Testimony of Steven Nadel
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American Council for an Energy-Efficient Economy (ACEEE)

To the Senate Energy and Natural Resources Committee
Subcommittee on Energy

Hearing on S. 1084, S. 717 and Other Pending Energy Efficiency Legislation

Date: June 25, 2013
Summary

This hearing is on nine energy efficiency bills that are potential amendments to S. 761, a bill endorsed by the full Senate Energy Committee that may soon reach the Senate floor. ACEEE strongly supports S. 761 and also supports the nine bills before us, although for one bill our support is contingent on a few modifications. In addition, I discuss several other possible amendments, most of which we support but one of which could be a backward step.

ACEEE has conducted a preliminary energy savings analysis of S. 761 and many of the potential amendments. Overall, we estimate that S. 761, together with all the amendments we support, will reduce U.S. energy use by over 15 quadrillion Btu's over the 2014–2030 period. This is nearly as much energy as will be used by the state of Oregon over this period. Saving this much energy will benefit our economy and our environment and we urge the Senate to adopt S. 761 and the other bills I discuss, but to avoid “backward steps” that lack broad support.

Introduction

My name is Steven Nadel and I am the Executive Director of the American Council for an Energy-Efficient Economy (ACEEE), a non-profit organization that acts as a catalyst to advance energy efficiency policies, programs, technologies, investments, and behavior. We were formed in 1980 by energy researchers and celebrated our 30th anniversary in 2010. Personally I have been involved in energy efficiency issues since the late-1970s and have testified multiple times before this Committee and its Subcommittees as well as before the House Energy and Commerce Committee.

Today’s hearing is on nine bills that are potential amendments to the Energy Savings and Industrial Competitiveness Act of 2013 (S. 761) that was previously reported out of the Senate Energy and Natural Resources Committee on a 19-3 vote. ACEEE strongly supports S. 761 and urges the Senate leadership to schedule this bill for floor time as soon as possible.

ACEEE has a long history of estimating the energy and economic impacts of energy efficiency legislation, going back to the 1980s. For example, last year we prepared an analysis on the 2012 Shaheen-Portman bill. We have begun an analysis of this year’s Shaheen-Portman bill as well as an analysis of most of the amendments, which I discuss later in my testimony. At this point we have preliminary estimates of energy savings, but are only just starting our analysis of micro- or macro-economic impacts. Our preliminary analysis finds that the 2013 Shaheen-Portman bill, as it is currently drafted, would save about 9.5 quadrillion Btu’s (“quads”) of energy over the 2014–2030 period. As a point of reference, the United States uses about 100 quads annually. The amendments we support and that I discuss below could add 6.3 additional quads of energy savings, for a combined total of 15.8 quads. This is more energy than would be used by the state of Utah or Nebraska over this period, and nearly as much energy as would be used by the state of Oregon (assuming annual use stays constant at current levels). Savings start modestly and grow steadily over time, as illustrated in Figure 1. Near the end of my testimony I will provide additional information on our analysis including energy savings by provision.

Of the nine bills before us today, ACEEE supports all of these bills, although in one case our support is contingent on a few modifications. In the next section of my testimony I discuss each of these bills, and then touch on several additional potential amendments that may be introduced when S. 761 reaches the Senate floor.

**Bills We Support**

**S. 1206 — Benchmarking**

S. 1206, introduced by Senator Franken, would promote benchmarking of large commercial and multifamily buildings. Building benchmarking is a process that allows building owners to assess the energy use of their buildings and compare them to otherwise similar buildings. This process helps to identify buildings that would most benefit from building upgrades. The federal ENERGY STAR Buildings program has encouraged benchmarking for many years and U.S. Environmental Protection Agency estimates that this program has benchmarked more than 185 million square feet of U.S. commercial building floor area, and resulted in average energy savings of about 7% in these buildings each year. However, the vast majority of the existing commercial building stock has not been benchmarked. This provision would encourage benchmarking of additional buildings by making whole building energy use data more readily available to building owners and promoting benchmarking in a variety of ways. This provision only applies to commercial buildings and multifamily residential buildings. Single-family homes and small buildings that house several families are not included.

Specific provisions in the bill call for:
1. Benchmarking additional federal buildings. Under existing federal law, federally-owned buildings must be benchmarked but most federally-leased buildings are not included in this requirement. This provision requires benchmarking of leased buildings where practical, addressing a gap in current law.

2. A study by the U.S. Department of Energy (DOE) on best practices for benchmarking, energy use data aggregation, and energy use disclosure. Many cities and some states are considering policies in these areas and this study would provide guidance on approaches that work and those that have been problematic so that new policies can take advantage of these lessons.

3. Combining existing public federal buildings databases and facilitating consolidation of other existing public buildings databases to make reporting easier for building owners and identification of best practices easier for analysts.

4. Establishing a small competitive grant program for utilities, their partners, and utility regulators to make whole building energy use data available to building owners. This includes aggregated tenant consumption so that whole buildings can be benchmarked. Data on individual tenants would not be provided in order to protect privacy.

This provision has been extensively vetted with the real estate industry and has been significantly modified to address their views.

S. 1191 — Better Buildings Act (Tenant Star)

S. 1191, introduced by Senators Bennet and Ayote, would encourage landlords and tenants to cooperate on energy efficiency. Presently most leased buildings suffer from a “split incentive” problem. Tenants pay energy bills but are usually not in buildings long enough to justify making energy-saving capital investments. Building owners make capital investments but since tenants pay the energy costs, they have little incentive to invest in energy efficiency upgrades. This bill would help address these problems by:

1. Identifying best practices for energy efficiency during tenant “fit-outs” — the improvements to a space tenants make between when they sign a lease and when they move in.

2. Establishing a new voluntary “Tenant Star” program to recognize tenants whose energy performance is substantially above average, complementing the existing whole building ENERGY STAR Buildings program.

3. Encouraging “energy-aligned” federal leasing by having the General Services Administration develop model leasing provisions that would spur cooperation on energy savings between federal tenants and building owners. Such leases can reduce costs to federal agencies and also serve as a model for leases by non-federal tenants.

Another witness at this hearing will be discussing this bill in depth so I will keep my comments brief.

S. 1200 — Residential Energy Savings Act of 2013 (Residential Financing)

S. 1200, introduced by Senators Sanders and Wyden, would establish a pilot program for state loans for residential building energy efficiency upgrades. Many homeowners lack the capital to make energy efficiency investments and this bill would assist states and other eligible entities in providing this capital at attractive terms, often working with banks and other financial institutions. The bill would have DOE make loans to states, local
governments, utilities, and other eligible entities who would use the funds to recapitalize, expand, or begin energy efficiency loan programs. The loans would be repaid with interest, providing for a high degree of cost recovery. States and other eligible entities would apply for funding and DOE would evaluate these applications based on a variety of criteria in the bill designed to encourage best practice program design. For example, the bill calls for consumer repayments to be “consumer friendly” and would encourage innovative approaches such as on-bill repayment. Since the federal cost of capital is lower than the cost of capital for many eligible entities, the program could provide a moderate-cost source of loan capital. To the extent states and other eligible entities could provide or raise additional funds for such activities as loan loss reserves, interest rates that are very attractive to consumers may be possible. This provision is a useful complement to the commercial building loan program now in S. 761.

S. 1209 — Race to the Top
S. 1209, introduced by Senators Warner and Manchin, would establish a “race-to-the-top” program for states to spur innovative energy efficiency efforts, just as the program by the same name at the Department of Education has spurred innovation in that field. The Race to the Top initiative was a top recommendation of the Energy 2030 initiative led by the Alliance to Save Energy, so I will leave it to their witness to provide more details on this bill.

S. 1084 — School Retrofits
S. 1084, introduced by Senators Udall and Collins, would have DOE coordinate federal efforts to help school systems, including K-12 and higher education, make their buildings more efficient. Currently there is a patchwork of efforts by various departments that are not well coordinated. We believe this is a useful objective that will make it easier for school systems to retrofit their buildings.

S. 1020 — All of the Above Federal Energy Conservation Act
S. 1020, introduced by Senators Hoeven and Manchin, would repeal Section 433 of the Energy Independence and Security Act of 2007 and replace it with two new provisions that would:

1. Extend and improve energy performance requirements for federal buildings. Under current law these requirements call for reducing energy use of federal buildings by 30% by 2015 relative to a fiscal year 2003 base. The new provision would extend this requirement to a 45% reduction by 2020.

2. Extend the federal energy efficiency performance standards that now apply to new construction to also include alterations. These standards call for performance levels 30% better than those in the most recent model building code for commercial buildings established by the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE).

We support this bill because, as currently written, Section 433 is not workable and because, according to our analysis, the two new provisions would result in larger energy savings than repeal of Section 433 would lose. The current Section 433 is not very workable because in its present form it discourages investments in long-term energy savings contracts and in combined heat and power systems. This was not its intent. Regarding energy savings, our analysis is summarized near the end of my testimony. We believe that Section 433 had a laudable goal — to reduce dependence on fossil fuels. We would prefer that Section 433 be rewritten to be more workable rather than outright repealed, but the legislative process requires compromise and we believe that S. 1020 is a workable compromise.
We also support the following two bills but recognize that they have significant costs and therefore to move forward will likely need reasonable funding offsets.

**S. 1213 — WAP and SEP Reauthorization**

S. 1213, introduced by Senators Coons, Collins and Reed, reauthorizes the low-income Weatherization Assistance Program (WAP) and the State Energy Program (SEP). WAP has been the key federal program to help low-income households to reduce their energy bills. It makes sense to help these households reduce their energy bills on an on-going basis, rather than just help to pay bills through the federal Fuel Assistance program (e.g., recall the old proverb, “Give a man a fish, and you feed him for a day; show him how to catch fish, and you feed him for a lifetime”). The WAP program has been very successful — the last “meta-evaluation” on the program found average energy savings of more than 20%. The new legislation includes several useful improvements to the current program — a requirement that DOE develop minimum professional standards for WAP contractors and workers, a requirement for an independent quality assurance program, and a new competitive leveraged grant program for non-profit agencies that have a track record of success in serving low-income communities. This bill will also reauthorize the SEP program, which has been a key program funding State Energy Offices in all states, including some states where this is the only funding. Another witness at this hearing will discuss these programs in more depth.

**S. 1205 — Local Energy Supply and Resiliency Act**

S. 1205, proposed by Senator Franken, is intended to enable energy efficiency and renewable energy projects by addressing market barriers for both the planning and financing of district energy and waste energy recovery projects. From an efficiency perspective, promoting district energy projects is important in that the aggregation of thermal loads creates opportunities for expanded combined heat and power, and implementing thermal systems at scale can improve efficiency and be responsive to electric system demands. In addition, waste energy recovery projects offer the opportunity to reduce electricity and fossil fuel requirements needed to meet local energy needs. The focus of this provision on the valuation of thermal energy represents an important precedent. ACEEE has not yet estimated the energy savings opportunities from this provision, but intends to analyze the provision in the coming weeks.

**Bill We Support with Modifications**

**S. 717 — Non-Profit Energy Efficiency Act**

S. 717, introduced by Senators Klobuchar and Hoeven, would help non-profit organizations save energy, a laudable goal. It provides matching grants, up to a cap, so that the non-profit organizations themselves will have to provide a significant contribution. In general we find this a useful bill. We are troubled, however, by the proposal to offset this bill with funding from the Building Technologies Program at DOE, an important program with a budget of only $220 million for this fiscal year. The Buildings Technology Program is working on developing and popularizing a variety of new and cost-effective energy-saving technologies and practices. A cut of $50 million in this program would be devastating. From our research, spending $50 million on the Building

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Technology Program provides a higher return on the federal investment than would be provided by spending the same money on retrofits using conventional technologies in a narrow subset of the building sector. To gain our support, this bill would need to be funded using an alternative offset.

In addition, we suggest a few other modifications. First, we suggest adding two criteria by which to prioritize grants: (1) the percentage of funds leveraged from other sources (e.g., a grant for 25% of the cost would receive priority over one for 50% of the cost); and (2) the financial need of the non-profit (e.g., poor non-profits should have priority over those with large available resources). Second, the language on eligible measures is probably too broad as it appears to include items whose primary purpose is not saving energy.  

**Additional Useful Potential Amendments to S. 761**

In addition to the bills that are formally part of this hearing, we wish to briefly mention several other likely amendments to S. 761 that we support as follows:

**S. 1106 — Sensible Accounting to Value Energy Act (SAVE)**

S. 1106 was recently introduced by Senators Bennet and Isakson and has been referred to the Banking Committee. The bill would encourage energy efficiency upgrades to homes by: (1) encouraging efficiency improvements at the time of purchase; and (2) recognizing the value of efficiency upgrades, and the operating cost savings they provide, when buildings are assessed and qualification for mortgages determined. Specifically, this bill instructs the Department of Housing and Urban Development (HUD) to issue updated underwriting and appraisal guidelines for borrowers who submit a qualified home energy report. The bill would cover any loan issued, insured, purchased, or securitized by the Federal Housing Administration and other federal mortgage loan insurance agencies or their successors. These agencies collectively guarantee more than 90% of all new loans. The bill has three components:

- **Debt-to-Income Adjustment:** Instructs lenders to account for expected energy cost savings as an offset to other expenses in the debt-to-income qualifying ratio, which tests the borrower’s ability to afford monthly mortgage payments. If no qualified energy report is provided, the DTI will not be adjusted.

- **Loan-to-Value Adjustment:** Instructs lenders to add the present value of expected energy savings when calculating the loan-to-value ratio, where not already accounted for in the home’s appraisal report. If no qualified energy report is provided, the valuation will not be adjusted.

- **Consumer Information:** Instructs lenders to inform loan applicants of the costs and benefits of energy efficiency and resources for improving the energy efficiency of a home.

The bill does not add to the current deficit or rely on taxes or fees; instead it removes current obstacles holding back more efficient building and remodeling of our homes. A recent study of more than 70,000 mortgages found

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3 Specifically, on page 2, lines 17-20, we recommend deleting “electrical wiring” (on lines 17 and 19) and “plumbing, sewage” (on line 18). Likewise, on page 3, lines 9-10, “modernize” should be deleted. If the primary purpose of a measure is improving energy efficiency, the remaining language on p. 3, lines 9-12 should be sufficient.
that mortgages on energy-efficient homes were 32% less likely to be in default.\(^4\) This study provides strong evidence that the SAVE Act is good credit policy and would help protect lenders and taxpayers from the risk of mortgage default. The bill removes an impediment to home energy efficiency from federal mortgage policy by recognizing how energy efficiency can increase home value and reduce operating costs, freeing up more income to pay a mortgage. In addition, the bill would allow American homeowners to finance cost-effective home energy upgrades as part of a traditional mortgage, improving access to the comfort and money-saving benefits of efficiency without increasing the cost of homeownership. The result is improved and lower cost access to capital to invest in making homes better.

The SAVE Act has support from a broad, diverse coalition including the National Association of Manufacturers, U.S. Chamber of Commerce, National Association of Realtors, National Association of Home Builders, ACEEE, the Institute for Market Transformation, the Alliance to Save Energy, and the Natural Resources Defense Council.

**Manchin Power Plant Efficiency**

This bill has not been introduced yet but would direct DOE to conduct a study on opportunities to improve the efficiency of existing electrical generation plants. There are significant opportunities to improve existing power plants\(^5\) and this bill would help identify the most promising approaches, helping power plant owners and regulators to identify cost-effective opportunities to improve their plants.

**H.R. 540 — Energy Efficient Government Technology Act**

This bill was introduced in the House by Representatives Eshoo and Rogers. We are aware of several senators who plan to shortly introduce a similar bill. The bill would encourage the use of information and communication technologies to save energy and would also assist efforts to improve the energy efficiency of data centers. The bill would expand upon the guidance in section 401 of S. 761 and also “turbo-charge” section 453 of the Energy Independence and Security Act of 2007, dealing with energy-efficient data centers and cloud computing. Both of these provisions would take advantage of recent advances in information and communications technologies to increase opportunities for saving energy, including reducing energy required to run data centers. To provide one example of these opportunities, the Natural Resources Defense Council and an “intelligent efficiency” service provider worked with the owner of several already-efficient Washington, D.C. office buildings and achieved 13% average energy savings in the first year by monitoring building meter data, identifying problems, and making actionable suggestions to building operations staff.\(^6\)

**Use of Federal Disaster Relief and Emergency Assistance for Energy-Efficient Products and Services**

Senator Gillibrand is now developing a bill to authorize and encourage the use of efficient products and services when buildings and other structures need to be replaced following a disaster. Under current law, if the old


\(^5\) For example, the Electric Power Research Institute hosted a conference on this topic in February, 2013. See [http://mydocs.epri.com/docs/PublicMeetingMaterials/1202/epri/call_to_papers.pdf](http://mydocs.epri.com/docs/PublicMeetingMaterials/1202/epri/call_to_papers.pdf).

\(^6\) Report forthcoming shortly.
building was inefficient, disaster funds cannot be used to replace it with a more efficient building, which just perpetuates inefficiency. The proposed bill will specifically authorize acquisition of efficient equipment that has been screened by the ENERGY STAR or Federal Energy Management Program, or efficient buildings that meet national model building codes.

**Water Efficiency**

S. 761 is focused on energy efficiency, but in a number of places the term “and water” can and should be added to also encourage water efficiency. Using water more efficiently saves energy by reducing energy used for water and waste water pumping and treatment. Specific suggestions have been forwarded to Senators Shaheen and Portman by the Alliance for Water Efficiency and we hope that some of these suggestions can be included in a managers’ amendment to S. 761.

**Potential “Backward Steps” on Energy Efficiency**

In addition to all of the above amendments which we generally support, we have heard about a few amendments that have been drafted but not introduced that could reduce energy efficiency and increase energy use.

First, we are concerned about a provision developed by the National Rural Electric Cooperative Association (NRECA) to establish new efficiency standards for “grid-enabled” electric water heaters that will use substantially more energy than water heaters that meet a federal efficiency standard that will go into effect in 2015. NRECA wants to allow electric coops to promote off-peak electric water heating and to use other demand response techniques. While we are hopeful we can work something out with them, their initial draft has multiple problems and we strongly oppose its adoption. DOE also understands NRECA’s concern and is working on a waiver to the standard for the appropriate use of electric water heaters in demand response programs. DOE’s initial proposal had some problems, but NRECA and others heavily commented on the DOE proposal and DOE is now working to address these comments. While we will work hard to reach an agreement with NRECA, if those discussions do not succeed, we recommend that instead of dictating a solution that has the support of only one set of parties to this proceeding, Congress should instead include a provision to direct DOE to make a decision and provide a deadline for DOE to make such a decision.

There is also a potentially troubling amendment dealing with the Leadership in Energy and Environmental Design program (LEED), a voluntary “green building” certification program. Fortunately, we understand that negotiations are ongoing between the interested parties and we hope that a reasonable compromise can be found.

**Energy Savings from these Provisions**

As discussed at the beginning of my testimony, ACEEE has conducted a preliminary analysis of the energy savings from S. 761 and most of the bills and provisions discussed in my testimony. In compiling these estimates, we have made informed assumptions on their impacts. For example, where appropriations are required, given the tight federal budget, we assume that full authorizations will not be funded and instead we assume that the appropriation is half of the authorization. Our savings estimates are summarized in Table 1. Table 1 lists annual savings in 2020 and 2030 as well as cumulative savings over the 2014–2030 period (e.g., the sum of annual savings for each year over this period). The largest savings, in order, come from Section 101 of S. 761 (on building codes), S. 1106 (the SAVE Act), improving the efficiency of existing power plants (Manchin), and Section 311 of S. 761 (industrial efficiency).
Table 1. Preliminary Estimate of Energy Savings by Provision

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<th>Title</th>
<th>Subtitle</th>
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Notes: Federal energy efficiency are the two new provisions in S. 1020. The line “Eliminate Overlap” adjusts for overlap between these two provisions and the Federal ICT provision in S. 761.

Overall, the savings from the provisions we support are roughly the same as those from last year’s version of Shaheen-Portman. Some sections that were included in last year’s version of this bill have changed or been dropped, and we now have one year less to accrue savings before the 2030 end-point in our analysis. Also, we revised some of our earlier estimates based on updated data. Furthermore, none of the amendments we analyzed this year were in last year’s bill.

In last year’s analysis we estimated that the Shaheen-Portman bill would generate nearly $60 billion in net consumer savings (i.e., savings minus costs) and would support nearly 160,000 net jobs by 2030. Since the energy
savings from the new bill with amendments are nearly the same, we would expect similar economic impacts in the new bill as in the old. We will publish a detailed report when we complete our analysis.

We are aware that S. 1020 ("repeal and replace") has attracted much attention so we paid special attention in our preliminary analysis to that section of that bill. We found that the fossil fuel energy savings achieved as a result of the implementation of Section 433 of the Energy Independence and Security Act of 2007 (EISA) would be less than intended when accounting for other, existing requirements applicable to new and renovated federal buildings. New federal buildings are already required by Section 305 of the Energy Conservation and Production Act to operate at 30% below the energy consumption levels of applicable building code. In addition, there is an existing requirement in Section 431 of EISA for a reduction of overall energy intensity of federal buildings by 30% in 2015. The benefit to new and renovated federal buildings from these two requirements effectively reduces the impact of Section 433 by roughly 50–80% annually. It is also important to note that these reduced impacts are also due to some drafting problems with Section 433 that has hindered its implementation; recognizing this, we assume that Section 433 would ultimately only achieve 75% of its objective and not 100%. If S. 1020 is adopted, it would extend the existing 30% below code requirement for new buildings to all buildings undergoing major renovations. The energy savings from this provision, when paired with energy savings from a proposed increase in the energy intensity target for all federal buildings to 45% by 2020, would exceed any savings gap from repeal of Section 433. Together these two provisions could save approximately 0.03 quads more than Section 433 would have in both 2020 and 2030, with an estimated total cumulative additional savings of about 0.4 quads over the 2014-2030 period.

**Conclusion**

ACEEE believes that *Energy Savings and Industrial Competitiveness Act of 2013* (S. 761) would be an important step toward improving the energy efficiency of the U.S. economy. All of the bills before us today, as well as many of the additional amendments that may be considered, would add to the energy efficiency savings achieved. We support:

- S. 1206 — Benchmarking
- S. 1191 — Better Buildings Act (Tenant Star)
- S. 1200 — Residential Energy Savings Act of 2013 (Residential Financing)
- S. 1209 — Race to the Top
- S. 1084 — School Retrofits
- S. 1020 — All of the Above Federal Energy Conservation Act
- S. 1213 — WAP and SEP Reauthorization
- S. 1205 — Local Energy Supply and Resiliency Act
- S. 717 — Non-Profit Energy Efficiency Act provided our recommended modifications are made
- S. 1106 — Sensible Accounting to Value Energy Act (SAVE)
- Senator Manchin’s Power Plant Efficiency provision
- H.R. 540 — Energy Efficient Government Technology Act
- Senator Gillibrand’s provision on Use of Federal Disaster Relief and Emergency Assistance for Energy-Efficient Products and Services
- Adding Water Efficiency to S. 761 in appropriate places
On the other hand, a potential amendment supported by NRECA on water heater efficiency standards is a potential “backward step” that could make enactment of energy efficiency legislation difficult.

Overall, we estimate that S. 761, together with all the amendments we support, will reduce U.S. energy use by more than 15 quadrillion Btu’s over the 2014–2030 period. This is nearly as much energy as will be used by the state of Oregon over this period. Saving this much energy will benefit our economy and our environment and we urge the Senate to adopt S. 761 and the other bills I have discussed, but to avoid “backward steps” that lack broad support.

This concludes my testimony. Thank you for the opportunity to present these views.