

**Testimony of Steven Nadel,  
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**Before the Subcommittee on Energy and Air Quality,  
Committee on Energy and Commerce,  
U.S. House of Representatives**

**Hearing on:  
Comprehensive National Energy Policy**

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## Summary

Energy efficiency is an important cornerstone for America's energy policy. Energy-efficiency has saved consumers and businesses several trillion dollars in the past two decades including hundreds of billions in 2002 alone. These efforts should now be accelerated in order to:

- Save consumers and businesses even more money;
- Change the energy supply and demand balance and put downward pressure on energy prices;
- Decrease reliance on imported oil;
- Help with economic development (since savings from energy efficiency generates jobs);
- Reduce carbon emissions, helping to moderate growth in the gases that contribute to global climate change.

The provisions in the draft Energy Policy Act of 2003 take modest steps in this direction and are a significant improvement relative to the efficiency provisions passed by the House in 2001. In particular, we support:

Title I on Energy Conservation – especially the sections on energy conservation standards for additional consumer and commercial products and on federal leadership in energy conservation;

Title VI on DOE Programs and the sections of Title V dealing with hydrogen vehicles and fuel;

Title X on Automobile Efficiency, primarily because it improves on the 2001 legislation by not extending the dual-fuel credit for cars (thereby saving on the order of 55 million barrels of oil annually).

Overall, we estimate that these provisions will reduce U.S. energy use by nearly 1% over the 2004-2020 period, including approximately a 2% reduction in 2020. By 2020 these provisions will also displace the need for approximately 130 new power plants of 300 MW each.

However, more can and should be done to improve U.S. energy efficiency including:

- Clarifying that DOE can address furnace fan energy use in its current rulemaking for a new residential furnace efficiency standard;
- Adding other new efficiency standards when and if negotiations with industry are successfully completed;
- Setting a fuel-savings goal of 1 million barrels per day of oil savings by 2010 for future passenger vehicle fuel-economy rules (an increase of about 5 mpg from current levels, thereby displacing a little more than we now import from Iraq);
- Encouraging combined heat and power and other distributed generation systems by adding provisions to Title VII that would provide an orderly transition from the current PURPA structure to one in which distributed generators participate in a fair market place that values their benefits and prices services in a truly competitive manner;
- Including an Energy Efficiency Performance Standard, modeled after a program now operating in Texas.

These additional provisions would increase energy savings under the bill by more than a factor of five. Failure to take these steps now will make it more likely that Congress will have to address energy problems in the not very distant future.

## Introduction

ACEEE is a non-profit organization dedicated to increasing energy efficiency as a means for both promoting economic prosperity and environmental protection. We were founded in 1980 and have contributed in key ways to energy legislation adopted during the past 20 years, including the Energy Policy Act of 1992 and the National Appliance Energy Conservation Act of 1987. I appreciate the opportunity to appear again before this Committee.

Energy efficiency improvement has contributed a great deal to our nation's economic growth and increased standard of living over the past 30 years. *Energy efficiency improvements since 1973 accounted for approximately 25 quadrillion Btu's in 2002, which is about 26% of U.S. energy use and more energy than we now get annually from coal, natural gas, or domestic oil sources.* Consider these facts which are based primarily on data published by the federal Energy Information Administration (EIA):

11. Total primary energy use per capita in the United States in 2002 was almost identical to that in 1973. Over the same 29-year period, economic output (GDP) per capita increased 74 percent.
12. National energy intensity (energy use per unit of GDP) fell 43 percent between 1973 and 2001. About 60% of this decline is attributable to real energy efficiency improvements and about 40% is due to structural changes in the economy and fuel switching.<sup>1</sup>
13. If the United States had not dramatically reduced its energy intensity over the past 29 years, consumers and businesses would have spent at least \$430 billion more on energy purchases in 2002.
14. Between 1996 and 2002, GDP increased 21 percent while primary energy use increased just 2 percent. Imagine how much worse our energy problems would be today if energy use had increased 10 or 20 percent during 1996-2002.

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<sup>1</sup> Murtishaw and Schipper, 2001, *Untangling Recent Trends in U.S. Energy Use*. Washington, D.C.: U.S. Environmental Protection Agency.

Even though the United States is much more energy-efficient today than it was 25 years ago, there is still enormous potential for additional cost-effective energy savings. Some newer energy efficiency measures have barely begun to be adopted. Other efficiency measures could be developed and commercialized in coming years, with proper support:

- 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>2</sup>
- ACEEE, in our *Smart Energy Policies* report, estimates that adopting a comprehensive set of policies for advancing energy efficiency could lower national energy use from EIA projections by as much as 11 percent in 2010 and 26 percent in 2020.<sup>3</sup>
- The opportunity for saving energy is also illustrated by experience in California in 2001. Prior to 2001 California was already one of the most-efficient states in terms of energy use per unit gross state product (ranking 5th in 1997 out of 50 states<sup>4</sup>). But in response to pressing electricity problems, California homeowners and businesses reduced energy use by 6.7% in summer 2001 relative to the year before (after adjusting for economic growth and weather)<sup>5</sup>, with savings costing an average of 3 cents per kWh,<sup>6</sup> far less than the typical retail or even wholesale price of electricity.

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<sup>2</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>3</sup> Nadel and Geller, 2001, *Smart Energy Policies: Saving Money and Reducing Pollutant Emissions Through Greater Energy Efficiency*, [www.aceee.org/energy/reports.htm](http://www.aceee.org/energy/reports.htm). Washington, DC: American Council for an Energy-Efficient Economy.

<sup>4</sup> Geller and Kubo, 2000, *National and State Energy Use and Carbon Emissions Trends*. Washington, DC: American Council for an Energy-Efficient Economy.

<sup>5</sup> California Energy Commission, 2001, *Emergency Conservation and Supply Response 2001*. Report P700-01-005F. Sacramento, CA.

<sup>6</sup> Global Energy Partners, 2003, *California Summary Study of 2001 Energy Efficiency Programs, Final Report*. Lafayette, CA.

Unfortunately, a variety of market barriers keep these savings from being implemented. These barriers are many-fold and include such factors as “split incentives” (landlords and builders often don’t make efficiency investments because the benefits of lower energy bills are received by tenants and homebuyers); panic purchases (when a product such as a refrigerator needs replacement, there often isn’t time to research energy-saving options); and bundling of energy-saving features with high-cost extra “bells and whistles.”

Furthermore, recent developments indicate that the U.S. needs to *accelerate* efforts to implement energy-efficiency improvements:

- Oil, gasoline and natural gas prices have been climbing steadily in recent months. 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. For example, the *Smart Energy Policies* study referenced above used the Department of Energy’s (DOE’s) National Energy Modeling System to assess the impacts of energy-saving policies and found that these policies could have a large impact on natural gas prices, reducing average prices in 2020 from \$3.10 per million Btu’s in the EIA basecase projection to \$1.90 per million Btu’s if a comprehensive set of efficiency policies is implemented.
- The U.S. is growing increasingly dependent on imported oil, with imports accounting for about 60% of U.S. oil consumption in 2000 of which nearly half came from OPEC and nearly a quarter came from the Persian Gulf.<sup>7</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 neighboring friendly countries.
- The U.S. economy has been in the doldrums for more than two years. Energy-efficiency investments 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”,

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<sup>7</sup> Energy Information Administration, 2001, *Annual Energy Review 2001*. Washington, DC: U.S. Dept. of Energy.

and helping the economy broadly. A 1997 study found that due to this effect, an aggressive set of efficiency policies could add about 770,000 million jobs to the U.S. economy by 2010.<sup>8</sup>

- Emissions of gases contributing to global climate change continue to increase. Early signs of the impact of these changes are becoming apparent in Alaska. Energy-efficiency is the most cost-effective way to reduce these emissions, as efficiency investments generally pay for themselves with energy savings, providing no-cost emissions reductions.

Energy-efficiency also draws broad popular support. A nationwide poll conducted for the *Los Angeles Times* found that when people were asked how to meet our energy needs, “15% called for greater conservation efforts, 17% supported development of new supplies and 61% said they favored both steps in equal measure”.<sup>9</sup> Similarly, in a May 2001 Gallop Poll, 47% of respondents said the U.S. should emphasize “more conservation” versus only 35% who said we should emphasize production (an additional 14% volunteered “both”). In this same 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>10</sup>

Furthermore, increasing energy efficiency does not present a trade-off between enhancing national security and energy reliability on the one hand and protecting the environment on the other, as do a number of energy supply options. Increasing energy efficiency is a “win-win” strategy from the perspective of economic growth, national security, reliability, and environmental protection.

We are not saying that energy efficiency alone will solve our energy problems. Even with aggressive actions to promote energy efficiency, U.S. energy consumption is likely to rise for more

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<sup>8</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.

<sup>9</sup> Barabak, Mark, 2001, “Bush is Criticized as Environment Weighed,” *Los Angeles Times*, April 30, p. A1.

<sup>10</sup> Moore, David, 2001, “Energy Crisis: Americans Lean toward Conservation over Production,” [www.gallup.com/poll/releases/pr010515.asp](http://www.gallup.com/poll/releases/pr010515.asp). Princeton, N.J.: The Gallup Organization.

than a 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.

### **Comments on the Draft “Energy Policy Act of 2003”**

In the bulk of my testimony, I want to comment on the energy-efficiency sections in the draft “Energy Policy Act of 2003” released by Chairman Barton last week. Five of the bill’s titles address energy efficiency in some fashion including Titles I (Energy Conservation), V (Vehicles and Fuel), VI (DOE Programs), VII (Electricity), and X (Automobile Efficiency).

Overall, with the exception of Title VII, these provisions represent modest but significant steps to improve energy efficiency in the U.S. These provisions are also a significant improvement over the efficiency related provisions in the energy bill passed by the House in 2001.

#### *Title I - Energy Conservation*

Most of the efficiency gains are contained in Title I. This title is based almost entirely on the energy efficiency title negotiated last summer and fall by House and Senate energy bill conferees of both political parties. We support this title and recommend that it be included in the final House bill.

Most of the savings in this title come from Subtitle C on Energy-Efficient Products. This section includes consensus energy-efficiency standards negotiated by ACEEE and industry to improve the efficiency of various products used in homes and businesses. In cases where there was clear consensus on what the new standard should be, the specific standard is included in the bill. Placing these standards in the bill speeds up implementation (saving the three years for a typical DOE rulemaking) and also provides clear direction for manufacturers on the products they need to produce (with a rulemaking, manufacturers face uncertainty until a final rule is published). In cases

where such consensus was lacking, the bill directs DOE to set standards by rule. Overall, we estimate that these standards will have a benefit-cost ratio of about five to one (energy bill savings will be about five times greater than the incremental cost of the more efficient equipment).<sup>11</sup> This Subtitle also includes a useful provision directing the Federal Trade Commission to review and improve the Energy Guide label that now is displayed on many types of appliances. The current label is ineffective at educating and motivating consumers and needs updating.

We do have a few small changes to suggest to this section. Most of these are too small and technical to mention here (we will instead note them in a separate letter to staff), but one item is worth mentioning. In the energy bill passed by the House in 2001, there was a provision directing DOE to consider efficiency standards furnace fans (these are the fans that circulate heated air through the ducts and into the living space). The Senate did not include this provision because furnace manufacturers argued (with ACEEE accent) that DOE already had this authority and should consider furnace fans as part of a current rulemaking on furnace efficiency. Recently DOE counsel has questioned whether DOE in fact has this authority. We recommend that the House bill clarify that DOE does in fact have authority to regulate the efficiency of furnace fans as part of rulemakings to set new furnace efficiency standards.

We are also talking with industry about a few possible additional consensus standards, such as a standard for compact fluorescent lamps that would be based on the present Energy Star specification for these products. As soon as these negotiations are completed we will bring our recommendations to Committee staff so that members may consider them.

Subtitle A addresses Federal Leadership in Energy Conservation. It is important for the federal government to continue to lead the nation in energy efficiency by setting an example of energy use in its own buildings. Few federal programs have been as cost-effective as DOE's Federal Energy Management Program (FEMP). At an average cost of only \$20 million per year, FEMP has cut federal building energy use by nearly 21% from Fiscal Year 1985 to Fiscal Year 1999 -- a reduction that now saves federal taxpayers roughly \$1 billion each year in reduced energy costs.

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<sup>11</sup> Kubo and Nadel, 2001, *Opportunities for New Appliance and Equipment Efficiency Standards: Energy and Economic Savings Beyond Current Standards Programs*. Washington, DC: American Council for an Energy-Efficient Economy.



The draft Energy Policy Act of 2003 includes an agreement from last year's Conference Committee on provisions to update and strengthen FEMP efforts including: (1) updating agency energy reduction targets; (2) extending and expanding Energy Savings Performance Contract (ESPC) authority; (3) requiring cost-effective metering; (4) increasing performance standards for new federal buildings; (5) strengthening federal procurement requirements; and (6) increasing federal fleet fuel-economy requirements. We fully support these provisions. This Subtitle also includes a useful new program to encourage and assist industry to make voluntary reductions in industrial energy intensity.

Subtitle B authorizes several new state and local energy-saving programs. These could be useful programs if funding is provided, but absent new funding these sections will probably have little impact.

Overall, preliminary estimates by ACEEE are that Title I will save about 18.5 quadrillion Btu's of energy ("quads") over the 2004-2020 period, including about 2.8 quads in 2020. These savings are nearly 1% of predicted U.S. energy use over this period, and about 2% of predicted energy use in 2020. Most of these savings will be in electricity, eliminating the need for about 130 new power plants (300 MW each) by 2020.

#### *Title X – Automobile Efficiency*

This section, according to the summary released by Committee Staff, authorizes the National Highway Transportation Safety Administration (NHTSA) to conduct fuel-economy rulemakings and also directs the National Academy of Sciences to conduct another fuel-economy study. What is most useful about this section is that it does not contain provisions from the 2001 House energy bill that extend the dual-fuel credit and that set overly modest goals for new efficiency standards. We hope that these omissions are permanent.

The dual-fuel credit was a well-intentioned effort to increase use of alternative fuels by giving a fuel-economy credit to manufacturers for producing cars that can use both gasoline and alternative fuels. However, this provision has resulted in little use of alternative fuels and instead

has increased gasoline consumption by allowing the entire fleet of vehicles to decrease average fuel economy by up to 1.2 miles per gallon. According to a recent joint report by U.S. Department of Transportation (DOT) and other agencies, dual fuel vehicles use gasoline 99% of the time.<sup>12</sup> The draft bill does well not to extend the dual-fuel credit. This action could save up to 55 million barrels of oil annually, which is more than the oil-savings target in the 2001 House energy bill. In addition, we recommend the further step of reducing the 0.9 mpg dual-fuel credit that DOT has proposed for model years 2005 to 2008. Alternatively, the dual fuel credit could be extended, but the amount of credit based on actual use of alternative fuels by dual-fuel vehicles (as determined by DOT). Such a provision would encourage manufacturers and alternative fuel providers to work together to increase the use of alternative fuels by these vehicles.

The 2001 bill also included a fuel savings target of 5 billion gallons of oil savings over the 2004-2010 period. While this number may sound significant, it's really a "fig leaf" and represents a fuel-use reduction of only 0.5% over this period. In fact, this target only captures modest fuel economy improvements that manufacturers have already announced, and that are also covered in a proposed NHTSA rule.<sup>13</sup> For a fuel-savings target to be useful, it needs to be significant. If a target is added to the bill, we would suggest 1 million barrels per day of oil savings by 2010. This level of savings is about 30% more than the U.S. imported from Iraq in 2001 and would represent a 22% average improvement in vehicle fuel economy by 2010 (e.g. from the current 24 mpg under the EPA test procedure to 29 mpg).

Ultimately, the U.S. needs much larger improvements in fuel economy in order to substantially reduce our reliance on oil imports. The last study by the National Academy of Sciences (NAS) found that a significant and cost-effective increase in mpg is possible over the next ten years.<sup>14</sup> Analysis by ACEEE has found that an average fuel economy of 41 mpg is possible and

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<sup>12</sup> DOT, DOE, and EPA, 2002, Report to Congress, *Effects of the Alternative Motor Fuels Act CAFÉ Incentives Policy*, March. Washington, DC: U.S. Dept. of Transportation.

<sup>13</sup> NHTSA, Dec. 16, 2002, "Light Truck Average Fuel Economy Standards Model Years 2005-07." Washington, DC: National Highway Transportation Safety Administration.

<sup>14</sup> National Research Council, 2002, *Effectiveness and Impact of Corporate Average Fuel Economy Standards*. Washington, DC: National Academy Press.

cost-effective by 2012.<sup>15</sup> Furthermore, both NAS and ACEEE have found that the largest percentage improvements in fuel economy can be achieved in SUVs and other light trucks, indicating that it is possible to improve fuel economy and still sell these types of vehicles. We recognize that there may not be the political will today to increase fuel economy significantly, and therefore that Congress is unlikely to take any significant action on this issue. However, such a course has a price – a price at the pump (since increased demand for gasoline tends to increase prices) and also a price in terms of the long-term competitiveness of the U.S. auto industry (if U.S. manufacturers pay less attention to fuel economy than foreign manufacturers, U.S. manufacturers will be at a competitive disadvantage when fuel supplies inevitably tighten up at some point in the future).

### *Title's V and VI*

Title VI authorizes DOE energy-efficiency programs for the next five years. By and large this title contains a variety of useful ideas (we particularly support the work on lighting and distributed energy systems). However, the impact of this title will primarily depend on future appropriations. Title V also includes specific authorization for the Freedom Car and Hydrogen Fuel programs. We think these are useful programs, and the draft bill improves upon DOE's formulation of the program by setting real-world goals for the introduction and performance of fuel cell vehicles. However, it will be at least 2030 before these vehicles have any significant impact. For example, Title V sets a goal of 2015 for production decisions and 2020 for selling vehicles that will be accepted by consumers. Since most new technologies only gradually penetrate the market, it will be at least 2030 before these vehicles have a significant presence on the road. In the interim, increased efforts will be needed to improve the efficiency of gasoline-powered vehicles. Also, it is far from certain that efforts to develop a hydrogen economy will be successful, so that rather than putting all of our "eggs" in the hydrogen basket, we recommend that a diverse range of advanced high-efficiency technologies be pursued.

### *Title VII – Electricity*

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<sup>15</sup> DeCicco, An and Ross, 2001, *Technical Options for Improving the Fuel Economy of U.S. Cars and Light Trucks by 2010-2015*. Washington, DC: American Council for an Energy-Efficient Economy.

In times of increasing energy costs, combined heat and power (CHP; sometimes also called cogeneration) represents one of the most important opportunities available for improving efficiency, the environment and economic competitiveness. With fair rules, 50,000 MW of CHP capacity can be added by 2010 and an additional 95,000 MW added by 2020, reducing the fuel needed to generate electricity by up to 50%.<sup>16</sup> A recent ACEEE study identified utility practices toward CHP and other distributed generation technologies as the most significant barrier to their expanded use.<sup>17</sup> However, in many utility territories, due to these utility practices, current PURPA provisions represent the only opportunity to make such facilities viable.

Subtitle E removes the mandatory purchase and sale requirements under Section 210 of PURPA once a competitive market is present. While we support this concept in principle, we are concerned that the actual provisions in the bill are not sufficient to protect new and existing qualifying facilities (QFs) from predatory behavior by utilities. To make the PURPA provisions in the bill workable, more explicit requirements are needed to ensure that a functioning market exists, where facilities can be interconnected at reasonable cost and in a reasonable timeframe, where excess power can be sold at fair prices, and where backup and supplemental power can be purchased at fair rates. In addition, we are disappointed that the bill does not include provisions that would address these underlying market problems directly, providing an orderly transition from the current PURPA QF structure to one in which distributed generators participate in a fair market place that values their benefits and prices services in a truly competitive manner. We understand that several members of this Committee are now attempting to craft language that would provide protection for distributed generation from predatory practices by utilities. We urge the Committee to give such provisions serious consideration. If a provision cannot be crafted that assures fair protections for distributed generation facilities, the existing protections afforded by PURPA are preferable to the current draft bill.

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<sup>16</sup> Nadel and Geller, 2001, *Smart Energy Policies: Saving Money and Reducing Pollutant Emissions Through Greater Energy Efficiency*, [Www.aceee.org/energy/reports.htm](http://www.aceee.org/energy/reports.htm). Washington, DC: American Council for an Energy-Efficient Economy.

<sup>17</sup> Brown, Scott and Elliott, 2002, *State Opportunities for Action: Review of States' Combined Heat and Power Activities*. Washington, DC: American Council for an Energy-Efficient Economy.

We also recommend that a provision be added to establish an Energy Efficiency Performance

Standard (EEPS) to establish energy-savings targets for electricity suppliers. Such a program was established in Texas as part of electricity restructuring legislation and appears to be working well.<sup>18</sup> A federal EEPS should require savings from efficiency programs of about 1% per year, starting in 2005 (in order to permit time for programs to start-up), thereby requiring 5% savings in 2010, 10% savings, in 2015, etc. Such a program should permit trading, so that utilities that save more than their target can sell savings credits to utilities that fall short of their savings targets. Trading would also permit the market to find the lowest-cost savings nationwide.

## **Conclusion**

Energy efficiency is an important cornerstone for America's energy policy. Energy-efficiency has saved consumers and businesses billions of dollars in the past two decades, but these efforts should be accelerated in order to:

- save consumers and businesses even more money;
- change the energy supply and demand balance and put downward pressure on energy prices;
- decrease reliance on imported oil;
- help with economic development (since savings from energy efficiency generates jobs); and
- reduce carbon emissions, helping to moderate growth in the gases that contribute to global climate change.

The provisions in the draft Energy Policy Act of 2003 take modest steps in this direction, particularly the section establishing new appliance and equipment efficiency standards. We are also happy to see that the bill does not extend the gasoline-wasting credit for dual fuel cars. *Overall, we estimate that this bill will reduce U.S. energy use by about 2% by 2020.*

But much more can and should be done. We recommend that Congress include provisions:

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<sup>18</sup> Kushler and Witte, 2001, *A Revised 50-State Status Report on Electric Restructuring and Public Benefits*. Washington, DC: American Council for an Energy-Efficient Economy.

- Clarifying in Title I that DOE can address furnace fan energy use in its current rulemaking for a new residential furnace efficiency standard;
- Adding other new efficiency standards in Title I when and if negotiations with industry are successfully completed;
- Setting a fuel-savings goal in Title X of 1 million barrels per day of oil savings by 2010 for future passenger vehicle fuel-economy rulemakings (an increase of about 5 mpg, thereby displacing imports from Iraq);
- Encouraging combined heat and power and other distributed generation systems by adding provisions to Title VII that would provide an orderly transition from the current PURPA structure to one in which distributed generators participate in a fair market place that values their benefits and prices services in a truly competitive manner;
- Including an Energy Efficiency Performance Standard in Title VII, modeled after a program now operating in Texas.

*These provisions would increase the savings under the bill by more than a factor of five.* Failure to take these steps now will make it more likely that Congress will have to address energy problems in the not very distant future.

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