



**Testimony of William Prindle,  
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**Before the Senate Energy and Natural Resources Committee**

**Hearing on:  
The Energy Efficiency Promotion Act (S. 1115)**

**April 23, 2007**



## **Summary**

### **Introduction**

Energy efficiency is the “first fuel” in America’s race for a clean and secure energy future. Energy efficiency has saved consumers and businesses trillions of dollars in the past three decades, including more than half a trillion dollars in 2006 alone. These efforts should now be accelerated in order to:

- Save American consumers and businesses even more money;
- Change the energy supply and demand balance to reduce energy prices;
- Decrease America’s addiction to oil, particularly oil imports;
- Strengthen our economy (since energy savings generate American jobs and capital investment); and
- Reduce the risks of global warming by moderating carbon dioxide emissions growth.

### **The Urgency and the Opportunity for Efficiency Policy**

America’s greatest energy challenges—energy security and global warming—are converging to force historic changes in U.S. energy and environmental policy. Our growing dependence on imported oil and natural gas, combined with high and volatile fuel prices threaten both our economic health and our geopolitical strength. The recent IPCC Fourth Assessment reports on the growing evidence of climate change, coupled with the Supreme Court’s recent decision that carbon dioxide is a pollutant regulated under the Clean Air Act, increase the urgency and clarify the legal basis for national policy action to reduce greenhouse gas emissions.

Energy efficiency is the one resource that addresses both the energy security and climate challenges, while enhancing economic prosperity. Domestic energy supplies with low carbon content will take time to develop; but we can start now to accelerate efficiency investment, which will enable low-carbon domestic supplies to begin reducing energy imports and carbon emissions. If we do not use efficiency as the “first fuel” in the race for clean and secure energy, clean energy supply technologies may not be able to be deployed fast enough to meet runaway energy demand.

ACEEE research shows that new energy efficiency policy initiatives could make a big difference on the energy security and global warming fronts. For example:

- A 2005 ACEEE analysis found that reducing natural gas use by about 4% over five years could reduce natural gas prices by over 20%. Reducing demand for oil and for refined petroleum products is also likely to reduce prices.
- A 2006 ACEEE study finds that we can reduce U.S. oil use by more than 5 million barrels per day by 2020. That’s equivalent to almost doubling current U.S. oil production—which no serious petroleum expert views as possible. Improvements to passenger vehicles account for more than 3 million barrels per day of savings, but more than 2 million barrels

per day of savings are available in the residential, commercial, and industrial sectors, and in heavy vehicles and airplanes.

- Another 2006 ACEEE study found that the Regional Greenhouse Gas Initiative (RGGI) cap and trade system for power-sector carbon dioxide emissions in the northeastern U.S. can have a positive impact on the regional economy provided increased energy-efficiency policy commitments are a key part of implementation efforts.

### **Past Energy Policy Acts, and the “Efficiency Gaps” They Left Unfilled**

The Energy Policy Act of 2005 contained some useful efficiency provisions, particularly new equipment efficiency standards and energy efficiency tax incentives. Other provisions authorized in the Act may help as well, but virtually all of these lack funding or other critical follow-up actions. Overall, ACEEE now estimates that the efficiency provisions in this law will reduce energy use in 2020 by 1.8 quadrillion Btu, which is 1.5% of projected national energy use. More than 75% of the savings are from equipment efficiency standards and efficiency tax incentives. Experience with the Energy Policy Act of 1992 shows a similar pattern – most of the savings came from a few provisions, and the majority of provisions proved to be more show than substance.

However, federal energy policy over the past twenty years has failed to address two of the core energy challenges in our economy: surging electricity demand and rapidly rising motor fuel usage. These two sectors are key elements to solving our energy security and climate problems. It is urgent that Congress take strong, prompt, unambiguous action in these areas. Had Congress adopted the major electricity and oil efficiency provisions that were deliberated in the development of EAct 2005, ACEEE estimates that 2020 savings would have been up to four times higher.

### **The Energy Efficiency Promotion Act**

ACEEE commends the Committee for leading the way in the 110<sup>th</sup> Congress with an energy efficiency bill. It reflects the principle that efficiency needs to be the first fuel in our energy resource policy process. Our comments focus on the following parts of the bill:

1. **Title I: Lighting technologies.** We support the reflector lamp standard contained in Section 102, which is based on a consensus agreement among ACEEE, manufacturers, and other stakeholders. The other provisions are also useful, including Sense of the Senate resolution in Section 104 that we hope will soon lead to a consensus agreement on a national standard to phase out the least efficient general service incandescent light bulbs, of which more than a billion are sold each year and pave the way for an eventual transition to dramatically more efficient light sources. We also recommend a new section calling for a study and plan for reaching a higher tier of energy performance for general service lighting that will meet or exceed the performance of today’s compact fluorescent products with no compromise in light quality and continued consumer choice in the market.

2. **Title II: Efficiency Standards.** This title contains consensus-based standards for residential boilers, industrial electric motors, and residential appliances, developed collaboratively among ACEEE, manufacturers, and other stakeholders. It also contains important provisions we support which enhance the Department of Energy's flexibility and capacity to create efficiency standards which best meet the statutory goals of "maximum energy savings which ... [are] technically feasible and economically justified." These provisions authorize regional standards for heating and cooling equipment, clarify the intent of the law regarding federal pre-emption of state appliance efficiency standards, allow for flexible application of more than one efficiency metric for a given product if justified, and allow DOE to expedite rulemakings based on consensus agreements. We also support Section 206's requirement for FTC Energy Guide labeling of consumer electronic equipment. In our analysis, this class of products is the fastest-growing energy use in American homes, and American consumers need energy use information to make informed choices on these products.
  
3. **Title III: Efficient Vehicles.** ACEEE supports the priorities identified in this title for vehicle efficiency technology research and deployment. We support the authorization of loan guarantees to facilities for the manufacture of parts for fuel-efficient vehicles, as well as incentives for manufacturers and suppliers to retool to produce advanced technology vehicles. We note however that the discussion of advanced lean burn technology should clarify that fuel economy for diesels is to be compared with that of gasoline vehicles *on an energy-equivalent basis*. This issue of gasoline-equivalence of diesel was not properly resolved in the EPA Act 2005 tax credits, despite Senate intent; it has caused confusion in the implementation of the credits and should be clarified through this bill.

We also support the allocation of resources to developing domestic capability in energy storage for vehicles and to advancing electric drive technologies. However, it should be noted that DOE has spent hundreds of millions of dollars in the past on technologies of this kind without accelerating domestic manufacturers' production of vehicles that use them. Within the scope of this bill, we suggest that part of the funding proposed in this section be used for a competition to produce a plug-in hybrid meeting certain performance and cost criteria. This would help to ensure some real-world progress on vehicle efficiency would follow from the proposed technology investment of over \$400 million per year.

4. **Title IV: National Energy Efficiency Goals.** While this title contains non-binding goals, we want to emphasize the need to set binding national targets for energy efficiency. While competitive markets will ultimately deliver the technologies and practices to reach these goals, markets do best when they have clear and simple targets to meet. We applaud the Committee for setting an energy productivity goal for the nation; the 2.5% annual improvement represents nearly a 50% improvement in current productivity growth, and would sharply reduce energy demand growth overall.

We especially support the energy savings targets in section 401, though we recommend that the fuel economy aspects of this section be more specific. We note that the President's Twenty in Ten proposal, on which the 2017 target for the section appears to be based, relies

very heavily on a loosely-defined set of alternative fuels, and only moderately accelerates fuel economy improvement. While the feasibility of deploying alternative fuels infrastructure is unproven, fuel economy technologies and costs are well known, and therefore a greater emphasis on fuel economy provides a better balance of risk for the nation. Accordingly, ACEEE recommends that fuel economy targets be set so as to save at least 12 billion gallons of fuel in 2017, 45 billion gallons in 2025, and 68 billion gallons in 2030.

We also recommend that a new section be created that sets electricity savings targets for distribution utilities, such that covered utilities would be required to save 10% of electricity sales by 2020. Many states have set such Energy Efficiency Resource Standards (EERS), often in coordination with renewable energy standards. We believe that setting efficiency standards is essential to the success of any renewable energy policy, because moderating demand growth is needed to allow clean supply sources to make a discernible difference in fossil fuel energy use.

5. **Title V: Federal Leadership.** ACEEE supports the provisions of this title, especially the permanent authorization of the Energy Savings Performance Contracting (ESPC) program, and the assessment of Combined Heat and Power opportunities at federal facilities. We recommend that Congress place a special priority on installing CHP technology at the Capitol powerplant, which could be accomplished through an ESPC or similar vehicle.
  
6. **Title VI: State and Local Initiatives.** ACEEE supports the provisions of this title, especially section 603's requirements for utilities and states to include energy efficiency in resource planning, and to reform ratemaking policies to make energy efficiency a better business proposition for utilities. We recommend that the bill also include Regional Transmission Organizations (RTOs) among the entities covered by this section. This section should also be linked ultimately to a federal Energy Efficiency Resource Standard (EERS) that sets quantitative targets for energy savings for utilities, with the goal of saving 10% of electricity sales by 2020. Sections 139 and 140 of EPCA 2005 called for a study and pilot program for EERS. The study is complete, and shows that these policies are gaining acceptance and enjoying success in a number of states. Given the increased urgency to address carbon emissions from electric utilities, this should be a high priority for Congress in 2007.

## Energy Savings

ACEEE estimates that the appliance and equipment efficiency standard provisions in this bill together can produce savings as follows:

- **Electricity:** at least 50 billion kilowatt hours per year, or enough to power roughly 4.8 million typical U.S. households
- **Natural gas:** 170 million therms per year, or enough to heat about a quarter million typical US homes.

- **Water:** at least 560 million gallons per day, or about 1.3% of total daily potable water usage.
- **Dollars:** more than \$12 billion in net benefits for consumers

We also estimate that significant additional savings would result from the sections that improve DOE authority to set better standards.

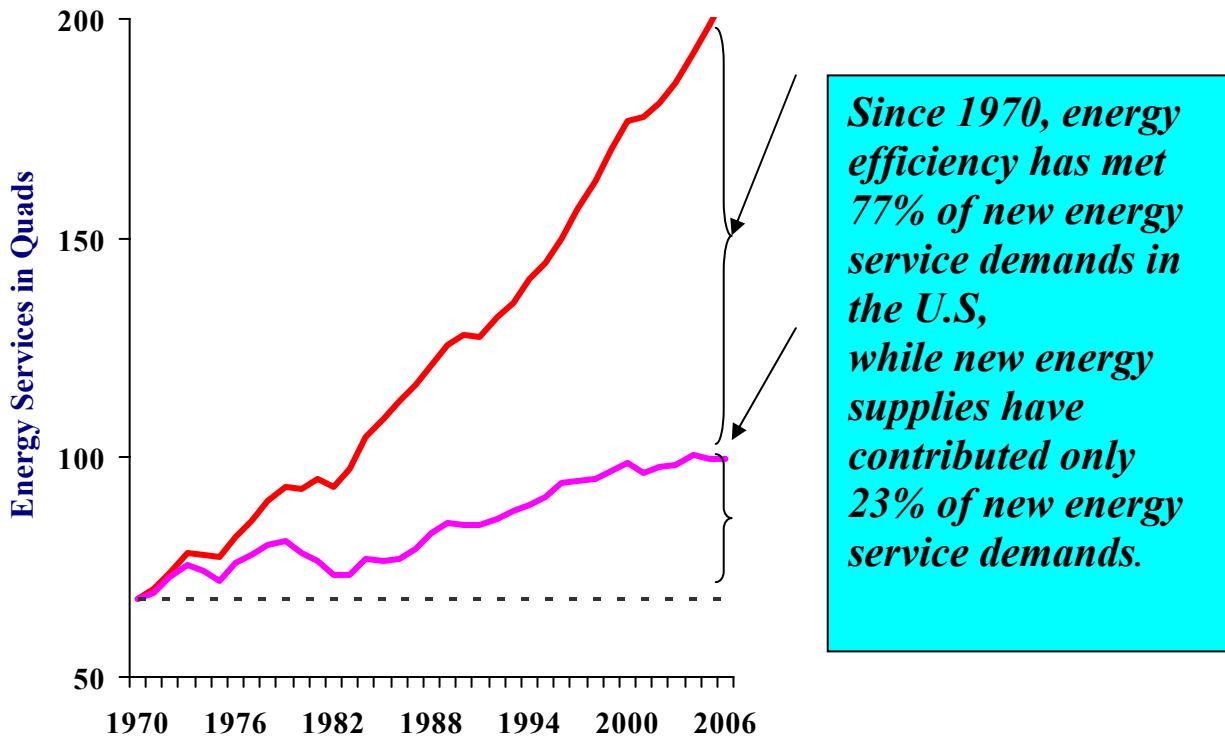
### **Conclusion**

ACEEE supports the Energy Efficiency Promotion Act as a major additional step on the road to a sustainable energy future. We recommend a number of ways that this bill can be augmented, within its existing provisions, by adding new provisions, and through additional legislation.

## Introduction

ACEEE is a nonprofit organization dedicated to increasing energy efficiency as a means of promoting both economic prosperity and environmental protection. We were founded in 1980 and have contributed in key ways to energy legislation adopted during the past 25 years, including the Energy Policy Acts of 2005 and 1992 and the National Appliance Energy Conservation Act of 1987. I have testified before the Committee several times and appreciate the opportunity to do so again.

Energy efficiency improvements have contributed a great deal to our nation's economic growth and increased standard of living over the past 30 years. Energy efficiency improvements since 1970 accounted for approximately 75 quadrillion Btus of saved energy in 2005, which is *about three-quarters of U.S. energy use and three times as much as total energy supply growth over the same period*. In this sense, energy efficiency can rightfully be called our country's largest energy resource. If the United States had not dramatically reduced its energy intensity over the past 30 years, consumers and businesses would have spent about \$700 billion more on energy purchases in 2005.





Energy efficiency has also become a major force in the economy in terms of infrastructure investment. ACEEE ongoing research indicates that total energy supply infrastructure investment in the United States in 2005 was approximately \$100 billion. Energy efficient technology spending, from high-efficiency lighting to hybrid cars, was in the range of \$200 billion in the same period. This means that America spends many times more money on energy-using technology than on energy supply technology. However, this remarkable truth is masked, by the fact that efficiency is typically hidden inside our buildings, vehicles, and factories in millions of products, components, and systems. Yet collectively, these efficiency investments support a much larger fraction of the economy than do all the energy supply sectors combined.

Even though the United States is much more energy-efficient today than it was 30 years ago, there is still enormous potential for additional cost-effective energy savings. Some newer energy efficiency technologies have barely begun to be adopted. Other efficiency measures could be developed and commercialized rapidly in coming years, with policy and program support. For example, in a study from 2000, the Department of Energy's national laboratories estimate that increasing energy efficiency throughout the economy could cut national energy use by 10 percent or more in 2010 and about 20 percent in 2020, with net economic benefits for consumers and businesses.<sup>1</sup> Studies for many regions of the country have found similar if not even greater opportunities for cost-effective energy savings.<sup>2</sup> A recent analysis by McKinsey Global Institute found that U.S. energy demand growth through 2030 could be fully met through cost-effective energy efficiency improvements. Our ongoing research indicates that current estimates of \$200 billion in annual spending on efficient technology could be doubled to \$400 billion, with strong public policies and increase private investment.

Unfortunately, a variety of market barriers keep energy efficiency investment from being accelerated. These barriers fall in two main categories: (1) principal-agent or "split incentive" barriers, in which, for example, home builders must invest added capital in efficient homes, but receive none of the energy savings benefits; and (2) transaction costs, which stem from inability of average consumers or businesses to make "economically optimum" decisions in time-and-information-limited real world conditions. A recent ACEEE study for the International Energy Agency found that, in the major residential and commercial end-use markets in five countries, half or more of the energy used is affected by these kinds of market barriers<sup>3</sup>. This finding suggests that public policies, beyond pricing policies, are needed to overcome such barriers.

In addition, basic forces in the economy work against the tendency of higher energy prices to moderate energy demand. This principle of "price elasticity of demand", while economically

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<sup>1</sup> Interlaboratory Working Group, 2000, *Scenarios for a Clean Energy Future*. Washington, D.C.: Interlaboratory Working Group on Energy-Efficient and Clean-Energy Technologies, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy.

<sup>2</sup> For a summary of many of these studies, see Nadel, Shipley and Elliott, 2004, *The Technical, Economic and Achievable Potential for Energy-Efficiency in the U.S. – A Meta-Analysis of Recent Studies*. Washington, D.C.: American Council for an Energy-Efficient Economy.

<sup>3</sup> Prindle et al. 2007. *Quantifying Market Barriers in the End Use of Energy*. Draft report to the International Energy Agency. American Council for an Energy-Efficient Economy.

correct, is countered by “income elasticity of demand”, under which rising incomes cause consumers to be less affected by rising prices. A large segment of our population continues to buy low-mileage, high priced vehicles with little concern for fuel costs. For less-affluent consumers, “cross-elasticities” come into play that cause them to keep using energy as an essential service, but to cut back on other goods and services to balance their household budgets. Economists have documented the slowing of retail sales among low-and moderate-income people in response to rising energy prices. Both the income elasticity and cross-elasticity effects suggest that energy prices alone won’t balance our energy markets, and we need stronger energy policies if we want to stabilize energy markets without wrecking our economy.

Recent developments in our energy markets indicate that the U.S. needs to *accelerate* efforts to implement energy efficiency improvements:

- Oil, gasoline, natural gas and coal prices have risen substantially in recent years. For example, residential natural gas prices in 2005 averaged \$13.83 per thousand cubic feet, up 61% from the average price three years earlier (prices averaged \$8.57 per thousand cubic feet in 2002).<sup>4</sup> Likewise retail gasoline prices are up 87% relative to three years ago (\$2.917 per gallon 6/19/06 versus \$1.558 per gallon 6/16/03).<sup>5</sup> Even more dramatically, Powder River Basin coal has more than doubled in price since three years ago (spot prices of \$13.80 per short ton in May, 2006, up from about \$6 per short ton in May, 2003).<sup>6</sup> Energy efficiency can reduce demand for these fuels, reducing upward price pressure and also reducing fuel-price volatility, making it easier for businesses to plan their investments. Prices are determined by the interaction of supply and demand—if we seek to address supply and not demand, it’s like entering a boxing match with one hand tied behind our back.
- A recent ACEEE analysis found that gas markets are so tight that if we could reduce gas demand by as little as 4% over the next five years, we could reduce wholesale natural gas prices by more than 20%.<sup>7</sup> This analysis was conducted by Energy and Environmental Analysis, Inc. using their North American Gas Market Model, the same analysis firm and computer model that was employed by DOE and the National Petroleum Council for their 2003 study on U.S. natural gas markets.<sup>8</sup> These savings would put over \$100 billion back into the U.S. economy. Moreover, this investment would help bring back U.S.

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<sup>4</sup> Energy Information Administration, 2006, *Natural Gas Navigator: U.S. Natural Gas Residential Price*. [http://tonto.eia.doe.gov/dnav/ng/ng\\_pri\\_sum\\_dcu\\_nus\\_m.htm](http://tonto.eia.doe.gov/dnav/ng/ng_pri_sum_dcu_nus_m.htm) . Visited June 20. Washington, D.C.: U.S. Dept. of Energy.

<sup>5</sup> Energy Information Administration, 2006, *Petroleum Navigator: U.S. All Grades All Formulations Retail Gasoline Prices*. [http://tonto.eia.doe.gov/dnav/pet/hist/mg\\_tt\\_usw.htm](http://tonto.eia.doe.gov/dnav/pet/hist/mg_tt_usw.htm) . Visited June 20. Washington, D.C.: U.S. Dept. of Energy.

<sup>6</sup> Energy Information Administration, 2006, *Coal News and Markets, Week of May 5, 2006*. <http://www.eia.doe.gov/cneaf/coal/page/coalnews/coalmar.html#spot> . Washington, D.C.: U.S. Dept. of Energy.

<sup>7</sup> Elliott and Shipley, 2005, *Impacts of Energy Efficiency and Renewable Energy on Natural Gas Markets: Updated and Expanded Analysis*. <http://www.aceee.org/pubs/e052full.pdf>. Washington, D.C.: American Council for an Energy-Efficient Economy.

<sup>8</sup> National Petroleum Commission. 2003, *Balancing Natural Gas Policy—Fueling the Demands of a Growing Economy: Volume I Summary of Findings and Recommendations*. Washington, D.C.: U.S. Department of Energy.

manufacturing jobs that have been lost to high gas prices and also help relieve the crushing burden of natural gas costs experienced by many households, including low-income households. Importantly, much of the gas savings in this analysis comes from electricity efficiency measures, because much of the marginal electric load is met by natural-gas fired power plants.

- The U.S. is growing increasingly dependent on imported oil, with imports accounting for more than 60% of U.S. oil consumption in 2005, of which more than 40% came from OPEC countries.<sup>9</sup> The U.S. Energy Information Administration estimates that imports will account for 68% of U.S. oil use in 2020.<sup>10</sup> While moderate amounts of new oil are available in hard-to-reach areas of the U.S., much greater amounts of oil are available by increasing the efficiency with which we use oil. A January 2006 report by ACEEE found that the U.S. can reduce oil use by as much as 5.3 million barrels per day in 2020 through improved efficiency, including more than 2 million barrels per day in industry, buildings, heavy duty vehicles and airplanes.<sup>11</sup> In other words, *there are substantial energy savings outside of the highly contentious area of light-duty vehicle fuel economy*. These 5.3 million barrels per day of oil savings are nearly as much as we presently import from OPEC (OPEC imports were 5.5 million barrels per day in 2005).<sup>12</sup> Energy efficiency can slow the growth in oil use, allowing a larger portion of our needs to be met from sources in the U.S. and friendly countries.
- Economists have increasingly raised concerns that the U.S. economy is slowing and that robust growth rates we have experienced in recent years will not be sustained. Energy efficiency investments can help spur additional economic growth; they often have financial returns of 30% or more, helping to reduce operating costs and improve profitability. In addition, by reducing operating costs, efficiency investments free up funds to spend on other goods and services, creating what economists call the “multiplier effect”, and helping the economy broadly. This stimulates new economic activity and job growth in the U.S., whereas most of every dollar we spend on oil flows overseas. A 1997 study found that due to this effect, an aggressive set of efficiency policies could add about 770,000 jobs to the U.S. economy by 2010.<sup>13</sup>
- Overall, the U.S. has ample supplies of electricity at present, but demand is growing and several regions (such as southwest Connecticut, Texas, New York, and California) are projecting a need for new capacity in the next few years in order to maintain adequate

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<sup>9</sup> Energy Information Administration, 2006, *Monthly Energy Review May 2006*. Washington, DC: U.S. Dept. of Energy.

<sup>10</sup> Energy Information Administration, 2006, *Annual Energy Outlook*. Washington, D.C.: U.S. Department of Energy.

<sup>11</sup> Elliott, Langer and Nadel, 2006, *Reducing Oil Use Through Energy Efficiency: Opportunities Beyond Cars and Light Trucks*. Washington, DC: American Council for an Energy-Efficient Economy.

<sup>12</sup> See note #9.

<sup>13</sup> Alliance to Save Energy et al., 1997, *Energy Innovations: A Prosperous Path to a Clean Environment*. Washington, DC: American Council for an Energy-Efficient Economy.

reserve margins.<sup>14,15</sup> Energy efficiency resource policies can slow demand growth rates, postponing the date that additional capacity will be needed.

- Greenhouse gas emissions continue to increase. Early signs of the impact of these changes are becoming apparent in Alaska and other Arctic regions.<sup>16</sup> And several recent papers have identified a link between warmer ocean temperatures and increased hurricane intensity.<sup>17,18</sup> Energy efficiency is the most cost-effective way to reduce these emissions, as efficiency investments generally pay for themselves with energy savings, providing negative-cost emissions reductions. The term “negative-cost” means that, because such efficiency investments produce net economic benefits, they achieve emission reductions at a net savings for the economy. This important point has been missed in much of the climate policy analysis modeling performed to date. Too many economic models are incapable of characterizing the real economic effects of efficiency investments, and so forecast inaccurate economic costs from climate policies. Fortunately, this kind of flawed policy analysis is beginning to be corrected. For example, a May 2006 study just released by ACEEE found that the Regional Greenhouse Gas Initiative (RGGI – the planned cap and trade system for greenhouse gases in the northeastern U.S.) can have a small but positive impact on the regional economy provided increased energy-efficiency programs are a key part of implementation efforts.<sup>19</sup>

Energy efficiency also draws broad popular support. For example, in a March 2005 Gallup Poll, 61% of respondents said the U.S. should emphasize “more conservation” versus only 28% who said we should emphasize production (an additional 6.5% volunteered “both”).<sup>20</sup> In an earlier May 2001 Gallup poll, when read a list of 11 actions to deal with the energy situation, the top four actions (supported by 85–91% of respondents) were “invest in new sources of energy,” “mandate more energy-efficient appliances,” “mandate more energy-efficient new buildings,” and “mandate more energy-efficient cars.” Options for increasing energy supply and delivery generally received significantly less support.<sup>21</sup>

However, energy efficiency alone will not solve our energy problems. Even with aggressive actions to promote energy efficiency, U.S. energy consumption is likely to rise for more than a

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<sup>14</sup> North American Electric Reliability Council, 2005, *2005 Long-Term Reliability Assessment: The Reliability of Bulk Electric Systems in North America*. Princeton, N.J.: North American Electric Reliability Council.

<sup>15</sup> New York Independent System Operator, 2005, “The NYISO Issues Reliability Needs Assessment.” Press release of December 21. Schenectady, N.Y.: New York Independent System Operator.

<sup>16</sup> Hassol, 2004, *Impacts of a Warming Arctic: Arctic Climate Impact Assessment*. <http://www.acia.uaf.edu>. Cambridge University Press.

<sup>17</sup> Webster, Holland, Curry and Chang, 2005, “Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment.” *Science*, 309, 16 September, 1844–1846.

<sup>18</sup> Emanuel, 2005, “Increasing Destructiveness of Tropical Cyclones over the Past 30 Years.” *Nature*, 436, 4 August, 686–688.

<sup>19</sup> Prindle, Shipley and Elliott, 2006, *Energy Efficiency’s Role in a Carbon Cap-and-Trade System: Modeling Results from the Regional Greenhouse Gas Initiative*. Washington, DC: American Council for an Energy-Efficient Economy.

<sup>20</sup> Gallop, 2005, “Gallop Poll Social Series—The Environment.” Princeton, N.J.: The Gallop Organization.

<sup>21</sup> Moore, David, 2001, “Energy Crisis: Americans Lean toward Conservation over Production.” Princeton, N.J.: The Gallop Organization.

decade, and this growth, combined with retirements of some aging facilities, will mean that some new energy supplies and energy infrastructure will be needed. But aggressive steps to promote energy efficiency will substantially cut our energy supply and energy infrastructure problems, reducing the economic cost, political controversy, and environmental impact of energy supply enhancements.

## **The Energy Policy Act of 2005**

The Energy Policy Act of 2005 (EPAct 2005) made some useful progress on energy efficiency. Particularly notable were sections that established new consensus federal efficiency standards on 16 products and that created energy efficiency tax incentives. Other useful provisions include extension of authority for Energy Saving Performance Contracts in federal facilities and a variety of reports that hopefully will help spur future policy action. For example, the EPAct 2005 provision requiring DOE to submit a plan to Congress on steps it will take to catch-up on overdue efficiency standard rulemakings was timed just right and DOE has now prepared and begun to implement this plan. In addition, a variety of promising initiatives were authorized in EPAct 2005, but to have an impact, need to be followed by appropriations. Unfortunately, most of the new provisions requiring funding have not been included in the FY 2007 or 2008 budget requests nor in appropriations bills. Given recent developments, such as the lack of funding for many of the EPAct 2005 provisions, ACEEE now estimates that the energy efficiency sections of EPAct 2005 will reduce U.S. energy use by about 1.8 quadrillion Btu (“Quads”) in 2020, reducing projected U.S. energy use in 2020 by 1.5%. Of these savings, more than 75% will come from the two key provisions – equipment efficiency standards and energy-efficiency tax incentives.<sup>22</sup>

EPAct 2005 overlooked two critical policy issues: energy efficiency targets for the electricity sector and the oil sector. These two sectors are critical for energy security and global warming, and efficiency needs to be the first-priority policy in these areas. However, the final bill did not include any specific oil or electricity saving targets, even though the Senate version included an oil savings target and Senate deliberations discussed setting utility energy efficiency targets. If the United States is serious about addressing its energy security and global warming problems, it must set specific and strong policies to moderate demand growth for oil and electricity.

## **Key Priorities for the Energy Efficiency Promotion Act**

ACEEE applauds the Committee for its timely and thorough approach in bringing an energy efficiency bill forward. Our specific comments focus in on those sections that we find to contain the greatest energy savings potential, and that are important to supporting effective policy implementation.

**Title I: Lighting technologies.** ACEEE supports the overall aims of this section, and also recommends certain additions.

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<sup>22</sup> Nadel, Prindle and Brooks, 2006, “The Energy Policy Act of 2005: Energy Efficiency Provisions and Implications for Future Policy Efforts” in *Proceedings of the 2006 ACEEE Summer Study on Energy-Efficiency in Buildings*. Washington, DC: American Council for an Energy-Efficient Economy.

- We support the reflector lamp standard contained in Section 102, which is based on a consensus agreement among ACEEE, manufacturers, and other stakeholders. Reflector lamps, increasingly common in recessed lighting fixtures in today's homes, represent a growing portion of the residential lighting market, and this standard will help moderate the impact of this end use
- We also support the Sense of the Senate provision in Section 104, which we hope will soon lead to a consensus agreement on a national standard to phase out the least efficient general service light bulbs, of which more than a billion are sold each year, and pave the way for an eventual transition to dramatically more efficient light sources. ACEEE is working with the Alliance to Save Energy, the Natural Resources Defense Council, Philips Lighting, Osram Sylvania, General Electric, the American Lighting Association, and others to develop this agreement.
- We also recommend a new section calling for a study and plan for reaching a higher tier of energy performance for general service lighting that will meet or exceed the performance of today's compact fluorescent products without compromise on light quality and with continued consumer choice in the market.

**Title II: Efficiency Standards.** This title contains consensus-based standards for residential boilers, industrial electric motors, and residential appliances, developed collaboratively among ACEEE, manufacturers, and other stakeholders. It also contains several provisions we support to improve the Department of Energy's ability to set standards that will save more energy and better balance the needs of states with federal authority.

- Section 201 is designed to allow DOE to set standards which capture different aspects of a product's efficiency performance. For example, DOE determined it lacked administrative authority to adopt the consensus boiler standard contained in S.1115 because that proposal called for two prescriptive requirements and a minimum efficiency rating. Several other products are currently subject to multiple standard requirements including commercial clothes washers, ceiling fans and heat pumps. For some products, it makes better engineering, economic and energy-efficiency sense to establish a standard which may combine multiple performance and prescriptive elements. Our analysis is that this added flexibility in DOE's authority will save more energy and reduce costs.
- Section 202 authorizes the Department of Energy to set regional standards for residential heating and cooling equipment. In our experience with rulemakings for central air conditioners and furnaces, DOE's professed inability to set regional standards has frustrated otherwise cost-effective standards from being proposed. DOE recognized this problem in its recent Notice of Proposed Rulemaking for residential furnaces, in which it invited states that need higher-performance furnaces to apply for waivers of pre-emption under the law. Several states have already moved in this direction. This section simply enables DOE to set regional standards directly, rather than relying on the cumbersome and uncertain process of waiver applications. A state-by-state waiver process will result in a patchwork of standards, whereas regional standards as allowed for in S. 2111 would result in no more than three large, contiguous regions. Since 1978 manufactured housing has been subject to very successful regional efficiency and other standards set by the

Department of Housing and Urban Development. A similar system which relies on manufacturer labeling of products and state enforcement would work for climate sensitive appliances like central air conditioners and heating equipment. States routinely adopt federal minimum standards into building codes, providing an already in-place system of state-based enforcement..

- Section 203 requires DOE to conduct a rulemaking to determine if standards for furnace fans are warranted. Congress authorized DOE to consider furnace fan energy saving standards in 2005, but the Department subsequently decided to not schedule a rulemaking. Given the Department's history of delays, we think it imperative that the Congress give DOE a hard deadline for action. We estimate that this rulemaking could offer very large energy and economic savings.
- Section 204 would allow an expedited DOE standard rulemaking based on consensus agreements. While we agree with the Department on the desirability of this provision, we prefer the bill's language to an alternative version proposed by the Department. We believe the bill's current language better reflects due process and would expedite rules more effectively. We also remind the Committee that the DOE language was rejected by Congress in 2005.
- Section 205 clarifies the intent of the law regarding federal pre-emption of state appliance efficiency standards. Federal law has struck a balance over the years between federal and state roles on appliance standards. While the general consensus is that federal states are preferable to a patchwork of state standards, states have also retained the right to advance standards for products not covered by federal law, and for covered products up to the effective date of the federal standard. History shows that state initiative has led to many of the advances in federal policy on appliance standards. In fact, it was state action on standards following the 1982 DOE "no-standard standard" rule that ultimately led to the National Appliance Energy Conservation Act of 1987. Since then, state initiatives have helped to spur consensus agreements for federal standards on many other products. The language in this section simply clarifies key aspects of this federal-state relationship. We also recommend that the Committee consider language that would "sunset" pre-emption if the federal government fails to promulgate standards within Congressionally-prescribed timeframes, and that would require DOE to conduct new rulemakings on covered products within a defined period following the effective date of a given standard. We believe these additional provisions will keep U.S. appliance efficiency standards policy moving forward, while striking the right balance between federal and state roles. Given the increasing urgency of accelerating the pace of energy efficiency technology improvement, it is appropriate for Congress to ensure that federal appliance efficiency standards keep up with and support technology innovation.
- Section 206 sets requirement for FTC Energy Guide labeling of consumer electronic equipment. We support this provision because, in our analyses, this class of products is the fastest-growing energy use American homes, and American consumers need energy use information to make informed choices on these products. A Natural Resources Defense Council report indicates that the largest televisions on the market today can use more

energy than the average refrigerator<sup>23</sup>. Coupled with other components in high-performance home entertainment systems, these products threaten to offset many of the energy savings the U.S. has achieved through its standards programs. Labeling these products, based on their full operating mode as well as on standby mode, is an important first step in addressing this problem.

- Section 209 raises the minimum efficiency requirements for electric motors covered by the Energy Policy Act of 1992 to the highest *NEMA Premium* available in the marketplace. In addition, the proposal expands the scope of motors covered to include most of the industrial electric motors of 500 horsepower and lower. ACEEE participated with NEMA in reaching consensus on this proposal, and ACEEE feels that the provision provides a balance between the interest of motor users and the need for greater energy efficiency among a product that consumes over two-thirds of the industrial electricity in the country.

**Title III: Efficient Vehicles.** ACEEE generally concurs with the priorities identified in this title for vehicle efficiency technology research and deployment. Despite the downward trend of DOE funding for research on lightweight materials for automotive applications in recent years, we believe there is substantial remaining potential to improve fuel economy through the use of such materials. Indeed, this is why we and others worked to ensure that DOT's CAFE reform for light trucks did not result in a system tying fuel economy requirements to vehicle weight, which would have eliminated auto manufacturers' incentive to incorporate lightweight materials into their products to raise corporate fuel economy.

ACEEE supports the authorization of loan guarantees to facilities for the manufacture of parts for fuel-efficient vehicles, as well as incentives for manufacturers and suppliers to retool to produce advanced technology vehicles. We note however that the discussion of advanced lean burn technology should clarify that fuel economy for diesels is to be compared with that of gasoline vehicles *on an energy-equivalent basis*. Otherwise, the requirement that the vehicle have fuel economy at least 125% of baseline fuel economy to qualify for the manufacturing incentive becomes much more lenient for diesels (11-14% less stringent) in terms of efficiency, due to the high Btu content of diesel fuel. While its high energy density does lead to an additional (non-efficiency) benefit for diesel in terms of petroleum reduction, carbon emissions produced by diesel combustion are higher per gallon, so that no climate benefits follow from high fuel density. It is important to take this opportunity to begin to establish the principle that petroleum reduction policies should support, not undermine, policies to address climate change. This issue of gasoline-equivalence of diesel was not properly resolved in the EPAct 2005 tax credits, despite Senate intent; it has caused confusion in the implementation of the credits and should be clarified through this bill.

We also support the allocation of resources to developing domestic capability in energy storage for vehicles and to advancing electric drive technologies. However, it should be noted that DOE has spent hundreds of millions of dollars in the past (e.g. in the Partnership for a New Generation of Vehicles) on technologies of this kind without accelerating domestic manufacturers' production of

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<sup>23</sup> Horowitz, Noah et al. 2005. *Televisions: Active Mode Energy Use and Opportunities for Energy Savings*. Natural Resources Defense Council Issue Paper, 2005.



vehicles that use them. That experience demonstrates the importance of using R&D dollars to support a policy of mandatory fuel economy increases, rather than as a substitute for such a policy. Within the scope of this bill, we suggest that part of the funding proposed in this section be used for a competition for parts/automaker teams to produce a prototype plug-in hybrid meeting certain performance and cost criteria (assuming large volume production). This would help to ensure some real-world progress on vehicle efficiency would follow from the proposed investment of over \$400 million per year in battery/electric drive technologies.

**Title IV: National Energy Efficiency Goals.** While this title contains non-binding goals, which we support, we also want to emphasize the need to set binding national goals for energy efficiency. While competitive markets will ultimately deliver the technologies and practices to reach these goals, markets do best when they have clear and simple targets to meet. We applaud the Committee for setting an energy productivity goal for the nation; the 2.5% annual improvement represents nearly a 50% improvement in current productivity growth, and would sharply reduce energy demand growth overall.

We especially support the energy savings targets in section 401, though we recommend that the fuel economy aspects of this section be more specific. We note that the President's Twenty in Ten proposal, on which the 2017 target for the section appears to be based, relies very heavily on a loosely-defined set of alternative fuels, and only moderately accelerates fuel economy improvement. While the feasibility of deploying alternative fuels infrastructure is unproven, fuel economy technologies and costs are well known, and therefore a greater emphasis on fuel economy provides a better balance of risk for the nation. ACEEE recommends that fuel economy targets be set so as to save at least 12 billion gallons of fuel in 2017, 45 billion gallons in 2025, and 68 billion gallons in 2030.

We also recommend that a new section be created that sets electricity savings targets for distribution utilities, such that covered utilities would be required to save 10% of electricity sales by 2020. Such Energy Efficiency Resource Standard (EERS) are simple, market-based mechanisms to encourage more efficient generation, transmission, and use of electricity and natural gas. EERS-type laws and regulations are now in operation in several states and countries. Texas's electricity restructuring law created a requirement for electric utilities to offset 10% of their demand growth through end-use energy efficiency. Utilities in Texas have already exceeded their targets there is discussion about raising them. Hawaii and Nevada recently expanded their renewable portfolio standards to include energy efficiency. Connecticut and California have both established energy savings targets for utility energy efficiency programs (Connecticut by law and California by regulation) while Vermont has specific savings goals in the performance contract with the nonprofit organization that runs statewide programs under a contract with the Public Service Board. Pennsylvania's new Advanced Energy Portfolio Standard includes end-use efficiency among other clean energy resources. Colorado's largest utility has energy savings goals as part of a settlement agreement approved by the Public Service Commission. And Illinois and New Jersey are planning to begin programs soon. EERS-like programs have been working well in the United Kingdom and the Flemish region of Belgium. Italy has recently started a program, and

another is about to start in France. Details on each of these programs are provided in a March 2006 ACEEE report.<sup>24</sup>

While many EERS are separate from a renewable portfolio standard, another option would be to combine renewable energy and energy efficiency in a single portfolio standard. However, if this is done, the portfolio target should be significantly higher than if only renewable energy or if only energy efficiency were included. Specifically, a combined RPS-EERS should not reduce any previously-set targets for renewable energy generation. For example, a combined efficiency/renewables target might be 15-20% of 2020 sales, which is a higher target than the 10% of 2020 electricity sales that the Senate has previously passed as a renewable portfolio standard.

**Title V: Federal Leadership.** ACEEE supports the provisions of this title, especially the permanent authorization of the Energy Savings Performance Contracting (ESPC) program, and the assessment of Combined Heat and Power (CHP) opportunities at federal facilities. We recommend that Congress place a special priority on installing CHP technology at the Capitol powerplant, which could be accomplished through an ESPC or similar vehicle.

**Title VI: State and Local Initiatives.** ACEEE supports the provisions of this title, especially section 603's requirements for utilities and states to include energy efficiency in resource planning, and to reform ratemaking policies to make energy efficiency a better business proposition for utilities. We recommend that the bill also include Regional Transmission Organizations (RTOs) among the entities covered by this section. This section should also be linked ultimately to a federal Energy Efficiency Resource Standard (EERS) that sets quantitative targets for energy savings for utilities, with the goal of saving 10% of electricity sales by 2020. Sections 139 and 140 of EAct 2005 called for a study and pilot program for EERS. The study is complete, and shows that these policies are gaining acceptance and enjoying success in a number of states. Given the increased urgency to address carbon emissions from electric utilities, this should be a high priority for Congress in 2007.

## Energy Savings

ACEEE has estimated the energy and water savings from the appliance standards provisions of the bill.

**Consensus standards.** The following standards are included based on agreements between efficiency advocates and manufacturers. Annual savings summarized below (at the level achieved when all equipment in use complies).

- Residential boilers – 170 million therms natural gas per year, net present benefits of \$2.5 billion.

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<sup>24</sup>Nadel, 2006, *Energy Efficiency Resource Standards: Experience and Recommendations*. Washington, D.C.: American Council for an Energy-Efficient Economy.

- Incandescent reflector lamps – 6 billion kilowatt hours per year, net present benefits of \$5 billion.
- Clothes washer, dishwashers and dehumidifiers – 560 million gallons of water per day; energy and dollar savings TBD
- Motors – 8 billion kilowatt hours per year, net present benefits of \$500 million

**New rulemakings.** The legislation provides for DOE rulemakings to set standards for the following products. Potential energy savings from such rulemakings (assuming appropriately strong DOE rules) are as follows:

- Refrigerators – 14 to 23 billion kilowatt hours per year, net present benefits TBD
- Residential furnace fans – 13 billion kilowatt hours per year; \$4.1 billion net present benefits
- Clothes washers and dishwashers – savings to be determined at a later date.

**Provisions to strengthen the appliance standards program.** Various standards pending before U.S. DOE for rulemakings have the potential to reduce energy consumption by nearly 200 billion kilowatt hours per year, roughly the amount of power generated by 65 large power plants (500 megawatts each). The pending legislation does not directly affect most of these rulemakings, but will enhance significantly the ability of DOE to set appropriately strong standards. Provisions designed to provide the Secretary of Energy greater flexibility in setting standards include limited authority for regional standards for climate-sensitive products, authority to use multiple efficiency metrics for a given product and authority for expedited rules.

**Total potential savings:**

- Electricity: At least 50 billion kilowatt hours per year, or enough to power roughly 4.8 million typical U.S. households
- Natural gas: 170 million therms per year, or enough to heat about a quarter million typical US homes.
- Water: At least 560 million gallons per day, or about 1.3% of total daily potable water usage.
- Dollars: More than \$12 billion in net present benefits for consumers.

**Conclusion**

Energy efficiency is the “first fuel” in America’s race for a clean and secure energy future. Energy efficiency has saved consumers and businesses trillions of dollars in the past three decades, including more than half a trillion dollars in 2006 alone. These efforts should now be accelerated to meet America’s greatest energy challenges—energy security and global warming. These twin problems are converging to force historic changes in U.S. energy and environmental policy. Energy efficiency is the one resource that addresses both the energy security and climate challenges in the near term, while enhancing economic prosperity. Domestic energy supplies with

low carbon content will take time to develop; but we can start now to accelerate efficiency investment, which will enable low-carbon domestic supplies to begin reducing energy imports and carbon emissions. If we do not use efficiency as the “first fuel” in the race for clean and secure energy, clean energy supply technologies may not be able to be deployed fast enough to meet runaway demand.

ACEEE supports the Energy Efficiency Promotion Act as a major additional step on the road to a sustainable energy future. We recommend a number of ways that this bill can be augmented, within its existing provisions, by adding new provisions, and through additional legislation.

This concludes my testimony. Thank you for the opportunity to present these views. We look forward to responding to any questions or providing any additional information that the committee may require to complete this important legislation.