

LUT-8

Land Use / Location

development. The high range uses an average intersection density of mixed use/transit-oriented development sites (TOD Site surveys in the Bay Area for *Candlestick-Hunters Point Phase II TIA*, Fehr & Peers, 2009).

There are two separate maxima noted in the fact sheet: a cap of 500% on the allowable percentage increase of intersections per square mile (variable A) and a cap of 30% on % VMT reduction. The rationale for the 500% cap is that there are diminishing returns to any change in environment. For example, it is reasonably doubtful that increasing intersection density by a factor of six instead of five would produce any additional change in travel behavior. The purpose for the 30% cap is to limit the influence of any single environmental factor (such as design). This emphasizes that community designs that implement multiple land use strategies (such as density, design, diversity, etc.) will show more of a reduction than relying on improvements from a single land use factor.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (45 intersections per square mile) = $(45 - 36) / 36 * 0.12 = 3.0\%$
- High Range % VMT Reduction (100 intersections per square mile) = $(100 - 36) / 36 * 0.12 = 21.3\%$

Preferred Literature:

- -0.12 = elasticity of VMT with respect to design (intersection/street density)
- -0.12 = elasticity of VMT with respect to design (% of 4-way intersections)

Ewing and Cervero's [1] synthesis showed a strong relationship of VMT to design elements, second only to destination accessibility. The weighted average elasticity of VMT to intersection/street density was -0.12 (looking at six studies). The weighted average elasticity of VMT to percentage of 4-way intersections was -0.12 (looking at four studies, of which one controlled for self-selection⁴⁴).

Alternative Literature:

Alternate:

- 2-19% reduction in VMT

⁴⁴ Self selection occurs when residents or employers that favor travel by non-auto modes choose locations where this type of travel is possible. They are therefore more inclined to take advantage of the available options than a typical resident or employee might otherwise be.

Transportation

LUT-8

Land Use / Location

Growing Cooler [2] looked at various reports which studied the effect of site design on VMT, showing a range of 2-19% reduction in VMT. In each case, alternative development plans for the same site were compared to a baseline or trend plan. Results suggest that VMT and CO₂ per capita decline as site density increases as well as the mix of jobs, housing, and retail uses become more balanced. *Growing Cooler* notes that the limited number of studies, differences in assumptions and methodologies, and variability of results make it difficult to generalize.

Alternate:

- 3 – 17% shift in mode share from auto to non-auto

The Marshall and Garrick paper [3] analyzes the differences in mode shares for grid and non-grid (“tree”) neighborhoods. For a city with a tributary tree street network, a neighborhood with a tree network had auto mode share of 92% while a neighborhood with a grid network had auto mode share of 89% (3% difference). For a city with a tributary radial street network, a tree neighborhood had auto mode share of 97% while a grid neighborhood had auto mode share of 84% (13% difference). For a city with a grid network, a tree neighborhood had auto mode share of 95% while a grid neighborhood had auto mode share of 78% (17% difference). The research is based on 24 California cities with populations between 30,000 and 100,000.

Alternative Literature References:

[2] Ewing, et al, 2008. *Growing Cooler – The Evidence on Urban Development and Climate Change*. Urban Land Institute.

[3] Marshall and Garrick, 2009. “The Effect of Street Network Design on Walking and Biking.” Submitted to the 89th Annual Meeting of Transportation Research Board, January 2010. (Table 3)

Other Literature Reviewed:

None

Transportation

CEQA# MM-T-6
MP# LU-4

SDT-1

Neighborhood / Site
Enhancement

3.2 Neighborhood/Site Enhancements

3.2.1 Provide Pedestrian Network Improvements

Range of Effectiveness: 0 - 2% vehicle miles traveled (VMT) reduction and therefore 0 - 2% reduction in GHG emissions.

Measure Description:

Providing a pedestrian access network to link areas of the Project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. The project will provide a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site. The project will minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation will be eliminated.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects
- Reduction benefit only occurs if the project has both pedestrian network improvements on site and connections to the larger off-site network.

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The project applicant must provide information regarding pedestrian access and connectivity within the project and to/from off-site destinations.

Transportation

CEQA# MM-T-6
MP# LU-4

SDT-1

**Neighborhood / Site
Enhancement**

Mitigation Method:

Estimated VMT Reduction	Extent of Pedestrian Accommodations	Context
2%	Within Project Site and Connecting Off-Site	Urban/Suburban
1%	Within Project Site	Urban/Suburban
< 1%	Within Project Site and Connecting Off-Site	Rural

Assumptions:

Data based upon the following references:

- Center for Clean Air Policy (CCAP) Transportation Emission Guidebook. http://www.ccap.org/safe/guidebook/guide_complete.html (accessed March 2010)
- 1000 Friends of Oregon (1997) "Making the Connections: A Summary of the LUTRAQ Project" (p. 16): http://www.onethousandfriendsoforegon.org/resources/lut_vol7.html

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁴⁵
CO _{2e}	0 - 2% of running
PM	0 - 2% of running
CO	0 - 2% of running
NO _x	0 - 2% of running
SO ₂	0 - 2% of running
ROG	0 – 1.2% of total

Discussion:

As detailed in the preferred literature section below, the lower range of 1 – 2% VMT reduction was pulled from the literature to provide a conservative estimate of reduction potential. The literature does not speak directly to a rural context, but an assumption was made that the benefits will likely be lower than a suburban/urban context.

Example:

N/A – calculations are not needed.

Preferred Literature:

⁴⁵ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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- 1 - 2% reduction in VMT

The Center for Clean Air Policy (CCAP) attributes a 1% reduction in VMT from pedestrian-oriented design assuming this creates a 5% decrease in automobile mode share (e.g. auto split shifts from 95% to 90%). This mode split is based on the Portland Regional Land Use Transportation and Air Quality (LUTRAQ) project. The LUTRAQ analysis also provides the high end of 10% reduction in VMT. This 10% assumes the following features:

– communities	Compact, mixed-use
– network	Interconnected street
– shorter block lengths	Narrower roadways and
– transit shelters	Sidewalks
– and street trees	Accessibility to transit and
–	Traffic calming measures
	Parks and public spaces

Other strategies (development density, diversity, design, transit accessibility, traffic calming) are intended to account for the effects of many of the measures in the above list. Therefore, the assumed effectiveness of the Pedestrian Network measure should utilize the lower end of the 1 - 10% reduction range. If the pedestrian improvements are being combined with a significant number of the companion strategies, trip reductions for those strategies should be applied as well, based on the values given specifically for those strategies in other sections of this report. Based upon these findings, and drawing upon recommendations presented in the alternate literature below, the recommended VMT reduction attributable to pedestrian network improvements, above and beyond the benefits of other measures in the above bullet list, should be 1% for comprehensive pedestrian accommodations within the development plan or project itself, or 2% for comprehensive internal accommodations and external accommodations connecting to off-site destinations.

Alternative Literature:

Alternate:

- Walking is three times more common with enhanced pedestrian infrastructure
- 58% increase in non-auto mode share for work trips

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The Nelson\Nygaard [1] report for the City of Santa Monica Land Use and Circulation Element EIR summarized studies looking at pedestrian environments. These studies have found a direct connection between non-auto forms of travel and a high quality pedestrian environment. Walking is three times more common with communities that have pedestrian friendly streets compared to less pedestrian friendly communities. Non-auto mode share for work trips is 49% in a pedestrian friendly community, compared to 31% in an auto-oriented community. Non-auto mode share for non-work trips is 15%, compared to 4% in an auto-oriented community. However, these effects also depend upon other aspects of the pedestrian friendliness being present, which are accounted for separately in this report through land use strategy mitigation measures such as density and urban design.

Alternate:

- 0.5% - 2.0% reduction in VMT

The Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions [2] attributes 1% reduction for a project connecting to *existing* external streets and pedestrian facilities. A 0.5% reduction is attributed to connecting to *planned* external streets and pedestrian facilities (which must be included in a pedestrian master plan or equivalent). Minimizing pedestrian barriers attribute an additional 1% reduction in VMT. These recommendations are generally in line with the recommended discounts derived from the preferred literature above.

Preferred and Alternative Literature Notes:

[1] Nelson\Nygaard, 2010. City of Santa Monica Land Use and Circulation Element EIR Report, Appendix – Santa Monica Luce Trip Reduction Impacts Analysis (p.401). <http://www.shapethefuture2025.net/>

Nelson\Nygaard looked at the following studies: Anne Vernez Moudon, Paul Hess, Mary Catherine Snyder and Kiril Stanilov (2003), Effects of Site Design on Pedestrian Travel in Mixed Use, Medium-Density Environments, <http://www.wsdot.wa.gov/research/reports/fullreports/432.1.pdf>; Robert Cervero and Carolyn Radisch (1995), Travel Choices in Pedestrian Versus Automobile Oriented Neighborhoods, <http://www.uctc.net/papers/281.pdf>;

[2] Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions. (p. 11) <http://www.airquality.org/ceqa/GuidanceLUEmissionReductions.pdf>

Other Literature Reviewed:

None

Transportation

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SDT-2

Neighborhood / Site
Enhancement

3.2.2 Provide Traffic Calming Measures

Range of Effectiveness: 0.25 – 1.00% vehicle miles traveled (VMT) reduction and therefore 0.25 – 1.00% reduction in GHG emissions.

Measure Description:

Providing traffic calming measures encourages people to walk or bike instead of using a vehicle. This mode shift will result in a decrease in VMT. Project design will include pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways will be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled VMT = vehicle miles

for running emissions EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of streets within project with traffic calming improvements
- Percentage of intersections within project with traffic calming improvements

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Mitigation Method:

		% of streets with improvements			
		25%	50%	75%	100%
		% VMT Reduction			
% of intersections with improvements	25%	0.25%	0.25%	0.5%	0.5%
	50%	0.25%	0.5%	0.5%	0.75%
	75%	0.5%	0.5%	0.75%	0.75%
	100%	0.5%	0.75%	0.75%	1%

Assumptions:

Data based upon the following references:

- [1] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions.* (p. B-25)
http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendices_Complete_102209.pdf
- [2] Sacramento Metropolitan Air Quality Management District (SMAQMD)
Recommended Guidance for Land Use Emission Reductions. (p.13)
<http://www.airquality.org/ceqa/GuidanceLUEmissionReductions.pdf>

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁴⁶
CO ₂ e	0.25 – 1.00% of running
PM	0.25 – 1.00% of running
CO	0.25 – 1.00% of running
NO _x	0.25 – 1.00% of running
SO ₂	0.25 – 1.00% of running
ROG	0.15 – 0.6% of total

Discussion:

The table above allows the Project Applicant to choose a range of street and intersection improvements to determine an appropriate VMT reduction estimate. The Applicant will look at the rows on the left and choose the percent of intersections within

⁴⁶ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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the project which will have traffic calming improvements. Then, the Applicant will look at the columns along the top and choose the percent of streets within the project which will have traffic calming improvements. The intersection cell of the row and column selected in the matrix is the VMT reduction estimate.

Though the literature provides some difference between a suburban and urban context, the difference is small and thus a conservative estimate was used to be applied to all contexts. Rural context is not specifically discussed in the literature but is assumed to have similar impacts.

For a low range, a project is assumed to have 25% of its streets with traffic calming improvements and 25% of its intersections with traffic calming improvements. For a high range, 100% of streets and intersections are assumed to have traffic calming improvements

Example:

N/A - No calculations needed.

Preferred Literature:

- -0.03 = elasticity of VMT with respect to a pedestrian environment factor (PEF)
- 1.5% - 2.0% reduction in suburban VMT
- 0.5% - 0.6% reduction in urban VMT

Moving Cooler [1] looked at Ewing's synthesis elasticity from the Smart Growth INDEX model (-0.03) to estimate VMT reduction for a suburban and urban location. The estimated reduction in VMT came from looking at the difference between the VMT results for Moving Cooler's strategy of pedestrian accessibility only compared to an aggressive strategy of pedestrian accessibility and traffic calming.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) *Recommended Guidance for Land Use Emission Reductions* [2] attributes 0.25 – 1% of VMT reductions to traffic calming measures. The table above illustrates the range of VMT reductions based on the percent of streets and intersections with traffic calming measures implemented. This range of reductions is recommended because it is generally consistent with the effectiveness ranges presented in the other preferred literature for situations in which the effects of traffic calming are distinguished from the other measures often found to co-exist with calming, and because it provides graduated effectiveness estimates depending on the degree to which calming is implemented.

Alternative Literature:

None

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Alternative Literature References:

None

Other Literature Reviewed:

None

Transportation

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MP# TR-6

SDT-3

**Neighborhood / Site
Enhancement**

3.2.3 Implement a Neighborhood Electric Vehicle (NEV) Network

Range of Effectiveness: 0.5-12.7% vehicle miles traveled (VMT) reduction since Neighborhood Electric Vehicles (NEVs) would result in a mode shift and therefore reduce the traditional vehicle VMT and GHG emissions⁴⁷. Range depends on the available NEV network and support facilities, NEV ownership levels, and the degree of shift from traditional

Measure Description:

The project will create local "light" vehicle networks, such as NEV networks. NEVs are classified in the California Vehicle Code as a "low speed vehicle". They are electric powered and must conform to applicable federal automobile safety standards. NEVs offer an alternative to traditional vehicle trips and can legally be used on roadways with speed limits of 35 MPH or less (unless specifically restricted). They are ideal for short trips up to 30 miles in length. To create an NEV network, the project will implement the necessary infrastructure, including NEV parking, charging facilities, striping, signage, and educational tools. NEV routes will be implemented throughout the project and will double as bicycle routes.

Measure Applicability:

- Urban, suburban, and rural context
- Small citywide or large multi-use developments
- Appropriate for mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

⁴⁷ Transit vehicles may also result in increases in emissions that are associated with electricity production or fuel use. The Project Applicant should consider these potential additional emissions when estimating mitigation for these measures.

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Inputs:

The following information needs to be provided by the Project Applicant:

- low vs. high penetration

Mitigation Method:

$$\% \text{ VMT reduction} = \text{Pop} * \text{Number} * \text{NEV}$$

Where

Penetration	=	Number of NEVs per household (0.04 to 1.0 from [1])
NEV	=	VMT reduction rate per household (12.7% from [2])

Assumptions:

Data based upon the following reference:

[1] City of Lincoln, MHM Engineers & Surveyors, *Neighborhood Electric Vehicle Transportation Program Final Report*, Issued 04/05/05

[2] City of Lincoln, *A Report to the California Legislature as required by Assembly Bill 2353, Neighborhood Electric Vehicle Transportation Plan Evaluation*, January 1, 2008.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁴⁸
CO ₂ e	0.5 – 12.7% of running
PM	0.5 – 12.7% of running
CO	0.5 – 12.7% of running
NO _x	0.5 – 12.7% of running
SO ₂	0.5 – 12.7% of running
ROG	0.3 – 7.6% of total

Discussion:

The estimated number of NEVs per household may vary based on what the project estimates as a penetration rate for implementing an NEV network. Adjust according to project characteristics. The estimated reduction in VMT is for non-NEV miles traveled. The calculations below assume that NEV miles traveled replace regular vehicle travel.

⁴⁸ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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This may not be the case and the project should consider applying an appropriate discount rate on what percentage of VMT is actually replaced by NEV travel..

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (low penetration) = $0.04 * 12.7\% = 0.5\%$
- High Range % VMT Reduction (high penetration) = $1.0 * 12.7\% = 12.7\%$

Preferred Literature:

- 12.7% reduction in VMT per household
- Penetration rates: 0.04 to 1 NEV / household

The NEV Transportation Program plans to implement the following strategies: charging facilities, striping, signage, parking, education on NEV safety, and NEV/bicycle lines throughout the community. . One estimate of current NEV ownership reported roughly 600 NEVs in the city of Lincoln in 2008⁴⁹. With current estimated households of ~13,500⁵⁰, a low estimate of NEV penetration would be 0.04 NEV per household. A high NEV penetration can be estimated at 1 NEV per household. The 2007 survey of NEV users in Lincoln revealed an average use of about 3,500 miles per year [2]. With an estimated annual 27,500 VMT/household⁵¹, this results in a 12.7% reduction in VMT per household.

Alternative Literature:

- 0.5% VMT reduction for neighborhoods with internal NEV connections
- 1% VMT reduction for internal and external connections to surrounding neighborhoods
- 1.5% VMT reduction for internal NEV connections and connections to other existing NEV networks serving all other types of uses.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions notes that current studies show NEVs do not replace gas-fueled vehicles as the primary vehicle. For the purpose

⁴⁹ Lincoln, California: A NEV-Friendly Community, Bennett Engineering, the City of Lincoln, and LincolnNEV, August 28, 2008 - <http://electricrickenmotorsports.com/news.php>

⁵⁰ SACOG Housing Estimates Statistics (<http://www.sacog.org/about/advocacy/pdf/factsheets/HousingStats.pdf>). Linearly interpolated 2008 household numbers between 2005 and 2035 projections.

⁵¹ SACOG SACSIm forecasts for VMT per household at 75.4 daily VMT per household * 365 days = 27521 annual VMT per household

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of providing incentives for developers to promote NEV use, a project will receive the above listed VMT reductions for implementation.

Alternative Literature Reference:

[1] Sacramento Metropolitan Air Quality Management District (SMAQMD)
Recommended Guidance for Land Use Emission Reductions. (p. 21)
<http://www.airquality.org/ceqa/GuidanceLUEmissionReductions.pdf>

Other Literature Reviewed:

None

Transportation

MP# LU-3.2.1 & 4.1.4

SDT-4

Neighborhood / Site
Enhancement

3.2.4 Create Urban Non-Motorized Zones

Range of Effectiveness: Grouped strategy. [See SDT-1]

Measure Description:

The project, if located in a central business district (CBD) or major activity center, will convert a percentage of its roadway miles to transit malls, linear parks, or other non-motorized zones. These features encourage non-motorized travel and thus a reduction in VMT.

This measure is most effective when applied with multiple design elements that encourage this use. Refer to Pedestrian Network Improvements (SDT-1) strategy for ranges of effectiveness in this category. The benefits of Urban Non-Motorized Zones alone have not been shown to be significant.

Measure Applicability:

- Urban context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Alternative Literature:

Alternate:

- 0.01 – 0.2% annual Vehicle Miles Traveled (VMT) reduction

Moving Cooler [1] assumes 2 – 6% of U.S. CBDs/activity centers will convert to non-motorized zones for the purpose of calculating the potential impact. At full implementation, this would result in a range of CBD/activity center annual VMT reduction of 0.07-0.2% and metro VMT reduction of 0.01-0.03%.

Alternate:

Pucher, Dill, and Handy (2010) [2] note several international case studies of urban non-motorized zones. In Bologna, Italy, vehicle traffic declined by 50%, and 8% of those arriving in the CBD came by bicycle after the conversion. In Lubeck, Germany, of those who used to drive, 12% switched to transit, walking, or bicycling with the conversion. In Aachen, Germany, car travel declined from 44% to 36%, but bicycling stayed constant at 3%

Notes:

No literature was identified that quantifies the benefits of this strategy at a smaller scale.

Transportation

MP# LU-3.2.1 & 4.1.4

SDT-4**Neighborhood / Site
Enhancement****Alternative Literature References:**

[1] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute.

http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf

[2] Pucher J., Dill, J., and Handy, S. *Infrastructure, Programs and Policies to Increase Bicycling: An International Review*. February 2010. *Preventive Medicine* 50 (2010) S106–S125.

http://policy.rutgers.edu/faculty/pucher/Pucher_Dill_Handy10.pdf

Other Literature Reviewed:

None

Transportation

MP# TR-4.1

SDT-5

Neighborhood / Site
Enhancement

3.2.5 Incorporate Bike Lane Street Design (on-site)

Range of Effectiveness: Grouped strategy. [See LUT-9]

Measure Description:

The project will incorporate bicycle lanes, routes, and shared-use paths into street systems, new subdivisions, and large developments. These on-street bike accommodations will be created to provide a continuous network of routes, facilitated with markings and signage. These improvements can help reduce peak-hour vehicle trips by making commuting by bike easier and more convenient for more people. In addition, improved bicycle facilities can increase access to and from transit hubs, thereby expanding the “catchment area” of the transit stop or station and increasing ridership. Bicycle access can also reduce parking pressure on heavily-used and/or heavily-subsidized feeder bus lines and auto-oriented park-and-ride facilities.

Refer to Improve Design of Development (LUT-9) strategy for overall effectiveness levels. The benefits of Bike Lane Street Design are small and should be grouped with the Improve Design of Development strategy to strengthen street network characteristics and enhance multi-modal environments.

Measure Applicability:

- Urban and suburban context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Alternative Literature:

Alternate:

- 1% increase in share of workers commuting by bicycle (for each additional mile of bike lanes per square mile)

Dill and Carr (2003) [1] showed that each additional mile of Type 2 bike lanes per square mile is associated with a 1% increase in the share of workers commuting by bicycle. Note that increasing by 1 mile is significant compared to the current average of 0.34 miles per square mile. Also, an increase in 1% in share of bicycle commuters would double the number of bicycle commuters in many areas with low existing bicycle mode share.

Alternate:

- 0.05 – 0.14% annual greenhouse gas (GHG) reduction
- 258 – 830% increase in bicycle community

Moving Cooler [2], based off of a national baseline, estimates 0.05% annual reduction in GHG emissions and 258% increase in bicycle commuting assuming 2 miles of bicycle

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lanes per square mile in areas with density > 2,000 persons per square mile. For 4 miles of bicycle lanes, estimates 0.09% GHG reductions and 449% increase in bicycle commuting. For 8 miles of bicycle lanes, estimates 0.14% GHG reductions and 830% increase in bicycle commuting. Companion strategies assumed include bicycle parking at commercial destinations, busses fitted with bicycle carriers, bike accessible rapid transit lines, education, bicycle stations, end-trip facilities, and signage.

Alternate:

- 0.075% increase in bicycle commuting with each mile of bikeway per 100,000 residents

A before-and-after study by Nelson and Allen (1997) [3] of bicycle facility implementation found that each mile of bikeway per 100,000 residents increases bicycle commuting 0.075%, all else being equal.

Alternative Literature References:

- [1] Dill, Jennifer and Theresa Carr (2003). "Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Them, Commuters Will Use Them – Another Look." *TRB 2003 Annual Meeting CD-ROM*.
- [2] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute.
http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf
- [3] Nelson, Arthur and David Allen (1997). "If You Build Them, Commuters Will Use Them; Cross-Sectional Analysis of Commuters and Bicycle Facilities." *Transportation Research Record 1578*.

Other Literature Reviewed:

None

Transportation

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MP# TR-4.1

SDT-6

**Neighborhood / Site
Enhancement**

3.2.6 Provide Bike Parking in Non-Residential Projects

Range of Effectiveness: Grouped strategy. [See LUT-9]

Measure Description:

A non-residential project will provide short-term and long-term bicycle parking facilities to meet peak season maximum demand. Refer to Improve Design of Development (LUT-9) strategy for overall effectiveness ranges. Bike Parking in Non-Residential Projects has minimal impacts as a standalone strategy and should be grouped with the Improve Design of Development strategy to encourage bicycling by providing strengthened street network characteristics and bicycle facilities.

Measure Applicability:

- Urban, suburban, and rural contexts
- Appropriate for retail, office, industrial, and mixed-use projects

Alternative Literature:

Alternate:

- 0.625% reduction in Vehicle Miles Traveled (VMT)

As a rule of thumb, the Center for Clean Air Policy (CCAP) guidebook [1] attributes a 1% to 5% reduction in VMT to the use of bicycles, which reflects the assumption that their use is typically for shorter trips. Based on the *CCAP Guidebook*, the TIAX report allots 2.5% reduction for all bicycle-related measures and a quarter of that for this bicycle parking alone. (This information is based on a TIAX review for Sacramento Metropolitan Air Quality Management District (SMAQMD).)

Alternate:

- 0.05 – 0.14% annual greenhouse gas (GHG) reduction
- 258 – 830% increase in bicycle community

Moving Cooler [2], based off of a national baseline, estimates 0.05% annual reduction in GHG emissions and 258% increase in bicycle commuting assuming 2 miles of bicycle lanes per square mile in areas with density > 2,000 persons per square mile. For 4 miles of bicycle lanes, *Moving Cooler* estimates 0.09% GHG reductions and 449% increase in bicycle commuting. For 8 miles of bicycle lanes, *Moving Cooler* estimates 0.14% GHG reductions and 830% increase in bicycle commuting. Companion strategies assumed include bicycle parking at commercial destinations, busses fitted with bicycle carriers, bike accessible rapid transit lines, education, bicycle stations, end-trip facilities, and signage.

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Alternative Literature References:

[1] Center For Clean Air Policy (CCAP) *Transportation Emission Guidebook*.

http://www.ccap.org/safe/guidebook/guide_complete.html; Based on results of 2005 literature search conducted by TIAX on behalf of SMAQMD.

[2] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute.

http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf

Other Literature Reviewed:

None

Transportation

CEQA# MM T-3

MP# TR-4.1.2

SDT-7**Neighborhood / Site
Enhancement**

3.2.7 Provide Bike Parking with Multi-Unit Residential Projects

Range of Effectiveness: Grouped strategy. [See LUT-9]

Measure Description:

Long-term bicycle parking will be provided at apartment complexes or condominiums without garages. Refer to Improve Design of Development (LUT-9) strategy for effectiveness ranges in this category. The benefits of Bike Parking with Multi-Unit Residential Projects have no quantified impacts and should be grouped with the Improve Design of Development strategy to encourage bicycling by providing strengthened street network characteristics and bicycle facilities.

Measure Applicability:

- Urban, suburban, or rural contexts
- Appropriate for residential projects

Alternative Literature:

No literature was identified that specifically looks at the quantitative impact of including bicycle parking at multi-unit residential sites.

Alternative Literature References:

None

Other Literature Reviewed:

None

Transportation

CEQA# MM T-17 & E-11
MP# TR-5.4

SDT-8

**Neighborhood / Site
Enhancement**

3.2.8 Provide Electric Vehicle Parking

Range of Effectiveness: Grouped strategy. [See SDT-3]

Measure Description:

This project will implement accessible electric vehicle parking. The project will provide conductive/inductive electric vehicle charging stations and signage prohibiting parking for non-electric vehicles. Refer to Neighborhood Electric Vehicle Network (SDT-3) strategy for effectiveness ranges in this category. The benefits of Electric Vehicle Parking may be quantified when grouped with the use of electric vehicles and or Neighborhood Electric Vehicle Network.

Measure Applicability:

- Urban or suburban contexts
- Appropriate for residential, retail, office, mixed use, and industrial projects

Alternative Literature:

No literature was identified that specifically looks at the quantitative impact of implementing electric vehicle parking.

Alternative Literature References:

None

Other Literature Reviewed:

None

Transportation

MP# TR-4.1

SDT-9

Neighborhood / Site
Enhancement

3.2.9 Dedicate Land for Bike Trails

Range of Effectiveness: Grouped strategy. [See LUT-9]

Measure Description:

Larger projects may be required to provide for, contribute to, or dedicate land for the provision of off-site bicycle trails linking the project to designated bicycle commuting routes in accordance with an adopted citywide or countywide bikeway plan.

Refer to Improve Design of Development (LUT-9) strategy for ranges of effectiveness in this category. The benefits of Land Dedication for Bike Trails have not been quantified and should be grouped with the Improve Design of Development strategy to strengthen street network characteristics and improve connectivity to off-site bicycle networks.

Measure Applicability:

- Urban, suburban, or rural contexts
- Appropriate for large residential, retail, office, mixed use, and industrial projects

Alternative Literature:

No literature was identified that specifically looks at the quantitative impact of implementing land dedication for bike trails.

Alternative Literature References:

None

Other Literature Reviewed:

None

Transportation

MP# LU-1.7 & LU-2.1.1.4

PDT-1

Parking Policy / Pricing

3.3 Parking Policy/Pricing

3.3.1 Limit Parking Supply

Range of Effectiveness: 5 – 12.5% vehicle miles travelled (VMT) reduction and therefore 5 – 12.5% reduction in GHG emissions.

Measure Description:

The project will change parking requirements and types of supply within the project site to encourage “smart growth” development and alternative transportation choices by project residents and employees. This will be accomplished in a multi-faceted strategy:

- Elimination (or reduction) of minimum parking requirements⁵²
- Creation of maximum parking requirements
- Provision of shared parking

Measure Applicability:

- Urban and suburban context
- Negligible in a rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects
- Reduction can be counted only if spillover parking is controlled (via residential permits and on-street market rate parking) [See PPT-5 and PPT-7]

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

VMT = vehicle miles traveled

EF_{running} = emission factor for running emissions

Inputs:

The following information needs to be provided by the Project Applicant:

- ITE parking generation rate for project site
- Actual parking provision rate for project site

⁵² This may require changes to local ordinances and regulations.

Transportation

MP# LU-1.7 & LU-2.1.1.4 **PDT-1** Parking Policy / Pricing

Mitigation Method:

$$\% \text{ VMT Reduction} = \frac{\text{Actual parking provision} - \text{ITE parking generation rate}}{\text{ITE parking generation rate}} \times 0.5$$

Assumptions:

Data based upon the following references:

[1] Nelson\Nygaard, 2005. Crediting Low-Traffic Developments (p. 16)
<http://www.montgomeryplanning.org/transportation/documents/TripGenerationAnalysisUsingURBEMIS.pdf>

All trips affected are assumed average trip lengths to convert from percentage vehicle trip reduction to VMT reduction (% vehicle trips = %VMT).

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁵³
CO ₂ e	5 – 12.5% of running
PM	5 – 12.5% of running
CO	5 – 12.5% of running
NO _x	5 – 12.5% of running
SO ₂	5 – 12.5% of running
ROG	3 – 7.5% of total

Discussion:

The literature suggests that a 50% reduction in conventional parking provision rates (per ITE rates) should serve as a typical ceiling for the reduction calculation. The upper range of VMT reduction will vary based on the size of the development (total number of spaces provided). ITE rates are used as baseline conditions to measure the effectiveness of this strategy.

Though not specifically documented in the literature, the degree of effectiveness of this measure will vary based on the level of urbanization of the project and surrounding areas, level of existing transit service, level of existing pedestrian and bicycle networks and other factors which would complement the shift away from single-occupant vehicle travel.

⁵³ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis.

Transportation

MP# LU-1.7 & LU-2.1.1.4

PDT-1

Parking Policy / Pricing

Example:

If the ITE parking generation rate for the project is 100 spaces, for a low range a 5% reduction in spaces is assumed. For a high range a 25% reduction in spaces is assumed.

- Low range % VMT Reduction = $[(100 - 95)/100] * 0.5 = 2.5\%$
- High range % VMT Reduction = $[(100 - 75)/100] * 0.5 = 12.5\%$

Preferred Literature:

To develop this model, Nelson\Nygaard [1] used the Institute of Transportation Engineers' *Parking Generation* handbook as the baseline figure for parking supply. This is assumed to be unconstrained demand. Trip reduction should only be credited if measures are implemented to control for spillover parking in and around the project, such as residential parking permits, metered parking, or time-limited parking.

Alternative Literature:

- 100% increase in transit ridership
- 100% increase in transit mode share

According to *TCRP Report 95, Chapter 18* [2], the central business district of Portland, Oregon implemented a maximum parking ratio of 1 space per 1,000 square feet of new buildings and implemented surface lot restrictions which limited conditions where buildings could be razed for parking. A "before and after" study was not conducted specifically for the maximum parking requirements and data comes from various surveys and published reports. Based on rough estimates the approximate parking ratio of 3.4 per 1,000 square feet in 1973 (for entire downtown) had been reduce to 1.5 by 1990. Transit mode share increased from 20% to 40%. The increases in transit ridership and mode share are not solely from maximum parking requirements. Other companion strategies, such as market parking pricing and high fuel costs, were in place.

Alternative Literature Sources:

[1] TCRP Report 95, Chapter 18: Parking Management and Supply: Traveler Response to *Transportation System Changes*. (p. 18-6)

http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c18.pdf

Other Literature Reviewed:

None

Transportation

MP# LU-1.7 **PDT-2** Parking Policy / Pricing

3.3.2 Unbundle Parking Costs from Property Cost

Range of Effectiveness: 2.6 – 13% vehicles miles traveled (VMT) reduction and therefore 2.6 – 13% reduction in GHG emissions.

Measure Description:

This project will unbundle parking costs from property costs. Unbundling separates parking from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost from the property cost. This removes the burden from those who do not wish to utilize a parking space. Parking will be priced separately from home rents/purchase prices or office leases. An assumption is made that the parking costs are passed through to the vehicle owners/drivers utilizing the parking spaces.

Measure Applicability:

- Urban and suburban context
- Negligible impact in a rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects
- Complementary strategy includes Workplace Parking Pricing. Though not required, implementing workplace parking pricing ensures the market signal from unbundling parking is transferred to the employee.

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled VMT = vehicle miles

for running emissions EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Monthly parking cost for project site

Mitigation Method:

$$\% \text{ Reduction in VMT} = \text{Change in vehicle cost} * \text{elasticity} * A$$

Transportation

MP# LU-1.7 **PDT-2** Parking Policy / Pricing

Where:

- -0.4 = elasticity of vehicle ownership with respect to total vehicle costs (lower end per VTPI)
- Change in vehicle cost = monthly parking cost * (12 / \$4,000), with \$4,000 representing the annual vehicle cost per VTPI [1]
- A: 85% = adjustment from vehicle ownership to VMT (see Appendix C for detail)

Assumptions:

Data based upon the following references:

[1] Victoria Transport Policy Institute, *Parking Requirement Impacts on Housing Affordability*; <http://www.vtpi.org/park-hou.pdf>; January 2009; accessed March 2010. (Annual/monthly parking fees estimated by VTPI in 2009) (p. 8, Table 3)

- For the elasticity of vehicle ownership, VTPI cites Phil Goodwin, Joyce Dargay and Mark Hanly (2003), *Elasticities Of Road Traffic And Fuel Consumption With Respect To Price And Income: A Review*, ESRC Transport Studies Unit, University College London (www.transport.ucl.ac.uk), commissioned by the UK Department of the Environment, Transport and the Regions (now UK Department for Transport); J.O. Jansson (1989), "Car Demand Modeling and Forecasting," *Journal of Transport Economics and Policy*, May 1989, pp. 125-129; Stephen Glaister and Dan Graham (2000), *The Effect of Fuel Prices on Motorists*, AA Motoring Policy Unit (www.theaa.com) and the UK Petroleum Industry Association (http://195.167.162.28/policyviews/pdf/effect_fuel_prices.pdf); and Thomas F. Golob (1989), "The Casual Influences of Income and Car Ownership on Trip Generation by Mode", *Journal of Transportation Economics and Policy*, May 1989, pp. 141-162

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁵⁴
CO ₂ e	2.6 – 13% of running
PM	2.6 – 13% of running
CO	2.6 – 13% of running

⁵⁴ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

MP# LU-1.7 **PDT-2** **Parking Policy / Pricing**

NOx	2.6 – 13% of running
SO ₂	2.6 – 13% of running
ROG	1.6 – 7.8% of total

Discussion:

As discussed in the preferred literature section, monthly parking costs typically range from \$25 to \$125. The lower end of the elasticity range provided by VTPI is used here to be conservative.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction = $\$25 * 12 / \$4000 * 0.4 * 85\% = 2.6\%$
- High Range % VMT Reduction = $\$125 * 12 / \$4000 * 0.4 * 85\% = 12.8\%$

Preferred Literature:

- -0.4 to -1.0 = elasticity of vehicle ownership with respect to total vehicle costs

The above elasticity comes from a synthesis of literature. As noted in the VTPI report [1], a 10% increase in total vehicle costs (operating costs, maintenance, fuel, parking, etc.) reduces vehicle ownership between 4% and 10%. The report, estimating \$4,000 in annual costs per vehicle, calculated vehicle ownership reductions from residential parking pricing.

Vehicle Ownership Reductions from Residential Parking Pricing

Annual (Monthly) Parking Fee	-0.4 Elasticity	-0.7 Elasticity	-1.0 Elasticity
\$300 (\$25)	4%	6%	8%
\$600 (\$50)	8%	11%	15%
\$900 (\$75)	11%	17%	23%
\$1,200 (\$100)	15%	23%	30%
\$1,500 (\$125)	19%	28%	38%

Alternative Literature:

None

Alternative Literature Notes:

None

Other Literature Reviewed:

None

Transportation

PDT-3 Parking Policy / Pricing

3.3.3 Implement Market Price Public Parking (On-Street)

Range of Effectiveness: 2.8 – 5.5% vehicle miles traveled (VMT) reduction and therefore 2.8 – 5.5% reduction in GHG emissions.

Measure Description:

This project and city in which it is located will implement a pricing strategy for parking by pricing all central business district/employment center/retail center on-street parking. It will be priced to encourage “park once” behavior. The benefit of this measure above that of paid parking at the project only is that it deters parking spillover from project-supplied parking to other public parking nearby, which undermine the vehicle miles traveled (VMT) benefits of project pricing. It may also generate sufficient area-wide mode shifts to justify increased transit service to the area.

Measure Applicability:

- Urban and suburban context
- Negligible impact in a rural context
- Appropriate for retail, office, and mixed-use projects
- Applicable in a specific or general plan context only
- Reduction can be counted only if spillover parking is controlled (via residential permits)
- Study conducted in a downtown area, and thus should be applied carefully if project is not in a central business/activity center

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Location of project site: low density suburb, suburban center, or urban location

Transportation

PDT-3 Parking Policy / Pricing

- Percent increase in on-street parking prices (minimum 25% needed)

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Park\$} * B$$

Where:

Park\$ = Percent increase in on-street parking prices (minimum of 25% increase [1])

B = Elasticity of VMT with respect to parking price (0.11, from [2])

Assumptions:

Data based upon the following references:

[1] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute. (p. B-10)

Moving Cooler’s parking pricing analysis cited Victoria Transport Policy Institute, *How Prices and Other Factors Affect Travel Behavior* (http://www.vtpi.org/tdm/tdm11.htm#_Toc161022578). The VTPI paper summarized the elasticities found in the Hensher and King paper. David A. Hensher and Jenny King (2001), “Parking Demand and Responsiveness to Supply, Price and Location in Sydney Central Business District,” *Transportation Research A*, Vol. 35, No. 3 (www.elsevier.com/locate/tra), March 2001, pp. 177-196.

[2] J. Peter Clinch and J. Andrew Kelly (2003), *Temporal Variance Of Revealed Preference On-Street Parking Price Elasticity*, Department of Environmental Studies, University College Dublin (www.environmentaleconomics.net). (p. 2) <http://www.ucd.ie/gpep/research/workingpapers/2004/04-02.pdf> As referenced in VTPI: http://www.vtpi.org/tdm/tdm11.htm#_Toc161022578

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁵⁵
CO ₂ e	2.8 – 5.5% of running

⁵⁵ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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PDT-3

Parking Policy / Pricing

PM	2.8 – 5.5% of running
CO	2.8 – 5.5% of running
NOx	2.8 – 5.5% of running
SO ₂	2.8 – 5.5% of running
ROG	1.7 – 3.3% of total

Discussion:

The range of parking price increases should be a minimum of 25% and a maximum of 50%. The minimum is based on Moving Cooler [1] discussions which state that a less than 25% increase would not be a sufficient amount to reduce VMT. The case study [2] looked at a 50% price increase, and thus no conclusions can be made on the elasticities above a 50% increase. This strategy may certainly be implemented at a higher price increase, but VMT reductions should be capped at results from a 50% increase to be conservative.

Example:

Assuming a baseline on-street parking price of \$1, sample calculations are provided below:

- Low Range % VMT Reduction (25% increase) = $(\$1.25 - \$1)/\$1 * 0.11 = 2.8\%$
- High Range % VMT Reduction (50% increase) = $(\$1.50 - \$1)/\$1 * 0.11 = 5.5\%$

Preferred Literature:

- -0.11 parking demand elasticity with respect to parking prices

The Clinch & Kelly study [2] of parking meters looked at the impacts of a 50% price increase in the cost of on-street parking. The case study location was a central on-street parking area with a 3-hour time limit and a mix of business and non-business uses. The study concluded the parking increases resulted in an estimated average price elasticity of demand of -0.11, while factoring in parking duration results in an elasticity of -0.2 (cost increases also affect the amount of time cars are parked).

Though this study is international (Dublin, Ireland), it represents a solid study of parking meter price increases and provides a conservative estimate of elasticity compared to the alternate literature.

Alternative Literature:

Alternate:

- -0.19 shopper parking elasticity with respect to parking price
- -0.48 commuter parking elasticity with respect to parking price

Transportation

PDT-3

Parking Policy / Pricing

The *TCRP 95 Chapter 13* [3] report looked at a case study of the city of San Francisco implementing a parking tax on all public and private off-street parking (in 1970). Based on the number of cars parked, the report estimated parking price elasticities of -0.19 to -0.48, an average over a three year period.

Alternate:

- -0.15 VMT elasticity with respect to parking prices (for low density regions)
- -0.47 VMT elasticity with respect to parking prices (for high density regions)

The Moving Cooler analysis assumes a 25 percent increase in on-street parking fees is a starting point sufficient to reduce VMT. Using the elasticities stated above, Moving Cooler estimates an annual percent VMT reduction from 0.42% - 1.14% for a range of regions from a large low density region to a small high density region. The calculations assume that pricing occurs at the urban central business district/employment center/retail center, one-fourth of all person trips are commute based trips, and approximately 15% of commute trips are to the CBD or regional activity centers.

Alternative Literature References:

[3] TCRP Report 95. *Chapter 13: Parking Pricing and Fees - Traveler Response to Transportation System Changes.*

http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c13.pdf. (p.13-42)

Other Literature Reviewed:

None

Transportation

PDT-4

Parking Policy / Pricing

3.3.4 Require Residential Area Parking Permits

Range of Effectiveness: Grouped strategy. (See PPT-1, PPT-2, and PPT-3)

Measure Description:

This project will require the purchase of residential parking permits (RPPs) for long-term use of on-street parking in residential areas. Permits reduce the impact of spillover parking in residential areas adjacent to commercial areas, transit stations, or other locations where parking may be limited and/or priced. Refer to Parking Supply Limitations (PPT-1), Unbundle Parking Costs from Property Cost (PPT-2), or Market Rate Parking Pricing (PPT-3) strategies for the ranges of effectiveness in these categories. The benefits of Residential Area Parking Permits strategy should be combined with any or all of the above mentioned strategies, as providing RPPs are a key complementary strategy to other parking strategies.

Measure Applicability:

- Urban context
- Appropriate for residential, retail, office, mixed use, and industrial projects

Alternative Literature:

- -0.45 = elasticity of vehicle miles traveled (VMT) with respect to price
- 0.08% greenhouse gas (GHG) reduction
- 0.09-0.36% VMT reduction

Moving Cooler [1] suggested residential parking permits of \$100-\$200 annually. This mitigation would impact home-based trips, which are reported to represent approximately 60% of all urban trips. The range of VMT reductions can be attributed to the type of urban area. VMT reductions for \$100 annual permits are 0.09% for large, high-density; 0.12% for large, low-density; 0.12% for medium, high-density; 0.18% for medium, low-density; 0.18% for small, high-density; and 0.12% for small, low-density. VMT reductions for \$200 annual permits are 0.18% for large, high-density; 0.24% for large, low-density; 0.24% for medium, high-density; 0.36% for medium, low-density; 0.36% for small, high-density; and 0.24% for small, low-density.

Alternative Literature References:

- [1] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute.
http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf

Transportation

TRT-1

Commute Trip Reduction

3.4 Commute Trip Reduction Programs

3.4.1 Implement Commute Trip Reduction Program - Voluntary

Commute Trip Reduction Program – Voluntary, is a multi-strategy program that encompasses a combination of individual measures described in sections 3.4.3 through 3.4.9. It is presented as a means of preventing double-counting of reductions for individual measures that are included in this strategy. It does so by setting a maximum level of reductions that should be permitted for a combined set of strategies within a voluntary program.

Range of Effectiveness: 1.0 – 6.2% commute vehicle miles traveled (VMT) Reduction and therefore 1.0 – 6.2% reduction in commute trip GHG emissions.

Measure Description:

The project will implement a voluntary Commute Trip Reduction (CTR) program with employers to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The main difference between a voluntary and a required program is:

- Monitoring and reporting is not required
- No established performance standards (i.e. no trip reduction requirements)

The CTR program will provide employees with assistance in using alternative modes of travel, and provide both “carrots” and “sticks” to encourage employees. The CTR program should include all of the following to apply the effectiveness reported by the literature:

- Carpooling encouragement
- Ride-matching assistance
- Preferential carpool parking
- Flexible work schedules for carpools
- Half time transportation coordinator
- Vanpool assistance
- Bicycle end-trip facilities (parking, showers and lockers)

Other strategies may also be included as part of a voluntary CTR program, though they are not included in the reductions estimation and thus are not incorporated in the estimated VMT reductions. These include: new employee orientation of trip reduction and alternative mode options, event promotions and publications, flexible work schedule for all employees, transit subsidies, parking cash-out or priced parking, shuttles, emergency ride home, and improved on-site amenities.

Transportation

TRT-1 Commute Trip Reduction

Measure Applicability:

- Urban and suburban context
- Negligible in a rural context, unless large employers exist, and suite of strategies implemented are relevant in rural settings
- Appropriate for retail, office, industrial and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled VMT = vehicle miles

for running emissions EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of employees eligible
- Location of project site: low density suburb, suburban center, or urban location

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B$$

Where

A = % reduction in commute VMT (from [1])

B = % employees eligible

Detail:

- A: 5.2% (low density suburb), 5.4% (suburban center), 6.2% (urban) annual reduction in commute VMT (from [1])

Assumptions:

Data based upon the following references:

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TRT-1 Commute Trip Reduction

- Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute. (Table 5.13)
http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁵⁶
CO ₂ e	1.0 – 6.2% of running
PM	1.0 – 6.2% of running
CO	1.0 – 6.2% of running
NO _x	1.0 – 6.2% of running
SO ₂	1.0 – 6.2% of running
ROG	0.6 –3.7% of total

Discussion:

This set of strategies typically serves as a complement to the more effective workplace CTR strategies such as pricing and parking cash out.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (low density suburb and 20% eligible) = 5.2% * 0.2 = 1.0%
- High Range % VMT Reduction (urban and 100% eligible) = 6.2% * 1 = 6.2%

Preferred Literature:

- 5.2 - 6.2% commute VMT reduction

Moving Cooler assumes the employer support program will include: carpooling, ride-matching, preferential carpool parking, flexible work schedules for carpools, a half-time transportation coordinator, vanpool assistance, bicycle parking, showers, and locker facilities. The report assigns 5.2% reduction to large metropolitan areas, 5.4% to medium metropolitan areas, and 6.2% to small metropolitan areas.

⁵⁶ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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Commute Trip Reduction

Alternative Literature:

Alternate:

- 15-19% reduction in commute vehicle trips

TCRP 95 Draft Chapter 19 [2] looked at a sample of 82 Transportation Demand Management (TDM) programs. Low support TDM programs had a 15% reduction, medium support programs 15.9%, and high support 19%. Low support programs had little employer effort. These programs may include rideshare matching, distribution of transit flyers, but have little employer involvement. With medium support programs, employers were involved with providing information regarding commute options and programs, a transportation coordinator (even if part-time), and assistance for ridesharing and transit pass purchases. With high support programs, the employer was providing most of the possible strategies. The sample of programs should not be construed as a random sample and probably represent above average results.

Alternate:

- 4.16 – 4.76% reduction in commute VMT

The Herzog study [3] compared a group of employees, who were eligible for comprehensive commuter benefits (with financial incentives, services such as guaranteed ride home and carpool matching, and informational campaigns) and general marketing information, to a reference group of employees not eligible for commuter benefits. The study showed a 4.79% reduction in VMT, assuming 75% of the carpoolers were traveling to the same worksite. There was a 4.16% reduction in VMT, assuming only 50% of carpoolers were traveling to the same worksite.

Alternate:

- 8.5% reduction in vehicle commute trips

Employer survey results [4] showed that employees at the surveyed companies made 8.5% fewer vehicle trips to work than had been found in the baseline surveys conducted by large employers under the area's trip reduction regulation (i.e. comparing voluntary program with a mandatory regulation). This implied that the 8.5% reduction is a conservative estimate as it is compared to another trip reduction strategy, rather than comparing to a baseline with no reduction strategies implemented. Another survey also showed that 68% of commuters drove alone to work when their employer did not encourage trip reduction. It revealed that with employer encouragement, the drive-alone rate fell 5 percentage points to 63%.

This strategy assumes a companion strategy of employer encouragement. The literature did not specify what commute options each employer provided as part of the program. Options provided may have ranged from simply providing public transit

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Commute Trip Reduction

information to implementing a full TDM program with parking cash out, flex hours, emergency ride home, etc. This San Francisco Bay Area survey worked to determine the extent and impact of the emissions saved through voluntary trip reduction efforts (www.cleanairpartnership.com). It identified 454 employment sites with voluntary trip reduction programs and conducted a selected random survey of the more than 400,000 employees at those sites. The study concluded that employer encouragement makes a significant difference in employees' commute choices.

Alternative Literature References:

[2] Pratt, Dick. Personal Communication Regarding the Draft of TCRP 95 Traveler Response to Transportation System Changes – Chapter 19 Employer and Institutional TDM Strategies.

[3] Herzog, Erik, Stacey Bricka, Lucie Audette, and Jeffra Rockwell. 2006. "Do Employee Commuter Benefits Reduce Vehicle Emissions and Fuel Consumption? Results of Fall 2004 Survey of Best Workplaces for Commuters." *Transportation Research Record* 1956, 34-41. (Table 8)

[4] Transportation Demand Management Institute of the Association for Commuter Transportation. *TDM Case Studies and Commuter Testimonials*. Prepared for the US EPA. 1997. (p. 25-28)
<http://www.epa.gov/OMS/stateresources/rellinks/docs/tmccases.pdf>

Other Literature Reviewed:

None

Transportation

CEQA# T-19

MP# MO-3.1

TRT-2

Commute Trip Reduction

3.4.2 Implement Commute Trip Reduction Program – Required Implementation/Monitoring

Commute Trip Reduction Program – Required, is a multi-strategy program that encompasses a combination of individual measures described in sections 3.4.3 through 3.4.9. It is presented as a means of preventing double-counting of reductions for individual measures that are included in this strategy. It does so by setting a maximum level of reduction that should be permitted for a combined set of strategies within a program that is contractually required of the development sponsors and managers and accompanied by a regular performance monitoring and reporting program.

Range of Effectiveness: 4.2 – 21.0% commute vehicle miles traveled (VMT) reduction and therefore 4.2 – 21.0% reduction in commute trip GHG emissions.

Measure Description:

The jurisdiction will implement a Commute Trip Reduction (CTR) ordinance. The intent of the ordinance will be to reduce drive-alone travel mode share and encourage alternative modes of travel. The critical components of this strategy are:

- Established performance standards (e.g. trip reduction requirements)
- Required implementation
- Regular monitoring and reporting

Regular monitoring and reporting will be required to assess the project's status in meeting the ordinance goals. The project should use existing ordinances, such as those in the cities of Tucson, Arizona and South San Francisco, California, as examples of successful CTR ordinance implementations. The City of Tucson requires employers with 100+ employees to participate in the program. An Alternative Mode Usage (AMU) goal and VMT reduction goal is established and each year the goal is increased. Employers persuade employees to commute via an alternative mode of transportation at least one day a week (including carpooling, vanpooling, transit, walking, bicycling, telecommuting, compressed work week, or alternatively fueled vehicle). The Transportation Demand Management (TDM) Ordinance in South San Francisco requires all non-residential developments that produce 100 average daily vehicle trips or more to meet a 35% non-drive-alone peak hour requirement with fees assessed for non-compliance. Employers have established significant CTR programs as a result.

Measure Applicability:

- Urban and suburban context
- Negligible in a rural context, unless large employers exist, and suite of strategies implemented are relevant in rural settings
- Jurisdiction level only
- Strategies in this case study calculations included:

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TRT-2

Commute Trip Reduction

- -
 - shuttles to transit station
 - servicing the Bay Area
 -
- Parking cash out
Employer sponsored
 - Employer sponsored bus
 - Transit subsidies

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of employees eligible

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B$$

Where

A = % shift in vehicle mode share of commute trips (from [1])

B = % employees eligible

C = Adjustment from vehicle mode share to commute VMT

Detail:

- A: 21% reduction in vehicle mode share (from [1])
- C: 1.0 (see Appendix C for detail)

Transportation

CEQA# T-19

MP# MO-3.1

TRT-2

Commute Trip Reduction

Assumptions:

Data based upon the following references:

[1] Nelson/Nygaard (2008). *South San Francisco Mode Share and Parking Report for Genentech, Inc.*(p. 8)

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁵⁷
CO ₂ e	4.2 – 21.0% of running
PM	4.2 – 21.0% of running
CO	4.2 – 21.0% of running
NO _x	4.2 – 21.0% of running
SO ₂	4.2 – 21.0% of running
ROG	2.5 – 12.6% of total

Discussion:

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (20% eligibility) = 21% * 20% = 4.2%
- High Range % VMT Reduction (100% eligibility) = 21% * 100% = 21%

Preferred Literature:

- 21% reduction in vehicle mode share

Genentech, in South San Francisco [1], achieved a 34% non-single-occupancy vehicle (non-SOV) mode share (66% SOV) in 2008. Since 2006 when SOV mode share was 74% (26% non-SOV), there has been a reduction of over 10% in drive alone share. Carpool share was 12% in 2008, compared to 11.57% in 2006. Genentech has a significant TDM program including parking cash out (\$4/day), express GenenBus service around the Bay Area, free shuttles to Bay Area Rapid Transit (BART) and Caltrain, and transit subsidies. The Genentech campus surveyed for this study is a large, single-tenant campus. Taking an average transit mode share in a suburban development of 1.3% (NHTS,

⁵⁷ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

CEQA# T-19

MP# MO-3.1

TRT-2

Commute Trip Reduction

http://www.dot.ca.gov/hq/tsip/tab/documents/travelsurveys/Final2001_Stw_Travel_Survey_WkdayRpt.pdf (SCAG, SANDAG, Fresno County)), this is an estimated decrease from 98.7% to 78% vehicle mode share (66% SOV + 12% carpool), a 21% reduction in vehicle mode share.

Alternative Literature:

Alternate:

- 10.7% average annual increase in use of non-SOV commute modes

For the City of Tucson [2], use of alternative commute modes increased 64.3% between 1989 and 1995. Employers integrated several key activities into their TDM plans: disseminating information, developing company policies to support TDM, investing in facility enhancements, conducting promotional campaigns, and offering subsidies or incentives to encourage AMU.

Alternative Literature References:

[2] Transportation Demand Management Institute of the Association for Commuter Transportation. *TDM Case Studies and Commuter Testimonials*. Prepared for the US EPA. 1997. (p. 17-19)

<http://www.epa.gov/OMS/stateresources/rellinks/docs/tmccases.pdf>

Other Literature Reviewed:

None

Transportation

MP# MO-3.1

TRT-3

Commute Trip Reduction

3.4.3 Provide Ride-Sharing Programs

Range of Effectiveness: 1 – 15% commute vehicle miles traveled (VMT) reduction and therefore 1 - 15% reduction in commute trip GHG emissions.

Measure Description:

Increasing the vehicle occupancy by ride sharing will result in fewer cars driving the same trip, and thus a decrease in VMT. The project will include a ride-sharing program as well as a permanent transportation management association membership and funding requirement. Funding may be provided by Community Facilities, District, or County Service Area, or other non-revocable funding mechanism. The project will promote ride-sharing programs through a multi-faceted approach such as:

- Designating a certain percentage of parking spaces for ride sharing vehicles
- Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles
- Providing a web site or message board for coordinating rides

Measure Applicability:

- Urban and suburban context
- Negligible impact in many rural contexts, but can be effective when a large employer in a rural area draws from a workforce in an urban or suburban area, such as when a major employer moves from an urban location to a rural location.
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of employees eligible

Transportation

MP# MO-3.1 **TRT-3** Commute Trip Reduction

- Location of project site: low density suburb, suburban center, or urban location

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Commute} * \text{Employee}$$

Where

Commute = % reduction in commute VMT (from [1])

Employee = % employees eligible

Detail:

- Commute: 5% (low density suburb), 10% (suburban center), 15% (urban) annual reduction in commute VMT (from [1])

Assumptions:

Data based upon the following references:

[1] VTPI. *TDM Encyclopedia*. <http://www.vtpi.org/tdm/tdm34.htm>; Accessed 3/5/2010.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁵⁸
CO ₂ e	1 – 15% of running
PM	1 – 15% of running
CO	1 – 15% of running
NOx	1 – 15% of running
SO ₂	1 – 15% of running
ROG	0.6 – 9% of total

Discussion:

This strategy is often part of Commute Trip Reduction (CTR) Program, another strategy documented separately (see TRT-1 and TRT-2). The Project Applicant should take care not to double count the impacts.

Example:

Sample calculations are provided below:

⁵⁸ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

MP# MO-3.1

TRT-3

Commute Trip Reduction

- Low Range % VMT Reduction (low density suburb and 20% eligible) = $5\% * 20\% = 1\%$
- High Range % VMT Reduction (urban and 100% eligible) = $15\% * 1 = 15\%$

Preferred Literature:

- 5 – 15% reduction of commute VMT

The *Transportation Demand Management (TDM) Encyclopedia* notes that because rideshare passengers tend to have relatively long commutes, mileage reductions can be relatively large with rideshare. If ridesharing reduces 5% of commute trips it may reduce 10% of vehicle miles because the trips that are reduced are twice as long as average. Rideshare programs can reduce up to 8.3% of commute VMT, up to 3.6% of total regional VMT, and up to 1.8% of regional vehicle trips (Apogee, 1994; TDM Resource Center, 1996). Another study notes that ridesharing programs typically attract 5-15% of commute trips if they offer only information and encouragement, and 10-30% if they also offer financial incentives such as parking cash out or vanpool subsidies (York and Fabricatore, 2001).

Alternative Literature:

- Up to 1% reduction in VMT (if combined with two other strategies)

Per the Nelson\Nygaard report [2], ride-sharing would fall under the category of a minor TDM program strategy. The report allows a 1% reduction in VMT for projects with at least three minor strategies.

Alternative Literature References:

[2] Nelson\Nygaard, 2005. *Crediting Low-Traffic Developments* (p.12).

<http://www.montgomeryplanning.org/transportation/documents/TripGenerationAnalysisUsingURBEMIS.pdf>

Criterion Planner/Engineers and Fehr & Peers Associates (2001). Index 4D Method. *A Quick-Response Method of Estimating Travel Impacts from Land-Use Changes*. Technical Memorandum prepared for US EPA, October 2001.

Other Literature Reviewed:

None

Transportation

MP# MO-3.1 **TRT-4** **Commute Trip Reduction**

3.4.4 Implement Subsidized or Discounted Transit Program

Range of Effectiveness: 0.3 – 20.0% commute vehicle miles traveled (VMT) reduction and therefore a 0.3 – 20.0% reduction in commute trip GHG emissions.

Measure Description:

This project will provide subsidized/discounted daily or monthly public transit passes. The project may also provide free transfers between all shuttles and transit to participants. These passes can be partially or wholly subsidized by the employer, school, or development. Many entities use revenue from parking to offset the cost of such a project.

Measure Applicability:

- Urban and suburban context
- Negligible in a rural context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of project employees eligible
- Transit subsidy amount
- Location of project site: low density suburb, suburban center, or urban location

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B * C$$

Where

A = % reduction in commute vehicle trips (VT) (from [1])

Transportation

MP# MO-3.1 **TRT-4** Commute Trip Reduction

B = % employees eligible
 C = Adjustment from commute VT to commute VMT

Detail:

- A:

	Daily Transit Subsidy			
	\$0.75	\$1.49	\$2.98	\$5.96
Worksite Setting	% Reduction in Commute VT			
Low density suburb	1.5%	3.3%	7.9%	20.0%*
Suburban center	3.4%	7.3%	16.4%	20.0%*
Urban location	6.2%	12.9%	20.0%*	20.0%*
* Discounts greater than 20% will be capped, as they exceed levels recommended by TCRP 95 Draft Chapter 19 and other literature.				
- C: 1.0 (see Appendix C for detail)

Assumptions:

Data based upon the following references:

[1] Nelson\Nygaard, 2010. *City of Santa Monica Land Use and Circulation Element EIR Report, Appendix – Santa Monica Luce Trip Reduction Impacts Analysis* (p.401).

[2] Nelson\Nygaard used the following literature sources: VTPI, Todd Litman, *Transportation Elasticities*, <http://www.vtpi.org/elasticities.pdf>. Comsis Corporation (1993), *Implementing Effective Travel Demand Management Measures: Inventory of Measures and Synthesis of Experience*, USDOT and Institute of Transportation Engineers (www.ite.org); www.bts.gov/ntl/DOCS/474.html.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁵⁹
CO ₂ e	0.3 - 20% of running
PM	0.3 - 20% of running
CO	0.3 - 20% of running
NOx	0.3 - 20% of running
SO ₂	0.3 - 20% of running
ROG	0.18 - 12% of total

⁵⁹ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

MP# MO-3.1 **TRT-4** **Commute Trip Reduction**

Discussion:

This strategy is often part of a Commute Trip Reduction (CTR), another strategy documented separately (see TRT-1 and TRT-2). The Project Applicant should take care not to double count the impacts.

The literature evaluates this strategy in relation to the employer, but keep in mind that this strategy can also be implemented by a school or the development as a whole.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (\$0.75, low density suburb, 20% eligible) = 1.5% * 20% = 0.3%
- High Range % VMT Reduction (\$5.96, urban, 100% eligible) = 20% * 100% = 20%

Preferred Literature:

Commute Vehicle Trip Reduction	Daily Transit Subsidy			
	\$0.75	\$1.49	\$2.98	\$5.96
Worksite Setting				
Low density suburb, rideshare oriented	0.1%	0.2%	0.6%	1.9%
Low density suburb, mode neutral	1.5%	3.3%	7.9%	21.7%*
Low density suburb, transit oriented	2.0%	4.2%	9.9%	23.2%*
Activity center, rideshare oriented	1.1%	2.4%	5.8%	16.5%
Activity center, mode neutral	3.4%	7.3%	16.4%	38.7%*
Activity center, transit oriented	5.2%	10.9%	23.5%*	49.7%*
Regional CBD/Corridor, rideshare oriented	2.2%	4.7%	10.9%	28.3%*
Regional CBD/Corridor, mode neutral	6.2%	12.9%	26.9%*	54.3%*
Regional CBD/Corridor, transit oriented	9.1%	18.1%	35.5%*	64.0%*

* Discounts greater than 20% will be capped, as they exceed levels recommended by TCRP 95 Draft Chapter 19 and other literature.

Nelson\Nygaard (2010) updated a commute trip reduction table from VTPI Transportation Elasticities to account for inflation since the data was compiled. Data regarding commute vehicle trip reductions was originally from a study conducted by Comsis Corporation and the Institute of Transportation Engineers (ITE).

Alternative Literature:

Alternate:

- 2.4-30.4% commute vehicle trip reduction (VTR)

Transportation

MP# MO-3.1

TRT-4

Commute Trip Reduction

TCRP 95 Draft Chapter 19 [2] indicates transit subsidies in areas with good transit and restricted parking have a commute VTR of 30.4%; good transit but free parking, a commute VTR of 7.6%; free parking and limited transit 2.4%. Programs with transit subsidies have an average commute VTR of 20.6% compared with an average commute VTR of 13.1% for sites with non-transit fare subsidies.

Alternate:

- 0.03-0.12% annual greenhouse gas (GHG) reduction

Moving Cooler [3] assumed price elasticities of -0.15, -0.2, and -0.3 for lower fares 25%, 33%, and 50%, respectively. *Moving Cooler* assumes average vehicle occupancy of 1.43 and a VMT/trip of 5.12.

Alternative Literature References:

[2] Pratt, Dick. Personal Communication Regarding the Draft of TCRP 95 Traveler Response to Transportation System Changes – Chapter 19 Employer and Institutional TDM Strategies.

[3] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute. (Table D.3)
http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf

Other Literature Reviewed:

None

Transportation

CEQA# MM T-2

MP# MO-3.2

TRT-5

Commute Trip Reduction

3.4.5 Provide End of Trip Facilities

Range of Effectiveness: Grouped strategy (see TRT-1 through TRT-3)

Measure Description:

Non-residential projects will provide "end-of-trip" facilities for bicycle riders including showers, secure bicycle lockers, and changing spaces. End-of-trip facilities encourage the use of bicycling as a viable form of travel to destinations, especially to work. End-of-trip facilities provide the added convenience and security needed to encourage bicycle commuting.

End-of-trip facilities have minimal impacts when implemented alone. This strategy's effectiveness in reducing vehicle miles traveled (VMT) depends heavily on the suite of other transit, pedestrian/bicycle, and demand management measures offered. End-of-trip facilities should be grouped with Commute Trip Reduction (CTR) Programs (TRT-1 through TRT-2).

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Alternative Literature:

Alternate:

- 22% increase in bicycle mode share

The bicycle study documents a multivariate analysis of UK National Travel Survey (Wardman et al. 2007) which found significant impacts on bicycling to work. Compared to base bicycle mode share of 5.8% for work trips, outdoor parking would raise the share to 6.3%, indoor secure parking to 6.6%, and indoor parking plus showers to 7.1%. This results in an estimate 22% increase in bicycle mode share $((7.1\% - 5.8\%) / 5.8\% = 22\%)$. This suggests that such end of trip facilities have an important impact on the decision to bicycle to work. However, these effects represent reductions in VMT no greater than 0.02% (see Appendix C for calculation detail).

Alternate:

- 2 - 5% reduction in commute vehicle trips

The *Transportation Demand Management (TDM) Encyclopedia*, citing Ewing (1993), documents Sacramento's TDM ordinance. The City allows developers to claim trip reduction credits for worksite showers and lockers of 5% in central business districts, 2% within 660 feet of a transit station, and 2% elsewhere.

Transportation

CEQA# MM T-2

MP# MO-3.2

TRT-5

Commute Trip Reduction

Alternate:

- 0.625% reduction in VMT

The *Center for Clean Air Policy (CCAP) Guidebook* attributes a 1% to 5% reduction associated with the use of bicycles, which reflects the assumption that their use is typically for shorter trips. Based on the *CCAP Guidebook*, a 2.5% reduction is allocated for all bicycle-related measures and a 1/4 of that for this measure alone. (This information is based on a TIAX review for SMAQMD).

Alternative Literature References:

- [1] Pucher J., Dill, J., and Handy, S. *Infrastructure, Programs and Policies to Increase Bicycling: An International Review*. February 2010. (Table 2, pg. S111)
http://policy.rutgers.edu/faculty/pucher/Pucher_Dill_Handy10.pdf
- [2] Victoria Transportation Policy Institute (VTPI). *TDM Encyclopedia*,
<http://www.vtpi.org/tdm/tdm9.htm>; accessed 3/4/2010; last update 1/25/2010).
 VTPI citing: Reid Ewing (1993), "TDM, Growth Management, and the Other Four Out of Five Trips," *Transportation Quarterly*, Vol. 47, No. 3, Summer 1993, pp. 343-366.
- [3] Center for Clean Air Policy (CCAP), *CCAP Transportation Emission Guidebook*.
http://www.ccap.org/safe/guidebook/guide_complete.html; TIAX Results of 2005 Literature Search Conducted by TIAX on behalf of SMAQMD

Other Literature Reviewed:

None

Transportation

MP# TR-3.5

TRT-6

Commute Trip Reduction

3.4.6 Encourage Telecommuting and Alternative Work Schedules

Range of Effectiveness: 0.07 – 5.50% commute vehicle miles traveled (VMT) reduction and therefore 0.07 – 5.50% reduction in commute trip GHG emissions.

Measure Description:

Encouraging telecommuting and alternative work schedules reduces the number of commute trips and therefore VMT traveled by employees. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed work weeks.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for retail, office, industrial, and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of employees participating (1 – 25%)
- Strategy implemented: 9-day/80-hour work week, 4-day/40-hour work week, or 1.5 days of telecommuting

Mitigation Method:

$$\% \text{ Commute VMT Reduction} = \text{Commute}$$

Where

Commute = % reduction in commute VMT (See table below)

Transportation

MP# TR-3.5 **TRT-6** Commute Trip Reduction

	Employee Participation				
	1%	3%	5%	10%	25%
	% Reduction in Commute VMT				
9-day/80-hour work week	0.07%	0.21%	0.35%	0.70%	1.75%
4-day/40-hour work week	0.15%	0.45%	0.75%	1.50%	3.75%
telecommuting 1.5 days	0.22%	0.66%	1.10%	2.20%	5.5%
Source: Moving Cooler Technical Appendices, Fehr & Peers					
Notes: The percentages from Moving Cooler incorporate a discount of 25% for rebound effects. The percentages beyond 1% employee participation are linearly extrapolated.					

Assumptions:

Data based upon the following references:

[1] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute. (p. B-54)

http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁶⁰
CO ₂ e	0.07 – 5.50% of running
PM	0.07 – 5.50% of running
CO	0.07 – 5.50% of running
NO _x	0.07 – 5.50% of running
SO ₂	0.07 – 5.50% of running
ROG	0.04 – 3.3% of total

Discussion:

This strategy is often part of a Commute Trip Reduction Program, another strategy documented separately (see TRT-1 and TRT-2). The Project Applicant should take care not to double count the impacts.

The employee participation rate should be capped at a maximum of 25%. *Moving Cooler* [1] notes that roughly 50% of a typical workforce could participate in alternative

⁶⁰ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

MP# TR-3.5

TRT-6

Commute Trip Reduction

work schedules (based on job requirements) and roughly 50% of those would choose to participate.

The 25% discount for rebound effects is maintained to provide a conservative estimate and support the literature results. The project may consider removing this discount from their calculations if deemed appropriate.

Example:

N/A – no calculations are needed.

Preferred Literature:

- 0.07% - 0.22% reduction in commuting VMT

Moving Cooler [1] estimates that if 1% of employees were to participate in a 9 day/80 hour compressed work week, commuting VMT would be reduced by 0.07%. If 1% of employees were to participate in a 4 day/40 hour compressed work week, commuting VMT would reduce by 0.15%; and 1% of employees participating in telecommuting 1.5 days per week would reduce commuting VMT by 0.22%. These percentages incorporate a discounting of 25% to account for rebound effects (i.e., travel for other purposes during the day while not at the work site). The percentages beyond 1% employee participation are linearly extrapolated (see table above).

Alternative Literature:

Alternate:

- 9-10% reduction in VMT for participating employees

As documented in *TCRP 95 Draft Chapter 19* [2], a Denver federal employer's implementation of compressed work week resulted in a 14-15% reduction in VMT for participating employees. This is equivalent to the 0.15% reduction for each 1% participation cited in the preferred literature above. In the Denver example, there was a 65% participation rate out of a total of 9,000 employees. *TCRP 95* states that the compressed work week experiment has no adverse effect on ride-sharing or transit use. Flexible hours have been shown to work best in the presence of medium or low transit availability.

Alternate:

- 0.5 vehicle trips reduced per employee per week
- 13 – 20 VMT reduced per employee per week

Transportation

MP# TR-3.5

TRT-6**Commute Trip Reduction**

As documented in *TCRP 95 Draft Chapter 19* [2], a study of compressed work week for 2,600 Southern California employees resulted in an average reduction of 0.5 trips per week (per participating employee). Participating employees also reduced their VMT by 13-20 miles per week. This translates to a reduction of between 5% and 10% in commute VMT, and so is lower than the 15% reduction cited for Denver government employees.

Alternative Literature References:

[2] Pratt, Dick. Personal Communication Regarding the Draft of TCRP 95 Traveler Response to Transportation System Changes – Chapter 19 Employer and Institutional TDM Strategies.

Other Literature Reviewed:

None

Transportation

TRT-7

Commute Trip Reduction

3.4.7 Implement Commute Trip Reduction Marketing

Range of Effectiveness: 0.8 – 4.0% commute vehicle miles traveled (VMT) reduction and therefore 0.8 – 4.0% reduction in commute trip GHG emissions.

Measure Description:

The project will implement marketing strategies to reduce commute trips. Information sharing and marketing are important components to successful commute trip reduction strategies. Implementing commute trip reduction strategies without a complementary marketing strategy will result in lower VMT reductions. Marketing strategies may include:

- New employee orientation of trip reduction and alternative mode options
- Event promotions
- Publications

CTR marketing is often part of a CTR program, voluntary or mandatory. CTR marketing is discussed separately here to emphasize the importance of not only providing employees with the options and monetary incentives to use alternative forms of transportation, but to clearly and deliberately promote and educate employees of the various options. This will greatly improve the impact of the implemented trip reduction strategies.

Measure Applicability:

- Urban and suburban context
- Negligible in a rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

VMT = vehicle miles traveled

EF_{running} = emission factor for running emissions

Transportation

TRT-7 Commute Trip Reduction

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of project employees eligible (i.e. percentage of employers choosing to participate)

Mitigation Method:

$$\% \text{ Commute VMT Reduction} = A * B * C$$

Where

A = % reduction in commute vehicle trips (from [1])

B = % employees eligible

C = Adjustment from commute VT to commute VMT

Detail:

- A: 4% (per [1])
- C: 1.0 (see Appendix C for detail)

Assumptions:

Data based upon the following references:

[1] Pratt, Dick. Personal communication regarding the *Draft of TCRP 95 Traveler Response to Transportation System Changes – Chapter 19 Employer and Institutional TDM Strategies*. Transit Cooperative Research Program.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁶¹
CO ₂ e	0.8 – 4.0% of running
PM	0.8 – 4.0% of running
CO	0.8 – 4.0% of running
NO _x	0.8 – 4.0% of running
SO ₂	0.8 – 4.0% of running
ROG	0.5 – 2.4% of total

⁶¹ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

TRT-7

Commute Trip Reduction

Discussion:

The effectiveness of commute trip reduction marketing in reducing VMT depends on which commute reduction strategies are being promoted. The effectiveness levels provided below should only be applied if other programs are offered concurrently, and represent the total effectiveness of the full suite of measures.

This strategy is often part of a CTR Program, another strategy documented separately (see strategy T# E1). Take care not to double count the impacts.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (20% eligible) = $4\% * 20\% = 0.8\%$
- High Range % VMT Reduction (100% eligible) = $4\% * 100\% = 4.0\%$

Preferred Literature:

- 4-5% commute vehicle trips reduced with full-scale employer support

TCRP 95 Draft Chapter 19 notes the average empirically-based estimate of reductions in vehicle trips for full-scale, site-specific employer support programs alone is 4-5%. This effectiveness assumes there are alternative commute modes available which have on-going employer support. For a program to receive credit for such outreach and marketing efforts, it should contain guarantees that the program will be maintained permanently, with promotional events delivered regularly and with routine performance monitoring.

Alternative Literature:

- 5-15% reduction in commute vehicle trips
- 3% increase in effectiveness of marketed transportation demand management (TDM) strategies

VTPI [2] notes that providing information on alternative travel modes by employers was one of the most important factors contributing to mode shifting. One study (Shadoff, 1993) estimates that marketing increases the effectiveness of other TDM strategies by up to 3%. Given adequate resources, marketing programs may reduce vehicle trips by 5-15%. The 5 – 15% range comes from a variety of case studies across the world. U.S. specific case studies include: 9% reduction in vehicle trips with TravelSmart in Portland (12% reduction in VMT), 4-8% reduction in vehicle trips from four cities with individualized marketing pilot projects from the Federal Transit Administration (FTA). Averaged across the four pilot projects, there was a 6.75% reduction in VMT.

Transportation

TRT-7

Commute Trip Reduction

Alternative Literature References:

[2] VTPI, TDM Encyclopedia – TDM Marketing; <http://www.vtpi.org/tdm/tdm23.htm>;
accessed 3/5/2010. Table 7 (citing FTA, 2006)

Other Literature Reviewed:

None

Transportation

MP# TR-3.1

TRT-8

Commute Trip Reduction

3.4.8 Implement Preferential Parking Permit Program

Range of Effectiveness: Grouped strategy (see TRT-1 through TRT-3)

Measure Description:

The project will provide preferential parking in convenient locations (such as near public transportation or building front doors) in terms of free or reduced parking fees, priority parking, or reserved parking for commuters who carpool, vanpool, ride-share or use alternatively fueled vehicles. The project will provide wide parking spaces to accommodate vanpool vehicles.

The impact of preferential parking permit programs has not been quantified by the literature and is likely to have negligible impacts when implemented alone. This strategy should be grouped with Commute Trip Reduction (CTR) Programs (TRT-1 and TRT-2) as a complementary strategy for encouraging non-single occupant vehicle travel.

Measure Applicability:

- Urban, suburban context
- Appropriate for residential, retail, office, mixed use, and industrial projects

Alternative Literature:

No quantitative results are available. The case study in the literature implemented a preferential parking permit program as a companion strategy to a comprehensive TDM program. Employees who carpooled at least three times a week qualified to use the spaces.

Alternative Literature References:

[1] Transportation Demand Management Institute of the Association for Commuter Transportation. *TDM Case Studies and Commuter Testimonials*. Prepared for the US EPA. 1997.

<http://www.epa.gov/OMS/stateresources/rellinks/docs/tmccases.pdf>

Other Literature Reviewed:

None

Transportation

TRT-9

Commute Trip Reduction

3.4.9 Implement Car-Sharing Program

Range of Effectiveness: 0.4 – 0.7% vehicle miles traveled (VMT) reduction and therefore 0.4 – 0.7% reduction in GHG emissions.

Measure Description:

This project will implement a car-sharing project to allow people to have on-demand access to a shared fleet of vehicles on an as-needed basis. User costs are typically determined through mileage or hourly rates, with deposits and/or annual membership fees. The car-sharing program could be created through a local partnership or through one of many existing car-share companies. Car-sharing programs may be grouped into three general categories: residential- or citywide-based, employer-based, and transit station-based. Transit station-based programs focus on providing the “last-mile” solution and link transit with commuters’ final destinations. Residential-based programs work to substitute entire household based trips. Employer-based programs provide a means for business/day trips for alternative mode commuters and provide a guaranteed ride home option.

Measure Applicability:

- Urban and suburban context
- Negligible in a rural context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled
for running emissions

VMT = vehicle miles
EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Urban or suburban context

Transportation

TRT-9

Commute Trip Reduction

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B / C$$

Where

A = % reduction in car-share member annual VMT (from the literature)

B = number of car share members per shared car (from the literature)

C = deployment level based on urban or suburban context

Detail:

- A: 37% (per [1])
- B: 20 (per [2])
- C:

Project setting	1 shared car per X population
Urban	1,000
Suburban	2,000
Source: <i>Moving Cooler</i>	

Assumptions:

Data based upon the following references:

- [1] Millard-Ball, Adam. "Car-Sharing: Where and How it Succeeds," (2005) Transit Cooperative Research Program (108). P. 4-22
- [2] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute. (p. B-52, Table D.3)
http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendices_Complete_102209.pdf

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁶²
CO ₂ e	0.4 – 0.7% of running
PM	0.4 – 0.7% of running
CO	0.4 – 0.7% of running
NO _x	0.4 – 0.7% of running
SO ₂	0.4 – 0.7% of running
ROG	0.24 – 0.42% of total

- ⁶² The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

TRT-9

Commute Trip Reduction

Discussion:

Variable C in the mitigation method section represents suggested levels of deployment based on the literature. Levels of deployment may vary based on the characteristics of the project site and the needs of the project residents and employees. This variable should be adjusted accordingly.

The methodology for calculation of VMT reduction utilizes *Moving Cooler's* rule of thumb⁶³ for the estimated number of car share members per vehicle. An estimate of 50% reduction in car-share member annual VMT (from *Moving Cooler*) was high compared to other literature sources, and *TCRP 108's* 37% reduction was used in the calculations instead.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (suburban) = $37\% * 20 / 2000 = 0.4\%$
- High Range % VMT Reduction (urban) = $37\% * 20 / 1000 = 0.7\%$

Preferred Literature:

- 37% reduction in car-share member VMT

The *TCRP 108* [1] report conducted a survey of car-share members in the United States and Canada in 2004. The results of the survey showed that respondents, on average, drove only 63% of the average mileage they previously drove when not car-share members.

Alternative Literature:

Alternate – Residential or Citywide Based:

- 0.05-0.27% reduction in GHG
- 0.33% reduction in VMT in urban areas

Moving Cooler [2] assumed an aggressive deployment of one car per 2,000 inhabitants of medium-density census tracts and of one car per 1,000 inhabitants of high-density census tracts. This strategy assumes providing a subsidy to a public, private, or nonprofit car-sharing organization and providing free or subsidized lease for usage of public street parking. *Moving Cooler* assumed 20 members per shared car and 50% reduction in VMT per equivalent car. The percent reduction calculated assumes a percentage of urban areas are low, medium, and high density, thus resulting in a lower

⁶³ See discussion in Alternative Literature section for "rule of thumb" detail.

Transportation

TRT-9

Commute Trip Reduction

than expected reduction in VMT assuming an aggressive deployment in medium and high density areas.

Alternate – Transit Station and Employer Based:

- 23-44% reduction in drive-alone mode share
- Average daily VMT reduction of 18 – 23 miles

TCRP 95 Draft Chapter 19 [3] looked at two demonstrations, CarLink I and CarLink II, in the San Francisco Bay Area. CarLink I ran from January to November 1999. It involved 54 individuals and 12 rental cars stationed at the Dublin-Pleasanton BART station. CarLink II ran from July 2001 to June 2002 and involved 107 individuals and 19 rental cars. CarLink II was based in Palo Alto in conjunction with Caltrain commuter rail service and several employers in the Stanford Research Park. Both CarLink demonstrations were primarily targeted for commuters. CarLink I had a 23% increase in rail mode share, a reduction in drive-alone mode share of 44%, and a decrease in Average Daily VMT of 18 miles. CarLink II had a VMT for round-trip commuters decrease of 23 miles per day and a mode share for drive alone decrease of 22.9%.

Alternate:

- 50% reduction in driving for car-share members

A UC Berkeley study of San Francisco's City CarShare [4] found that members drive nearly 50% less after joining. The study also found that when people joined the car-sharing organization, nearly 30% reduced their household vehicle ownership and two-thirds avoided purchasing another car. The UC Berkeley study found that almost 75% of vehicle trips made by car-sharing members were for social trips such as running errands and visiting friends. Only 25% of trips were for commuting to work or for recreation. Most trips were also made outside of peak periods. Therefore, car-sharing may generate limited impact on peak period traffic.

Alternative Literature References:

[3] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute. (p. B-52, Table D.3)

http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendices_Complete_102209.pdf

[4] Pratt, Dick. *Personal Communication Regarding the Draft of TCRP 95 Traveler Response to Transportation System Changes – Chapter 19 Employer and Institutional TDM Strategies*. Transit Cooperative Research Program.

Transportation

TRT-9

Commute Trip Reduction

Cervero, Robert and Yu-Hsin Tsai. *San Francisco City CarShare: Travel-Demand Trends and Second-Year Impacts*, 2005. (Figure 7, p. 35, Table 7, Table 12)
<http://escholarship.org/uc/item/4f39b7b4>

Other Literature Reviewed:

None

Transportation

TRT-10

Commute Trip Reduction

3.4.10 Implement a School Pool Program

Range of Effectiveness: 7.2 – 15.8% school vehicle miles traveled (VMT) Reduction and therefore 7.2 – 15.8% reduction in school trip GHG emissions.

Measure Description:

This project will create a ridesharing program for school children. Most school districts provide bussing services to public schools only. SchoolPool helps match parents to transport students to private schools, or to schools where students cannot walk or bike but do not meet the requirements for bussing.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Degree of implementation of SchoolPool Program(moderate to aggressive)

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Families} * B$$

Where

Families = % families that participate (from [1] and [2])

B = adjustments to convert from participation to daily VMT to annual school VMT

Transportation

TRT-10

Commute Trip Reduction

Detail:

- Families: 16% (moderate implementation), 35% (aggressive implementation), (from [1] and [2])
- B: 45% (see Appendix C for detail)

Assumptions:

Data based upon the following references:

- [1] Transportation Demand Management Institute of the Association for Commuter Transportation. *TDM Case Studies and Commuter Testimonials*. Prepared for the US EPA. 1997. (p. 10, 36-38)
<http://www.epa.gov/OMS/stateresources/rellinks/docs/tmccases.pdf>
- [2] Denver Regional Council of Governments (DRCOG). *Survey of Schoolpool Participants, April 2008*. <http://www.drcog.org/index.cfm?page=SchoolPool>.
 Obtained from Schoolpool Coordinator, Mia Bemelen.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁶⁴
CO ₂ e	7.2 – 15.8% of running
PM	7.2 – 15.8% of running
CO	7.2 – 15.8% of running
NO _x	7.2 – 15.8% of running
SO ₂	7.2 – 15.8% of running
ROG	4.3 – 9.5% of total

Discussion:

This strategy reflects the findings from only one case study.

Example:

Sample calculations are provided below:

- Low Range % School VMT Reduction (moderate implementation) = 16% * 45% = 7.2%
- High Range % School VMT Reduction (aggressive implementation) = 35% * 45% = 15.8%

⁶⁴ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

TRT-10

Commute Trip Reduction

Preferred Literature:

- 7,711 – 18,659 daily VMT reduction

As presented in the TDM Case Studies [1] compilation, the SchoolPool program in Denver saved 18,659 VMT per day in 1995, compared with 7,711 daily in 1994 – a 142% increase. The Denver Regional Council of Governments (DRCOG) [2] enrolled approximately 7,000 families and 32 private schools in the program. The DRCOG staff surveyed a school or interested families to collect home location and schedules of the students. The survey also identified prospective drivers. DRCOG then used carpool-matching software and GIS to match families. These match lists were sent to the parents for them to form their own school pools. 16% of families in the database formed carpools. The average carpool carried 3.1 students.

The SchoolPool program is still in effect and surveys are conducted every few years to monitor the effectiveness of the program. The latest survey report received was in 2008. The report showed that the participant database had increased to over 10,000 families, an 18% increase from 2005. 29% of participants used the list to form a school carpool. This percentage was lower than 35% in 2005 but higher than prior to 2005, at 24%. The average number of families in each carpool ranged from 2.1 prior to 2005 to 2.8 in 2008. The average number of carpool days per week was roughly 4.7. The number of school weeks per year was 39. Per discussions with the Schoolpool Coordinator, a main factor of success was establishing a large database. This was achieved by having parents opt-out of the database versus opting-in.

Alternative Literature:

None

Alternative Literature References:

None

Other Literature Reviewed:

None

Transportation

MP# MO-3.1 **TRT-11** Commute Trip Reduction

3.4.11 Provide Employer-Sponsored Vanpool/Shuttle

Range of Effectiveness: 0.3 – 13.4% commute vehicle miles traveled (VMT) reduction and therefore 0.3 – 13.4% reduction in commute trip GHG emissions.

Measure Description:

This project will implement an employer-sponsored vanpool or shuttle. A vanpool will usually service employees' commute to work while a shuttle will service nearby transit stations and surrounding commercial centers. Employer-sponsored vanpool programs entail an employer purchasing or leasing vans for employee use, and often subsidizing the cost of at least program administration, if not more. The driver usually receives personal use of the van, often for a mileage fee. Scheduling is within the employer's purview, and rider charges are normally set on the basis of vehicle and operating cost.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for office, industrial, and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

VMT = vehicle miles traveled
EF_{running} = emission factor for running emissions

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of employees eligible

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B * C$$

Where

A = % shift in vanpool mode share of commute trips (from [1])

B = % employees eligible

C = adjustments from vanpool mode share to commute VMT

Transportation

MP# MO-3.1 **TRT-11** **Commute Trip Reduction**

Detail:

- A: 2-20% annual reduction in vehicle mode share (*from [1]*)
 - Low range: low degree of implementation, smaller employers
 - High range: high degree of implementation, larger employers
- C: 0.67 (See Appendix C for detail)

Assumptions:

Data based upon the following references:

[1] TCRP Report 95. *Chapter 5: Vanpools and Buspools - Traveler Response to Transportation System Changes.*
http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c5.pdf. (p.5-8)

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁶⁵
CO ₂ e	0.3 – 13.4% of running
PM	0.3 – 13.4% of running
CO	0.3 – 13.4% of running
NOx	0.3 – 13.4% of running
SO ₂	0.3 – 13.4% of running
ROG	0.18 – 8.0% of total

Discussion:

Vanpools are generally more successful with the largest of employers, as large employee counts create the best opportunities for employees to find a suitable number of travel companions to form a vanpool. In the San Francisco Bay Area several large companies (such as Google, Apple, and Genentech) provide regional bus transportation for their employees. No specific studies of these large buspools were identified in the literature. However, the GenenBus serves as a key element of the overall commute trip reduction (CTR) program for Genentech, as discussed in the CTR Program – Required strategy.

This strategy is often part of a CTR Program, another strategy documented separately (see strategy T# E1). Take care not to double count the impacts.

Example:

Sample calculations are provided below:

⁶⁵ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

MP# MO-3.1

TRT-11

Commuter Trip Reduction

- Low Range % VMT Reduction (low implementation/small employer, 20% eligible)
= $2\% * 20\% * 0.67 = 0.3\%$
- High Range % VMT Reduction (high implementation/large employer, 100% eligible) = $20\% * 100\% * 0.67 = 13.4\%$

Preferred Literature:

- 2-20% vanpool mode share

TCRP Report 95 [1] notes that vanpools can capture 2 to 20% mode share. This range can be attributed to differences in programs, access to high-occupancy vehicle (HOV) lanes, and geographic range. The *TCRP Report* highlights a case study of the 3M Corporation, which with the implementation of a vanpooling program saw drive alone mode share decrease by 10 percentage points and vanpooling mode share increase to 7.8 percent. The *TCRP Report* notes most vanpools programs do best where one-way trip lengths exceed 20 miles, where work schedules are fixed and regular, where employer size is sufficient to allow matching of 5 to 12 people from the same residential area, where public transit is inadequate, and where some congestion or parking problems exist.

Alternative Literature:

In *TDM Case Studies* [2], a case study of Kaiser Permanente Hospital has shown their employer-sponsored shuttle service eliminated 380,100 miles per month, or nearly 4 million miles of travel per year, and four tons of smog precursors annually.

Alternative Literature References:

[2] Transportation Demand Management Institute of the Association for Commuter Transportation. *TDM Case Studies and Commuter Testimonials*. Prepared for the US EPA. 1997.

<http://www.epa.gov/OMS/stateresources/rellinks/docs/tmccases.pdf>

Other Literature Reviewed:

None

Transportation

TRT-12

Commute Trip Reduction

3.4.12 Implement Bike-Sharing Programs

Range of Effectiveness: Grouped strategy (see SDT-5 and LUT-9)

Measure Description:

This project will establish a bike sharing program. Stations should be at regular intervals throughout the project site. The number of bike-share kiosks throughout the project area should vary depending on the density of the project and surrounding area. Paris' bike-share program places a station every few blocks throughout the city (approximately 28 bike stations/square mile). Bike-station density should increase around commercial and transit hubs.

Bike sharing programs have minimal impacts when implemented alone. This strategy's effectiveness is heavily dependent on the location and context. Bike-sharing programs have worked well in densely populated areas (examples in Barcelona, London, Lyon, and Paris) with existing infrastructure for bicycling. Bike sharing programs should be combined with **Bike Lane Street Design (SDT-5)** and **Improve Design of Development (LUT-9)**.

Taking evidence from the literature, a 135-300% increase in bicycling (of which roughly 7% are shifting from vehicle travel) results in a negligible impact (around 0.03% vehicle miles traveled (VMT) reduction (see Appendix C for calculations)).

Measure Applicability:

- Urban and suburban-center context only
- Negligible in a rural context
- Appropriate for residential, retail, office, industrial, and mixed-use projects

Alternative Literature:

Alternate:

The International Review [1] found bike mode share increases:

- from 0.75% in 2005 to 1.76% in 2007 in Barcelona (Romero, 2008) (135% increase)
- From 1% in 2001 to 2.5% in 2007 in Paris (Nadal, 2007; City of Paris, 2007) (150% increase)
- From 0.5% in 1995 to 2% in 2006 in Lyon (Bonnette, 2007; Velo'V, 2009) (300% increase)

London [2] is the only study that reports the breakdown of the prior mode In London: 6% of users reported shifting from driving, 34% from transit, 23% said they would not have

Transportation

TRT-12

Commute Trip Reduction

travelled (Noland and Ishaque, 2006). Additionally, 68% of the bike trips were for leisure or recreation. Companion strategies included concurrent improvements in bicycle facilities.

The London program was implemented west of Central London in a densely populated area, mainly residential, with several employment centers. A relatively well developed bike network existed, including over 1,000 bike racks. The program implemented 25 locker stations with 70 bikes total.

Alternate:

- 1/3 vehicle trip reduced per day per bicycle (1,000 vehicle trips reduced per day in Lyon)

The Bike Share Opportunities [3] report looks at two case studies of bike-sharing implementation in France. In Lyon, the 3,000 bike-share system shifts 1,000 car trips to bicycle each day. Surveys indicate that 7% of the bike share trips would have otherwise been made by car. Lyon saw a 44% increase in bicycle riding within the first year of their program while Paris saw a 70% increase in bicycle riding and a 5% reduction in car use and congestion within the first year and a half of their program. The Bike Share Opportunities report found that population density is an important part of a successful program. Paris' bike share subscription rates range between 6% and 9% of the total population. This equates to an average of 75,000 rentals per day. The effectiveness of bike share programs at sub-city scales are not addressed in the literature.

Alternative Literature References:

- [1] Pucher J., Dill, J., and Handy, S. Infrastructure, Programs and Policies to Increase Bicycling: An International Review. February 2010. (Table 4)
- [2] Noland, R.B., Ishaque, M.M., 2006. "Smart Bicycles in an urban area: Evaluation of a pilot scheme in London." *Journal of Public Transportation*. 9(5), 71-95.
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.117.8173&rep=rep1&type=pdf#page=76>
- [3] NYC Department of City Planning, *Bike-Share Opportunities in New York City*, 2009. (p. 11, 14, 24, 68)
http://www.nyc.gov/html/dcp/html/transportation/td_bike_share.shtml

Other Literature Reviewed:

None

Transportation

MP# TR-3.4

TRT-13

Commute Trip Reduction

3.4.13 Implement School Bus Program

Measure Effectiveness Range: 38 – 63% School VMT Reduction and therefore 38 – 63% reduction in school trip GHG emissions⁶⁶

Measure Description:

The project will work with the school district to restore or expand school bus services in the project area and local community.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled VMT = vehicle miles

for running emissions EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of families expected to use/using school bus program

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B$$

Where

A = % families expected to use/using school bus program

B = adjustments to convert from participation to school day VMT to annual school VMT

⁶⁶ Transit vehicles may also result in increases in emissions that are associated with electricity production or fuel use. The Project Applicant should consider these potential additional emissions when estimating mitigation for these measures.

Transportation

MP# TR-3.4

TRT-13

Commute Trip Reduction

Detail:

- A: a typical range of 50 – 84% (see discussion section)
- B: 75% (see Appendix C for detail)

Assumptions:

Data based upon the following references:

[1] JD Franz Research, Inc.; *Lamorinda School Bus Program, 2003 Parent Survey, Final Report*; January 2004; obtained from Juliet Hansen, Program Manager. (p. 5)

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁶⁷
CO _{2e}	38 – 63% of running
PM	38 – 63% of running
CO	38 – 63% of running
NO _x	38 – 63% of running
SO ₂	38 – 63% of running
ROG	23 – 38% of total

Discussion:

The literature presents a high range of effectiveness showing 84% participation by families. 50% is an estimated low range assuming the project has a minimum utilization goal. Note that the literature presents results from a single case study.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (50% participation) = 50% * 75% = 38%
- High Range % VMT Reduction (85% participation) = 84% * 75% = 63%

Preferred Literature:

- 84% penetration rate
- 2,451 – 2,677 daily vehicle trips reduced
- 441,180 – 481,860 annual vehicle trips reduced

⁶⁷ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

MP# TR-3.4

TRT-13**Commute Trip Reduction**

The Lamorinda School Bus Program was implemented to reduce traffic congestion in the communities of Lafayette, Orinda, and Moraga, California. In 2003, a parent survey was conducted to determine the extent to which the program diverted or eliminated vehicle trips. This survey covered a representative sample of all parents (not just those signed up for the school bus program). The range of morning trips prevented is 1,266 to 1,382; the range of afternoon trips prevented is 1,185 to 1,295. Annualized, the estimated total trip prevention is between 441,180 to 481,860. 83% of parents surveyed reported that their child usually rides the bus to school in the morning. 84% usually rode the bus back home in the afternoons. The data came from surveys and the results are unique to the location and extent of the program. The report did not indicate the number of school buses in operation during the time of the survey.

Alternative Literature:

None

Alternative Literature References:

None

Other Literature Reviewed:

None

Transportation

TRT-14

Commute Trip Reduction

3.4.14 Price Workplace Parking

Range of Effectiveness: 0.1 – 19.7% commute vehicle miles traveled (VMT) reduction and therefore 0.1 -19.7% reduction in commute trip GHG emissions.

Measure Description:

The project will implement workplace parking pricing at its employment centers. This may include: explicitly charging for parking for its employees, implementing above market rate pricing, validating parking only for invited guests, not providing employee parking and transportation allowances, and educating employees about available alternatives.

Though similar to the Employee Parking “Cash-Out” strategy, this strategy focuses on implementing market rate and above market rate pricing to provide a price signal for employees to consider alternative modes for their work commute.

Measure Applicability:

- Urban and suburban context
- Negligible impact in a rural context
- Appropriate for retail, office, industrial, and mixed-use projects
- Reductions applied only if complementary strategies are in place:
 - Residential parking permits and market rate public on-street parking - to prevent spill-over parking
 - Unbundled parking - is not required but provides a market signal to employers to transfer over the, now explicit, cost of parking to the employees. In addition, unbundling parking provides a price with which employers can utilize as a means of establishing workplace parking prices.

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled VMT = vehicle miles

for running emissions EF_{running} = emission factor

Transportation

TRT-14

Commute Trip Reduction

Inputs:

The following information needs to be provided by the Project Applicant:

- Location of project site: low density suburb, suburban center, or urban location
- Daily parking charge (\$1 - \$6)
- Percentage of employees subject to priced parking

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B$$

Where

A = Percentage reduction in commute VMT (from [1] and [2])

B = Percent of employees subject to priced parking

Detail:

Project Location	A: Daily Parking Charge			
	\$1	\$2	\$3	\$6
Low density suburb	0.5%	1.2%	1.9%	2.8%
Suburban center	1.8%	3.7%	5.4%	6.8%
Urban Location	6.9%	12.5%	16.8%	19.7%
Moving Cooler, VTPI, Fehr & Peers. Note: 2009 dollars.				

Assumptions:

Data based upon the following references:

[1] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute. (Table 5.13, Table D.3)

http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendices_Complete_102209.pdf

[2] VTPI, Todd Litman, *Transportation Elasticities*, (Table 15)

<http://www.vtpi.org/elasticities.pdf>.

Cosis Corporation (1993), *Implementing Effective Travel Demand Management Measures: Inventory of Measures and Synthesis of Experience*, USDOT and Institute of Transportation Engineers (www.ite.org);

www.bts.gov/ntl/DOCS/474.html.

Transportation

TRT-14

Commute Trip Reduction

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁶⁸
CO ₂ e	0.1 – 19.7% of running
PM	0.1 – 19.7% of running
CO	0.1 – 19.7% of running
NO _x	0.1 – 19.7% of running
SO ₂	0.1 – 19.7% of running
ROG	0.06 – 11.8% of total

Discussion:

Priced parking can result in parking spillover concerns. The highest VMT reductions should be given only with complementary strategies such as parking time limits or neighborhood parking permits are in place in surrounding areas.

Example:

Sample calculations are provided below:

- Low Range % Commute VMT Reduction (low density suburb, \$1/day, 20% priced) = $0.5\% * 20\% = 0.1\%$
- High Range % Commute VMT Reduction (urban, \$6/day, 100% priced) = $19.7\% * 100\% = 19.7\%$

Preferred Literature:

The table above (variable A) was calculated using the percent commute VMT reduction from *Moving Cooler* (0.5% - 6.9% reduction for \$1/day parking charge). The percentage reductions for \$2 - \$6 / day parking charges were extrapolated by multiplying the *Moving Cooler* percentages with the ratios from the VTPI table below (percentage increases). For example, to obtain a percent VMT reduction for a \$6/day parking charge for a low density suburb, $0.5\% * ((36.1\% - 6.5\%) / 6.5\%) = 2.3\%$. The methodology was utilized to capture the non-linear effect of parking charges on trip reduction (VTPI) while maintaining a conservative estimate of percent reductions (*Moving Cooler*).

Preferred:

- 0.5-6.9% reduction in commuting VMT
- 0.44-2.07% reduction in greenhouse gas (GHG) emissions

⁶⁸ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

TRT-14

Commute Trip Reduction

Moving Cooler Technical Appendices indicate that increasing employee parking costs \$1 per day (\$0.50 per vehicle for carpool and free for vanpools) can reduce GHG between 0.44% and 2.07% and reduce commuting VMT between 0.5% and 6.9%. The reduction in GHG varies based on how extensive the implementation of the program is. The reduction in commuting VMT differs for type of urban area as shown in the table below. Please note that these numbers are independent of results for employee parking cash-out strategy (discussed in its own fact sheet).

Strategy	Description	Percent Change in Commuting VMT					
		Large Metropolitan (higher transit use)	Large Metropolitan (lower transit use)	Medium Metro (higher)	Medium Metro (lower)	Small Metro (higher)	Small Metro (lower)
Parking Charges	Parking charge of \$1/day	6.9%	0.9%	1.8%	0.5%	1.3%	0.5%
Source: <i>Moving Cooler</i>							

Preferred:

Commute Vehicle trip reduction	Daily Parking Charges			
	\$0.75	\$1.49	\$2.98	\$5.96
Worksite Setting				
Suburb	6.5%	15.1%	25.3%*	36.1%*
Suburban Center	12.3%	25.1%*	37.0%*	46.8%*
Central Business District	17.5%	31.8%*	42.6%*	50.0%*
Source: VTPI [2]				

* Discounts greater than 20% should be capped, as they exceed levels recommended by *TCRP 95* and other literature.

The reduction in commute trips varies by parking fee and worksite setting [2]. For daily parking fees between \$1.49 and \$5.96, worksites set in low-density suburbs could decrease vehicle trips by 6.5-36.1%, worksites set in activity centers could decrease vehicle trips by 12.3-46.8%, and worksites set in regional central business districts could decrease vehicles by 17.5-50%. (Note that adjusted parking fees (from 1993 dollars to 2009 dollars) were used. Adjustments were taken from the *Santa Monica General Plan EIR Report, Appendix, Nelson\Nygaard*).

Alternative Literature:

Alternate:

- 1 percentage point reduction in auto mode share
- 12.3% reduction in commute vehicle trips

TCRP 95 Draft Chapter 19 [4] found that an increase of \$8 per month in employee parking charges was necessary to decrease employee SOV mode split rates by one

Transportation

TRT-14

Commute Trip Reduction

percentage point. *TCRP 95* compared 82 sites with TDM programs and found that programs with parking fees have an average commute vehicle trip reduction of 24.6%, compared with 12.3% for sites with free parking.

Alternate:

- 1% reduction in VMT (\$1 per day charge)
- 2.6% reduction in VMT (\$3 per day charge)

The Deakin, et al. report [5] for the California Air Resources Board (CARB) analyzed transportation pricing measures for the Los Angeles, Bay Area, San Diego, and Sacramento metropolitan areas.

Alternative Literature References:

[4] Pratt, Dick. Personal Communication Regarding the Draft of TCRP 95 Traveler Response to Transportation System Changes – Chapter 19 Employer and Institutional TDM Strategies. (Table 19-9)

[5] Deakin, E., Harvey, G., Pozdena, R., and Yarema, G., 1996. *Transportation Pricing Strategies for California: An Assessment of Congestion, Emissions, Energy and Equity Impacts*. Final Report. Prepared for California Air Resources Board (CARB), Sacramento, CA (Table 7.2)

Other Literature Reviewed:

None

Transportation

CEQA# MM T-9
MP# TR-5.3

TRT-15

Commute Trip Reduction

3.4.15 Implement Employee Parking “Cash-Out”

Range of Effectiveness: 0.6 – 7.7% commute vehicle miles traveled (VMT) reduction and therefore 0.6 – 7.7% reduction in commute trip GHG emissions

Measure Description:

The project will require employers to offer employee parking “cash-out.” The term “cash-out” is used to describe the employer providing employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to the cost of the parking space to the employer.

Measure Applicability:

- Urban and suburban context
- Not applicable in a rural context
- Appropriate for retail, office, industrial, and mixed-use projects
- Reductions applied only if complementary strategies are in place:
 - Residential parking permits and market rate public on-street parking -to prevent spill-over parking
 - Unbundled parking - is not required but provides a market signal to employers to forgo paying for parking spaces and “cash-out” the employee instead. In addition, unbundling parking provides a price with which employers can utilize as a means of establishing “cash-out” prices.

Baseline Method:

See introduction section.

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of employees eligible
- Location of project site: low density suburb, suburban center, or urban location

Mitigation Method:

$$\% \text{ VMT Reduction} = A * B$$

Where

A = % reduction in commute VMT (from the literature)

B = % of employees eligible

Transportation

CEQA# MM T-9

TRT-15

Commute Trip Reduction

MP# TR-5.3

Detail:

- A: Change in Commute VMT: 3.0% (low density suburb), 4.5% (suburban center), 7.7% (urban) change in commute VMT (source: Moving Cooler)

Assumptions:

Data based upon the following references:

- Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute. (Table 5.13, Table D.3)
http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁶⁹
CO ₂ e	0.6 – 7.7% of running
PM	0.6 – 7.7% of running
CO	0.6 – 7.7% of running
NO _x	0.6 – 7.7% of running
SO ₂	0.6 – 7.7% of running
ROG	0.36 – 4.62% of running

Discussion:

Please note that these estimates are independent of results for workplace parking pricing strategy (see strategy number T# E5 for more information).

If work site parking is not unbundled, employers cannot utilize this unbundled price as a means of establishing “cash-out” prices. The table below shows typical costs for parking facilities in large urban and suburban areas in the US. This can be utilized as a reference point for establishing reasonable “cash-out” prices. Note that the table does not include external costs to parking such as added congestion, lost opportunity cost of land devoted to parking, and greenhouse gas (GHG) emissions.

	Structured (urban)	Surface (suburban)
Land (Annualized)	\$1,089	\$215
Construction (Annualized)	\$2,171	\$326

⁶⁹ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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TRT-15

Commute Trip Reduction

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O & M Costs	\$575	\$345
Annual Total	\$3,835	\$885
Monthly Costs	\$320	\$74
Source: VTPI, <i>Transportation Costs and Benefit Analysis II – Parking Costs</i> , April 2010 (p.5.4-10)		

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (low density suburb and 20% eligible) = $3\% * 0.2 = 0.6\%$
- High Range % VMT Reduction (urban and 100% eligible) = $7.7\% * 1 = 7.7\%$

Preferred Literature:

- 0.44% - 2.07% reduction in GHG emissions
- 3.0% - 7.7% reduction in commute VMT

Moving Cooler Technical Appendices indicate that reimbursing “cash-out” participants \$1/day can reduce GHG between 0.44% and 2.07% and reduce commuting VMT between 3.0% and 7.7%. The reduction in GHG varies based on how extensive the implementation of the program is. The reduction in commuting VMT differs for type of urban area is shown in the table below.

Strategy	Description	Percent Change in Commuting VMT					
		Large Metropolitan (higher transit use)	Large Metropolitan (lower transit use)	Medium Metro (higher)	Medium Metro (lower)	Small Metro (higher)	Small Metro (lower)
Parking Cash-Out	Subsidy of \$1/day	7.7%	3.7%	4.5%	3.0%	4.0%	3.0%

Alternative Literature:

Alternate:

- 2-6% reduction in vehicle trips

VTPI used synthesis data to determine parking cash out could reduce commute vehicle trips by 10-30%. VTPI estimates that the portion of vehicle travel affected by parking cash-out would be about 20% and therefore there would be only about a 2-6% total reduction in vehicle trips attributed to parking cash-out.

Alternate:

Transportation

CEQA# MM T-9

MP# TR-5.3

TRT-15

Commute Trip Reduction

- 12% reduction in VMT per year per employee
- 64% increase in carpooling
- 50% increase in transit mode share
- 39% increase in pedestrian/bike share

Shoup looked at eight California firms that complied with California's 1992 parking cash-out law, applicable to employers of 50 or more persons in regions that do not meet the state's clean air standards. To comply, a firm must offer commuters the option to choose a cash payment equal to any parking subsidy offered. Six of companies went beyond compliance and subsidized one or more alternatives to parking (more than the parking subsidy price). The eight companies ranged in size between 120 and 300 employees, and were located in downtown Los Angeles, Century City, Santa Monica, and West Hollywood. Shoup states that an average of 12% fewer VMT per year per employee is equivalent to removing one of every eight cars driven to work off the road.

Alternative Literature Notes:

Litman, T., 2009. "Win-Win Emission Reduction Strategies." Victoria Transport Policy Institute. Website: <http://www.vtpi.org/wwclimate.pdf>. Accessed March 2010. (p. 5)

Donald Shoup, "Evaluating the Effects of Cashing Out Employer-Paid Parking: Eight Case Studies." *Transport Policy*, Vol. 4, No. 4, October 1997, pp. 201-216. (Table 1, p. 204)

Other Literature Reviewed:

None

Transportation

CEQA# MS-G3

TST-1

Transit System
Improvements

3.5 Transit System Improvements

3.5.1 Provide a Bus Rapid Transit System

Range of Effectiveness: 0.02 – 3.2% vehicle miles traveled (VMT) reduction and therefore 0.02 – 3% reduction in GHG emissions.

Measure Description:

The project will provide a Bus Rapid Transit (BRT) system with design features for high quality and cost-effective transit service. These include:

- Grade-separated right-of-way, including bus only lanes (for buses, emergency vehicles, and sometimes taxis), and other Transit Priority measures. Some systems use guideways which automatically steer the bus on portions of the route.
- Frequent, high-capacity service
- High-quality vehicles that are easy to board, quiet, clean, and comfortable to ride.
- Pre-paid fare collection to minimize boarding delays.
- Integrated fare systems, allowing free or discounted transfers between routes and modes.
- Convenient user information and marketing programs.
- High quality bus stations with Transit Oriented Development in nearby areas.
- Modal integration, with BRT service coordinated with walking and cycling facilities, taxi services, intercity bus, rail transit, and other transportation services.

BRT systems vary significantly in the level of travel efficiency offered above and beyond “identity” features and BRT branding. The following effectiveness ranges represent general guidelines. Each proposed BRT should be evaluated specifically based on its characteristics in terms of time savings, cost, efficiency, and way-finding advantages. These types of features encourage people to use public transit and therefore reduce VMT.

Measure Applicability:

- Urban and suburban context
- Negligible in a rural context. Other measures are more appropriate to rural areas, such as express bus service to urban activity centers with park-and-ride lots at system-efficient rural access points.
- Appropriate for specific or general plans

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

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$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Existing transit mode share
- Percentage of lines serving Project converting to BRT

The following are optional inputs. Average (default) values are included in the calculations but can be updated to project specificity if desired. Please see Appendix C for calculation detail:

- Average vehicle occupancy

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Riders} * \text{Mode} * \text{Lines} * D$$

Where

Riders = % increase in transit ridership on BRT line (28% from [1])

Mode mode share (see table below) = Existing transit

Lines serving project converting to BRT = Percentage of lines

D = Adjustments from transit ridership increase to VMT (0.67, see Appendix C)

Project setting	Transit mode share
Suburban	1.3%
Urban	4%
Urban Center	17%
Source: NHTS, 2001 http://www.dot.ca.gov/hq/tsip/tab/documents/travelsurveys/Final2001_StwTravelSurveyWkdayRpt.pdf (Urban – MTC, SACOG. Suburban – SCAG, SANDAG, Fresno County.) Urban Center from San Francisco County Transportation Authority Countywide Transportation Plan, 2000.	

Transportation

CEQA# MS-G3 **TST-1** **Transit System Improvements**

- D: 0.67 (see Appendix C for detail)

Assumptions:

Data based upon the following references:

[1] FTA, August 2005. “Las Vegas Metropolitan Area Express BRT Demonstration Project”, NTD, <http://www.ntdprogram.gov/ntdprogram/cs?action=showRegionAgencies®ion=9>

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁷⁰
CO ₂ e	0.02 – 3.2% of running
PM	0.02 – 3.2% of running
CO	0.02 – 3.2% of running
NO _x	0.02 – 3.2% of running
SO ₂	0.02 – 3.2% of running
ROG	0.012 – 1.9% of total

Discussion:

Increases in transit ridership due to shifts from other lines do not need to be addressed since it is already incorporated in the literature.

In general, transit operational strategies alone are not enough for a large modal shift [2], as evidenced by the low range in VMT reductions. Through case study analysis, the TCRP report [2] observed that strategies that focused solely on improving level of service or quality of transit were unsuccessful at achieving a significant shift. Strategies that reduce the attractiveness of vehicle travel should be implemented in combination to attract a larger shift in transit ridership. The three following factors directly impact the attractiveness of vehicle travel: urban expressway capacity, urban core density, and downtown parking availability.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (suburban, 10% of lines) = 28% * 1.3% * 10% * 0.67 = 0.02%

⁷⁰ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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- High Range % VMT Reduction (urban, 100% of lines) = $28\% * 17\% * 100\% * 0.67 = 3.2\%$

Preferred Literature:

- 28% increase in transit ridership in the existing corridor

The FTA study [1] looks at the implementation of the Las Vegas BRT system. The BRT supplemented an existing route along a 7.5 mile corridor. The existing route was scaled back. Total ridership on the corridor (both routes combined) increased 61,704 monthly riders, 28% increase on the existing corridor and 1.4% increase in system ridership. The route represented an increase in 2.1% of system service miles provided.

Alternative Literature:

Alternate:

- 27-84% increase in total transit ridership

Various bus rapid transit systems obtained the following total transit ridership growth: Vancouver 96B (30%), Las Vegas Max (35-40%), Boston Silver Line (84%), Los Angeles (27-42%), and Oakland (66%). VTPI [3] obtained the BRT data from BC Transit’s unpublished research. The effectiveness of a BRT strategy depends largely on the land uses the BRT serves and their design and density.

Alternate:

- 50% increase in weekly transit ridership
- 60 – 80% shorter travel time compared to vehicle trip

The Martin Luther King, Jr. East Busway in Pennsylvania opened in 1983 as a separate roadway exclusively for public buses. The busway was 6.8 miles long with six stations. Ridership has grown from 20,000 to 30,000 weekday riders over 10 years. The busway saves commuters significant time compared with driving: 12 minutes versus 30-45 minutes in the AM or an hour in the PM [4].

Alternative Literature References:

[2] Transit Cooperative Research Program. TCRP 27 – Building Transit Ridership: An Exploration of Transit’s Market Share and the Public Policies That Influence It (p.47-48). 1997. [cited in discussion section above]

[3] TDM Encyclopedia; Victoria Transport Policy Institute (2010). Bus Rapid Transit; (<http://www.vtppi.org/tdm/tdm120.htm>); updated 1/25/2010; accessed 3/3/2010.

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TST-1

Transit System Improvements

[4] Transportation Demand Management Institute of the Association for Commuter Transportation. *TDM Case Studies and Commuter Testimonials*. Prepared for the US EPA. 1997. (p.55-56)
<http://www.epa.gov/OMS/stateresources/rellinks/docs/tmccases.pdf>

Transportation

MP# LU-3.4.3

TST-2

Transit System
Improvements

3.5.2 Implement Transit Access Improvements

Range of Effectiveness: Grouped strategy. [See TST-3 and TST-4]

Measure Description:

This project will improve access to transit facilities through sidewalk/ crosswalk safety enhancements and bus shelter improvements. The benefits of Transit Access Improvements alone have not been quantified and should be grouped with Transit Network Expansion (TST-3) and Transit Service Frequency and Speed (TST-4).

Measure Applicability:

- Urban, suburban context
- Appropriate for residential, retail, office, mixed use, and industrial projects

Alternative Literature:

No literature was identified that specifically looks at the quantitative impact of improving transit facilities as a standalone strategy.

Alternative Literature References:

None

Other Literature Reviewed:

None

Transportation

CEQA# MS-G3 **TST-3** Transit System Improvements

3.5.3 Expand Transit Network

Range of Effectiveness: 0.1 – 8.2% vehicle miles travelled (VMT) reduction and therefore 0.1 – 8.2% reduction in GHG emissions⁷¹

Measure Description:

The project will expand the local transit network by adding or modifying existing transit service to enhance the service near the project site. This will encourage the use of transit and therefore reduce VMT.

Measure Applicability:

- Urban and suburban context
- May be applicable in a rural context but no literature documentation available (effectiveness will be case specific and should be based on specific assessment of levels of services and origins/destinations served)
- Appropriate for specific or general plans

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled

for running emissions

VMT = vehicle miles

EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage increase transit network coverage
- Existing transit mode share
- Project location: urban center, urban, or suburban

⁷¹ Transit vehicles may also result in increases in emissions that are associated with electricity production or fuel use. The Project Applicant should consider these potential additional emissions when estimating mitigation for these measures.

Transportation

CEQA# MS-G3 **TST-3** **Transit System Improvements**

The following are optional inputs. Average (default) values are included in the calculations but can be updated to project specificity if desired. Please see Appendix C for calculation detail:

- Average vehicle occupancy

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Coverage} * B * \text{Mode} * D$$

Where

- Coverage = % increase in transit network coverage
- B = elasticity of transit ridership with respect to service coverage (see Table below)
- Mode = existing transit mode share
- D = adjustments from transit ridership increase to VMT (0.67, from Appendix C)

B:

Project setting	Elasticity
Suburban	1.01
Urban	0.72
Urban Center	0.65
Source: TCRP 95, Chapter 10	

Mode: Provide existing transit mode share for project or utilize the following averages

Project setting	Transit mode share
Suburban	1.3%
Urban	4%
Urban Center	17%
Source: NHTS, 2001 http://www.dot.ca.gov/hq/tsip/tab/documents/travelsurveys/Final2001_StwTravelSurveyWkdayRpt.pdf (Urban – MTC, SACOG. Suburban – SCAG, SANDAG, Fresno County.) Urban Center from San Francisco County Transportation Authority Countywide Transportation Plan, 2000.	

Assumptions:

Data based upon the following references:

Transportation

CEQA# MS-G3 **TST-3** **Transit System Improvements**

[1] Transit Cooperative Research Program. TCRP Report 95 Traveler Response to System Changes – Chapter 10: Bus Routing and Coverage. 2004. (p. 10-8 to 10-10)

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁷²
CO ₂ e	0.1 – 8.2% of running
PM	0.1 – 8.2% of running
CO	0.1 – 8.2% of running
NO _x	0.1 – 8.2% of running
SO ₂	0.1 – 8.2% of running
ROG	0.06 – 4.9% of total

Discussion:

In general, transit operational strategies alone are not enough for a large modal shift [2], as evidenced by the low range in VMT reductions. Through case study analysis, the TCRP report [2] observed that strategies that focused solely on improving level of service or quality of transit were unsuccessful at achieving a significant shift. Strategies that reduce the attractiveness of vehicle travel should be implemented in combination to attract a larger shift in transit ridership. The three following factors directly impact the attractiveness of vehicle travel: urban expressway capacity, urban core density, and downtown parking availability.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (10% expansion, suburban) = 10% * 1.01 * 1.3% * .67 = 0.1%
- High Range % VMT Reduction (100% expansion, urban) = 100% * 0.72 * 17% * .67 = 8.2%

The low and high ranges are estimates and may vary based on the characteristics of the project.

⁷² The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Transportation

CEQA# MS-G3

TST-3

Transit System
Improvements

Preferred Literature:

- 0.65 = elasticity of transit ridership with respect to service coverage/expansion (in radial routes to central business districts)
- 0.72 = elasticity of transit ridership with respect to service coverage/expansion (in central city routes)
- 1.01 = elasticity of transit ridership with respect to service coverage/expansion (in suburban routes)

TCRP 95 Chapter 10 [1] documents the results of system-wide service expansions in San Diego. The least sensitivity to service expansion came from central business districts while the largest impacts came from suburban routes. Suburban locations, with traditionally low transit service, tend to have greater ridership increases compared to urban locations which already have established transit systems. In general, there is greater opportunity in suburban locations.

Alternative Literature:

- -0.06 = elasticity of VMT with respect to transit revenue miles

Growing Cooler [3] modeled the impact of various urban variables (including transit revenue miles and transit passenger miles) on VMT, using data from 84 urban areas around the U.S.

Alternative Literature References:

- [2] Transit Cooperative Research Program. TCRP 27 – Building Transit Ridership: An Exploration of Transit's Market Share and the Public Policies That Influence It (p.47-48). 1997. [cited in discussion section above]
- [3] Ewing, et al, 2008. *Growing Cooler – The Evidence on Urban Development and Climate Change*. Urban Land Institute.

Transportation

CEQA# MS-G3

TST-4

Transit System
Improvements

3.5.4 Increase Transit Service Frequency/Speed

Range of Effectiveness: 0.02 – 2.5% vehicle miles traveled (VMT) reduction and therefore 0.02 – 2.5% reduction in GHG emissions⁷³

Measure Description:

This project will reduce transit-passenger travel time through more reduced headways and increased speed and reliability. This makes transit service more attractive and may result in a mode shift from auto to transit which reduces VMT.

Measure Applicability:

- Urban and suburban context
- May be applicable in a rural context but no literature documentation available (effectiveness will be case specific and should be based on specific assessment of levels of services and origins/destinations served)
- Appropriate for specific or general plans

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled
for running emissions

VMT = vehicle miles
EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage reduction in headways (increase in frequency)
- Level of implementation
- Project setting: urban center, urban, suburban
- Existing transit mode share

⁷³ Transit vehicles may also result in increases in emissions that are associated with electricity production or fuel use. The Project Applicant should consider these potential additional emissions when estimating mitigation for these measures.

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CEQA# MS-G3

TST-4

Transit System Improvements

The following are optional inputs. Average (default) values are included in the calculations but can be updated to project-specific values if desired. Please see Appendix C for calculation detail:

- Average vehicle occupancy

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Headway} * B * C * \text{Mode} * E$$

Where

Headway = % reduction in headways

B = ridership with respect to increased frequency of service

= elasticity of transit (from [1])

C = adjustment for level of implementation

Mode = existing transit mode share

E = adjustments from transit ridership increase to VMT

Detail:

- Headway: reasonable ranges from 15 – 80%
- B:

Setting	Elasticity
Urban	0.32
Suburban	0.36
Source: TCRP Report 95 Chapter 9	

- C:

Level of implementation = number of lines improved / total number of lines serving project	Adjustment
<50%	50%
>=50%	85%
Fehr & Peers, 2010.	

- Mode: Provide existing transit mode share for project or utilize the following averages

Project setting	Transit mode share
Suburban	1.3%
Urban	4%
Urban Center	17%
Source: NHTS, 2001 http://www.dot.ca.gov/hq/tsip/tab/documents/travelsurveys/Final2001_StwTravelSurveyWkdayRpt.pdf (Urban – MTC, SACOG. Suburban – SCAG, SANDAG, Fresno County.)	

Transportation

CEQA# MS-G3 **TST-4** **Transit System Improvements**

Urban Center from San Francisco County Transportation Authority
Countywide Transportation Plan, 2000.

- E: 0.67 (see Appendix C for detail)

Assumptions:

Data based upon the following references:

[1] Transit Cooperative Research Program. TCRP Report 95 Traveler Response to System Changes – Chapter 9: Transit Scheduling and Frequency (p. 9-14)

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁷⁴
CO ₂ e	0.02 – 2.5% % of running
PM	0.02 – 2.5% % of running
CO	0.02 – 2.5% % of running
NO _x	0.02 – 2.5% % of running
SO ₂	0.02 – 2.5% % of running
ROG	0.01 – 1.5% % of total

Discussion:

Reasonable ranges for reductions were calculated assuming existing 30-minute headways reduced to 25 minutes and 5 minutes to establish the estimated low and high reductions, respectively.

The level of implementation adjustment is used to take into account increases in transit ridership due to shifts from other lines. If increases in frequency are only applied to a percentage of the lines serving the project, then we conservatively estimate that 50% of the transit ridership increase is a shift from the existing lines. If frequency increases are applied to a majority of the lines serving the project, we conservatively assume at least some of the transit ridership (15%) comes from existing riders.

In general, transit operational strategies alone are not enough for a large modal shift [2], as evidenced by the low range in VMT reductions. Through case study analysis, the TCRP report [2] observed that strategies that focused solely on improving level of service or quality of transit were unsuccessful at achieving a significant shift. Strategies that reduce the attractiveness of vehicle travel should be implemented in combination to attract a larger shift in transit ridership. The three following factors directly impact the

⁷⁴ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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Transit System
Improvements

attractiveness of vehicle travel: urban expressway capacity, urban core density, and downtown parking availability.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (15% reduction in headways, suburban, <50% implementation) = $15\% * 0.36 * 50\% * 1.3\% * 0.67 = 0.02\%$
- High Range % VMT Reduction (80% reduction in headways, urban, >50% implementation) = $80\% * 0.32 * 85\% * 17\% * 0.67 = 2.5\%$

Preferred Literature:

- 0.32 = elasticity of transit ridership with respect to transit service (urban)
- 0.36 – 0.38 = elasticity of transit ridership with respect to transit service (suburban)

TCRP 95 Chapter 9 [1] documents the results of frequency changes in Dallas. Increases in frequency are more sensitive in a suburban environment. Suburban locations, with traditionally low transit service, tend to have greater ridership increases compared to urban locations which already have established transit systems. In general, there is greater opportunity in suburban locations

Alternative Literature:

- 0.5 = elasticity of transit ridership with respect to increased frequency of service
- 1.5 to 2.3% increase in annual transit trips due to increased frequency of service
- 0.4-0.5 = elasticity of ridership with respect to increased operational speed
- 4% - 15% increase in annual transit trips due to increased operational speed
- 0.03-0.09% annual GHG reduction (for bus service expansion, increased frequency, and increased operational speed)

For increased frequency of service strategy, *Moving Cooler* [3] looked at three levels of service increases, 3%, 3.5% and 4.67% increases in service, resulting in a 1.5 – 2.3% increase in annual transit trips. For increased speed and reliability, *Moving Cooler* looked at three levels of speed/reliability increases. Improving travel speed by 10% assumed implementing signal prioritization, limited stop service, etc. over 5 years. Improving travel speed by 15% assumed all above strategies plus signal synchronization and intersection reconfiguration over 5 years. Improving travel speed by 30% assumed all above strategies and an improved reliability by 40%, integrated fare system, and implementation of BRT where appropriate. *Moving Cooler* calculates estimated 0.04-0.14% annual GHG reductions in combination with bus service expansion strategy.

Transportation

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TST-4

Transit System
Improvements

Alternative Literature References:

- [2] Transit Cooperative Research Program. TCRP 27 – Building Transit Ridership: An Exploration of Transit's Market Share and the Public Policies That Influence It (p.47-48). 1997. [cited in discussion section]
- [3] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute. (p B-32, B-33, Table D.3)
http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendices_Complete_102209.pdf

Transportation

MP# TR-4.1.4

TST-5

Transit System
Improvements

3.5.5 Provide Bike Parking Near Transit

Range of Effectiveness: Grouped strategy. [See TST-3 and TST-4]

Measure Description:

Provide short-term and long-term bicycle parking near rail stations, transit stops, and freeway access points. The benefits of Station Bike Parking have no quantified impacts as a standalone strategy and should be grouped with Transit Network Expansion (TST-3) and Increase Transit Service Frequency and Speed (TST-4) to encourage multi-modal use in the area and provide ease of access to nearby transit for bicyclists.

Measure Applicability:

- Urban, suburban context
- Appropriate for residential, retail, office, mixed use, and industrial projects

Alternative Literature:

No literature was identified that specifically looks at the quantitative impact of including transit station bike parking.

Alternative Literature References:

None

Other Literature Reviewed:

None

Transportation

TST-6

Transit System Improvements

3.5.6 Provide Local Shuttles

Range of Effectiveness: Grouped strategy. [See TST-4 and TST-5]

Measure Description:

The project will provide local shuttle service through coordination with the local transit operator or private contractor. The local shuttles will provide service to transit hubs, commercial centers, and residential areas. The benefits of Local Shuttles alone have not been quantified and should be grouped with Transit Network Expansion (TST-4) and Transit Service Frequency and Speed (TST-5) to solve the “first mile/last mile” problem. In addition, many of the CommuteTrip Reduction Programs (Section 2.4, TRP 1-13) also included local shuttles.

Measure Applicability:

- Urban, suburban context
- Appropriate for large residential, retail, office, mixed use, and industrial projects

Alternative Literature:

No literature was identified to support the effectiveness of this strategy alone.

Alternative Literature References:

None

Other Literature Reviewed:

None

Transportation

MP# TR-3.6

RPT-1

Road Pricing Management

3.6 Road Pricing/Management

3.6.1 Implement Area or Cordon Pricing

Range of Effectiveness: 7.9 – 22.0% vehicle miles traveled (VMT) reduction and therefore 7.9 – 22.0% reduction in GHG emissions.

Measure Description:

This project will implement a cordon pricing scheme. The pricing scheme will set a cordon (boundary) around a specified area to charge a toll to enter the area by vehicle. The cordon location is usually the boundary of a central business district (CBD) or urban center, but could also apply to substantial development projects with limited points of access, such as the proposed Treasure Island development in San Francisco. The cordon toll may be static/constant, applied only during peak periods, or be variable, with higher prices during congested peak periods. The toll price can be based on a fixed schedule or be dynamic, responding to real-time congestion levels. It is critical to have an existing, high quality transit infrastructure for the implementation of this strategy to reach a significant level of effectiveness. The pricing signals will only cause mode shifts if alternative modes of travel are available and reliable.

Measure Applicability:

- Central business district or urban center only

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$\text{CO}_2 = \text{VMT} \times \text{EF}_{\text{running}}$$

Where:

traveled
for running emissions

VMT = vehicle miles
EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage increase in pricing for passenger vehicles to cross cordon
- Peak period variable price or static all-day pricing (London scheme)

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MP# TR-3.6 **RPT-1** Road Pricing Management

The following are optional inputs. Average (default) values are included in the calculations but can be updated to project-specific values if desired. Please see Appendix C for calculation detail:

- % (due to pricing) route shift, time-of-day shift, HOV shift, trip reduction, shift to transit/walk/bike

Mitigation Method:

$$\% \text{ VMT Reduction} = \text{Cordon\$} * B * C$$

Where

- Cordon\$ = % increase in pricing for passenger vehicles to cross cordon
- B = Elasticity of VMT with respect to price (from [1])
- C = Adjustment for % of VMT impacted by congestion pricing and mode shifts

Detail:

- Cordon\$: reasonable range of 100 – 500% (See Appendix C for detail)
- B: 0.45 [1]
- C:

Cordon pricing scheme	Adjustment
Peak-period variable pricing	8.8%
Static all-day pricing	21%
Source: See Appendix C for detail	

Assumptions:

Data based upon the following references:

[1] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute. (p. B-13, B-14)
http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf

- Referencing: VTPI, *Transportation Elasticities: How Prices and Other Factors Affect Travel Behavior*. July 2008. www.vtpi.org

Transportation

MP# TR-3.6

RPT-1

Road Pricing Management

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁷⁵
CO ₂ e	7.9 - 22.0% of running
PM	7.9 - 22.0% of running
CO	7.9 - 22.0% of running
NO _x	7.9 - 22.0% of running
SO ₂	7.9 - 22.0% of running
ROG	4.7 – 13.2% of total

Discussion:

The amount of pricing will vary on a case-by-case basis. The 100 – 500% increase is an estimated range of increases and should be adjusted to reflect the specificities of the pricing scheme implemented. Take care in calculating the percentage increase in price if baseline is \$0.00. An upper limit of 500% may be a good check point. If baseline is zero, the Project Applicant may want to conduct calculations with a low baseline such as \$1.00.

These calculations assume that the project is within the area cordon, essentially assuming that 100% of project trips will be affected. See Appendix C to make appropriate adjustments.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (100% increase in price, peak period pricing) = $100\% * 0.45 * 8.8\% = 4.0\%$
- High Range % VMT Reduction (500% increase in price, all-day pricing) = $500\% * 0.45 * 21\% = 47.3\% = 22\%$ (established maximum based on literature)

Preferred Literature:

- -0.45 VMT elasticity with regard to pricing
- 0.04-0.08% greenhouse gas (GHG) reduction

Moving Cooler [1] assumes an average of 3% of regional VMT would cross the CBD cordon. A VMT reduction of 20% was estimated to require an average of 65 cents/mile applied to all congested VMT in the CBD, major employment, and retail centers. The

⁷⁵ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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MP# TR-3.6

RPT-1

Road Pricing Management

range in GHG reductions is attributed to the range of implementation and start date. *Moving Cooler* reports an elasticity range from -0.15 to -0.47 from VTPI. *Moving Cooler* utilizes a stronger elasticity (0.45) to represent greater impact cordon pricing will have on users compared to other pricing strategies.

Alternative Literature:

- 6.5-14.0% reduction in carbon emissions
- 16-22% reduction in vehicles
- 6-9% increase in transit use

The Center for Clean Air Policy (CCAP) [2] cites two case studies in Europe, one in London and one in Stockholm, which show vehicle reductions of 16% and 22%, respectively. London's fee reduced CO₂ by 6.5%. Stockholm's program reduced injuries by 10%, increased transit use by 6-9%, and reduced carbon emissions by 14% in the central city within months of implementation.

Alternative Literature References:

[2] Center for Clean Air Policy (CCAP), *Short-term Efficiency Measures*. (p. 1)

<http://www.ccap.org/docs/resources/715/Short-Term%20Travel%20Efficiency%20Measures%20cut%20GHGs%209%2009%20final.pdf>

CCAP cites Transport for London. *Central London Congestion Charging: Impacts Monitoring, Sixth Annual Report*. July 2008 <http://www.tfl.gov.uk/assets/downloads/sixth-annual-impacts-monitoring-report-2008-07.pdf> (p. 6) and Leslie Abboud and Jenny Clevstrom, "Stockholm's Syndrome," August 29, 2006, *Wall Street Journal*. http://transportation.northwestern.edu/mahmassani/Media/WSJ_8.06.pdf (p. 2)

Other Literature Reviewed:

None

Transportation

MP# TR-2.1 & TR-2.2

RPT-2

Road Pricing Management

3.6.2 Improve Traffic Flow

Range of Effectiveness: 0 - 45% reduction in GHG emissions

Measure Description:

The project will implement improvements to smooth traffic flow, reduce idling, eliminate bottlenecks, and management speed. Strategies may include signalization improvements to reduce delay, incident management to increase response time to breakdowns and collisions, Intelligent Transportation Systems (ITS) to provide real-time information regarding road conditions and directions, and speed management to reduce high free-flow speeds.

This measure does not take credit for any reduction in GHG emissions associated with changes to non-project traffic VMT. If Project Applicant wants to take credit for this benefit, the non-project traffic VMT would also need to be covered in the baseline conditions.

Measure Applicability:

- Urban, suburban, and rural context

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO₂ emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{\text{running}}$$

Where:

traveled
for running emissions

VMT = vehicle miles
EF_{running} = emission factor

Inputs:

The following information needs to be provided by the Project Applicant:

- Average base-year travel speed (miles per hour (mph)) on implemented roads (congested⁷⁶ condition)

⁷⁶ A roadway is considered “congested” if operating at Level of Service (LOS) E or F

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MP# TR-2.1 & TR-2.2
RPT-2
Road Pricing Management

- Future travel speed (mph) on implemented roads for both a) congested and b) free-flow⁷⁷ condition
- Total vehicle miles traveled (VMT) on implemented roadways
- Total project-generated VMT

Mitigation Method:

$$\% \text{ CO}_2 \text{ Emissions Reduction} = 1 - \frac{\text{Project GHG Emission}_{\text{post strategy}}}{\text{Project GHG emission}_{\text{baseline}}}$$

Where

Project GHG emission_{post strategy} = EF_{running} after strategy implementation * project VMT

Project GHG emission_{baseline} = EF_{running} before strategy implementation * project VMT

EF_{running} = emission factor for running emissions [from table presented under “Detail” below]

Detail:

mph	Grams of CO ₂ / mile	
	congested	Free-flow
5	1,110	823
10	715	512
15	524	368
20	424	297
25	371	262
30	343	247
35	330	244
40	324	249
45	323	259
50	325	273
55	328	289
60	332	306
65	339	325
70	353	347
75	377	375
80	420	416
85	497	478

Source: Barth, 2008, Fehr & Peers [1]

⁷⁷ A roadway is considered “free flow” if operating at LOS D or better

Transportation
 MP# TR-2.1 & TR-2.2 **RPT-2** **Road Pricing Management**

By only including the project VMT portion, the reduction is typically on scale with the percentage of cost for traffic improvements and full reduction calculated for project VMT should be used. However, if the project cost is a greater share than their contribution to the VMT on the road, than the project and non-project VMT should be calculated and the percent reduction should be multiplied by the percent cost allocation. The GHG emission reductions associated with non-project VMT (if applicable) would be calculated as follows:

$$\text{Metric Tonnes GHG reduced due to improving non-Project traffic flow} = \% \text{ Cost Allocation} * \text{Non-Project VMT} * (EF_{\text{congested}} - EF_{\text{freeflow}}) / (1,000,000 \text{ gram/MT})$$

Where:

Non-Project VMT that the Project's cost share impacts = portion of non-project VMT

$EF_{\text{congested}}$ congested road in g/VMT = emissions for

EF_{freeflow} freeflow road in g/VMT = emissions for

Assumptions:

Data based upon the following references:

[1] Barth and Boriboonsomsin, "Real World CO₂ Impacts of Traffic Congestion", *Transportation Research Record, Journal of the Transportation Research Board*, No. 2058, Transportation Research Board, National Academy of Science, 2008.

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions ⁷⁸
CO ₂ e	0 - 45% of running
PM	0 - 45% of running
CO	0 - 45% of running

⁷⁸ The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

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MP# TR-2.1 & TR-2.2

RPT-2

Road Pricing Management

NOx	0 - 45% of running
SO ₂	0 - 45% of running
ROG	0 - 27% of total

Discussion:

Care must be taken when estimating effectiveness since significantly improving traffic flow essentially lowers the cost and delay involved in travel, which under certain circumstances may induce additional VMT. [See Appendix C for a discussion on induced travel.]

The range of effectiveness presented above is a very rough estimate as emissions reductions will be highly dependent on the level of implementation and degree of congestion on the existing roadways. In addition, the low range of effectiveness was stated at 0% to highlight the potential of induced travel negating benefits achieved from this strategy.

Example:

Sample calculations are provided below:

- Signal timing coordination implementation:
 - Existing congested speeds of 25 mph
 - Conditions post-implementation: would improve to 25 mph free flow speed
 - Proposed project daily traffic generation is 200,000 VMT
 - Project CO₂ Emissions_{baseline} = (371 g CO₂/mile) * (200,000 VMT daily) * (1 MT / 1 x 10⁶ g) = 74 MT of CO₂ daily
 - Project CO₂ Emissions_{post strategy} = (262 g CO₂/mile) * (200,000 VMT daily) * (1 MT / 1 x 10⁶ g) = 52.4 MT of CO₂ daily
 - Percent CO₂emissions reduction = 1 - (52.4 MT/ 74 MT) = 29%
- Speed management technique:
 - Existing free-flow speeds of 75 mph
 - Conditions post-implementation: reduce to 55 mph free flow speed
 - Proposed project daily traffic generation is 200,000 VMT
 - Project CO₂ Emissions_{baseline} = (375 g CO₂/mile) * (200,000 VMT daily) * (1 MT / 1 x 10⁶ g) = 75 MT of CO₂ daily
 - Project CO₂ Emissions_{post strategy} = (289 g CO₂/mile) * (200,000 VMT daily) * (1 MT / 1 x 10⁶ g) = 58 MT of CO₂ daily
 - Percent CO₂emissions reduction= 1 – (58 tons/ 75 tons) = 23%

Preferred Literature:

- 7 – 12% reduction in CO₂ emissions

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RPT-2

Road Pricing Management

This study [1] examined traffic conditions in Southern California using energy and emissions modeling and calculated the impacts of 1) congestion mitigation strategies to smooth traffic flow, 2) speed management techniques to reduce high free-flow speeds, and 3) suppression techniques to eliminate acceleration/deceleration associated with stop-and-go traffic. Using typical conditions on Southern California freeways, the strategies could reduce emissions by 7 to 12 percent.

The table (in the mitigation method section) was calculated using the CO₂ emissions equation from the report:

$$\ln(y) = b_0 + b_1 * x + b_2 * x^2 + b_3 * x^3 + b_4 * x^4$$

where

y = CO₂ emission in grams / mile

x = average trip speed in miles per hour (mph)

The coefficients for b_i were based off of Table 1 of the report, which then provides an equation for both congested conditions (real-world) and free-flow (steady-state) conditions.

Alternative Literature:

- 4 - 13% reduction in fuel consumption

The FHWA study [2] looks at various case studies of traffic flow improvements. In Los Angeles, a new traffic control signal system was estimated to reduce signal delays by 44%, vehicle stops by 41%, and fuel consumption by 13%. In Virginia, a study of retiming signal systems estimated reductions of stops by 25%, travel time by 10%, and fuel consumption by 4%. In California, optimization of 3,172 traffic signals through 1988 (through California's Fuel Efficient Traffic Signal Management program) documented an average reduction in vehicle stops of 16% and in fuel use of 8.6%. The 4-13% reduction in fuel consumption applies only to that vehicular travel directly benefited by the traffic flow improvements, specifically the VMT within the corridor in which the ITS is implemented and only during the times of day that would otherwise be congested without ITS. For example, signal coordination along an arterial normally congested in peak commute hours would produce a 4-13% reduction in fuel consumption only for the VMT occurring along that arterial during weekday commute hours.

Alternate:

- Up to 0.02% increase in greenhouse gas (GHG) emissions

Moving Cooler [3] estimates that bottleneck relief will result in an increase in GHG emissions during the 40-year period, 2010 to 2050. In the short term, however,

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RPT-2**Road Pricing Management**

improved roadway conditions may improve congestion and delay, and thus reduce fuel consumption. VMT and GHG emissions are projected to increase after 2030 as induced demand begins to consume the roadway capacity. The study estimates a maximum increase of 0.02% in GHG emissions.

Alternative Literature References:

[2] FHWA, *Strategies to Reduce Greenhouse Gas Emissions from Transportation Sources*. http://www.fhwa.dot.gov/environment/glob_c5.pdf.

[3] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Technical Appendices. Prepared for the Urban Land Institute.

http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf

Other Literature Reviewed:

None

Transportation

RPT-3

Road Pricing Management

3.6.3 Required Project Contributions to Transportation Infrastructure Improvement Projects

Range of Effectiveness: Grouped strategy. [See RPT-2 and TST-1 through 7]

Measure Description:

The project should contribute to traffic-flow improvements or other multi-modal infrastructure projects that reduce emissions and are not considered as substantially growth inducing. The local transportation agency should be consulted for specific needs.

Larger projects may be required to contribute a proportionate share to the development and/or continuation of a regional transit system. Contributions may consist of dedicated right-of-way, capital improvements, easements, etc. The local transportation agency should be consulted for specific needs.

Refer to Traffic Flow Improvements (RPT-2) or the Transit System Improvements (TST-1 through 7) strategies for a range of effectiveness in these categories. The benefits of Required Contributions may only be quantified when grouped with related improvements.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential, retail, office, mixed use, and industrial projects

Alternative Literature:

Although no literature discusses project contributions as a standalone measure, this strategy is a supporting strategy for most operations and infrastructure projects listed in this report.

Other Literature Reviewed:

None

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MP# TR-1

RPT-4

Road Pricing Management

3.6.4 Install Park-and-Ride Lots

Range of Effectiveness: Grouped strategy. [See RPT-1, TRT-11, TRT-3, and TST-1 through 6]

Measure Description:

This project will install park-and-ride lots near transit stops and High Occupancy Vehicle (HOV) lanes. Park-and-ride lots also facilitate car- and vanpooling. Refer to Implement Area or Cordon Pricing (RPT-1), Employer-Sponsored Vanpool/Shuttle (TRT-11), Ride Share Program (TRT-3), or the Transit System Improvement strategies (TST-1 through 6) for ranges of effectiveness within these categories. The benefits of Park-and-Ride Lots are minimal as a stand-alone strategy and should be grouped with any or all of the above listed strategies to encourage carpooling, vanpooling, ride-sharing, and transit usage.

Measure Applicability:

- Suburban and rural context
- Appropriate for residential, retail, office, mixed use, and industrial projects

Alternative Literature:

Alternate:

- 0.1 – 0.5% vehicle miles traveled (VMT) reduction

A 2005 FHWA [1] study found that regional VMT in metropolitan areas may be reduced between 0.1 to 0.5% (citing Apogee Research, Inc., 1994). The reduction potential of this strategy may be limited because it reduces the trip length but not vehicle trips.

Alternate:

- 0.50% VMT reduction per day

Washington State Department of Transportation (WSDOT) [2] notes the above number applies to countywide interstates and arterials.

Alternative Literature References:

[1] FHWA. Transportation and Global Climate Change: A Review and Analysis of the Literature – Chapter 5: Strategies to Reduce Greenhouse Gas Emissions from Transportation Sources.

http://www.fhwa.dot.gov/environment/glob_c5.pdf

Transportation

MP# TR-1

RPT-4

Road Pricing Management

[2] Washington State Department of Transportation. *Cost Effectiveness of Park-and-Ride Lots in the Puget Sound Area.*

<http://www.wsdot.wa.gov/research/reports/fullreports/094.1.pdf>

Other Literature Reviewed:

None

Transportation

MP# TR-6 **VT-1** Vehicles

3.7 Vehicles

3.7.1 Electrify Loading Docks and/or Require Idling-Reduction Systems

Range of Effectiveness: 26-71% reduction in TRU idling GHG emissions

Measure Description:

Heavy-duty trucks transporting produce or other refrigerated goods will idle at truck loading docks and during layovers or rest periods so that the truck engine can continue to power the cab cooling elements. Idling requires fuel use and results in GHG emissions.

The Project Applicant should implement an enforcement and education program that will ensure compliance with this measure. This includes posting signs regarding idling restrictions as well as recording engine meter times upon entering and exiting the facility.

Measure Applicability:

- Truck refrigeration units (TRU)

Inputs:

The following information needs to be provided by the Project Applicant:

- Electricity provider for the Project
- Horsepower of TRU
- Hours of operation

Baseline Method:

$$GHG\ emission = \frac{CO_2\ Exhaust}{Activity \times AvgHP \times LF} \times Hp \times Hr \times C \times LF$$

Where:

GHG emission = MT CO₂e

CO₂ Exhaust = Statewide daily CO₂ emission from TRU for the relevant horsepower tier (tons/day). Obtained from OFFROAD2007.

Activity = Statewide daily average TRU operating hours for the relevant horsepower tier (hours/day). Obtained from OFFROAD2007.

AvgHP = Average TRU horsepower for the relevant horsepower tier (HP). Obtained from OFFROAD2007.

Hp = Horsepower of TRU.

Hr = Hours of operation.

C = Unit conversion factor

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LF = Load factor of TRU for the relevant horsepower tier (dimensionless).
 Obtained from OFFROAD 2007.

Note that this method assumes the load factor of the TRU is same as the default in OFFROAD2007.

Mitigation Method:

Electrify loading docks

TRUs will be plugged into electric loading dock instead of left idling. The indirect GHG emission from electricity generation is:

$$\text{GHG emission} = \text{Utility} \times \text{Hp} \times \text{LF} \times \text{Hr} \times \text{C}$$

Where:

- GHG emissions = MT CO₂e
- Utility = Carbon intensity of Local Utility (CO₂e/kWh)
- Hp = Horsepower of TRU.
- LF = Load factor of TRU for the relevant horsepower tier (dimensionless).
 Obtained from OFFROAD2007.
- Hr = Hours of operation.
- C = Unit conversion factor

$$\text{GHG Reduction \%}^{79} = 1 - \frac{\text{Utility} \times \text{C}}{\text{EF} \times 10^{-6}}$$

Idling Reduction

Emissions from reduced TRU idling periods are calculated using the same methodology for the baseline scenario, but with the shorter hours of operation.

$$\text{GHG Reduction \%} = 1 - \frac{\text{time}_{\text{mitigated}}}{\text{time}_{\text{baseline}}}$$

Electrify loading docks

Power Utility	TRU Horsepower (HP)	Idling Emission Reductions ⁸⁰
LADW&P	< 15	26.3%
	< 25	26.3%
	< 50	35.8%

⁷⁹ This assumes energy from engine losses are the same.

⁸⁰ This reduction percentage applies to all GHG and criteria pollutant idling emissions.

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MP# TR-6

VT-1

Vehicles

PG&E	< 15	72.9%
	< 25	72.9%
	< 50	76.3%
SCE	< 15	61.8%
	< 25	61.8%
	< 50	66.7%
SDGE	< 15	53.5%
	< 25	53.5%
	< 50	59.5%
SMUD	< 15	67.0%
	< 25	67.0%
	< 50	71.2%

Idling Reduction

Emission reduction from shorter idling period is same as the percentage reduction in idling time.

Discussion:

The output from OFFROAD2007 shows the same emissions within each horsepower tier regardless of the year modeled. Therefore, the emission reduction is dependent on the location of the Project and horsepower of the TRU only.

Assumptions:

Data based upon the following references:

- California Air Resources Board. Off-road Emissions Inventory. OFFROAD2007. Available online at: <http://www.arb.ca.gov/msei/offroad/offroad.htm>
- California Climate Action Registry Reporting Online Tool. 2006 PUP Reports. Available online at: <https://www.climateregistry.org/CARROT/public/reports.aspx>

Preferred Literature:

The electrification of truck loading docks can allow properly equipped trucks to take advantage of external power and completely eliminate the need for idling. Trucks would need to be equipped with internal wiring, inverter, system, and a heating, ventilation, and air conditioning (HVAC) system. Under this mitigation measure, the direct emissions from fuel combustion are completely displaced by indirect emissions from the CO₂ generated during electricity production. The amount of electricity required depends on the type of truck and refrigeration elements; this data could be determined from manufacturer specifications. The total kilowatt-hours required should be multiplied by the carbon-intensity factor of the local utility provider in order to calculate the amount of indirect CO₂ emissions. To take credit for this mitigation measure, the Project Applicant

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MP# TR-6

VT-1

Vehicles

would need to provide detailed evidence supporting a calculation of the emissions reductions.

Alternative Literature:

None

Other Literature Reviewed:

1. USEPA. 2002. Green Transport Partnership, A Glance at Clean Freight Strategies: Idle Reduction. Available online at: <http://nepis.epa.gov/Adobe/PDF/P1000S9K.PDF>
2. ATRI. 2009. Research Results: Demonstration of Integrated Mobile Idle Reduction Solutions. Available online at: <http://www.atrionline.org/research/results/ATRI1pagesummaryMIRTDemo.pdf>

None

Transportation

CEQA# MM T-21 VT-2 Vehicles

3.7.2 Utilize Alternative Fueled Vehicles

Range of Effectiveness: Reduction in GHG emissions varies depending on vehicle type, year, and associated fuel economy.

Measure Description:

When construction equipment is powered by alternative fuels such as biodiesel (B20), liquefied natural gas (LNG), or compressed natural gas (CNG) rather than conventional petroleum diesel or gasoline, GHG emissions from fuel combustion may be reduced.

Measure Applicability:

- Vehicles

Inputs:

The following information needs to be provided by the Project Applicant:

- Vehicle category
- Traveling speed (mph)
- Number of trips and trip length, or Vehicle Miles Traveled (VMT)
- Fuel economy (mpg) or Fuel consumption

Baseline Method:

$$\text{Baseline CO}_2 \text{ Emission} = \text{EF} \times \frac{1}{\text{FE}} \times \text{VMT} \times \text{C}$$

Where:

- Baseline CO₂ Emission = MT of CO₂
- EF = CO₂ emission factor, from CCAR General Reporting Protocol (g/gallon)
- VMT = Vehicle miles traveled (VMT) = T x L
- FE = Fuel economy (mpg)
- C = Unit conversion factor

$$\text{Baseline N}_2\text{O /CH}_4 \text{ Emission} = \text{EF} \times \text{VMT} \times \text{C}$$

Where:

- Baseline N₂O/CH₄ Emission = MT of N₂O or CH₄
- EF = N₂O or CH₄ emission factor, from CCAR General Reporting Protocol (g/mile)
- VMT = Vehicle miles traveled (VMT) = T x L
- T = Number of one-way trips
- L = One-way trip length
- FC = Fuel consumption (gallon) = VMT/FE

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CEQA# MM T-21 VT-2 Vehicles

FE = Fuel economy (mpg)
 C = Unit conversion factor

The total baseline GHG emission is the sum of the emissions of CO₂, N₂O and CH₄, adjusted by their global warming potentials (GWP):

Baseline GHG Emission

$$= \text{Baseline CO}_2 \text{ Emission} + \text{Baseline N}_2\text{O Emission} \times 310 + \text{Baseline CH}_4 \text{ Emission} \times 21$$

Where:

$$\begin{aligned} \text{Baseline GHG Emission} &= \text{MT of CO}_2\text{e} \\ 310 &= \text{GWP of N}_2\text{O} \\ 21 &= \text{GWP of CH}_4 \end{aligned}$$

Mitigation Method:

Mitigated emissions from using alternative fuel is calculated using the same methodology before, but using emission factors for the alternative fuel, and fuel consumption calculated as follows:

$$\text{GHG Emissions} = \frac{1}{\text{FE}} \times \text{ER} \times \text{VMT} \times \text{EF}_{\text{CO}_2} + \text{VMT} \times \text{EF}_{\text{N}_2\text{O}} + \text{VMT} \times \text{EF}_{\text{CH}_4}$$

Where:

- ER = Energy ratio from US Department of Energy (see table below)
- EF = Emission Factor for pollutant
- VMT = Vehicle miles traveled (VMT)
- FE = Fuel economy (mpg)

Fuel	Energy Ratio: Amount of fuel needed to provide same energy as			
	1 gallon of Gasoline		1 gallon of Diesel	
Gasoline	1	gal	1.13	gal
#2 Diesel	0.88	gal	1	gal
B20	0.92	gal	1.01	gal
CNG	126. 67	ft ³	143.14	ft ³
LNG	1.56	gal	1.77	gal
LPC	1.37	gal	1.55	gal

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Emission reductions can be calculated as:

$$\text{Reduction} = 1 - \frac{\text{Mitigated Emission}}{\text{Running Emission}}$$

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions
CO ₂ e	Range Not Quantified ⁸¹
PM	Range Not Quantified
CO	Range Not Quantified
NO _x	Range Not Quantified
SO ₂	Range Not Quantified
ROG	Range Not Quantified

Discussion:

Using the methodology described above, only the running emission is considered. A hypothetical scenario for a gasoline fueled light duty automobile in 2015 is illustrated below. The CO₂ emission factor from motor gasoline in CCAR 2009 is 8.81 kg/gallon. Assuming the automobile makes two trips of 60 mile each per day, and using the current passenger car fuel economy of 27.5 mpg under the CAFE standards, then the annual baseline CO₂ emission from the automobile is:

$$8.81 \times \frac{2 \times 60 \times 365}{27.5} \times 10^{-3} = 14.0 \text{ MT/year}$$

Where 10⁻³ is the conversion factor from kilograms to MT.

Using the most recent N₂O emission factor of 0.0079 g/mile in CCAR 2009 for gasoline passenger cars, the annual baseline N₂O emission from the automobile is:

$$0.0079 \times 2 \times 365 \times 60 \times 10^{-6} = 0.000346 \text{ MT/year}$$

⁸¹ The emissions reductions varies and depends on vehicle type, year, and the associated fuel economy. The methodology above describes how to calculate the expected GHG emissions reduction assuming the required input parameters are known.

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Similarly, using the same formula with the most recent CH₄ emission factor of 0.0147 g/mile in CCAR 2009 for gasoline passenger cars, the annual baseline CH₄ emission from the automobile is calculated to be 0.000644 MT/year.

Thus, the total baseline GHG emission for the automobile is:

$$14.0 + 0.000346 \times 310 + 0.000644 \times 21 = 14.1 \text{ MT/year}$$

If compressed natural gas (CNG) is used as alternative fuel, the CNG consumption for the same VMT is:

$$\frac{2 \times 60 \times 365}{27.5} \times 126.67 = 201,751 \text{ ft}^3$$

Using the same formula as for the baseline scenario but with emission factors of CNG and the CNG consumption, the mitigated GHG emission can be calculated as shown in the table below

Pollutant	Emission (MT/yr)
CO ₂	11.0
N ₂ O	0.0022
CH ₄	0.0323
CO ₂ e	12.4

Therefore, the emission reduction is:

$$1 - \frac{12.4}{14.0} = 11.4\%$$

Notice that in the baseline scenario, N₂O and CH₄ only make up <1% of the total GHG emissions, but actually increase for the mitigated scenario and contribute to >10% of total GHG emissions.

Assumptions:

Data based upon the following references:

- California Climate Action Registry (CCAR). 2009. General Reporting Protocol. Version 3.1. Available online at: <http://www.climateregistry.org/tools/protocols/general-reporting-protocol.html>

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- US Department of Energy. 2010. Alternative and Advanced Fuels – Fuel Properties. Available online at: <http://www.afdc.energy.gov/afdc/fuels/properties.html>

Preferred Literature:

The amount of emissions avoided from using alternative fuel vehicles can be calculated using emission factors from the California Climate Action Registry (CCAR) General Reporting Protocol [1]. Multiplying this factor by the fuel consumption or vehicle miles traveled (VMT) gives the direct emissions of CO₂ and N₂O /CH₄, respectively. Fuel consumption and VMT can be calculated interchangeably with the fuel economy (mpg). The total GHG emission is the sum of the emissions from the three chemicals multiplied by their respective global warming potential (GWP).

Assuming the same VMT, the amount of alternative fuel required to run the same vehicle fleet can be calculated by multiplying gasoline/diesel fuel consumption by the equivalent-energy ratio obtained from the US Department of Energy [2]. Using the alternative fuel consumption and the emission factors for the alternative fuel from CCAR, the mitigated GHG emissions can be calculated. The GHG emissions reduction associated with this mitigation measure is therefore the difference in emissions from these two scenarios.

Alternative Literature:

None

Notes:

[1] California Climate Action Registry (CCAR). 2009. General Reporting Protocol. Version 3.1. Available online at:

<http://www.climateregistry.org/tools/protocols/general-reporting-protocol.html>

[2] US Department of Energy. 2010. Alternative and Advanced Fuels – Fuel Properties.

Available online at: <http://www.afdc.energy.gov/afdc/fuels/properties.html>

Other Literature Reviewed:

None

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3.7.3 Utilize Electric or Hybrid Vehicles

Range of Effectiveness: 0.4 - 20.3% reduction in GHG emissions

Measure Description:

When vehicles are powered by grid electricity rather than fossil fuel, direct GHG emissions from fuel combustion are replaced with indirect GHG emissions associated with the electricity used to power the vehicles. When vehicles are powered by hybrid-electric drives, GHG emissions from fuel combustion are reduced.

Measure Applicability:

- Vehicles

Inputs:

The following information needs to be provided by the Project Applicant:

- Vehicle category
- Traveling speed (mph)
- Number of trips and trip length, or Vehicle Miles Traveled (VMT)
- Fuel economy (mpg)

Baseline Method:

$$\text{Baseline Emission} = \text{EF} \times (1 - \text{R}) \times \text{VMT} \times \text{C}$$

Where:

- Baseline Emission = MT of Pollutant
- EF = Running emission factor for pollutant at traveling speed, from EMFAC.
- VMT = Vehicle miles traveled (VMT)
- R = Additional reduction in EF due to regulation (see Table 1)
- C = Unit conversion factor

Mitigation Method:

Fully Electric Vehicle

Vehicle will run solely on electricity. The indirect GHG emission from electricity generation is:

$$\text{Mitigated Emission} = \text{Utility} \times \frac{1}{\text{FE}} \times \text{VMT} \times \text{ER} \times \text{C}$$

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Where:

- Mitigated Emission = MT of CO₂e
- Utility = Carbon intensity of Local Utility (CO₂e/kWh)
- VMT = Vehicle miles traveled (VMT)
- ER = Energy Ratio = 33.4 kWh/gallon-gasoline or 37.7 kWh/gallon-diesel
- FE = Fuel Economy (mpg)
- C = Unit conversion factor

Power Utility	Carbon-Intensity (lbs CO ₂ e/MWh)
LADW&P	1,238
PG&E	456
SCE	641
SDGE	781
SMUD	555

Criteria pollutant emissions will be 100% reduced for equipment running solely on electricity.

Hybrid-Electric Vehicle

The Project Applicant has to determine the fuel consumption reduced from using the hybrid-electric vehicle. The emission reductions for all pollutants are the same as the fuel reduction.

Emission reductions can be calculated as:

$$\text{GHG Reduction\%} = 1 - \frac{\text{Mitigated Emission}}{\text{RunningEmission}}$$

Emission Reduction Ranges and Variables:

See Table VT-3.1 below.

Discussion:

Using the methodology described above, only the running emission is considered. A hypothetical scenario for a gasoline fueled light duty automobile with catalytic converter in 2015 is illustrated below. The running CO₂ emission factor at 30 mph from an EMFAC run of the Sacramento county with temperature of 60F and relative humidity of 45% is 336.1 g/mile. From Table VT-3.1, there will be an additional reduction of 9.1% for the emission factor in 2015 due to Pavley standard. Assuming the automobile makes two trips of 60 mile each per day, then annual baseline emission from the automobile is:

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$$336.1 \times (100\% - 9.1\%) \times 2 \times 365 \times 60 \times 10^{-6} = 13.4 \text{ MT/year}$$

Where 10^{-6} is the conversion factor from grams to MT. Assuming the current passenger car fuel economy of 27.5 mpg under the CAFE standards, and using the carbon-intensity factor for PG&E, the electric provider for the Sacramento region, the mitigated emission from replacing the automobile described above with electric vehicle would be:

$$\left(456 \times \frac{2 \times 365 \times 60}{27.5} \times 33.4 \times \frac{1}{2,204 \times 10^3} \right) = 11.0 \text{ MT/year}$$

Therefore, the emission reduction is:

$$1 - \frac{11.0}{13.4} = 17.9\%$$

Assumptions:

Data based upon the following references:

- California Air Resources Board. EMFAC2007. Available online at: http://www.arb.ca.gov/msei/onroad/latest_version.htm
- California Climate Action Registry (CCAR). 2009. General Reporting Protocol. Version 3.1. Available online at: <http://www.climateregistry.org/tools/protocols/general-reporting-protocol.html>
- California Climate Action Registry Reporting Online Tool. 2006 PUP Reports. Available online at: <https://www.climateregistry.org/CARROT/public/reports.aspx>
- US Department of Energy. 2010. Alternative and Advanced Fuels – Fuel Properties. Available online at: <http://www.afdc.energy.gov/afdc/fuels/properties.html>

Preferred Literature:

The amount of emissions avoided from using electric and hybrid vehicles can be calculated using CARB's EMFAC model, which provides state-wide and regional running emission factors for a variety of on-road vehicles in units of grams per mile [1]. Multiplying this factor by the vehicle miles traveled (VMT) gives the direct emissions. For criteria pollutant, emissions can be assumed to be 100% reduced from running on electricity. For GHG, assuming the same VMT, the electricity required to run the same vehicle fleet can be calculated by dividing by the fuel economy (mpg) and multiplying the gasoline-electric energy ratio obtained from the US Department of Energy [2]. Multiplying this value by the carbon-intensity factor of the local utility gives the amount of indirect GHG emissions associated with electric vehicles. The GHG emissions

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reduction associated with this mitigation measure is therefore the difference in emissions from these two scenarios.

Alternative Literature:

None

Notes:

[1] California Air Resources Board. EMFAC2007. Available online at:

http://www.arb.ca.gov/msei/onroad/latest_version.htm

[2] US Department of Energy. 2010. Alternative and Advanced Fuels – Fuel Properties.

Available online at: <http://www.afdc.energy.gov/afdc/fuels/properties.html>

Other Literature Reviewed:

None

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**Table VT-3.1
Reduction in EMFAC Running Emission Factor from New Regulations**

Year	Vehicle Class	Reduction	Pollutant	Regulation
2010	LDA/LDT/MDV	0.4%	CO ₂	Pavley Standard
2011	LDA/LDT/MDV	1.6%	CO ₂	Pavley Standard
2012	LDA/LDT/MDV	3.5%	CO ₂	Pavley Standard
2013	LDA/LDT/MDV	5.3%	CO ₂	Pavley Standard
2014	LDA/LDT/MDV	7.1%	CO ₂	Pavley Standard
2015	LDA/LDT/MDV	9.1%	CO ₂	Pavley Standard
2016	LDA/LDT/MDV	11.0%	CO ₂	Pavley Standard
2017	LDA/LDT/MDV	13.1%	CO ₂	Pavley Standard
2018	LDA/LDT/MDV	15.5%	CO ₂	Pavley Standard
2019	LDA/LDT/MDV	17.9%	CO ₂	Pavley Standard
2020	LDA/LDT/MDV	20.3%	CO ₂	Pavley Standard
2011	Other Buses	21.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	School Bus	19.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	MHDDT Agriculture	17.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	MHDDT CA International Registration Plan	4.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	MHDDT Instate	6.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	MHDDT Out-of-state	4.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	HHDDT Agriculture	23.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	HHDDT CA International Registration Plan	1.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	HHDDT Non-neighboring Out-of-state	0.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	HHDDT Neighboring Out-of-state	2.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	HHDDT Singleunit	10.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	HHDDT Tractor	9.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	Other Buses	25.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	Power Take Off	28.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	School Bus	45.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	MHDDT Agriculture	20.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	MHDDT CA International Registration Plan	12.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	MHDDT Instate	11.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles

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Year	Vehicle Class	Reduction	Pollutant	Regulation
				Regulation
2012	MHDDT Out-of-state	12.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Agriculture	29.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT CA International Registration Plan	8.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Non-neighboring Out-of-state	15.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Neighboring Out-of-state	15.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Drayage at Other Facilities	9.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Drayage in Bay Area	9.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Drayage near South Coast	7.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Singleunit	14.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Tractor	13.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	Other Buses	45.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	Power Take Off	57.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	School Bus	68.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	MHDDT Agriculture	31.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	MHDDT CA International Registration Plan	55.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	MHDDT Instate	64.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	MHDDT Out-of-state	55.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Agriculture	48.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT CA International Registration Plan	60.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Non-neighboring Out-of-state	50.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Neighboring Out-of-state	63.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Drayage at Other Facilities	67.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Drayage in Bay Area	65.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Drayage near South Coast	51.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2013	HHDDT Singleunit	66.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Tractor	69.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	Other Buses	53.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	Power Take Off	63.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	School Bus	71.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	MHDDT Agriculture	33.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	MHDDT CA International Registration Plan	65.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	MHDDT Instate	77.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	MHDDT Out-of-state	65.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	MHDDT Utility	0.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Agriculture	52.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT CA International Registration Plan	63.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Non-neighboring Out-of-state	46.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Neighboring Out-of-state	64.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Singleunit	79.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Tractor	79.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Utility	4.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	Other Buses	49.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	Power Take Off	61.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	School Bus	71.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	MHDDT Agriculture	34.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	MHDDT CA International Registration Plan	60.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	MHDDT Instate	74.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	MHDDT Out-of-state	60.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	MHDDT Utility	0.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2015	HHDDT Agriculture	53.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT CA International Registration Plan	55.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Non-neighboring Out-of-state	37.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Neighboring Out-of-state	55.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Singleunit	77.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Tractor	76.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Utility	4.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	Other Buses	43.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	Power Take Off	75.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	School Bus	70.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	MHDDT Agriculture	32.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	MHDDT CA International Registration Plan	56.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	MHDDT Instate	73.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	MHDDT Out-of-state	56.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	MHDDT Utility	0.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Agriculture	51.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT CA International Registration Plan	45.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Non-neighboring Out-of-state	27.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Neighboring Out-of-state	46.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Singleunit	75.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Tractor	73.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Utility	4.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	Other Buses	36.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	Power Take Off	71.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	School Bus	67.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2017	MHDDT Agriculture	55.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	MHDDT CA International Registration Plan	52.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	MHDDT Instate	70.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	MHDDT Out-of-state	52.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	MHDDT Utility	0.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Agriculture	58.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT CA International Registration Plan	37.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Non-neighboring Out-of-state	18.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Neighboring Out-of-state	37.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Singleunit	73.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Tractor	70.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Utility	3.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	Other Buses	31.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	Power Take Off	67.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	School Bus	74.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	MHDDT Agriculture	53.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	MHDDT CA International Registration Plan	47.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	MHDDT Instate	68.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	MHDDT Out-of-state	47.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	MHDDT Utility	0.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT Agriculture	55.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT CA International Registration Plan	30.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT Non-neighboring Out-of-state	11.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT Neighboring Out-of-state	30.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT Singleunit	72.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2018	HHDDT Tractor	67.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT Utility	3.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	Other Buses	27.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	Power Take Off	76.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	School Bus	73.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	MHDDT Agriculture	53.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	MHDDT CA International Registration Plan	42.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	MHDDT Instate	65.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	MHDDT Out-of-state	42.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	MHDDT Utility	0.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Agriculture	54.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT CA International Registration Plan	24.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Non-neighboring Out-of-state	5.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Neighboring Out-of-state	24.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Singleunit	69.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Tractor	64.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Utility	3.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	Other Buses	23.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	Power Take Off	74.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	School Bus	71.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	MHDDT Agriculture	52.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	MHDDT CA International Registration Plan	37.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	MHDDT Instate	60.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	MHDDT Out-of-state	37.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	MHDDT Utility	0.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2020	HHDDT Agriculture	52.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT CA International Registration Plan	19.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT Non-neighboring Out-of-state	3.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT Neighboring Out-of-state	20.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT Singleunit	66.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT Tractor	61.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT Utility	2.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	Other Buses	21.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	Power Take Off	79.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	School Bus	68.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	MHDDT Agriculture	51.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	MHDDT CA International Registration Plan	33.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	MHDDT Instate	57.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	MHDDT Out-of-state	33.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	MHDDT Utility	5.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Agriculture	50.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT CA International Registration Plan	16.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Non-neighboring Out-of-state	3.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Neighboring Out-of-state	16.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Drayage at Other Facilities	10.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Drayage in Bay Area	9.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Drayage near South Coast	9.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Singleunit	64.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Tractor	59.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Utility	5.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2022	Other Buses	20.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	Power Take Off	79.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	School Bus	66.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	MHDDT Agriculture	50.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	MHDDT CA International Registration Plan	28.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	MHDDT Instate	53.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	MHDDT Out-of-state	28.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	MHDDT Utility	6.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Agriculture	49.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT CA International Registration Plan	13.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Non-neighboring Out-of-state	1.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Neighboring Out-of-state	14.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Drayage at Other Facilities	10.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Drayage in Bay Area	8.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Drayage near South Coast	8.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Singleunit	61.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Tractor	55.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Utility	5.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	Other Buses	18.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	Power Take Off	74.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	School Bus	64.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	MHDDT Agriculture	79.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	MHDDT CA International Registration Plan	23.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	MHDDT Instate	48.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	MHDDT Out-of-state	23.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2023	MHDDT Utility	7.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Agriculture	68.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT CA International Registration Plan	11.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Non-neighboring Out-of-state	1.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Neighboring Out-of-state	11.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Drayage at Other Facilities	9.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Drayage in Bay Area	8.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Drayage near South Coast	8.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Singleunit	56.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Tractor	51.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Utility	4.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	Other Buses	15.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	Power Take Off	68.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	School Bus	61.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	MHDDT Agriculture	77.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	MHDDT CA International Registration Plan	20.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	MHDDT Instate	43.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	MHDDT Out-of-state	20.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	MHDDT Utility	5.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Agriculture	65.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT CA International Registration Plan	9.1%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Non-neighboring Out-of-state	0.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Neighboring Out-of-state	9.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Drayage at Other Facilities	9.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Drayage in Bay Area	7.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2024	HHDDT Drayage near South Coast	7.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Singleunit	50.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Tractor	46.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Utility	3.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	Other Buses	13.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	Power Take Off	62.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	School Bus	58.2%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	MHDDT Agriculture	75.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	MHDDT CA International Registration Plan	15.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	MHDDT Instate	37.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	MHDDT Out-of-state	15.3%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	MHDDT Utility	3.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Agriculture	62.7%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT CA International Registration Plan	6.8%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Non-neighboring Out-of-state	0.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Neighboring Out-of-state	7.0%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Drayage at Other Facilities	8.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Drayage in Bay Area	7.5%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Drayage near South Coast	7.6%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Singleunit	44.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Tractor	42.9%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Utility	2.4%	PM2.5	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	MHDDT CA International Registration Plan	1.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	MHDDT Instate	2.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	MHDDT Out-of-state	1.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2011	HHDDT CA International Registration Plan	0.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	HHDDT Non-neighboring Out-of-state	0.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	HHDDT Neighboring Out-of-state	1.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	HHDDT Singleunit	4.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2011	HHDDT Tractor	3.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	Power Take Off	13.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	School Bus	2.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	MHDDT CA International Registration Plan	1.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	MHDDT Instate	2.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	MHDDT Out-of-state	1.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT CA International Registration Plan	0.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Non-neighboring Out-of-state	0.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Neighboring Out-of-state	0.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Singleunit	3.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2012	HHDDT Tractor	3.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	Other Buses	18.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	Power Take Off	34.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	School Bus	4.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	MHDDT Agriculture	5.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	MHDDT CA International Registration Plan	12.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	MHDDT Instate	25.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	MHDDT Out-of-state	12.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Agriculture	10.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT CA International Registration Plan	8.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Non-neighboring Out-of-state	1.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2013	HHDDT Neighboring Out-of-state	8.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Singleunit	33.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2013	HHDDT Tractor	28.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	Other Buses	40.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	Power Take Off	37.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	School Bus	6.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	MHDDT Agriculture	9.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	MHDDT CA International Registration Plan	22.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	MHDDT Instate	34.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	MHDDT Out-of-state	22.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	MHDDT Utility	0.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Agriculture	17.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT CA International Registration Plan	13.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Non-neighboring Out-of-state	4.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Neighboring Out-of-state	14.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Singleunit	45.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Tractor	36.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2014	HHDDT Utility	1.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	Other Buses	52.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	Power Take Off	33.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	School Bus	6.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	MHDDT Agriculture	18.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	MHDDT CA International Registration Plan	20.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	MHDDT Instate	31.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	MHDDT Out-of-state	20.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2015	MHDDT Utility	0.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Agriculture	27.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT CA International Registration Plan	11.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Non-neighboring Out-of-state	2.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Neighboring Out-of-state	12.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Singleunit	42.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Tractor	34.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2015	HHDDT Utility	1.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	Other Buses	54.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	Power Take Off	43.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	School Bus	4.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	MHDDT Agriculture	19.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	MHDDT CA International Registration Plan	22.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	MHDDT Instate	32.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	MHDDT Out-of-state	22.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	MHDDT Utility	0.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Agriculture	29.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT CA International Registration Plan	11.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Non-neighboring Out-of-state	3.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Neighboring Out-of-state	13.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Singleunit	43.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Tractor	35.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2016	HHDDT Utility	1.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	Other Buses	59.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	Power Take Off	38.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2017	MHDDT Agriculture	43.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	MHDDT CA International Registration Plan	27.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	MHDDT Instate	35.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	MHDDT Out-of-state	27.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	MHDDT Utility	1.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Agriculture	45.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT CA International Registration Plan	14.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Non-neighboring Out-of-state	7.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Neighboring Out-of-state	17.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Singleunit	46.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Tractor	38.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2017	HHDDT Utility	1.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	Other Buses	56.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	Power Take Off	32.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	School Bus	7.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	MHDDT Agriculture	41.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	MHDDT CA International Registration Plan	26.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	MHDDT Instate	41.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	MHDDT Out-of-state	26.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	MHDDT Utility	1.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT Agriculture	42.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT CA International Registration Plan	15.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT Non-neighboring Out-of-state	4.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT Neighboring Out-of-state	16.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT Singleunit	51.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2018	HHDDT Tractor	43.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2018	HHDDT Utility	1.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	Other Buses	52.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	Power Take Off	38.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	School Bus	6.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	MHDDT Agriculture	40.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	MHDDT CA International Registration Plan	22.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	MHDDT Instate	38.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	MHDDT Out-of-state	22.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	MHDDT Utility	1.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Agriculture	40.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT CA International Registration Plan	12.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Non-neighboring Out-of-state	2.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Neighboring Out-of-state	13.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Singleunit	48.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Tractor	41.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2019	HHDDT Utility	1.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	Other Buses	49.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	Power Take Off	41.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	School Bus	5.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	MHDDT Agriculture	38.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	MHDDT CA International Registration Plan	19.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	MHDDT Instate	34.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	MHDDT Out-of-state	19.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	MHDDT Utility	1.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation

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Year	Vehicle Class	Reduction	Pollutant	Regulation
2020	HHDDT Agriculture	38.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT CA International Registration Plan	9.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT Non-neighboring Out-of-state	1.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT Neighboring Out-of-state	10.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT Singleunit	45.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT Tractor	39.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2020	HHDDT Utility	1.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	Other Buses	48.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	Power Take Off	51.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	School Bus	4.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	MHDDT Agriculture	38.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	MHDDT CA International Registration Plan	21.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	MHDDT Instate	41.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	MHDDT Out-of-state	21.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	MHDDT Utility	33.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Agriculture	37.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT CA International Registration Plan	9.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Non-neighboring Out-of-state	1.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Neighboring Out-of-state	9.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Drayage at Other Facilities	40.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Drayage in Bay Area	41.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Drayage near South Coast	39.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Singleunit	54.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Tractor	45.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2021	HHDDT Utility	21.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation

Transportation

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Vehicles

Year	Vehicle Class	Reduction	Pollutant	Regulation
2022	Other Buses	48.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	Power Take Off	60.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	School Bus	3.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	MHDDT Agriculture	40.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	MHDDT CA International Registration Plan	20.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	MHDDT Instate	41.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	MHDDT Out-of-state	20.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	MHDDT Utility	28.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Agriculture	40.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT CA International Registration Plan	8.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Non-neighboring Out-of-state	1.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Neighboring Out-of-state	9.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Drayage at Other Facilities	39.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Drayage in Bay Area	40.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Drayage near South Coast	39.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Singleunit	54.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Tractor	45.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2022	HHDDT Utility	18.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	Other Buses	47.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	Power Take Off	54.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	School Bus	2.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	MHDDT Agriculture	65.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	MHDDT CA International Registration Plan	18.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	MHDDT Instate	39.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	MHDDT Out-of-state	18.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation

Transportation

CEQA# MM T-20

VT-3

Vehicles

Year	Vehicle Class	Reduction	Pollutant	Regulation
2023	MHDDT Utility	25.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Agriculture	59.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT CA International Registration Plan	7.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Non-neighboring Out-of-state	1.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Neighboring Out-of-state	8.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Drayage at Other Facilities	38.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Drayage in Bay Area	39.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Drayage near South Coast	38.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Singleunit	52.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Tractor	44.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2023	HHDDT Utility	16.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	Other Buses	43.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	Power Take Off	47.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	School Bus	1.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	MHDDT Agriculture	63.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	MHDDT CA International Registration Plan	15.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	MHDDT Instate	33.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	MHDDT Out-of-state	15.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	MHDDT Utility	19.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Agriculture	56.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT CA International Registration Plan	6.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Non-neighboring Out-of-state	0.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Neighboring Out-of-state	6.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Drayage at Other Facilities	38.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Drayage in Bay Area	39.4%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation

Transportation

CEQA# MM T-20

VT-3

Vehicles

Year	Vehicle Class	Reduction	Pollutant	Regulation
2024	HHDDT Drayage near South Coast	37.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Singleunit	47.2%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Tractor	39.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2024	HHDDT Utility	13.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	Other Buses	39.0%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	Power Take Off	39.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	School Bus	1.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	MHDDT Agriculture	61.1%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	MHDDT CA International Registration Plan	11.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	MHDDT Instate	28.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	MHDDT Out-of-state	11.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	MHDDT Utility	13.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Agriculture	53.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT CA International Registration Plan	4.6%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Non-neighboring Out-of-state	0.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Neighboring Out-of-state	4.8%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Drayage at Other Facilities	37.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Drayage in Bay Area	38.9%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Drayage near South Coast	37.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Singleunit	41.5%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Tractor	35.7%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation
2025	HHDDT Utility	10.3%	NOx	On-Road Heavy-Duty Diesel Vehicles Regulation

Appendix A

List of Acronyms and Glossary of Terms

Appendix A

List of Acronyms

ACM	alternative calculation method
AF	acre feet
B20	biodiesel (20%)
BOD	biochemical oxygen demand
BMP	best management practice
C	carbon
CAFE	corporate average fuel economy
CAPCOA	California Air Pollution Control Officers Association
CAR	Climate Action Registry
CARB	California Air Resources Board
CCAR	California Climate Action Registry
CDWR	California Department of Water Resources
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CEUS	California Commercial End-Use Survey
CGBSC	California Green Building Standards Code
CH ₄	methane
CHP	combined heat and power
CIWMB	California Integrated Waste Management Board
CNG	compressed natural gas
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
DE	destruction efficiency
DEIR	Draft Environmental Impact Report
DU	dwelling unit
EF	emission factor
EIA	United States Energy Information Administration
EIR	Environmental Impact Report
EMFAC	on-road vehicle emission factors model
ET ₀	reference evapotranspiration
ETWU	estimated total water use
FCZ	forecasting climate zone
GHG	greenhouse gas
GP	General Plan
GRP	General Reporting Protocol
GWP	global warming potential
HA	hydrozone area
HHV	higher heating value
hp	horsepower
HVAC	heating, ventilating, and air conditioning
IE	irrigation efficiency
IPCC	Intergovernmental Panel on Climate Change
ITE	Institute of Transportation Engineers
ITS	intelligent transportation systems
kBTU	thousand British thermal units
kW	kilowatt
kWh	kilowatt-hour
kWh/yr	kilowatt-hours/year
lbs	pounds

LA	landscape area
LADWP	Los Angeles Department of Water and Power
LCA	life cycle assessment
LDA	light-duty auto
LDT	light-duty truck
LED	light-emitting diode
LFM	landfill methane
LNG	liquefied natural gas
LPG	liquefied petroleum gas
MAWA	maximum applied water allowance
MMBTU	million British thermal units
MSW	mixed solid waste
MTCE	metric tonnes carbon equivalent
N ₂ O	nitrous oxide
NO _x	nitrogen oxides
NRDC	Natural Resources Defense Council
NREL	National Renewable Energy Laboratory
OLED	organic light-emitting diode
OFFROAD	off-road vehicle emission factors model
PF	plant factor
PG&E	Pacific Gas and Electric
PM	particulate matter
PUP	Power/Utility Protocol
RASS	Residential Appliance Saturation Survey
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SDGE	San Diego Gas and Electric
SLA	special landscape area
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
scf	standard cubic feet
SHP	separate heat and power
SO ₂	sulfur dioxide
sqft	square feet
TDM	transportation demand management
TDV	time dependent valuation
TOD	transit-oriented development
tonnes	metric tonnes; 1,000 kilograms
TRU	truck refrigeration unit
URBEMIS	Urban Emissions Model
US	United States
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
VCAPCD	Ventura County Air Pollution Control District
VTPI	Victoria Transport Policy Institute
VMT	vehicle miles traveled
VTR	vehicle trip reduction
WARM	Waste Reduction Model
WMO	World Meteorological Organization
yr	year

Glossary of Terms

Alternative Calculation Method

Software used to demonstrate compliance with the California Building Energy Efficiency Standards (Title 24). The software must comply with the requirements listed in the Alternative Calculation Method Approval Manual.

Additionality^a

The reduction in emissions by sources or enhancement of removals by sinks that is additional to any that would occur in the absence of the project. The project should not subsidize or take credit for emissions reductions which would have occurred regardless of the project.

Albedo^a

The fraction of solar radiation reflected by a surface or object, often expressed as a ratio or fraction. Snow covered surfaces have a high albedo; the albedo of soils ranges from high to low; vegetation covered surfaces and oceans have a low albedo. The Earth's albedo varies mainly through varying cloudiness, snow, ice, leaf area, and land cover changes. Paved surfaces with high albedos reflect solar radiation and can help reduce the urban heat island effect.

Below Market Rate Housing

Housing rented at rates lower than the market rate. Below market rate housing is designed to assist lower-income families. When below market rate housing is provided near job centers or transit, it provides lower income families with desirable job/housing match or greater opportunities for commuting to work through public transit.

Biochemical Oxygen Demand

Represents the amount of oxygen that would be required to completely consume the organic matter contained in wastewater through aerobic decomposition processes. Under the same conditions, wastewater with higher biochemical oxygen demand (BOD) concentrations will generally yield more methane than wastewater with lower BOD concentrations. BOD₅ is a measure of BOD after five days of decomposition.

Biogenic Emissions^b

Carbon dioxide emissions produced from combusting a variety of biofuels, such as biodiesel, ethanol, wood, wood waste and landfill gas.

Carbon Dioxide Equivalent

A measure for comparing carbon dioxide with other greenhouse gases. Tonnes carbon dioxide equivalent is calculated by multiplying the tonnes of a greenhouse gas by its associated global warming potential.

California Environmental Quality Act

A statute passed in 1970 that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.

Carbon Neutral Power

A power generation system which has net zero carbon emissions. Examples of existing carbon neutral power systems are photovoltaics, wind turbines, and hydropower systems.

Carbon Sink

Any process or mechanism that removes carbon dioxide from the atmosphere. A forest is an example of a carbon sink, because it sequesters carbon dioxide from the atmosphere.

“Carrot”

The purpose of a carrot is to provide an incentive which encourages a particular action. Parking cash-out would be considered a “carrot” since the employee receives a monetary incentive for not driving to work, but is not punished for maintaining status quo.

Combined Heat and Power

Also known as cogeneration. Combined heat and power is the generation of both heat and electricity from the same process, such as combustion of fuel, with the purpose of utilizing or selling both simultaneously. In combined heat and power systems, the thermal energy byproducts of a process are captured and used, where they would be wasted in a separate heat and power system. Examples of combined heat and power systems include gas turbines, reciprocating engines, and fuel cells.

Compact Infill

A Project which is located within or contiguous with the central city. Examples may include redevelopment areas, abandoned sites, or underutilized older buildings/sites.

Climate Zone

Geographic area of similar climatic characteristics, including temperature, weather, and other factors which affect building energy use. The California Energy Commission identified 16 Forecasting Climate Zones (FCZs) for use in the CEUS and RASS analyses. The designation of these FCZs was based in part on the utility service area.

Cordon Pricing

Tolls charged for entering a particular area (a “cordon”), such as a downtown.

Density

The amount of persons, jobs, or dwellings per unit of land area. This is an important metric for determining traffic-related parameters.

Destination Accessibility

A measure of the number of jobs or other attractions reachable within a given travel time. Destination accessibility tends to be highest at central locations and lowest at peripheral ones.

Efficacy

The capacity to produce a desired effect.

ENERGY STAR

A joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy which sets national standards for energy efficient consumer products. ENERGY STAR certified products are guaranteed to meet the efficiency standards specified by the program.

Elasticity

The percentage change of one variable in response to a percentage change in another variable. Elasticity = percent change in variable A / percent change in variable B (where the

Appendix A

change in B leads to the change in A). For example, if the elasticity of VMT with respect to density is -0.12, this means a 100% increase in density leads to a 12% decrease in VMT.

Evapotranspiration^c

The loss of water from the soil both by evaporation and by transpiration from the plants growing in the soil.

General Plan

A set of long-term goals and policies that guide local land use decisions. The 2003 *General Plan Guidelines* developed by the California Office of Planning and Research provides advice on how to write a general plan that expresses a community's long-term vision, fulfills statutory requirements, and contributes to creating a great community.

Global Warming Potential^b

The ratio of radiative forcing that would result from the emission of one kilogram of a greenhouse gas to that from the emission of one kilogram of carbon dioxide over a fixed period of time.

Graywater

Non-drinkable water that can be collected and reused onsite for irrigation, flushing toilets, and other purposes. This water has not been processed through a waste water treatment plant.

Greenhouse Gas

For the purposes of this report, greenhouse gases are the six gases identified in the Kyoto Protocol: carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Headway

The amount of time (in minutes) that elapses between two public transit vehicles servicing a given route and given line. Headways for buses and rail are generally shorter during peak periods and longer during off-peak periods. Headway is the inverse of frequency (headway = 1/frequency), where frequency is the number of arrivals over a given time period (i.e. buses per hour).

Intelligent Transportation System

A broad range of communications-based information and electronics technologies integrated into transportation system infrastructure and vehicles to relieve congestion and improve travel safety.

Job Center

An area with a high degree and density of employment.

Kilowatt Hour

A unit of energy. In the U.S., the kilowatt hour is the unit of measure used by utilities to bill consumers for energy use.

Land Use Index

Measures the degree of land use mix of a development. An index of 0 indicates a single land use while 1 indicates a full mix of uses.

Lumen

A unit of luminous flux. A measure of the brilliance of a source of visible light, or the power of light perceived by the human eye.

Master Planned Community

Large communities developed specifically incorporating housing, office parks, recreational area, and commercial centers within the community. Master planned communities tend to encompass a large land area with the intent of being self-sustaining. Many master planned communities may have lakes, golf courses, and large parks.

Mixed Use

A development that incorporates more than one type of land use. For example, a small mixed use development may have buildings with ground-floor retail and housing on the floors above. A larger mixed use development will locate a variety of land uses within a short proximity of each other. This may include integrating office space, shopping, parks, and schools with residential development. The mixed-use development should encourage walking and other non-auto modes of transport from residential to office/commercial/institutional locations (and vice versa).

Ordinance

A local law usually found in municipal code.

Parking Spillover

A term used to describe the effects of implementing a parking management strategy in a sub-area that has unintended consequences of impacting the surrounding areas. For example, assume parking meters are installed on all streets in a commercial/retail block with no other parking strategies implemented. Customers will no longer park in the metered spots and will instead “spillover” to the surrounding residential neighborhoods where parking is still unrestricted.

Photovoltaic^c

A system that converts sunlight directly into electricity using cells made of silicon or other conductive materials (solar cells). When sunlight hits the cells, a chemical reaction occurs, resulting in the release of electricity.

Recycled Water

Non-drinkable water that can be reused for irrigation, flushing toilets, and other purposes. It has been processed through a wastewater treatment plant and often needs to be redistributed.

Ride Sharing

Any form of carpooling or vanpooling where additional passengers are carried on the trip. Ride-sharing can be casual and formed independently or be part of an employer program where assistance is provided to employees to match up commuters who live in close proximity of one another.

Appendix A

Renewable Energy^a

Energy sources that are, within a short time frame relative to the Earth's natural cycles, sustainable, and include non-carbon technologies such as solar energy, hydropower, and wind, as well as carbon-neutral technologies such as biomass.

Self Selection

When an individual selects himself into a group.

Separate Heat and Power

The typical system for acquiring heat and power. Thermal energy and electricity are generated and used separately. For example, heat is generated from a boiler while electricity is acquired from the local utility. Separate heat and power systems are used as the baseline of comparison for combined heat and power systems.

Sequestration^a

The process of increasing the carbon content of a carbon reservoir other than the atmosphere. Biological approaches to sequestration include direct removal of carbon dioxide from the atmosphere through afforestation, reforestation, and practices that enhance soil carbon in agriculture. Physical approaches include separation and disposal of carbon dioxide from flue gases or from processing fossil fuels to produce hydrogen- and carbon dioxide-rich fractions and longterm storage in underground in depleted oil and gas reservoirs, coal seams, and saline aquifers.

“Stick”

The purpose of a stick is to establish a penalty for a status quo action. Workplace parking pricing would be considered a “stick” since the employee is now monetarily penalized for driving to work.

Suburban

An area characterized by dispersed, low-density, single-use, automobile dependent land use patterns, usually outside of the central city (a suburb).

Suburban Center

The suburban center serves the population of the suburb with office, retail and housing which is denser than the surrounding suburb.

Title 24

Title 24 Part 6 is also known as the California Building Energy Efficiency Standard, which regulates building energy efficiency standards. Regulated energy uses include space heating and cooling, ventilation, domestic hot water heating, and some hard-wired lighting. Title 24 determines compliance by comparing the modeled energy use of a ‘proposed home’ to that of a minimally Title 24 compliant ‘standard home’ of equal dimensions. Title 24 focuses on building energy efficiency per square foot; it places no limits upon the size of the house or the actual energy used per dwelling unit. The current Title 24 standards were published in 2008.

Transit-Oriented Development

A development located near and specifically designed around a rail or bus station. Proximity alone does not characterize a development as transit-oriented. The development and surrounding neighborhood should be designed for walking and bicycling and parking management strategies should be implemented. The development should be located within a short walking distance to a high-quality, high frequency, and reliable bus or rail service.

Transportation Demand Management

Any transportation strategy which has an intent to increase the transportation system efficiency and reduce demand on the system by discouraging single-occupancy vehicle travel and encouraging more efficient travel patterns, alternative modes of transportation such as walking, bicycling, public transit, and ridesharing. TDM measures should also shift travel patterns from peak to off-peak hours and shift travel from further to closer destinations.

Transit Ridership

The number of passengers who ride in a public transportation system, such as buses and subways.

Tree and Grid Network

Describes the layout of streets within and surrounding a project. Streets that are characterized as a tree network actually look like a tree and its branches. Streets are not laid out in any uniform pattern, intersection density is low, and the streets are less connected. In a grid network, streets are laid out in a perpendicular and parallel grid pattern. Streets tend to intersect more frequently, intersection density is higher, and the streets are more connected.

Urban

An area which is located within the central city with higher density of land uses than you would find in the suburbs. It may be characterized by multi-family housing and located near office and retail.

Urban Heat Island Effect

The phenomenon in which a metropolitan area is warmer than its surrounding rural areas due to increased land surface which retains heat, such as concrete, asphalt, metal, and other materials found in buildings and pavements.

Vehicle Miles Traveled

The number of miles driven by vehicles. This is an important traffic parameter and the basis for most traffic-related greenhouse gas emissions calculations.

Vehicle Occupancy

The number of persons in a vehicle during a trip, including the driver and passengers.

Notes:

^a Definition adapted from: IPCC. 2001. Third Assessment Report: Climate Change 2001 (TAR). Annex B: Glossary of Terms. Available online at: <http://www.ipcc.ch/pdf/glossary/tar-ipcc-terms-en.pdf>

^b Definition adapted from: CCAR. 2009. General Reporting Protocol, Version 3.1. Available online at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

^c Definition adapted from: USEPA. 2010. Greening EPA Glossary. Available online at: <http://www.epa.gov/oaintrnt/glossary.htm>



Appendix B

Greenhouse Gas Mitigation Measures Task 0: Standard Approach to Calculate Unmitigated Emissions



Greenhouse Gas Mitigation Measures Task 0: Standard Approach to Calculate Unmitigated Emissions

Prepared for:
**California Pollution Control Officers
Association (CAPCOA)**

Prepared by:
**ENVIRON International Corporation
San Francisco, California**

And

**Fehr & Peers
San Francisco & Walnut Creek,
California**

Date:
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1 Introduction

ENVIRON International Corporation (ENVIRON) and Fehr & Peers worked with the California Air Pollution Control Officers Association (CAPCOA) to quantify reductions associated with greenhouse gas (GHG) mitigation measures that can be applied to California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) analyses. The first part of this overall task defines a standard approach to calculate the baseline emissions before mitigation. This report contains the recommendations for methodologies and approaches to assess the baseline GHG emissions.

This report and its methodologies form the basis for the subsequent tasks associated with quantification of GHG mitigation measures. To the extent possible, default values are included with this report and in the mitigation measure Fact Sheets.

This report presents methods to be used to calculate short-term and one-time emissions sources as well as emissions that will occur annually after construction (operational emissions). The one-time emission sources include changes in carbon sequestration due to vegetation changes and emissions associated with construction. The annual operational emissions include the emissions associated with building energy use including natural gas and electricity, emissions associated with mobile sources, emissions associated with water use and wastewater treatment, emissions associated with area sources such as natural gas fired hearths, landscape maintenance equipment, swimming pools, and golf courses.

2 GHG Equivalent Emissions

The term “GHGs” includes gases that contribute to the greenhouse effect, such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), as well as gases that are only man-made and that are emitted through the use of modern industrial products, such as hydrofluorocarbons (HFCs), chlorinated fluorocarbons (CFCs), and sulfurhexafluoride (SF₆). These last three families of gases, while not naturally present in the atmosphere, have properties that also cause them to trap infrared radiation when they are present in the atmosphere, thus making them GHGs. These six gases comprise the major GHGs that are recognized by the Kyoto Accords (water is not included).¹ There are other GHGs that are not recognized by the Kyoto Accords, due either to the smaller role that they play in climate change or the uncertainties surrounding their effects. Atmospheric water vapor is not recognized by the Kyoto Accords because there is not an obvious correlation between water concentrations and specific human activities. Water appears to act in a positive feedback manner; higher temperatures lead to higher water vapor concentrations in the atmosphere, which in turn can cause more global warming.² California has recently recognized nitrogen trifluoride as another regulated greenhouse gas.

¹ This Kyoto Protocol sets legally binding targets and timetables for cutting the greenhouse gas emissions of industrialized countries. The US has not approved the Kyoto treaty.

² From the IPCC Third Assessment Report: http://www.grida.no/climate/ipcc_tar/wg1/143.htm and http://www.grida.no/climate/ipcc_tar/wg1/268.htm

Residents and the employees and patrons of commercial and municipal buildings and services use electricity, heating, water, and are transported by motor vehicles. These activities directly or indirectly emit GHGs. The most significant GHG emissions resulting from such residential and commercial developments are emissions of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). GHG emissions are typically measured in terms of MT of CO₂ equivalents (CO₂e), calculated as the product of the mass emitted of a given GHG and its specific global warming potential (GWP).

The effect that each of these gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a MT for MT basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO₂. CH₄ and N₂O are substantially more potent GHGs than CO₂, with GWPs of 21 and 310, respectively according to the IPCC's Second Assessment Report (SAR).³ In emissions inventories, GHG emissions are typically reported in terms of pounds (lbs) or MT⁴ of CO₂ equivalents (CO₂e). CO₂e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH₄ and N₂O have much higher GWPs than CO₂, CO₂ is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in CO₂e, both from developments and human activity in general. Since most regulatory agencies and protocols use the SAR GWP values as a basis, this assessment will also use SAR GWP values even though more recent values exist. However, SAR did not consider nitrogen trifluoride, however there are no sources of nitrogen trifluoride that would typically need to be quantified.

3 Units of measurement: MT of CO₂ and CO₂e

In many sections of this report, including the final summary sections, emissions are presented in units of CO₂e either because the GWPs of CH₄ and N₂O were accounted for explicitly, or the CH₄ and N₂O are assumed to contribute a negligible amount of GWP when compared to the CO₂ emissions from that particular emissions category.

Emissions and reductions are calculated in terms of metric tons. As such, "MT" will be used to refer to metric tons (1,000 kilograms). "Tons" will be used to refer to short tons (2,000 pounds [lbs]).

4 Indirect GHG Emissions from Electricity Use

As noted above, indirect GHG emissions are created as a result of electricity use. When electricity is used in a building, the electricity generation typically takes place offsite at the power plant; electricity use in a building generally causes emissions in an indirect manner. The project should use information specific for each local utility provider for different parts of

³ GWP values from IPCC's Second Assessment Report (SAR, 1996) are still used by international convention and are used in this protocol, even though more recent (and slightly different) GWP values were developed in the IPCC's Fourth Assessment Report (FAR, 2007)

⁴ In this report, "MT" will be used to refer to metric MT (1,000 kilograms). "Tons" will be used to refer to short tons (2,000 pounds).

California. Accordingly, indirect GHG emissions from electricity usage are calculated using the utility specific carbon-intensity factor based Power/Utility Protocol (PUP) report from California Climate Action Registry (CCAR)⁵ for the 2006 baseline year. ENVIRON does not recommend using the 2004 PUP reports since this year was one of the first year’s utilities reported emissions, as such, the data is likely less accurate than subsequent years since utilities had a chance to refine data collection methods for the later years. Furthermore, a large coal burning power plant in Mojave was going offline in 2005 which was factored into the Scoping Plan analysis. Therefore, ENVIRON suggests using the 2006 PUP reports since it likely represents a more accurate dataset year. This emission factor takes into account the baseline year’s mix of energy sources used to generate electricity for a specific utility and the relative carbon intensities of these sources. The emission factor will be determined as a CO₂e incorporating the CO₂, CH₄, and N₂O emissions.

Power Utility	Carbon-Intensity (lbs CO ₂ e/MWh)
LADW&P	1,238
PG&E	456
SCE	641
SDGE	781
SMUD	555

5 Short-Term Emissions

Short-term or one-time emissions from the development of a Project are associated with vegetation removal and re-vegetation on the Project site and construction-related activities.

5.1 Construction Activities

Construction activities occur during the early stage of a project. Construction activities include any demolition, site grading, building construction, and paving. These construction activities have several main sources of GHG emissions. Off-road construction equipment such as dozers, pavers, and backhoes are used on-site during construction. These pieces of equipment typically are diesel fueled although other fuels are occasionally used. Besides the off-road construction, there are on-road vehicles. These vehicles are used for worker commuting, delivering of material to the site, and hauling material away from the site. The methodology to calculate these sources of emissions is described in the next sections.

5.1.1 Estimating GHG Emissions from Off-Road Construction Equipment

This section describes how emissions from off-road equipment used during demolition, site grading, building construction and paving are calculated. This section can be used for any fuel

⁵ California Climate Action Registry (CCAR) Database. PUP Report.

burning equipment such as diesel, gasoline, or compressed natural gas (CNG). For electric equipment please see the method in the next section.

First, the number and type of equipment that will be used in the construction, as well as the duration of the entire construction project, is needed. Absent other data, ENVIRON recommends that each piece of equipment will operate for 8 hours a day, five days a week throughout the construction duration. An equipment hour is defined as one hour of a piece of equipment being used. Specifications for each type of construction equipment (horsepower, load factor, and GHG emission factor) are provided by OFFROAD2007⁶. CO₂ and CH₄ emissions for each type of construction equipment are calculated as follows:

$$\text{Equipment Emissions [grams]} = \frac{\text{Total equipment hours}}{\text{hours}} \times \frac{\text{emission factor [grams per brake horsepower-hour]}}{\text{horsepower}} \times \text{equipment horsepower} \times \text{load factor}^7$$

The grams of CO₂ and CH₄ are multiplied by their respective GWP and then the two emissions are summed to derive the final CO₂e emissions from the piece of off-road equipment. Since OFFROAD2007 does not provide an emission factor for N₂O which is a minor subset of nitrogen oxides (NO_x) emissions and the contribution to the overall GHG emissions is likely small, it is therefore not included in calculations that used OFFROAD2007. These were accounted for with alternative fuels since they have a larger proportion of N₂O and CH₄.

5.1.2 Estimating GHG emissions from Electric Off-Road Construction Equipment

In order to estimate the indirect GHG emissions associated with electricity consumption of electrical powered equipment, the following inputs are required. First, the total operating hours of the electrical piece of equipment is needed. Secondly, the amount of kilowatts the equipment uses per time is needed. These two pieces are used along with the carbon intensity factor for the local utility provider as follows:

$$\text{Equipment Emissions} = \frac{\text{Total equipment hours}}{\text{equipment hours}} \times \text{average power draw (kW/hr)} \times \text{Utility EF (g CO}_2\text{e per kWhr)}$$

5.1.3 GHG Emissions from On-Road Vehicles Associated with Construction

Emissions from on-road vehicles associated with construction include workers commuting to the site, vendors delivering materials, and hauling away of materials. GHGs are emitted from these vehicles in two ways: running emissions, produced by driving the vehicle, and startup emissions, produced by turning the vehicle on. Idling emissions will not be considered since

⁶ OFFROAD2007 is a model developed by the Air Resources Board which contains emission factors for off-road equipment. It is available at : <http://www.arb.ca.gov/msei/offroad/offroad.htm>

⁷ Load factor is the percentage of the maximum horsepower rating at which the equipment normally operates.

regulations exist which limit idling⁸ and they would represent a small contribution to the GHG emissions. The majority of these on-road vehicle emissions are running emissions.

Running emissions are calculated using the same method for all trip types. The total Vehicle Miles Traveled (VMT) for the trip type category is estimated, and then multiplied by the representative GHG emission factors for the vehicles expected to be driven. The total VMT for a given trip type is calculated as follows:

$$VMT = \text{Number of round trips} \times \text{average round trip length (miles)}$$

The number of trips should be based on project specific information. Default values associated with each land use type can be obtained construction cost estimators or default values in emission estimator programs. Average round trip length should be based on project specific information or county specific default values. After total VMT is calculated, GHG emissions for on-road vehicles associated with construction can be calculated from the following equation:

$$CO_2 \text{ emissions} = VMT \times EF_{\text{running}}$$

Where:

VMT = vehicle miles traveled

EF_{running} = running emission factor for vehicle fleet for trip type

The CO₂ calculation involves the following assumptions:

- a. Vehicle Fleet Defaults:
 - a. Workers commute half with light duty trucks (LDTs) and half commute in light duty autos (LDAs). Half of the LDTs are type 1 and the other half type 2.
 - b. Vendors are all heavy-heavy duty vehicles.
 - c. Hauling is all heavy-heavy duty vehicles.
- b. The emission factor depends upon the speed of the vehicle. A default value of 35 miles per hour will be used.
- c. EMFAC emission factors from the construction year will be used for EF_{running} .

⁸ The Air Resources Board adopted in 2004 and modified in 2005 an Air Toxic Control Measure that limits idling in diesel vehicles to 5-minutes. <http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm>

The emissions associated with CH₄ and N₂O are calculated in a similar manner or assumed to represent 5% of the total CO₂e emissions. They are then converted to CO₂e by multiplying by their respective global warming potential.

Startup emissions are CO₂ emitted from starting a vehicle. For the various trips during all phases, the startup emissions are calculated using the following assumptions:

- a. The same vehicle fleet assumptions as used in running emissions.
- b. Two engine startups per day with a 12 hour wait before each startup.⁹

The USEPA recommends assuming that CH₄, N₂O, and HFCs account for 5% of GHG emissions from on-road vehicles, taking into account their GWPs.¹⁰ To incorporate these additional GHGs into the calculations, the total GHG footprint is calculated by dividing the CO₂ emissions by 0.95.

5.2 Vegetation Change

ENVIRON suggests following the IPCC protocol for vegetation since it has default values that work well with the information typically available for development projects. This method is similar to the CCAR Forest Protocol¹¹ and the Center for Urban Forest Research Tree Carbon Calculator¹², but it has more general default values available that will generally applicable to all areas of California without requiring detailed site-specific information¹³.

5.2.1 Quantifying the One-Time Release by Changes in Carbon Sequestration Capacity

The one-time release of GHGs due to permanent changes in carbon sequestration capacity is calculated using the following four steps:¹⁴

1. *Identify and quantify the change in area of various land types due to the development (i.e. alluvial scrub, non-native grassland, agricultural, etc.).* These area changes include not only the area of land that will be converted to buildings, but also areas disrupted by the construction of utility corridors, water tank sites, and associated borrow and grading areas.

⁹ The emission factor grows with the length of time the engine is off before each ignition.

¹⁰ USEPA. 2005. *Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle*. Office of Transportation and Air Quality. February.

¹¹ CCAR. 2007. Forest Sector Protocol Version 2.1. September. Available at: http://www.climateregistry.org/resources/docs/protocols/industry/forest/forest_sector_protocol_version_2.1_sept2007.pdf

¹² Available at: <http://www.fs.fed.us/ccrc/topics/urban-forests/ctcc/>

¹³ The CCAR Forest Protocol and Urban Forest Research Tree Carbon Calculator are not used since their main focus is annual emissions for carbon offset considerations. As such they are designed to work with very specific details of the vegetation that is not available at a CEQA level of analysis.

¹⁴ This section follows the IPCC guidelines, but has been adapted for ease of use for these types of Projects.

Areas temporarily disturbed that will eventually recover to become vegetated will not be counted as vegetation removed as there is no net change in vegetation or land use.¹⁵

2. *Estimate the biomass associated with each land type.* For the purposes of this report, ENVIRON suggests using the available general vegetation types found in the IPCC publication Guidelines for National Greenhouse Gas Inventories (IPCC Guidelines).¹⁶

California vegetation is heavily dominated by scrub and chaparral vegetation which may not be accurately characterized by default forest land properties. Consequently, ecological zones and biomass based subdivisions identified in the IPCC Guidelines were used to sub-categorize the vegetation as scrub dominated. These subcategories should be used to determine the CO₂ emissions resulting from land use impacts.

3. *Calculate CO₂ emissions from the net change of vegetation.* When vegetation is removed, it may undergo biodegradation,¹⁷ or it may be combusted. Either pathway results in the carbon (C) present in the plants being combined with oxygen (O₂) to form CO₂. To estimate the mass of carbon present in the biomass, biomass weight is multiplied by the mass carbon fraction, 0.5.¹⁸ The mass of carbon is multiplied by 3.67¹⁹ to calculate the final mass of CO₂, assuming all of this carbon is converted into CO₂.
4. Calculate the overall change in sequestered CO₂. – For all types of land that change from one type of land to another,²⁰ initial and final values of sequestered CO₂ are calculated using the equation below.

Overall Change in Sequestered CO₂ [MT CO₂]

$$= \sum_i (SeqCO_2)_i \times (area)_i - \sum_j (SeqCO_2)_j \times (area)_j$$

Where:

SeqCO ₂	=	mass of sequestered CO ₂ per unit area [MT CO ₂ /acre]
area	=	area of land for specific land use type [acre]
i	=	index for final land use type
j	=	index for initial land use type

¹⁵ This assumption facilitates the calculation as a yearly growth rate and CO₂ removal rate does not have to be calculated. As long as the disturbed land will indeed return to its original state, this assumption is valid for time periods over 20 years.

¹⁶ Available online at <http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.htm>

¹⁷ Cleared vegetation may also be deposited in a landfill or compost area, where some anaerobic degradation which will generate CH₄ may take place. However, for the purposes of this section, we are assuming that only aerobic biodegradation will take place which will result in CO₂ emissions only.

¹⁸ The fraction of the biomass weight that is carbon. Here, a carbon fraction of 0.5 is used for all vegetation types from CCAR Forest Sector Protocol.

¹⁹ The ratio of the molecular mass of CO₂ to the molecular mass of carbon is 44/12 or 3.67.

²⁰ For example from forestland to grassland, or from cropland to permanently developed.

5.2.2 Calculating CO₂ Sequestration by Trees

Planting individual trees will sequester CO₂. Changing vegetation as described above results in a one-time carbon-stock change. Planting trees is also considered to result in a one-time carbon-stock change. Default annual CO₂ sequestration rates on a per tree basis, based on values provided by the IPCC are used²¹. An average of 0.035 MT CO₂ per year per tree can be used for trees planted, if the tree type is not known.

Urban trees are only net carbon sinks when they are actively growing. The IPCC assumes an active growing period of 20 years. Thereafter, the accumulation of carbon in biomass slows with age, and will be completely offset by losses from clipping, pruning, and occasional death. Actual active growing periods are subject to, among other things, species, climate regime, and planting density. In this report, the IPCC default value of 20 years is recommended. For large tree sequestration projects, the Project may consider using the Forest or Urban tree planting protocols developed by Climate Action Registry (CAR). These protocols have slightly different assumptions regarding steady state, tree growth, and replacement of trees..

5.3 Built Environment

The amount of energy used, and the associated GHG emissions emitted per square foot of available space vary with the type of building. For example, food stores are far more energy intensive than warehouses, which have little climate-conditioned space. Therefore, this analysis is specific to the type of building.

GHGs are emitted as a result of activities in buildings for which electricity and natural gas are used as energy sources. Combustion of any type of fuel emits CO₂ and other GHGs directly into the atmosphere; when this occurs within a building (such as by natural gas consumption) this is a direct emission source²² associated with that building. GHGs are also emitted during the generation of electricity from fossil fuels. When electricity is used in a building, the electricity generation typically takes place offsite at the power plant; electricity use in a building generally causes emissions in an indirect manner.

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as plug-in appliances. In California, Title 24 part 6 governs energy consumed by the built environment, mechanical systems, and some fixed lighting. This includes the space heating, space cooling, water heating, and ventilation systems. Non-building energy use, or “plug-in” energy use can be further subdivided by specific end-use (refrigeration, cooking, office equipment, etc.). The following two steps are performed to quantify the energy use due to buildings:

²¹ The Center for Urban Forest Research Tree Carbon Calculator is not suggested since it requires knowledge on specific tree species to estimate carbon sequestered. This information is typically not available during the preparation of CEQA documents.

²² California Climate Action Registry (CCAR) General Reporting Protocol (GRP), Version 3.1 (January). Available at: http://www.climateactionregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf, Chapter 8

1. Calculate energy use from systems covered by Title 24²³ (HVAC system, water heating system, and the lighting system).
2. Calculate energy use from office equipment, plug-in lighting, and other sources not covered by Title 24.

The resulting energy use quantities are then converted to GHG emissions by multiplying by the appropriate emission factors obtained by incorporating information on local electricity providers for electricity, and by natural gas emission factors for natural gas combustion.

ENVIRON recommends using default values for Title 24 and non-Title 24 energy use for various building types. These will take into account the building size and climate zone. There are several sources of information that can be used to obtain building energy intensity. Each is described briefly below.

The *California Commercial Energy Use Survey (CEUS)* data is provided by the California Energy Commission (CEC). It is based on a survey conducted in 2002 for existing commercial buildings in various climate zones. Electricity and natural gas use per square foot for each end use in each building type and climate zone is extracted from the CEUS data. Since the data is provided by end use, it is straightforward to calculate the Title 24 and non-Title 24 regulated energy intensity for each building type.

Commercial Buildings Energy Consumption Survey (CBECS) is a survey of non-residential buildings that was conducted in 2003 by the Energy Information Administration (EIA). Electricity and natural gas use per square foot can be extracted from this data. The energy use estimates are assumed to represent 2001 Title 24 compliant buildings. Using CBECS, the percent of electricity and natural gas used for each end use can be calculated. It is then straightforward to calculate the Title 24 and non-Title 24 electricity and natural gas intensity for each building type. Similar surveys exist for manufacturing and residential energy use.

The *Residential Appliance Saturation Survey (RASS)* refers to the California Energy Commission Consultant Report entitled "California Statewide Residential Appliance Saturday Study". Data from RASS is used to calculate the total electricity and natural gas use for residential buildings on a per dwelling unit. The RASS study estimates the unit energy consumption (UEC) values for individual households surveyed and also provides the saturation number for each type of end use. The saturation number indicates the proportion of households that have a demand for each type of end-use category. As the data is provided by end use, it is straightforward to calculate the Title 24 and non-Title 24 electricity and natural gas intensity for each building type.

Alternative Calculation Method (ACM) software is available that makes estimates of the energy consumption by a model Title 24 compliant building. These programs provide

²³ Title 24, Part 6, of the California Code of Regulations: California's Energy Efficiency Standards for Residential and Nonresidential Buildings. <http://www.energy.ca.gov/title24/>

annual energy use for the heating, ventilation, and air conditioning (HVAC) system in each building; therefore, estimates from ACM software represent Title 24-regulated energy use. These do not calculate the non-Title 24 energy use for the buildings.

The Department of Energy produced the *Building America Research Benchmark Definition* (BARBD) technical manual, which presents empirical equations for electricity and natural gas usage. As the data is provided by end use, it is straightforward to calculate the Title 24 and non-Title 24 electricity and natural gas intensity for each building type.

Literature surveys may also be used for building and land use types not well represented by the above sources.

ENVIRON suggests using the CEUS and RASS datasets for these calculations since the data is available for several land use categories in different climate zones in California.

The Title 24 standards have been updated twice (in 2005 and 2008) since some of these data were compiled. CEC has published reports estimating the percentage deductions in energy use resulting from these new standards. Based on CEC's discussion on average savings for Title 24 improvements, these CEC savings percentages by end use can be used to account for reductions in electricity use due to updates to Title 24. Since energy use for each different system type (ie, heating, cooling, water heating, and ventilation) as well as appliances is defined, this method will easily allow for application of mitigation measures aimed at reducing the energy use of these devices in a prescriptive manner.

Based on the electricity intensity, CO₂e intensity values (CO₂e emissions per square foot or dwelling unit, as applicable, per year) for each building type can be calculated. Electricity intensity data is multiplied by an electricity emission factor to generate CO₂e intensity values. The total CO₂e emissions from each building type are calculated by multiplying the CO₂e intensity values by the appropriate metric (building square footage for non-residential buildings or number of dwelling units for residential buildings). Summing the CO₂e emissions from all building types gives the total CO₂e emissions from electricity use in Title 24 and non-Title 24 sources in buildings.

Based on the natural gas intensity, CO₂e intensity values (CO₂e emissions per square foot or dwelling unit, as applicable, per year) for each building type can be calculated. Natural gas intensity data is multiplied by a natural gas emission factor to generate CO₂e intensity values. The total CO₂e emissions from each building type are calculated by multiplying the CO₂ intensity values by the appropriate metric (building square footage for non-residential buildings or number of dwelling units for residential buildings). Summing the CO₂e emissions from all building types gives the total CO₂e emissions from natural gas use in Title 24 and non-Title 24 sources in buildings.

5.3.1 Natural Gas Boilers

GHG emissions from the combustion of natural gas are calculated as the product of natural gas consumption, natural gas heat content, and carbon-intensity factor. The Project Applicant has

to determine the natural gas consumption, while the heat content and carbon-intensity factor can be obtained from the CCAR General Reporting Protocol.

5.4 Area Sources

Area sources are local combustion of fuel. The area sources covered in this section include natural gas fireplaces/stoves and landscape maintenance equipment. Natural gas usage from the primary building heating is not included in this category since it is already included with building energy use. Each of these area sources is discussed further.

5.4.1 Natural Gas Fireplaces/Stoves

GHG emissions associated with natural gas fired fireplaces are calculated using emission factors from CCAR. The average BTU per hour for fireplaces in homes needs to be specified. Default values for annual fireplace usage varies for each County. Natural gas is assumed to have 1,020 BTU per standard cubic foot²⁴.

5.4.2 Landscape Maintenance

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, roto tillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers, as well as air compressors, generators, and pumps.

Similar to construction off-road equipment, emission factors are based on the OFFROAD2007 model. These are combined with the hours of operation for each equipment piece as well as the horsepower and load factors. The GHG emissions will be calculated based on the emission factors for the equipment and fuel reported from OFFROAD2007 and the appropriate GWP. Default usages (hours of operation) should be determined for the landscape equipment based on the Project needs.

5.5 Water

Delivering and treating water for use at the project site requires energy. This embodied energy associated with the distribution of water to the end user is associated with the electricity to pump and treat the water. GHG emissions due to water use are related to the energy used to convey, treat and distribute water. Thus, these emissions are indirect emissions from the production of electricity to power these systems.

The amount of electricity required to treat and supply water depends on the volume of water involved. Three processes are necessary to supply water to users: (1) supply and conveyance of the water from the source; (2) treatment of the water to potable standards; and (3) distribution of the water to individual users.

²⁴ USEPA. 1998. AP-42 Emission Factors. Chapter 1.4 Natural Gas Combustion.

Therefore, to quantify the GHG emissions associated with the distribution of water to an end user, the carbon intensity of electricity is used along with the amount of electricity used in pumping and treating the water. Since consumption of water varies greatly for each land use type, default values need to be determined with several listed in the mitigation measure fact sheets. Since buildings may have different percentages of water associated with indoor and outdoor water usage, the water usage is quantified separately. In addition since mitigation measures associated with water use may be directed separately toward indoor and outdoor water usage, this will be beneficial for this task.

5.5.1 Indoor

Indirect emissions resulting from electricity use are determined by multiplying electricity use by the CO₂e emission factor provided by the local electricity supplier. Energy use per unit of water for different aspects of water treatment (e.g. source water pumping and conveyance, water treatment, distribution to users) is determined using the stated volumes of water and energy intensities values (i.e., energy use per unit volume of water) provided by reports from the California Energy Commission (CEC) on energy use for California's water systems.²⁵ The CEC report estimates the electricity required to extract and convey one million gallons of water. Using this energy intensity factor, the expected indoor water demand, and the utility-specific carbon-intensity factor, GHG emissions from indoor water supply and conveyance may be calculated.

The amount of electricity required to treat and distribute one million gallon of potable water is estimated in the CEC report. Based on the estimated indoor water demand, these energy intensity factors, and the utility-specific carbon intensity factor, GHG emissions from indoor water treatment and distribution may be calculated.

The sum of emissions due to supplying, conveying, treating, and distributing indoor water gives the total emissions due to indoor water use.

5.5.2 Outdoor

Indirect emissions resulting from electricity use are determined by multiplying electricity use by the CO₂ emission factor provided by the local electricity supplier. Energy use per unit of water for different aspects of water treatment (e.g. source water pumping and conveyance, water treatment, distribution to users) is determined using the stated volumes of water and energy intensities values (i.e., energy use per unit volume of water) provided by reports from the California Energy Commission (CEC) on energy use for California's water systems.²⁶ The

²⁵ CEC 2005. California's Water-Energy Relationship. Final Staff Report. CEC-700-2005-011-SF, CEC 2006. Refining Estimates of Water-Related Energy Use in California. PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118. December.

²⁶ CEC 2005. California's Water-Energy Relationship. Final Staff Report. CEC-700-2005-011-SF, CEC 2006. Refining Estimates of Water-Related Energy Use in California. PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118. December.

energy needed to supply and convey the water will be used to pump this water from the sources and distribute it throughout the development. The CEC report estimates the electricity required to extract and convey one million gallons of water. Using this energy intensity factor, the expected outdoor water demand, and the utility-specific carbon-intensity factor, GHG emissions from outdoor water supply and conveyance may be calculated.

The amount of electricity required to treat and distribute one million gallon of potable water (see recycled water for non-potable water) is estimated in the CEC report. Based on the estimated outdoor water demand, these energy intensity factors, and the utility-specific carbon intensity factor, GHG emissions from outdoor water treatment and distribution may be calculated.

The sum of emissions due to supplying, conveying, treating, and distributing outdoor water gives the total emissions due to outdoor water use.

5.5.2.1 Landscape Watering – Turf Grass

The amount of outdoor water used in the landscape watering of turf grass is calculated based on the California Department of Water Resources (CDWR) 2009 Model Water Efficient Landscape Ordinance²⁷ and the CDWR 2000 report “A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California: The Landscape Coefficient Method and WUCOLS III.”²⁸ Using this methodology, the amount of water required to support the baseline turf water demand ($Water_{baseline}$) is calculated as follows:

$$ETC = Kc \times ET_0$$

Where:

- ETC = Crop Evapotranspiration, the total amount of water the baseline turf loses during a specific time period due to evapotranspiration²⁹ (inches water/day)
- KC = Crop Coefficient, factor determined from field research, which compares the amount of water lost by the crop (e.g. turf) to the amount of water lost by a reference crop (unitless).
Species-specific; provided in CDWR 2000
- ET₀ = Reference Evapotranspiration, the amount of water lost by a reference crop (inches water/day)
Region-specific; provided in Appendix A of CDWR 2009

²⁷ California Department of Water Resources. 2009. Model Water Efficient Landscape Ordinance. Available online at: <http://www.water.ca.gov/wateruseefficiency/docs/MWEL09-10-09.pdf>

²⁸ California Department of Water Resources. 2000. A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California: The Landscape Coefficient Method and WUCOLS III. Available online at: http://www.water.ca.gov/pubs/conservation/a_guide_to_estimating_irrigation_water_needs_of_landscape_plantings_in_california_wucols/wucols00.pdf

²⁹ Evapotranspiration is water lost to the atmosphere due to evaporation from soil and transpiration from plant leaves. For a more detailed definition, see this California Irrigation Management Information System (CIMIS) website: <http://www.cimis.water.ca.gov/cimis/infoEtoOverview.jsp;jsessionid=91682943559928B8A9A243D2A2665E19>

Then:

$$\text{Water}_{\text{baseline}} = \text{ETC} \times \text{Area}_{\text{baseline}} \times 0.62 \times 365$$

Where:

- $\text{Water}_{\text{baseline}}$ = Volume of water required to support the baseline turf (gallons/year)
- $\text{Area}_{\text{baseline}}$ = Area of existing or standard turf (square feet)
- 0.62 = conversion factor (gallons/squarefoot.inches water)
- 365 = conversion factor (days/year)

Based on the estimated outdoor water demand for watering turf grass, the outdoor water energy intensity factors described above, and the utility-specific carbon intensity factor, GHG emissions from watering turf grass in lawns may be calculated.

5.5.2.2 Landscape Watering – General

The amount of outdoor water used in the landscape watering of landscapes and lawns is calculated based on the California Department of Water Resources (CDWR) 2009 Model Water Efficient Landscape Ordinance.³⁰ Using this methodology, the amount of water required to support the baseline lawn water demand ($\text{Water}_{\text{baseline}}$) is defined as the Maximum Applied Water Allowance (MAWA) and is calculated as follows:

$$\text{Water}_{\text{baseline}} = \text{MAWA} = \text{ET}_0 \times 0.62 \times [(0.7 \times \text{LA}) + (0.3 \times \text{SLA})]$$

Where:

- $\text{Water}_{\text{baseline}}$ = Volume of water required to support the baseline lawn (gallons/year)
- MAWA = Maximum Applied Water Allowance (gallons/year)
- ET_0 = Annual Reference Evapotranspiration³¹ from Appendix A of CDWR 2009 (inches per year)
- 0.7 = ET Adjustment Factor (ETAF)
- LA = Landscape Area³² includes Special Landscape Area³³ (square feet)

³⁰ California Department of Water Resources. 2009. Model Water Efficient Landscape Ordinance. Available online at: <http://www.water.ca.gov/wateruseefficiency/docs/MWEL09-10-09.pdf>

³¹ Evapotranspiration is water lost to the atmosphere due to evaporation from soil and transpiration from plant leaves. For a more detailed definition, see this California Irrigation Management Information System (CIMIS) website: <http://www.cimis.water.ca.gov/cimis/infoEtoOverview.jsp;jsessionid=91682943559928B8A9A243D2A2665E19>

³² § 491 Definitions in CDWR 2009: “Landscape Area (LA) means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designed for non-development (e.g., open spaces and existing native vegetation).”

³³ § 491 Definitions in CDWR 2009: “Special Landscape Area (SLA) means an area of the landscape dedicated

- 0.62 = Conversion factor (to gallons per square foot)
- SLA = Portion of the landscape area identified as Special Landscape Area (square feet)
- 0.3 = the additional ETAF for Special Landscape Area

Based on the estimated outdoor water demand for watering lawns, the outdoor water energy intensity factors described above, and the utility-specific carbon intensity factor, GHG emissions from watering lawns may be calculated.

5.5.3 Recycled Water

After use, wastewater is treated and reused as reclaimed water. Any reclaimed water produced is generally redistributed to users via pumping. An estimate of the non-potable water demand to be met through the distribution of recycled water is needed. Estimates of the amount of energy needed to redistribute and, if necessary, treat reclaimed water is 400 kW-hr per acre foot.³⁴ Based on the estimated demand for reclaimed water, the estimated electricity demand and the utility-specific carbon-intensity factor, non-potable reclaimed water redistribution emissions are calculated.

5.5.4 Process

Industrial land uses can use a large amount of water for their processes. The water used for this will not be quantified since there is not sufficient water use data for this type of land use for the development of a default value. Water use is highly dependent on the specific industry..

5.6 Wastewater

Emissions associated with wastewater treatment include indirect emissions necessary to power the treatment process and direct emissions from degradation of organic material in the wastewater.

5.6.1 Direct Emissions

Direct emissions from wastewater treatment include emissions of CH₄ and biogenic CO₂. The method described by the Local Government Operations Protocol developed by the California Air Resources Board is suggested with default values assigned since detailed plant specific data will typically not be available.³⁵ The assumed daily 5-day carbonaceous biological oxygen

solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.”

³⁴ CEC 2005. California’s Water-Energy Relationship. Final Staff Report. CEC-700-2005-011-SF.

³⁵ California Air Resources Board. 2008. *Local Government Operations Protocol - for the quantification and reporting of greenhouse gas emissions inventories*. Version 1.0. September 2008. Developed in partnership by California Air Resources Board, California Climate Action Registry, ICLEI - Local Governments for Sustainability, The Climate Registry

demand (BOD₅) of 200 mg/L-wastewater is multiplied by the protocol defaults for maximum CH₄-producing capacity (0.6 kg-CH₄/kg-BOD₅) and other default values to obtain the direct CH₄ emission. The amount of digester gas produced per volume of wastewater, and amount of N₂O per volume of wastewater needs to be determined. These values are then multiplied by the Global Warming Potential factor³⁶ of 21 for CH₄ or 310 for the GWP of N₂O that would be generated otherwise to obtain the annual CO₂ equivalent emissions.

5.6.2 Indirect Emissions

Indirect GHG emissions result from the electricity necessary to power the wastewater treatment process. The electricity required to operate a wastewater treatment plant is estimated to be 1,911 kW-hr per million gallons.³⁷ Based on the expected amount of wastewater requiring treatment, which will be assumed to be equal to the indoor potable water demand absent other data, the energy intensity factor and the utility-specific carbon-intensity factor, indirect emissions due to wastewater treatment are calculated.

5.7 Public Lighting

Lighting sources contribute to GHG emissions indirectly, via the production of the electricity that powers these lights. Lighting sources considered in this source category include streetlights, traffic lights, and parking lot lights. The annual electricity use may be estimated using the number of heads, the power requirements of each head, and the assumption that they operate for 12 hours a day on average for 365 days per year or 24 hours for traffic lights. The emission factor for public lighting is the utility-specific carbon-intensity factor. Multiplying the electricity usage by the emission factor gives an estimate of annual CO₂e emissions from public lighting.

5.8 Municipal Vehicles

GHG emissions from municipal vehicles are due to direct emissions from the burning of fossil fuels. Municipal vehicles considered in this source category include vehicles such as police cars, fire trucks, and garbage trucks. Data from reports by Medford, MA; Duluth, MN; Northampton, MA; and Santa Rosa, California³⁸ show that the CO₂ emissions from municipal

³⁶ Intergovernmental Panel on Climate Change. IPCC Second Assessment - Climate Change 1995.

³⁷ CEC 2006. Refining Estimates of Water-Related Energy Use in California. PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118. December.

³⁸ City of Medford. 2001. Climate Action Plan. October. <http://www.massclimateaction.org/pdf/MedfordPlan2001.pdf>
 City of Northampton. 2006. Greenhouse Gas Emissions Inventory. Cities for Climate Protection Campaign. June. <http://www.northamptonma.gov/uploads/listWidget/3208/NorthamptonInventoryClimateProtection.pdf>
 City of Santa Rosa. Cities for Climate Protection: Santa Rosa. http://ci.santa-rosa.ca.us/City_Hall/City_Manager/CCPFinalReport.pdf
 Skoog., C. 2001. Greenhouse Gas Inventory and Forecast Report. City of Duluth Facilities Management and The International Council for Local Environmental Initiatives. October. <http://www.ci.duluth.mn.us/city/information/ccp/GHGEmissions.pdf>

vehicles would be approximately³⁹ 0.05 MT per capita per year. Using these studies and the expected population, emissions from municipal vehicles may be calculated.

5.9 On-Road Mobile Sources

This section estimates GHG emissions from on-road mobile sources. The on-road mobile source emissions considered a project will be from the typical daily operation of motor vehicles by project residents and non-residents. The GHG emissions based upon all vehicle miles traveled associated with residential and non-residential trips regardless of internal or external destinations or purpose of trip are estimated. Traffic patterns, trip rates, and trip lengths are based upon the methods discussed below.

The CCAR GRP⁴⁰ recommends estimating GHG emissions from mobile sources at an individual vehicle level, assuming knowledge of the fuel consumption rate for each vehicle as well as the miles traveled per car. Since these parameters are not known for a future development, the CCAR guidance can not be used as recommended.

Estimating Trip Rates

The majority of transportation impact analysis conducted for CEQA documents in California apply trip generation rates provided by the Institute of Transportation Engineers (ITE) in their regularly updated report *Trip Generation*. The report is based on traffic counts data collected over four decades at built developments throughout the United States. This data is typically based on single-use developments, in suburban locations with ample free parking and with minimal transit service and demand management strategies in place. As a result, the ITE trip generation rates represent upper bound trip generation rates for an individual land use type. This represents a good basis against which to measure the trip-reducing effects of any one or more of the mitigation strategies that will be quantified in subsequent tasks. Therefore, we recommend ITE trip rates as the baseline condition against which the effectiveness of CAPCOA's mitigation measures is applied.

There are some CEQA traffic studies that use data other than ITE trip generation rates. Below we briefly discuss the possible use of these alternative datasets. These traffic studies typically use trip generation data from one of the following sources:

SANDAG Traffic Generators. In the San Diego region, most studies use data from the SANDAG *Traffic Generators* report. This report is similar to the ITE *Trip Generation* in that it uses primarily suburban, single use developments, except that this dataset is based on traffic counts conducted in the San Diego region rather than throughout the United States. In studies where the SANDAG data is used, CAPCOA reviewers should apply the trip reduction estimates presented in subsequent tasks directly to the SANDAG trip generation rates.

³⁹ In an effort to be conservative, the largest per capita number from these four reports was used.

⁴⁰ California Climate Action Registry (CCAR). 2009. *General Reporting Protocol*. Version 3.1. January.

Travel Forecast Models. For some large development projects or general plans, the local or regional travel model is used to estimate the number of trips generated as well as trip lengths and vehicle speeds at which the individual trips occur. These models account for whether the trip segment occurs on a freeway or local streets as well as the degree of congestion. The values for trip generation rates and trip lengths using ITE and average trip lengths can be used to assess the model estimates of vehicle trip generation and VMT. These comparisons should recognize that the travel models explicitly account for various factors that reduce trip-making and VMT, including the demographic characteristics of the site occupants, location and accessibility of the development site relative to other destinations in the region, the mix of land uses within the site and its surrounding area, and possibly the availability of effective transit service. When performing a comparison using the ITE trip rates and average trip lengths, the reviewer should take into consideration that these factors have already been accounted for in the modeling. Therefore, we recommend applying ITE trip rates and lengths along with the adjustments recommended elsewhere in this document (accounting for site location, design and demographics) as a means of reality-checking transportation model results.

Traffic counts at comparable developments. Some traffic assessments elect to conduct traffic counts at existing developments that are similar to the proposed development. When reviewing impact assessments produced using such information, the reviewer should take into account the extent to which the surveyed development(s) already contain trip generation and trip length reducing measures. Care needs to be used to avoid double-counting reductions.

Estimating VMT from Mobile Sources

Data on average trip lengths are used to translate trip generation rates into vehicle miles of travel (VMT). These trip lengths should be obtained from published sources of average trip lengths for different types of trip types (i.e., commute trips, shopping trips, and others) for each region within the state. Vehicle miles traveled (VMT) are calculated by multiplying ITE trip rates by the typical trip lengths.

Some mechanisms that reduce trip generation rates and trip lengths below these standard ITE-trip rates and current average trip lengths might be considered to be intrinsic parts of the development proposal rather than mitigation measures, such as project location (e.g., infill or transit oriented development [TOD]), density, mix of uses, and urban design. These are not considered part of the baseline condition, but are recognized and quantified as project design features (PDFs). This approach has the following advantages: 1) it creates a consistent basis of analysis for all development projects regardless of location and self-mitigating features already included in the project proposal, and 2) it highlights all elements of a project that reduce trip generation rates and vehicle miles traveled.

Other Factors Influencing Mobile Source GHG Emissions

Beyond trip generation, trip length and VMT, other factors that affect GHG emissions include traffic flow, vehicle fuel consumption rates, and fuel type.

Traffic speed and efficiency profiles are largely influenced by: a) the project location and degree of prevailing congestion in its vicinity, b) the degree to which the project implements traffic level-

of-service mitigation measures often triggered by CEQA review, and c) actions taken by local, regional governments and Caltrans to reduce corridor or area-wide congestion.

The simplified mitigation assessment methods developed for this study use several categories of emissions factors per VMT that account for a) the generalized project location (core infill, inner ring suburbs, outer suburbs, rural), and b) and region-specific fleet and emissions rate if available.

While it is beyond the scope of this document to provide CAPCOA the ability to perform traffic speed and efficiency analysis, the study report advises CAPCOA on the type of analysis to expect to see in CEQA documents on development projects. CEQA impact and mitigation assessment methods should continue to perform air quality analysis using tools such as EMFAC that reference prevailing traffic speed profiles, especially for infill development and congested corridors, while applying appropriate credit for congestion reducing measures included in the project mitigation requirements, funded capital improvements plans, and fiscally constrained Regional Transportation Plans (RTPs.)

5.9.1 Estimating GHG Emissions from Mobile Sources

The CO₂ emissions from mobile sources were calculated with the trip rates, trip lengths and emission factors for running and starting emissions from EMFAC2007 as follows:

$$CO_2 \text{ emissions} = VMT \times EF_{\text{running}}$$

Where:

VMT = vehicle miles traveled
 EF_{running} = emission factor for running emissions

The CO₂e calculation involves the following assumptions:

- The emission factor depends upon the speed of the vehicle.
- EMFAC emission factors from the baseline year will be used for EF_{running} based on County specific fleet mix for different trip types and adjusted to account for applicable regulations that are not currently incorporated yet into EMFAC.

Startup emissions are CO₂ emitted from starting a vehicle. Startup emissions are calculated using the following assumptions:

- The number of starts is equal to the number of trips made annually.
- The breakdown in vehicles is EMFAC fleet mix for County specific fleet mix.
- The emission factor for startup is calculated based on a weighted average of time between starts for each trip type (commute trips versus all other types).

Fleet distribution types will be based on EMFAC2007 or the most recent EMFAC version available. For mobile sources, the USEPA recommends assuming that CH₄, N₂O, and HFCs

account for 5% of GHG emissions from on-road vehicles, taking into account their GWPs.⁴¹ To incorporate these additional GHGs into the calculations, the total GHG footprint is calculated by dividing the CO₂ emissions by 0.95.

Emission factors for alternative fuel can be obtained from the CCAR General Reporting Protocol. For comparison with alternative fuel, N₂O and CH₄ emissions should be calculated separately as their emissions from alternative fuel are generally higher than from gasoline or diesel.

Low-emission-vehicle programs, such as neighborhood electric vehicles (NEV) or car sharing programs, will only be considered in accounting for GHG reductions if included in project-specific design or mitigation measures.

5.10 GHG Emissions from Specialized Land Uses

Below are methods to quantify GHG emissions from some additional land use categories that may be commonly found in development projects. These include golf courses and swimming pools. The methods proposed to determine GHG emissions associated with these sources is discussed in the following sections. The GHG emissions will typically fall into other categories such as landscape maintenance, water usage, and buildings, but since the data sources are different, they are explicitly described.

5.10.1 Golf Courses

Emission flux resulting from the construction of the golf course is not discussed, nor is the sequestration of CO₂ into the turf, trees, or lakes of the golf course. Operational CO₂ emissions were calculated for three areas: irrigation, maintenance (mowing), and on-site buildings' energy use. All three components are discussed in this section.

5.10.2 Calculating CO₂ Emissions from Irrigation of the Golf Course

The release of GHGs due to irrigation practices was calculated in two steps:

1. Identify the quantity of water needed.
2. Calculate the emissions associated with pumping the water.

1. *Identify the quantity of water needed.* Standard water use for an 18-hole golf course ranges from 250 to 450 acre-ft yearly. A survey of golf course superintendents conducted in the summer of 2003 by the Northern and Southern California Golf Associations revealed an annual average California usage of 345 acre-ft.⁴² Numerous factors will affect the actual water usage

⁴¹ USEPA. 2005. *Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle*. Office of Transportation and Air Quality. February.

⁴² Northern California Golf Association. *Improving California Golf Course Water Efficiency*, pg 14. <http://www.owue.water.ca.gov/docs/2004Apps/2004-079.pdf>

of a specific golf course, and it is likely to vary by year. ENVIRON recommends using the average usage of 345 acre-ft per year annually.

2. *Calculate the associated emissions.* Using the information identified above, ENVIRON calculates total emissions from irrigation of an 18-hole golf course as follows:

Estimate total dynamic head: This is the combination of lift (300 feet) and desired pressure. Standard athletic field sprinklers require a base pressure of approximately 65 psi.⁴³

$$\begin{aligned}
 60 \text{ psi} \times 2.31 \text{ ft/psi}^{44} &= 139 \text{ ft} \\
 + \text{ lift} &= 300 \text{ ft} \\
 \hline
 \text{Total dynamic head} &= 439 \text{ ft}
 \end{aligned}$$

Identify fuel unit and multiply by head: Possible pumping fuels include electricity, natural gas, diesel, and propane. In these calculations, ENVIRON assumes that all pumps will use electricity. Based on the literature, ENVIRON recommends using a pumping energy use of 1.551 kW-hr/acre-ft/ft.⁴⁵

$$1.551 \text{ kW-hr/acre-ft/ft} \times 439 \text{ ft} = 681 \text{ kW-hr/acre-foot}$$

Multiply energy demand by emission factor and convert to MT: The energy demand per acre-ft calculated above is multiplied by the emission factor for the electricity generation source and converted to MT.

$$\frac{681 \text{ kW-hr/acre-ft} \times 0.666 \text{ lbs CO}_2/\text{kW-hr}}{2204.62 \text{ lbs/ton}} = 0.21 \text{ MT CO}_2/\text{acre-ft}$$

The anticipated annual water demand will be multiplied by these values and then combined this with the calculated emission factor yields total annual emissions from irrigation of the golf course. Other outdoor land uses that require irrigation can follow a similar procedure.

5.10.3 Calculating CO₂ Emissions from Maintenance of the Golf Course

Maintenance emissions include the emissions resulting from the mowing of turf grass. The release of GHGs due to mowing was calculated in three steps:

1. Identify the area of turf and frequency of mowing.
2. Identify the efficiency of a typical mower.

⁴³ Full Coverage Irrigation. Partial List of Customers Using FCI Nozzles. <http://www.fcinozzles.com/clients.asp>.

⁴⁴ Conversion factor: 1 psi = 2.31 feet of head. Kele & Associates Technical Reference: Liquid Level Measurement. <http://www.kele.com/tech/monitor/Pressure/LiqLevMs.pdf>

⁴⁵ Kansas State University Irrigation Management Series. Comparing Irrigation Energy Costs. Table 4. <http://www.oznet.ksu.edu/library/ageng2/mf2360.pdf>

3. Calculate the emissions associated with mowing.

1. *Identify the area of turf and frequency of mowing:* An Arizona State economic analysis of golf courses reports that on average 2/3 of the land within a golf course is maintained.⁴⁶ ENVIRON suggests assuming that the course will be mowed twice weekly, although high maintenance areas such as greens will be mowed more frequently.⁴⁷ ENVIRON recommends a growing season of 52 weeks/year.⁴⁸

2. *Identify the efficiency of a typical mower.* Typical mower calculations are based on the specifications for a lightweight fairway mower (model 3235C) reported by John Deere’s Golf & Turf division.⁴⁹ A typical mower will use one tank (18 gallons) of diesel per day (assumed to be 8 hours). Given the size specifications of the mower and assuming an average speed of 5.5 mph, such a mower can cover 44 acres on 18 gallons of diesel.

3. *Calculate the emissions associated with mowing.* Using the information collected above and a CO₂ emission factor for diesel combustion⁵⁰, ENVIRON calculates the emission factor for mowing the golf course:

$$2 \text{ mowings/week} \times 52 \text{ weeks/year} \times \frac{18 \text{ gallons diesel/}}{44 \text{ acre-mowing}} \times \frac{22.4 \text{ lbs CO}_2/\text{gallon diesel}}{2204 \text{ lbs/ton}} = \frac{0.43 \text{ MT CO}_2/\text{acre-year}}$$

5.10.4 Calculating CO₂ Emissions from Building Energy Use at the Golf Course

Any of the non-residential building energy use data sources described in the Buildings section may be used to estimate energy intensity at the golf course.

5.11 Pools

Recreation centers may include various pools, spas, and restroom buildings; ENVIRON assumes that pools are the main consumers of energy in recreation centers. This section describes the methods used to estimate the GHGs associated with pools in recreation centers.

The energy used to heat and maintain a swimming pool depends on several factors, including (but not limited to): whether the pool is indoors or outdoors, size of the pool (surface area and depth), water temperature, and energy efficiency of pool pump and water heater, and whether

⁴⁶ Total acreage divided by total acreage maintained. Arizona State University, Dr. Troy Schmitz. Economic Impacts and Environmental Aspects of the Arizona Golf Course Industry. <http://agb.poly.asu.edu/workingpapers/0501.pdf>.

⁴⁷ Based on Best Practices video. <http://buckeyeturf.osu.edu/podcast/?p=51>

⁴⁸ Based on 95% of Southern California Survey respondents report an irrigation season greater than 9-10 months. <http://www.owue.water.ca.gov/docs/2004Apps/2004-079.pdf>

⁴⁹ John Deere Product Specifications. 3235C Lightweight Fairway Mower. http://www.deere.com/en_US/ProductCatalog/GT/series/gt_lwfm_c_series.html

⁵⁰ EIA. Fuel and Energy Source Codes and Emission Coefficients. <http://www.eia.doe.gov/oiaf/1605/factors.html>

solar heating is used. By making assumptions for these parameters and using known or predicted values for energy use, ENVIRON estimates the electricity and natural gas use of an outdoor pool.

5.11.1 Recreation Center Characterization

In the calculations described below, ENVIRON assumes that the proposed pools will be outdoor pools with dimensions 50 meters by 22.9 meters (a typical, competition-size pool). ENVIRON bases electricity calculations on a pool that ran its standard water filter for 24 hours per day, 365 days per year. As there is little data publicly available on the energy use of commercial swimming pools, ENVIRON extrapolates energy consumption from information obtained from two sources: 1) Data on electricity used by pool pumps from Pacific Gas and Electric (PG&E),⁵¹ and 2) Data on the annual cost to heat a commercial pool located in Carlsbad, CA.⁵²

5.11.2 Electricity Use of Pools

A PG&E study on energy efficiency of a pool pump at the Lyons Pool in Oakland, CA, found an annual electricity use of 110,400 kilowatt hours per year (kWh per yr).⁵³ The study pool is smaller than the assumed size of the proposed pool (actual size of the Lyons Pool is 35 yards by 16 yards). Accordingly, ENVIRON scales the electricity use to reflect the larger size of the proposed pool.

5.11.3 Natural Gas Use of Pools

The estimated annual cost of heating a standard competition-size pool is \$184,400 (or 72% of the total cost of pool operations).⁵⁴ ENVIRON used the average PG&E commercial rate for natural gas of \$0.95 per therm to convert this cost into annual natural gas use (hundred cubic feet per year [ccf/year]).⁵⁵ The commercial rate averages the variable cost due to energy usage and time of year. This corresponds to approximately 184,400 ccf per year.⁵⁶

This value is comparable to that obtained from the pool industry.⁵⁷ The estimated cost of heating a residential pool using a natural gas heater is about one dollar per square foot of water

⁵¹ PG&E. 2006. Energy Efficient Commercial Pool Program, Preliminary Facility Report. Lyons Pool, "City of Oakland/Oakland Unified School District." October.

⁵² Mendioroz, R. 2006. Fueling Change: A Number of Design Schemes and Alternative-Energy Strategies Can Help Operators Beat the Price of Natural Gas. Athletic Business. March.

⁵³ PG&E. 2006. Energy Efficient Commercial Pool Program, Preliminary Facility Report. Lyons Pool, "City of Oakland/Oakland Unified School District." October.

⁵⁴ Mendioroz, R. 2006. Fueling Change: A Number of Design Schemes and Alternative-Energy Strategies Can Help Operators Beat the Price of Natural Gas. Athletic Business. March.

⁵⁵ Pacific Gas and Electric (PG&E). 2007. Gas Rate Finder. Vol 36-G, No. 9. September.
<http://www.pge.com/tariffs/GRF0907.pdf>

⁵⁶ At the commercial rate given 1 ccf costs \$1.

⁵⁷ SolarCraft Services Inc. 2007. Phone conversation with Chris Bumaz on September 18, 2007. Novato, CA
<http://www.solarcraft.com/>

surface area per month (\$/sqft-month) in residential therms.⁵⁸ Applying this value to a competition-size pool yields an annual natural gas use of 147,600 ccf/year.

5.11.4 Conversion of Electricity and Natural Gas Use to Greenhouse Gas Emissions

ENVIRON used utility-specific electricity and natural gas emission factors to calculate the total CO₂ emissions for each pool. A summary of the calculations is shown below:

$$\text{Emissions from Electricity} \left(\frac{\text{Tonnes CO}_2 / \text{yr}}{1,000 \text{ sqft}} \right) = \frac{\text{Energy Use (ccf / yr)} \times \text{Emission Factor (lbs CO}_2\text{e / ccf)} \times \text{Conversion Factor (tonne / 2205 lbs)}}{\text{Surface Area of Pool (1,000 sqft)}}$$

$$\text{Emissions from Natural Gas} \left(\frac{\text{Tonnes CO}_2 / \text{yr}}{1,000 \text{ sqft}} \right) = \frac{\text{Energy Use (ccf / yr)} \times \text{Emission Factor (lbs CO}_2\text{e / ccf)} \times \text{Conversion Factor (tonne / 2205 lbs)}}{\text{Surface Area of Pool (1,000 sqft)}}$$

⁵⁸ The residential price for one therm of natural gas.



Appendix C

Transportation Appendices

Appendix C.1
Transportation Calculations

Appendix C.1 – Transportation Calculations

Table C-1 provides further detail into the calculations of percent reduction in vehicle miles traveled (VMT) for each of the fact sheets (that have references to the appendix). Many of the strategies in the table below do not provide the full equations for percent reduction in vehicle miles traveled. Only the equations or variables which require further detail are outlined here. The table also provides detail on any assumptions which are made to perform the calculations and the basis of such assumptions. An additional section below Table C-1 provides a detailed discussion of the calculations made for the transit accessibility strategy.

Table C-1 Transportation Calculations					
Strategy	T#	Equation	Variable	Value	Source/Notes
Increase Density (Land Use/Location)	A2	A = Percentage increase in housing units per acre = (number of housing units per acre – number of housing units per acre for typical ITE development) / (number of housing units per acre for typical ITE development)	number of housing units per acre for typical ITE development	7.6 = blended average density of residential development in the US in 2003	A.C. Nelson. “Leadership in a New Era.” <i>Journal of the American Planning Association</i> , Vol. 72, Issue 4, 2006, pp. 393-407 – as cited in <i>Growing Cooler</i>
		A = Percentage increase in jobs per job acre = (number of jobs per job acre – number of jobs per job acre for typical ITE development) / (number of jobs per job acre for typical ITE development)	number of jobs per job acre for typical ITE development	20 = average jobs per job acre	Year 2005 Land Use, Sacramento County Travel Demand Model, 2008
Improve Design of Development (Land Use/Location)	A3	A = Percentage increase in intersections versus a typical ITE suburban development = (intersections per square mile of project – intersections per square mile of typical ITE suburban development) / (intersections per square mile of typical ITE suburban development)	intersections per square mile of typical ITE suburban development	36 = ITE site average intersection density	Based on Fehr & Peers methodology for analysis in the report: <i>Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study</i> , Fehr & Peers, 2009

Appendix C

Table C-1 Transportation Calculations					
Strategy	T#	Equation	Variable	Value	Source/Notes
Increase Diversity (Mixed Use) (Land Use/Location)	A5	A = Percentage increase in land use index versus single use development = (project land use index – single land use index) / single land use index	single land use index	$0.15 = - [1*(\ln 1) + 0.01*(\ln 0.01)+...+0.01*(\ln 0.01)] / \ln(6)$	--
Increase Destination Accessibility (Land Use/Location)	A6	A = Percentage decrease in distance to downtown or major job center = (distance to downtown/job center for typical ITE development – distance to downtown/job center for project) / (distance to downtown/job center for typical ITE development)	distance to downtown/job center for typical ITE development	12 miles (average work trip length from NHTS)	2000-2001 California Statewide Travel Survey, 2001 NHTS Summary of Travel Trends, p.15 (Table 5)
Increase Transit Accessibility (Land Use/Location)	A7	A = Increase in transit mode share = % transit mode share for project - % transit mode share for typical ITE development	% transit mode share for typical ITE development	1.3%	NHTS, 2001 http://www.dot.ca.gov/hq/tsip/tab/documents/travelsurveys/Final2001_StwTravelSurveyWkdayRpt.pdf , p.150 (Suburban – SCAG, SANDAG, Fresno County.)
		B = Adjustment from transit mode share to VMT = 1 / average vehicle occupancy * conversion from VT to VMT = 0.67	Divide by average vehicle occupancy to translate to VT	1 / average vehicle occupancy = 1 / 1.5 = 0.67	NHTS, http://www.dot.ca.gov/hq/tsip/tab/documents/travelsurveys/2000_Household_Survey.pdf , p.iii
			conversion from VT to VMT	1	Assume all trip lengths are equal (vehicle trips to VMT) ¹

¹ To convert to vehicle miles traveled, we assume that all vehicle trips will average out to typical trip length (“assume all trip lengths are equal”). Thus, we can assume that a percentage reduction in vehicle trips will equal the same percentage reduction in vehicle miles traveled.

**Table C-1
Transportation Calculations**

Strategy	T#	Equation	Variable	Value	Source/Notes
Unbundle Parking Cost from Property Cost (Parking Pricing/Policy)	C3	A = Adjustment from Vehicle Ownership to VMT = average trips per 2 vehicles * 1 vehicle per average trips =(9.8 trips/ 2 vehicles) * (1 vehicle / 5.7 trips) = 0.85	Average trips per X vehicles	Households with 2 vehicles take 9.8 trips while households with 1 vehicle take 5.7 trips per day	i.e. A reduction of 1 vehicle leads to an 0.85 reduction in vehicle trips http://www.dot.ca.gov/hq/tsip/tab/documents/travel_surveys/2000_Household_Survey.pdf , table 8.7
Expand Transit Network (Transit System Improvements)	D2	D = Adjustment for Transit Ridership Increase to VMT	--	0.67	see Increase Transit Accessibility
Enhance Transit Service Frequency/Speed (Transit System Improvements)	D3	E = Adjustment for Transit Ridership Increase to VMT	--	0.67	see Increase Transit Accessibility
Implement Bus Rapid Transit (Transit System Improvements)	D4	D = Adjustment for Transit Ridership Increase to VMT	--	0.67	see Increase Transit Accessibility
Implement Required Trip Reduction Programs (Trip Reduction Programs)	E2	C = Adjustment from vehicle mode share to commute VMT	--	1	Assume all trip lengths are equal (vehicle mode share to vehicle trips to VMT) ⁱ
Provide a Transit Fare Subsidy (Trip Reduction Programs)	E3	C = Adjustment from commute VT to commute VMT	--	1	Assume all trip lengths are equal (vehicle trips to VMT) ⁱ
Implement Commute Trip Reduction Marketing (Trip Reduction Programs)	E7	C = Adjustment from commute VT to commute VMT	--	1	Assume all trip lengths are equal (vehicle trips to VMT) ⁱ

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Table C-1 Transportation Calculations					
Strategy	T#	Equation	Variable	Value	Source/Notes
Provide Employer-Sponsored Vanpool/Shuttle (Trip Reduction Programs)	E8	C = Adjustment from vanpool mode share to commute VMT	--	0.67	see Increase Transit Accessibility
Implement Bike-Sharing Programs (Trip Reduction Programs)	E10	% VMT Reduction = A * B * C = 2% * 7% * 20% = 0.03%	--	--	--
		A = 2% = Net new bicycle mode share = (existing mode share * % increase in bicycle mode share) – existing mode share	Existing mode share	Estimate at 1%	Pucher et al., 2010
			% increase in bicycle mode share	135 – 300%	Pucher et al., 2010, Table 4 (see fact sheet for calculations)
		B = % of new bicycle trips shifting from vehicles (from literature)	--	6-7%	Pucher et al., 2010 and Bike-Share in NYC, 2009, Table 4, p.45
			adjustments to convert from vehicle mode share to VMT	1	Assume all trip lengths are equal (vehicle mode share to vehicle trips to VMT) ⁱ
	C = adjustments to convert from vehicle mode share to VMT * adjustment for shorter than average trip lengths = 1*20%	adjustment for shorter than average trip lengths	1.94/9.9 = 20%	Adjustment to reflect ratio of bike trip length to average trip length (this strategy will only replace the shorter vehicle trips that can be reasonably replaced by a bicycle). [1.94 miles (average bike trip length from Moving Cooler Appendices B-28 referencing NHTS) / 9.9 miles (average household trip length from NHTS Transferability, 2001 NHTS, http://nhts-gis.ornl.gov/transferability/Default.aspx)]	

Table C-1 Transportation Calculations					
Strategy	T#	Equation	Variable	Value	Source/Notes
Provide End of Trip Facilities (Trip Reduction Programs)	E11	*utilizing the same equation in bike sharing program section, set A = 1.3% = (7.1% - 5.8%) % VMT Reduction = A * B * C = 1.3% * 7% * 20% = 0.02%	--	--	--
Establish Schoolpool (Trip Reduction Programs)	E13	B = Adjustments to convert from participation to daily VMT to annual school VMT = [(avg # of families per carpool - 1) / avg # of families per carpool] *% of school days	avg # of families per carpool	2.5	TDM Case Studies, DRCOG, p.13
			% of school days	75% = 39 school weeks/ 52 weeks	TDM Case Studies, DRCOG, p.13
Provide School Buses (Trip Reduction Programs)	E14	B = Adjustments to convert from participation to daily VMT to annual school VMT = % of school days	% of school days	75% = 39 school weeks/ 52 weeks	TDM Case Studies, DRCOG, p.13
Cordon Pricing (Road Pricing Management)	F2	A = % increase in pricing for passenger vehicles to cross cordon	--	100 – 500%	<i>Moving Cooler</i> uses peak hour price per mile instead of crossing price. The percentage change can still be calculated to provide a general estimate for a high range % change. Assuming a baseline of \$0.10, calculated percentage increase to \$0.49 - \$0.65 (<i>Moving Cooler</i>) and adjusted with rounding
		C = % of VMT Impacted by Cordon Pricing and Mode Shift Adjustments = %VMT impacted by congestion pricing * Mode shift adjustment = 8.8% (peak period) and 21% (all day)	--	--	--

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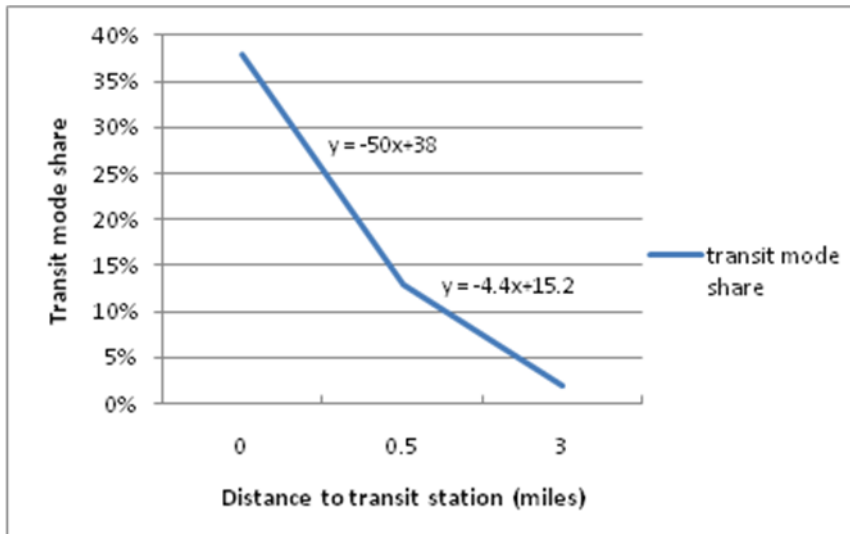
Table C-1 Transportation Calculations					
Strategy	T#	Equation	Variable	Value	Source/Notes
		Peak period = 25% * 35% = 8%	%VMT impacted by congestion pricing	25%	20% of trips are work trips (NHTS Transferability, 2001 NHTS, http://nhts-gis.ornl.gov/transferability/Default.aspx) and round up assuming other trips travel during peak periods
			Mode shift adjustment	35% = 20% + 30%/2	Of the estimated trips affected to the increase in price, assume 50% is either a time of day shift/route shift/no change, 30% convert to HOV trips (with average 2 ppl per HOV), and 20% are trip reductions/shift to transit, walk or bike
		Static all day price (London) = 60% * 35% = 21%	% VMT impacted by congestion pricing	60%	Conservatively assume 60% of trips fall in the peak periods and mid-day
			Mode shift adjustment	35%= 20% + 30%/2	Of the estimated reduced trips due to the increase in price, assume 50% is either a time of day shift/route shift/no change, 30% convert to HOV trips (with average 2 people per HOV), and 20% are trip reductions/shift to transit, walk or bike

Increase Transit Accessibility (Land Use/Location)

Distance to transit	Transit mode share calculation equation (where x = distance of project to transit)
0 – 0.5 miles	-50*x + 38

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0.5 to 3 miles	$-4.4 * x + 15.2$
> 3 miles	no impact
Source: Lund et al, 2004; Fehr & Peers 2010	



Data was taken from Table 5-25 of Lund et al, 2004. The table provided transit commute mode shares for those living with ½ mile of a rail station for 5 sites surveyed within California. Removing the extreme low and high percentages, this provided a range of transit commute mode share of 13% to 38%. A simple linear extrapolation was conducted to provide a relationship for distance to transit (between 0 and ½ mile) to transit mode share, via the equation: transit mode share = $-50 * \text{distance to transit} + 38$. The table also provided transit mode shares for those living from ½ to 3 miles from a station, a range from 2% to 13%. Using the same methodology, a relationship for distance to transit (between ½ mile and 3 miles) to transit mode share is provided via the equation: transit mode share = $-4.4x + 15.2$.

Appendix C.2
Trip Adjustment Factors

Appendix C.2 – Trip Adjustment Factors

The trip adjustment factors are not explicitly used for calculations of reduction in vehicle miles traveled (VMT) but serve as an added resource point for users of this document. For example, we report all commute trip reduction (CTR) program strategies as a percentage reduction in commute VMT. If the user would like to translate this to project level VMT (assuming the project is NOT an office park), and the user does not have statistics about the project area readily available, then the trip adjustment factors table can be utilized.

Example: Assume the user is providing a 15% reduction in commute VMT for a implementation of a ride share program. To calculate an estimated reduction in project level VMT, the user can multiple 15% by 20% (NHTS average % of work trips) and again multiply by 12.0 / 9.9 (average work trip length/average trip length) to adjust for both the portion of trips which are work related and that work trips tend to be longer than average trips.

TABLE C-2. TRIP ADJUSTMENT FACTORS				
	NHTS ¹	Sacramento Region ²	San Diego Region ³	Rural (Kings County, CA) ⁴
Average Work Trip Length (vehicle)	12.0	10.4	8.4	-
Average Trip Length (vehicle)	9.9	6.8	6.9	8.7
Average % of Work Trips	20%	20%	-	12%
Average % of School Trips	9.8%	-	-	-
Average Length of School Trips (Vehicle)	6.0	-	4.2	-
Average Vehicle Occupancy (All Trips)	1.5	1.4	1.5	-
Source: 1. 2000-2001 California Statewide Travel Survey, 2001 NHTS Summary of Travel Trends 2. SACMET model, Fehr & Peers, 2010. 3. SANDAG Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (April 2002) 4. NHTS Transferability, 2001 NHTS, http://nhts-gis.ornl.gov/transferability/Default.aspx				

Appendix C

Appendix C.3
Induced Travel Memo

MEMORANDUM

Date: February 3, 2010

To: CAPCOA Team

From: Tien-Tien Chan, Jerry Walters, and Meghan Mitman

Subject: Induced Travel Material

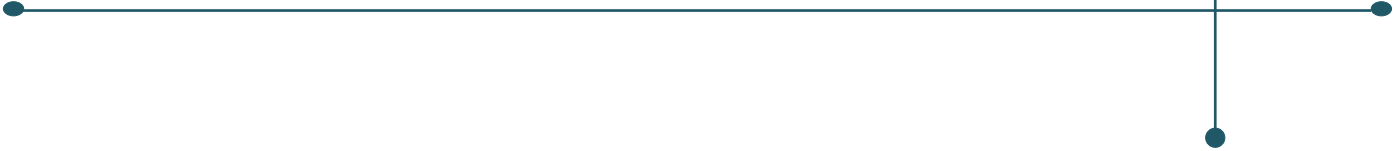
SF10-0475

Induced travel is a term used to describe how travel demand responds to roadway capacity expansion and roadway improvements. Consistent with the theory of supply and demand, the general topic of research concerning induced travel is that reducing the cost of travel (i.e., reduced travel time due to a new road improvement) will increase the amount of travel. In other words, road improvements alone can prompt traffic increases. To what degree and under what circumstances these increases occur is a matter of debate and the key subject of most induced travel research. We have attached the following documents which represent research on induced travel effects:

- *Comparative Evaluations on the Elasticity of Travel Demand* – study conducted for the Utah DOT which included national literature review of induced travel studies
- *Are Induced-Travel Studies Inducing Bad Investments?* – article by Cervero in Access Magazine: Transportation Research at the University of California
- *Road Expansion, Urban Growth, Growth, and Induced Travel: A Path Analysis* – APA Journal paper by Cervero, also discusses the impacts of induced growth and induced investments

The reader should be aware that conditions may vary considerably and the extent of induced travel depends on a variety of factors, including: the degree of prior congestion in the corridor, its duration over hours of the day, its extent over lane miles of the corridor, the degree to which unserved traffic diverts to local streets and the degree of congestion on those routes, the availability of alternate modes within the corridor, whether corridor is radial and oriented toward downtown with high parking cost and limited availability or circumferential, planned level of growth in the corridor, whether the corridor is interstate or interregional, whether it is a truck route, and other factors.

GHG reduction strategies such as transportation system management (e.g. signal coordination, adaptive signal control) may also have the potential for inducing travel. For such strategies, if the estimated improvement exceeds 10% benefit in travel time reduction, we recommend conducting project specific analysis on induced travel prior to establishing GHG reduction benefits.



Appendix D

Building Mitigation Measure Quantification Methods

This Appendix summarizes the steps and assumptions used in two of the mitigation strategies – exceed Title 24 energy efficiency standards (BE-1) and installing energy efficient appliances (BE-4).

Background

GHGs are emitted as a result of activities in residential and commercial buildings when electricity and natural gas are used as energy sources. New California buildings must be designed to meet the building energy efficiency standards of Title 24, also known as the California Building Standards Code. Title 24 Part 6 regulates energy uses including space heating and cooling, hot water heating, ventilation, and hard-wired lighting. By committing to a percent improvement over Title 24, a development reduces its energy use and resulting GHG emissions.

The Title 24 standards have been updated twice (in 2005 and 2008)¹ since some of these data used to estimate energy use were compiled. California Energy Commission (CEC) has published reports estimating the percentage deductions in energy use resulting from these new standards. Based on CEC’s discussion on average savings for Title 24 improvements, these CEC savings percentages by end use can be used to account for reductions in electricity and natural gas use due to the two most recent updates to Title 24. Since energy use for each different system type (ie, heating, cooling, water heating, and ventilation) as well as appliances is defined in this survey, the use of survey data with updates for Title 24 will easily allow for application of mitigation measures aimed at reducing the energy use of these devices in a prescriptive manner.

Another mitigation measure to reduce a building’s energy consumption as well as the associated GHG emissions from natural gas combustion and electricity production is to use energy-efficient appliances. For residential dwellings, typical builder-supplied appliances include refrigerators and dishwashers. Clothes washers and ceiling fans would be applicable if the builder supplied them. For commercial land uses, only energy-efficient refrigerators have been evaluated for grocery stores.

1 California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
 California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: <http://www.energy.ca.gov/ceus/>

Methodology

Datasets

The Residential Appliance Saturation Survey (RASS)² and California Commercial Energy Use Survey (CEUS)³ datasets were used to estimate the energy intensities of residential and non-residential buildings, respectively, since the data is available for several land use categories in different climate zones in California. The RASS dataset further differentiates the energy use intensities between single-family, multi-family and townhome residences.

The Energy Star and Other Climate Protection Partnerships 2008 Annual Report⁴ and subsequent Annual Reports were reviewed for typical reductions for energy-efficient appliances. ENERGY STAR residential refrigerators, clothes washers, dishwashers, and ceiling fans use 15%, 25%, 40%, and 50% less electricity than standard appliances, respectively. ENERGY STAR commercial refrigerators use 35% less electricity than standard appliances.

Calculations

Exceeding Title 24 Energy Efficiency Standards (BE-1)

RASS and CEUS datasets were used to obtain the energy intensities of different end use categories for different building types in different climate zones. Energy intensities from CEUS are given per square foot per year and used as presented. RASS presents Unit Energy Consumption (UEC) per dwelling unit per year and saturation values; the energy intensities used in this analysis are products of the UEC and saturation values.

Data for some climate zones is not presented in the CEUS and RASS studies. However, data from adjacent climate zones is assumed to be representative and substituted as follows:

For non-residential building types:

- Climate Zone 11 used Climate Zone 9 data.
- Climate Zone 12 used Climate Zone 9 data.
- Climate Zone 14 used Climate Zone 1 data.
- Climate Zone 15 used Climate Zone 10 data.

For residential building types:

- Climate Zone 6 used Climate Zone 2 data.
- Climate Zone 14 used Climate Zone 1 data.
- Climate Zone 15 used Climate Zone 10 data.

RASS and CEUS data are based on 2002 consumption data. Because older buildings tend to be less energy efficient, and the majority of the buildings in the survey were likely constructed

² California Statewide Residential Appliance Saturation Study Reporting Center. Available at:

<http://websafe.kemainc.com/RASSWEB/DesktopDefault.aspx>

³ California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at:

<http://www.energy.ca.gov/ceus/>

⁴ United States Environmental Protection Agency 2009. ENERGY STAR and Other Climate Protection Partnerships: 2008 Annual Report. Available at: <http://www.epa.gov/cpd/pdf/2008AnnualReportFinal.pdf>

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before 2001, the RASS and CEUS data likely overestimate energy use for a 2001 Title 24-compliant building.

To account for updates since the 2001 Title 24 standards, percentage reductions for each end use category taken directly from the CEC's "Impact Analysis for 2005 Energy Efficiency Standards" and "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings" reports were applied to the CEUS and RASS datasets for improvements from 2001 to 2005, and 2005 to 2008, respectively (see Tables D-1 and D-2). For the CEUS data, exterior lighting was assumed to be covered by Title 24 lighting and therefore has the full percentage reductions taken. Interior lighting was assumed to be 50% Title 24 and 50% non-Title 24 uses. Therefore only half of the reduction for lighting was applied. The resulting 2008 numbers were then used as baseline energy intensities for this mitigation strategy. The total baseline energy intensities are calculated as follows:

$$\text{Baseline} = \sum [T24_{2001} \times (1 - R_{2001-2005}) \times (1 - R_{2005-2008})] + \sum \text{NT24}$$

Where:

- Baseline = Total baseline energy intensities of building category
- T24₂₀₀₁ = Energy intensities of Title 24 regulated end use from RASS or CEUS
- R₂₀₀₁₋₂₀₀₅ = Reduction from 2001 to 2005
- R₂₀₀₅₋₂₀₀₈ = Reduction from 2005 to 2008
- NT24 = Non-Title 24 regulated end use energy intensities

Table D-1
Reduction in Title 24 Regulated End Use for Non-Residential Buildings

Energy Source	End Use	Reduction from 2001 to 2005	Reduction from 2005 to 2008
Electricity	Heating	4.9%	37.2%
	Ventilation	5.0%	1.5%
	Refrigeration	0.0%	0.0%
	Process	0.0%	0.0%
	Office Equipment	0.0%	0.0%
	Motors	0.0%	0.0%
	Miscellaneous	0.0%	0.0%
	Interior Lighting	4.9%	5.9%
	Water Heating	0.0%	0.0%
	Cooking	0.0%	0.0%
	Air Compressors	0.0%	0.0%
	Cooling	6.7%	8.3%
	Exterior Lighting	9.8%	11.7%
Natural Gas	Cooking	0.0%	0.0%
	Cooling	10.4%	9.3%
	Heating	3.1%	15.9%
	Water Heating	0.0%	0.0%
	Process	0.0%	0.0%
	Miscellaneous	0.0%	0.0%

Table D-2
Reduction in Title 24 Regulated End Use for Residential Buildings

Energy Source	End Use (As presented in RASS Dataset)	Reduction from 2001 to 2005			Reduction from 2005 to 2008		
		Multi-family	Single family	Town home	Multi-family	Single family	Town home
Electricity	Conv. Electric heat	24.3%	19.8%	24.3%	19.7%	22.7%	19.7%
	HP Eheat	24.3%	19.8%	24.3%	19.7%	22.7%	19.7%
	Aux Eheat	24.3%	19.8%	24.3%	19.7%	22.7%	19.7%
	Furnace Fan	24.3%	19.8%	24.3%	19.7%	22.7%	19.7%
	Central A/C	24.3%	19.8%	24.3%	19.7%	22.7%	19.7%
	Room A/C	24.3%	19.8%	24.3%	19.7%	22.7%	19.7%
	Evap Cooling	24.3%	19.8%	24.3%	19.7%	22.7%	19.7%
	Water Heat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Solar Water Heater	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dryer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Clothes Washer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dish Washer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	First Refrigerator	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Second Refrigerator	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Freezer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Pool Pump	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Spa	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Outdoor Lighting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Range/Oven	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	TV	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Spa Electric Heat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Microwave	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Home Office	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	PC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Water Bed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Well Pump	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Natural Gas	Primary Heat	15.7%	6.7%	15.7%	7.0%	10.0%	7.0%
	Auxiliary Heat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Conv. Gas Water Heat	15.7%	6.7%	15.7%	7.0%	10.0%	7.0%
	Solar Water Heat w/Gas Backup	15.7%	6.7%	15.7%	7.0%	10.0%	7.0%
	Dryer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Range/Oven	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Pool Heat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Spa Heat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Miscellaneous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

The same approach was used to quantify GHGs emission reduction from exceeding Title 24 energy efficiency standards by 1%. The 1% reduction was applied to only energy use intensities for Title 24 regulated end use categories. For the CEUS data, the reduction was not applied to any portion of interior lighting. The reduced energy use intensities were added to the unadjusted energy use intensities for non-Title 24 regulated end use categories to obtain the total energy use intensities for exceeding Title 24 energy efficiency standards by 1% for each building category. These were then compared to the baseline line energy intensities for the overall percentage reduction as follows:

$$\text{Percentage Reduction} = 1 - \frac{\sum [T24_{2001} \times (1 - R_{2001-2005}) \times (1 - R_{2005-2008}) \times 99\%] + \sum \text{NT24}}{\text{Baseline}}$$

Where:

- Baseline = Total baseline energy intensities of building category
- T24₂₀₀₁ = Energy intensities of Title 24 regulated end use from RASS or CEUS
- R₂₀₀₁₋₂₀₀₅ = Reduction from 2001 to 2005
- R₂₀₀₅₋₂₀₀₈ = Reduction from 2005 to 2008
- NT24 = Non-Title 24 regulated end use energy intensities

Installing Energy Efficient Appliances

The same baseline line energy use intensities from the Exceeding Title 24 Energy Efficiency Standards mitigation were used for this mitigation strategy. For all appliances except ceiling fan, the reductions as presented in the ENERGY STAR 2008 annual report were applied to the energy use intensities of the corresponding energy end use categories. All other end use categories were kept unadjusted. The percentage reductions were calculated as follows:

$$\text{Percentage Reduction} = 1 - \frac{\text{Appliance Intensity} \times (1 - \text{ESR}) + \sum \text{Other End Use}}{\text{Baseline}}$$

Where:

- Baseline = Total baseline energy intensities of building category
- Appliance Intensity = 2008 baseline energy intensity of appliance in consideration
- ESR = Reduction from ENERGY STAR appliance
- Other End Use = 2008 baseline energy intensity of all other end uses

RASS does not specify a ceiling fan end-use; rather, electricity use from ceiling fans is accounted for in the “Miscellaneous” category which includes interior lighting, attic fans, and other miscellaneous plug-in loads. Since the electricity usage of ceiling fans alone is not

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specified, a value from the National Renewable Energy Laboratory (NREL) Building America Research Benchmark Definition (BARBD)⁵ was used. BARBD reported that the average energy use per ceiling fan is 84.1 kWh per year. In this mitigation measure, it was assumed that each multi-family, single-family, and townhome residence has one ceiling fan. Therefore, the 50% reduction from ENERGY STAR for ceiling fan was applied to 84.1 kWh of the electricity attributed to the Miscellaneous RASS category. In other words, 42.05 kWh was subtracted from the electricity end use intensities of the “Miscellaneous RASS” category in evaluating the GHGs emission reduction from installing energy efficient ceiling fans.

The total energy use intensities with reduction from each appliance in consideration were then compared to the baseline line energy intensities for the overall percentage reduction as follows:

$$\text{Percentage Reduction} = 1 - \frac{(\text{Misc} - 42.05) + \sum \text{Other End Use}}{\text{Baseline}}$$

Where:

- Baseline = Total baseline energy intensities of building category
- Misc = 2008 energy intensity in Miscellaneous category for electricity
- Other End Use = 2008 baseline energy intensity of all other end uses

5 NREL. 2010. Building America Research Benchmark Definition. Available online at: <http://www.nrel.gov/docs/fy10osti/47246.pdf>

Attachment E: SANDAG Mitigation Measures



Mobility Management VMT Reduction Calculator Tool – Design Document

June 2019

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Introduction

This report documents the design of the Mobility Management VMT Reduction Calculator Tool. The Microsoft Excel-based Tool produces estimates of the percent reduction in vehicle miles traveled (VMT) resulting from the application of mobility management strategies. The Tool is intended to act as a resource for evaluating and quantifying the impacts of mobility management strategies as part of the development review and transportation analysis process. The Tool supports the goals of Senate Bill 743 (Steinberg, 2013) (SB 743) by providing jurisdictions and developers with a resource to quantify VMT reductions resulting from implementation of a variety of mitigation strategies at various scales.

This report describes the user inputs, constants assumptions, formulas, and outputs for each strategy included in the Tool. Most of this information is available in the Tool itself, although this document provides some additional explanation of data sources and calculation methods.

The report is organized similarly to the Tool itself. The first four sections describe the Main page, FAQs page, Project-Level Results page, and Community-Level Results page. The remaining sections describe the 22 strategies included in the Tool, grouped into the following five categories:

- **Employer Commute Programs**
- **Land Use Strategies**
- **Parking Management**
- **Neighborhood Enhancements**
- **Transit Strategies**

Main Page

MOBILITY MANAGEMENT VMT REDUCTION CALCULATOR TOOL



Users of the Tool should begin on the Main page. The Main page is organized around the following five boxes:

Overview

Describes the Tool and its purpose.

Instructions

Describes how to use the Tool in a series of six steps.

Legend

Describes the formatting for cells used in the VMT-reduction calculations for each strategy.

Project Information

The user can enter the following optional information:

- Project Name (optional):
- Project Address (optional):
- Project Type (optional):

The user should enter the following information:

- Scale of Analysis:
 - Project/site *or*
 - City/community
- Analysis Location:
 - Using a drop-down menu, the user should select the city in which the analysis is located
- Community Plan Area (CPA), if applicable:
 - If the user selects San Diego or Unincorporated San Diego County, using the drop-down menu the user should select the CPA in which the analysis is located

Mobility Management Strategies

The user will see a list of the 22 strategies included in the Tool, shown below. Each strategy name is a hyperlinked, and clicking on a name will take the user to that strategy. The color scheme in these tables is intended to match that used in the Guidebook. These tables also contain links to the Project-Level Results and Community-Level Results pages.

Project/Site-Level Strategies	
Project-Level Results	
Employer Commute Programs	
Strategies implemented by employers that encourage workers to commute by modes other than auto	
1A	Voluntary Employer Commute Program
1B	Mandatory Employer Commute Program
1C	Employer Carpool Program
1D	Employer Transit Pass Subsidy
1E	Employer Vanpool Program
1F	Employer Telework Program
Land Use Strategies	
Strategies that modify the location or characteristics of development projects to encourage non-auto travel modes	
2A	Transit Oriented Development
2B	Mixed Use Development
Parking Management	
Strategies that discourage auto travel by modifying the price or supply of vehicle parking	
3A	Parking Pricing
3B	Parking Cash Out

Community/City-Level Strategies	
Community-Level Results	
Neighborhood Enhancements	
Strategies that improve or encourage neighborhood-level bicycle, pedestrian, and other multimodal travel options	
4A	Street Connectivity Improvement
4B	Pedestrian Facility Improvement
4C	Bikeway Network Expansion
4D	Bike Facility Improvement
4E	Bikeshare
4F	Carshare
4G	Community-Based Travel Planning
Transit Strategies	
Strategies that improve transit service and cause a mode shift from auto to transit	
5A	Transit Service Expansion
5B	Transit Frequency Improvements
5C	Transit-Supportive Treatments
5D	Transit Fare Reduction
5E	Microtransit NEV Shuttle

FAQs Page

This page contains frequently asked questions and associated answers.

1. What does this tool do?

The SANDAG VMT Reduction Calculator Tool can be used to estimate the percent reduction in VMT from various mobility management strategies. The tool operates at two geographic scales: project/site-level and community/city-level. The tool user must provide simple input information about a strategy in order to produce a VMT-reduction estimate. The tool is intended to act as a resource for evaluating and quantifying the impacts of mobility management strategies as part of the development review and transportation analysis process. The tool supports the goals of SB 743 by providing jurisdictions and developers with a resource to quantify VMT reductions resulting from implementation of a variety of mitigation strategies.

2. How do I enter strategy information?

Tool users enter information about a strategy of interest in the orange-colored cells found on each strategy page. Users cannot enter information in any other cells.

3. How do I see if the strategy has a VMT impact?

Each strategy page has a row labeled “Change in VMT.” A negative value in this row indicates a reduction in VMT; a positive value indicates an increase in VMT (denoted with a red outline of the cell).

4. What VMT reduction strategies are included in the tool?

The 22 strategies are listed on the Main page of this tool. Users can also review the Mobility Management Strategy Guidebook that serves as a companion resource to this tool for more information.

5. How do I select VMT reduction strategies?

From the Main page or the Results page, the user can click on a strategy hyperlink of interest. On the Strategy page, entering input values in all of the orange-colored cells will activate that strategy. If the user does not want the VMT-reduction results of a given strategy to be included in the summary results, either delete the Strategy page inputs in the orange-colored cells or click “Exclude from results” on the Strategy page.

6. Where can I learn more about how the reductions are calculated?

Each strategy page lists the references that were used to develop the VMT reduction estimates. Users can also review the Mobility Management Strategy Guidebook that serves as a companion resource to this tool for more information.

7. How is the total percent change in VMT adjusted when I select multiple strategies?

If only one strategy is selected, the user will see on the Results page (a) the percent change in VMT associated with that strategy and (b) the percent change in VMT (total) from all strategies. In this case, the values are the same. If more than one strategy is selected, the tool uses “multiplicative dampening” to adjust the sum of VMT reduction. Multiplicative dampening accounts for the diminished percent change in VMT that a strategy will have if other strategies are also selected. The total is calculated with the following formula:

$$\text{Total} = \{[100\% - (\text{Strategy A \% change in VMT})] \times [100\% - (\text{Strategy B \% change in VMT})] \times \dots \times [100\% - (\text{Strategy Z \% change in VMT})]\} - 100\%$$

8. How are the mode share, trip length, and VMT per capita data derived?

The mode share, trip length, and VMT per capita data found in this tool reflect travel by residents of the San Diego region only. The data are parsed by jurisdiction and, for the City of San Diego and the Unincorporated County of San Diego, by CPA. The data reflect the home origin of residents during an average 24-hour weekday. The analysis includes all trip purposes (all activities assigned to the home location). The data do not reflect travel for which the home origin is located outside of the San Diego region or by visitors to the San Diego region. It does not include travel made by heavy-duty trucks or travel for commercial purposes.

9. Can I calculate the total percent change in VMT from multiple strategies if the scales of analysis from my chosen strategies are not the same?

The tool safeguards against accidentally calculating the total percent change in VMT from strategies of different scales of analysis by graying out cells through conditional formatting and creating separate Print pages for the project/site-level results and the community/city-level results. While it may be possible that a user’s project involves strategies that affect VMT at both scales, it is likely that combining the percentage VMT reduction from strategies of different scales would not be valid. If a user’s project involves strategies that affect VMT at both scales, the user should use the tool as follows:

- a. Input project information on Main page
- b. Calculate VMT reductions from all applicable project/site-level strategies
- c. Print the project/site-level VMT results
- d. Open a clean version of the tool with no user inputs entered
- e. Repeat steps a through c for the community/city-level strategies

10. Why are there two totals displayed on the Results pages?

As discussed above in Question 7, the total percent change in VMT can be calculated when multiple strategies are selected. However, if the selected strategies reduce VMT from different types of trips (i.e., employee commute trips and all project-generated trips), it may not be valid to combine the total percent change in VMT. For example, parking pricing at a commercial facility affects VMT from all project-generated trips, while an employee vanpool program only affects VMT from the facility’s employee commute trips. Of the ten project-level strategies, seven reduce VMT from employee commute trips and three reduce VMT from all project-generated trips (including non-commute trips). The seven are summed to an Employee Commute Trips Total using multiplicative dampening (see Question 7), and the three are separately summed to a Project-Generated Trips Total in the same way. This similarly occurs on the Community-Level Results page, where, of the 12 strategies, 11 reduce VMT from all city/CPA trips and one (4D Bike Facility Improvement) reduces VMT from trips on the roadway affected by a bikeway addition.

11. Can the tool be used to analyze strategies in rural areas?

There is little empirical research to support the estimation of VMT reduction in rural areas. Strategies that are likely to be most effective in rural areas include employer vanpool and telecommute programs. Many of the

strategies included in this tool will have little to no effectiveness in rural areas. Because of the lack of relevant research, analysis of strategies applied in a rural context should be done on a case-by-case basis and should generally not rely on the relationships contained in this tool.

12. How is the maximum VMT reduction calculated for each strategy?

On each strategy page below the “Type of VMT affected,” the “Max VMT reduction” is listed. Sometimes a strategy’s maximum VMT reduction is dependent only on user inputs, other times it is capped at a certain percentage, and other times it is based on regional parameters (e.g., mode share) specific to each city/CPA. Furthermore, the max VMT reduction can also be changed by optional user inputs that override default data. The max VMT reduction listed on each strategy page is meant to provide the user with a general estimate of the reduction potential for each strategy. The values listed were derived from the tool using the City of San Diego Downtown/City Centre CPA as the analysis location with all default data. The user may achieve a max VMT reduction that is different than the Max VMT reduction listed based on the differences in regional parameters of the selected city/CPA and any additional user overrides.

13. How is each place type defined?

Low-density suburb: Dispersed, low-density, single-use, automobile-dependent land use patterns, usually outside of the central city. Other characteristics may include: 20+ miles from regional central business district; more housing than jobs; buildings are one to two stories; curvilinear (cul-de-sac) street patterns; parking between street and office or retail and large-lot residential parking is common; ample parking and largely surface lot-based; no parking prices; limited bus service with peak headways 30+ minutes.

Suburban center: Cluster of multi-use development within dispersed, low-density, automobile-dependent land use patterns. Serves the population of a suburb with office, retail, and housing that is denser than the surrounding suburb. Other characteristics may include: 20+ miles from regional central business district; balanced jobs/housing ratio; buildings are two stories; grid street pattern; 0–20-foot setbacks; somewhat constrained parking supply on street and ample off-street; low to no parking prices; bus service at 20–30-minute headways; and/or a commuter rail station.

Urban: Located within a central city with multi-family housing and nearby office and retail. Other characteristics may include: within or less than five miles from the central business district; jobs/housing ratio > 1.5; buildings are at least six stories; grid street pattern; minimal setbacks; constrained parking supply; high parking prices; and high-quality rail service and/or comprehensive bus service.

14. There is text in a locked cell that is cut off, and I cannot click into the cell to read the remainder of the text. How can I read the cell text?

The margins of all cells have been adjusted so that at Excel’s 100% zoom level, all the text can be seen. Adjust your zoom level to 100% if you see that a cell’s text is cut off. This also applies to any text in comment bubbles.

15. What does “percent of employees eligible” mean, as used in strategies 1A through 1D?

This refers to the percentage of employees that would be able to participate in the strategy’s program if they desired to. This will usually be 100%. Employees who might not be able to participate could include those who work nighttime hours when transit and rideshare services are not available or employees who are required to drive to work as part of their job duties. This input does not refer to the percentage of employees who actually participate in the program.

Project-Level Results Page

This page lists all the project-level strategies and displays the percentage reduction in VMT calculated for each strategy that the user analyzes. In the default state of the Tool, all strategies are “inactive,” so no VMT reduction results are initially shown on this page. As the user “activates” an individual strategy by providing inputs, the tool calculates the percentage reduction in VMT for the strategy, displaying the results on the individual strategy page and this results summary page.

The bottom of this page displays the total percentage reduction in VMT for multiple project-level strategies selected. The total VMT reduction formula applies multiplicative dampening so as not to double-count VMT impacts. For example, if one strategy reduces VMT by 10%, then only 90% of VMT remains to be affected by subsequent strategies. If a second strategy is applied that also reduces VMT by 10%, the combined resulting VMT would be 81% (10% reduction of 90% of VMT). Thus, the VMT reduction impact of both strategies is 19% rather than 20% if the impacts were purely additive. The following is the formula used to calculate the total VMT reduction if multiple strategies are selected:

$$\text{Total} = \{[100\% - (\text{Strategy A \% change in VMT})] \times [100\% - (\text{Strategy B \% change in VMT})] \times \dots \times [100\% - (\text{Strategy Z \% change in VMT})]\} - 100\%$$

The page shows two rows for total VMT reduction – one for strategies that affect employee commute trips and one for project strategies that affect all project-generated trips. This is because it may not be valid to combine VMT reductions for the two types. For example, parking pricing at a commercial facility affects VMT from all project-generated trips, while an employee vanpool program only affects VMT from the facility’s employee commute trips. Of the ten project-level strategies, seven reduce VMT from employee commute trips, and three reduce VMT from all project-generated trips (including non-commute trips). The seven are summed to an Employee Commute Trips Total using multiplicative dampening, and the three are separately summed to a Project-Generated Trips Total in the same way.

Community-Level Results Page

This page lists all the community-level strategies and displays the percentage reduction in VMT calculated for each strategy that the user analyzes. The functionality of this page is similar to the Project-Level Results Page.

Like the Project-Level Results page, this page shows two total rows. Of the 12 strategies, 11 reduce VMT from all city/CPA trips and one (4D Bike Facility Improvement) reduces VMT from trips on the roadway affected by a bikeway addition. These should not be combined.

Employer Commute Program Strategies

Strategies implemented by employers that encourage workers to commute by modes other than autos.

1A. Voluntary Employer Commute Program

Description: Employer offers a voluntary employer commute trip-reduction program. The program may include a carpool or vanpool program, subsidized or discounted transit passes, bike amenities, commute trip-reduction marketing, and preferential parking permit program. This strategy encompasses strategies 1C (Employer Carpool Program), 1D (Employer Transit Pass Subsidy), and 1E (Employer Vanpool Program) and cannot be analyzed in combination with these strategies. Unlike strategy 1B (Mandatory Employer Commute Program), this strategy does not require monitoring, reporting, or performance standards. If this strategy is selected, strategy 1B cannot be analyzed as part of the total VMT reduction.

Formula: % change in VMT = % of employees eligible × % change in commute VMT

User Inputs:

- Is the program contractually required of the developer or property owner and accompanied by a regular performance monitoring and reporting program? [Yes/No]
 - If Yes, must use Strategy 1B
 - If No, use Strategy 1A
- Place type of project/site
 - Low-density suburb
 - Suburban center
 - Urban
- Percent of employees eligible
 - Refers to percentage of employees that would be able to participate in the strategy’s program if they desired to. This will usually be 100%. Employees who might not be able to participate could include those who work nighttime hours when transit and rideshare services are not available or employees who are required to drive to work as part of their job duties. This input does not refer to the percentage of employees who actually participate in the program.

Constants and Assumptions:

- Percent change in commute VMT:
 - Low-density suburb: –6.2%
 - Suburban center: –5.4%
 - Urban: –5.2%
- Strategy cannot be used in combination with 1B.
- Strategy encompasses strategies 1C, 1D, and 1E and cannot be analyzed in combination with these strategies.

SANDAG Data:

None.

Sources:

- California Air Pollution Control Officers Association. 2010. “Quantifying Greenhouse Gas Mitigation Measures.” capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf
- Cambridge Systematics. 2009. “Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions.” Technical Appendices. Prepared for the Urban Land Institute. reconnectingamerica.org/assets/Uploads/2009movingcoolerexecsumandappend.pdf
- Boarnet, Marlon G., Hsin-Ping Hsu, and Susan Handy. 2014. “Impacts of Employer-Based Trip Reduction Programs and Vanpools on Passenger Vehicle Use and Greenhouse Gas Emissions: Policy Brief.” arb.ca.gov/cc/sb375/policies/ebtr/ebtr_brief.pdf

1B. Mandatory Employer Commute Program

Description: Employer offers a mandatory employer commute trip-reduction program. The program may include a carpool or vanpool program, subsidized or discounted transit passes, bike amenities, encouragement for telecommuting and alternative work schedules, commute trip-reduction marketing, and preferential parking permit program. This strategy encompasses strategies 1C, 1D, and 1E and cannot be analyzed in combination with these strategies. Unlike strategy 1A (Voluntary Employer Commute Program), this strategy would be contractually required of the developer or property owner and is accompanied by a regular performance-monitoring and reporting program. If this strategy is selected, strategy 1A cannot be analyzed as part of the total VMT reduction.

Formula: % change in VMT = % of employees eligible × % change in commute VMT

User Inputs:

- Is the program contractually required of the developer or property owner and accompanied by a regular performance-monitoring and reporting program? [Yes/No]
 - If Yes, use Strategy 1B
 - If No, must use Strategy 1A
- Percent of employees eligible
 - Refers to percentage of employees that would be able to participate in the strategy’s program if they desired to. This will usually be 100%. Employees who might not be able to participate could include those who work nighttime hours when transit and rideshare services are not available or employees who are required to drive to work as part of their job duties. This input does not refer to the percentage of employees who actually participate in the program.

Constants and Assumptions:

- Percent change in commute VMT is –26%
- Strategy cannot be used in combination with 1A.
- Strategy encompasses strategies 1C, 1D, and 1E and cannot be analyzed in combination with these strategies.

SANDAG Data:

None.

Sources:

- California Air Pollution Control Officers Association. 2010. “Quantifying Greenhouse Gas Mitigation Measures.” capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf
- City of South San Francisco. 2015. “2015 Genentech Annual Report.” ci-ssf-ca.granicus.com/MetaViewer.php?view_id=2&clip_id=859&meta_id=62028
- Cambridge Systematics. 2009. “Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions.” Technical Appendices. Prepared for the Urban Land Institute. reconnectingamerica.org/assets/Uploads/2009movingcoolerexecsumandappend.pdf

1C. Employer Carpool Program

Description: Employers can encourage carpooling by providing ridematching assistance to employees, providing priority parking for carshare vehicles, and providing incentives for carpooling.

Formula: % change in VMT = % of employees eligible × % change in commute VMT

User Inputs:

- Place type of project/site
 - Low-density suburb
 - Suburban center
 - Urban
- Percent of employees eligible
 - Refers to percentage of employees that would be able to participate in the strategy’s program if they desired to. This will usually be 100%. Employees who might not be able to participate could include those who work nighttime hours when transit and rideshare services are not available or employees who are required to drive to work as part of their job duties. This input does not refer to the percentage of employees who actually participate in the program.

Constants and Assumptions:

- Percent change in commute VMT:
 - Low-density suburb: –3%
 - Suburban center: –5%
 - Urban: –8%
- Strategy encompassed by strategies 1A and 1B and cannot be analyzed in combination with these strategies.

SANDAG Data:

None.

Sources:

- Ewing, R. 1993. “TDM, Growth Management and the Other Four out of Five Trips.” Transportation Quarterly, Vol. 48, No. 3.

- Victoria Transport Policy Institute. “Ridesharing: Carpooling and Vanpooling.” TDM Encyclopedia. vtpi.org/tdm/tdm34.htm
- California Air Pollution Control Officers Association. 2010. “Quantifying Greenhouse Gas Mitigation Measures.” capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf
- New York State Department of Transportation. 2019. Data from 511NYRideshare program participants.

1D. Employer Transit Pass Subsidy

Description: Employers can encourage employees to take transit by providing subsidized or discounted daily or monthly public transit passes to employees.

Formula: % change in VMT = % of employees eligible × % change in commute VMT

Where % change in commute VMT differs by place type (low-density suburb, suburban center, or urban) and level of daily transit subsidy (\$1 to \$4)

User Inputs:

- Place type of project/site
 - Urban
 - Suburban center
 - Low-density suburb
- Transit subsidy per day
 - \$1
 - \$2
 - \$3
 - \$4
- Percent of employees eligible
 - Refers to percentage of employees that would be able to participate in the strategy’s program if they desired to. This will usually be 100%. Employees who might not be able to participate could include those who work nighttime hours when transit and rideshare services are not available or employees who are required to drive to work as part of their job duties. This input does not refer to the percentage of employees who actually participate in the program.

Constants and Assumptions:

- Percent change in commute VMT

Place Type	Subsidy Level per Day			
	\$1.00	\$2.00	\$3.00	\$4.00
Low-Density Suburb	-0.1%	-0.2%	-0.4%	-0.6%
Suburban Center	-1.1%	-2.4%	-4.1%	-5.8%
Urban	-2.2%	-4.7%	-7.8%	-10.9%

- o Estimated based on Nelson Nygaard (2010) and TCRP (2010). Subsidy levels in Nelson Nygaard were updated to reflect inflation. Also considers maximum VMT reductions suggested in Boarnet et al. (2014).
- Strategy encompassed by strategies 1A and 1B and cannot be analyzed in combination with these strategies.

SANDAG Data:

None.

Sources:

- Nelson Nygaard. 2010. "Santa Monica LUCE Trip Reduction Impacts Analysis." City of Santa Monica Land Use and Circulation Element, Final EIR. smgov.net/Departments/PCD/Plans/2010-Land-Use-and-Circulation-Element/
- Transportation Research Board. 2010. "TCRP Report 95 Chapter 19: Employer and Institutional TDM Strategies." trb.org/Publications/TCRPReport95.aspx
- Boarnet, Marlon G., Hsin-Ping Hsu, and Susan Handy. 2014. "Impacts of Employer-Based Trip Reduction Programs and Vanpools on Passenger Vehicle Use and Greenhouse Gas Emissions: Policy Brief." arb.ca.gov/cc/sb375/policies/ebtr/ebtr_brief.pdf

1E. Employer Vanpool Program

Description: Vanpooling is a flexible form of public transportation that provides groups of 5–15 people with a cost-effective and convenient rideshare option for commuting. An employer can encourage ridesharing by subsidizing vanpooling for employees who have a similar origin and destination and by providing priority parking for employees who vanpool.

The SANDAG Vanpool Program provides a subsidy of up to \$400 per month to offset the vehicle lease cost.

Formula: % change in VMT = $(M_A \times L_A + M_V \times L_V / O_V) / (M_A \times L_A + M_V \times L_V) - 1$

Where:

M_A = auto (non-vanpool) mode share

M_V = vanpool/long trip mode share

L_A = length of average auto commute trip

L_V = length of vanpool/long commute trip

O_V = average vanpool occupancy

User Inputs:

- Does the employer sponsor a vanpool program? [Yes/No]
 - If No, strategy does not apply to project and no change in VMT.
- Percentage of employees who participate in vanpool (optional override of regional default)
- One-way length of average auto commute (optional override of regional default)
- One-way length of long (vanpool) commute (optional override of regional default)

Constants and Assumptions:

- If the user override of vanpool participation rate exceeds maximum of 15%, the default value will be used. This maximum is based on TCRP Report 95, Chapter 5 and ICF’s experience implementing the 511NYRideshare program, the nation’s largest regional TDM program.
- Strategy encompassed by strategies 1A and 1B and cannot be analyzed in combination with these strategies.

SANDAG Data:

- Percentage of employees who participate in vanpool is 2.7%.
- Average one-way commute trip length is 12.71 miles.
- Average one-way vanpool trip length is 42 miles.
- Average vanpool occupancy (including driver) is 6.25 persons.

Sources:

- SANDAG. 2018. Commute Behavior Survey.
- SANDAG. Activity Based Model. 2016. (v14.0.1, scenario ID 232)
- SANDAG. 2018. SANDAG Vanpool Program
- Transportation Research Board. 2005. “TCRP Report 95 Chapter 5 Buspools and Vanpools.” trb.org/Publications/TCRPReport95.aspx
- New York State Department of Transportation. 2019. Data from 511NYRideshare program participants.

1F. Employer Telecommute Program

Description: A telework program enables employees to work from home or a remote location one or more days per week. Depending on the nature of the work, schedules can range from full-time, specific days of the week, or as-needed. The VMT impacts of telework are similar to a flexible work schedule program, which enables employees to work long hours in exchange for one day off every week or two.

Formula: % change in VMT = % of employees who participate × % change in commute VMT for 1% of employees telecommuting X days/week

Where X = 1, 2, or 3

User Inputs:

- Percentage of employees who participate
- Days per week the average employee telecommutes

Constants and Assumptions:

- Percent change in commute VMT for 1% of employees telecommuting at X days/week:
 - 1: -0.15%
 - 2: -0.29%
 - 3: -0.44%

SANDAG Data:

None.

Sources:

- Cambridge Systematics. 2009. "Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions." Technical Appendices. Prepared for the Urban Land Institute. reconnectingamerica.org/assets/Uploads/2009movingcoolerexecsumandappend.pdf
- California Air Pollution Control Officers Association. 2010. "Quantifying Greenhouse Gas Mitigation Measures." capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

Land Use Strategies

Strategies that modify the location or characteristics of development projects to encourage non-auto travel modes.

2A. Transit-Oriented Development

Description: Transit-Oriented Development (TOD) refers to projects built in compact, walkable areas that have easy access to public transit, ideally in a location with a mix of uses, including housing, retail, offices, and community facilities. TODs generally are described as places within a ten-minute walk of a high-frequency rail transit station (e.g., SPRINTER, COASTER, Trolley). They should, at a minimum, incorporate adequate bike and pedestrian access to transit, thereby encouraging transit use and reducing vehicle travel.

Formula: % change in VMT = difference in transit mode share with strategy × mode shift factor

User Inputs:

- Is the project within 0.5 mile of a rail transit station (e.g., SPRINTER, COASTER, Trolley)? [Yes/No]
 - If No, strategy cannot be used
- Existing transit mode share (optional override of city/CPA default)

Constants and Assumptions:

- Ratio of transit mode share for TOD area compared to transit mode share for surrounding city/CPA is 4.9.
- Maximum transit mode share is 27%, per Lund (2004).
- Mode shift factor is 0.70. Calculated as (1/average vehicle occupancy) or (1/1.42). Mode shift factor is an adjustment to reflect the reduction in vehicle trips associated with a reduction in person trips, since some vehicles carry more than one person.

SANDAG Data:

- Default transit mode share (all trips), by City/CPA

Sources:

- Tal, G., et al. 2013. "Technical Background Document on the Impacts of Transit Access (Distance to Transit) Based on a Review of the Empirical Literature." arb.ca.gov/cc/sb375/policies/transitservice/transit_brief.pdf
- SANDAG. Activity Based Model. 2016. (v14.0.1, scenario ID 232)
- Lund, H., et al. 2004. "Travel Characteristics of Transit-Oriented Development in California." bart.gov/sites/default/files/docs/Travel_of_TOD.pdf

2B. Mixed Use Development

Description: Mixed use projects incorporate a range of complementary land uses that provide a more balanced development approach relative to the surrounding neighborhood and encourage transportation alternatives. This could include co-location residential development, office space, retail shops, and others. Land use mix is measured using an entropy index. An index of 0 indicates a single land use while an index of 1 indicates equal distribution of all land uses. For ease of use, the strategy is calculated using only two land use types - residential (number of residents) and commercial (number of jobs).

Formula: % change in VMT = % change in land use index × elasticity

Where:

land use index = $-A / (\ln[2])$

$A = (b1/a) \times \ln(b1/a) + (b2/a) \times \ln(b2/a)$

a = residents + jobs

b1 = residents

b2 = jobs

User Inputs:

- Existing land use index (optional override of city/CPA default)
- Residents added with project
- Jobs added with project

Constants and Assumptions:

- Elasticity of VMT with respect to land use index is -0.09 , per Ewing and Cervero (2010).
- Percent change in land use index with strategy is capped at 500%, per CAPCOA (2010).
- Percent change in VMT is capped at -30% , per CAPCOA (2010).

SANDAG Data:

- Default land use index, by city/CPA, is calculated based on SANDAG-provided data on population and jobs.

Sources:

- SANDAG Land Use Inventory (SPACECORE). 2016.
- Ewing, R., and Cervero, R. 2010. "Travel and the Built Environment – A Meta-Analysis." Journal of the American Planning Association.

Parking Management Strategies

Strategies that discourage auto travel by modifying the price or supply of vehicle parking.

3A. Parking Pricing

Description: Priced parking can be implemented on- or off-street and helps to effectively manage the parking supply. Priced parking works best in areas where on-street parking is managed (e.g., priced parking, residential permit programs, time limits, etc.) to reduce unintended consequences of parking in adjacent neighborhoods.

Formula: % change in VMT = % change in parking price × elasticity

User Inputs:

- Parking price unit. User selects one of these options:
 - \$/hour
 - \$/day
 - \$/month
 - \$/year
- Existing parking price
- Parking price with project

Constants and Assumptions:

- Elasticity of vehicle trips with respect to parking price is –0.15.
- Change in vehicle trips assumed to equal change in VMT.
- A minimum 25% parking price change is needed to affect VMT.
- Change in parking price is capped at a minimum of –50% and a maximum of 50%.

SANDAG Data:

None.

Sources:

- Transportation Research Board. 2009. TCRP Report 95, Chapter 13, Parking Pricing and Fees. p13-4. trb.org/Publications/TCRPReport95.aspx
- Cambridge Systematics. 2009. “Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions.” Technical Appendices. Prepared for the Urban Land Institute. reconnectingamerica.org/resource-center/browse-research/2009/moving-cooler-an-analysis-of-transportation-strategies-for-reducing-greenhouse-gas-emissions/

3B. Parking Cash Out

Description: Employers can offer employees who are provided free parking the option to take the cash value of the space in lieu of the space itself. California state law (Assembly Bill 2109 [Katz, 1992]) requires that

certain employers who provide subsidized parking for their employees offer a cash allowance in lieu of a parking space. This strategy is only applicable where employers pay for or rent parking for their employees.

Parking cash-out is most successful when paired with incentives or programs that encourage the use of transportation alternatives.

Formula: % change in VMT = % of employees who participate × % change in commute VMT among participants

User Inputs:

- Percentage of employees who participate

Constants and Assumptions:

- 12% reduction in commute VMT among participants.

SANDAG Data:

None.

Sources:

- California Air Resources Board. 2009. "California's Parking Cash-Out Program: An Informational Guide for Employers." arb.ca.gov/planning/tsaq/cashout/cashout_guide_0809.pdf
- Shoup, Donald C. 2005. "Parking Cash Out." Planners Advisory Service, American Planning Association. shoup.bol.ucla.edu/ParkingCashOut.pdf

Neighborhood Enhancement Strategies

Strategies that improve or encourage neighborhood-level bicycle, pedestrian, and other multimodal travel options.

4A. Street Connectivity Improvement

Description: A connected and complete street network improves accessibility, safety, and livability of the community. Traditional grid street patterns with short blocks offer a high degree of connectivity compared to street networks with curvilinear designs and cul-de-sacs. This strategy uses intersection density as a proxy for street connectivity improvements, which helps facilitate a greater number of short trips. Example projects that increase intersection density would be building a new street network in a subdivision or retrofitting an existing street network to improve connectivity (e.g., cul-de-sacs converted to grid streets).

Formula: % change in VMT = % change in intersection density × elasticity

User Inputs:

- Existing intersection density (intersections per square mile) (optional override of city/CPA default)
- Intersection density with strategy (intersections per square mile)

Constants and Assumptions:

- Elasticity of VMT with respect to intersection density is -0.12.
- Change in intersection density capped at a minimum of -50% and a maximum of 50%.

SANDAG Data:

- Default intersection density, by city/CPA, is provided by SanGIS (2016).

Sources:

- San Diego Geographic Information Source (SanGIS). 2016. "Roads_All." San Diego Geographic Information Source – JPA. sangis.org/download/index.html. Downloaded: May 1, 2019.
- Ewing, R., and Cervero, R. 2010. "Travel and the Built Environment – A Meta-Analysis." Journal of the American Planning Association.
- Handy, Susan, et al, 2014. "Impacts of Network Connectivity on Passenger Vehicle Use and Greenhouse Gas Emissions: Policy Brief." arb.ca.gov/cc/sb375/policies/connectivity/network_connectivity_brief.pdf

4B. Pedestrian Facility Improvement

Description: Enhancing pedestrian facilities (e.g., streetscape and pedestrian crossing improvements) within the jurisdiction or community helps encourage walking and reduce the reliance on the single-occupancy vehicle. This strategy applies to sidewalk enhancements that improve the existing streetscape and is not inclusive of greenfield developments with new roadways.

Formula: % change in VMT = % change in ratio of sidewalk length to street length × elasticity

User Inputs:

- Existing sidewalk length in city/CPA (miles)

- Existing street length in city/CPA (miles)
- Sidewalk length in city/CPA with project (miles)

Constants and Assumptions:

- Street length is assumed to remain constant, since the strategy involves adding sidewalks to the existing street network, not modifying street networks. Assuming a constant street length simplifies the user inputs and prevents users from erroneously entering unreasonable values.
- Elasticity of VMT with respect to sidewalk coverage ratio is -0.05.
- VMT change is capped at 1.4%, which is based on the following assumptions:
 - 10% of auto trips are short trips that could shift to walking (average 0.83 mile in length, per SANDAG)
 - 90% of auto trips are longer trips that cannot shift to walking (average 6.5 miles in length, per SANDAG)
 - So maximum VMT change = $(10\% \times 0.83) / (90\% \times 6.5) = 1.4\%$

SANDAG Data:

- Regional average one-way walk trip length is 0.83 miles.
- Regional average one-way auto trip length is 6.5 miles.

Sources:

- Frank, L., Greenwald, M., Kavage, S. and Devlin, A. 2011. “An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy.” WSDOT Research Report WA-RD 765.1, Washington State Department of Transportation. wsdot.wa.gov/research/reports/fullreports/765.1.pdf
- Handy, Susan, et al, 2014. “Impacts of Pedestrian Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions: Policy Brief.” arb.ca.gov/cc/sb375/policies/ped/walking_brief.pdf

4C. Bikeway Network Expansion

Description: A bikeway network includes an interconnected system of bike lanes, bike paths, and cycle tracks (Class I, Class II, and Class IV facilities). Bike facilities may share the roadway with vehicles or provide a dedicated pathway that separates bikes from cars or pedestrians. Increasing the network of bike facilities helps encourage biking as a safe and convenient alternative to driving. If this strategy is selected, strategy 4D (Bike Facility Improvement) cannot be analyzed as part of the total VMT reduction.

Formula: $\% \text{ change in VMT} = (-1) \times \% \text{ change in bikeway miles} \times \text{elasticity} \times \text{existing bike mode share} \times \text{bike trip length} / (\text{existing auto mode share} \times \text{auto trip length})$

Derivation of Formula:

$$\begin{aligned} \% \text{ change in VMT} &= [\text{change in auto VMT}] / [\text{current auto VMT}] \\ &= (-1) \times [\text{change in bicycle miles traveled}] / [\text{current auto VMT}] \\ &= (-1) \times [\text{total trips in city/CPA} \times \text{bike mode share} \times \text{bike trip length} \times \% \text{ change in} \\ &\quad \text{bikeway density} \times \text{elasticity}] / [\text{total trips in city/CPA} \times \text{auto mode share} \times \text{auto trip} \\ &\quad \text{length}] \end{aligned}$$

User Inputs:

- Would the project expand a network of bikeways or add a single bikeway? [Network of bikeways/ Single bikeway]
 - If Network of bikeways, use Strategy 4C
 - If Single bikeway, must use Strategy 4D
- Existing bicycle mode share (optional override of city/CPA default)
- Existing auto mode share (optional override of city/CPA default)
- Are any of the current or proposed bikeways in the city/CPA classified as Class III? [Yes/No]
 - If Yes, Class III bike lane miles should be left out of the bikeway mile user inputs.
- Existing bikeway miles in city/CPA
- Additional bikeway miles in city/CPA with project
- One-way bicycle trip length (optional override of regional default)
- One-way auto trip length (optional override of regional default)

Constants and Assumptions:

- Elasticity of bike trips with respect to bikeway miles per 10,000 population is 0.25.
- Maximum VMT change capped at 5.0%, which is based on the following assumptions:
 - 10% of auto trips are short trips that could shift to bicycling (average 2.9 mile in length, per SANDAG)
 - 90% of auto trips are longer trips that cannot shift to walking (average 6.5 miles in length, per SANDAG)
 - So maximum VMT change = $(10\% \times 2.9) / (90\% \times 6.5) = 5.0\%$

SANDAG Data:

- Default auto mode share, by city/CPA
- Default bicycle mode share, by city/CPA
- Regional average one-way bicycle trip length is 2.9 miles.
- Regional average one-way auto trip length is 6.5 miles.

Sources:

- SANDAG. 2016. Activity Based Model. (v14.0.1, scenario ID 232)
- Pucher, J. and R. Buehler, 2011. “Analysis of Bicycling Trends and Policies in Large North American Cities: Lessons for New York.” Report for U. S. Department of Transportation, Research and Innovative Technology Administration, Washington, D.C. and UTRC II New York.

4D. Bike Facility Improvement

Description: If a comprehensive bikeway network expansion (strategy 4C) is not feasible, the addition of a single bike lane (Class II), bike path (Class I), or protected bikeway (Class IV) to an existing bikeway network helps improve biking conditions within an area. Class I facilities are bike paths that are physically separated from motor vehicle traffic. Class II facilities are striped bicycle lanes that provide exclusive use to bicycles on a roadway. Class IV facilities are protected on-street bikeways, also called cycle tracks. Consider local or state

bike width standards when implementing facility improvements. If this strategy is selected, strategy 4C (Bikeway Network Expansion) cannot be analyzed as part of the total VMT reduction.

Formula: % change in VMT = $-1 \times (\text{auto trips reduced by strategy}) \times (\text{bike trip length}) / (\text{existing auto trips on roadway}) \times (\text{auto trip length})$

Where auto trips reduced by strategy = $\text{AADT} \times (\text{A} + \text{C})$

AADT = Existing average annual daily traffic volume on roadway affected by strategy

A = AADT adjustment factor

C = Credit for Activity Centers near project

User Inputs:

- Would the project expand a network of bikeways or add a single bikeway? [Network of bikeways/ Single bikeway]
 - If Network of bikeways, must use Strategy 4C
 - If Single bikeway, use Strategy 4D
- One-way bicycle trip length (optional override of regional default)
- One-way auto trip length (optional override of regional default)
- Existing Annual Average Daily Traffic (AADT) on roadway parallel to bicycle project
- Length of bike project (only Class I, II, or IV) in one direction (miles)
 - ≤ 1
 - > 1 and ≤ 2
 - > 2
- Activity Centers near project
 - 3 within 0.5 mile
 - 4–6 within 0.5 mile
 - 7 or more within 0.5 mile
 - 3 within 0.25 mile
 - 4–6 within 0.25 mile
 - 8 or more within 0.25 mile

Constants and Assumptions:

- Adjustment factor (A) of AADT for auto trips replaced by bike trips due to strategy

Average Daily Traffic	Bike Project Length (miles)	Adjustment Factor
0 – 12,000	≤ 1	0.0019
	> 1 and ≤ 2	0.0029
	> 2	0.0038
12,001 – 24,000	≤ 1	0.0014
	> 1 and ≤ 2	0.002
	> 2	0.0027
24,001 – 30,000	≤ 1	0.001
	> 1 and ≤ 2	0.0014
	> 2	0.0019

- Estimated based on California Air Resources Board (CARB) (2005). Based on assumption that at all municipalities would be either cities with a population greater than or equal to 250,000 or a non-university town with a population less than 250,000.
- Credit for activity centers based on number and distance
 - If 3 within 0.5 mile, 0.0005 credits
 - If 4–6 within 0.5 mile, 0.001 credits
 - If 7 or more within 0.5 mile, 0.0015 credits
 - If 3 within 0.25 mile, 0.001 credits
 - If 4–6 within 0.25 mile, 0.002 credits
 - If 8 or more within 0.25 mile, 0.003 credits
- Existing Annual Average Daily Traffic on roadway parallel to bicycle project (two-way traffic volume in trips/day on road parallel to proposed bike lane) cannot exceed 30,000, per CARB (2005).

SANDAG Data:

- Regional average one-way bicycle trip length is 2.9 miles.
- Regional average one-way auto trip length is 6.5 miles.

Sources:

- SANDAG. 2016. Activity Based Model. (v14.0.1, scenario ID 232)
- California Air Resources Board. 2005. “Methods to Find the Cost-Effectiveness of Funding Air Quality Projects.” arb.ca.gov/planning/tsaq/eval/mv_fees_cost-effectiveness_methods_may05.doc

4E. Bikeshare

Description: Bikeshare programs help to reduce traffic congestion and demand for parking by providing users with on-demand access to bikes for short-term rental. Bikeshare systems that feature electrified vehicles (scooters, e-bikes) help increase the range of the bike trip, making these services convenient and attractive to users. Providing discounted bikeshare memberships or dedicated bikeshare parking can encourage users and improve the user experience.

Formula: % change in VMT = $-1 \times [\text{change in \% of population with access} \times \text{daily bike share trips per person} \times \text{auto substitution rate} \times \text{bike share trip length}] / [\text{average daily auto trips per person} \times \text{auto trip length}]$

Derivation of Formula:

$$\begin{aligned} \text{\% change in VMT} &= [\text{change in VMT}] / [\text{total VMT}] \\ &= -1 \times [\text{total population} \times \text{change in \% with access to bikeshare} \times \text{daily bikeshare trips per person} \times \text{auto substitution rate} \times \text{bikeshare trip length}] / [\text{total population} \times \text{daily auto trips per person} \times \text{auto trip length}] \\ &= -1 \times [\text{change in \% with access to bikeshare} \times \text{daily bikeshare trips per person} \times \text{auto substitution rate} \times \text{bikeshare trip length}] / [\text{daily auto trips per person} \times \text{auto trip length}] \end{aligned}$$

User Inputs:

- Major Statistical Area (MSA) of program expansion
 - Central
 - North City
 - South Suburban
 - East Suburban
 - North County West
 - North County East
 - East County
- Percentage of population in target community that will have access to the expanded bikeshare system
- One-way auto trip length (optional override of regional default)

Constants and Assumptions:

- Bikeshare daily one-way trips per 1,000 residents based on MSA
 - If Central, 23
 - If North City, 23
 - If South Suburban, 6
 - If East Suburban, 6
 - If North County West, 6
 - If North County East, 6
 - If East County, 6

- Percentage of e-bike share trips replacing auto trips is 37%.

SANDAG Data:

- Regional average one-way auto trip length is 6.5 miles.
- Average daily one-way auto trips per adult, city/CPA.
- Average one-way e-bike trip length is 1.7 miles.

Sources:

- WSP. 2019. “Draft TDM Off-Model Methodology—March 2019 Revision.” Memo to SANDAG.
- MacArthur, J., M. Harpool, D. Scheppke. 2018. “North American survey of electric bike owners.” National Institute for Transportation and Communities: Washington D.C.
- SANDAG. 2016. Activity Based Model. (v14.0.1, scenario ID 232)
- SANDAG. 2018. Anonymized and aggregated data from bikeshare operators in San Diego.

4F. Carshare

Description: Carsharing offers people with convenient access to a vehicle for personal or commuting purposes. Carsharing helps to encourage transportation alternatives by reducing vehicle ownership. Roundtrip carshare providers require members to return the vehicle to a designated location. One-way carshare (i.e., free-floating) providers allow members to pick up the vehicle in one place and end their trip in another. Discounted carshare memberships and priority parking for carsharing vehicles help encourage use of carsharing services.

Formula: % change in VMT = $-1 \times (\text{increase in \% of adults with access to carshare} \times \text{\% of adults with access who become members} \times \text{VMT reduction per member}) / (\text{trips per day} \times \text{average auto trip length})$

Derivation of Formula:

$$\begin{aligned} \text{\% change in VMT} &= [\text{change in VMT}] / [\text{total VMT}] \\ &= -1 \times [\text{total population} \times \text{change in \% of population with access to carshare} \\ &\quad \times \text{\% of adults with access who become members} \times \text{VMT reduction per member}] / \\ &\quad [\text{total population} \times \text{trips per day} \times \text{average auto trip length}] \\ &= -1 \times [\text{change in \% with access to carshare} \times \text{\% of adults with access who become} \\ &\quad \text{members} \times \text{VMT reduction per member}] / [\text{trips per day} \times \text{average auto trip length}] \end{aligned}$$

User Inputs:

- Percentage of cars providing round-trip carshare (vs. one-way carshare)
 - Represents the number of round-trip carshare cars divided by total carshare cars, where total cars includes both roundtrip and one-way providers. If all round-trip, enter 100.
- Percentage of adults in city/CPA with existing carshare access
 - Carshare access defined as at least one carshare pod within 0.5 mile of residence
- Percentage of adults in city/CPA with carshare access with strategy
- One-way auto trip length (optional override of regional default)

Constants and Assumptions:

- Percentage of adults with carshare access who become members is 2%, per WSP (2019).
- VMT reduction per day per carshare member is 7 for roundtrip carshare (Cervero 2007) and 1.1 for one-way carshare (Martin 2016). Formula calculates a weighted average based on user input for percent round-trip.

SANDAG Data:

- Average daily one-way auto trips per adult, by city/CPA.
- Regional average one-way auto trip length is 6.5 miles.

Sources:

- WSP. 2019. "Draft TDM Off-Model Methodology—March 2019 Revision." Memo to SANDAG.
- Cervero, Robert, Golub, Aaron, Nee, Brendan. 2007. "City CarShare: Longer-Term Travel Demand and Car Ownership Impacts." Transportation Research Record: Journal of the Transportation Research Board, 1992, pp 70–80.
- Martin, E., and Shaheen, S. 2016. "The Impacts of Car2go on Vehicle Ownership, Modal Shift, Vehicle Miles Traveled, and Greenhouse Gas Emissions: An Analysis of Five North American Cities." innovativemobility.org/wp-content/uploads/2016/07/Impactsofcar2go_FiveCities_2016.pdf
- SANDAG. 2016. Activity Based Model. (v14.0.1, scenario ID 232)

4G. Community-Based Travel Planning

Description: Community-based travel planning is a residential-based approach to outreach that provides households with customized information, incentives, and support to encourage the use of transportation alternatives. The approach involves a team of trained Travel Advisors engaging residents at home or in their communities to offer information, incentives, and advice about how members of households can travel in alternative ways that meet their needs. Teams of trained Travel Advisors visit all households within a targeted geographic area, have tailored conversations about residents’ travel needs, and educate residents about the various transportation options available to them. Due to the personalized outreach method, communities are typically targeted in phases.

Formula: % change in VMT = $-1 \times$ % of households in community that are targeted \times % of targeted households that participate \times % reduction in single-occupancy vehicle trips among participating households

User Inputs:

- Households in city/CPA that are targeted

Constants and Assumptions:

- Percentage of targeted households that participate is 17%.
- Percentage of single-occupancy vehicle trip reduction among participating households is 12%.

SANDAG Data:

- Households, by CPA/city

Sources:

- SANDAG. 2016. Land Use Inventory (SPACECORE).
- Results from program evaluations including King County Metro Transit. 2014, 2015, 2017; North Coast Corridor Program. 2014; Portland Bureau of Transportation. 2010; Community Transit. n.d. Curb @ Home.
- WSP. 2019. "Draft TDM Off-Model Methodology—March 2019 Revision." Memo to SANDAG.

Transit Strategies

Strategies that improve transit service and cause a mode shift from auto to transit.

5A. Transit Service Expansion

Description: Expanding the transit network increases the transit system’s ability to accommodate existing and future travel demand, particularly for peak-period commute trips. This strategy provides an effective alternative to congested freeways and roadways for travelers and can reduce vehicle miles traveled by increasing transit ridership. Transit network service improvements should be coordinated closely with the operating transit agency.

Formula: $\% \text{ change in VMT} = -1 \times (\text{existing transit mode share} \times \% \text{ change in network coverage} \times \text{elasticity} \times \text{mode shift factor}) / (\text{existing auto mode share})$

Derivation of Formula:

$$\begin{aligned} \% \text{ change in VMT} &= [\text{change in auto VMT}] / [\text{current auto VMT}] \\ &= -[\text{change in transit passenger miles} \times \text{mode shift factor}] / [\text{current auto VMT}] \\ &= -[\text{total trips} \times \text{transit mode share} \times \text{trip length} \times \% \text{ change in network coverage} \\ &\quad \times \text{elasticity of transit ridership with respect to network coverage} \times \text{mode shift factor}] \\ &\quad / [\text{total trips} \times \text{auto mode share} \times \text{trip length}] \\ &= -[\text{transit mode share} \times \% \text{ change in network coverage} \times \text{elasticity} \times \text{mode shift} \\ &\quad \text{factor}] / [\text{auto mode share}] \end{aligned}$$

User Inputs:

- Existing bus transit route length in city/CPA (miles)
- Bus transit route length in city/CPA with expansion (miles)
- Existing transit mode share (optional override of city/CPA default)
- Existing auto mode share (optional override of city/CPA default)

Constants and Assumptions:

- Elasticity of transit ridership with respect to service coverage is 0.72.
- Percent change in bus network coverage is capped at 100%.
- If the user override of existing transit mode share exceeds maximum of 25%, the default value will be used.
- If the user override of existing auto mode share falls below minimum of 50%, the default value will be used.

SANDAG Data:

- Default auto mode share, by city/CPA (all trips)
- Default transit mode share, by city/CPA (all trips)
- Mode shift factor is 0.70. Calculated as (1/average vehicle occupancy) or (1/1.42). Mode shift factor is an adjustment to reflect the reduction in vehicle trips associated with a reduction in person trips, since some vehicles carry more than one person.

Sources:

- SANDAG. 2016. Activity Based Model. (v14.0.1, scenario ID 232)
- Transportation Research Board. 2004. “TCRP Report 95 Chapter 10 Bus Routing and Coverage.” trb.org/Publications/TCRPReport95.aspx

5B. Transit Frequency Improvements

Description: Transit frequency improvements can be implemented systemwide or on individual routes. Frequency improvements increase transit ridership by reducing travel times, which improves the user experience and increases the attractiveness of transit service. Transit network service improvements should be coordinated closely with the operating transit agency.

Formula: % change in VMT = $-1 \times (\text{existing transit mode share} \times \text{\% change in transit frequency} \times \text{elasticity} \times \text{mode shift factor} \times \text{implementation adjustment}) / (\text{existing auto mode share})$

Derivation of Formula:

$$\begin{aligned} \text{\% change in VMT} &= ([\text{change in auto VMT}] / [\text{current auto VMT}]) \times \text{implementation adjustment} \\ &= (-1 \times [\text{change in transit passenger miles} \times \text{mode shift factor}] / [\text{current auto VMT}]) \times \text{implementation adjustment} \\ &= (-1 \times [\text{total trips} \times \text{transit mode share} \times \text{trip length} \times \text{\% change in transit frequency} \times \text{elasticity of transit ridership with respect to frequency} \times \text{mode shift factor}] / [\text{total trips} \times \text{auto mode share} \times \text{trip length}]) \times \text{implementation adjustment} \\ &= (-1 \times [\text{transit mode share} \times \text{\% change in transit frequency} \times \text{elasticity} \times \text{mode shift factor}] / [\text{auto mode share}]) \times \text{implementation adjustment} \end{aligned}$$

User Inputs:

- Existing peak period headway (minutes)
- Peak period headway with strategy (minutes)
- Existing total transit routes serving city/CPA
- Transit routes serving city/CPA that are improved
- Existing transit mode share (optional override of city/CPA default)
- Existing auto mode share (optional override of city/CPA default)

Constants and Assumptions:

- Elasticity of transit ridership with respect to frequency of service is 0.33.
- The percent change in transit frequency (arrivals per hour) is capped at a 300% increase or a 75% decrease.
- If the user override of existing transit mode share exceeds maximum of 25%, the default value will be used.
- If the user override of existing auto mode share falls below minimum of 50%, the default value will be used.

SANDAG Data:

- Default transit mode share, by city/CPA
- Default auto mode share, by city/CPA
- Mode shift factor is 0.70. Calculated as (1/average vehicle occupancy) or (1/1.42). Mode shift factor is an adjustment to reflect the reduction in vehicle trips associated with a reduction in person trips, since some vehicles carry more than one person.

Sources:

- SANDAG. 2016. Activity Based Model. (v14.0.1, scenario ID 232)
- Transportation Research Board. 2004. “TCRP Report 95 Chapter 9, Transit Scheduling and Frequency.” trb.org/Publications/TCRPReport95.aspx

5C. Transit-Supportive Treatments

Description: Apply roadway infrastructure and/or traffic signal modifications to improve transit travel times and reliability, leading to mode shift to transit. Treatments can include transit signal priority, bus-only signal phases, queue jumps, curb extensions to speed passenger loading, and dedicated bus lanes. Transit-supportive treatments should be coordinated closely with the operating transit agency.

Formula: $\% \text{ change in VMT} = -1 \times (\text{existing transit mode share} \times \% \text{ change in transit travel time} \times \text{elasticity} \times \text{mode shift factor}) / \text{existing auto mode share}$

Derivation of Formula:

$$\begin{aligned} \% \text{ change in VMT} &= [\text{change in auto VMT}] / [\text{current auto VMT}] \\ &= -1 \times [\text{change in transit passenger miles} \times \text{mode shift factor}] / [\text{current auto VMT}] \\ &= -1 \times [\text{total trips} \times \text{transit mode share} \times \text{trip length} \times \% \text{ change in transit travel} \\ &\quad \text{time} \times \text{elasticity of transit ridership with respect to travel time} \times \text{mode shift factor}] / \\ &\quad [\text{total trips} \times \text{auto mode share} \times \text{trip length}] \\ &= -1 \times [\text{transit mode share} \times \% \text{ change in transit travel time} \times \text{elasticity} \times \text{mode} \\ &\quad \text{shift factor}] / [\text{auto mode share}] \end{aligned}$$

User Inputs:

- Percentage of community transit routes that receive treatments with project
- Percent change in transit travel time due to treatments (optional override of default)
- Existing transit mode share (optional override of city/CPA default)
- Existing auto mode share (optional override of city/CPA default)

Constants and Assumptions:

- Default percent change in transit travel time due to treatments is –12%.
- Elasticity of transit ridership with respect to transit travel time is –0.4.
- If the user override of default percent change in transit travel time due to treatments value falls below minimum of –20% or exceeds maximum of 0%, the default value will be used.

- If the user override of existing transit mode share exceeds maximum of 25%, the default value will be used.
- If the user override of existing auto mode share falls below minimum of 50%, the default value will be used.

SANDAG Data:

- Mode shift factor is 0.70. Calculated as (1/average vehicle occupancy) or (1/1.42). Mode shift factor is an adjustment to reflect the reduction in vehicle trips associated with a reduction in person trips, since some vehicles carry more than one person.
- Default auto mode share, by city/CPA
- Default transit mode share, by city/CPA

Sources:

- Transportation Research Board. 2016. “TCRP Report 183: A Guidebook on Transit-Supportive Roadway Strategies.” trb.org/Main/Blurbs/173932.aspx
- SANDAG. 2016. Activity Based Model. (v14.0.1, scenario ID 232)
- Transportation Research Board. 2007. “TCRP Report 118: Bus Rapid Transit Practitioners Guide.” trb.org/Publications/Blurbs/158960.aspx

5D. Transit Fare Reduction

Description: Transit pricing strategies are designed to reduce the costs associated with using transit, thereby creating incentives for people to shift from other traveling modes. Fare reductions can be implemented systemwide or in specific fare-free or reduced fare zones. This strategy varies from Employer Transit Pass Subsidy (Strategy 1D), which can be offered through employer-based benefits programs in which the employer fully or partially pays the employee’s cost of transit.

Formula: $\% \text{ change in VMT} = -1 \times (\text{existing transit mode share} \times \% \text{ change in transit fare} \times \text{elasticity} \times \text{mode shift factor}) / (\text{existing auto mode share})$

Derivation of Formula:

$$\begin{aligned} \% \text{ change in VMT} &= [\text{change in auto VMT}] / [\text{current auto VMT}] \\ &= -1 \times [\text{change in transit passenger miles} \times \text{mode shift factor}] / [\text{current auto VMT}] \\ &= -1 \times [\text{total trips} \times \text{transit mode share} \times \text{trip length} \times \% \text{ change in transit fare} \\ &\quad \times \text{elasticity of transit ridership with respect to fare} \times \text{mode shift factor}] / [\text{total trips} \\ &\quad \times \text{auto mode share} \times \text{trip length}] \\ &= -1 \times [\text{transit mode share} \times \% \text{ change in transit fare} \times \text{elasticity} \times \text{mode shift} \\ &\quad \text{factor}] / [\text{auto mode share}] \end{aligned}$$

User Inputs:

- Transit fare unit
 - \$/trip
 - \$/hour
 - \$/day

- \$/month
- \$/year
- Existing regular transit fare
- Regular transit fare with project
- Existing transit mode share (optional override of city/CPA default)
- Existing auto mode share (optional override of city/CPA default)

Constants and Assumptions:

- Elasticity of transit ridership with respect to transit fare is –0.3.

SANDAG Data:

- Default auto mode share, by city/CPA
- Default transit mode share, by city/CPA
- Mode shift factor is 0.70. Calculated as (1/average vehicle occupancy) or (1/1.42). Mode shift factor is an adjustment to reflect the reduction in vehicle trips associated with a reduction in person trips, since some vehicles carry more than one person.
- Percent change in transit fare is capped at 50%.
- If the user override of existing transit mode share exceeds maximum of 25%, the default value will be used.
- If the user override of existing auto mode share falls below minimum of 50%, the default value will be used.

Sources:

- SANDAG. 2016. Activity Based Model. (v14.0.1, scenario ID 232)
- California Air Resources Board. 2013. “Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emission.” arb.ca.gov/cc/sb375/policies/transitservice/transit_bkgd.pdf

5E. Microtransit NEV Shuttle

Description: Microtransit services utilize real-time ride-hailing, mobile tracking, and app-based payment to provide demand-based service to users. Microtransit services are flexible and can be designed to fulfill the mobility needs of a community. Neighborhood electric vehicles (NEVs) are a type of microtransit service that operate within a defined service area and fulfill trips that are short-distance in nature, typically less than two miles long. NEVs help to facilitate connections to and from transit stations and provide users with an alternative to driving for short trips.

Formula: % change in VMT = $-1 \times (\% \text{ of city/CPA covered by new microtransit service} \times \text{microtransit share of person trips} \times \text{auto substitution rate} \times \text{average microtransit trip length}) / (\text{auto mode share} \times \text{average auto trip length})$

Derivation of Formula:

$$\begin{aligned}
 \% \text{ change in VMT} &= [\text{change in VMT}] / [\text{total VMT}] \\
 &= -1 \times [\text{total daily person trips} \times \text{microtransit share of person trips} \times \text{change in \% with access to microtransit} \times \text{auto substitution rate} \times \text{average microtransit trip length}] / [\text{total daily person trips} \times \text{auto mode share} \times \text{auto trip length}] \\
 &= -1 \times [\text{microtransit share of person trips} \times \text{change in \% with access to microtransit} \times \text{auto substitution rate} \times \text{average microtransit trip length}] / [\text{auto mode share} \times \text{auto trip length}]
 \end{aligned}$$

User Inputs:

- Percentage of city/CPA covered by new microtransit service
- One-way microtransit trip length (optional override of regional default)
- One-way auto trip length (optional override of regional default)
- Existing auto mode share (optional override of city/CPA default)

Constants and Assumptions:

- Microtransit share of all person trips is 0.41%.
- Auto trip substitution rate is 0.33.
- Average length of one-way microtransit trip is one mile.
- If the user override of existing auto mode share value falls below minimum of 50%, the default value will be used.

SANDAG Data:

- Default existing auto mode share, by city/CPA
- Regional average one-way auto trip length is 6.5 miles.

Sources:

- WSP. 2019. "Draft TDM Off-Model Methodology—March 2019 Revision." Memo to SANDAG.
- SANDAG. Activity Based Model. 2016. (v14.0.1, scenario ID 232)

Attachment F: Local Transportation Analysis Report Format

LOCAL TRANSPORTATION ANALYSIS REPORT FORMAT

COVER PAGE

1. Project address
2. Project name (if applicable)
3. Prepared for
4. Date (month/day/year)
5. Consultant contact information including a contact name
6. Consultant job number (if applicable)
7. Entitlement Number (i.e. Tract or CUP Number)
8. City Planner Name (if known)
9. Stamp and/or signature of qualified engineer or authorized owner/principal of firm stating the study was prepared and reviewed under their supervision and direction.

TABLE OF CONTENTS LIST OF FIGURES LIST OF TABLES

EXECUTIVE SUMMARY

Provide summary of the LTA, project location and size, intersections analyzed, study scenarios, impacts, mitigation and recommendations in a figure and table. Methodology used to analyze the impacts does not need to be included in the executive summary. Document results of LOS analysis, intersections and roadway segments Provide summary of site access and circulation. Results of LOS analysis should be summarized in a table form as follows for both existing and cumulative scenarios:

Summary of Intersection Level of Service

<i>Intersection</i>	<i>Existing</i>		<i>Existing plus Proposed Project</i>		<i>Existing plus Approved and Pending plus Proposed Project</i>	
	<i>Delay</i>	<i>LOS</i>	<i>Delay</i>	<i>LOS</i>	<i>Delay</i>	<i>LOS</i>

INTRODUCTION

Provide description of the project, location, size and proposed primary access. A vicinity map showing the site location and the study area relative to other transportation systems along with study intersections and roadway segments should be provided. Document study intersections, roadway segments and study scenarios providing brief explanation on each study scenarios. Describe the methodology used to analyze the impacts of the study and the thresholds for determining an impact.

EXISTING CONDITIONS

Provide a description of existing streets and roadways within the project site (if any) and in the surrounding area. Include information on the roadway classifications (per the

Clovis General Plan Circulation Element), the number of lanes, posted speed limits, divided/undivided and bike lanes.

Existing daily directional and peak-hour through and turning traffic volumes on the roadways surrounding and/or logically associated with the project site, including major highways and freeways. Local streets affected by the project should also be shown. Each report shall include appendices providing count data used in the preparation of the report. The source and date of the traffic volume information shall be indicated. A figure illustrating the peak hour traffic volumes, lane configurations, and traffic control at the study intersections and roadway segments should be provided.

All assumed roadways and intersections or any other transportation circulation improvements must be identified and discussed. The discussion should include the scope and the status of the assumed improvements including the construction schedule and financing plan.

In addition, any transit facilities within 1,300 feet of the project or study intersections/roadways segments, including the service provider(s), routes, frequency and location/amenities of existing bus stops should be provided.

Existing and planned bicycle and pedestrian facilities adjacent to the project site, utilized by the project, connected to by the project, or impacted by the project should be identified and described in detail.

Results of LOS analysis should be summarized in table (in a format illustrated above) and discussed. If any of the study intersections or roadway segments are operating at unacceptable levels, mitigation measures should be identified.

EXISTING PLUS PROPOSED PROJECT CONDITIONS

This scenario is required by CEQA to show the impacts of the proposed project on the existing conditions. It should include a project description, trip generation and distribution, level of service analysis, and appropriate tables, figures, and recommendations/mitigation as described below.

Project Description

A description of the project, including factors which quantify traffic generators, e.g., dwelling units, square feet of office space, persons to be employed, restaurant seats, acres of raw land, etc. Provide site plan including access, project-only trips at the access points, circulation, parking, and loading as applicable.

Trip Generation and Trip Distribution

Provide trip generation and trip distribution. Provide any relevant information, discussion if applicable.

Level of Service Analysis

Provide a figure illustrating peak hour traffic volumes at the study intersections and roadway segments for Existing plus Proposed Project Conditions. Results of LOS analysis should be summarized in table and discussed. If any of the study intersections or roadway segments are projected to operate at unacceptable levels, mitigation measures should be identified.

Site Access and Circulation

Provide site access and circulation analysis and discussion as per the "SITE ACCESS AND CIRCULATION" Section of this document. Provide a figure showing on site and circulation recommendations.

NEAR-TERM ANALYSIS (EXISTING PLUS APPROVED AND PENDING PROJECT PLUS PROPOSED PROJECT CONDITIONS)

Approved and pending projects located within the vicinity of project, (projects that would impact study intersections and/or roadway segments or as determined by Traffic Engineering Manager), that can reasonably be expected to be in place by the project's construction year along with the trip generation should be summarized in a table. A figure illustrating the Existing plus Approved and Pending Projects Plus Proposed Project peak hour traffic volumes should be provided.

Results of LOS analysis should be summarized in table and discussed. If any of the study intersections or roadway segments are projected to operate at unacceptable levels, mitigation measures should be identified.

CUMULATIVE 20-YEAR AND CUMULATIVE 20-YEAR PLUS PROJECT CONDITIONS

Provide similar information for both scenarios as above referenced scenarios. Please discuss in detail how the traffic volume forecasts were developed using the Fresno COG model. This information should be easy to follow and reproducible by a peer consultant.

QUEUING

Discuss and provide recommendations to mitigate unacceptable queues at study intersections under appropriate scenarios as applicable.

SIGNAL WARRANTS

Provide signal warrants analysis and discuss results of the analysis under appropriate scenarios as applicable.

CONCLUSION

MITIGATIONS & RECOMMENDATIONS

Provide objective recommendations in a table or figure and discuss the timing and funding of recommendations.

APPENDIX

Traffic Counts

Fresno COG Model Runs and Turning Movement Forecast outputs

Signal Warrants

References and Bibliography Level Service Calculation Sheets

**BACKGROUND MEMO
SENATE BILL 743**

ATTACHMENT 3

MEMORANDUM

Date: March 18, 2020 Project #:24913
To: City of Clovis
From: Michael Sahimi and Fernando Sotelo, Kittelson & Associates
Project: City of Clovis VMT Implementation
Subject: SB 743 Background, Key Elements for Implementation, and Examples

INTRODUCTION

Senate Bill 743 (SB 743) was signed into law in September 2013. It requires changes to guidelines for the California Environmental Quality Act (CEQA). The purpose of SB 743 is to promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.

Under SB 743, a project's effect on automobile delay shall not constitute a significant environmental impact. Therefore, level of service (LOS) and other similar vehicle delay or capacity metrics may no longer serve as transportation impact metrics for CEQA analysis. The California Office of Planning and Research (OPR) has updated the CEQA Guidelines and provided a final technical advisory in December 2018, which recommends vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts under CEQA. For land use and transportation projects, SB 743-compliant CEQA analysis becomes mandatory on July 1, 2020.

This memorandum documents relevant greenhouse gas (GHG) emission and VMT policies and targets in the region, key elements for the City of Clovis in implementing SB 743, and approaches taken to date by other California agencies in establishing Senate Bill (SB) 743-compliant transportation analysis guidelines and significance criteria. It includes four sections.

SB 743 Background

This section summarizes the SB 743 legislation and state guidance.

Key Elements for Implementation

Jurisdictions adopting SB 743-compliant standards need to implement several elements such as methodologies and impact thresholds. OPR has provided recommendations for most of these elements. This section discusses the key elements and the OPR recommendations.

Existing GHG/VMT Targets and Policies in the Region

Local and regional jurisdictions in the Fresno region have adopted goals, policies, targets, and other recommendations for reducing GHG emissions and VMT in the region. This section summarizes relevant targets and policies that the City of Clovis should be aware of moving forward in its SB 743 implementation.

VMT Implementation by Early Adopters

Several jurisdictions in California have established VMT-based transportation impact guidelines within the past five years. This section details the approaches taken by four cities which have implemented SB 743-related CEQA approaches within the past two years: Elk Grove, Los Angeles, Corona, and San Jose (a full matrix detailing the approach of these and other cities is attached to this memorandum).

SB 743 BACKGROUND

On September 27, 2013, Senate Bill (SB) 743 was signed into law. The Legislature found that with the adoption of the Sustainable Communities and Climate Protection Act of 2008 (SB 375), the State of California had signaled its commitment to encourage land use and transportation planning decisions and investments that reduce vehicle miles traveled (VMT) and thereby contribute to the reduction of greenhouse gas emissions (GHG), as required by the California Global Warming Solutions Act of 2006 (AB 32). Additionally, the Complete Streets Act (AB 1358), requires local governments to plan for a balanced, multimodal transportation network that meets the needs of all users. To further the State's commitment to the goals of SB 375, AB 32 and AB 1358, SB 743 adds Chapter 2.7, Modernization of Transportation Analysis for Transit-Oriented Infill Projects, to Division 13 (Section 21099) of the Public Resources Code.

SB 743 has fundamentally changed transportation impact analysis as part of CEQA compliance. Under current practice, CEQA transportation analyses of individual projects typically determine impacts in the circulation system in terms of roadway delay and/or capacity at specific locations, mostly located in proximity to a project site. SB 743 changes include the elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts. Further, it confirms that parking impacts will not be considered significant impacts on the environment for select development projects within infill areas with nearby frequent transit service.

SB 743 includes amendments that revise the definition of "in-fill opportunity zones" to allow cities and counties to opt out of traditional LOS standards established by congestion management programs (CMPs) and requires OPR to update the CEQA Guidelines and establish "criteria for determining the significance of transportation impacts of projects within transit priority areas." As part of the new CEQA Guidelines, the new criteria "shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." OPR has released several iterations of its technical advisory (the final version released in December 2018) with the key guidance being that VMT is the most appropriate metric for evaluating a project's transportation impacts.

The California Natural Resources Agency certified and adopted the CEQA Guidelines including the Guidelines section implementing SB 743. The final text, final statement of reasons, and related materials are posted at <http://resources.ca.gov/ceqa>. The changes have been approved by the Office of the Administrative Law and are now in effect.

It shall be noted that revisions to CEQA transportation analysis requirements do not preclude the application of local general plan policies, municipal and zoning codes, conditions of approval, or any other planning requirements through a city's planning approval process to ensure adequate operation of the transportation system in terms of transportation congestion measures related to vehicular delay and roadway capacity. Therefore, a city could continue to apply congestion-related transportation impact analysis and mitigation for land development projects through planning approval processes outside CEQA.

KEY ELEMENTS FOR IMPLEMENTATION

In its *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018), OPR provides recommendations for jurisdictions to implement SB 743-compliant transportation analyses. These key elements and OPR recommendations are outlined below. Please note, OPR's recommendations are not binding and lead agencies ultimately have the discretion to set or apply their own significance thresholds, provided they are based on significant evidence. The following discusses key elements related to land use projects and transportation projects.

Land Use Development Projects

There are several key elements for implementing SB 743-compliant standards for land use projects. OPR has provided recommendations pertaining to the appropriate methodology for analyzing impacts related to residential, office, retail, and other land use projects. However, these recommendations still allow for discretion by local agencies in setting thresholds and evaluating non-standard land uses.

VMT Estimating Tool

OPR recommends tour- and trip-based travel models to estimate the VMT generated by land use projects. Other types of tools that can be used include sketch tools and spreadsheet tools.

VMT Metrics

OPR provides specific recommended metrics for residential, office, and retail projects. OPR recommends measuring VMT for residential and office projects on a "per rate" basis. Specifically, OPR recommends VMT per capita for residential projects and VMT per employee for office projects. When estimating VMT using trip-based models, the home-based VMT per capita and home-based work VMT per employee should be used. For activity-based models, the VMT per capita and VMT per employee should be used. OPR recommends estimating total VMT in an area as the metric to assess retail projects.

Impact Thresholds

OPR recommends that VMT-based evaluations should be compared to the citywide or regional average (whichever is applied) minus 15 percent for most land uses. In other words, a project that generates a per capita or per employee VMT that is more than 85 percent of existing VMT could result in a significant impact. OPR recommends comparing to the regional or city average for residential projects, and to the regional average for office projects. If a threshold based on city VMT is used for residential projects, proposed development should not cumulatively exceed the number of units specified in the regional Sustainable Communities Strategy (SCS) for that city, and should be consistent with the SCS. For retail projects, OPR recommends measuring the net decrease or increase in VMT in the study area with and without the project. The recommended impact threshold is any increase in total VMT. These thresholds are in line with statewide greenhouse gas emission reduction targets.

Screening Criteria

OPR recommends several screening thresholds that can be used to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed VMT study.

- **Map-Based Screening:** As an alternative to calculating VMT individually for each new development project, lead agencies can develop a map-based screening approach which compares the VMT for each travel demand model traffic analysis zone (TAZ) to the appropriate citywide or regional averages. Projects can then be screened out from requiring VMT analysis if they are in a low-VMT area, provided the project incorporates similar features to other projects in the area. It should be noted that this map-based screening is most appropriate only for residential and office land uses.
- **Small Projects:** Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than significant transportation impact.
- **Adjacency to High-Quality Transit:** A residential, retail, and/or office project that is located within a half mile of an existing major transit stop¹ or an existing stop along a high-quality transit corridor² could be presumed to have a less-than-significant transportation impact. However, this criteria is applicable absent other indicators that a project would increase VMT, such as a floor area ratio (FAR) of less than 0.75, parking provided in excess of municipal requirements, inconsistency with the SCS, or replacing affordable residential units with a smaller number of moderate- or high-income residential units.

¹ Defined as a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods

² Defined as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

- **Local-Serving Retail:** Since local-serving retail tends to shorten trips and reduce VMT, OPR recommends presuming that local-serving retail (as opposed to regional retail) would not have an impact. Absent local data, OPR defines local-serving retail as 50,000 square feet or less.
- **Affordable Housing:** Given that affordable housing in infill locations generally improve an area's jobs-housing balance and generates less VMT than market-rate housing, OPR recommends assuming a less-than-significant impact for a residential development with 100% affordable housing in infill locations, although jurisdictions could develop their own applicable percentage based on local data and conditions.

Redevelopment Projects

If the project leads to a net overall increase in VMT, then the thresholds developed by the jurisdiction should apply. If a project replaces other uses and results in a net decrease in overall VMT, OPR suggests assuming a less-than-significant impact finding without the need for more detailed VMT analysis using the previously detailed VMT thresholds.

Analyzing Mixed Use Projects

For mixed use projects containing a mix of residential, retail, office, and/or other uses, OPR does not recommend combining the analysis with a single threshold. OPR recommends analyzing the project's dominant use only or analyzing each use separately (taking credit for internal capture) with the applicable significance thresholds.

Analyzing Other Uses

Given that residential, office, and retail projects tend to have the greatest influence of land use projects on VMT in California, OPR has provided recommended metrics and thresholds for these project types. If thresholds for other land use types (such as industrial, medical or institutional) are needed, OPR recommends that lead agencies use location-specific information to develop thresholds.

Mitigation

To mitigate the VMT impacts of land use projects, OPR recommends built environment and Transportation Demand Management (TDM) strategies, a mix of land uses and connective non-auto infrastructure to reduce VMT.

Transportation (Infrastructure) Projects

There are also key elements for implementing SB 743-compliant standards for transportation projects; OPR's recommendations are outlined below.

Types of Projects to Analyze

OPR recommends analyzing transportation projects if they are expected to increase VMT. The OPR technical advisory provides a list of transportation project types that would not likely lead to a substantial or measurable increase in vehicle travel and generally should not require a VMT analysis, such as rehabilitation, safety projects, auxiliary lanes less than one mile in length, turning lanes, conversion to

managed or transit lanes, road diets, removal or relocation of parking spaces, and addition of non-motorized, transit, and active transportation facilities. A full list is provided in the technical advisory. On the other hand, OPR states that projects that would likely lead to an increase in vehicle travel and would require an analysis include the addition of through lanes.

Estimating Tool and Methodology

While travel demand models could capture the effects of additional roadway capacity due to rerouting and mode shift, they generally do not capture the long term effects of new vehicle trips generated as a result of the additional roadway capacity (also known as induced demand). OPR recommends calculating the change in VMT using per-mile demand elasticities to capture the effects of induced demand.

VMT Metric and Threshold

OPR recommends analyzing the effects of transportation projects by measuring the change in total VMT (as opposed to VMT per capita or per employee). However, OPR does not recommend a specific total VMT threshold. Rather, OPR recommends that a lead agency could develop a project-level threshold using the agency's VMT level and budget delineated by the California Air Resources Board (CARB) Scoping Plan and the CARB Mobile Source Strategy.

Mitigation

To mitigate the VMT impacts of transportation projects, OPR recommends mitigation and alternatives such as tolling lanes to encourage carpooling and fund transit, converting existing general purpose lanes to HOV or HOT lanes, implementing or funding off-site TDM strategies, or implementing ITS strategies to improve passenger throughput on existing lanes.

EXISTING GHG/VMT TARGETS AND POLICIES IN THE REGION

As discussed above, lead agencies, have the discretion to set or apply their own thresholds of significance. Section 21099 of the Public Resources Code states that the criteria for determining the significance of transportation impacts must promote: (1) reduction of greenhouse gas emissions; (2) development of multimodal transportation networks; and (3) a diversity of land uses. In light of considering VMT thresholds and mitigation measures for projects in the City of Clovis and an alignment with long-range development goals, the following discusses relevant targets and policies by the City of Clovis, the Fresno Council of Governments (Fresno COG), and the County of Fresno are summarized in Table 1.

Table 1: Existing Targets and Policies

Jurisdiction	Document	Relevant Goals, Policies, or Targets
City of Clovis	General Plan (2014)	The Land Use Element calls out Mixed-Use Focus Areas and Specific Plans, which could have additional policies and design/development standards.
		Circulation Element Policy 1.4 (Jobs and housing) is to encourage infill development that would provide jobs and services closer to housing, and vice versa, to reduce citywide vehicle miles travelled and effectively utilize the existing transportation infrastructure.
		Air Quality Element Policy 1.1 (Land use and transportation) is to reduce greenhouse gas and other local pollutant emissions through mixed use and transit-oriented development and well-designed transit, pedestrian, and bicycle systems.
		Air Quality Element Goal 2 is a region with healthy air quality and lower greenhouse gas emissions.
		Air Quality Element Policy 2.1 (regional coordination) is to support regional efforts to reduce air pollution (criteria air pollutants and greenhouse gas emissions) and collaborate with other agencies to improve air quality at the emission source and reduce vehicle miles traveled.
		Air Quality Element Policy 2.2 (Cross-jurisdictional issues) is to collaborate with regional agencies and surrounding jurisdictions to address cross-jurisdictional transportation and air quality issues
	Air Quality Element Policy 2.6 (Innovative mitigation) is to encourage innovative mitigation measures to reduce air quality impacts by coordinating with the SJVAPCD, project applicants, and other interested parties.	
	Active Transportation Plan (2016)	AB 32 and SB 375 statewide goals of reducing GHG emissions from 1990 by 28% by 2020 and 50% by 2050 and components of reducing auto trips and VMT are cited as relevant to the Plan.
Affordable Housing and Sustainable Communities (AHSC) Program funding for projects that demonstrate VMT reduction is cited as a Plan funding source.		
Fresno COG	Regional Transportation Plan / Sustainable Communities Strategy 2018-2042 (2017)	Relevant regional goals include the following: <ul style="list-style-type: none"> • A multimodal regional transportation network compatible with adopted land use plans and consistent with the intent of SB375. • A coordinated policy for public transportation that complements land use and air quality/climate change policies.
		Relevant regional objectives include the following: <ul style="list-style-type: none"> • Development of a regional transportation network which is environmentally sensitive, fosters sustainable regional growth, and helps reduce greenhouse gas emissions wherever possible.

Jurisdiction	Document	Relevant Goals, Policies, or Targets
		<ul style="list-style-type: none"> Participate in and support the coordinated transportation and air quality planning efforts between the eight Valley Metropolitan Planning Organizations, Caltrans, the San Joaquin Valley Air Pollution Control District, the Federal Highway Administration, Federal Transit Administration, the California Air Resources Board, and local agencies charged with land use planning. Implement all appropriate Transportation System Management, Transportation Demand Management, and Transportation Control Measure strategies as technologically and economically feasible. Support transportation investments that work toward accomplishing air quality and climate change goals, optimizing the utilization of land and encourage a stable economic base.
		The SCS describes Fresno COG’s GHG targets for the Fresno region compared to 2005 levels (5% per capita reduction by 2020 and 10% per capita reduction by 2035).
	2020 Greenhouse Emission Reduction Target for the Fresno County Region (2017)	In its letter to the California Air Resources Board (CARB), Fresno COG recommends a 6% per capita GHG reduction for the Fresno region by 2020 from 2010 levels.
	Long Range Transit Plan (2019)	One of the goals of the LRTP is to collaborate on land use decisions that facilitate increased ridership, improve air quality, and reduce greenhouse gas emissions. Objectives under this goal include supporting compact mixed-used development near transit to increase ridership and reduce VMT and encouraging the location of jobs and amenities near transit to minimize the need for long vehicle trips.
		Recommended land use-related implementation strategies for the LRTP include: <ul style="list-style-type: none"> Direct development towards transit corridors. Promote transit-supportive density. Develop within urban spheres.
		Recommended marketing and community engagement implementation strategies for the LRTP include: <ul style="list-style-type: none"> Institute bulk transit pass programs. Form pass sale partnerships with businesses in transit corridors.
		The LRTP calls out a VMT fee as a potential revenue and funding opportunity. A VMT fee can generate substantial revenue and implement increased-mobility policy goals.

Jurisdiction	Document	Relevant Goals, Policies, or Targets
County of Fresno	Board Briefing Report on Emissions (2012)	In its Government Operations Greenhouse Gas Emissions Inventory, the County recommends the following: <ul style="list-style-type: none"> • Regardless of chosen long-term emissions reduction targets, to establish linear interim targets for every two- to three-year period. • Re-inventory emissions on a regular basis (every three to five years). • Long-term goal of reducing emissions by 85% to 90% below 2010 levels by 2050.
		The State’s GHG emission reduction targets are: <ul style="list-style-type: none"> • Reduce emissions to 2000 levels by 2010. • Reduce emissions to 1990 levels by 2020. • Reduce emissions to 80% below 1990 levels by 2050.
		Recommended emissions reduction strategies for the County include: <ul style="list-style-type: none"> • Explore telecommuting to reduce emissions from employee commute. • Continue to encourage employees to use alternative modes of transportation by offering additional commuter benefits. • Explore various policies to encourage walking and biking in good weather by employees that live within 5 miles, and to encourage carpooling by all employees. • Continue to promote incentives for employees who use transit or carpool. • Emphasize the County’s Commute Trip Reduction (CTR) program (e.g. carpooling and biking incentives). • Implement employee commute programs aimed at reducing greenhouse gas emissions.

VMT IMPLEMENTATION BY EARLY ADOPTERS

This section documents approaches taken to date by other California agencies in establishing Senate Bill (SB) 743-compliant transportation analysis guidelines and significance criteria. Several jurisdictions in California have established VMT-based transportation impact guidelines within the past five years. This memorandum details the approaches taken by four cities which have implemented SB 743-related CEQA approaches within the past two years: Elk Grove, Los Angeles, Corona, and San Jose (a full matrix detailing the approaches of these and other cities is attached to this memorandum).

City of Elk Grove

The City of Elk Grove released its updated *Transportation Analysis Guidelines* in December 2019. The guidelines include the following recommendations:

- Assess a project's VMT (compared to existing conditions) and consistency with the General Plan Land Use Plan or the Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS). This is consistent with OPR recommendations.
- The thresholds of significance for all land use projects consist of VMT per service population (residents + employees) greater than 15 percent below the baseline for the relevant General Plan land use designation, and exceeding the baseline daily VMT for the city or the study area (north, south, east, or west). While the efficiency metric threshold (greater than 15 percent below the average) is consistent with OPR recommendations, the reference to land use designation averages and the threshold of exceeding city or study area baseline VMT differs from OPR recommendations.
- In regard to screening criteria for projects, Elk Grove recommendations are in line with OPR for low VMT screening maps, high-quality transit, and affordable housing. However, Elk Grove also includes the requirement of being located on a high-density housing site as designated in the Housing Element for affordable housing. In addition, Elk Grove differs from OPR in regard to screening for project size. Small projects are defined as 10 residential dwelling units or less or 50,000 square feet of commercial, office, or industrial uses or less.
- For transportation projects, the guidelines utilize OPR's list of projects that should or should not require a detailed VMT analysis. The thresholds of significance for transportation projects are exceeding VMT per service population, inconsistency with the SACOG MTP/SCS, and exceeding the cumulative VMT per service population, using the City's travel demand model. The metrics, threshold, and recommended tool differ from OPR recommendations.
- The Elk Grove guidelines recommend built environment and TDM measures to mitigate VMT impacts.

Elk Grove's guidelines include non-CEQA analysis requirements such as site access and on-site circulation review, off-site traffic operations, and effects on multimodal traffic.

The City of Elk Grove recommends using SACOG's regional travel demand model for land use projects and the city's travel demand model for transportation projects.

City of Los Angeles

The City of Los Angeles released its *Transportation Assessment Guidelines* in July 2019. The guidelines include the following recommendations:

- Assess a project's VMT (compared to existing conditions) and consistency with the Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). This is consistent with OPR recommendations.
- The threshold of significance for residential projects is household VMT per capita greater than 15 percent below the average for the Area Planning Commission (APC) area³ in which the project is located. While the threshold (VMT per capita greater than 15 percent below the average) is consistent with OPR recommendations, the comparison geography (APC area) differs from OPR recommendations.
- The threshold of significance for office projects (or other employment projects) is work VMT per employee greater than 15 percent below the average for the APC area. While the threshold (VMT per employee greater than 15 percent below the average) is consistent with OPR recommendations, the comparison geography (APC area) differs from OPR recommendations.
- The threshold of significance for retail projects is a net increase in total VMT. This is consistent with OPR recommendations.
- In regard to screening criteria for projects, Los Angeles differs from OPR in defining a small project, which Los Angeles defines as generating fewer than 250 trips per day. Los Angeles guidelines also recommend screening out public services from VMT analysis, but do not include high-quality transit as a screening criterion.
- Los Angeles's guidelines are consistent with OPR recommendations for analyzing transportation projects (analyzing change in project area VMT using travel demand model and induced demand elasticity formulas).
- The Los Angeles guidelines recommend TDM measures to mitigate VMT impacts.

Los Angeles's guidelines include LOS analysis for non-CEQA purposes. In addition, the guidelines require that projects analyze site driveways and nearby intersections to determine project access and circulation issues.

The City of Los Angeles recommends using either the City's spreadsheet-based tool or full travel demand model to determine the VMT for projects.

³ An APC area is a sub-city geography within the City of Los Angeles. There are seven (7) APCs in the city.

City of Corona

The City of Corona prepared its *Draft City of Corona CEQA Assessment – VMT Analysis Guidelines* in January 2019. The guidelines include the following recommendations:

- Assess a project’s VMT compared to existing conditions. In addition, for cumulative analyses, assess consistency with the General Plan or the increase in the cumulative citywide VMT per service population. The draft Corona guidelines are consistent with OPR recommendations with respect to comparing project VMT to existing VMT, but differ in regard to assessing cumulative VMT impacts.
- The threshold of significance for all land use projects is VMT per service population greater than the existing city average and increasing the cumulative citywide VMT per service population. Corona guidelines differ from OPR recommendations in respect to the appropriate impact threshold (existing VMT vs. 15 percent below existing VMT), VMT metric, and geography for establishing baseline VMT.
- In regard to screening criteria for projects, Corona’s draft recommendations are in line with OPR for low VMT screening maps, adjacency to major transit stops, and local-serving retail. Corona’s draft guidelines also recommend screening out neighborhood schools from VMT analysis. However, the draft guidelines do not mention OPR’s recommended screening criteria for small projects or affordable housing projects.
- Corona’s guidelines differ from OPR recommendation for assessing mixed-use projects. OPR recommends analyzing each use separately or analyzing the dominant use. However, Corona’s draft guidelines recommend analyzing the project as a whole, in terms of VMT per service population.
- Corona’s draft guidelines are generally consistent with OPR recommendations for analyzing transportation projects by recommending the change in total citywide VMT as the preferred metric, measured using the city’s travel demand model or lane-mile elasticity formulas to analyze induced vehicle demand.
- The draft Corona guidelines recommend TDM strategies to mitigate VMT impacts.

The City of Corona’s draft guidelines do not provide recommendations for analyzing LOS for non-CEQA purposes. However, the draft guidelines defer to the city’s General Plan, which includes policies that address LOS and identify LOS standards for city infrastructure.

At this time, the City of Corona does not provide a spreadsheet-based tool for SB 743 analysis; the draft guidelines recommend using the Corona General Plan Model for VMT analyses.

City of San Jose

The City of San Jose released its *Transportation Analysis Handbook* in April 2018. The guidelines include the following recommendations:

- Assess a project's VMT (compared to existing conditions) and consistency with General Plan. The San Jose guidelines are consistent with OPR recommendations with respect to comparing project VMT to existing VMT, but differ in regard to assessing cumulative VMT impacts.
- The threshold of significance for residential projects is VMT per resident greater than 15 percent below the citywide average or the regional average (whichever is lower). This is consistent with OPR recommendations.
- The threshold of significance for general employment projects (such as offices) is VMT per employee greater than 15 percent below the regional average. This is consistent with OPR recommendations.
- The threshold of significance for industrial employment projects is VMT per employee greater than the regional average. While the VMT metric and comparison geography are consistent with OPR recommendations, the VMT impact threshold differs from OPR recommendations.
- The threshold of significance for retail, hotel, and school projects is a net increase in total VMT in the region. San Jose guidelines differ from OPR recommendations by recommending total VMT as the metric for hotel and school projects.
- In regard to screening criteria for projects, San Jose recommendations are in line with OPR for low VMT screening maps, high-quality transit, and affordable housing. However, San Jose differs from OPR for project size. Local serving retail is defined as 100,000 square feet or less. Small projects are defined as 15 units of single-family housing or less, 25 units of multi-family housing or less, 10,000 square feet of office or less, or 30,000 square feet of industrial uses or less. San Jose's guidelines also recommend screening out public services from VMT analysis.
- San Jose's guidelines are consistent with OPR recommendations for analyzing transportation projects, except that they do not recommend a specific tool.
- The San Jose guidelines recommend TDM measures to mitigate VMT impacts.

San Jose retains LOS analysis as part of Local Transportation Analysis (non-CEQA) requirements, specifically for evaluating a project's access and circulation within and near the site.

The City of San Jose recommends utilizing either the city's spreadsheet-based tool or full travel demand model to analyze projects.

Summary

The following are the key findings of this memorandum:

- The guidelines for the four example jurisdictions discussed in this memorandum (Cities of Elk Grove, Los Angeles, Corona, and San Jose) are generally consistent with OPR recommendations. However, there are a few distinct exceptions from the OPR recommendations:
 - Elk Grove and Corona recommend analyzing VMT per service population (residents + employees) for all projects, rather than providing separate metrics for residential, office, and retail projects.

- The guidelines for Los Angeles, Corona, and Elk Grove each deviate from OPR in regard to the recommended geographies for establishing baseline VMT to compare to projects. For example, Los Angeles requires the use of APC thresholds, while Elk Grove has developed thresholds for individual land use designations.
- The City of Corona's draft guidelines establish a project VMT impact threshold of greater than the baseline existing VMT, which differs from OPR's recommended threshold for residential and office projects of VMT per capita or per employee greater than 15 percent below existing VMT. San Jose's impact threshold for industrial employment projects also differs from OPR recommendations in this regard.
- The City of Elk Grove includes an additional land use project threshold of exceeding the baseline daily VMT for the city or the study area (north, south, east, or west)
- San Jose's guidelines substantially differ from OPR in regard to defining small projects and local-serving retail. Both San Jose and Elk Grove also provide detailed guidance in defining small projects for different land uses.
- The Cities of Los Angeles, Corona, and San Jose each define additional land uses that are assumed to have less-than-significant VMT impacts and would not require a detailed VMT analysis, such as public services and neighborhood schools.
- The City of Elk Grove recommends VMT per service populations as the metric for analyzing transportation projects, which differs from OPR's recommendation to use total VMT.
- Of the four example cities discussed in this memo, all distinctly call out requirements for non-CEQA LOS analysis.

A full matrix detailing the approach of these and other cities is attached to this memorandum.

Decision Points		Options/OPR Recommendation	Elk Grove	City of LA	Santa Ana	ITE San Diego	Corona	San Francisco	San Jose	Oakland	Pasadena	San Luis Obispo	
Analysis Scenarios		Existing VMT metrics	Existing VMT metrics for land use projects; Existing and Cumulative for transportation projects; Consistency with GP LU Plan or SACOG MTP/SCS	Existing VMT metrics; Consistency with SCAG RTP/SCS	Existing VMT metrics; Consistency with SCAG RTP/SCS; Increase in cumulative total citywide VMT	SANDAG RTIP scenario for future land use and transportation network	Existing VMT metrics; Consistency with General Plan or increase in cumulative citywide VMT metric	Existing and Cumulative VMT metrics	Existing VMT metrics; Consistency with General Plan	Existing VMT metrics	Existing VMT metrics	Existing and Cumulative VMT metrics	
Land Use Projects	VMT Estimating Tool	Tour- and trip-based models; sketch models; spreadsheet models	SACOG SACSIM model	City of LA VMT Calculator Tool or City's Travel Demand Forecasting model	Orange County Transportation Analysis Model (OCTAM)	SANDAG VMT calculation tool (if <2400 ADT) or SANDAG travel model (if >2400 ADT)	Corona General Plan Model	San Francisco County Transportation Authority's San Francisco Chained Activity Modeling Process (SF-CHAMP) (online)	San Jose VMT Evaluation Tool (sketch tool) or San Jose Travel Demand Model	Travel Demand Model	Pasadena Travel Demand Model	City or SLOCOG travel demand models, or quick-response tools	
	VMT Metrics/Categories	<p>For trip-based models: Residential Projects: Home-based VMT per capita Office Projects: Home-based Work VMT per employee</p> <p>For tour-based models: Residential Projects: VMT per capita Office Projects: VMT per employee</p> <p>For all model types: Retail Projects: Total VMT</p>	VMT per service population and Total daily VMT	<p>Residential Projects: Household VMT per capita Office Projects: Work VMT per employee Retail Projects: Total VMT</p>	VMT per service population (residents + employees)	<p>Residential Projects: VMT per capita Employment Projects: VMT per employee Retail Projects: Total VMT</p>	VMT per service population (residents + employees)	<p>Residential Projects: Household VMT per capita Office Projects: VMT per employee Retail Projects: Work VMT per retail employee</p>	<p>Residential Projects: VMT per capita Office/Industrial Projects: VMT per employee Retail/Hotel/School Projects: Total VMT</p>	<p>Residential Projects: Household VMT per capita Office/Retail Projects: VMT per employee</p>	VMT per service population and Vehicle Trips (VT) per service population	VMT per trip	
	Baseline Geography for VMT comparison	<p>Residential Projects: Region or City Office Projects: Region</p>	<p>For VMT per service population: General Plan land use designation limit (provided in Mobility Element). For Total Daily VMT: Total limit Citywide or in Study Area (North, South, East, or West)</p>	<p>Residential/Office Projects: Area Planning Commission (APC) area</p>	County	City (or community level) and San Diego region	City	Region (Bay Area)	<p>Residential Projects: Region or City Office/Industrial Projects: Region Retail/Hotel/School Projects: Region</p>	Region	City	Region	
	Impact Thresholds of Significance	<p>Residential/Office: Greater than 15% below existing Retail: Net increase in total VMT</p>	Exceeding baseline daily VMT for City or Study Area and exceeding baseline VMT per service population for General Plan Land Use designation (15% reduction below baseline)	<p>Residential/Office: Greater than 15% below existing Retail: Net increase in total VMT</p>	Greater than 15% below existing	<p>Residential/Employment: Greater than 15% below (compared to RTIP future land use/network outputs and/or SANDAG online tool) Retail: Refers to OPR recommendations</p>	Project VMT/SP greater than existing Citywide VMT/SP; Increases cumulative Citywide VMT/SP	Greater than 15% below existing	<p>Residential/Office Projects: Greater than 15% below existing Industrial: Greater than existing Retail/Hotel/School Projects: Net increase in total VMT</p>	Greater than 15% below existing	Greater than existing	Greater than existing	
	Screening Criteria	Map-based screening (low VMT areas)	Residential and office projects in area with low VMT, incorporating similar features	Projects within pre-screened areas on VMT screening map		Projects located in low VMT-generating TAZs	Not explicitly discussed	Projects located in low VMT-generating TAZs	Projects located in low VMT-generating TAZs	Projects located in low VMT-generating areas	Projects located in low VMT-generating TAZs		
		Small projects (Minimum Project Size)	Less than 100 trips per day (based on 10KSF office)	Less than 10 residential dwelling units; Commercial, office, or industrial less than 50 KSF; Mixed-use project below the residential and non-residential size thresholds	Less than 250 trips per day	Less than 110 trips per day	<p>Alternative 1: Less than 500 daily trips if not in General Plan, or 1000 daily trips if in General Plan Alternative 2: Hybrid of OPR approach and local trip rates</p>	100 trips per day or fewer	15 single family units or less; 25 multi family units or less; 10,000 square feet office or less; 30,000 square feet industrial or less	Fewer than 100 daily trips	<p>Residential: Less than 50 units Non-Residential: Less than 50,000 SF</p>	100 trips per day or fewer	
		High-Quality Transit	Within 1/2 mile of existing major transit stop or existing stop along HQTC	Projects within 1/2 mile of an existing major transit stop or an existing stop along a HQTC		Projects located in Transit Priority Areas	Within 1/2 mile of existing major transit stop or existing stop along HQTC (if in place in SANDAG's RTIP scenario)	Projects located in Transit Priority Areas	Within half mile of existing major transit stop	Within 1/2 mile of existing major transit stop or existing stop along HQTC	Within 1/2 mile of existing major transit stop or existing stop along HQTC		Required for projects within transit zones
		Local-Serving Retail	50,000 SF or smaller	Less than 50,000 SF	50,000 SF or smaller	Less than 50,000 SF	Not defined, but refers to OPR	Less than 50,000 SF	Less than or equal to 10,000 SF	100,000 SF or less			
Affordable Housing		High percentage of affordable housing in infill locations	Project that is high density low income housing on a high density housing site as designated in Housing Element.		Affordable housing in infill urbanized areas or near major transit stops may be exempt	100% affordable housing in infill locations (to be defined based on local conditions)			100% restricted affordable units				
Redevelopment Projects		LTS impact if replacement land use leads to net overall decrease in VMT				LTS impact if replacement land use leads to net overall decrease in VMT							
Other Screening Criteria	--		Net decrease in VMT; Public services	Neighborhood schools		Neighborhood schools		Public services	Public services				

Decision Points		Options/OPR Recommendation	Elk Grove	City of LA	Santa Ana	ITE San Diego	Corona	San Francisco	San Jose	Oakland	Pasadena	San Luis Obispo
	Analyzing Mixed-Use Projects	Analyze each use separately, or analyze dominant use		Analyze all project land uses	VMT per service population (residents + employees)	Analyze each use separately. Also, calculate each uses's trips and internalization reduction based on ITE, MXD, or other method. Apply reductions to trip lengths to obtain VMT per capita or employee.	VMT per service population (residents + employees)	Analyze each use separately	Analyze each use separately			
	Other Land Uses (outside of residential, office, retail)	Lead agencies may use location-specific information to develop thresholds for other land use types	Use VMT limits for relevant Land Use designation and City/study area total VMT	Use criteria for office projects	VMT per service population (residents + employees)	Analyze trip-making characteristics of project and analyze using residential or employment methodology	VMT per service population (residents + employees)			Use residential, office, or retail criteria (as appropriate)		
Transportation Projects	Types of Projects to Analyze	Provides list of projects which are expected to either increase or decrease VMT (or have no impact)	Based on OPR list.	Utilizes OPR list	Repair, maintenance or minor alterations are exempt	Utilizes OPR list (e.g. exclude transit, bike, and ped projects). Also, exclude if included in a citywide plan)		List of projects which are expected to either increase or decrease VMT	Utilizes OPR list			
	VMT Metric/Threshold	Change in Total VMT (no significance threshold recommended)	Exceeding VMT per service population; Inconsistent with SACOG MTP/SCS; Exceeding cumulative VMT per service population.	Change in project area VMT	Change in total citywide VMT	Level of VMT expected based on General Plan	Change in total citywide VMT	Exceed region's fair share VMT allocation	Percent Change in Total VMT			
	VMT Estimating Tool/Methodology	Calculate using elasticities or travel demand model with additional analysis for induced demand (provides lane-mile elasticity formula)	City of Elk Grove travel forecasting model	City's Travel Demand Forecasting model and lane-mile elasticity	OCTAM or lane-mile elasticity research	Small project: Sketch planning tool. Large project: SANDAG model. Project that reduces approx. 5 minutes per trip: Analyze induced demand.	City model or lane-mile elasticity	Use a travel model or elasticity model (with agency guidance)				
Mitigation	Built environment and Transportation Demand Management (TDM) strategies	Built environment and Transportation Demand Management (TDM) strategies	TDM Strategies		Built environment/project design and Transportation Demand Management (TDM) strategies	TDM Strategies	TDM Strategies	Transportation Demand Management (TDM) strategies				
Level of Service	No longer constitute significant environmental effect under CEQA	Site access and on-site circulation review; off-site traffic operations; effects on multimodal traffic	Analyze project driveways and nearby intersections for project access and circulation analysis		Local transportation analysis that evaluates project's access and circulation within and near the site (and effect on multimodal traffic) as non-CEQA analysis.	Required for traffic impact studies		Local transportation analysis that evaluates project's access and circulation within and near the site	Intersection LOS required as-needed	Residential street segment analysis; Tiered intersection LOS standards	Intersection and roadway segment LOS	
Update Date		December 2019	July 2019	June 2019	May 2019	March 2019	February 2019	April 2018	April 2017	September 2015	March 2015	

**TECHNICAL ADVISORY ON EVALUATING TRANSPORTATION
IMPACTS IN CEQA**

ATTACHMENT 4

TECHNICAL ADVISORY

ON EVALUATING TRANSPORTATION IMPACTS IN CEQA



December 2018

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A. Introduction

This technical advisory is one in a series of advisories provided by the Governor’s Office of Planning and Research (OPR) as a service to professional planners, land use officials, and CEQA practitioners. OPR issues technical assistance on issues that broadly affect the practice of land use planning and the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). (Gov. Code, § 65040, subs. (g), (l), (m).) The purpose of this document is to provide advice and recommendations, which agencies and other entities may use at their discretion. This document does not alter lead agency discretion in preparing environmental documents subject to CEQA. This document should not be construed as legal advice.

[Senate Bill 743](#) (Steinberg, 2013), which was codified in Public Resources Code section 21099, required changes to the guidelines implementing CEQA (CEQA Guidelines) (Cal. Code Regs., Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. As one appellate court recently explained: “During the last 10 years, the Legislature has charted a course of long-term sustainability based on denser infill development, reduced reliance on individual vehicles and improved mass transit, all with the goal of reducing greenhouse gas emissions. Section 21099 is part of that strategy” (*Covina Residents for Responsible Development v. City of Covina* (2018) 21 Cal.App.5th 712, 729.) Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.” (*Id.*, subd. (b)(1); see generally, adopted CEQA Guidelines, § 15064.3, subd. (b) [Criteria for Analyzing Transportation Impacts].) To that end, in developing the criteria, OPR has proposed, and the California Natural Resources Agency (Agency) has certified and adopted, changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project’s transportation impacts. With the California Natural Resources Agency’s certification and adoption of the changes to the CEQA Guidelines, automobile delay, as measured by “level of service” and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA. (Pub. Resources Code, § 21099, subd. (b)(3).)

This advisory contains technical recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures. Again, OPR provides this Technical Advisory as a resource for the public to use at their discretion. OPR is not enforcing or attempting to enforce any part of the recommendations contained herein. (Gov. Code, § 65035 [“It is not the intent of the Legislature to vest in the Office of Planning and Research any direct operating or regulatory powers over land use, public works, or other state, regional, or local projects or programs.”].)

This December 2018 technical advisory is an update to the advisory it published in April 2018. OPR will continue to monitor implementation of these new provisions and may update or supplement this advisory in response to new information and advancements in modeling and methods.

B. Background

VMT and Greenhouse Gas Emissions Reduction. Senate Bill 32 (Pavley, 2016) requires California to reduce greenhouse gas (GHG) emissions 40 percent below 1990 levels by 2030, and Executive Order B-16-12 provides a target of 80 percent below 1990 emissions levels for the transportation sector by 2050. The transportation sector has three major means of reducing GHG emissions: increasing vehicle efficiency, reducing fuel carbon content, and reducing the amount of vehicle travel. The California Air Resources Board (CARB) has provided a path forward for achieving these emissions reductions from the transportation sector in its 2016 Mobile Source Strategy. CARB determined that it will not be possible to achieve the State's 2030 and post-2030 emissions goals without reducing VMT growth. Further, in its 2018 Progress Report on California's Sustainable Communities and Climate Protection Act, CARB found that despite the State meeting its 2020 climate goals, "emissions from statewide passenger vehicle travel per capita [have been] increasing and going in the wrong direction," and "California cannot meet its [long-term] climate goals without curbing growth in single-occupancy vehicle activity."¹ CARB also found that "[w]ith emissions from the transportation sector continuing to rise despite increases in fuel efficiency and decreases in the carbon content of fuel, California will not achieve the necessary greenhouse gas emissions reductions to meet mandates for 2030 and beyond without significant changes to how communities and transportation systems are planned, funded, and built."²

Thus, to achieve the State's long-term climate goals, California needs to reduce per capita VMT. This can occur under CEQA through VMT mitigation. Half of California's GHG emissions come from the transportation sector³, therefore, reducing VMT is an effective climate strategy, which can also result in co-benefits.⁴ Furthermore, without early VMT mitigation, the state may follow a path that meets GHG targets in the early years, but finds itself poorly positioned to meet more stringent targets later. For example, in absence of VMT analysis and mitigation in CEQA, lead agencies might rely upon verifiable offsets for GHG mitigation, ignoring the longer-term climate change impacts resulting from land use development and infrastructure investment decisions. As stated in CARB's 2017 Scoping Plan:

"California's future climate strategy will require increased focus on integrated land use planning to support livable, transit-connected communities, and conservation of agricultural and other lands. Accommodating population and economic growth through travel- and energy-efficient land use provides GHG-efficient growth, reducing GHGs from both transportation and building energy use. GHGs can be further reduced at the project level through implementing energy-efficient construction and travel demand management approaches."⁵ (*Id.* at p. 102.)

¹ California Air Resources Board (Nov. 2018) *2018 Progress Report on California's Sustainable Communities and Climate Protection Act*, pp. 4, 5, available at https://ww2.arb.ca.gov/sites/default/files/2018-11/Final2018Report_SB150_112618_02_Report.pdf.

² *Id.*, p. 28.

³ See <https://ca50million.ca.gov/transportation/>

⁴ Fang et al. (2017) *Cutting Greenhouse Gas Emissions Is Only the Beginning: A Literature Review of the Co-Benefits of Reducing Vehicle Miles Traveled*.

⁵ California Air Resources Board (Nov. 2017) *California's 2017 Climate Change Scoping Plan*, p. 102, available at https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

In light of this, the 2017 Scoping Plan describes and quantifies VMT reductions needed to achieve our long-term GHG emissions reduction goals, and specifically points to the need for statewide deployment of the VMT metric in CEQA:

“Employing VMT as the metric of transportation impact statewide will help to ensure GHG reductions planned under SB 375 will be achieved through on-the-ground development, and will also play an important role in creating the additional GHG reductions needed beyond SB 375 across the State. Implementation of this change will rely, in part, on local land use decisions to reduce GHG emissions associated with the transportation sector, both at the project level, and in long-term plans (including general plans, climate action plans, specific plans, and transportation plans) and supporting sustainable community strategies developed under SB 375.”⁶

VMT and Other Impacts to Health and Environment. VMT mitigation also creates substantial benefits (sometimes characterized as “co-benefits” to GHG reduction) in both in the near-term and the long-term. Beyond GHG emissions, increases in VMT also impact human health and the natural environment. Human health is impacted as increases in vehicle travel lead to more vehicle crashes, poorer air quality, increases in chronic diseases associated with reduced physical activity, and worse mental health. Increases in vehicle travel also negatively affect other road users, including pedestrians, cyclists, other motorists, and many transit users. The natural environment is impacted as higher VMT leads to more collisions with wildlife and fragments habitat. Additionally, development that leads to more vehicle travel also tends to consume more energy, water, and open space (including farmland and sensitive habitat). This increase in impermeable surfaces raises the flood risk and pollutant transport into waterways.⁷

VMT and Economic Growth. While it was previously believed that VMT growth was a necessary component of economic growth, data from the past two decades shows that economic growth is possible without a concomitant increase in VMT. (Figure 1.) Recent research shows that requiring development projects to mitigate LOS may actually reduce accessibility to destinations and impede economic growth.^{8,9}

⁶ *Id.* at p. 76.

⁷ Fang et al. (2017) *Cutting Greenhouse Gas Emissions Is Only the Beginning: A Literature Review of the Co-Benefits of Reducing Vehicle Miles Traveled*, available at https://ncst.ucdavis.edu/wp-content/uploads/2017/03/NCST-VMT-Co-Benefits-White-Paper_Fang_March-2017.pdf.

⁸ Haynes et al. (Sept. 2015) *Congested Development: A Study of Traffic Delays, Access, and Economic Activity in Metropolitan Los Angeles*, available at http://www.its.ucla.edu/wp-content/uploads/sites/6/2015/11/Haynes_Congested-Development_1-Oct-2015_final.pdf.

⁹ Osman et al. (Mar. 2016) *Not So Fast: A Study of Traffic Delays, Access, and Economic Activity in the San Francisco Bay Area*, available at http://www.its.ucla.edu/wp-content/uploads/sites/6/2016/08/Taylor-Not-so-Fast-04-01-2016_final.pdf.

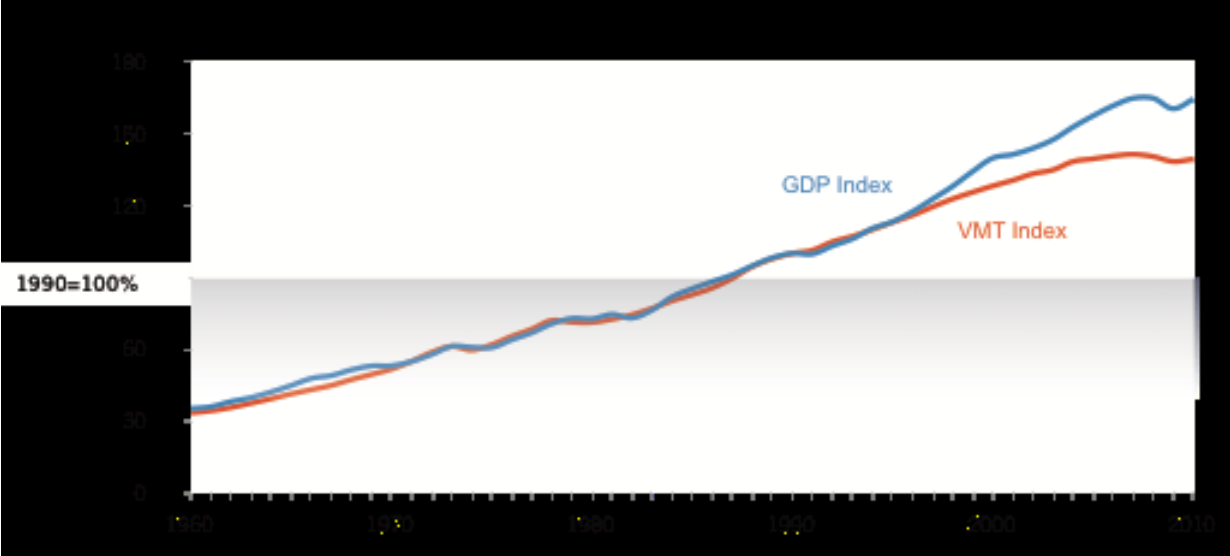


Figure 1. Kooshian and Winkelman (2011) VMT and Gross Domestic Product (GDP), 1960-2010.

C. Technical Considerations in Assessing Vehicle Miles Traveled

Many practitioners are familiar with accounting for VMT in connection with long-range planning, or as part of the CEQA analysis of a project’s greenhouse gas emissions or energy impacts. This document provides technical information on how to assess VMT as part of a transportation impacts analysis under CEQA. Appendix 1 provides a description of which VMT to count and options on how to count it. Appendix 2 provides information on induced travel resulting from roadway capacity projects, including the mechanisms giving rise to induced travel, the research quantifying it, and information on additional approaches for assessing it.

1. Recommendations Regarding Methodology

Proposed Section 15064.3 explains that a “lead agency may use models to estimate a project’s vehicle miles traveled . . .” CEQA generally defers to lead agencies on the choice of methodology to analyze impacts. (*Santa Monica Baykeeper v. City of Malibu* (2011) 193 Cal.App.4th 1538, 1546; see *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 409 [“the issue is not whether the studies are irrefutable or whether they could have been better” ... rather, the “relevant issue is only whether the studies are sufficiently credible to be considered” as part of the lead agency’s overall evaluation].) This section provides suggestions to lead agencies regarding methodologies to analyze VMT associated with a project.

Vehicle Types. Proposed Section 15064.3, subdivision (a), states, “For the purposes of this section, ‘vehicle miles traveled’ refers to the amount and distance of automobile travel attributable to a project.” Here, the term “automobile” refers to on-road passenger vehicles, specifically cars and light trucks. Heavy-duty truck VMT could be included for modeling convenience and ease of calculation (for example, where models or data provide combined auto and heavy truck VMT). For an apples-to-apples

comparison, vehicle types considered should be consistent across project assessment, significance thresholds, and mitigation.

Residential and Office Projects. Tour- and trip-based approaches¹⁰ offer the best methods for assessing VMT from residential/office projects and for comparing those assessments to VMT thresholds. These approaches also offer the most straightforward methods for assessing VMT reductions from mitigation measures for residential/office projects. When available, tour-based assessment is ideal because it captures travel behavior more comprehensively. But where tour-based tools or data are not available for all components of an analysis, a trip-based assessment of VMT serves as a reasonable proxy.

Models and methodologies used to calculate thresholds, estimate project VMT, and estimate VMT reduction due to mitigation should be comparable. For example:

- A tour-based assessment of project VMT should be compared to a tour-based threshold, or a trip-based assessment to a trip-based VMT threshold.
- Where a travel demand model is used to determine thresholds, the same model should also be used to provide trip lengths as part of assessing project VMT.
- Where only trip-based estimates of VMT reduction from mitigation are available, a trip-based threshold should be used, and project VMT should be assessed in a trip-based manner.

When a trip-based method is used to analyze a residential project, the focus can be on home-based trips. Similarly, when a trip-based method is used to analyze an office project, the focus can be on home-based work trips.

When tour-based models are used to analyze an office project, either employee work tour VMT or VMT from all employee tours may be attributed to the project. This is because workplace location influences overall travel. For consistency, the significance threshold should be based on the same metric: either employee work tour VMT or VMT from all employee tours.

For office projects that feature a customer component, such as a government office that serves the public, a lead agency can analyze the customer VMT component of the project using the methodology for retail development (see below).

Retail Projects. Generally, lead agencies should analyze the effects of a retail project by assessing the change in total VMT¹¹ because retail projects typically re-route travel from other retail destinations. A retail project might lead to increases or decreases in VMT, depending on previously existing retail travel patterns.

¹⁰ See Appendix 1, *Considerations About Which VMT to Count*, for a description of these approaches.

¹¹ See Appendix 1, *Considerations About Which VMT to Count*, “Assessing Change in Total VMT” section, for a description of this approach.

Considerations for All Projects. Lead agencies should not truncate any VMT analysis because of jurisdictional or other boundaries, for example, by failing to count the portion of a trip that falls outside the jurisdiction or by discounting the VMT from a trip that crosses a jurisdictional boundary. CEQA requires environmental analyses to reflect a “good faith effort at full disclosure.” (CEQA Guidelines, § 15151.) Thus, where methodologies exist that can estimate the full extent of vehicle travel from a project, the lead agency should apply them to do so. Where those VMT effects will grow over time, analyses should consider both a project’s short-term and long-term effects on VMT.

Combining land uses for VMT analysis is not recommended. Different land uses generate different amounts of VMT, so the outcome of such an analysis could depend more on the mix of uses than on their travel efficiency. As a result, it could be difficult or impossible for a lead agency to connect a significance threshold with an environmental policy objective (such as a target set by law), inhibiting the CEQA imperative of identifying a project’s significant impacts and providing mitigation where feasible. Combining land uses for a VMT analysis could streamline certain mixes of uses in a manner disconnected from policy objectives or environmental outcomes. Instead, OPR recommends analyzing each use separately, or simply focusing analysis on the dominant use, and comparing each result to the appropriate threshold. Recommendations for methods of analysis and thresholds are provided below. In the analysis of each use, a mixed-use project should take credit for internal capture.

Any project that includes in its geographic bounds a portion of an existing or planned Transit Priority Area (i.e., the project is within a ½ mile of an existing or planned major transit stop or an existing stop along a high quality transit corridor) may employ VMT as its primary metric of transportation impact for the entire project. (See Pub. Resources Code, § 21099, subds. (a)(7), (b)(1).)

Cumulative Impacts. A project’s cumulative impacts are based on an assessment of whether the “incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.” (Pub. Resources Code, § 21083, subd. (b)(2); see CEQA Guidelines, § 15064, subd. (h)(1).) When using an absolute VMT metric, i.e., total VMT (as recommended below for retail and transportation projects), analyzing the combined impacts for a cumulative impacts analysis may be appropriate. However, metrics such as VMT per capita or VMT per employee, i.e., metrics framed in terms of efficiency (as recommended below for use on residential and office projects), cannot be summed because they employ a denominator. A project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa. This is similar to the analysis typically conducted for greenhouse gas emissions, air quality impacts, and impacts that utilize plan compliance as a threshold of significance. (See *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4th 204, 219, 223; CEQA Guidelines, § 15064, subd. (h)(3).)

D. General Principles to Guide Consideration of VMT

SB 743 directs OPR to establish specific “criteria for determining the significance of transportation impacts of projects[.]” (Pub. Resources Code, § 21099, subd. (b)(1).) In establishing this criterion, OPR was guided by the general principles contained within CEQA, the CEQA Guidelines, and applicable case law.

To assist in the determination of significance, many lead agencies rely on “thresholds of significance.” The CEQA Guidelines define a “threshold of significance” to mean “an identifiable **quantitative, qualitative¹² or performance level** of a particular environmental effect, non-compliance with which means the effect will **normally** be determined to be significant by the agency and compliance with which means the effect **normally** will be determined to be less than significant.” (CEQA Guidelines, § 15064.7, subd. (a) (emphasis added).) Lead agencies have discretion to develop and adopt their own, or rely on thresholds recommended by other agencies, “provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.” (*Id.* at subd. (c); *Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th 1059, 1068.) Substantial evidence means “enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached.” (*Id.* at § 15384 (emphasis added); *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1108-1109.)

Additionally, the analysis leading to the determination of significance need not be perfect. The CEQA Guidelines describe the standard for adequacy of environmental analyses:

An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to **make a decision which intelligently takes account of environmental consequences**. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is **reasonably feasible**. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The **courts have looked not for perfection** but for **adequacy, completeness**, and a **good faith effort** at full disclosure.

(CEQA Guidelines, § 15151 (emphasis added).)

These general principles guide OPR’s recommendations regarding thresholds of significance for VMT set forth below.

¹² Generally, qualitative analyses should only be conducted when methods do not exist for undertaking a quantitative analysis.

E. Recommendations Regarding Significance Thresholds

As noted above, lead agencies have the discretion to set or apply their own thresholds of significance. (*Center for Biological Diversity v. California Dept. of Fish & Wildlife* (2015) 62 Cal.4th 204, 218-223 [lead agency had discretion to use compliance with AB 32's emissions goals as a significance threshold]; *Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th at p. 1068.) However, Section 21099 of the Public Resources Code states that the criteria for determining the significance of transportation impacts must promote: (1) reduction of greenhouse gas emissions; (2) development of multimodal transportation networks; and (3) a diversity of land uses. It further directed OPR to prepare and develop criteria for determining significance. (Pub. Resources Code, § 21099, subd. (b)(1).) This section provides OPR's suggested thresholds, as well as considerations for lead agencies that choose to adopt their own

The VMT metric can support the three statutory goals: "the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (Pub. Resources Code, § 21099, subd. (b)(1), emphasis added.) However, in order for it to promote and support all three, lead agencies should select a significance threshold that aligns with state law on all three. State law concerning the development of multimodal transportation networks and diversity of land uses requires planning for and prioritizing increases in complete streets and infill development, but does not mandate a particular depth of implementation that could translate into a particular threshold of significance. Meanwhile, the State has clear quantitative targets for GHG emissions reduction set forth in law and based on scientific consensus, and the depth of VMT reduction needed to achieve those targets has been quantified. Tying VMT thresholds to GHG reduction also supports the two other statutory goals. Therefore, to ensure adequate analysis of transportation impacts, OPR recommends using quantitative VMT thresholds linked to GHG reduction targets when methods exist to do so.

Various legislative mandates and state policies establish quantitative greenhouse gas emissions reduction targets. For example:

- Assembly Bill 32 (2006) requires statewide GHG emissions reductions to 1990 levels by 2020 and continued reductions beyond 2020.
- Senate Bill 32 (2016) requires at least a 40 percent reduction in GHG emissions from 1990 levels by 2030.
- Pursuant to Senate Bill 375 (2008), the California Air Resources Board GHG emissions reduction targets for metropolitan planning organizations (MPOs) to achieve based on land use patterns and transportation systems specified in Regional Transportation Plans and Sustainable Community Strategies (RTP/SCS). Current targets for the State's largest MPOs call for a 19 percent reduction in GHG emissions from cars and light trucks from 2005 emissions levels by 2035.
- Executive Order B-30-15 (2015) sets a GHG emissions reduction target of 40 percent below 1990 levels by 2030.

- Executive Order S-3-05 (2005) sets a GHG emissions reduction target of 80 percent below 1990 levels by 2050.
- Executive Order B-16-12 (2012) specifies a GHG emissions reduction target of 80 percent below 1990 levels by 2050 specifically for transportation.
- Executive Order B-55-18 (2018) established an additional statewide goal of achieving carbon neutrality as soon as possible, but no later than 2045, and maintaining net negative emissions thereafter. It states, “The California Air Resources Board shall work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal.”
- Senate Bill 391 requires the California Transportation Plan to support 80 percent reduction in GHGs below 1990 levels by 2050.
- The California Air Resources Board Mobile Source Strategy (2016) describes California’s strategy for containing air pollutant emissions from vehicles, and quantifies VMT growth compatible with achieving state targets.
- The California Air Resources Board’s 2017 Climate Change Scoping Plan Update: The Strategy for Achieving California’s 2030 Greenhouse Gas Target describes California’s strategy for containing GHG emissions from vehicles, and quantifies VMT growth compatible with achieving state targets.

Considering these various targets, the California Supreme Court observed:

Meeting our statewide reduction goals does not preclude all new development. Rather, the Scoping Plan ... assumes continued growth and depends on increased efficiency and conservation in land use and transportation from all Californians.

(Center for Biological Diversity v. California Dept. of Fish & Wildlife, supra, 62 Cal.4th at p. 220.) Indeed, the Court noted that when a lead agency uses consistency with climate goals as a way to determine significance, particularly for long-term projects, the lead agency must consider the project’s effect on meeting long-term reduction goals. *(Ibid.)* And more recently, the Supreme Court stated that “CEQA requires public agencies . . . to ensure that such analysis stay in step with evolving scientific knowledge and state regulatory schemes.” *(Cleveland National Forest Foundation v. San Diego Assn. of Governments (2017) 3 Cal.5th 497, 504.)*

Meeting the targets described above will require substantial reductions in existing VMT per capita to curb GHG emissions and other pollutants. But targets for overall GHG emissions reduction do not translate directly into VMT thresholds for individual projects for many reasons, including:

- Some, but not all, of the emissions reductions needed to achieve those targets could be accomplished by other measures, including increased vehicle efficiency and decreased fuel carbon content. The CARB’s *First Update to the Climate Change Scoping Plan* explains:

“Achieving California’s long-term criteria pollutant and GHG emissions goals will require four strategies to be employed: (1) improve vehicle efficiency and develop zero emission technologies, (2) reduce the carbon content of fuels and provide market support to get these lower-carbon fuels into the marketplace, (3) **plan and build communities to reduce vehicular GHG emissions and provide more transportation options, and (4) improve the efficiency and throughput of existing transportation systems.**”¹³ CARB’s *2018 Progress Report on California’s Sustainable Communities and Climate Protection Act* states on page 28 that “California cannot meet its climate goals without curbing growth in single-occupancy vehicle activity.” In other words, vehicle efficiency and better fuels are necessary, but insufficient, to address the GHG emissions from the transportation system. Land use patterns and transportation options also will need to change to support reductions in vehicle travel/VMT.

- New land use projects alone will not sufficiently reduce per-capita VMT to achieve those targets, nor are they expected to be the sole source of VMT reduction.
- Interactions between land use projects, and also between land use and transportation projects, existing and future, together affect VMT.
- Because location within the region is the most important determinant of VMT, in some cases, streamlining CEQA review of projects in travel efficient locations may be the most effective means of reducing VMT.
- When assessing climate impacts of some types of land use projects, use of an efficiency metric (e.g., per capita, per employee) may provide a better measure of impact than an absolute numeric threshold. (*Center for Biological Diversity, supra.*)

Public Resources Code section 21099 directs OPR to propose criteria for determining the significance of transportation impacts. In this Technical Advisory, OPR provides its recommendations to assist lead agencies in selecting a significance threshold that may be appropriate for their particular projects. While OPR’s Technical Advisory is not binding on public agencies, CEQA allows lead agencies to “consider thresholds of significance . . . recommended by other public agencies, provided the decision to adopt those thresholds is supported by substantial evidence.” (CEQA Guidelines, § 15064.7, subd. (c).) Based on OPR’s extensive review of the applicable research, and in light of an assessment by the California Air Resources Board quantifying the need for VMT reduction in order to meet the State’s long-term climate goals, **OPR recommends that a per capita or per employee VMT that is fifteen percent below that of existing development may be a reasonable threshold.**

Fifteen percent reductions in VMT are achievable at the project level in a variety of place types.¹⁴

Moreover, a fifteen percent reduction is consistent with SB 743’s direction to OPR to select a threshold that will help the State achieve its climate goals. As described above, section 21099 states that the

¹³ California Air Resources Board (May 2014) *First Update to the Climate Change Scoping Plan*, p. 46 (emphasis added).

¹⁴ CAPCOA (2010) *Quantifying Greenhouse Gas Mitigation Measures*, p. 55, available at <http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf>.

criteria for determining significance must “promote the reduction in greenhouse gas emissions.” In its document *California Air Resources Board 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals*¹⁵, CARB assesses VMT reduction per capita consistent with its evidence-based modeling scenario that would achieve State climate goals of 40 percent GHG emissions reduction from 1990 levels by 2030 and 80 percent GHG emissions reduction levels from 1990 by 2050. Applying California Department of Finance population forecasts, CARB finds per-capita light-duty vehicle travel would need to be approximately 16.8 percent lower than existing, and overall per-capita vehicle travel would need to be approximately 14.3 percent lower than existing levels under that scenario. Below these levels, a project could be considered low VMT and would, on that metric, be consistent with 2017 Scoping Plan Update assumptions that achieve climate state climate goals.

CARB finds per capita vehicle travel would need to be kept below what today’s policies and plans would achieve.

CARB’s assessment is based on data in the 2017 Scoping Plan Update and 2016 Mobile Source Strategy. In those documents, CARB previously examined the relationship between VMT and the state’s GHG emissions reduction targets. The Scoping Plan finds:

“While the State can do more to accelerate and incentivize these local decisions, local actions that reduce VMT are also necessary to meet transportation sector-specific goals and achieve the 2030 target under SB 32. Through developing the Scoping Plan, CARB staff is more convinced than ever that, in addition to achieving GHG reductions from cleaner fuels and vehicles, California must also reduce VMT. Stronger SB 375 GHG reduction targets will enable the State to make significant progress toward needed reductions, but alone will not provide the VMT growth reductions needed; there is a gap between what SB 375 can provide and what is needed to meet the State’s 2030 and 2050 goals.”¹⁶

Note that, at present, consistency with RTP/SCSs does not necessarily lead to a less-than-significant VMT impact.¹⁷ As the Final 2017 Scoping Plan Update states,

VMT reductions are necessary to achieve the 2030 target and must be part of any strategy evaluated in this Plan. Stronger SB 375 GHG reduction targets will enable the State to make significant progress toward this goal, but alone will not provide all of the VMT growth reductions that will be needed. There is a gap between what SB 375 can provide and what is needed to meet the State’s 2030 and 2050 goals.”¹⁸

¹⁵ California Air Resources Board (Jan. 2019) *California Air Resources Board 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals*, available at <https://ww2.arb.ca.gov/resources/documents/carb-2017-scoping-plan-identified-vmt-reductions-and-relationship-state-climate>.

¹⁶ California Air Resources Board (Nov. 2017) *California’s 2017 Climate Change Scoping Plan*, p. 101.

¹⁷ California Air Resources Board (Feb. 2018) *Updated Final Staff Report: Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets*, Figure 3, p. 35, available at https://www.arb.ca.gov/cc/sb375/sb375_target_update_final_staff_report_feb2018.pdf.

¹⁸ California Air Resources Board (Nov. 2017) *California’s 2017 Climate Change Scoping Plan*, p. 75.

Also, in order to capture the full effects of induced travel resulting from roadway capacity projects, an RTP/SCS would need to include an assessment of land use effects of those projects, and the effects of those land uses on VMT. (See section titled “*Estimating VMT Impacts from Transportation Projects*” below.) RTP/SCSs typically model VMT using a collaboratively-developed land use “vision” for the region’s land use, rather than studying the effects on land use of the proposed transportation investments.

In summary, achieving 15 percent lower per capita (residential) or per employee (office) VMT than existing development is both generally achievable and is supported by evidence that connects this level of reduction to the State’s emissions goals.

1. Screening Thresholds for Land Use Projects

Many agencies use “screening thresholds” to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study. (See e.g., CEQA Guidelines, §§ 15063(c)(3)(C), 15128, and Appendix G.) As explained below, this technical advisory suggests that lead agencies may screen out VMT impacts using project size, maps, transit availability, and provision of affordable housing.

Screening Threshold for Small Projects

Many local agencies have developed screening thresholds to indicate when detailed analysis is needed. Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day¹⁹ generally may be assumed to cause a less-than-significant transportation impact.

Map-Based Screening for Residential and Office Projects

Residential and office projects that locate in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. Maps created with VMT data, for example from a travel survey or a travel demand model, can illustrate areas that are

¹⁹ CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).) Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact.

currently below threshold VMT (see recommendations below). Because new development in such locations would likely result in a similar level of VMT, such maps can be used to screen out residential and office projects from needing to prepare a detailed VMT analysis.

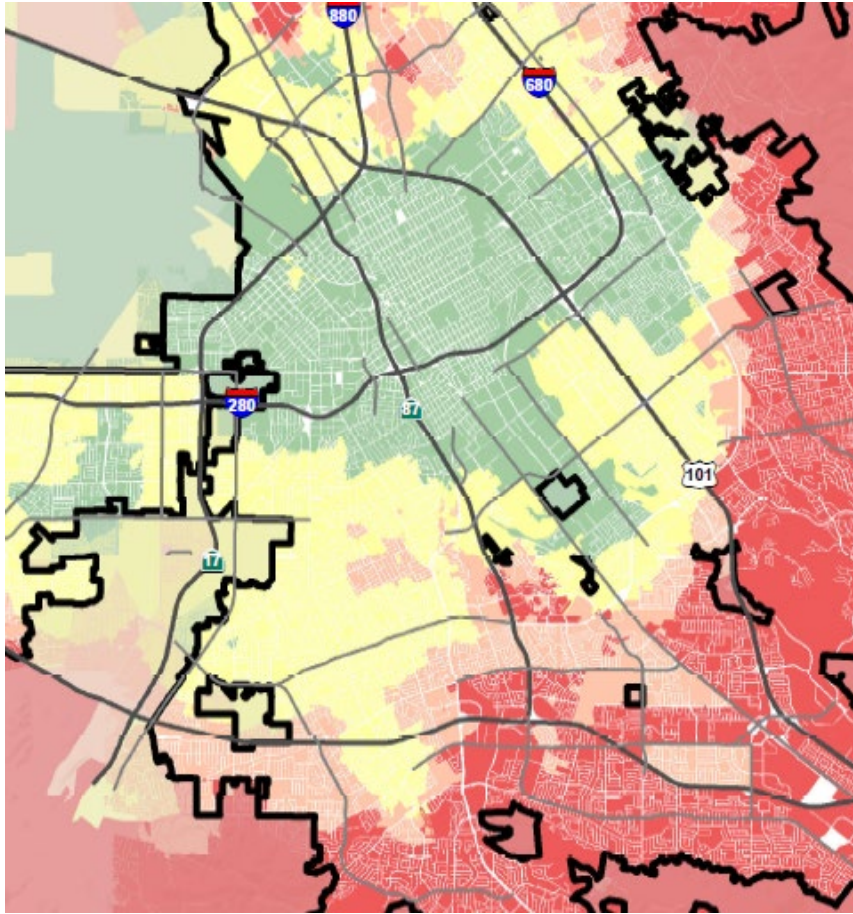


Figure 2. Example map of household VMT that could be used to delineate areas eligible to receive streamlining for VMT analysis. (Source: City of San José, Department of Transportation, draft output of City Transportation Model.)

Presumption of Less Than Significant Impact Near Transit Stations

Proposed CEQA Guideline Section 15064.3, subdivision (b)(1), states that lead agencies generally should presume that certain projects (including residential, retail, and office projects, as well as projects that are a mix of these uses) proposed within ½ mile of an existing major transit stop²⁰ or an existing stop

²⁰ Pub. Resources Code, § 21064.3 (“‘Major transit stop’ means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.”).

along a high quality transit corridor²¹ will have a less-than-significant impact on VMT. This presumption would not apply, however, if project-specific or location-specific information indicates that the project will still generate significant levels of VMT. For example, the presumption might not be appropriate if the project:

- Has a Floor Area Ratio (FAR) of less than 0.75
- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking)
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization)
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units

A project or plan near transit which replaces affordable residential units²² with a smaller number of moderate- or high-income residential units may increase overall VMT because the increase in VMT of displaced residents could overwhelm the improvements in travel efficiency enjoyed by new residents.²³

If any of these exceptions to the presumption might apply, the lead agency should conduct a detailed VMT analysis to determine whether the project would exceed VMT thresholds (see below).

Presumption of Less Than Significant Impact for Affordable Residential Development

Adding affordable housing to infill locations generally improves jobs-housing match, in turn shortening commutes and reducing VMT.^{24,25} Further, "... low-wage workers in particular would be more likely to choose a residential location close to their workplace, if one is available."²⁶ In areas where existing jobs-housing match is closer to optimal, low income housing nevertheless generates less VMT than market-

²¹ Pub. Resources Code, § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.").

²² Including naturally-occurring affordable residential units.

²³ Chapple et al. (2017) *Developing a New Methodology for Analyzing Potential Displacement*, Chapter 4, pp. 159-160, available at <https://www.arb.ca.gov/research/apr/past/13-310.pdf>.

²⁴ Karner and Benner (2016) *The convergence of social equity and environmental sustainability: Jobs-housing fit and commute distance* ("[P]olicies that advance a more equitable distribution of jobs and housing by linking the affordability of locally available housing with local wage levels are likely to be associated with reduced commuting distances").

²⁵ Karner and Benner (2015) *Low-wage jobs-housing fit: identifying locations of affordable housing shortages*.

²⁶ Karner and Benner (2015) *Low-wage jobs-housing fit: identifying locations of affordable housing shortages*.

rate housing.^{27,28} Therefore, a project consisting of a high percentage of affordable housing may be a basis for the lead agency to find a less-than-significant impact on VMT. Evidence supports a presumption of less than significant impact for a 100 percent affordable residential development (or the residential component of a mixed-use development) in infill locations. Lead agencies may develop their own presumption of less than significant impact for residential projects (or residential portions of mixed use projects) containing a particular amount of affordable housing, based on local circumstances and evidence. Furthermore, a project which includes any affordable residential units may factor the effect of the affordability on VMT into the assessment of VMT generated by those units.

2. Recommended Numeric Thresholds for Residential, Office, and Retail Projects

Recommended threshold for residential projects: A proposed project exceeding a level of 15 percent below existing VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as regional VMT per capita or as city VMT per capita. Proposed development referencing a threshold based on city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the number of units specified in the SCS for that city, and should be consistent with the SCS.

Residential development that would generate vehicle travel that is 15 or more percent below the existing residential VMT per capita, measured against the region or city, may indicate a less-than-significant transportation impact. In MPO areas, development measured against city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the population or number of units specified in the SCS for that city because greater-than-planned amounts of development in areas above the region-based threshold would undermine the VMT containment needed to achieve regional targets under SB 375.

For residential projects in unincorporated county areas, the local agency can compare a residential project's VMT to (1) the region's VMT per capita, or (2) the aggregate population-weighted VMT per capita of all cities in the region. In MPO areas, development in unincorporated areas measured against aggregate city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the population or number of units specified in the SCS for that city because greater-than-planned amounts of development in areas above the regional threshold would undermine achievement of regional targets under SB 375.

²⁷ Chapple et al. (2017) *Developing a New Methodology for Analyzing Potential Displacement*, available at <https://www.arb.ca.gov/research/apr/past/13-310.pdf>.

²⁸ CAPCOA (2010) *Quantifying Greenhouse Gas Mitigation Measures*, pp. 176-178, available at <http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf>.

These thresholds can be applied to either household (i.e., tour-based) VMT or home-based (i.e., trip-based) VMT assessments.²⁹ It is critical, however, that the agency be consistent in its VMT measurement approach throughout the analysis to maintain an “apples-to-apples” comparison. For example, if the agency uses a home-based VMT for the threshold, it should also be use home-based VMT for calculating project VMT and VMT reduction due to mitigation measures.

Recommended threshold for office projects: A proposed project exceeding a level of 15 percent below existing regional VMT per employee may indicate a significant transportation impact.

Office projects that would generate vehicle travel exceeding 15 percent below existing VMT per employee for the region may indicate a significant transportation impact. In cases where the region is substantially larger than the geography over which most workers would be expected to live, it might be appropriate to refer to a smaller geography, such as the county, that includes the area over which nearly all workers would be expected to live.

Office VMT screening maps can be developed using tour-based data, considering either total employee VMT or employee work tour VMT. Similarly, tour-based analysis of office project VMT could consider either total employee VMT or employee work tour VMT. Where tour-based information is unavailable for threshold determination, project assessment, or assessment of mitigation, home-based work trip VMT should be used throughout all steps of the analysis to maintain an “apples-to-apples” comparison.

Recommended threshold for retail projects: A net increase in total VMT may indicate a significant transportation impact.

Because new retail development typically redistributes shopping trips rather than creating new trips,³⁰ estimating the total change in VMT (i.e., the difference in total VMT in the area affected with and without the project) is the best way to analyze a retail project’s transportation impacts.

By adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies generally may presume such development creates a less-than-significant transportation impact. Regional-serving retail development, on the other hand, which can lead to substitution of longer trips for shorter ones, may tend to have a significant impact. Where such development decreases VMT, lead agencies should consider the impact to be less-than-significant.

Many cities and counties define local-serving and regional-serving retail in their zoning codes. Lead agencies may refer to those local definitions when available, but should also consider any project-

²⁹ See Appendix 1 for a description of these approaches.

³⁰ Lovejoy, et al. (2013) *Measuring the impacts of local land-use policies on vehicle miles of travel: The case of the first big-box store in Davis, California*, *The Journal of Transport and Land Use*.

specific information, such as market studies or economic impacts analyses that might bear on customers' travel behavior. Because lead agencies will best understand their own communities and the likely travel behaviors of future project users, they are likely in the best position to decide when a project will likely be local-serving. Generally, however, retail development including stores larger than 50,000 square feet might be considered regional-serving, and so lead agencies should undertake an analysis to determine whether the project might increase or decrease VMT.

Mixed-Use Projects

Lead agencies can evaluate each component of a mixed-use project independently and apply the significance threshold for each project type included (e.g., residential and retail). Alternatively, a lead agency may consider only the project's dominant use. In the analysis of each use, a project should take credit for internal capture. Combining different land uses and applying one threshold to those land uses may result in an inaccurate impact assessment.

Other Project Types

Of land use projects, residential, office, and retail projects tend to have the greatest influence on VMT. For that reason, OPR recommends the quantified thresholds described above for purposes of analysis and mitigation. Lead agencies, using more location-specific information, may develop their own more specific thresholds, which may include other land use types. In developing thresholds for other project types, or thresholds different from those recommended here, lead agencies should consider the purposes described in section 21099 of the Public Resources Code and regulations in the CEQA Guidelines on the development of thresholds of significance (e.g., CEQA Guidelines, § 15064.7).

Strategies and projects that decrease local VMT but increase total VMT should be avoided. Agencies should consider whether their actions encourage development in a less travel-efficient location by limiting development in travel-efficient locations.

Redevelopment Projects

Where a project replaces existing VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project leads to a net overall increase in VMT, then the thresholds described above should apply.

As described above, a project or plan near transit which replaces affordable³¹ residential units with a smaller number of moderate- or high-income residential units may increase overall VMT, because

³¹ Including naturally-occurring affordable residential units.

displaced residents' VMT may increase.³² A lead agency should analyze VMT for such a project even if it otherwise would have been presumed less than significant. The assessment should incorporate an estimate of the aggregate VMT increase experienced by displaced residents. That additional VMT should be included in the numerator of the VMT per capita assessed for the project.

If a residential or office project leads to a net increase in VMT, then the project's VMT per capita (residential) or per employee (office) should be compared to thresholds recommended above. Per capita and per employee VMT are efficiency metrics, and, as such, apply only to the existing project without regard to the VMT generated by the previously existing land use.

If the project leads to a net increase in provision of locally-serving retail, transportation impacts from the retail portion of the development should be presumed to be less than significant. If the project consists of regionally-serving retail, and increases overall VMT compared to with existing uses, then the project would lead to a significant transportation impact.

RTP/SCS Consistency (All Land Use Projects)

Section 15125, subdivision (d), of the CEQA Guidelines provides that lead agencies should analyze impacts resulting from inconsistencies with regional plans, including regional transportation plans. For this reason, if a project is inconsistent with the Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), the lead agency should evaluate whether that inconsistency indicates a significant impact on transportation. For example, a development may be inconsistent with an RTP/SCS if the development is outside the footprint of development or within an area specified as open space as shown in the SCS.

3. Recommendations Regarding Land Use Plans

As with projects, agencies should analyze VMT outcomes of land use plans across the full area over which the plan may substantively affect travel patterns, including beyond the boundary of the plan or jurisdiction's geography. And as with projects, VMT should be counted in full rather than split between origin and destination. (Emissions inventories have sometimes split cross-boundary trips in order to sum to a regional total, but CEQA requires accounting for the full impact without truncation or discounting). Analysis of specific plans may employ the same thresholds described above for projects. A general plan, area plan, or community plan may have a significant impact on transportation if proposed new residential, office, or retail land uses would in aggregate exceed the respective thresholds recommended above. Where the lead agency tiers from a general plan EIR pursuant to CEQA Guidelines sections 15152 and 15166, the lead agency generally focuses on the environmental impacts that are specific to the later project and were not analyzed as significant impacts in the prior EIR. (Pub. Resources Code, § 21068.5; Guidelines, § 15152, subd. (a).) Thus, in analyzing the later project, the lead agency

³² Chapple et al. (2017) *Developing a New Methodology for Analyzing Potential Displacement*, Chapter 4, pp. 159-160, available at <https://www.arb.ca.gov/research/apr/past/13-310.pdf>.

would focus on the VMT impacts that were not adequately addressed in the prior EIR. In the tiered document, the lead agency should continue to apply the thresholds recommended above.

Thresholds for plans in non-MPO areas may be determined on a case-by-case basis.

4. Other Considerations

Rural Projects Outside of MPOs

In rural areas of non-MPO counties (i.e., areas not near established or incorporated cities or towns), fewer options may be available for reducing VMT, and significance thresholds may be best determined on a case-by-case basis. Note, however, that clustered small towns and small town main streets may have substantial VMT benefits compared to isolated rural development, similar to the transit oriented development described above.

Impacts to Transit

Because criteria for determining the significance of transportation impacts must promote “the development of multimodal transportation networks” pursuant to Public Resources Code section 21099, subd. (b)(1), lead agencies should consider project impacts to transit systems and bicycle and pedestrian networks. For example, a project that blocks access to a transit stop or blocks a transit route itself may interfere with transit functions. Lead agencies should consult with transit agencies as early as possible in the development process, particularly for projects that are located within one half mile of transit stops.

When evaluating impacts to multimodal transportation networks, lead agencies generally should not treat the addition of new transit users as an adverse impact. An infill development may add riders to transit systems and the additional boarding and alighting may slow transit vehicles, but it also adds destinations, improving proximity and accessibility. Such development also improves regional vehicle flow by adding less vehicle travel onto the regional network.

Increased demand throughout a region may, however, cause a cumulative impact by requiring new or additional transit infrastructure. Such impacts may be adequately addressed through a fee program that fairly allocates the cost of improvements not just to projects that happen to locate near transit, but rather across a region to all projects that impose burdens on the entire transportation system, since transit can broadly improve the function of the transportation system.

F. Considering the Effects of Transportation Projects on Vehicle Travel

Many transportation projects change travel patterns. A transportation project which leads to additional vehicle travel on the roadway network, commonly referred to as “induced vehicle travel,” would need to quantify the amount of additional vehicle travel in order to assess air quality impacts, greenhouse gas emissions impacts, energy impacts, and noise impacts. Transportation projects also are required to

examine induced growth impacts under CEQA. (See generally, Pub. Resources Code, §§ 21065 [defining “project” under CEQA as an activity as causing either a direct or reasonably foreseeable indirect physical change], 21065.3 [defining “project-specific effect” to mean all direct or indirect environmental effects], 21100, subd. (b) [required contents of an EIR].) For any project that increases vehicle travel, explicit assessment and quantitative reporting of the amount of additional vehicle travel should not be omitted from the document; such information may be useful and necessary for a full understanding of a project’s environmental impacts. (See Pub. Resources Code, §§ 21000, 21001, 21001.1, 21002, 21002.1 [discussing the policies of CEQA].) A lead agency that uses the VMT metric to assess the transportation impacts of a transportation project may simply report that change in VMT as the impact. When the lead agency uses another metric to analyze the transportation impacts of a roadway project, changes in amount of vehicle travel added to the roadway network should still be analyzed and reported.³³

While CEQA does not require perfection, it is important to make a reasonably accurate estimate of transportation projects’ effects on vehicle travel in order to make reasonably accurate estimates of GHG emissions, air quality emissions, energy impacts, and noise impacts. (See, e.g., *California Clean Energy Com. v. City of Woodland* (2014) 225 Cal.App.4th 173, 210 [EIR failed to consider project’s transportation energy impacts]; *Ukiah Citizens for Safety First v. City of Ukiah* (2016) 248 Cal.App.4th 256, 266.) Appendix 2 describes in detail the causes of induced vehicle travel, the robust empirical evidence of induced vehicle travel, and how models and research can be used in conjunction to quantitatively assess induced vehicle travel with reasonable accuracy.

If a project would likely lead to a measurable and substantial increase in vehicle travel, the lead agency should conduct an analysis assessing the amount of vehicle travel the project will induce. Project types that would likely lead to a measurable and substantial increase in vehicle travel generally include:

- Addition of through lanes on existing or new highways, including general purpose lanes, HOV lanes, peak period lanes, auxiliary lanes, or lanes through grade-separated interchanges

Projects that would not likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis, include:

- Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets (e.g., highways; roadways; bridges; culverts; Transportation Management System field elements such as cameras, message signs, detection, or signals; tunnels; transit systems; and assets that serve bicycle and pedestrian facilities) and that do not add additional motor vehicle capacity
- Roadside safety devices or hardware installation such as median barriers and guardrails

³³ See, e.g., California Department of Transportation (2006) *Guidance for Preparers of Growth-related, Indirect Impact Analyses*, available at [http://www.dot.ca.gov/ser/Growth-related IndirectImpactAnalysis/GRI_guidance06May_files/gri_guidance.pdf](http://www.dot.ca.gov/ser/Growth-related%20IndirectImpactAnalysis/GRI_guidance06May_files/gri_guidance.pdf).

- Roadway shoulder enhancements to provide “breakdown space,” dedicated space for use only by transit vehicles, to provide bicycle access, or to otherwise improve safety, but which will not be used as automobile vehicle travel lanes
- Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety
- Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left, right, and U-turn pockets, two-way left turn lanes, or emergency breakdown lanes that are not utilized as through lanes
- Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit
- Conversion of existing general purpose lanes (including ramps) to managed lanes or transit lanes, or changing lane management in a manner that would not substantially increase vehicle travel
- Addition of a new lane that is permanently restricted to use only by transit vehicles
- Reduction in number of through lanes
- Grade separation to separate vehicles from rail, transit, pedestrians or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., HOV, HOT, or trucks) from general vehicles
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features
- Installation of traffic metering systems, detection systems, cameras, changeable message signs and other electronics designed to optimize vehicle, bicycle, or pedestrian flow
- Timing of signals to optimize vehicle, bicycle, or pedestrian flow
- Installation of roundabouts or traffic circles
- Installation or reconfiguration of traffic calming devices
- Adoption of or increase in tolls
- Addition of tolled lanes, where tolls are sufficient to mitigate VMT increase
- Initiation of new transit service
- Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes
- Removal or relocation of off-street or on-street parking spaces
- Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs)
- Addition of traffic wayfinding signage
- Rehabilitation and maintenance projects that do not add motor vehicle capacity
- Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way
- Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve non-motorized travel
- Installation of publicly available alternative fuel/charging infrastructure
- Addition of passing lanes, truck climbing lanes, or truck brake-check lanes in rural areas that do not increase overall vehicle capacity along the corridor

1. Recommended Significance Threshold for Transportation Projects

As noted in Section 15064.3 of the CEQA Guidelines, lead agencies for roadway capacity projects have discretion, consistent with CEQA and planning requirements, to choose which metric to use to evaluate transportation impacts. This section recommends considerations for evaluating impacts using vehicle miles traveled. Lead agencies have discretion to choose a threshold of significance for transportation projects as they do for other types of projects. As explained above, Public Resources Code section 21099, subdivision (b)(1), provides that criteria for determining the significance of transportation impacts must promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. (*Id.*; see generally, adopted CEQA Guidelines, § 15064.3, subd. (b) [Criteria for Analyzing Transportation Impacts].) With those goals in mind, OPR prepared and the Agency adopted an appropriate transportation metric.

Whether adopting a threshold of significance, or evaluating transportation impacts on a case-by-case basis, a lead agency should ensure that the analysis addresses:

- Direct, indirect and cumulative effects of the transportation project (CEQA Guidelines, § 15064, subds. (d), (h))
- Near-term and long-term effects of the transportation project (CEQA Guidelines, §§ 15063, subd. (a)(1), 15126.2, subd. (a))
- The transportation project's consistency with state greenhouse gas reduction goals (Pub. Resources Code, § 21099)³⁴
- The impact of the transportation project on the development of multimodal transportation networks (Pub. Resources Code, § 21099)
- The impact of the transportation project on the development of a diversity of land uses (Pub. Resources Code, § 21099)

The CARB Scoping Plan and the CARB Mobile Source Strategy delineate VMT levels required to achieve legally mandated GHG emissions reduction targets. A lead agency should develop a project-level threshold based on those VMT levels, and may apply the following approach:

1. Propose a fair-share allocation of those budgets to their jurisdiction (e.g., by population);

³⁴ The California Air Resources Board has ascertained the limits of VMT growth compatible with California containing greenhouse gas emissions to levels research shows would allow for climate stabilization. (See [The 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target](#) (p. 78, p. 101); [Mobile Source Strategy](#) (p. 37).) CARB's [Updated Final Staff Report on Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets](#) illustrates that the current Regional Transportation Plans and Sustainable Communities Strategies will fall short of achieving the necessary on-road transportation-related GHG emissions reductions called for in the 2017 Scoping Plan (Figure 3, p. 35). Accordingly, OPR recommends not basing GHG emissions or transportation impact analysis for a transportation project solely on consistency with an RTP/SCS.

2. Determine the amount of VMT growth likely to result from background population growth, and subtract that from their “budget”;
3. Allocate their jurisdiction’s share between their various VMT-increasing transportation projects, using whatever criteria the lead agency prefers.

2. Estimating VMT Impacts from Transportation Projects

CEQA requires analysis of a project’s potential growth-inducing impacts. (Pub. Resources Code, § 21100, subd. (b)(5); CEQA Guidelines, § 15126.2, subd. (d).) Many agencies are familiar with the analysis of growth inducing impacts associated with water, sewer, and other infrastructure. This technical advisory addresses growth that may be expected from roadway expansion projects.

Because a roadway expansion project can induce substantial VMT, incorporating quantitative estimates of induced VMT is critical to calculating both transportation and other impacts of these projects. Induced travel also has the potential to reduce or eliminate congestion relief benefits. An accurate estimate of induced travel is needed to accurately weigh costs and benefits of a highway capacity expansion project.

The effect of a transportation project on vehicle travel should be estimated using the “change in total VMT” method described in *Appendix 1*. This means that an assessment of total VMT without the project and an assessment with the project should be made; the difference between the two is the amount of VMT attributable to the project. The assessment should cover the full area in which driving patterns are expected to change. As with other types of projects, the VMT estimation should not be truncated at a modeling or jurisdictional boundary for convenience of analysis when travel behavior is substantially affected beyond that boundary.

Transit and Active Transportation Projects

Transit and active transportation projects generally reduce VMT and therefore are presumed to cause a less-than-significant impact on transportation. This presumption may apply to all passenger rail projects, bus and bus rapid transit projects, and bicycle and pedestrian infrastructure projects. Streamlining transit and active transportation projects aligns with each of the three statutory goals contained in SB 743 by reducing GHG emissions, increasing multimodal transportation networks, and facilitating mixed use development.

Roadway Projects

Reducing roadway capacity (for example, by removing or repurposing motor vehicle travel lanes) will generally reduce VMT and therefore is presumed to cause a less-than-significant impact on transportation. Generally, no transportation analysis is needed for such projects.

Building new roadways, adding roadway capacity in congested areas, or adding roadway capacity to areas where congestion is expected in the future, typically induces additional vehicle travel. For the types of projects previously indicated as likely to lead to additional vehicle travel, an estimate should be made of the change in vehicle travel resulting from the project.

For projects that increase roadway capacity, lead agencies can evaluate induced travel quantitatively by applying the results of existing studies that examine the magnitude of the increase of VMT resulting from a given increase in lane miles. These studies estimate the percent change in VMT for every percent change in miles to the roadway system (i.e., “elasticity”).³⁵ Given that lead agencies have discretion in choosing their methodology, and the studies on induced travel reveal a range of elasticities, lead agencies may appropriately apply professional judgment in studying the transportation effects of a particular project. The most recent major study, estimates an elasticity of 1.0, meaning that every percent change in lane miles results in a one percent increase in VMT.³⁶

To estimate VMT impacts from roadway expansion projects:

1. Determine the total lane-miles over an area that fully captures travel behavior changes resulting from the project (generally the region, but for projects affecting interregional travel look at all affected regions).
2. Determine the percent change in total lane miles that will result from the project.
3. Determine the total existing VMT over that same area.
4. Multiply the percent increase in lane miles by the existing VMT, and then multiply that by the elasticity from the induced travel literature:

[% increase in lane miles] x [existing VMT] x [elasticity] = [VMT resulting from the project]

A National Center for Sustainable Transportation tool can be used to apply this method:

<https://ncst.ucdavis.edu/research/tools>

This method would not be suitable for rural (non-MPO) locations in the state which are neither congested nor projected to become congested. It also may not be suitable for a new road that provides new connectivity across a barrier (e.g., a bridge across a river) if it would be expected to substantially

³⁵ See U.C. Davis, Institute for Transportation Studies (Oct. 2015) *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*; Boarnet and Handy (Sept. 2014) *Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions*, California Air Resources Board Policy Brief, available at https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf.

³⁶ See Duranton and Turner (2011) *The Fundamental Law of Road Congestion: Evidence from US cities*, available at <http://www.nber.org/papers/w15376>.

shorten existing trips. If it is likely to be substantial, the trips-shortening effect should be examined explicitly.

The effects of roadway capacity on vehicle travel can also be applied at a programmatic level. For example, in a regional planning process the lead agency can use that program-level analysis to streamline later project-level analysis. (See CEQA Guidelines, § 15168.) A program-level analysis of VMT should include effects of the program on land use patterns, and the VMT that results from those land use effects. In order for a program-level document to adequately analyze potential induced demand from a project or program of roadway capacity expansion, lead agencies cannot assume a fixed land use pattern (i.e., a land use pattern that does not vary in response to the provision of roadway capacity). A proper analysis should account for land use investment and development pattern changes that react in a reasonable manner to changes in accessibility created by transportation infrastructure investments (whether at the project or program level).

Mitigation and Alternatives

Induced VMT has the potential to reduce or eliminate congestion relief benefits, increase VMT, and increase other environmental impacts that result from vehicle travel.³⁷ If those effects are significant, the lead agency will need to consider mitigation or alternatives. In the context of increased travel that is induced by capacity increases, appropriate mitigation and alternatives that a lead agency might consider include the following:

- Tolling new lanes to encourage carpools and fund transit improvements
- Converting existing general purpose lanes to HOV or HOT lanes
- Implementing or funding off-site travel demand management
- Implementing Intelligent Transportation Systems (ITS) strategies to improve passenger throughput on existing lanes

Tolling and other management strategies can have the additional benefit of preventing congestion and maintaining free-flow conditions, conferring substantial benefits to road users as discussed above.

G. Analyzing Other Impacts Related to Transportation

While requiring a change in the methodology of assessing transportation impacts, Public Resources Code section 21099 notes that this change “does not relieve a public agency of the requirement to analyze a project’s potentially significant transportation impacts related to air quality, noise, safety, or any other impact associated with transportation.” OPR expects that lead agencies will continue to

³⁷ See National Center for Sustainable Transportation (Oct. 2015) *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*, available at http://www.dot.ca.gov/newtech/researchreports/reports/2015/10-12-2015-NCST_Brief_InducedTravel_CS6_v3.pdf; see Duranton and Turner (2011) *The Fundamental Law of Road Congestion: Evidence from US cities*, available at <http://www.nber.org/papers/w15376>.

address mobile source emissions in the air quality and noise sections of an environmental document and the corresponding studies that support the analysis in those sections. Lead agencies should continue to address environmental impacts of a proposed project pursuant to CEQA's requirements, using a format that is appropriate for their particular project.

Because safety concerns result from many different factors, they are best addressed at a programmatic level (i.e., in a general plan or regional transportation plan) in cooperation with local governments, metropolitan planning organizations, and, where the state highway system is involved, the California Department of Transportation. In most cases, such an analysis would not be appropriate on a project-by-project basis. Increases in traffic volumes at a particular location resulting from a project typically cannot be estimated with sufficient accuracy or precision to provide useful information for an analysis of safety concerns. Moreover, an array of factors affect travel demand (e.g., strength of the local economy, price of gasoline), causing substantial additional uncertainty. Appendix B of OPR's [General Plan Guidelines](#) summarizes research which could be used to guide a programmatic analysis under CEQA. Lead agencies should note that automobile congestion or delay does not constitute a significant environmental impact (Pub. Resources Code, §21099(b)(2)), and safety should not be used as a proxy for road capacity.

H. VMT Mitigation and Alternatives

When a lead agency identifies a significant impact, it must identify feasible mitigation measures that could avoid or substantially reduce that impact. (Pub. Resources Code, § 21002.1, subd. (a).) Additionally, CEQA requires that an environmental impact report identify feasible alternatives that could avoid or substantially reduce a project's significant environmental impacts.

Indeed, the California Court of Appeal recently held that a long-term regional transportation plan was deficient for failing to discuss an alternative which could significantly reduce total vehicle miles traveled. In *Cleveland National Forest Foundation v. San Diego Association of Governments, et al.* (2017) 17 Cal.App.5th 413, the court found that omission "inexplicable" given the lead agency's "acknowledgment in its Climate Action Strategy that the state's efforts to reduce greenhouse gas emissions from on-road transportation will not succeed if the amount of driving, or vehicle miles traveled, is not significantly reduced." (*Cleveland National Forest Foundation, supra*, 17 Cal.App.5th at p. 436.) Additionally, the court noted that the project alternatives focused primarily on congestion relief even though "the [regional] transportation plan is a long-term and congestion relief is not necessarily an effective long-term strategy." (*Id.* at p. 437.) The court concluded its discussion of the alternatives analysis by stating: "Given the acknowledged long-term drawbacks of congestion relief alternatives, there is not substantial evidence to support the EIR's exclusion of an alternative focused primarily on significantly reducing vehicle trips." (*Ibid.*)

Several examples of potential mitigation measures and alternatives to reduce VMT are described below. However, the selection of particular mitigation measures and alternatives are left to the discretion of

the lead agency, and mitigation measures may vary, depending on the proposed project and significant impacts, if any. Further, OPR expects that agencies will continue to innovate and find new ways to reduce vehicular travel.

Potential measures to reduce vehicle miles traveled include, but are not limited to:

- Improve or increase access to transit.
- Increase access to common goods and services, such as groceries, schools, and daycare.
- Incorporate affordable housing into the project.
- Incorporate neighborhood electric vehicle network.
- Orient the project toward transit, bicycle and pedestrian facilities.
- Improve pedestrian or bicycle networks, or transit service.
- Provide traffic calming.
- Provide bicycle parking.
- Limit or eliminate parking supply.
- Unbundle parking costs.
- Provide parking cash-out programs.
- Implement roadway pricing.
- Implement or provide access to a commute reduction program.
- Provide car-sharing, bike sharing, and ride-sharing programs.
- Provide transit passes.
- Shifting single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching services.
- Providing telework options.
- Providing incentives or subsidies that increase the use of modes other than single-occupancy vehicle.
- Providing on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms.
- Providing employee transportation coordinators at employment sites.
- Providing a guaranteed ride home service to users of non-auto modes.

Notably, because VMT is largely a regional impact, regional VMT-reduction programs may be an appropriate form of mitigation. In lieu fees have been found to be valid mitigation where there is both a commitment to pay fees and evidence that mitigation will actually occur. (*Save Our Peninsula Committee v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 140-141; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 727–728.) Fee programs are particularly useful to address cumulative impacts. (CEQA Guidelines, § 15130, subd. (a)(3) [a “project’s incremental contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact”].) The mitigation program must undergo CEQA evaluation, either on the program as a whole, or the in-lieu fees or other mitigation must be evaluated

on a project-specific basis. (*California Native Plant Society v. County of El Dorado* (2009) 170 Cal.App.4th 1026.) That CEQA evaluation could be part of a larger program, such as a regional transportation plan, analyzed in a Program EIR. (CEQA Guidelines, § 15168.)

Examples of project alternatives that may reduce vehicle miles traveled include, but are not limited to:

- Locate the project in an area of the region that already exhibits low VMT.
- Locate the project near transit.
- Increase project density.
- Increase the mix of uses within the project or within the project's surroundings.
- Increase connectivity and/or intersection density on the project site.
- Deploy management strategies (e.g., pricing, vehicle occupancy requirements) on roadways or roadway lanes.

Appendix 1. Considerations About Which VMT to Count

Consistent with the obligation to make a good faith effort to disclose the environmental consequences of a project, lead agencies have discretion to choose the most appropriate methodology to evaluate project impacts.³⁸ A lead agency can evaluate a project's effect on VMT in numerous ways. The purpose of this document is to provide technical considerations in determining which methodology may be most useful for various project types.

Background on Estimating Vehicle Miles Traveled

Before discussing specific methodological recommendations, this section provides a brief overview of modeling and counting VMT, including some key terminology.

Here is an illustrative example of some methods of estimating vehicle miles traveled. Consider the following hypothetical travel day (all by automobile):

1. Residence to Coffee Shop
2. Coffee Shop to Work
3. Work to Sandwich Shop
4. Sandwich Shop to Work
5. Work to Residence
6. Residence to Store
7. Store to Residence

Trip-based assessment of a project's effect on travel behavior counts VMT from individual trips to and from the project. It is the most basic, and traditionally the most common, method of counting VMT. A trip-based VMT assessment of the residence in the above example would consider segments 1, 5, 6 and 7. For residential projects, the sum of home-based trips is called *home-based* VMT.

A *tour-based* assessment counts the entire home-back-to-home tour that includes the project. A tour-based VMT assessment of the residence in the above example would consider segments 1, 2, 3, 4, and 5 in one tour, and 6 and 7 in a second tour. A tour-based assessment of the workplace would include segments 1, 2, 3, 4, and 5. Together, all tours comprise *household* VMT.

³⁸ The California Supreme Court has explained that when an agency has prepared an environmental impact report:

[T]he issue is not whether the [lead agency's] studies are irrefutable or whether they could have been better. The relevant issue is only whether the studies are sufficiently credible to be considered as part of the total evidence that supports the [lead agency's] finding[.]

(*Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376, 409; see also *Eureka Citizens for Responsible Gov't v. City of Eureka* (2007) 147 Cal.App.4th 357, 372.)

Both trip- and tour-based assessments can be used as measures of transportation efficiency, using denominators such as per capita, per employee, or per person-trip.

Trip- and Tour-based Assessment of VMT

As illustrated above, a tour-based assessment of VMT is a more complete characterization of a project's effect on VMT. In many cases, a project affects travel behavior beyond the first destination. The location and characteristics of the home and workplace will often be the main drivers of VMT. For example, a residential or office development located near high quality transit will likely lead to some commute trips utilizing transit, affecting mode choice on the rest of the tour.

Characteristics of an office project can also affect an employee's VMT beyond the work tour. For example, a workplace located at the urban periphery, far from transit, can require an employee to own a car, which in turn affects the entirety of an employee's travel behavior and VMT. For this reason, when estimating the effect of an office development on VMT, it may be appropriate to consider total employee VMT if data and tools, such as tour-based models, are available. This is consistent with CEQA's requirement to evaluate both direct and *indirect* effects of a project. (See CEQA Guidelines, § 15064, subd. (d)(2).)

Assessing Change in Total VMT

A third method, estimating the *change in total VMT* with and without the project, can evaluate whether a project is likely to divert existing trips, and what the effect of those diversions will be on total VMT. This method answers the question, "What is the net effect of the project on area VMT?" As an illustration, assessing the total change in VMT for a grocery store built in a food desert that diverts trips from more distant stores could reveal a net VMT reduction. The analysis should address the full area over which the project affects travel behavior, even if the effect on travel behavior crosses political boundaries.

Using Models to Estimate VMT

Travel demand models, sketch models, spreadsheet models, research, and data can all be used to calculate and estimate VMT (see Appendix F of the [preliminary discussion draft](#)). To the extent possible, lead agencies should choose models that have sensitivity to features of the project that affect VMT. Those tools and resources can also assist in establishing thresholds of significance and estimating VMT reduction attributable to mitigation measures and project alternatives. When using models and tools for those various purposes, agencies should use comparable data and methods, in order to set up an "apples-to-apples" comparison between thresholds, VMT estimates, and VMT mitigation estimates.

Models can work together. For example, agencies can use travel demand models or survey data to estimate existing trip lengths and input those into sketch models such as CalEEMod to achieve more

accurate results. Whenever possible, agencies should input localized trip lengths into a sketch model to tailor the analysis to the project location. However, in doing so, agencies should be careful to avoid double counting if the sketch model includes other inputs or toggles that are proxies for trip length (e.g., distance to city center). Generally, if an agency changes any sketch model defaults, it should record and report those changes for transparency of analysis. Again, trip length data should come from the same source as data used to calculate thresholds to be sure of an “apples-to-apples” comparison.

Additional background information regarding travel demand models is available in the California Transportation Commission’s [“2010 Regional Transportation Plan Guidelines,”](#) beginning at page 35.

Appendix 2. Induced Travel: Mechanisms, Research, and Additional Assessment Approaches

Induced travel occurs where roadway capacity is expanded in an area of present or projected future congestion. The effect typically manifests over several years. Lower travel times make the modified facility more attractive to travelers, resulting in the following trip-making changes:

- **Longer trips.** The ability to travel a long distance in a shorter time increases the attractiveness of destinations that are farther away, increasing trip length and vehicle travel.
- **Changes in mode choice.** When transportation investments are devoted to reducing automobile travel time, travelers tend to shift toward automobile use from other modes, which increases vehicle travel.
- **Route changes.** Faster travel times on a route attract more drivers to that route from other routes, which can increase or decrease vehicle travel depending on whether it shortens or lengthens trips.
- **Newly generated trips.** Increasing travel speeds can induce additional trips, which increases vehicle travel. For example, an individual who previously telecommuted or purchased goods on the internet might choose to accomplish those tasks via automobile trips as a result of increased speeds.
- **Land Use Changes.** Faster travel times along a corridor lead to land development farther along that corridor; that new development generates and attracts longer trips, which increases vehicle travel. Over several years, this induced growth component of induced vehicle travel can be substantial, making it critical to include in analyses.

Each of these effects has implications for the total amount of vehicle travel. These effects operate over different time scales. For example, changes in mode choice might occur immediately, while land use changes typically take a few years or longer. CEQA requires lead agencies to analyze both short-term and long-term effects.

Evidence of Induced Vehicle Travel. A large number of peer reviewed studies³⁹ have demonstrated a causal link between highway capacity increases and VMT increases. Many provide quantitative estimates of the magnitude of the induced VMT phenomenon. Collectively, they provide high quality evidence of the existence and magnitude of the induced travel effect.

³⁹ See, e.g., Boarnet and Handy (Sept. 2014) Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions, California Air Resources Board Policy Brief, available at https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf; National Center for Sustainable Transportation (Oct. 2015) *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*, available at http://www.dot.ca.gov/research/researchreports/reports/2015/10-12-2015-NCST_Brief_InducedTravel_CS6_v3.pdf.

Most of these studies express the amount of induced vehicle travel as an “elasticity,” which is a multiplier that describes the additional vehicle travel resulting from an additional lane mile of roadway capacity added. For example, an elasticity of 0.6 would signify an 0.6 percent increase in vehicle travel for every 1.0 percent increase in lane miles. Many of these studies distinguish “short run elasticity” (increase in vehicle travel in the first few years) from “long run elasticity” (increase in vehicle travel beyond the first few years). Long run elasticity is larger than short run elasticity, because as time passes, more of the components of induced vehicle travel materialize. Generally, short run elasticity can be thought of as excluding the effects of land use change, while long run elasticity includes them. Most studies find a long run elasticity between 0.6 and just over 1.0,⁴⁰ meaning that every increase in lanes miles of one percent leads to an increase in vehicle travel of 0.6 to 1.0 percent. The most recent major study finds the elasticity of vehicle travel by lanes miles added to be 1.03; in other words, each percent increase in lane miles results in a 1.03 percent increase in vehicle travel.⁴¹ (An elasticity greater than 1.0 can occur because new lanes induce vehicle travel that spills beyond the project location.) In CEQA analysis, the long-run elasticity should be used, as it captures the full effect of the project rather than just the early-stage effect.

Quantifying Induced Vehicle Travel Using Models. Lead agencies can generally achieve the most accurate assessment of induced vehicle travel resulting from roadway capacity increasing projects by applying elasticities from the academic literature, because those estimates include vehicle travel resulting from induced land use. If a lead agency chooses to use a travel demand model, additional analysis would be needed to account for induced land use. This section describes some approaches to undertaking that additional analysis.

Proper use of a travel demand model can capture the following components of induced VMT:

- Trip length (generally increases VMT)
- Mode shift (generally shifts from other modes toward automobile use, increasing VMT)
- Route changes (can act to increase or decrease VMT)
- Newly generated trips (generally increases VMT)
 - Note that not all travel demand models have sensitivity to this factor, so an off-model estimate may be necessary if this effect could be substantial.

However, estimating long-run induced VMT also requires an estimate of the project’s effects on land use. This component of the analysis is important because it has the potential to be a large component of

⁴⁰ See Boarnet and Handy (Sept. 2014) [Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions](https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf), California Air Resources Board Policy Brief, p. 2, available at https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf.

⁴¹ Duranton and Turner (2011) *The Fundamental Law of Road Congestion: Evidence from US cities*, available at <http://www.nber.org/papers/w15376>.

the overall induced travel effect. Options for estimating and incorporating the VMT effects that are caused by the subsequent land use changes include:

1. *Employ an expert panel.* An expert panel could assess changes to land use development that would likely result from the project. This assessment could then be analyzed by the travel demand model to assess effects on vehicle travel. Induced vehicle travel assessed via this approach should be verified using elasticities found in the academic literature.
2. *Adjust model results to align with the empirical research.* If the travel demand model analysis is performed without incorporating projected land use changes resulting from the project, the assessed vehicle travel should be adjusted upward to account for those land use changes. The assessed VMT after adjustment should fall within the range found in the academic literature.
3. *Employ a land use model, running it iteratively with a travel demand model.* A land use model can be used to estimate the land use effects of a roadway capacity increase, and the traffic patterns that result from the land use change can then be fed back into the travel demand model. The land use model and travel demand model can be iterated to produce an accurate result.

A project which provides new connectivity across a barrier, such as a new bridge across a river, may provide a shortened path between existing origins and destinations, thereby shortening existing trips. In rare cases, this trip-shortening effect might be substantial enough to reduce the amount of vehicle travel resulting from the project below the range found in the elasticities in the academic literature, or even lead a net reduction in vehicle travel overall. In such cases, the trip-shortening effect could be examined explicitly.

Whenever employing a travel demand model to assess induced vehicle travel, any limitation or known lack of sensitivity in the analysis that might cause substantial errors in the VMT estimate (for example, model insensitivity to one of the components of induced VMT described above) should be disclosed and characterized, and a description should be provided on how it could influence the analysis results. A discussion of the potential error or bias should be carried into analyses that rely on the VMT analysis, such as greenhouse gas emissions, air quality, energy, and noise.



CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Planning and Development Services

DATE: July 20, 2020

SUBJECT: Consider Approval - Res. 20-____, Final Map Tract 6260, located at the northeast corner of Shaw Avenue and Locan Avenue (DYP 6260 LP, A California Limited Partnership).

Staff: Mike Harrison, City Engineer

Recommendation: Approve

ATTACHMENTS:

1. Res. 20-____
2. Vicinity Map
3. Copy of Final Map

CONFLICT OF INTEREST

Councilmember Jose Flores owns property within 500 feet of subject property and, pursuant to law, must abstain from participation and decision regarding this item.

RECOMMENDATION

For the City Council to approve a resolution which will:

1. Accept the offer of dedication of parcels and public utility easement within Tract 6260, and;
2. Authorize recording of the final map.

EXECUTIVE SUMMARY

The subdivider, DYP 6260 LP has submitted a final map for approval conforming to the conditionally approved tentative map. The improvement plans are being processed by City staff. The improvements to be installed include curb, gutter, sidewalk, street lights, fire hydrants, street paving, sanitary sewer, water main and landscaping. The subject tract is located on the northeast corner of Shaw Avenue and Locan Avenue. It contains approximately 10.32 acres and consists of 34 units, zoned R-1.

FISCAL IMPACT

The subdivider will be installing curb, gutter, sidewalk, street paving, sanitary sewers, water mains, and neighborhood paseo landscaping which will be perpetually maintained by the City of Clovis.

REASON FOR RECOMMENDATION

The subdivision agreement has been executed by the subdivider and all development fees paid or deferred in accordance with Municipal Code. The agreement provides for the developer to complete a technically correct map and improvement plans and to complete all required improvements in compliance with the conditions of approval. The improvements are adequately secured.

ACTIONS FOLLOWING APPROVAL

The final map will be filed with the Fresno County Recorder's office for recording.

Prepared by: David Gonzalez, Civil Engineer

Reviewed by: City Manager *DH*

RESOLUTION 20-____**RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLOVIS
APPROVING FINAL SUBDIVISION MAP FOR TRACT NO. 6260**

WHEREAS, a final map has been presented to the City Council of the City of Clovis for Tract 6260, by The City of Clovis, a Municipal Corporation, and

WHEREAS, said final tract conforms to the requirements of Chapter 2, Part 2, of Division 4 of the Business and Professions Code and to local ordinances.

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Clovis as follows:

1. The final map of Tract 6260, consisting of three (3) sheets, a copy of which is on file with the City Clerk, be and the same is hereby approved.
2. Approval of the Subdivision improvement plans for said tract are being completed by City Staff.
3. The preliminary Engineer's Estimate of development cost of said tract, a copy of which is on file with the City Clerk, be and the same is hereby approved and adopted as the estimated cost of improvements for said subdivision in the sum of \$1,458,000.00.
4. The offer and dedication for public use of the parcels and easements specified on said map are accepted by the City of Clovis and the City Clerk is authorized and directed to execute said subdivision map.
5. This Council finds that the proposed subdivision, together with the provisions for its design and improvement, are consistent with applicable general and specific plans of the City of Clovis.
6. Improvement Security, as provided hereunder and in said Subdivision Agreement, is fixed at one hundred percent (100%) of the remaining improvements to be constructed or the sum of \$1,458,000.00 for guaranteeing specific performance of said agreement and fifty percent (50%) of the remaining improvements or the sum of \$729,000.00 for payment of labor and materials furnished by contractors, subcontractors, laborers and materialmen in connection with the improvements required to be made or constructed by said subdivider in conformity with said subdivision map or said agreement.
7. Subdivider shall furnish a bond in the sum of \$145,800.00 being the amount determined by the City Council of the City as necessary for the guarantee and warranty of the work for a period of one year following the completion and acceptance of the tract against any defective work or labor done, or defective

ATTACHMENT 1

materials furnished. Said bond is required to be furnished prior to acceptance of the tract by the City Council.

* * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on July 20, 2020, by the following vote, to wit:

- AYES:
- NOES:
- ABSENT:
- ABSTAIN:

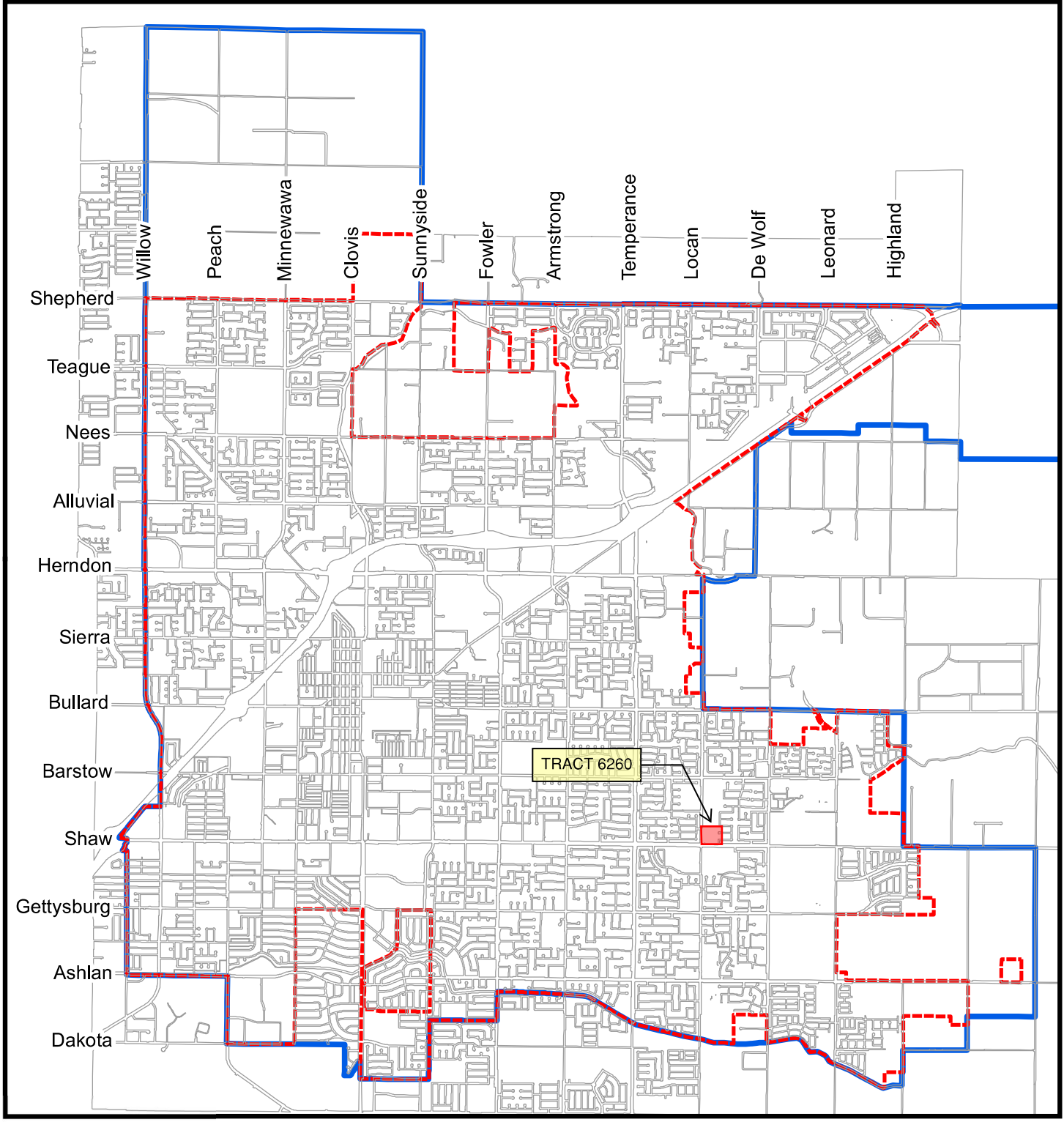
DATED: July 20, 2020

Mayor

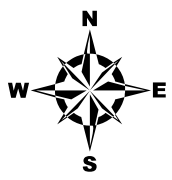
City Clerk

VICINITY MAP

TM 6260



ATTACHMENT 2



OWNERS STATEMENT:

THE UNDERSIGNED, BEING ALL PARTIES HAVING ANY RECORD TITLE INTEREST IN THE LAND WITHIN THIS SUBDIVISION, HEREBY CONSENT TO THE PREPARATION AND RECORDATION OF THIS MAP AND OFFER FOR DEDICATION FOR PUBLIC USE THE PARCELS AND EASEMENTS SPECIFIED ON SAID MAP AS INTENDED FOR PUBLIC USE FOR THE PURPOSES SPECIFIED THEREIN.

DYP 6260 LP, A CALIFORNIA LIMITED PARTNERSHIP

BY: CHRISTOPHER BRANDON DE YOUNG
EXECUTIVE VICE PRESIDENT

NOTARY ACKNOWLEDGMENTS:

STATE OF CALIFORNIA } A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE
COUNTY OF FRESNO } VERIFIES ONLY THE IDENTITY OF THE INDIVIDUAL WHO SIGNED THE
DOCUMENT TO WHICH THIS CERTIFICATE IS ATTACHED AND NOT THE
TRUTHFULNESS, ACCURACY, OR VALIDITY OF THAT DOCUMENT

ON _____, 2020 BEFORE ME _____, NOTARY PUBLIC,
PERSONALLY APPEARED _____ WHO PROVED TO ME ON THE BASIS OF
SATISFACTORY EVIDENCE TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE WITHIN
INSTRUMENT AND ACKNOWLEDGED TO ME THAT SHE EXECUTED THE SAME IN HIS/HER
AUTHORIZED CAPACITY AND THAT BY HIS/HER SIGNATURE ON THE INSTRUMENT THE PERSON, OR
THE ENTITY UPON BEHALF OF WHICH THE PERSON ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA THAT
THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND.

PRINT NAME _____ SIGNATURE _____
MY COMMISSION EXPIRES: _____ COUNTY OF: _____
COMMISSION NUMBER: _____

BENEFICIARY:

WATHEN SIGNATURE MANSIONETTE ESTATES, INC., A CALIFORNIA CORPORATION, AS BENEFICIARY UNDER
DEED OF TRUST RECORDED _____ IN OFFICIAL RECORDS UNDER RECORDERS'
SERIAL NUMBER 2020-_____

PRINT NAME _____ SIGNATURE _____

NOTARY ACKNOWLEDGMENTS:

STATE OF CALIFORNIA } A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE
COUNTY OF FRESNO } VERIFIES ONLY THE IDENTITY OF THE INDIVIDUAL WHO SIGNED THE
DOCUMENT TO WHICH THIS CERTIFICATE IS ATTACHED AND NOT THE
TRUTHFULNESS, ACCURACY, OR VALIDITY OF THAT DOCUMENT

ON _____, 2020 BEFORE ME _____, NOTARY PUBLIC,
PERSONALLY APPEARED _____ WHO PROVED TO ME ON THE BASIS OF
SATISFACTORY EVIDENCE TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE WITHIN
INSTRUMENT AND ACKNOWLEDGED TO ME THAT SHE EXECUTED THE SAME IN HIS/HER
AUTHORIZED CAPACITY AND THAT BY HIS/HER SIGNATURE ON THE INSTRUMENT THE PERSON, OR
THE ENTITY UPON BEHALF OF WHICH THE PERSON ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA THAT
THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND.

PRINT NAME _____ SIGNATURE _____
MY COMMISSION EXPIRES: _____ COUNTY OF: _____
COMMISSION NUMBER: _____

BENEFICIARY:

UNITED SECURITY BANK, AS BENEFICIARY UNDER DEED OF TRUST RECORDED _____
IN OFFICIAL RECORDS UNDER RECORDERS SERIAL NUMBER 2020-_____

PRINT NAME _____ SIGNATURE _____

NOTARY ACKNOWLEDGMENTS:

STATE OF CALIFORNIA } A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE
COUNTY OF FRESNO } VERIFIES ONLY THE IDENTITY OF THE INDIVIDUAL WHO SIGNED THE
DOCUMENT TO WHICH THIS CERTIFICATE IS ATTACHED AND NOT THE
TRUTHFULNESS, ACCURACY, OR VALIDITY OF THAT DOCUMENT

ON _____, 2020 BEFORE ME _____, NOTARY PUBLIC,
PERSONALLY APPEARED _____ WHO PROVED TO ME ON THE BASIS OF
SATISFACTORY EVIDENCE TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE WITHIN
INSTRUMENT AND ACKNOWLEDGED TO ME THAT SHE EXECUTED THE SAME IN HIS/HER
AUTHORIZED CAPACITY AND THAT BY HIS/HER SIGNATURE ON THE INSTRUMENT THE PERSON, OR
THE ENTITY UPON BEHALF OF WHICH THE PERSON ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA THAT
THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND.

PRINT NAME _____ SIGNATURE _____
MY COMMISSION EXPIRES: _____ COUNTY OF: _____
COMMISSION NUMBER: _____

FINAL MAP OF
TRACT NO. 6260

IN THE CITY OF CLOVIS, COUNTY OF FRESNO, CALIFORNIA
SURVEYED AND PLATTED IN JANUARY 2015
BY YAMABE & HORN ENGINEERING, INC.
CONSISTING OF 3 SHEETS
SHEET 1 OF 3

LEGAL DESCRIPTION:

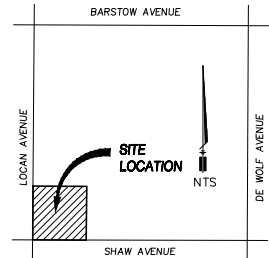
THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF CLOVIS, COUNTY OF FRESNO, STATE OF CALIFORNIA AND IS DESCRIBED AS FOLLOWS:

THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 13 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLATS THEREOF.

THIS LAND IS SUBJECT TO THE FOLLOWING:

- 1. THE EFFECT OF AN INSTRUMENT ENTITLED "BEFORE THE BOARD OF DIRECTORS OF THE FRESNO METROPOLITAN FLOOD CONTROL DISTRICT RESOLUTION PROVIDING FOR THE RECORDATION OF A MAP IDENTIFYING AREAS SUBJECT TO PAYMENT OF DRAINAGE FEES AND/OR REQUIREMENTS TO CONSTRUCT PLANNED LOCAL DRAINAGE FACILITIES", RECORDED JULY 31, 1995 AS DOCUMENT NO. 95092128, OFFICIAL RECORDS FRESNO COUNTY.
- 2. A RIGHT OF WAY FOR DITCHES AND CANALS AS RESERVED BY THE UNITED STATES OF AMERICA IN THE PATENT RECORDED NOVEMBER 1, 1872 IN BOOK E OF PATENTS, 3 PAGE 33, OFFICIAL RECORDS FRESNO COUNTY. (NOT PLOTTABLE)
- 3. AN EASEMENT FOR CANAL, EMBANKMENTS, BRANCHES AND INCIDENTAL PURPOSES RECORDED AUGUST 13, 1873 IN BOOK J OF DEEDS, PAGE 36, OFFICIAL RECORDS FRESNO COUNTY. (NOT PLOTTABLE).
- 4. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2-5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 2004-01, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED MAY 5, 2017 AS DOCUMENT NO. 2017-0055779, OFFICIAL RECORDS FRESNO COUNTY. MODIFICATIONS TO THE TERMS AND PROVISIONS OF SAID DOCUMENT RECORDED MAY 5, 2017 AS DOCUMENT NO. 2017-0055780, OFFICIAL RECORDS FRESNO COUNTY.
- 5. A STATEMENT OF COVENANTS AFFECTING LAND DEVELOPMENT AND CREATION OF LIEN FOR TRACT NO. 5176 REGARDING GENERAL DEVELOPMENT IMPACT FEES DEFERMENT, RECORDED _____, 2020 AS DOCUMENT NO. 2020-_____. OFFICIAL RECORDS FRESNO COUNTY.
- 6. A STATEMENT OF COVENANTS AFFECTING LAND DEVELOPMENT FOR TRACT NO. 5176 REGARDING LANDSCAPE MAINTENANCE DISTRICT, RECORDED _____, 2020 AS DOCUMENT NO. 2020-_____. OFFICIAL RECORDS FRESNO COUNTY.
- 7. A STATEMENT OF COVENANTS AFFECTING LAND DEVELOPMENT FOR TRACT NO. 5176 REGARDING FENCE/WALL PERPETUAL MAINTENANCE, RECORDED _____, 2020 AS DOCUMENT NO. 2020-_____. OFFICIAL RECORDS FRESNO COUNTY.
- 8. A STATEMENT OF COVENANTS AFFECTING LAND DEVELOPMENT FOR TRACT NO. 5176 REGARDING RIGHT TO FARM NOTICE, RECORDED _____, 2020 AS DOCUMENT NO. 2020-_____. OFFICIAL RECORDS FRESNO COUNTY.

VICINITY MAP:



SURVEYOR'S STATEMENT

THIS MAP WAS PREPARED BY ME OR UNDER MY DIRECTION AND IS BASED UPON A FIELD SURVEY IN CONFORMANCE WITH THE REQUIREMENTS OF THE SUBDIVISION MAP ACT AND LOCAL ORDINANCE AT THE REQUEST OF WATHEN FAMILY BUILDERS ON JANUARY 28, 2015. I HEREBY STATE THAT ALL THE MONUMENTS ARE OF THE CHARACTER AND OCCUPY THE POSITIONS INDICATED, OR THAT THEY WILL BE SET IN THOSE POSITIONS ON OR BEFORE ONE YEAR OF THE DATE THIS MAP IS RECORDED, OR ANY TIME EXTENSION APPROVED BY THE CITY ENGINEER. THE MONUMENTS ARE, OR WILL BE, SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED, AND THIS FINAL MAP SUBSTANTIALLY CONFORMS TO THE CONDITIONALLY APPROVED TENTATIVE MAP.

DAVID C. HORN, PLS 8204 _____ DATE _____

CITY ENGINEER'S STATEMENT

I MICHAEL J. HARRISON, CITY ENGINEER OF THE CITY OF CLOVIS HEREBY STATE THAT I HAVE CAREFULLY EXAMINED THIS MAP, THAT THE SUBDIVISION SHOWN IS SUBSTANTIALLY THE SAME AS IT APPEARED ON THE TENTATIVE MAP AND ANY APPROVED ALTERATIONS THEREOF, THAT ALL PROVISIONS OF THE SUBDIVISION MAP ACT AND OF ANY LOCAL ORDINANCES APPLICABLE AT THE TIME OF APPROVAL OF THE TENTATIVE MAP HAVE BEEN COMPLIED WITH, AND THAT I AM SATISFIED THAT THE MAP IS TECHNICALLY CORRECT.

MICHAEL J. HARRISON, P.L.S. 8088 _____ DATE _____
CITY ENGINEER

CITY CLERK'S STATEMENT

I HEREBY STATE THAT THE CITY COUNCIL OF THE CITY OF CLOVIS, BY RESOLUTION ADOPTED _____, 2018 APPROVED THE WITHIN MAP AND ACCEPTED, SUBJECT TO IMPROVEMENT, ON BEHALF OF THE PUBLIC, ANY REAL PROPERTY AND EASEMENTS OFFERED FOR DEDICATION FOR PUBLIC USE IN CONFORMITY WITH THE TERMS OF THE OFFER OF DEDICATION, AND APPROVED THE ABANDONMENT OF THOSE PUBLIC STREETS AND/OR PUBLIC EASEMENTS NOT SHOWN ON THE MAP AND NOTED AS ABANDONED BY THE FILING OF THE MAP.

JOHN HOLT, CITY CLERK _____ DATE _____

RECORDERS CERTIFICATE

DOCUMENT NO. _____ FEE PAID \$12.00
FILED THIS _____ DAY OF _____, 2020, AT _____ M.
IN VOLUME _____ OF PLATS, AT PAGES _____ THROUGH _____, FRESNO COUNTY RECORDS,
AT THE REQUEST OF FIDELITY NATIONAL TITLE COMPANY
PAUL DICTOS, C.P.A., FRESNO COUNTY ASSESSOR-RECORDER
BY: _____ DEPUTY

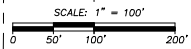


2885 N. BURL AVE.
SUITE 101
FRESNO, CA 93727
TEL (559) 244-3123
FAX (559) 244-3120

FINAL MAP OF TRACT NO. 6260

IN THE CITY OF CLOVIS FRESNO COUNTY, CALIFORNIA
 SURVEYED AND PLATTED IN APRIL 2014
 BY YAMABE & HORN ENGINEERING, INC.
 CONSISTING OF 2 SHEETS
 SHEET 2 OF 3

BOUNDARY ANALYSIS



LEGEND

- MONUMENT FOUND & ACCEPTED AS NOTED UNLESS OTHERWISE NOTED
- R1 () RECORD DATA PER TRACT NO. 5970 RECORDED IN VOLUME 82 OF PLATS, PAGES 25-26, F.C.R.
- R2 () RECORD DATA PER TRACT NO. 4683 RECORDED IN VOLUME 66 OF PLATS, PAGES 58-59, F.C.R.
- R3 () RECORD DATA PER TRACT NO. 5418 RECORDED IN VOLUME 75 OF PLATS, PAGES 27-30, F.C.R.
- ◆ PREVIOUSLY GRANTED EASEMENT FOR PUBLIC ROAD PURPOSES PER THE INSTRUMENT RECORDED APRIL 28, 1904 IN VOLUME 219 OF DEEDS, PAGE 375, O.R.F.C.
- ◇ PREVIOUSLY GRANTED EASEMENT FOR PUBLIC ROAD PURPOSES PER THE INSTRUMENT RECORDED MARCH 6, 1918 IN VOLUME 651 OF DEEDS, PAGE 428, O.R.F.C.
- ◆ PREVIOUSLY DEDICATED FOR PUBLIC STREET PURPOSES PER THE MAP OF TRACT NO. 4683 RECORDED IN VOLUME 66 OF PLATS, PAGES 58-59, F.C.R.
- ◆ PREVIOUSLY GRANTED TO THE COUNTY OF FRESNO PER THE GRANT DEED RECORDED JUNE 21, 1975 IN VOLUME 6458 OF DEEDS, PAGE 94, AS DOCUMENT NO. 52028, O.R.F.C.
- △ PREVIOUSLY DEDICATED FOR PUBLIC STREET PURPOSES PER THE MAP OF TRACT NO. 5970 RECORDED IN VOLUME 82 OF PLATS, PAGES 25-26, F.C.R.
- ▲ PREVIOUSLY GRANTED TO THE CITY OF CLOVIS FOR PUBLIC STREET PURPOSES PER THE GRANT DEED RECORDED FEBRUARY 28, 2007 AS DOCUMENT NO. 2007-004203, O.R.F.C.
- ◆ PREVIOUSLY GRANTED FOR PUBLIC ROAD PURPOSES PER THE GRANT DEED RECORDED APRIL 23, 1975, IN BOOK 6423, PAGE 586, O.R.F.C.
- * AREA OF RIGHT OF ENTRY EASEMENT GRANTED TO THE CITY OF CLOVIS PER DOCUMENT ENTITLED "RIGHT OF ENTRY FOR STREET IMPROVEMENTS ALONG SHAW AVENUE", RECORDED SEPTEMBER 27, 2006 AS DOCUMENT NO. 2006-0206248, O.R.F.C.
- ◆ PREVIOUSLY GRANTED EASEMENT FOR PUBLIC ROAD PURPOSES PER THE INSTRUMENT RECORDED AUGUST 9, 1959 AS DOC. NO. 1959-0116891, O.R.F.C.
- CR CORNER RECORD ON FILE WITH THE FRESNO COUNTY SURVEYOR
- O.R.F.C. OFFICIAL RECORDS FRESNO COUNTY
- F.C.R. FRESNO COUNTY RECORDS
- CFR CALCULATED FROM RECORD DATA
- SECTION LINE
- - - EXISTING PROPERTY / RIGHT OF WAY LINE
- - - EASEMENT LINE
- LIMITS OF SUBDIVISION

PURSUANT TO SECTION 66499.20.2 OF THE SUBDIVISION MAP ACT, THE FILING OF THIS MAP CONSTITUTES THE ABANDONMENT OF THE FOLLOWING EASEMENTS LYING WITHIN THE LIMITS OF THIS SUBDIVISION:

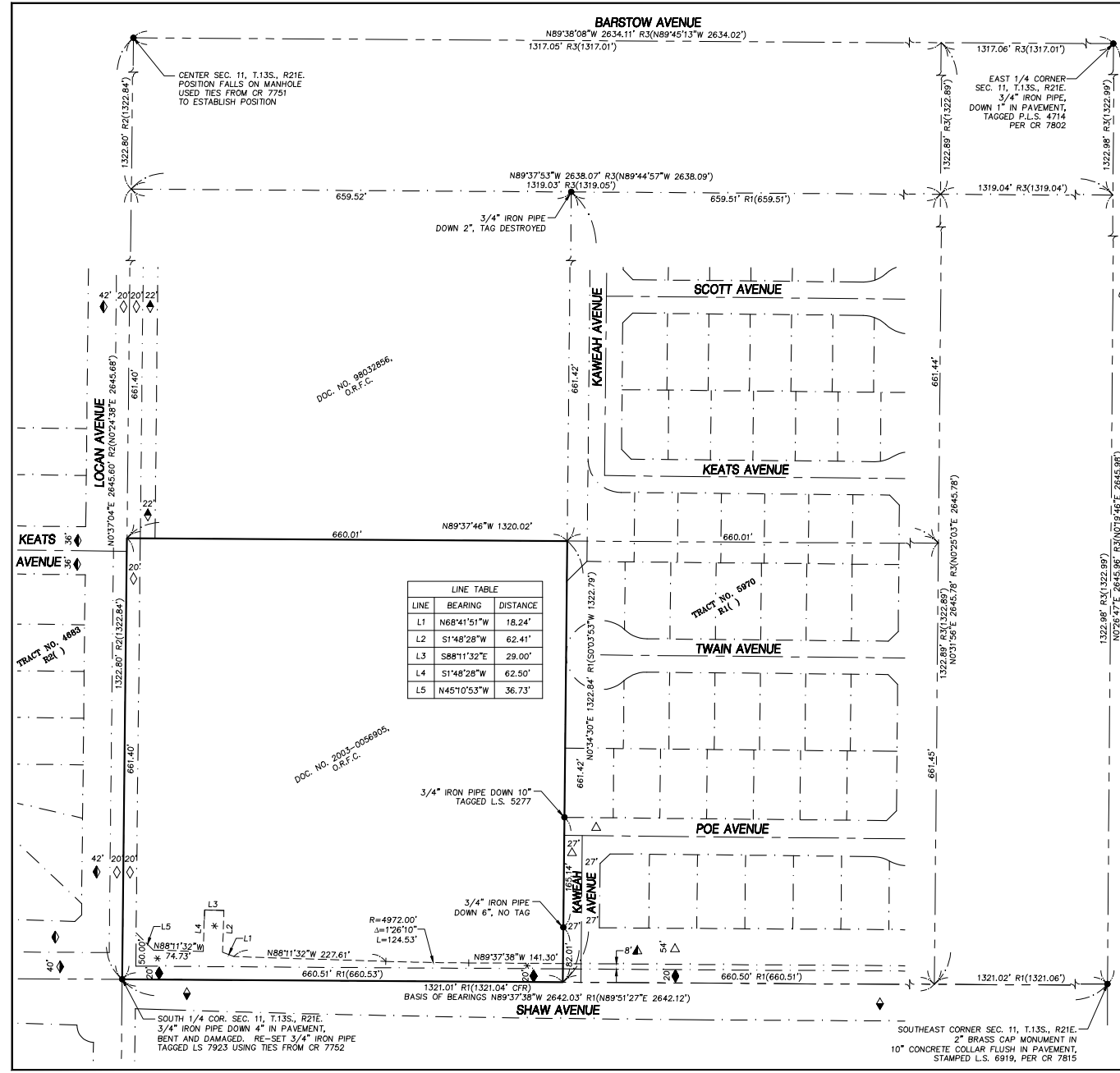
- ◇ PREVIOUSLY GRANTED EASEMENT FOR PUBLIC ROAD PURPOSES PER THE INSTRUMENT RECORDED MARCH 6, 1918 IN VOLUME 651 OF DEEDS, PAGE 428, O.R.F.C.
- ◆ PREVIOUSLY GRANTED EASEMENT FOR PUBLIC ROAD PURPOSES PER THE INSTRUMENT RECORDED APRIL 28, 1904 IN VOLUME 219 OF DEEDS, PAGE 375, O.R.F.C.
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BASIS OF BEARINGS:

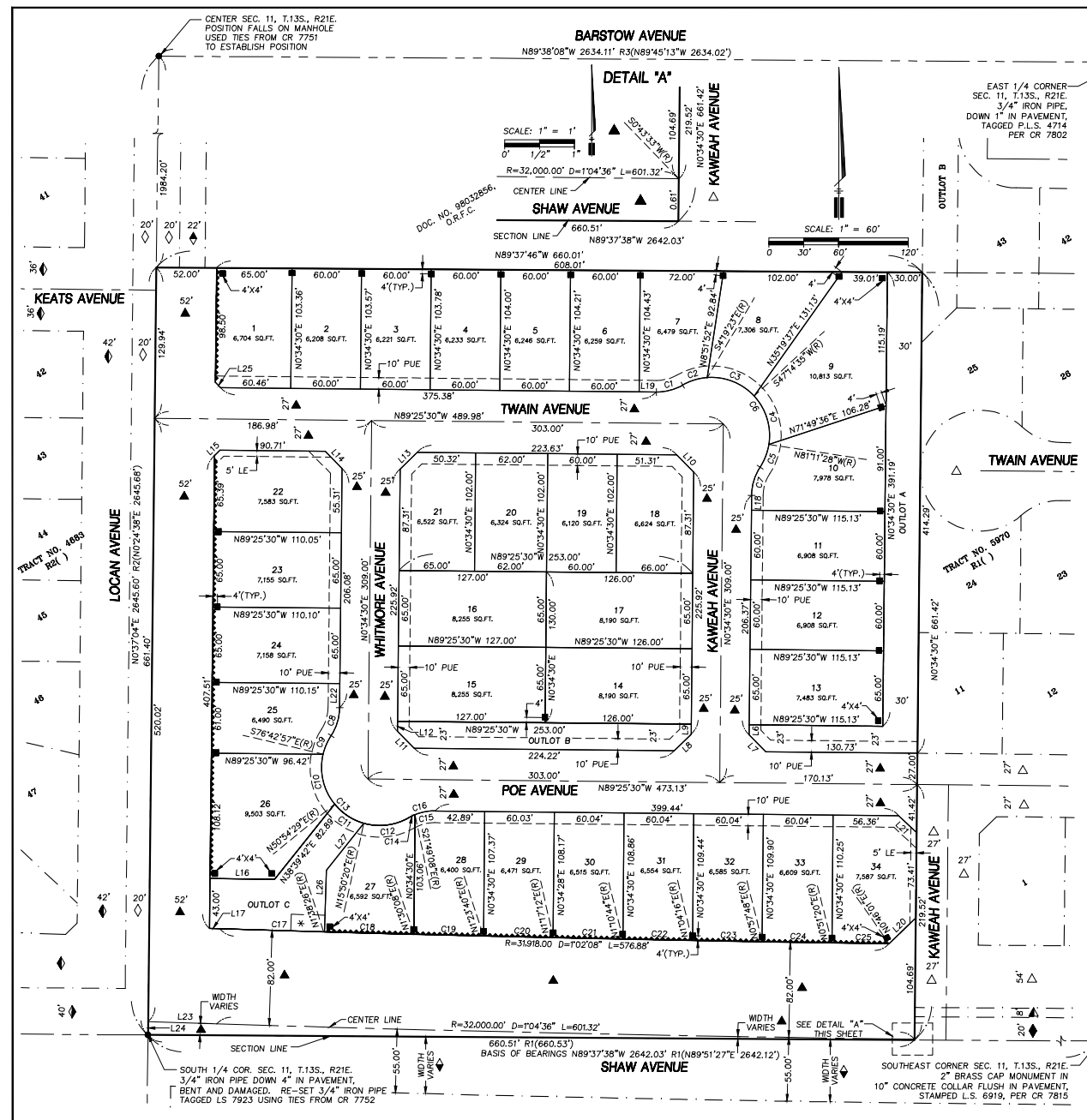
THE GEODETIC OBSERVATION OF THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 11, TOWNSHIP 13 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN TAKEN TO BE NORTH 89°37'38" WEST.



2885 N. BURL AVE.
 SUITE 101
 FRESNO, CA 93727
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 FAX (559) 244-3120



FINAL MAP OF
TRACT NO. 6260
 IN THE CITY OF CLOVIS, COUNTY OF FRESNO,
 STATE OF CALIFORNIA
 SURVEYED AND PLATTED IN JANUARY 2015
 BY YAMABE & HORN ENGINEERING, INC.
 CONSISTING OF 3 SHEETS
 SHEET 3 OF 3



CURVE TABLE

CURVE	RADIUS	DELTA	LENGTH
C1	45.00'	30°19'37"	23.82'
C2	50.00'	25°25'44"	22.19'
C3	50.00'	51°33'58"	45.00'
C4	50.00'	51°33'57"	45.00'
C5	50.00'	24°24'11"	21.30'
C6	50.00'	152°57'50"	133.49'
C7	45.00'	32°38'13"	25.63'
C8	45.00'	32°38'13"	25.63'
C9	50.00'	19°55'40"	17.39'
C10	50.00'	52°22'34"	45.71'
C11	50.00'	35°04'09"	30.60'
C12	50.00'	45°35'27"	39.79'
C13	50.00'	152°57'50"	133.49'
C14	45.00'	7°55'59"	6.23'
C15	45.00'	22°23'38"	17.59'
C16	45.00'	30°19'37"	23.82'
C17	3198.00'	0°09'43"	90.22'
C18	3198.00'	0°08'18"	77.06'
C19	3198.00'	0°06'28"	60.04'
C20	3198.00'	0°06'28"	60.04'
C21	3198.00'	0°06'28"	60.04'
C22	3198.00'	0°06'28"	60.04'
C23	3198.00'	0°06'28"	60.04'
C24	3198.00'	0°06'28"	60.04'
C25	3198.00'	0°05'19"	49.36'

- LEGEND**
- MONUMENT FOUND & ACCEPTED AS NOTED UNLESS OTHERWISE NOTED
 - SET 3/4" X 30" LONG IRON PIPE DOWN 6" TAGGED LS 7923 AS WITNESS CORNER ON LOT LINE 4.00' FROM PROPERTY CORNER OR 4.00' X 4.00' OFFSET FROM PROPERTY LINES.
 - R1 () RECORD DATA PER TRACT NO. 5970 RECORDED IN VOLUME 82 OF PLATS, PAGES 25-26, F.C.R.
 - R2 () RECORD DATA PER TRACT NO. 4683 RECORDED IN VOLUME 66 OF PLATS, PAGES 58-59, F.C.R.
 - R3 () RECORD DATA PER TRACT NO. 5418 RECORDED IN VOLUME 75 OF PLATS, PAGES 27-30, F.C.R.
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 - ◇ PREVIOUSLY GRANTED FOR PUBLIC ROAD PURPOSES PER THE GRANT DEED RECORDED APRIL 23, 1975, IN BOOK 6423, PAGE 586, O.R.F.C.
 - ◇ PREVIOUSLY GRANTED EASEMENT FOR PUBLIC ROAD PURPOSES PER THE INSTRUMENT RECORDED AUGUST 9, 1999 AS DOC. NO. 1999-0116891, O.R.F.C.
 - * AREA OF RIGHT OF ENTRY EASEMENT GRANTED TO THE CITY OF CLOVIS PER DOCUMENT ENTITLED "RIGHT OF ENTRY FOR STREET IMPROVEMENTS ALONG SHAW AVENUE," RECORDED SEPTEMBER 27, 2006 AS DOCUMENT NO. 2006-0206248, O.R.F.C.

LINE TABLE

LINE	BEARING	DISTANCE
L6	S0°34'30"W	8.60'
L7	N44°25'08"W	20.36'
L8	S45°34'16"W	20.35'
L9	S0°34'30"W	8.61'
L10	S44°25'30"W	20.77'
L11	N44°25'30"W	20.35'
L12	N0°34'30"E	8.61'
L13	N45°34'16"E	20.77'
L14	S44°24'58"E	20.77'
L15	N45°35'47"E	6.52'
L16	N89°22'56"W	55.65'
L17	N88°11'51"W	8.89'
L18	N0°34'30"E	12.77'
L19	N89°25'30"W	14.92'
L20	S45°42'54"W	32.05'
L21	S46°52'44"E	21.34'
L22	S0°34'30"W	20.77'
L23	N88°11'51"W	59.24'
L24	S0°37'04"W	11.44'
L25	N44°21'36"W	6.53'
L26	N1°48'28"E	53.16'
L27	N38°39'42"E	51.74'

THE REAL PROPERTY DESCRIBED BELOW IS DEDICATED IN FEE FOR PUBLIC PURPOSES:

- ▲ NOW OFFERED FOR DEDICATION FOR PUBLIC STREET AND UTILITY PURPOSES FOR PUBLIC USE
- OUTLOTS A,B,C NOW OFFERED FOR DEDICATION FOR PUBLIC USE

THE REAL PROPERTY DESCRIBED BELOW IS DEDICATED AS AN EASEMENT FOR PUBLIC PURPOSES:

- PUE NOW OFFERED FOR DEDICATION FOR PUBLIC UTILITY EASEMENT PURPOSES
- LE NOW OFFERED FOR DEDICATION FOR LANDSCAPE EASEMENT PURPOSES

NOTE

1. SET 3/4" X 30" LONG IRON PIPE DOWN 6" TAGGED LS 7923 OR BRASS TAG STAMPED LS 7923 FLUSH WITH CONCRETE SURFACE AT ALL LOT CORNERS, ANGLE POINTS AND POINTS OF CURVATURE, UNLESS OTHERWISE NOTED.

BASIS OF BEARINGS:
 THE GEODETIC OBSERVATION OF THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 11, TOWNSHIP 13 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN TAKEN TO BE NORTH 89°37'38" WEST.

YAMABE & HORN ENGINEERING, INC.
 2885 N. BURL AVE.
 SUITE 101
 FRESNO, CA 93727
 TEL (559) 244-3123
 FAX (559) 244-3120



CITY *of* CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Planning and Development Services

DATE: July 20, 2020

SUBJECT: Consider Approval – Res. 20-____, Annexation of Proposed Tract 6260, located at the northeast corner of Shaw Avenue and Locan Avenue to the Landscape Maintenance District No. 1 of the City of Clovis. (DYP 6260 LP, A California Limited Partnership).

Staff: Mike Harrison, City Engineer

Recommendation: Approve

ATTACHMENTS: 1. Res. 20-____

CONFLICT OF INTEREST

Councilmember Jose Flores owns property within 500 feet of subject property and, pursuant to law, must abstain from participation and decision regarding this item.

RECOMMENDATION

For the City Council to approve Res. 20-____, that will annex proposed Tract 6260, located at the northeast area of Shaw Avenue and Locan Avenue, to the Landscape Maintenance District No. 1 of the City of Clovis.

EXECUTIVE SUMMARY

The owner, DYP 6260 LP, has requested to be annexed to the Landscape Maintenance District No. 1 of the City of Clovis as set forth by the Conditions of Approval for Tentative Tract Map 6260.

BACKGROUND

DYP 6260 LP, the developer of Tract 6260, has executed a covenant that this development be annexed to the City of Clovis LMD No. 1. An executed copy can be provided on request. Council formed the original District on July 15, 1985, for the purpose of funding the maintenance of landscaped areas and parks.

Under the provisions of the Landscaping and Lighting Act of 1972 and in accordance with Article XIII C and Article XIII D of Proposition 218, all the owners of property proposed for

annexation have provided a written request and consent to annexation and have executed a covenant (petition) indicating acceptance of the annual assessment.

FISCAL IMPACT

This project will add landscaping to the Landscape Maintenance District No. 1 of the City of Clovis shown as follows:

	<u>Tract 6260</u>	<u>Year to Date</u>
LMD Landscaping added:	0.75 acres	0.75 acres
Resource needs added:	0.075 person	0.075 person

The resource needs estimate is based on 1 person per 10 acres of landscaped area.

REASON FOR RECOMMENDATION

The property owners for the subject tract have requested annexation into the City of Clovis LMD No. 1.

ACTIONS FOLLOWING APPROVAL

Tract 6260 shall become a part of City of Clovis LMD No. 1 and will be assessed next year for maintenance costs.

Prepared by: David Gonzalez, Civil Engineer

Reviewed by: City Manager *DH*

RESOLUTION 20-____

A RESOLUTION OF THE COUNCIL OF THE CITY OF CLOVIS, CALIFORNIA, APPROVING ANNEXATION TO LANDSCAPING MAINTENANCE DISTRICT NO. 1 OF THE CITY OF CLOVIS

WHEREAS, City of Clovis Landscape Maintenance District No. 1 ("District") was formed by Resolution No. 85-78, adopted July 15, 1985, pursuant to Part 2 of Division 15 of the Streets and Highways Code (Landscape and Lighting Act of 1972), herein the "Act"; and

WHEREAS, all of the owners of property proposed to be annexed to the District consisting of proposed Tract No. 6260, as described in Attachment "A" attached hereto and incorporated herein by reference, have consented to said annexation and such annexation may be ordered without notice and hearing or filing of engineer's report, or both.

NOW, THEREFORE, IT IS RESOLVED AND ORDERED, as follows:

1. That the public interest and convenience require that certain property described in **Attachment A** attached hereto and by reference incorporated herein be annexed into Landscape Maintenance District No. 1 of the City of Clovis for the maintenance and servicing of landscaping facilities.
2. The City Clerk shall receive and file the maps showing the boundaries of the areas annexed as set forth in **Attachment A** which boundaries shall be used for assessment proceedings until and unless a change of organization is approved pursuant to the Act.

* * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on July 20, 2020, by the following vote, to wit:

AYES:
NOES:
ABSENT:
ABSTAIN:

DATED: July 20, 2020

Mayor

City Clerk

ATTACHMENT A

LOTS 1 THROUGH 34, INCLUSIVE, OF TRACT MAP 6260, RECORDED IN VOLUME _____, PAGES _____ THROUGH _____ OF PLATS, FRESNO COUNTY RECORDS.



CITY of CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Administration

DATE: July 20, 2020

SUBJECT: Workshop – For the Clovis City Council to conduct a workshop to discuss the impact on ongoing City operations during the COVID-19 State of Emergency as declared by the Federal Government, State of California, County of Fresno, and City of Clovis; and to explore actions the City may take in response to the crisis.

a. Consider Approval - Res. 20-___, A Resolution of the City Council of the City of Clovis confirming the Director of Emergency Services' Orders

Staff: Andrew Haussler, Economic Development Director

Recommendation: Approve

ATTACHMENTS: 1. Resolution 20-___, A Resolution Adopting Emergency Order 2020-15

CONFLICT OF INTEREST

None.

RECOMMENDATION

For the City Council to confirm the Emergency Services Director Order 2020–15, assisting retail and service establishments severely impacted by the COVID-19 crisis by allowing those businesses with the option to temporarily expand capacity into public and private common areas under specified circumstances.

BACKGROUND

On March 16, 2020, the City Council approved the following:

1. A request from the Director of Emergency Services for the City of Clovis that the City Council of the City of Clovis proclaim the existence or threatened existence of a local emergency (COVID-19); and
2. A Resolution of the City Council of the City of Clovis proclaiming the existence or threatened existence of a local emergency (COVID-19).

On March 21, 2020, the City Council confirmed the Director of Emergency Services':

1. Order 2020-01: Declaration Closing Bars, Wineries, Breweries, Pubs, and Restaurants; and
2. Order 2020-02: Declaration Closing Gyms, Health Clubs, Trampoline Parks, Arcades, and Theaters; and
3. Order 2020-03: Declaration Establishing Emergency Telework Guidelines.

On March 30, 2020, the City Council confirmed the Director of Emergency Services':

1. Order 2020-04 pertaining to employee leave/pay during emergency determined as necessary to safeguard life and property and continue essential services of the City of Clovis; and
2. Order 2020-05 related to price gouging and taking unfair advantage of consumers.

On April 6, 2020, the City Council confirmed the Director of Emergency Services':

1. Order 2020-06 related to waiving late fees on business license payments and utility payments; and
2. Order 2020-07 related to waiving municipal code restrictions against parking a recreational vehicle under specific circumstances.

On April 13, 2020, the City Council confirmed the Director of Emergency Services':

1. Order 2020-08 related to suspension of employee vacation caps during the declared emergency; and
2. Order 2020-09 related to waiving transit fares during the declared emergency; and
3. Order 2020-04A, an addendum to 2020-04 relating to emergency leave/pay for use by all City of Clovis employees during the declared emergency; and
4. Order 2020-10 related to closing play structures, exercise apparatus, and picnic shelters at City-owned parks; and
5. Order 2020-11 related to local enforcement of Governor's Executive Order pertaining to the statewide stay at home requirements; and
6. Order 2020-12 relating to enforcement of local emergency orders.

On April 20, 2020, the City Council confirmed the Director of Emergency Services':

1. Order 2020-08A, an addendum to suspension of vacation cap order 2020-08 related to suspension of employee vacation caps during the declared emergency.

On May 4, 2020, the City Council approved an emergency order as follows:

1. Order 2020–13 in order to add clarity to the City's roles and responsibilities under the governor's stay at home order by: (1) repealing emergency orders 2020-01 (bars and restaurant closures), 2020-02 (gyms and places of amusement), and 2020-10 (City parks) as unnecessarily duplicative as the statewide stay at home order covers these and other items; and (2) clarifying the City's enforcement responsibilities.

On June 1, 2020, the City Council approved an emergency order as follows:

1. Order 2020–14, assisting restaurants severely impacted by the COVID-19 crisis by allowing restaurants with the option to temporarily expand capacity into public and private common areas under specified circumstances.

Staff is now returning for the City Council to request the confirmation of the Director of Emergency Services':

1. Order 2020–15 assisting retail and service establishments severely impacted by the COVID-19 crisis by allowing those businesses with the option to temporarily expand capacity into public and private common areas under specified circumstances.

FISCAL IMPACT

None

Prepared by: John Holt, Assistant City Manager

Reviewed by: City Manager *JH*

CITY OF CLOVIS

RESOLUTION NO. 20-

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLOVIS
CONFIRMING THE DIRECTOR OF EMERGENCY SERVICES' ORDERS
AND DECLARATIONS**

WHEREAS, there exists a local emergency in the City of Clovis ("City") pursuant to Resolution 20-20, approved by the City Council on March 16, 2020, where the City declared a local emergency due to the increase in confirmed cases of COVID-19, including now multiple confirmed cases within Fresno, Madera and Tulare Counties; and

WHEREAS, under the authority of Government Code sections 8610 and 8634, and Clovis Municipal Code section 4.2.06, the Director of Emergency Services is empowered, upon declaration of a local emergency, to make and issue regulations on matters reasonably related to the protection of life and property as affected by such emergency; and

WHEREAS, under conditions of the emergency, it is deemed necessary in the interest of public safety to enact certain emergency orders and restrictions within the City; and

WHEREAS, life and property is deemed to be in peril and time is of the essence; and

WHEREAS, the City Council does hereby find that the above-described conditions of disaster or of extreme peril did warrant and necessitate the Director of Emergency Services' orders and restrictions in response to the existence of a local emergency; and

WHEREAS, effective March 20, 2020, pursuant to Executive Order N-33-20, the Governor issued a Statewide stay at home/stay in place order, which encompasses and expands upon the orders of the Director of Emergency Services.

NOW, THEREFORE, the City Council of the City of Clovis resolves as follows:

1. The following order, restrictions, or declarations of the Director of Emergency Services, are hereby ratified and confirmed:

- Order 2020–15, assisting retail and service establishments severely impacted by the COVID-19 crisis by allowing those businesses with the option to temporarily expand capacity into public and private common areas under specified circumstances. (**Exhibit 1**).

BE IT FURTHER RESOLVED that the above-referenced Order shall remain in effect until such time as it is terminated by the Director of Emergency Services or the City Council of the City of Clovis, or until termination of the declared local emergency, whichever occurs first.

* * * * *

The foregoing resolution was introduced and adopted at a meeting of the City Council of the City of Clovis held on July 20, 2020, by the following vote, to wit:

AYES:

NOES:

ABSENT:

ABSTAIN:

Date: July 20, 2020.

Drew Bessinger, Mayor

Attest:

John Holt, City Clerk

CITY OF CLOVIS
EMERGENCY SERVICES DIRECTOR ORDER 2020 – 15

DECLARATION OF THE DIRECTOR OF EMERGENCY SERVICES OF THE CITY OF CLOVIS ASSISTING RETAIL AND SERVICE ESTABLISHMENTS SEVERELY IMPACTED BY THE COVID-19 CRISIS BY ALLOWING THOSE BUSINESSES THE OPTION TO TEMPORARILY EXPAND CAPACITY INTO PUBLIC AND PRIVATE COMMON AREAS UNDER SPECIFIED CIRCUMSTANCES

WHEREAS, on March 16, 2020, the California Department of Public Health established guidelines for social distancing, elimination of non-essential gatherings, and isolation for specific individuals, in order to prevent the transmission of COVID-19 (“DPH Guidance”); and

WHEREAS, there exists a local emergency in the City of Clovis pursuant to Resolution 20-20, approved by the City Council on March 16, 2020, where the City declared a local emergency as a result of the threatened spread of COVID-19 in the City, surrounding areas, and the state; and

WHEREAS, on March 19, 2020, with the adoption of Executive Order N-33-20, the Governor ordered a Statewide stay at home/stay in place order (“Stay at Home Order”) to address the spread of COVID-19, allowing only essential businesses to remain open; and

WHEREAS, the City is operating under the Governor’s Stay at Home Order as supplemented by Fresno County; and

WHEREAS, the Governor and Fresno County have begun the process for allowing restaurants, retail establishments, and other businesses to reopen in the State; and

WHEREAS, the City has determined that there is a need, when feasible and safe, to assist local businesses most severely impacted by the restrictions on reopening; and

WHEREAS, under the most recent State and County orders, many businesses that were allowed to open in accordance with State and County guidance that required physical separation (social distancing) and other actions, are now required to close indoor operations; and

WHEREAS, restaurants, retail establishments, fitness centers, hair salons, personal care services, and other local businesses (collectively “Business Establishment”), that are now prohibited from operating indoors, play a vital role in the City of Clovis. They not only provide important tax revenue, but jobs and income to employees and owners. They are the anchors of communities and support tourism and the neighborhoods they are in; and

WHEREAS, the list of Business Establishments currently prohibited from operating indoors can be expanded at any time and this Order is intended to cover those Business Establishments as well; and

WHEREAS, Business Establishments will be challenged to remain profitable with only an on-line presence and store pickup, and many will no doubt fail, and therefore it is in the City's best interest to assist Business Establishments in expanding capacity where feasible and safe so as to lessen the chance of a Business Establishment failing; and

WHEREAS, one way the City can assist with Business Establishment capacity is to temporarily make available to Business Establishments the option of using outdoor public and private areas for their activities and services, and to otherwise temporarily waive regulations that prohibit Business Establishments in public and private common areas; and

WHEREAS, with the adoption of Emergency Order 2020-14, the City Council previously approved a temporary waiver allowing restaurants to use public and private common areas for outdoor dining, under specified circumstances; and

WHEREAS, this Order is intended to supplement Emergency Order 2020-14, by expanding the temporary waiver for restaurants to include all Business Establishments; and

WHEREAS, under the authority of Government Code sections 8610 and 8634, and Clovis Municipal Code section 4.2.06, the City's Director of Emergency Services and the City Council are empowered, upon declaration of a local emergency, to make and issue regulations on matters reasonably related to the protection of life and property as affected by such emergency.

NOW, THEREFORE, I, Luke Serpa, as Director of Emergency Services, declare effective 3:00 p.m. on July 13, 2020, as follows:

1. Notwithstanding anything to the contrary in the City's zoning ordinances, development code, approved land use entitlements, site plan review approvals, or entertainment permits, all Business Establishments in the City are eligible during the City's declared local emergency to apply for a temporary waiver allowing them to use public and private common areas for their operations.

- a. Public common areas include sidewalks, streets, parking lots, recreation space, and other public space that might be conducive to the outdoor Business Establishment activities and services.
- b. Private common areas include sidewalks, parking lots, recreation space, and other private space, generally within a private shopping center, that might be conducive to outdoor Business Establishment activities and services.

2. Eligible public and private common areas for outdoor Business Establishment activities and services shall be known as the "Expansion Area". If the Expansion Area is approved, the approval shall be considered a temporary permit to operate outdoor Business Establishment activities and services in the Expansion Area and shall be officially termed a "Waiver". A business owner wishing to apply for a Waiver shall meet the minimum requirements set forth in **Exhibit A**.

The approval of a Waiver shall not be deemed to convey a property or vested right to operate contrary to City codes, standards, and permit requirements.

3. Waivers shall be approved in the discretion of, and may be revoked by, the Community and Economic Development Director (“Director”) in accordance with the criteria and procedures set forth in **Exhibit A**. The Director may impose any conditions deemed reasonably necessary to ensure the safe and lawful operation of outdoor Business Establishment activities and services in the Expansion Area. All Waivers shall automatically expire upon the lifting or expiration of the City’s declared local emergency, or upon earlier modification of this Order eliminating the Waiver.

4. The denial or revocation of a Waiver may be appealed to the City Manager, where the decision shall be final. Any appeal to the City Manager shall be an informal proceeding without the technical rules of evidence.

5. The City Manager is directed to develop supplemental guidelines for implementation of the Waiver program consistent with **Exhibit A**, which may be amended as often as needed as determined by the City Manager.

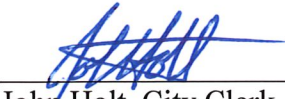
BE IT FURTHER ORDERED that this order shall remain in effect until such time as it is terminated, repealed, amended, or modified by the Director of Emergency Services or the City Council of the City of Clovis.

DATE AND TIME: July 13, 2020 at 3:00 p.m.



Luke Serpa, Director of Emergency Services

ATTEST:



John Holt, City Clerk

**EMERGENCY ORDER 2020-15
EXHIBIT A**

**MINIMUM REQUIREMENTS AND PROCEDURES FOR BUSINESS
ESTABLISHMENTS SEEKING A WAIVER TO EXPAND CAPACITY BY
USING COMMON AREAS FOR OUTDOOR BUSINESS ESTABLISHMENT
ACTIVITIES AND SERVICES**

The following requirements and procedures shall apply for any Business Establishment wishing to seek a Waiver to allow outdoor Business Establishment activities and services in public and private common areas, as defined in this Order.

1. The business owner shall complete an application on a form prescribed by the City Manager. No fee will be required for the application. The applicant is encouraged to consult with the Director prior to completing the application. The application shall include the following:
 - a. For private shopping centers, a letter of consent, or other evidence satisfactory to the Director, that the shopping center owner has consented to use of the Expansion Area for outdoor Business Establishment activities and services.
 - b. A diagram showing the proposed foot print of the Expansion Area. The diagram shall include the proposed location of tables, furniture, other Business Establishment features, fencing (ornamental or safety), awnings (or other shade structures), misters, heaters, ground cover (if desired), entry and exiting, and Americans with Disabilities Act (“ADA”) paths of travel.
 - c. For public areas, liability waivers and certificates of insurance as required by the City’s Risk Manager and City Attorney. When appropriate, the Director may require a Sidewalk Permit or Encroachment Permit. There shall be no fee for a Sidewalk or Encroachment Permit issued under this Order.
 - d. Where parking spaces are proposed to be removed, a parking plan showing where employees and customers will park and how impacts to other businesses, if any, will be addressed.
 - e. Where parking lots or public streets are proposed to be used, a safety and traffic control plan showing how employees and customers will be protected from vehicle traffic, including the use of barricades.
 - f. Any other matter determined necessary by the Director to make a decision.
2. The Expansion Area shall be limited to area(s) adjacent to the existing business, and in no event shall allow Business Establishment capacity, with the implementation of required social distancing measures, to exceed 100% of normal capacity.

3. All structures, entry and existing, paths of travel, and safety features shall be approved by the City's Building and Fire Departments. For public common areas, approval shall also be obtained from the Public Utilities Department.
4. If a Business Establishment sells or serves alcohol in the Expansion Area, the Business Establishment owner shall obtain all required Alcoholic Beverage Control ("ABC") approvals as well as approval from the Clovis Police Department.
5. The Business Establishment owner, Business Establishment manager, and any other responsible person, shall keep the Expansion Area free of litter and debris. This cleaning shall consist of, at a minimum, regularly sweeping and washing the Expansion Area. In addition, the Business Establishment owner shall be responsible for regularly removing any trash generated by the business within 100 feet of the business.
6. Waivers may be revoked by the Director for: (a) violations of this Order, Supplemental Guidelines issued by the City Manager, or any conditions of approval; or (2) if operation in the Expansion Area creates a nuisance. Prior to revocation, the Director shall provide written notice of the basis for revocation.
7. Any Business Establishment desiring to provide entertainment in the primary business or Expansion Area that would otherwise require an Entertainment Permit under Chapter 5.5 of the Municipal Code, shall make separate application under that Chapter. If the Business Establishment has an Entertainment Permit issued for the primary business, the Business Establishment shall not provide entertainment in the Expansion Area without an amendment to the Entertainment Permit authorizing that use.
8. The City shall have the right to immediately suspend the operation of an outdoor Business Establishment area operating under a Waiver at any time because of anticipated or actual problems or conflicts with ADA paths of travel or to protect the safety of employees and customers. The City shall attempt to work with the Business Establishment to solve any problems or conflicts.
9. Upon expiration or revocation of a Waiver, the Business Establishment shall remove all Business Establishment owned property and restore the Expansion Area to its prior condition, satisfactory to the City and/or private shopping center owner.
10. The City shall not be responsible for any liability or damages associated with issuance or revocation of a Waiver, or with the immediate suspension of outdoor Business Establishment activities as provided for under this Order, and the Business Establishment, affiliates, successors, and assigns, in accepting a Waiver agree to release, hold harmless, and defend the City from any such liability.