



# Board of Building Standards

## COMMERCIAL ENERGY CODE STAKEHOLDER COMMENT REVIEW/ CODE COMMITTEE MEETING AGENDA

DATE: JANUARY 27, 2022  
TIME: 1:00 PM  
LOCATION: TRAINING RM 3, 6606 TUSSING RD, REYNOLDSBURG, OHIO 43068  
[Videoconference Link](#)

### Call to Order

### Approval of Minutes

[MIN-1](#) November 18, 2021 Code Committee Meeting Minutes

### Petitions

### Recommendations of the Residential Construction Advisory Committee

[R-1](#) Petition #21-01 RCO 4401.2 - Duane Chubb/Dana Daughters of Gamechanger Fittings LLC

### Old Business

[OB-1](#) Commercial Energy Code - Stakeholder Comments

### New Business

### Adjourn

**File Attachments for Item:**

MIN-1 November 18, 2021 Code Committee Meeting Minutes

**OHIO BOARD OF BUILDING STANDARDS  
CODE COMMITTEE MINUTES  
NOVEMBER 18, 2021**

The Code Committee met on November 18, 2021 with the following members present: Mr. Denk, Ms. Cromwell, Mr. Johnson, Mr. Miller, Mr. Samuelson, Mr. Stanbery, Mr. Tyler, and Mr. Yankie. Board Chairman, Tim Galvin, was also present.

The following staff members were present: Regina Hanshaw, Debbie Ohler, and Jay Richards

Guests present: John Johnson

**CALL TO ORDER**

The meeting was called to order by Mr. Denk at 1:04 P.M.

**APPROVAL OF MINUTES**

Mr. Stanbery made the motion to approve the minutes of the Code Committee meeting held on October 21, 2021. Mr. Miller seconded the motion. The motion passed unanimously.

**PETITIONS**

Staff presented Petition #21-01 from Duane Chubb & Dana Daughters of Gamechanger Fittings LLC which seeks to change the referenced OPC edition referenced in the RCO Section 4401.2 to include the updates made effective in August of 2018. Mr. Miller made the motion to refer the petition to the RCAC for review and recommendation. Ms. Cromwell seconded the motion. The motion passed unanimously.

**RECOMMENDATIONS OF THE RESIDENTIAL CONSTRUCTION ADVISORY COMMITTEE**

No items for consideration

**OLD BUSINESS**

**OB-2 OBC Chapter 2- Definition of Registered Design Professional to include Landscape Architect** – Mr. Miller made a motion to continue to table the item until Mr. Doug Boyer can be present to explain his concerns and request. Mr. Tyler seconded the motion. The motion passed unanimously.

**OB-3 Code Review Update** – Staff presented a list of rules that require further review by the committee. Some of the rules need coordination with other agencies, need staff to draft fixes, or need further Committee discussion. These items will appear on future code committee meeting agendas starting in 2022. No action was taken.

**OB-4 2020 NEC E-notification Phase Stakeholder Comments** – No comments were received during this comment period. Staff explained that the next step in the adoption process is to wait for the CSI recommendation and permission to file the rules with the LSC and JCARR.

**OB-1 Commercial Energy Code Update** – Staff summarized the energy codes that the committee had previously reviewed and outlined the current adopted standards for commercial energy code compliance in Ohio and shared the staff-prepared energy code flow chart guidance document that illustrates the numerous paths to compliance. The committee members shared concern about listing, on the flowchart, the available software tools that can be used to demonstrate compliance. The committee suggested that staff add footnotes and a disclaimer to the flowchart.

The committee discussed the pros and cons about moving forward with adoption of the various editions of the ASHRAE 90.1 and the IECC standards. The discussion focused on the prevalence of energy conservation issues in the news, the benefits to the building owner of commissioning, the cost impact of moving forward in the current economic situation, the complexity of the required control systems, the difficulty of getting equipment, the shifting of the cost burden from the owner to the tenant, the possibility of slowing or stalling construction as a result of increased cost and complexity due to aggressive energy codes, the challenge of educating building department personnel and design professionals to use the newer more complex codes, the possibility of rendering compliance software unusable if too much of the standards are amended, etc.

Mr. Tyler suggested, as a starting point for discussion, considering the adoption of the 2018 IECC for commercial buildings so that the energy standard referenced from the Ohio Building Code (OBC) is the same as the one referenced in the 2019 Residential Code of Ohio (RCO). Mr. Denk and Mr. Tyler further suggested getting feedback from stakeholders such as OBOA, AIA, BOMA, and others about their experience with or thoughts about moving forward with the 2016 ASHRAE 90.1. After much brainstorming about the best way to get valuable feedback, staff suggested sending out a notice soliciting stakeholder comments and including links to free U.S. Department of Energy (DOE) webinars and training materials on the 2016 ASHRAE 90.1 standard. Staff offered to explore this option and, if possible, have stakeholder feedback/comments ready for presentation to the committee at the January Code Committee meeting.

## **NEW BUSINESS**

No items for consideration

## **ADJOURN**

Mr. Johnson made the motion to adjourn at 3:25 P.M. Ms. Cromwell seconded the motion. The motion passed unanimously.

**File Attachments for Item:**

R-1 Petition #21-01 RCO 4401.2 - Duane Chubb/Dana Daughters of Gamechanger Fittings LLC

# APPLICATION

## FOR RULE CHANGE

Pursuant to section 3781.12 of the Revised Code and rules adopted by the Board of Building Standards, application is herewith submitted to adopt, amend, or annul a rule adopted by the Board pursuant to section 3718.10 of the Revised Code.



## BOARD OF BUILDING STANDARDS

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Reynoldsburg, Ohio 43068-9009

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www.com.state.oh.us/dico/bbs/default.aspx

For BBS use:

Petition #: 21-01

Date Recv'd: Oct. 25, 2021

Submitter:

Dana Daughters

(Contact Name)

GameChanger Fittings, LLC

(Organization/Company)

Address:

784 Timber Lane

(Include Room Number, Suite, etc.)

Geneva

(City)

OH

(State)

44041

(Zip)

Telephone Number: 440-474-2204

Fax Number: \_\_\_\_\_

Date: OCT 27, 2021

E-mail Address:

dana@gamechangerfittings.com

Code Section:

RCO 4401.2

General Explanation of Proposed Change (attach additional sheets if necessary):

Update Ohio Plumbing Code reference date from 11-1-2017  
to 8-1-2018.

Explanation of Cost Impact of Proposed Code Change\*: None

\*Attach additional cost information as necessary to justify any statement of cost increase or cost decrease.

Information on Submittal (attach additional sheets if necessary):	
1. Sponsor:	<p><i>Dana Daughters - GameChanger Fittings, LLC</i></p> <p>Organization sponsoring or requesting the rule change (if any)</p>
2. Rule Title:	<p><i>Update OPC reference date in RCO 4401.2</i></p> <p>Title of rule change</p>
3. Purpose/ Objective:	<p><i>Incorporate amendments approved after 11-1-2017</i></p> <p>Technical justification for the proposed rule change</p>
<p>4. Formatted Rule Language</p> <p>(Using Strike-out for Deleted Text and Underline for Added Text)</p>	<p><i>"4101:3-1 to 4101:3-15, codified and published as the 2017 Ohio Plumbing Code, effective <del>11-1-2017</del> <u>8-1-2018</u>, and as modified in Section 2501.1.1"</i></p> <p>Use strike-out for deleted text and underline for added text</p>
5. Notes:	<ol style="list-style-type: none"> <li>1. To encourage uniformity among states using model codes, it is recommended that the submitter first submit any code change directly to ICC and participate in the national model code development process.</li> <li>2. Please provide a copy of application and documentation.</li> <li>3. Use a separate form for each code change proposal.</li> </ol>

**File Attachments for Item:**

OB-1 Commercial Energy Code - Stakeholder Comments



**From:** [Ned B. Heminger](#)  
**To:** [BBS, BBSOfficeAsst3](#)  
**Subject:** Comment on Adoption of ASHRAE 90.1-2016 and IECC 2018  
**Date:** Wednesday, December 29, 2021 1:53:54 PM  
**Attachments:** [image001.jpg](#)

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To the BBS:

**I recommend adding language to Ohio's Energy Code so that Data Centers can comply with "ASHRAE 90.4-2016 – Energy Standard for Data Centers", provided they are within the scope of this standard.**

Some history behind this, in the 2010 version of 90.1 a change was made that no longer exempted data centers from the standard. This created a significant problem for the industry because 90.1 was primarily written around comfort cooling systems. While some patchwork was done in the 2010 standard, it was not a good solution. Additional patchwork was done in later editions, until such time that a new energy standard was developed by ASHRAE specifically for Data Centers. This occurred with the new publication 90.4-2016. Even at that time, 90.1 did not recognize this new 90.4 standard until the 90.1-2019 standard was published. Until such time that Ohio recognizes 90.1-2019 or a later version, it would be very beneficial to include 90.4-2016 as a compliance path for Data Centers in Ohio.

Thank you for your consideration. If you have any questions, please do not hesitate to call.

**Ned Heminger, PE, LEED AP, HBDP**

*Vice President*

*Chief Engineer*



HAWA Engineers | 980 Old Henderson Road, Columbus, Ohio 43220 | (O) 614-451-1711 | (C) 614-595-2773  
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**From:** [Jim Schrader](#)  
**To:** [BBS, BBSOfficeAsst3](#)  
**Cc:** [Jim Schrader](#)  
**Subject:** Comment on Adoption of ASHRAE 90.1-2016 and IECC 2018  
**Date:** Thursday, January 13, 2022 1:23:58 PM  
**Attachments:** [image001.png](#)

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To BBS:

I recommend that language be added to Ohio's Energy Code to allow Data Centers to comply with ASHRAE 90.4 – 2016 - Energy Standard for Data Centers.

**Jim Schrader, President**

**TechSite**

Phone: (614) 873-7800 x 103 | Mobile: (614) 361-9037

Email: [jim.schrader@techsiteplan.com](mailto:jim.schrader@techsiteplan.com)

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8188 Business Way, Plain City, OH 43064

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**From:** [Nicole Westfall - MEEA](#)  
**To:** [BBS, BBSOfficeAsst3](#)  
**Subject:** MEEA Comments on Ohio's Building Code Updates  
**Date:** Friday, January 14, 2022 2:25:44 PM  
**Attachments:** [image001.png](#)  
[MEEA comments on Ohio's Building Code Update - 1.14.2022.pdf](#)

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Ms. Hanshaw and the Ohio Board of Building Standards,

Thank you for the opportunity to comment on Ohio's Building Code update. Please find attached comments from the Midwest Energy Efficiency Alliance. If you have any questions about the attached, please do not hesitate to reach out to me.

Kind regards,  
Nicole Westfall

**Nicole Westfall**

(she/her/hers)

**Building Policy Manager**

Midwest Energy Efficiency Alliance (MEEA)

312.374.0918 | [www.mwalliance.org](http://www.mwalliance.org)



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January 14, 2022

Ohio Board of Building Standards Members  
Attn: Regina Hanshaw  
6606 Tussing Rd  
Reynoldsburg, OH 43068

RE: Comments of the Midwest Energy Efficiency Alliance (MEEA) Supporting the  
Adoption of the 2021 International Energy Conservation Code

Dear Ms. Hanshaw and Members of the Board of Building Standards,

Thank you for opportunity to comment on Ohio's commercial energy code update. The Midwest Energy Efficiency Alliance (MEEA) is a member-based non-profit organization promoting energy efficiency to optimize energy generation, reduce consumption, create jobs and decrease carbon emissions in all Midwest communities. MEEA has previously worked in Ohio on energy codes and provided technical assistance to the Ohio Board of Building Standards in previous energy code adoption cycles.

MEEA supports the adoption of the most recent model energy code, the 2021 IECC, without weakening amendments for commercial and multifamily residential buildings in Ohio. While the adoption of the unamended 2018 IECC will improve commercial construction in the state, the 2021 IECC provides the most up to date cost effective standards and guidance on best practices for commercial construction and will ensure Ohio is capitalizing on the energy savings that come with the adoption of the latest model energy code. We urge the Board adopt the unamended 2021 IECC to ensure the people of Ohio receive the wide-ranging benefits of improved building efficiency. Doing so will make commercial buildings more resilient, reduce costs for owners and occupants, help promote local job creation, and improve the state's building infrastructure for generations to come.

### **The 2021 IECC provides a cost-effective way for Ohioans to save money and energy**

Buildings account for roughly 40% of all energy used and over 70% of all electricity used in the United States. Updated building energy codes have consistently shown to be the most cost-effective way to reduce that energy consumption – putting significant monetary savings back into pockets of building owners, businesses and residents. The US Department of Energy (DOE) conducts state-specific energy savings and cost-effectiveness analyses for each new model commercial energy code<sup>1</sup>. Using DOE research, updating Ohio's current code, based on the 2012 IECC, to the 2021 IECC

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<sup>1</sup> DOE's analysis is based on ASRAE 90.1-2019. The 2021 IECC incorporates ASHRAE Standard 90.1 by reference as a compliance option and the commercial requirements are typically very close to ASHRAE for overall efficiency. Because these codes are the same in terms of efficiency, we reference the 2021 IECC for clarity. See U.S. Dep't of Energy, *Cost-Effectiveness of ANSI/ASHRAE/IES Standard 90.1-2019 for Ohio*, at vi (July 2021), available at [https://www.energycodes.gov/sites/default/files/2019-09/Cost-effectiveness\\_of\\_ASHRAE\\_Standard\\_90-1-2013-Ohio.pdf](https://www.energycodes.gov/sites/default/files/2019-09/Cost-effectiveness_of_ASHRAE_Standard_90-1-2013-Ohio.pdf)

would result in a nearly 19% improvement in building energy efficiency.<sup>2</sup> The update on an unamended 2021 IECC would provide significantly more energy savings than can be attributed to the 2018 IECC. Results show that updating Ohio's commercial energy code from the 2018 IECC to the 2021 IECC is cost-effective for every building type in Ohio – meaning the cost of energy saved is higher than cost of compliance and will reduce building energy use and costs when compared to the current commercial energy code in Ohio<sup>3</sup>. On average, building owners and occupants can expect to save an average of \$0.05 per square foot in just the first year. This analysis only compares the two most recent version of the code for Ohio – because the state has adopted the 2012 IECC with several weakening amendments, expected energy and cost savings would be significantly higher.

### **Strong Energy Codes Make Ohio's Buildings More Resilient**

In addition, the adoption of the 2021 IECC would lead to more energy efficient buildings in Ohio but would also result in the construction of more resilient buildings. Improving the resiliency and preparedness of Ohio's buildings from blizzards, floods, heatwaves, and power outages will bring obvious benefits to communities across the state, including increased safety, greater ability to safely shelter in place and improved health outcomes. Updating energy codes can also significantly reduce the stress on the grid, and improve reliability, by reducing peak demand from commercial buildings in the state. This is critical during times of extreme weather, when energy resources from the grid can be strained. The most cost-effective time to prevent future damage from extreme weather is during initial building construction and Ohio has an opportunity to instill long-term resiliency planning with the adoption of the 2021 IECC.

### **Efficient buildings make for healthier and more productive environments**

The adoption of a strong commercial building energy code would result in healthier and more productive indoor environments for Ohioans. Improvements in the building envelope and mechanical systems found in the unamended 2021 IECC would positively improve the indoor environmental quality of commercial buildings. The COVID-19 pandemic clearly demonstrated the importance of providing controlled fresh air in our businesses, workspaces, and homes. However, while critically important, increasing ventilation can also increase the energy use in our buildings. Energy efficient construction can ensure that buildings are able to cost-effectively provide appropriate levels of fresh air without increasing costs.<sup>4</sup>

### **Energy efficiency supports Ohio jobs.**

In 2020, the clean energy sector supported more than 103,400 jobs in Ohio, of which 71% are in energy efficiency.<sup>5</sup> Of those energy efficiency jobs, all are interdependent

<sup>2</sup> See <https://www.energycodes.gov/development/determinations> for more information.

<sup>3</sup> See U.S. DOE, State Fact sheet – Ohio, at vi (July 2021), available at [https://www.energycodes.gov/sites/default/files/2021-07/EED\\_1365\\_BROCH\\_StateEnergyCodes\\_states\\_OHIO.pdf](https://www.energycodes.gov/sites/default/files/2021-07/EED_1365_BROCH_StateEnergyCodes_states_OHIO.pdf)

<sup>4</sup> See: <https://energynews.us/2021/06/25/energy-efficiency-can-rein-in-costs-from-healthy-building-air-quality-projects/>

<sup>5</sup> See Clean Energy Jobs Midwest: <https://www.cleanjobsmidwest.com/state/ohio>



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with the building industry, whether it be HVAC, insulation, or lighting. These are good, in-state jobs in a vital, growing sector of Ohio's economy. By updating the state's commercial energy code, Ohio has an opportunity to build on this foundation and continue to spur local construction and manufacturing jobs while improving the livability and resiliency of new building and reducing energy waste.

The 2021 IECC includes achievable, cost-effective standards that many states across the Midwest are considering. The adoption of the unamended 2021 IECC would result in energy efficient commercial buildings that are more affordable to operate and maintain for years to come in Ohio. However, the full value of the energy and cost savings, and other benefits associated with updating to the 2021 IECC will be substantially reduced if weakening amendments or a weaker model energy code are adopted in the final Ohio Commercial Building Code. The adoption of the unamended 2021 IECC will reduce the cost of utility bills for residents, businesses and building owner's, create more comfortable and healthier indoor environments and improve the resilience of buildings in the state. Adopting the newest/strongest building standards will ensure long-lasting benefits for all Ohioans. If you have any additional questions, please contact MEEA's Building Policy Manager, Nicole Westfall at [nwestfall@mwalliance.org](mailto:nwestfall@mwalliance.org).

Thank you for your time and consideration.

Sincerely,

Stacey Paradis  
Executive Director

**From:** [Eric Lacey](#)  
**To:** [BBS, BBSOfficeAsst3](#)  
**Cc:** [Hanshaw, Regina](#)  
**Subject:** RECA Comments Supporting Commercial Energy Code Update in OH  
**Date:** Wednesday, January 12, 2022 2:47:08 PM  
**Attachments:** [Supplemental RECA Comments Supporting 2021 IECC in OH 1-12-22.pdf](#)  
[RECA Comments Supporting 2021 IECC in OH 7-14-21.pdf](#)

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Regina,

I hope you are doing well. Please see the attached supplemental comments of the Responsible Energy Comments in support of Ohio's proposed commercial energy code update, along with a copy of our July 2021 letter. If you have any questions, please call or email me. I will also plan on participating virtually in the January 27 Board of Building Standards meeting in case Board members have any questions.

Thank you,  
Eric

Eric Lacey, Chairman  
Responsible Energy Codes Alliance  
1850 M Street, NW, Suite 610  
Washington, DC 20036  
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Submitted Via Email

July 16, 2021

Regina Hanshaw  
Executive Secretary  
Ohio Board of Building Standards  
P.O. Box 4009  
6606 Tussing Road  
Reynoldsburg, OH 43068

**RE: Comments of the Responsible Energy Codes Alliance (RECA) Supporting the Adoption of the 2021 International Energy Conservation Code for Commercial and Multifamily Residential Buildings**

Dear Ms. Hanshaw,

We understand that the Ohio Board of Building Standards is in the process of reviewing the 2021 *International Building Code (IBC)* for adoption as the Ohio Building Code. The Responsible Energy Codes Alliance supports the full adoption of the 2021 *IBC*, including Chapter 13, which would incorporate the 2021 *International Energy Conservation Code (IECC)* for commercial and multifamily residential construction. The 2021 version of the *IECC* is a clear and substantial improvement over the 2015 and 2018 versions of the *IECC* and will provide a range of energy efficiency, resiliency, and environmental benefits for the owners and occupants of commercial and multifamily residential buildings.

The need for decisive action to reduce energy demands is clearer than ever before. Buildings are a significant source of energy use and emissions, and the 2021 *IECC* provides a solution focused on improving the energy performance of buildings that will save money, promote local job creation, and improve the state's building infrastructure for generations to come. Updating Chapter 13 of the Ohio Building Code from the 2012 *IECC* to the 2021 *IECC* presents an important leadership opportunity that will place Ohio on the forefront of building efficiency. As a result, we recommend that the Board consider the full range of long-term benefits of adopting the 2021 *IECC* for commercial and multifamily residential buildings in the state.



## Energy and Cost Savings

The *IECC* is the most widely adopted model energy code for residential and commercial construction, and earlier versions have been adopted in Ohio and nearly every state that has a statewide energy code. For the last fifteen years, the *IECC* has improved in efficiency with every new edition, providing straightforward energy and cost savings for the owners of homes and commercial buildings, and providing an important policy tool for state and local governments to achieve energy efficiency goals.

Like previous editions of the code, the 2021 *IECC* incorporates *ASHRAE* Standard 90.1 by reference as a compliance option, providing additional flexibility for design professionals and builders without sacrificing energy efficiency. In accordance with federal law, the U.S. Department of Energy analyzes efficiency improvements in each edition of *ASHRAE* Standard 90.1. The *IECC* commercial requirements are historically similar to Standard 90.1 in terms of overall efficiency, and the vast majority of states adopt the *IECC* (including the reference to Standard 90.1) and allow design professionals to use both codes. The table below summarizes DOE's analyses of national average energy savings, showing that building owners and occupants stand to benefit from over 20% lower energy costs, on average, with the adoption of the three most recent editions of the model codes.

Model Code	National Avg. Energy Cost Savings over previous model code		National Avg. Energy Cost Savings over previous model code
<b><i>ASHRAE</i> 90.1-2013</b>	<b>8.7%<sup>1</sup></b>	<b>2015 <i>IECC</i></b>	<b>11.5%<sup>2</sup></b>
<b><i>ASHRAE</i> 90.1-2016</b>	<b>8.3%<sup>3</sup></b>	<b>2018 <i>IECC</i></b>	<b>5.3%<sup>4</sup></b>
<b><i>ASHRAE</i> 90.1-2019</b>	<b>4.3%<sup>5</sup></b>	<b>2021 <i>IECC</i></b>	<b>Not yet released</b>

<sup>1</sup> See U.S. Dep't of Energy, *ANSI/ASHRAE/IES Standard 90.1-2013 Determination of Energy Savings: Quantitative Analysis*, at iv (Aug. 2014), available at [https://www.energycodes.gov/sites/default/files/documents/901-2013\\_finalCommercialDeterminationQuantitativeAnalysis\\_TSD.pdf](https://www.energycodes.gov/sites/default/files/documents/901-2013_finalCommercialDeterminationQuantitativeAnalysis_TSD.pdf).

<sup>2</sup> See U.S. Dep't of Energy, *Energy and Energy Cost Savings Analysis of the 2015 IECC for Commercial Buildings*, at vi (Aug. 2015), available at [https://www.energycodes.gov/sites/default/files/documents/2015\\_IECC\\_Commercial\\_Analysis.pdf](https://www.energycodes.gov/sites/default/files/documents/2015_IECC_Commercial_Analysis.pdf).

<sup>3</sup> See U.S. Dep't of Energy, *Energy Savings Analysis: ANSI/ASHRAE/IES Standard 90.1-2016*, at iv (Oct. 2017), available at [https://www.energycodes.gov/sites/default/files/documents/02202018\\_Standard\\_90.1-2016\\_Determination\\_TSD.pdf](https://www.energycodes.gov/sites/default/files/documents/02202018_Standard_90.1-2016_Determination_TSD.pdf).

<sup>4</sup> See U.S. Dep't of Energy, *Energy and Energy Cost Savings Analysis of the 2018 IECC for Commercial Buildings*, at vi (Dec. 2018), available at [https://www.energycodes.gov/sites/default/files/documents/2018\\_IECC\\_Commercial\\_Analysis\\_Final.pdf](https://www.energycodes.gov/sites/default/files/documents/2018_IECC_Commercial_Analysis_Final.pdf).

By adopting the 2021 *IECC*, Ohio can capture the important energy-saving improvements incorporated into the 2015, 2018, and 2021 versions of the *IECC*.<sup>6</sup>

### **State-Specific Weakening Amendments**

As noted earlier, in the most recent update to Chapter 13 of the Ohio Building Code, several state-specific weakening amendments were adopted, leaving the statewide code short of its full potential for energy and cost savings. Weakening amendments make the code less efficient by watering down specific code requirements and substituting requirements from previous codes for more up-to-date provisions. The *IECC* has undergone a considerable number of interrelated changes since the 2012 edition, so carrying forward the current Ohio amendments could create conflicts (in addition to lost energy savings).

The most straightforward approach to address such potential amendments in this code update would be to start with a clean slate by eliminating all state-specific amendments at the start and then add back only the administrative amendments necessary to align section numbers and other necessary state amendments. If substantive amendments are to be considered, each such amendment to the model code should be carefully analyzed to determine if it is an improvement to the 2021 *IECC*. In our view, only improvements should be adopted and incorporated into Chapter 13 of the Ohio Building Code. For example, the current amendment to Section 1301.2 allows new multifamily residential buildings to be air leakage tested to  $\leq 4$  ACH50, whereas the *IECC* has required these buildings to be tested to  $\leq 3$  ACH50 since the 2012 edition. In Ohio's varying climate conditions, tighter envelopes provide energy savings and comfort benefits for occupants. And since the current requirement has been in place for several years now, we expect that builders could easily achieve improved air tightness levels in the next edition of the code. We recommend that Ohio adopt the air tightness testing requirement and other improvements as they are published in the 2021 *IECC* so that owners and occupants of these buildings can enjoy the full benefits of the latest model energy codes.

### **Broad Support for the 2021 *IECC***

Like previous versions of the *IECC*, the 2021 edition was developed with the direct input of the nation's leading architects, building code officials, builders, manufacturers, environmental groups, and sustainability experts in a consensus-based code development

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<sup>5</sup> See U.S. Dep't of Energy, *Preliminary Energy Savings Analysis: ANSI/ASHRAE/IES Standard 90.1-2019*, at vi (Apr. 2021), available at [https://www.energycodes.gov/sites/default/files/documents/20210407\\_Standard\\_90.1-2019\\_Determination\\_TSD.pdf](https://www.energycodes.gov/sites/default/files/documents/20210407_Standard_90.1-2019_Determination_TSD.pdf).

<sup>6</sup> For an estimate of energy and carbon savings associated with the latest model energy codes, download the Building Energy Codes Emissions Calculator at <https://www.imt.org/resources/building-energy-codes-emissions-calculator/>.

process. During this process, the efficiency improvements proposed for the 2021 *IECC* were endorsed by a broad range of organizations, including mayors, code officials, state energy officials, sustainability directors, and other governmental representatives from every region of the U.S. For example, the U.S. Conference of Mayors unanimously adopted a Resolution endorsing proposals that would achieve a 10% improvement in the 2021 *IECC*, finding that:

“... building energy codes, by setting minimum efficiency requirements for all newly constructed and renovated residential, multi-family, and commercial buildings, provide measurable and permanent energy savings and carbon emissions reductions over the century-long life spans of these buildings ...”<sup>7</sup>

The 2021 *IECC* is the result of voting by governmental members who participated directly in the ICC process. These members voted in record numbers to improve almost every aspect of the *IECC*, paving the way for a more efficient, more sustainable future.

The 2021 *IECC* contains reasonable energy-saving improvements for the entire building, including:

- Improved building envelopes, providing year-round energy savings and comfort for occupants;
- Improved requirements for verification, certificates, and other consumer protections;
- More efficient mechanical and lighting systems and automated controls designed with occupant health and safety in mind;
- Additional flexibility for builders and design professionals to optimize their design choices without reducing efficiency;
- Improved resilience, protecting occupants from environmental and climate-related risks and helping protect the investment of building owners; and
- A framework for jurisdictions to customize efficiency and net-zero requirements to adapt the *IECC* to meet energy and climate goals.

Delaying the adoption of potential efficiency improvements in the energy code could also have significant long-lasting negative consequences. Buildings constructed today are expected to last 70 years or more, and the vast majority of features that affect efficiency will be chosen and set in place at construction. The failure to grasp the opportunity to build more efficient buildings at the outset is a tremendous loss; any delay in adoption will result in the

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<sup>7</sup> See U.S. Conference of Mayors, *Meeting Mayors' Energy and Climate Goals by Putting America's Model Energy Code on a Glide Path to Net Zero Energy Buildings by 2050*, USCM Resolution 59 (July 1, 2019) (emphasis added), available at <https://energyefficientcodes.org/wp-content/uploads/2019-07-1-Putting-the-IECC-on-a-Glide-Path-to-Net-Zero-Energy-Buildings-by-2050.pdf>.

construction of buildings with less efficiency, a condition that will last for many years and possibly for the life of such buildings. The owners and occupants of commercial and multifamily residential buildings depend on the state to regulate buildings in a way that optimizes energy and cost savings and that will be consistent with Ohio's long-term energy goals. The 2021 *IECC* provides a consensus-driven, adaptable blueprint for Ohio's future.

**Conclusion**

RECA's members and supporters have been involved in energy code development and adoption for decades, and we offer our assistance and experience as you work to maximize building energy efficiency. Please contact us if you have any questions or would like to discuss how RECA can be of assistance.

Sincerely,

Eric Lacey  
RECA Chairman

*RECA is a broad coalition of energy efficiency professionals, regional efficiency organizations, product and equipment manufacturers, trade associations, and environmental organizations with expertise in the development, adoption, and implementation of building energy codes nationwide. RECA is dedicated to improving the energy efficiency of homes throughout the U.S. through greater use of energy efficient practices and building products. It is administered by the Alliance to Save Energy, a non-profit coalition of business, government, environmental and consumer leaders that supports energy efficiency as a cost-effective energy resource under existing market conditions and advocates energy-efficiency policies that minimize costs to society and individual consumers. Below is a list of RECA Members that endorse these comments.*

Air Barrier Association of America

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EPS Industry Alliance

Extruded Polystyrene Foam Association

Institute for Market Transformation

Johns Manville Corporation

Knauf Insulation

National Fenestration Rating Council

Natural Resources Defense Council

North American Insulation Manufacturers Association

Owens Corning

Polyisocyanurate Insulation Manufacturers Association

Submitted Via Email

January 12, 2022

Regina Hanshaw  
Executive Secretary  
Ohio Board of Building Standards  
P.O. Box 4009  
6606 Tussing Road  
Reynoldsburg, OH 43068

**RE: Comments of the Responsible Energy Codes Alliance (RECA) Supporting the Adoption of the 2018 *IECC*/*ASHRAE* 90.1-2016 and Supplementing July 16, 2021 RECA Letter Supporting the Adoption of the 2021 *IECC*/*ASHRAE* 90.1-2019**

Dear Ms. Hanshaw,

We are writing in response to the Ohio Board of Building Standards' December 10, 2021 request for comments on the adoption of the 2018 *International Energy Conservation Code (IECC)* and *ASHRAE* Standard 90.1-2016 (*ASHRAE*) for commercial and multifamily residential construction. RECA submitted comments to the Board supporting an update to the most recent edition of the model energy codes on July 16, 2021 (a full copy of which is attached to these comments). **As discussed in more detail below, we strongly recommend adoption of the 2018 *IECC*/*ASHRAE* 90.1-2016, and ideally the 2021 *IECC*/*ASHRAE* 90.1-2019, as soon as reasonably practicable.** We submit the following supplemental comments to provide additional information requested by the Board.

**1. RECA supports the proposed adoption of the 2018 *IECC*/*ASHRAE* 90.1-2016 in Ohio.**

RECA supports the adoption of the 2018 *IECC* and *ASHRAE* 90.1-2016, which would be a substantial improvement over the current commercial energy code in Ohio (based on the 2012 *IECC*). As we noted in our July letter, the 2018 *IECC*/*ASHRAE* 90.1-2016 provide clear, cost-effective energy savings for commercial and residential multifamily buildings in Ohio's climate zones. U.S. DOE has found that on a national basis, the 2018 *IECC* saves an average 5.3% in energy cost over the 2015 *IECC* and an additional 11.5% over the 2012 *IECC*. Similarly, *ASHRAE* 90.1-2016 saves 8.3% in energy cost over the 2013 version and an additional 8.7% over the previous version. (A more complete discussion of energy savings can be found in the attached July 2021 letter, page 2).

The Board's request for comments asks for specific details on the impact of the latest codes on building design. The update from the 2012 to the 2018 edition of the *IECC* will provide a number of key improvements for commercial buildings, including the following:

- **System Efficiency** – Heating, cooling, and water heating system efficiency requirements have been improved to maintain pace with federal requirements and market transformation, and new system control requirements will help further optimize efficiency.
  - **Permanent Envelope** – The opaque envelope requirements and fenestration efficiency requirements are improved, helping to ensure long-term occupant comfort and energy savings, reducing electric peak demands, and contributing overall to a more durable and resilient building stock. A building that is insulated well and includes reasonably efficient fenestration will provide these benefits over the useful lifetime of the building.
  - **Lighting Efficiency** – Lighting efficiency requirements and controls have been updated nearly every cycle to keep pace with rapid advancement in lighting efficiency and market trends. Interior and exterior lighting power densities have been adjusted to match the improving performance of lighting products. The 2018 *IECC* also updates requirements for lighting in multifamily residential dwelling units.
  - **Additional Efficiency Options** – The 2018 *IECC* updates and increases the number of efficiency options in section C406, giving design professionals and builders more flexibility in compliance.
2. **Each edition of the *IECC* and *ASHRAE* 90.1 published since the 2012 *IECC* has been carefully reviewed by the U.S. Department of Energy and found to be an improvement in energy efficiency and to be life-cycle cost-effective for Ohio buildings.**

The U.S. Department of Energy reviews each edition of the national model energy codes pursuant to its federal statutory mandate. As part of this work, DOE has released state-specific energy savings and cost-effectiveness analyses for the most recent three editions of the model codes. For commercial buildings, U.S. DOE analyzes *ASHRAE* Standard 90.1 (which is a compliance option referenced in the *IECC*). For Ohio commercial construction specifically, DOE found clear cost-effectiveness over the useful lifetime of commercial buildings for each edition.

By adopting the 2018 *IECC/ASHRAE* 90.1-2016, Ohio can benefit from the energy- and cost-saving improvements incorporated into two published versions of the model energy codes. (Adoption of the 2021 *IECC* provides additional cost savings.)



U.S. DOE Analyses of Cost Savings for Commercial Buildings in Ohio			
Model Code	Average Annual Cost Savings Over Previous Model Code	Avg. Life Cycle Cost Savings (Public Bldgs)	Avg. Life Cycle Cost Savings (Private Bldgs)
<i>ASHRAE</i> 90.1-2013 <sup>1</sup>	\$0.144/sq.ft.	\$2.38/sq.ft.	\$1.97/sq.ft.
<i>ASHRAE</i> 90.1-2016 <sup>2</sup>	\$0.118/sq.ft.	\$7.62/sq.ft.	\$6.31/sq.ft.
<i>ASHRAE</i> 90.1-2019 <sup>3</sup>	\$0.054/sq.ft.	\$4.02/sq.ft.	\$3.57/sq.ft.

**3. RECA also encourages the Board to take the next step and adopt the 2021 *IECC/ASHRAE* 90.1-2019 as soon as practicable.**

As noted in our July comments to the Board, while a move to the 2018 *IECC/ASHRAE* 90.1-2016 would certainly be a major improvement and should not be delayed, adoption of the 2021 *IECC* (which includes *ASHRAE* 90.1-2019 as a compliance option) would yield even more energy savings and provide the widest range of benefits for building owners and occupants. The owners and occupants of commercial buildings constructed to the 2021 *IECC/ASHRAE* 90.1-2019 would see, on average, over a 20% reduction in energy costs as compared to buildings constructed to Ohio's current code. The latest model codes have demonstrated clear energy savings and will contribute to Ohio's greenhouse gas reduction goals; additionally, buildings will be more comfortable and more resilient for generations to come.

A move to the 2021 *IECC* provides significant additional improvements for commercial buildings at all levels as compared with the 2018 *IECC*:

- 1. Further Improvements in Envelope Efficiency.** The 2021 *IECC* improves nearly all aspects of the permanent envelope, including more efficient fenestration and opaque envelope requirements.

<sup>1</sup> See U.S. Dep't of Energy, *Cost-Effectiveness of ASHRAE Standard 90.1-2013 for the State of Ohio*, at 2 (Dec. 2015) available at [https://www.energycodes.gov/sites/default/files/2019-09/Cost-effectiveness\\_of\\_ASHRAE\\_Standard\\_90-1-2013-Ohio.pdf](https://www.energycodes.gov/sites/default/files/2019-09/Cost-effectiveness_of_ASHRAE_Standard_90-1-2013-Ohio.pdf).

<sup>2</sup> See U.S. Dep't of Energy, *Cost-Effectiveness of ASHRAE Standard 90.1-2016 for the State of Ohio*, at 1 (Aug. 2020) available at [https://www.energycodes.gov/sites/default/files/2021-03/Cost-effectiveness\\_of\\_ASHRAE\\_Standard\\_90-1-2016-Ohio.pdf](https://www.energycodes.gov/sites/default/files/2021-03/Cost-effectiveness_of_ASHRAE_Standard_90-1-2016-Ohio.pdf).

<sup>3</sup> See U.S. Dep't of Energy, *Cost-Effectiveness of ANSI/ASHRAE/IES Standard 90.1-2019 for Ohio*, at 1 (July 2021) available at [https://www.energycodes.gov/sites/default/files/2021-07/Cost-effectiveness\\_of\\_ASHRAE\\_Standard\\_90-1-2019-Ohio.pdf](https://www.energycodes.gov/sites/default/files/2021-07/Cost-effectiveness_of_ASHRAE_Standard_90-1-2019-Ohio.pdf).



2. **Tighter Building Envelopes.** New air leakage testing for most building types will save energy, improve mechanical system performance, and help maintain healthy indoor air quality.
3. **Heating, Cooling, and Lighting Improvements.** Increased mechanical system and lighting system efficiencies will help maintain occupant health and reduce costs.
4. **Increased Flexibility for Design Professionals.** A new points-based system of code compliance replaces the package-based Additional Efficiency Options and will provide additional flexibility for design professionals to demonstrate compliance with the code based on specific building occupancy types.
5. **Streamlined Compliance and Enforcement.** Reorganized compliance paths will facilitate code compliance and enforcement.
6. **Improved Transparency for Building Owners.** New certificate and other disclosure requirements will provide information to building owners and operators and improve transparency in the design and building process.
7. **Reference to Most Current and Up-to date Version of ASHRAE 90.1.** The 2021 *IECC* references the improved *ASHRAE* 90.1-2019 as an alternate compliance path.
8. **Consistency with other I-Codes.** Section numbers and internal references will align with other 2021 International Codes under consideration in Ohio.

Adopting a code that meets or exceeds *ASHRAE* Standard 90.1-2019 would also be an important step in meeting the Federal Law that requires states to adopt a commercial energy code that meets or exceeds the most recent edition of *ASHRAE* on which U.S. DOE has found increased energy savings.<sup>4</sup> Because U.S. DOE made a positive determination on *ASHRAE* Standard 90.1-2019 on July 28, 2021, states have until July 28, 2023 to make that certification to the Secretary of Energy.<sup>5</sup>

The 2021 *IECC* (and *ASHRAE* Standard 90.1-2019) are the most current and up-to-date options available for adoption and, like previous editions of the model codes, benefit from the latest input of the nation's architects, engineers, efficiency experts, builders, product and equipment manufacturers, and other stakeholders who prioritize safe, healthy, efficient buildings.

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<sup>4</sup> See 42 U.S.C. § 6833 (b)2(B).

<sup>5</sup> See U.S. Dep't of Energy, *Final Determination Regarding Energy Efficiency Improvements in ANSI/ASHRAE/IES Standard 90.1-2019*, 86 Fed. Reg. 40543 (July 28, 2021).

## **Conclusion**

RECA supports the work of the Board of Building Standards to improve the health and safety of the built environment for Ohio citizens. We strongly recommend adoption of the 2018 *IECC/ASHRAE* 90.1-2016, and ideally the 2021 *IECC/ASHRAE* 90.1-2019, as soon as practicable. Please contact us if you have any questions or would like to discuss how RECA can help.

Sincerely,

Eric Lacey  
RECA Chairman

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