PIMA
POLYISOCYANURATE INSULATION
MANUFACTURERS ASSOCIATION

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Sent via Electronic Mail

October 11, 2018

Grace Strom Power, Chief of Staff
New Jersey Board of Public Utilities
44 South Clinton Ave.
Trenton, NJ 08609
emp.comments@bpu.nj.gov

Re: New Jersey's 2019 Energy Master Plan

Dear Ms. Power,

The Polyisocyanurate Insulation Manufacturers Association (PIMA) would like to take this opportunity to comment on New Jersey's Energy Master Plan now being developed by the Board of Public Utilities. PIMA is the trade association for North American manufacturers of rigid polyiso foam insulation – a product that is used in most low-slope commercial roofs as well as in commercial and residential walls. Polyiso insulation products and the raw materials used to manufacture polyiso are produced in over 50 manufacturing facilities across North America, including Parsippany, New Jersey.

Development of this Energy Master Plan provides New Jersey with the opportunity to demonstrate leadership on energy and environmental policy and to promote energy-efficiency measures that will have a positive impact on New Jersey's employment and economy. According to the most recent *U.S. Energy and Employment Report,* there are now 2.25 million Americans directly employed in energy-efficiency jobs in the United States and 33,815 of these jobs are in New Jersey.[1] With the right policies, New Jersey can grow this segment of its economy and energy-efficiency can become a key contributor to the Governor's goal of achieving 100% clean energy by mid-century.

Recommendations

- Move forward with adoption of the 2018 International Energy Conservation Code (IECC);

[1] U.S. Energy and Employment Report, National Association of State Energy Officials (NASEO) and Energy Futures Initiative, May, 2018, https://www.usenergyjobs.org/

- Strengthen the Rehabilitation Subcode (part of the Uniform Construction Code) to decrease the number of building retrofit projects that are exempt from the energy efficiency requirements under the Energy Subcode (which is based on the IECC and also part of the Uniform Construction Code)
- Provide additional resources for building energy code training and enforcement focused on the area of existing building alterations; and
- Develop a building energy "stretch" code and allow local jurisdictions the option of adopting that code.

Building Energy Codes

PIMA encourages the Board to focus more attention on buildings and the use of building energy codes as a key policy for addressing the environmental and economic consequences of energy waste. Residential and commercial buildings account for 41% of total U.S. energy use and 74% of electricity use, so measures targeting this sector will have a relatively large impact. The most cost-effective and comprehensive tools for reducing this energy use are strong building energy codes along with quality code training and education of local code officials, designers, and builders. The benefits of reducing building energy use include: consumer and business cost savings; improved energy productivity and a stronger economy; reduction in air pollution; increased job growth; improved resiliency; and increased flexibility and reliability of our energy system and grid.

Although PIMA is encouraged by the New Jersey's steady progress in the area of building energy codes, we believe the State could do more to extend those requirements to alterations in existing buildings by amending its Rehabilitation Subcode to be more in-line with the model International Existing Building Code (IEBC), which is commonly used in other states. The current NJ Rehabilitation Subcode exempts a number of common building alterations from the energy code. As part of the new Energy Master Plan, we strongly encourage you to include recommendations for strengthening this aspect of the State's Rehabilitation Subcode in order to achieve greater energy savings from existing buildings.

I. Energy Savings Potential Related to New Construction

Updating New Jersey's commercial building energy code to the 2018 IECC would reduce building energy costs by approximately 8.2%.[2] Recent advances in energy efficiency under the IECC have proven to be extremely cost effective for commercial buildings, even when measured against strict simple payback standards. A cost-effectiveness analysis of the 2018 IECC is not yet available, but for the 2015 IECC (which had a similar incremental percentage improvement in energy performance compared to the previous edition), the average incremental cost of

[2] Energy Savings Analysis ANSI/ASHRAE/IES Standard 90.1-2016, Office of Energy Efficiency & Renewable Energy, U.S. Department of Energy (June 2017). Available at: https://www.energycodes.gov/development/determinations.

construction was only a tenth of one percent nationally[3] and the average simple payback period for New Jersey was determined to be 7.4 years.[4]

II. Energy Saving Potential Related to Alterations in Existing Buildings

One of the more impactful changes to the model energy codes was in 1999 and 2000 when the scope of ASHRAE Standard 90.1 and the International Energy Conservation Code (IECC) were both expanded to cover alterations in existing buildings. Underscoring the importance of including existing buildings within the scope of the energy code, the Pacific Northwest National Laboratory (PNNL) advised states who were considering the adoption of ASHRAE Standard 90.1-1999 (which initiated the coverage of alterations in the model codes) that "the expansion of this code to existing buildings could produce nearly 50% more savings then if it were applied to new buildings alone."[5] This assessment from over 16 years ago is supported today through individual state construction permit data. The amount of commercial construction that is attributed to building alterations vs. new construction is very high: 80% in New York[6] and 50% in New Jersey (both measured as a percentage of total construction).[7]

The intent of including existing buildings under the energy code is to leverage the natural cycle of building upgrades and component replacement in order to improve energy efficiency. More than half of existing commercial buildings were built before state and local governments started to adopt building energy codes, so these older buildings offer a huge opportunity for energy savings and the most cost-effective time to improve a building's energy performance is when it is renovated and/or when components and systems are replaced. This process is particularly important for envelope improvements, which reduce building heating and cooling loads, thus creating the potential for even greater improvement in equipment efficiencies in the future. As one example, approximately 2.5 billion square feet of commercial, low-slope roofs are replaced or re-covered each year on existing buildings. Replacing a typical existing roof with an energy code-compliant roof reduces whole building energy use by an average of 5.7% and could result in a ten-year cumulative energy cost savings of more than $12

[3] R. Hart et al., "National Cost-Effectiveness of ANSI/ASHRAE/IES Standard 90.1-2013," Pacific Northwest National Laboratory, January 2015, page 4.26 (Note: estimate is a weighted average).
[4] R. Hart et al., Cost-Effectiveness of ASHRAE Standard 90.1-2013 for the State of New Jersey, Pacific Northwest National Laboratory, December 2015. Available at: https://www.energycodes.gov/sites/default/files/documents/Cost-effectiveness_of_ASHRAE_Standard_90-1-2013-NewJersey.pdf
[5] Cort KA, DB Belzer, MA Halverson, EE Richman, and DW Winiarski. 2002. Analysis of Potential Benefits and Costs of Adopting ASHRAE Standard 90.1-1999 as a Commercial Building Energy Code in Michigan. PNNL-14017, Pacific Northwest National Laboratory, Richland, WA, page 28, https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-14017.pdf
[6] New York State Energy Research and Development Authority, New Efficiency: New York, April 2018, page 61. file:///C:/Users/mangic/Downloads/New-Efficiency-New-York%20(3).pdf
[7] NJ Department of Community Affairs, Dollar amount of construction authorized by building permit type, July 7, 2017 (data averaged over the last five years) https://www.state.nj.us/dca/divisions/codes/reporter/building_permits.html#7.

billion and a cumulative CO2 emission reduction of more than 100 million metric tons[8] (equal to the annual emissions of 24.8 coal-fired power plants or 21.4 million cars).[9]

III. Energy "Stretch" Code

Stretch codes provide easily-adoptable code language that is cost-effective and that local jurisdictions can adopt as an overlay of the base energy code in order to achieve greater energy savings, typically in the range of 10 to 20 percent.[10] Using stretch codes helps signal to the market which direction building practices are heading. This will result in earlier acceptance and adoption of energy-efficient measures and construction practices which should also translate into greater acceptance of the base code. Currently, Massachusetts and New York have energy stretch codes that can be adopted at the local level.

IV. Energy Code Training

The success of building energy codes depends on enforcement and compliance. Providing adequate resources towards the education and training of building professionals and code officials will provide local governments with the reinforcement they need to effectively enforce building energy codes. Also, regular energy code training keeps builders, designers, and code officials knowledgeable about building science and new construction techniques, materials and technologies that are relevant to building energy use.

V. Additional Benefits of a Strong Energy Code for New Jersey

Building energy codes enable New Jersey businesses that lease real property to be more competitive and to invest more money back into their businesses and local communities. Sometimes referred to as an issue of "split incentives," this is particularly prevalent with commercial buildings, were businesses that rent retail, office or commercial space are responsible for paying the energy costs associated with operating the building.[11] They pay these energy costs with little to no influence over improvements that would improve energy efficiency. New Jersey's energy code can help ensure that these businesses are afforded access to energy efficient buildings.

Furthermore, the 2018 IECC will help ensure New Jersey residents and businesses have homes and buildings that promote general welfare and safety. For example, in a recent Department of Energy survey, one in five respondents reported reducing or forgoing basic

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[8] Jerry Phelan et al., Energy and Environmental Impact Reduction Opportunities for Existing Buildings with Low-Slope Roofs, Bayer Materials Science, April 2009. This average site energy savings and cumulative energy cost savings is for 7 building categories in climate zones 2-6.

[9] From U.S. EPA's Greenhouse Gas Equivalencies Calculator at https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

[10] See https://newbuildings.org/code_policy/utility-programs-stretch-codes/stretch-codes/

[11] 39% of non-government commercial building space is leased and another 13% have a mix of owner-occupied and leased tenants (2012 CBECS data, Table B1).

necessities like food and medicine to pay an energy bill and 14% reported receiving a disconnection notice for energy service.[12] Moreover, recent events serve as a reminder that severe weather can leave communities stranded without power for days or even weeks. Buildings constructed with energy-efficient envelopes can help protect occupants during the most vulnerable times.[13] The benefits of modern building energy codes are clear and the risks of failing to protect New Jersey's health and safety can be easily avoided.

Thank you for the opportunity to submit these comments.

Sincerely,

Justin Koscher
President

Enclosure

December 15, 2017 letter to Governor-Elect Murphy from insulation industry regarding energy-efficiency policy and jobs

[12] "One in three U.S. households faced challenges in paying energy bills in 2015," U.S. Energy Information Administration. Available at: https://www.eia.gov/consumption/residential/reports/2015/energybills/?src=%E2%80%B9%20Consumption%20%20%20%20%20%20Residential%20Energy%20Consumption%20Survey%20(RECS)-f1.

[13] "Leaks and Lives: How Better Building Envelopes Make Blackouts Less Dangerous," ACEEE (2014). Available at: http://aceee.org/files/proceedings/2014/data/papers/1-439.pdf.