Statement for the Record

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FOR A HEARING ON

ENERGY EFFICIENCY LEGISLATION

BEFORE THE
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Chairman Rush, Ranking Member Upton, and Members of the Subcommittee, thank you for the opportunity to testify on behalf of the Department of Energy (DOE) regarding a number of bills addressing energy efficiency issues that are being considered by this Committee.

One of my top priorities for Energy Efficiency and Renewable Energy (EERE) is energy affordability. Affordable, reliable energy is critical to human well-being. The use of energy helps keep us safe, saves us time, amplifies our work efforts, and reduces the effects of distance, among other benefits. When energy is more affordable, it frees up more of our budget and time so we can spend these precious resources on the things we care about most.

Cost-effective energy efficiency improves the energy affordability of U.S. homes, buildings, and manufacturing sectors. Since 2005, U.S. electricity demand has stayed relatively flat[1] while U.S. gross domestic product (GDP) has steadily increased,[2] in part due to cost-effective improvements in energy efficiency.[3] However, in the Energy Information Administration's (EIA) 2019 Annual Energy Outlook, the reference case projects that growth in demand will outpace energy efficiency improvements during the 2018-2050 projection period.[4] Thus, there is a potential opportunity for further energy efficiency improvements, with an emphasis on solutions that do not sacrifice the comfort of building occupants or the performance of labor-saving products, devices, and equipment.

[1] U.S. Energy Information Administration. Table 7.6 Electricity End Use; Dec 2005-Dec 2018. Accessed April 2, 2019. https://www.eia.gov/totalenergy/data/browser/?tbl=T07.06#/?f=M&start=200512&end=201812&charted=5-6-7.

[2] The World Bank. GDP (current US$); United States. Accessed March 29, 2019. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2017&locations=US&start=2005

[3] U.S. Energy Information Administration. "Total electricity sales fell in 2015 for 5th time in past 8 years." March 14, 2016. https://www.eia.gov/todayinenergy/detail.php?id=25352&src=email

[4] U.S. Energy Information Administration. Annual Energy Outlook 2019 with projections to 2050. Washington, DC: U.S. Department of Energy, January 2019. https://www.eia.gov/outlooks/aeo/pdf/aeo2019.pdf

The United States' (U.S.) approximately 125 million homes and commercial buildings are the single largest energy-consuming sector in the U.S. economy, representing approximately 75 percent of the Nation's electricity use,[5] 40 percent of its total energy demand,[6] and significantly contributes to peak power demand. As a result, Americans spend nearly $400 billion each year to power their homes, offices, schools, hospitals, and other commercial and residential buildings.[7]

As the EERE Assistant Secretary, I am responsible for overseeing a broad portfolio of energy efficiency and renewable energy programs. The technologies in my portfolio advance America's economic growth and energy security while enhancing the reliability and resilience of the U.S. energy system. Today, I would like to share what relevant work my office has done and is doing in the areas that these bills address.

Home Owner Managing Energy Savings (HOMES) Act

The HOMES Act would create a program through the Department of Energy to provide rebates to homeowners for achieving home energy savings, as well as to develop quality assurance programs to oversee the delivery of home efficiency retrofit programs.

Residential buildings use an estimated 21% of all energy used in the U.S. EIA's 2019 Energy Outlook projects a slight decline in energy consumption for this sector through 2050[8].

[5] U.S. Energy Information Administration. Table 7.6 Electricity End Use; Dec 2005-Dec 2018. Accessed April 2, 2019. https://www.eia.gov/totalenergy/data/browser/?tbl=T07.06#/?f=M&start=200512&end=201812&charted=5-6-7.

[6] U.S. Energy Information Administration. Table 2.1 Energy Consumption by Sector. 2014-2018. Accessed April 2, 2019. https://www.eia.gov/totalenergy/data/browser/?tbl=T02.01#/?f=A&start=2014&end=2018&charted=3-6-9-12.

[7] Spending derived from the U.S. Energy Information 2012 Commercial Building Energy Consumption Survey (CBECS) and 2009 Residential Energy Consumption Survey (RECS) from "Total Building Site Energy Expenditures".

[8] U.S. Energy Information Administration. Annual Energy Outlook 2019 with projections to 2050. Washington, DC: U.S. Department of Energy, January 2019. https://www.eia.gov/outlooks/aeo/pdf/aeo2019.pdf

However, there is still an opportunity for energy savings given that 55% of the Nation's more than 118 million homes[9] were built before 1980—prior to the existence of today's more efficient products and building construction practices.

Home energy retrofits represent a potentially substantial opportunity for energy savings that do not negatively impact comfort or performance. EERE is initiating research to develop better solutions for achieving cost-effective energy savings (50% to 75% reduction in energy use intensity) through advancements in building construction technologies, less intrusive installation methods, and more effective integrated envelope and heating/cooling technologies.

In addition to research and development, EERE implements a variety of programs that promote residential energy efficiency. EERE's Building Technologies Office (BTO) administers the Home Performance with ENERGY STAR (HPwES) program in partnership with the U.S. Environmental Protection Agency and local sponsors, such as utilities, state and local governments, and non-profits that primarily administer utility-funded energy efficiency programs. These HPwES sponsors, along with 1,400 participating contractors, provide energy improvement services to homeowners across the U.S. In fact, since 2002, HPwES partners have reported completing improvements to more than 700,000 homes[10].

In addition to HPwES, BTO and the DOE National Laboratories have developed the Home Energy Score to provide homeowners, buyers, and renters directly comparable and credible information about a home's expected energy use. Like a miles-per-gallon rating for a car, the Home Energy Score is based on a standard assessment of energy-related assets to easily compare the energy performance of different homes. Utilities, contractors, and software tool providers access the DOE scoring tool at no charge to generate reliable energy estimates and the

[9] EIA, Residential Energy Consumption Survey 2015 (RECS
[10]2017 Home Performance with ENERGY STAR Annual Report

Home Energy Score, which they can provide to their customers. Some HPwES sponsors have incorporated the Home Energy Score tool into their programs and appreciate the fact that it provides an easy to use framework for analyzing data and tracking their program's efforts. Approximately 115,000 homes have been scored to date.

Another resource available to homebuyers is the Residential Energy Services Network (RESNET), a nonprofit organization with a national network of home energy professionals recognized by DOE and EPA to "help homeowners reduce their utility bills by making their home more energy efficient." To date, RESNET reports having rated over 2 million homes using the Home Energy Rating System (HERS) Index.

Additionally, EERE's Weatherization Assistance Program (WAP) developed and maintains a foundational workforce training and certification program to ensure quality work is performed in WAP residential weatherization retrofits for low-income homes. WAP invested in enhanced training capacity throughout the country and developed the Guidelines for Home Energy Professionals (GHEP) as the foundation for training and certification of the local agencies' staff and contractors. Utility programs across the country have recognized and adopted the Home Energy Professional Certification program. GHEP resources include a complete set of Standard Work Specifications in the Guidelines for each energy conservation measure installed in the home as well as professional certification requirements for installers, crew chiefs, energy auditors, and quality control inspectors.

Smart Building Acceleration Act

The Smart Building Acceleration Act would take a number of actions related to evaluating and advancing the current state of "smart buildings" in the private and federal sectors.

As stated earlier, buildings consume about 75% of U.S. electricity demand and 40% of total energy demand. These large energy loads mean that buildings can potentially provide cost-effective demand flexibility for the grid. At EERE, our research on grid-interactive building technologies is led by BTO, in coordination with the National Labs and private sector partners, including the National Association of State Energy Officials (NASEO) and the National Association of Regulatory Utility Commissioners (NARUC). This research initiative is focused on increasing energy affordability for families and businesses while providing grid flexibility, with an emphasis on solutions that do not negatively impact comfort or productivity. BTO works closely with several National Labs, as well as across DOE through the Grid Modernization Initiative, on R&D focused on driving down the cost of smart building technologies.

Another critical area of research for DOE is ensuring that cybersecurity is built in to the initial design, production, and deployment of new technologies. This includes ensuring cyber resilience for every part of the manufacturing supply chain. In the buildings sector, EERE is focused on ensuring that smart building technologies are cyber-secure for both the building owner's privacy and the grid's resiliency.

We see an opportunity for smart building technology to improve energy integration and storage options for both building owners and grid operators. With smart communications and controls, buildings can better manage building functions, including traditional demand assets like lighting and air conditioning along with on-site photovoltaics, electric vehicle charging, and battery storage, in a continuous and integrated way.

Beyond research and development, EERE's work in smart and connected buildings includes federal buildings. The federal government is America's largest single energy consumer. Federal buildings present another opportunity for early commercial deployment of emerging

grid-interactive, energy-efficient technologies, while also improving the energy performance of federal buildings.

EERE's Federal Energy Management Program works closely with other federal agencies in this regard, providing assistance and technical support so that the federal government can better incorporate the strategic integration of advanced and smart technologies to promote affordable and resilient facilities.

Weatherization Assistance Program

The Weatherization Assistance and State Energy Programs bill would reauthorize these two programs through 2022.

The President's Budget requests no funding for the WAP and the State Energy Program to reduce federal intervention in state-level energy policy and implementation.

The Administration's focus for the Office of Energy Efficiency and Renewable Energy is on early-stage applied research and development. DOE is focused on higher risk activities that are more appropriately performed by the federal government, versus those that are more appropriately left to the private sector, states, and local governments.

DOE also understands congressional interest in these programs, and continues to manage them consistent with statute.

Energy Efficiency and Conservation Block Grant Program

Improving Energy Efficiency of Public Buildings

The bill would expand the purpose of the Energy Efficiency and Conservation Block Grant Program (EECBG) to include diversifying energy supplies, including facilitating and promoting the use of alternative fuels, and reauthorize the Program at $3.5 billion annually from FY20-25, with a focus on "deployment of energy distribution technologies that significantly

increase energy efficiency or expand access to alternative fuels." The bill also expands the prioritization that the Secretary must consider for competitive EECBG grants to include projects to expand the use of alternative fuels.

The second bill would reauthorize grants for improving the energy efficiency of public buildings at $100 million annually from FY21-25.

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Smart Energy and Water Efficiency Act

The Smart Energy and Water Efficiency Act would award grants to eligible entities to demonstrate advanced and innovative technology-based solutions to improve the energy efficiency of water, wastewater, and water reuse systems.

DOE is implementing several initiatives to promote affordable, efficient, and secure water supplies. In October 2018, U.S. Energy Secretary Rick Perry launched the Water Security Grand Challenge, a White House-initiated and Energy Department-led initiative to meet the global need for safe, secure, and affordable water. The five specific 2030 goals under the Water Security Grand Challenge are to:

- Launch desalination technologies that deliver cost-competitive clean water;
- Transform water, produced from the energy sector, from a waste to a resource;
- Achieve near-zero water impact for new thermoelectric power plants, and significantly lower freshwater use intensity within the existing fleet;
- Double resource recovery from municipal wastewater; and

- Develop small modular energy-water systems for urban, rural, tribal, national security, and disaster response settings.

The Department of Energy is deploying a portfolio of programs to address the goals of the Water Security Grand Challenge, including prize competitions, research and development, and public-private partnerships. While DOE is leading this effort, the Department is working closely with important partners throughout the federal government, including the U.S. Environmental Protection Agency, U.S. Department of Interior, and U.S. Department of Agriculture, as well as with the private sector, to address these goals.

AMO also works with water utilities and other industrial partners to improve their energy and water efficiency through efforts like Better Buildings, Better Plants, which is a voluntary recognition program to support a 25% improvement in energy intensity over 10 years. Partners receive technical support from DOE and share best practices and replicable models with their peers.

EERE's Weatherization and Intergovernmental Programs Office (WIP) also provides technical assistance that focuses specifically on the efficiency of wastewater treatment facilities. WIP's Sustainable Wastewater Infrastructure of the Future (SWIFt) Accelerator works with partners to develop and validate innovative approaches and tools that help them integrate energy efficiency into their infrastructure and operations. SWIFt began in October 2016 and will run through October 2019, involving close to 100 partners at the state, regional, local, and plant levels across the country. In addition to the individual partners' goal achievements and plans, WIP will be compiling a toolkit comprising the 28 wastewater-specific tools and resources developed during the Accelerator to be made available to all wastewater facilities.

Thank you for the opportunity to appear before the Subcommittee to discuss these important energy efficiency issues, and I look forward to your questions.