



Statement of
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International Institute of Building Enclosure Consultants (IIBEC)
Before the
House Committee on Appropriations Subcommittee on Energy and Water Development and
Related Agencies

May 7, 2021

Dear Madam Chair Kaptur and Ranking Member Simpson:

On behalf of the over 3,500 members of the International Institute of Building Enclosure Consultants (IIBEC), I would like to express our support for the Department of Energy Office of Energy Efficiency and Renewable Energy (EERE) Building Technologies program. As a matter of fact, IIBEC is a proud sponsor of the Building Envelope Campaign, run out of the Building Energy Research Development subprogram, due to their excellent work in this area.

Building Technologies was allocated \$290,000,000 for FY 2021. While the full FY2022 budget request has not been submitted as of this submission, IIBEC encourages this Subcommittee to consider this level plus inflation as the floor for FY 2022, and then provide additional programmatic funding for Building Technologies along with an added allocation of \$10 million for building envelope research.

IIBEC members come from a diverse group of design and construction industry companies, including hundreds of engineering firms, architecture companies, consultants, contractors, and product manufacturers. Our members specialize in design, investigation, repair, and management of roofing, exterior wall, and waterproofing systems. IIBEC members act as an advocate for the building on behalf of the owner or manager and ensures the building enclosure or roofing projects meet standards, codes, warranty requirements, and functionality required. IIBEC members are perfectly positioned to inform owners and managers about the benefits of adopting a high-performance approach when it comes to designing or retrofitting a building.

Buildings Enclosures (Envelopes) Are Critical for Decreasing Energy Usage

It is widely understood that residential and commercial buildings are the single largest energy-consuming sector in the U.S. economy, representing approximately 75% of the Nation's electricity use, and 40% of its total energy consumption. From a monetary perspective, this equates to more than \$400 billion per year, so if we can save 20%, an achievable goal, we could

save approximately \$80 billion annually on energy bills and help create jobs. This is where the building enclosures prove their value.

The building enclosure consists of all the elements of a building that separate its interior from the exterior environment: external walls, insulation, windows, and roofing. Advanced building enclosure materials can reduce building energy use and costs by lowering heating and cooling loads, which account for roughly half of energy consumed by a typical U.S. home and 40% in commercial buildings. Heating and cooling loads can be reduced by as much as 40% simply by using efficient building envelope technologies. Another 10% to 15% can be saved by adding roof and attic insulation.

While the use of advanced building materials can have an enormous impact on energy usage, geographical location significantly influences opportunities for energy savings from specific technologies. In warm climates, for example, reflective roofs and walls, exterior shades, and window coatings and films reduce the energy consumption required for cooling. Conversely, in cold climates, improved air sealing, high-performance insulation, and advanced windows reduce energy consumed for heating.

Not only can building enclosures help reduce energy usage, but they are also resilient, and will help keep communities safe. According to NOAA, there were 16 weather events in 2017 that each caused over \$1 billion in damage. As climate change increases in the severity and frequency of storms, high-performance building enclosures can be designed to withstand, and quickly recover from, these storm events while protecting individuals and maintaining functionality. The National Institute of Building Sciences estimates that for every \$1 spent on resilient building and construction, \$6 in recovery costs can be saved.

While there are many benefits to using advanced building enclosure materials, capital costs in office buildings often present a significant barrier to realizing high-performance buildings. Innovative procurement and delivery strategies, integrated design principles, and streamlined construction methods can help overcome these barriers. In new constructions, for example, installing a high-performance building envelope can also reduce the upfront cost and space necessary for mechanical ventilation, air conditioning and space heating.

As Congress searches for methods to reduce energy usage to conserve our natural resources, strengthen the economy by creating jobs, improving the resiliency of the grid by reducing individual building usage, and saving money by helping make energy services more affordable, I respectfully direct your attention to the work of the Building Technologies Office (BTO). In a highly fractured and overlapping sector with many stakeholders and building with numerous subsystems, the BTO can lead where the private sector cannot.

Research: Government funding of early-stage research and development (R&D) supports the efforts of the building sector to develop and deploy technologies that can improve energy

efficiency and affordability without sacrificing the comfort of people inside buildings and the performance of labor-saving devices, appliances, and equipment.

BTO-sponsored research focuses on opportunities to transform the energy efficient technologies that impact the largest energy demands within buildings: lighting, space conditioning and refrigeration, water heating, appliances, and miscellaneous electric loads (MELs), as well as the building enclosures themselves.

Lead, Collaborate, and Educate: Through the Better Building program, DOE partners with leaders in the public and private sectors to make the nation's homes, commercial buildings, and industrial properties more energy efficient by accelerating investment and sharing of successful best practices.

For example, the **Building Envelope Campaign (BEC)** was developed to help building owners, managers, architects, and builders better understand the relationship between the building envelope and energy performance. The Campaign calculates the contribution of each element in the envelope, including the roof, to the thermal performance of the building. The building owners, managers, architects, and builders can then use that information to target areas for improvement. As previously mentioned, IIBEC is a proud sponsor of the BEC.

While there is a growing body of work focusing on high-performance buildings and the important role building enclosures perform, the public affords greater credibility to information put forth by the DOE on this topic due to its objectivity and expertise. As a matter of fact, the third goal of the BEC is, *to demonstrate and document energy and cost savings with integrated design, construction, commissioning, and maintenance from the implementation of high-performing envelope systems.*

We have a responsibility to use energy wisely. Investing in building enclosure research will help us do just that.

Additional case studies and demonstration projects will further the awareness and understanding of the importance of a building's enclosure and how different products, designs, construction materials, and methods, can lead to optimized energy usage and lower long-term operating costs. This understanding will likely lead more owners and managers choosing a high-performance enclosure design and achieve, intentionally or unintentionally, the goal of reducing the sector's carbon usage.

As I am sure you are aware, there are many different approaches the government can take to address climate change. By focusing more resources on the one sector where there is so much energy to save, you can help shift the paradigm and make high-performance building enclosures a choice for more owners and managers.