Testimony of Kara Saul Rinaldi
As Vice President of Government Affairs, Policy, and Programs,
Building Performance Association
Before the
U.S. House of Representatives, Select Committee on the Climate Crisis
Hearing Title:
Solving the Climate Crisis: Cleaner, Stronger Buildings

Chair Castor, Ranking Member Graves, and members of the Committee, thank you for inviting me to testify today on the important role that buildings can play in reducing America's contribution to global climate change. As you may know, the buildings sector is responsible for 31% of all U.S. greenhouse gas emissions.[1] While buildings are a significant contributor to our climate crisis, they can also be a key part of the solution. I will discuss commercial and federal buildings but will focus in particular on how the residential sector is key to carbon reductions and achieving numerous other benefits. Policies aimed at retrofitting the over 115 million homes across the country will not only help reduce carbon emissions from the nation's residential building stock but will also help homeowners save money on their monthly utility bills and improve the comfort, health, safety, and resiliency of their homes. Advancing energy efficiency in buildings across the U.S. will support climate change mitigation and resilience, while also being an engine for job growth and economic opportunity.

I am President and CEO of the AnnDyl Policy Group, an energy and environmental policy strategy firm, and I serve as the Vice President of Government Affairs, Policy, and Programs for the Building Performance Association (BPA), formerly known as the Home Performance Coalition, a national non-profit 501c3 organization that works with industry leaders in the home performance and weatherization industries to advance energy- efficient, healthy and safe homes retrofit policies, programs and standards through research, education, training and outreach. I am pleased to represent BPA here today.

Energy Efficient Buildings are a Pathway to Deep Decarbonization

There is significant opportunity to decarbonize the buildings sector by adopting policies that advance energy efficiency. Energy efficiency is a critical pathway to achieving deep decarbonization because it is cleaner and cheaper than building new low-carbon or carbon-free generation. Deploying energy efficiency reduces demand for primary energy and generating capacity needs and therefore lowers the overall costs of shifting to a low-carbon energy system.[2] Ultimately, the cleanest and cheapest energy is the energy you don't use in the first

[1] https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf
[2] An NRDC study found that 80% emissions reductions in the U.S. by 2050 is achievable and cost-effective using existing clean energy technologies. Energy efficiency is the single greatest contributor to emissions reductions in the model scenario which assumes an aggressive, but technically and economically achievable, deployment of energy efficiency across the U.S. economy. https://www.nrdc.org/sites/default/files/americas-clean-energy-frontier-report.pdf

place. A new report from ACEEE found that energy efficiency alone can cut energy use and greenhouse gas emissions in half by 2050.[3] Buildings deliver 33% of the total emissions reductions in the report's model, and upgrades to existing buildings and homes and appliance and equipment efficiency are identified as some of the largest cost-effective opportunities to achieve these reductions.

The residential buildings sector in particular remains a largely untapped resource for carbon reduction goals. I will discuss specific policy opportunities to address barriers and advance energy efficiency in the residential sector in a moment.

Energy Efficiency Creates Jobs

Energy efficiency is the largest employer and fastest growing sector in the energy industry. Put simply, energy efficiency equals jobs. According to this year's "Energy Efficiency Jobs in America"[4] report released by E4TheFuture and attached to this testimony, the energy efficiency sector employs 2.3 million Americans, twice as many workers as the entire U.S. fossil fuel industry, and energy efficiency is leading the nation's energy economy in new job creation, accounting for half of the entire energy industry's job growth in 2018. These local, family-sustaining jobs exist all across the country. In fact, the E4TheFuture report found that 99.7% of U.S. counties have energy efficiency jobs and more than 300,000 of these jobs are in rural areas. A significant portion of energy efficiency jobs in the U.S. are in the residential sector, and approximately 56 percent of energy efficiency jobs involve construction and repairs. These are the contractors – the "boots on the ground" – installing energy efficiency products and technologies and working to reduce energy waste in homes and commercial buildings across the country. These jobs are, by their very nature, inherently local and cannot be exported. Contractors are local – their kids go to the same schools as their clients, they sponsor baseball teams, they share in community successes and failures. Policies that encourage investment in energy efficiency can further advance growth in this industry, creating even more well-paying jobs all across America and generating economic opportunity through the decarbonization transition.

Importantly, policies that provide incentives for building efficiency retrofits, such as the HOMES act or tax policy like the 25C or 179D federal credits, create a ripple effect on jobs. Demand for insulation, air sealing, HVAC will certainly create work for those who install these products, but it also creates jobs in the manufacturing and distributing of those products. This creates jobs around those industrial centers where workers eat, shop, and live.

Not only is energy efficiency the largest employer in the energy sector, it has the most potential for even more job growth moving forward. With an aging building stock across the country we have only scratched the surface on investing in energy efficiency improvements. Addressing barriers to retrofitting these existing homes and buildings and advancing energy efficiency across the entire buildings sector will simultaneously support decarbonization and job creation.

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[3] https://aceee.org/sites/default/files/publications/researchreports/u1907.pdf

[4] https://e4thefuture.org/wp-content/uploads/2019/09/Energy-Efficiency-Jobs-in-America-2019.pdf

It is also important to note that the energy efficiency industry is comprised mainly of small businesses: 80% of energy efficiency businesses in America have fewer than 20 employees.[5] These small businesses are the heart of the American economy—creating jobs, driving growth, and saving us all money through improved energy efficiency. They are also the ones that are in need of assistance when it comes to ensuring that there are qualified workers to fill these jobs. Small energy efficiency businesses need resources to help train new hires and provide ongoing education to existing employees, keeping them up to date on certifications and trained in the latest technologies and health and safety practices. To prepare more American workers for quality jobs in energy efficiency and drive further growth in this industry, Congress should act to support workforce development and jobs training. ***The Blue Collar to Green Collar Jobs Development Act of 2019 (HR 1315)*** would create a comprehensive, nationwide program to improve education and training for workers in the energy efficiency industry, including manufacturing, engineering, construction, and building retrofitting jobs. This legislation will result in more American workers who are equipped to provide energy efficiency products and services and whose work will reduce energy waste and save money for homes and businesses across the country.

Energy Efficiency Provides Building Resilience

Energy efficiency measures not only save energy and reduce carbon pollution, they also improve the physical structure of the building. Building envelope improvements like high performing insulation and air sealing increase the durability of the building and its ability to withstand extreme weather and keep occupants safe. Studies have shown that buildings built to the latest energy code, with efficient, well-sealed structures, are able to maintain safe indoor temperatures through extreme heat and cold and allow residents to remain safe and comfortable for longer during a power outage.[6] Beyond the durability and resilience of the physical buildings themselves, energy efficiency enhances resilience in other ways: providing health and safety benefits like improved indoor air quality, delivering cost savings to families and businesses which creates new opportunities for productive spending and local investment, and supporting the reliability and resilience of our power grid which I will discuss further in a moment.

Energy Efficiency Policy as a part of Equity Policy

Energy efficiency is a key strategy for both reducing carbon emissions and improving the lives of Americans. Legislation that advances energy efficiency in buildings, especially residential buildings, provides many benefits in addition to energy and pollution reductions including increased comfort, health, and energy affordability.

The occupants of the vast majority of homes in the U.S. experience building-related comfort problems, health issues, and/or high utility bills—problems which could all be significantly

[5] https://e4thefuture.org/wp-content/uploads/2019/09/Energy-Efficiency-Jobs-in-America-2019.pdf
[6] http://www.aceee.org/files/proceedings/2014/data/papers/1-439.pdf

mitigated by proper construction techniques and energy efficiency upgrades.[7] Studies have shown that improvements in occupant health from residential energy efficiency are strongest among vulnerable groups: lower income households and residents with pre-existing health conditions linked to housing risks.[8]

Energy costs are a significant living expense. For the nearly one-third of U.S. households who face challenges paying energy bills or sustaining adequate heating and cooling in their homes, the cost savings provided by energy efficiency are critical.[9] Congress should advance policies aimed at helping middle income Americans make efficiency upgrades to their homes (e.g. HOMES Act) as well as programs designed to make efficiency upgrades to low income homes (e.g. Weatherization Assistance Program).

In addition to the cost-savings benefits to homeowners, efficiency upgrades also have health and safety benefits. A U.S. Department of Energy report on the Weatherization Assistance Program found that home improvements focused on energy efficiency can improve indoor air quality, which reduces respiratory illness and sick days, and reduce thermal stress caused by exposure to extreme indoor thermal conditions (temperature, humidity, drafts).[10] A report from E4TheFuture, entitled "Occupant Health Benefits of Residential Energy Efficiency,"[11] which reviews existing research on the link between resident health benefits and energy efficiency upgrades, also found that residential energy efficiency upgrades can produce significant improvements in asthma symptoms and help improve overall physical and mental health.

It is critical that Congress continue to support and expand the Weatherization Assistance Program. I was the lead author of a report[12] in 2017, published by the Home Performance Coalition, that offered recommendations for improvements to the program, opportunities for streamlining, and ways to encourage the use of private sector contractors. Some of these ideas are included in the ***Weatherization Enhancement and Local Energy Efficiency Investment and Accountability Act (HR 2041)*** which would reauthorize and make updates to the Weatherization Assistance Program. This bill has passed out of Committee this year and awaits a floor vote. I urge Congress to act on this important legislation.

Smart Energy-Efficient Buildings are a Pathway to a Clean, Affordable, Resilient Grid

When we talk about clean energy and decarbonizing the electric grid, buildings and energy efficiency must be part of that conversation. When we discuss grid resilience and stability concerns, building efficiency must be a part of the conversation, because it is buildings that are

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[7] https://www.building-performance.org/sites/default/files/0819-EE-high-performing-homes-blueprint-v8.pdf
[8] https://e4thefuture.org/wp-content/uploads/2016/11/Occupant-Health-Benefits-Residential-EE.pdf
[9] https://www.eia.gov/todayinenergy/detail.php?id=37072
[10] https://weatherization.ornl.gov/wp-content/uploads/pdf/WAPRetroEvalFinalReports/ORNL_TM-2014_345.pdf
[11] https://e4thefuture.org/occupant-health-benefits-of-residential-energy-efficiency/
[12] https://www.building-performance.org/sites/default/files/Weatherization%20%26%20HP%20Recommendations%20Report2.pdf

being asked not only to generate power (through renewables) but to reduce their energy consumption at certain times of the day (through demand response).

There is a growing need for policymakers to look at buildings as an integral part of the grid that not only use energy but can also generate power, store energy, and shift demand from times of high demand and cost to times when wind and solar power are abundant and energy is cheapest. Thanks to advances in technology, our nation's buildings—and the residential sector in particular—can be enabled to play an important role in managing energy demand to support grid efficiency, reliability, and resilience and achieve significant carbon reductions.

The U.S. Department of Energy (DOE) Building Technologies Office (BTO) has been doing a lot of work in the area of "Grid-interactive Efficient Buildings" (GEBs). I am the lead author of a new report released today by the National Association of State Energy Officials (NASEO) entitled "Residential Grid-Interactive Efficient Building Technology and Policy: Harnessing the Power of Homes for a Clean, Affordable, Resilient Grid of the Future," that describes how homes with energy efficiency measures, combined with smart technologies, and small-scale storage and generation resources can support grid needs and achieve carbon reductions while consumers benefit from utility bill savings, increased comfort, and amenity.[13] GEB technologies (e.g. smart thermostats, efficient connected appliances, battery and thermal storage, and home energy management systems) make homes smart, connected, efficient and flexible, allowing them to reduce or shift energy use to take advantage of variable renewable energy and support a cleaner grid, while helping American families lower their utility bills and increase comfort and convenience.

Importantly, GEBs can provide energy savings and demand flexibility as a cost-effective clean energy solution that reduces carbon emissions. Smart grid-interactive technologies provide two-way communication between a home and the grid and offer new tools to target load shedding and shifting more precisely and continuously, exactly when and where it is needed, while maintaining occupant comfort and needs. For example, a smart water heater is able to receive a signal when there is overproduction of renewable energy and respond by adjusting its heating cycle to use that clean power and then store the hot water for use later in the day. With intelligent controls smart water heaters ensure that residents always have access to hot water, while maximizing the use of carbon-free generation by responding dynamically to grid conditions. The building efficiency sector is undergoing rapid change and is increasingly a source of innovation and new technology, with more sophisticated solutions for home energy management. As the sensors, controls, software, and machine learning that comprise home energy management systems advance and integrate with more technologies, these platforms can support the interconnection of solar, storage, and flexible end uses in the home to coordinate load management strategies for grid and user benefit.

Energy efficiency measures are the foundation of a smart, grid-interactive efficient home. They reduce the baseline load of a home, lowering overall electricity use. Conventional energy

[13] The report, released today, is attached to this testimony.

efficiency measures include building envelope improvements and replacement of existing equipment and systems (e.g., appliances, lighting, HVAC, boilers) with higher-efficiency models. All of these measures provide a foundation for other solutions' effectiveness: minimizing the load size that requires shifting, enabling homes to hold a comfortable temperature for longer periods of time, and ensuring distributed generation and storage are appropriately sized. Smart technologies help advance energy efficiency in buildings, driving additional savings and connecting efficiency measures with new opportunities to provide load flexibility. Smart thermostats, for example, offer monitoring, control, and optimization of HVAC systems to take advantage of energy saving opportunities (e.g., via learned schedules and low energy "away" modes) and can also be used for demand response. On the hottest days of the year, smart thermostats can respond by raising the setpoint slightly to save energy and ease strain on the grid, when paired with other efficiency measures like a tight, well-insulated building envelope and dynamic efficient window shading keep the home cool and comfortable—all with little to no effort from the homeowner.

Deploying these solutions in an integrated way can cost-effectively reduce peak demand, address capacity constraints, and provide other grid services—deferring transmission and distribution upgrades and reducing the need for new power plants. A recent study by Rocky Mountain Institute[14] found that Clean Energy Portfolios of wind, solar, storage, energy efficiency, and demand flexibility are now cost-competitive with new natural gas plants, while providing the same grid reliability services currently serviced by natural gas.[15] In order to integrate these clean energy resources and maximize carbon reductions across the power system, the grid needs "intelligence." Smart grid technologies in the buildings sector like smart meters, sensors and controls, and software solutions provide enhanced monitoring, detection, and control capabilities. These technologies are an important and cost-effective way to increase the reliability and efficiency of the grid and maximize the use of renewable energy, by providing increased visibility into grid conditions and allowing utilities to better manage increasingly complex energy systems.

We need to break down the silos between energy efficiency, renewables, and distributed energy resources such as electric vehicles and battery storage. Advancing energy efficiency and smart energy management technologies will help homes and buildings save energy and use energy more flexibly to minimize our carbon footprint. Plans for interoperability, incentives, and maximizing data use is critical for tapping this great energy resource. With policy and program innovation that brings all of these pieces together to optimize energy usage we can reduce the need for new power plants, deliver more reliable energy services at lower costs, all while making homes healthier, more comfortable places to live.

As noted in the Residential Grid-Interactive Efficient Building Technology and Policy report, the Building Performance Association also encourages federal investment in the following areas to

[14] https://rmi.org/insight/clean-energy-portfolios-pipelines-and-plants

[15] The study also found that energy efficiency and demand flexibility—resources that GEBs can provide—are the least-cost route to meeting energy, capacity, and flexibility needs.

advance innovation with residential GEBs, supporting both decarbonization in the buildings sector and a cleaner, more resilient grid:

- **Grid modernization.** Investment in full deployment of smart meters (AMI) across the entire residential sector would create an enabling infrastructure for grid-interactive energy optimization. Smart meters provide two-way communication between a home and utility and provide much more granular energy usage information, creating new opportunities for targeted energy efficiency and demand response and supporting the integration of customer-sited resources like rooftop solar and battery storage, enabling a broad range of GEB solutions.
- **Residential GEB demonstration and deployment.** To build on research on grid-interactive efficient building solutions, funding should focus on demonstration and deployment to (1) evaluate energy optimization strategies integrating energy efficiency and smart technology in real homes and (2) assess the potential of different retrofit measures to increase energy efficiency, grid interactivity, and demand flexibility in existing homes.
- **Advance workforce education.** Curriculum development and resources to train home performance contractors on integrating smart technology within home performance retrofits to further advance residential energy efficiency and demand flexibility.
- **Research to quantify the value of residential GEBs and their benefits.** New methods and tools for valuing the hard-to-quantify benefits residential GEBs provide, including energy resiliency and non-energy benefits like convenience and safety.
- **Development and promotion of standards for interoperability.** Standard communications protocols and interoperability are key to ensuring that different technologies can work together effectively, and integrated solutions are cost-effective and future-proofed.

Residential Sector is Key to Carbon Reductions

The residential buildings sector remains a largely untapped resource for carbon reduction goals. Residential buildings consume more electricity than any other sector[16] and are the largest contributor to peak demand,[17] which makes this sector especially important from a carbon emissions reduction standpoint. I authored a report in 2016, published by the Home Performance Coalition, which outlines how residential energy efficiency can play an important role as a proven, low-cost, and accessible way to help meet carbon emission reduction goals.[18] The residential buildings sector is often overlooked by policymakers because of its diversity and complication: over 70% of our nation's housing stock was built before 1990, with almost 40% older than 1970,[19] and the characteristics of homes vary considerably by the year they were

[16] https://www.eia.gov/electricity/annual/html/epa_01_02.html
[17] https://www.energy.gov/sites/prod/files/2019/04/f61/bto-geb_overview-4.15.19.pdf
[18] https://www.building-performance.org/sites/default/files/A%20Policymaker%E2%80%99s%20Guide%20to%20Incorporating%20Existing%20Homes%20into%20Carbon%20Reduction%20Strategies%20and%20Clean%20Power%20Plan%20Compliance_0.pdf
[19] https://www.eia.gov/consumption/residential/data/2015/hc/php/hc2.3.php

built, meaning they need individualized attention. Retrofitting and providing certifications to allow for the valuation of these homes could achieve significant energy and carbon savings. Each house is unique and the barriers that exist in terms of financing, homeowner education and engagement, and proper valuation of efficiency characteristics of residential buildings all make it a difficult sector to tackle from a policy perspective. The following pieces of legislation and policy proposals represent a multi-pronged policy approach to reducing carbon emissions in the residential building stock:

Other Legislative and Policy Proposals to Incentivize Residential Energy Efficiency:

Home Owner Managing Energy Savings (HOMES) Act of 2019 (116th – HR 2043, Rep. Welch). Would establish a grant program for rebates to make residential energy efficiency upgrades with a network of rebate aggregators, quality assurance, and pilot on pay for performance. Earlier iterations of the HOMES Act from previous Congresses have been bipartisan with Rep. McKinley (R-WV).

Access to Consumer Energy Information Act or the E-Access Act (116th – discussion draft, Rep. Welch) (114th – HR 1980/S 1044, Rep. Welch (D-VT), Rep. Cartwright (D-PA) / Sen. Markey): Would allow DOE to facilitate customers' access to their own electricity data, adds consumer access to energy use and price data to State energy conservation plans, and provides for establishment of voluntary guidelines with access to third parties according to a protocol established by the Secretary.

Residential Energy Efficiency Valuation Act "REEVA": A short term grant program to states to provide incentives based on measured energy savings from energy efficiency upgrades of residential buildings. Payments are to contractors/aggregators based on performance. The contractor/aggregator is to utilize financing to provide market-based incentives for their customers. *Language available from the Building Performance Association.*

Sensible Accounting to Value Energy (SAVE) Act (114th – HR 614/ 113th – S 1106, Rep. Murphy, Rep. Jolly / Sen. Bennet, Sen. Isakson): HUD to develop and issue guidelines to all federal mortgage agencies to implement enhanced loan eligibility based on energy cost savings due to efficiency upgrades. Supported by the NAHB and many others. Included in the Energy Savings and Industrial Competitiveness Act (HR 3962, S2137).

Tax credit. We recommend support for tax incentives for homeowners that invest in sound residential energy efficiency home upgrades; tax incentives like a forward-looking, expanded 25C tax credit. The 25C tax credit is the only energy efficiency tax credit provided to consumers, everyday homeowners who struggle to pay their utility bills. Residential tax incentives are critical to reducing the upfront cost of energy efficiency improvements, thereby allowing more Americans access to the efficiency market, reducing monthly utility bills, increasing the health and safety of homes, and reducing carbon emissions. We support a forward-looking extension of a tax credit for

residential energy efficiency upgrades and recommend improving the 25C credit by updating goals and transitioning the credit into permanent performance-based instead of prescriptive incentive.

Energy Efficiency Resource Standard (EERS). Direct electric and natural gas utilities to achieve increasing levels of energy savings through cost-effective customer energy efficiency programs.[20] States could administer the program, and limited credit trading would be allowed. While traditional EERS models set resource-specific savings targets, a national standard could be designed more flexibly with an overarching GHG emissions reduction goal, which would allow for beneficial electrification where clean electricity replaces direct fossil fuel use to reduce emissions.[21]

Energy Efficiency in Commercial Buildings

Some of the policy proposals above also will help to advance energy efficiency in the commercial buildings sector—including support for workforce development (H.R. 1315), Access to utility data, implementing a federal EERS. Support for the retrofit of existing commercial buildings is important because it is estimated that over half of the buildings that will be in use in 2050 are already built.[22]

Key to advancing commercial energy efficiency is a forward-looking, permanent extension of the 179D Energy Efficient Buildings tax deduction which will help support building owners and investors in retrofitting existing buildings, as well as in constructing new above-code buildings. Importantly this deduction has included performance criteria, incentivizes whole building efficiency, and requires verification. Congress should consider making the 179D tax deduction permanent in order to incentivize more and broader energy efficiency improvements in commercial buildings and reduce carbon emissions from this sector.

Federal Investment in Energy Efficiency Provides Significant Returns

With the "power of the purse" in the hands of Congress, it would be remiss for me to fail to mention the important role this body has to advance energy efficiency research, development, and deployment in the appropriations process. Dollar for dollar, federal investments in energy

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[20] According to ACEEE analysis, a federal EERS of 20% electricity and 12% natural gas savings by 2030 would save utility customers nearly $150 billion on their energy bills and would achieve CO2 emissions reductions equivalent to taking nearly 50 million cars of the road. https://aceee.org/policy-brief/energy-efficiency-resource-standard-eers

[21] ACEEE recently published "Next-Generation Energy Efficiency Resource Standards" which looks at new EERS approaches that can help meet aggressive climate goals, along with delivering cost, grid and equity benefits. https://aceee.org/sites/default/files/publications/researchreports/u1905.pdf

[22] https://buildingefficiencyinitiative.org/articles/why-focus-existing-buildings

efficiency create more jobs than investment in the utility sector or fossil-fuels,[23] and federal investments in DOE programs that support energy efficiency – like the Building Technologies Office, Weatherization Assistance Program, and State Energy Program – lead to job creation and economic growth.

The following programs at the Department of Energy deserve the support of the American taxpayer as these programs are proven to provide a significant return on investment. When funded they will continue to provide energy cost relief to households, support American-based industry and American jobs, ameliorate issues with the aging electrical grid, and support national security goals.

- **Building Technologies Office (BTO),** which develops critical technologies, tools, and solutions that help U.S. consumers and businesses achieve peak efficiency performance in new and existing homes and buildings across all sectors of our economy. Programs like Home Performance with Energy Star, which advances contractor engagement in high efficiency equipment installations, and Home Energy Score, which helps ensure that energy efficiency is valued in real estate transactions – are just two examples of crucial residential programs within BTO. The **Residential Building Integration program** within BTO has the capacity to fundamentally transform the performance of homes and greatly improve the energy efficiency in the 115 million existing residential buildings throughout this country. We recommend funding be focused on facilitating later-stage research, demonstration, and widespread deployment of technology solutions in new and existing homes, with an emphasis on whole-house energy efficiency retrofits (including outreach, engagement and training to private sector contractors) and continuing efforts to advance smart home technology. BTO's programs can significantly improve the energy efficiency in the residential sector through its partnerships with the thousands of small businesses in this sector, the construction trades, equipment, smart grid technology and systems suppliers, integrators and state and local governments. We encourage the direct engagement with residential contractors and businesses, which are crucial to the success of buildings programs.

- **State Energy Program (SEP)**, which provides funding and technical assistance to states, territories, and the District of Columbia to enhance energy security, advance state-led energy initiatives, and maximize the benefits of decreasing energy waste. Over the past 30 years, SEP has proven to be the critical link in helping states improve efficiency in hospitals and schools, establish business incubators and job training programs, and establish relationships with energy service companies and small businesses to implement cost-effective energy efficiency programs across their state. The Oak Ridge National Laboratory found that every dollar invested in SEP by the federal government yields over $10 leveraged for energy-related economic development and realizes $7.22 in energy cost savings for U.S. citizens and businesses **–** a tremendous economic value.

[23] ACEEE. N.d. Energy Efficiency and Economic Opportunity. Retrieved from http://aceee.org/files/pdf/fact-sheet/ee-economic-opportunity.pdf

SEP provides extraordinary value and flexibility, which is why governors across the country strongly support continued funding. It is important to note that SEP defers to the governors all decisions on allocating resources provided by DOE to meet their states' priorities such as energy emergency planning and response and energy related economic development.

- **Weatherization Assistance Program (WAP)**, which helps low-income and rural families, seniors, and individuals with disabilities make lasting energy efficiency improvements to their homes. WAP has a proven track record of creating new jobs and contributing to the economy through the program's large supply chain of vendors, suppliers, and manufacturers. Since 1976, WAP has helped make more than 7 million homes more efficient, saving the average recipient about $4,200 over the lifetime of their home. A peer-reviewed study from the Oak Ridge National Laboratory found that the program is cost-effective at even conservative levels of evaluation. Each dollar that goes toward weatherization assistance yields at least $2.30 in benefits, and by some estimates as much as $4.10 to the home and society. The President's FY20 budget request, which zeroes out funding for the WAP program, would be a devastating blow to America's low- and moderate-income citizens: making those who are already vulnerable, more vulnerable, and those who are already poor, poorer.

Aside from the very important programs noted above, we recommend Congress do everything in its power to support the later-stage research and development, field validation, deployment, demonstration, consumer education, and technical assistance activities performed within the Office of Energy Efficiency and Renewable Energy (EERE). While the Administration continues to place an emphasis on early-stage research activities within EERE, if the results of that early-stage research are not then integrated and pushed out into the market through demonstration and deployment activities, these innovative energy technologies, practices, and information cannot be fully utilized by American consumers and companies to reduce carbon emissions. This is particularly the case with complex systems and structures such as America's homes and buildings. We urge Congress to support – and hold the Administration accountable to advancing – a comprehensive and real-world strategy that includes medium- and later-stage research, deployment, and demonstration activities that are designed to utilize the most effective means to increase buildings' energy efficiency in order to reduce carbon emissions.

Leading By Example: Energy Efficiency in Federal Buildings

There are also important opportunities to simultaneously save American taxpayer money and reduce carbon emissions by improving the energy performance of federal buildings. Energy Savings Performance Contracts (ESPCs) are an innovative and effective model for public-private partnerships to improve building energy efficiency. ESPCs allow federal agencies to procure energy savings and facility improvements with no up-front capital costs or special appropriations from Congress and provide savings guarantees, reducing government risk. Studies by the Oak Ridge National Laboratory show that actual cost savings exceed guaranteed

savings for many ESPC projects allowing significant cost savings to accrue to the government.[24] In the short term, Congress should enable more of these successful public-private partnerships through the following pieces of legislation and policy proposals:

Legislation:

- **Federal Energy and Water Management Performance Act of 2019 (S. 1857, Sen. Murkowski, Sen. Manchin):** Would reauthorize the Federal Energy Management Program (FEMP) at $36 million and improve federal energy and water requirements.
- **Energy Savings and Industrial Competitiveness Act of 2019 (S. 2137, Sen. Portman, Sen. Shaheen; H.R. 3962, Rep. Welch, Rep. McKinley):** Would reauthorize the Federal Energy Management Program (FEMP) at $36 million and improve federal energy and water requirements. It extends energy use reduction goals and would expand the scope of existing energy standards for new federal buildings to include major renovations.
- **Energy Savings through Public-Private Partnerships Act of 2019, (S. 1706, Sen. Gardner, Sen. Coons; H.R. 3079, Rep. Welch):** Would encourage the increased use of ESPCs in federal facilities by addressing barriers and increasing the use of energy efficiency and distributed generation.

Federal Appropriations:

Congress should ensure adequate funding for the following programs to continue to improve the performance and cost savings for federal buildings:

- **Federal Energy Management Program (FEMP).** In addition to reauthorizing this important program (S. 1857), Congress should ensure continued adequate funding for FEMP including carveouts for the Assisting Federal Facilities with Energy Conservation Technologies (AFFECT) program which provides grants to federal agencies to support the use of ESPCs, to achieve energy savings and implement other important climate-related measures like resiliency that might not generate utility bill savings.
- **U.S. General Services Administration (GSA) Office of Federal High-Performance Buildings.** Through ESPCs, construction and leasing policies, and other public private partnership models GSA has saved millions of dollars. GSA has reported, for example, that sustainable building standards helped GSA avoid more than $250 million in energy and water costs from 2008 to 2014.[25] These programs save taxpayers money while reducing energy-related carbon emissions and should continue to be funded by Congress to ensure continued progress.

[24] https://info.ornl.gov/sites/publications/Files/Pub41816.pdf

[25] https://app_gsagov_prod_rdcgwaajp7wr.s3.amazonaws.com/GSA_FY_2015_SSPP_Final.docx

Conclusion

In conclusion, Madam Chair and esteemed members of the committee, I ask you to consider the buildings you live and work in as a part of the solution to the climate crisis. The built environment is one of the largest consumers of energy and thus emitters of greenhouse gas emissions. We need to break down the silos between energy efficiency, renewables, and distributed energy resources such as electric vehicles and battery storage. With policy and program innovation that brings all of these pieces together to optimize energy usage we can reduce the need for new power plants, deliver more reliable energy services at lower costs, all while making homes healthier, more comfortable places to live.