Pennsylvania
Department of
Environmental Protection

August 3, 2026
via electronic transmission

U.S. Department of Energy
Building Technologies Office
Mailstop EE-5B
1000 Independence Avenue SW
Washington, DC 20585-0121

RE: Docket ID No. EERE-2026-BT-BC-0034
Request for Information: Updating and Improving the Methodology for Assessing Affordability and Cost-Effectiveness of Building Energy Codes
BldgEnergyCodesMethodology2026BC0034@ee.doe.gov

Dear Assistant Secretary Robertson,

The Pennsylvania Department of Environmental Protection (DEP and/or Department) appreciates the opportunity to provide comments on The United States Department of Energy's (DOE) Request for Information (RFI) titled *Updating and Improving the Methodology for Assessing Affordability and Cost-Effectiveness of Building Energy Codes* (Docket EERE-2026-BT-BC-0034).

The Energy Programs Office (EPO), recognized as the State Energy Office by the United States Department of Energy, is housed within the Pennsylvania Department of Environmental Protection. The Energy Programs Office's mission is to "maintain the statutory responsibilities of the Pennsylvania Energy Office, to support the development of clean and indigenous energy resources, to advance conservation and efficient use of diverse energy resources to provide for a healthier environment, to achieve greater energy security for future generations, and achieve the mission of DEP to protect Pennsylvania's air, land, and water from pollution and provide for the health and safety of its citizens through a cleaner environment." Among the various responsibilities of EPO is implementation of projects and programs that will decrease inefficient energy usage across all sectors from residential to industrial. One component of this work is supporting training and outreach about building energy management and efficiency including building energy codes. As such, EPO welcomes the opportunity to respond to the U.S. DOE's RFI regarding building energy codes.

Of the various issues that DOE requested information, EPO has selected to respond to a few specific questions, leaving the responses to some of the questions to the trade associations, builders, designers and technical groups in the Commonwealth.

Questions and Responses:

Q01: Suggestions for cost data and other considerations that more accurately reflect the real market costs paid by consumers.

Response: The data used for real costs to consumers for construction – especially for residential construction - is difficult to ascertain for all cost types, not just those related to building energy codes. A better analysis of overall costs to consumers might be achieved by combining the data from the Residential Energy Consumption Survey (RECS) and examining the impact of the energy code on operational energy costs for similar homes in the same climate zone with where there is a required energy code compared to where there is none. Once that data is known, then an analysis of annual savings could be applied moving forward.

Q02: The appropriateness of developing and maintaining a publicly available database that estimates real market costs to consumers from building energy codes.

Response: The real market costs to consumers from building energy codes depends on numerous factors, which is why the analysis for the costs and paybacks requires the technical support of qualified professionals during the development of the codes and the historical work conducted by the Pacific Northwest National Laboratory to confirm these numbers once the codes are published. Developing and maintaining a publicly available database to estimate "real costs" would be a complex tool that would require regular review and adjustment based on fluctuating utility and fuel cost data. Advances in home building technologies require more complex codes, resulting in safer, healthier, more durable spaces for humans to live and work and first cost is not the only cost a smart consumer needs to calculate the affordability of construction elements.

Q04: Suggestions for data and analysis approaches that more accurately reflect economic benefits to consumers.

Response: In most situations, both residential and commercial buildings are financed over time, through mortgages or commercial loans. It is important during the evaluation of efficiency measures that ongoing savings are considered. A high-efficiency heating and ventilation system may increase mortgage payments by a small amount, but especially in the face of rising energy costs nationally, the monthly utility bills will be lower and continue to be lower each month, leaving the building owner more financially stable. Using just first cost ignores a true "return on investment" calculation: comparing the total cost of ownership of the new equipment or system with the measurable financial benefits it delivers over time.

Q09: Suggestions for data and studies that demonstrate the appropriate length of time that is applicable to energy efficiency measures, and better methods of evaluating benefits to consumers.

Response: The data to demonstrate appropriate length of time applicable to energy efficiency measures should include appropriate lifetime of the measure and the ease of replacement. For example, few building types allow the owner to add insulation or improve air sealing once the structure is completed. The lifetime of insulation and air sealing systems is the lifetime of that building. According to the International Association of Certified Home Inspectors (InterNACHI), the average life expectancy of a single-family residential structure with a timber frame and concrete foundation is 100+ years. A 2025 journal article determined that the mean and median age of a residential building in the United States is 85 years, based on demolition data. Commercial buildings have a mean age of 71 years. For both residential and commercial

construction, windows and doors are readily available from manufacturers with the expectation of 20 years when properly installed. Roof structures are 30-80 years, depending on material for residential construction and 20-40 years for commercial construction.

Q11: Input on broader issues of regulatory burden caused by permitting delays and localized regulatory costs.

Response: Data from a variety of studies show that properly enforced building codes have an overall benefit to communities, resulting in increased durability and better health outcomes for occupants. Support for permitting entities, building code officials, designers and builders alike would be beneficial from the national level in the form of checklists, online tools and training to reduce incorrect application submissions, non-compliant design submission and understanding of proper building techniques. EPO has supported this type of effort, using State Energy Program dollars in the past, and seen improvements in outcomes for building inspectors and owners. The Building Code Effectiveness Grading Schedule (BCEGS), developed by Verisk (formerly ISO Mitigation) is a common tool used to determine how well building departments are enforcing codes. This classification may be used by insurance companies to assess the level of risk associated with investing in communities – directly affecting insurance rates and mortgage availability. A score and classification are provided for both residential and commercial/industrial buildings. The Federal Emergency Management Agency (FEMA) found that by 2040 up-to-date building codes will avoid $132 billion in damage from storms and other disasters that are increasing due to climate change. This study also showed that building energy codes also increase the ability of residents to safely stay in their homes for longer during a power outage with extreme heat or cold. The joint 2023 study by three national laboratories (PNNL, LBNL, and NREL) and the Department of Energy (DOE) found that building to the 2021 IECC would protect residents during extreme heat and cold events, reducing deaths and doubling the length of time residents can safely stay in their homes during a power outage. Lastly, modular home construction provides an avenue for high overall code compliance and simpler permitting, lowering regulatory costs for municipalities and builders alike. This allows for consistent construction and inspections and responsive compliance to occur at a manufacturing site for many of the detailed elements of all building codes.

Again, DEP appreciates the opportunity to provide comments on U.S. DOE's Request for Information on *Updating and Improving the Methodology for Assessing Affordability and Cost-Effectiveness of Building Energy Codes*. Should you have questions or need additional information, please contact Christine Knapp, Director of the Energy Programs Office, by e-mail at chrknapp@pa.gov or by telephone at 717.783.2290.

Sincerely,

Jessica L Shirley

Jessica Shirley
Secretary