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June 28, 2016

VIA ELECTRONIC MAIL

Felix Zemel, Technical Director  
Massachusetts Board of Building Regulations and Standards

**RE: RECA Comments Supporting the Adoption of the 2015 *IECC* and ASHRAE Standard 90.1-2013 in Massachusetts and Recommending Further Changes**

Dear Mr. Zemel:

I am writing on behalf of the Responsible Energy Codes Alliance<sup>1</sup> to support the incorporation of the 2015 International Energy Conservation Code (*IECC*) and ASHRAE Standard 90.1-2013 into the 9<sup>th</sup> Edition of the Massachusetts State Building Code, as proposed on the Board of Building Regulations and Standards (BBRS) website. **The adoption and implementation of the 2015 *IECC* and ASHRAE 90.1-2013 will bring significant energy and cost savings to Massachusetts citizens and provide a boost to local businesses and high-skilled workers. However, we do offer some observations on the proposed state-specific modifications and recommend a few further improvements to the proposal, which we hope that the state will carefully consider and which we detail below.**

**Support for 2015 *IECC*/ASHRAE 90.1-2013**

Massachusetts' investment in high-performance buildings will provide immediate energy and cost savings for residential and commercial building owners, and will leave a lasting legacy by improving the efficiency of these buildings for many years. Two recent analyses conducted by the U.S. Department of Energy found that the adoption of the most recent editions of the nation's model energy codes will yield energy and cost savings for

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<sup>1</sup> The Responsible Energy Codes Alliance is a broad coalition of energy efficiency professionals, regional organizations, product and equipment manufacturers, trade associations, and environmental organizations that promote the adoption and implementation of improved building energy codes and, in particular, the most recent version of the *IECC* nationwide without weakening amendments. A list of RECA members is enclosed at the end of this letter. RECA members have been involved in the development of the *IRC* and *IECC*, and the implementation of these codes in jurisdictions across the country for two decades.

owners and occupants of buildings in Massachusetts:

- According to a U.S. DOE analysis of the 2015 *IECC*, residential homes built to the 2015 *IECC* in Massachusetts will not only maintain the significant efficiency improvements of the current energy code, but will also yield additional energy savings. These improvements will pay for themselves in a relatively short time period (an average of 1.3 years, according to the analysis).<sup>2</sup>
- In a similar study on commercial buildings, the U.S. DOE found that an update from ASHRAE Standard 90.1-2010 to ASHRAE 90.1-2013 would yield cost-effective energy savings for all building types analyzed. Expected life-cycle energy savings averaged \$5.63/square foot for publicly-owned buildings and \$4.03/square foot for privately-owned buildings.<sup>3</sup>

Efficient buildings provide more comfortable and healthier environments for the people who live and work in them. These improvements will not only benefit the owners of new homes and the occupants and owners of commercial buildings by lowering energy costs, but will also benefit all Massachusetts citizens by reducing the need for additional peak electricity generation. Recent studies show that more efficient buildings, and the associated reduced need to generate energy for these buildings, will contribute to public health.<sup>4</sup> Lower pollution levels and better air quality will provide a range of public health and other benefits even beyond the straightforward energy- and cost-saving benefits of building energy codes. For all of these reasons, RECA supports the incorporation of the 2015 *IECC* and ASHRAE 90.1-2013 into the 9<sup>th</sup> Edition Code.

### **Comments on Massachusetts-Specific Amendments**

#### **1. On-Site Power Production in the Energy Rating Index**

The proposed code update incorporates the Energy Rating Index of the 2015 *IECC* into the 9<sup>th</sup> Edition Code, but with state-specific modifications that would permit the use of on-site renewable energy as a means of compliance with the code. RECA generally opposes the use of on-site power production (including renewable electricity sources such as solar photovoltaics) as a trade-off against energy conservation measures in the Energy Rating

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<sup>2</sup> See U.S. Department of Energy, *Cost-Effectiveness Analysis of the Residential Provisions of the 2015 IECC for Massachusetts*, at 2 (February 2016).

<sup>3</sup> See U.S. Department of Energy, *Cost-Effectiveness of ASHRAE Standard 90.1-2013 for the State of Massachusetts*, at 3 (December 2015).

<sup>4</sup> See, e.g., Levy, et. al., *Carbon reductions and health co-benefits from US residential energy efficiency measures*, 2016 Environmental Research Letters 11 034017, available at <http://iopscience.iop.org/1748-9326/11/3/034017>.

Index, and we would prefer Massachusetts expressly not allow such trade-offs, but at a minimum, we support imposing narrow limitations on any trade-off credit for renewable generation so that energy conservation will not be significantly reduced.<sup>5</sup>

The *IECC* has never permitted the use of on-site power production to offset residential energy conservation measures. Indeed, the scope of the *IECC* is “to regulate the design and construction of buildings for the *effective use and conservation of energy* over the useful life of each building.”<sup>6</sup> Energy conservation and electric generation are two distinctly different processes, and a shift in fuel use to generate electricity (such as a shift from fossil fuel generation to renewable energy sources) does not actually reduce the amount of energy used by a building. In fact, if trade-offs are permitted between energy conservation and on-site power production, the home could actually use *more* energy and still claim the same ERI score. A compliance option that results in an increase in energy use is, in our view, clearly counter to the purpose of the Energy Conservation Code.

We recognize that renewable on-site power production is addressed in some sustainable or “green” building standards and some energy rating programs, and there may be good policy reasons for promoting the use of renewable energy in addition to energy conservation. However, if states want to reduce operating costs and improve comfort for homeowners, improve resiliency, reduce environmental impacts and continue toward an energy efficient future, we do not believe that trading away current required levels of energy conservation for more energy production will move these states in the right direction.

The addition of trade-offs between energy production and energy conservation also creates several new compliance and enforcement issues. For example, how will building code officials calculate the capacity, orientation, long-term degradation, replacement, and other details of a generation system to determine whether to award credit (and how much)? Can power be sold back to the utility and still yield credit against the home’s energy use? How can a building official ensure that the system is permanently installed and owned by the homeowner (as a permanent part of the real property) and not simply leased from a third party (where it can be removed if lease payments are not made)? And if and when a photovoltaic system is removed from a home, what are the consequences -- should this event trigger a requirement that the home comply with the energy code? These and other issues could complicate code enforcement, and could ultimately lead to less-efficient homes.

Only one state that has adopted the 2015 *IECC* has specifically recognized through a

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<sup>5</sup> For more information on the Energy Rating Index and the treatment of on-site power production, including white papers, analyses, and other materials, see [www.buildingenergycodes.org](http://www.buildingenergycodes.org).

<sup>6</sup> 2015 *IECC*, Section R101.3 (emphasis added).

state-specific amendment the use of on-site renewable energy in its ERI – Vermont – and it essentially imposed a 5-point cap on credit for on-site power in the ERI. If the BBRS intends to allow any credit for on-site renewable energy, the limitations proposed in the draft 9<sup>th</sup> Edition Code are a good start (allowing 5 points of credit for a 2.5 kW or more solar PV). It is important to either expressly prohibit any credit for on-site generation or at least include specific definitions and reasonable limitations (for example, preclude the consideration of leased solar in the ERI) on such credit, and possibly a phase-out. Like the Vermont ERI path, the changes proposed in the 9<sup>th</sup> Edition Code appear to limit credit for on-site renewable power to 5 points, which is clearly better than an unlimited, open-ended trade-off that could be used to trade away all of the advances made in energy conservation in recent code updates. We also strongly support the requirement in Section N1106.2 that all mandatory provisions of the code be met, and that the thermal envelope meet or exceed the requirements of the 2009 *IECC*. Of course, we still encourage the state to consider whether any trade-off should be allowed, since even a limited trade-off would allow those homes to be less efficient than the current *IECC*.

## **2. Appendix AA Stretch Code**

RECA supports the efforts of states like Massachusetts to set additional targets for energy conservation beyond the baseline code. The proposed approaches are sensible; however, we note that the compliance options are nearly identical to the base code compliance options. Because Appendix AA is intended to be a “stretch” beyond base code compliance, we recommend reducing the required ERI Index score somewhat to make it a “stretch” – for example, all of the ERI target scores in Table N1106.4.1 could be reduced by 5 points (this would lower the base target score to 50). This will encourage further innovation and more efficiency in those communities enforcing the stretch energy code, and will pave the way for future improvements in the base code.

## **Conclusion**

Massachusetts again has an opportunity to provide regional and national leadership by implementing modern building energy codes and promoting cost-effective, long-term improvements in residential and commercial buildings. RECA has participated in previous reviews by the state of Massachusetts of earlier versions of the *IECC* and is happy to have the opportunity to participate in the current process. RECA supports the adoption of the 2015 *IECC* and ASHRAE 90.1-2013, and we offer our experience in energy code adoption and



implementation as the Council moves to maximize energy efficiency. Please contact me at  
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 organizations, product and equipment manufacturers, trade associations, and environmental organizations with expertise in the adoption, implementation and enforcement 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.*

Alliance to Save Energy  
American Chemistry Council  
American Council for an Energy-Efficient Economy  
Energy Efficient Codes Coalition  
EPS Industry Alliance  
Extruded Polystyrene Foam Association  
National Fenestration Rating Council  
North American Insulation Manufacturers Association  
Polyisocyanurate Insulation Manufacturers Association  
Sierra Club