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

Before the Committee on Energy,
U.S. Senate

Hearing on:
Legislative Proposals Related to Energy Efficiency

July 13, 2001

Introduction

ACEEE is a non-profit organization dedicated to increasing energy efficiency as a means for both promoting economic prosperity and protecting the environment. 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 before this Committee. Specifically I have been asked to discuss the federal appliance and equipment standards program.

The Federal Standards Program

Federal appliance and equipment efficiency standards were signed into law by President Reagan in 1987 and expanded under President Reagan in 1988 and President Bush in 1992. Minimum efficiency standards were adopted in order to address market failures, replace a patchwork of state standards, save consumers money, and reduce energy use and peak electrical demand. Among the market failures addressed by standards are lack of consumer awareness, rush purchases when an existing appliance breaks down, and purchases by builders and landlords who do not pay appliance operating costs and hence have no financial incentive to value efficiency. Standards remove inefficient products from the market but still leave consumers with a full range of products and features to choose among. Since adoption, standards have sharply cut the energy use of major energy using appliances and equipment while not interfering with manufacturers' ability to offer excellent performance and a wide array of features. For example, the typical refrigerator manufactured today uses less than half the energy of an average 1987 model, but is bigger and offers more features.

Appliance and equipment standards are clearly one of the federal government's most effective energy-saving programs. In 2000, standards on refrigerators and many other products reduced U.S. electricity use by 2.5% and total U.S. energy use by 1.3%, including displacing the need for 70,300 MW of generating capacity (the equivalent of 234 power plants, 300 MW each). These standards reduced consumer energy bills in 2000 by approximately $9 billion with energy bill savings far exceeding any increase in product cost. Consumer energy bill savings to date total about $50 billion with a typical benefit-cost ratio of more than 3:1. By 2020, standards already enacted will save 4.3 quads per year (3.5% of projected U.S. energy use), and reduce peak electric demand by 120,000 MW (more than a 10% reduction).[1]

Appliance Standards in the Administration Energy Plan

The Bush/Cheney *National Energy Policy* devotes half-page to the federal standards program and notes that these "standards will stimulate energy savings that benefit the consumer, and reduce fossil fuel consumption, thus reducing air emissions." The Plan then recommends that the Secretary of Energy: (1) "support [the] appliance standards program for covered products, setting higher standards where technologically feasible and economically justified;" and (2) "expand the scope of the appliance standard program, setting standards for additional appliances where technologically feasible and economically justified."

Summary of ACEEE Recommendations

In order to provide additional cost-effective savings under this program, we recommend three actions:

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[1] Geller, Kubo, and Nadel. 2001. *Overall Savings from Federal Appliance and Equipment Efficiency Standards*. Washington, D.C.: American Council for an Energy-Efficient Economy.

1. Congress should enact new efficiency standards for products now or soon to be covered by state efficiency standards and by several voluntary standards programs.

2. The Bush Administration should permit a SEER 13 efficiency standard for residential central air conditioners and heat pumps to proceed.

3. DOE, with adequate funding and encouragement from the Congress, should complete Congressionally-mandated rulemakings in a timely manner.

In the balance of this testimony I will elaborate on these three recommendations.

Opportunities for New Products to Cover Under the Standards Program

The most recent federal legislation on standards, the Energy Policy Act, was passed in 1992. Since then there have been many technical and programmatic developments that make it possible and desirable to extend the federal standards program to additional products. These developments include work on new standards by several states, development of Energy Star specifications for many efficient products, and additional research on the amount of energy used for different energy end-uses. In particular, for the past year, the California Energy Commission (CEC) has undertaken a rulemaking to develop new standards for several products not currently covered by the federal standards program.

Based on the work of the CEC and others, we recommend that the federal standards program be extended to cover eleven additional products. These products fall into two general categories: (1) eight products for which sufficient technical information is available for Congress to enact specific new standards; and (2) three products for which the U.S. Department of Energy (DOE) needs to conduct additional research before specific standards can be set. In our opinion, where possible, Congressional action is preferable to DOE action, since a DOE rulemaking takes at least three years, and often far longer (DOE is still working on several rulemakings called for in the 1992 Energy Policy Act). Furthermore, for the majority of the standards in both categories, Congressional action is needed because under current laws, DOE is only authorized to extend the standards program to "consumer products" and many of the opportunities for new standards involve products used by businesses and not consumers. In the paragraphs below, I briefly describe the eleven products which should be covered under the standards program. I list products in approximate order of likely energy savings.

Torchiere lighting fixtures. Torchieres are portable lighting fixtures that aim light upward and bounce it off the ceiling to provide indirect lighting. In recent years they have become ubiquitous in American homes and apartments due to their high light levels and low purchase price. However, these products are major energy hogs, and can be fire hazards as well (more than 400 fires have been traced to halogen torchieres). The typical product consumes 300 Watts or more of power. Much more efficient torchieres based on high-output compact fluorescent designs use less than 100 Watts and provide the same or equal light output without creating a potential fire hazard. The simple payback for these more efficient units is typically less than two years (simple payback is the number of years for operating cost savings to offset the incremental cost of the efficiency improvements). The CEC has developed minimum efficiency standards for these products that cap energy use at 190 Watts and include other important technical details.[2] These same standards should be adopted nationally.

Furnace and heat pump fans. The efficiency of residential furnaces and heat pumps is covered by current federal standards, but these standards don't include the energy consumed by the blower used to circulate conditioned air around the home. The typical furnace fan uses 800-1000 kWh per year, but more efficient

[2] California Energy Commission. "Appliance Efficiency Regulations (draft of April 2001)." Sacramento, CA.

fans now on the market use less than 300 kWh, a saving of more than 60%.[3] In high volume mass production the more efficient fans should cost on the order of $100 more than a conventional fan, resulting in a simple payback to the homeowner of less than three years.[4] Additional technical work is needed to decide how best to set a fan power limit (i.e., these limits need to take account of the heating capacity and airflow of the system), so responsibility for setting the standard should be delegated to DOE.

Electronic equipment and power supplies. Many types of electronic equipment used in the home continuously use small amounts of power, even when they are turned off. Examples include TVs, VCRs, microwave ovens, and many rechargeable products. Aggregated over the many hours in a year and the number of products in place in a typical home, this "standby" power use amounts to about 5% of electricity use in a typical home according to analyses by Lawrence Berkeley National Laboratory and others.[5] More efficient power supplies and other technical improvements can reduce this standby power use by an average of about 75% in the vast majority of cases, at a typical cost of no more than a couple of dollars per product.[6] For some of these products, the Energy Star program awards special labels to identify power-stingy designs. We recommend that Congress adopt a standby power limit of one watt for all of these products, but to allow DOE to set looser standards where manufacturers can demonstrate that a one watt limit is not technically feasible or economically justified.

Commercial unit heaters. Unit heaters are used in open commercial and industrial spaces to provide heating. The typical system has a seasonal efficiency of about 63%, whereas systems with power or induced-draft burners typically have seasonal efficiencies of about 82%. The more efficient systems reduce energy use an average of 23%, and have a simple payback of about two years.[7] Due to the impact of federal standards, residential heating systems now predominantly use power or induced-draft burners and DOE has just adopted new regulations for commercial furnaces that require similar improvements.[8] We recommend that Congress adopt requirements for unit heaters the same as those just adopted by DOE for commercial furnaces.

Ceiling fans. Large "Casablanca style" ceiling fans are used in many homes to circulate air around the room and help occupants feel more comfortable. However, most of these fans have inefficient motors and blade designs, not to mention inefficient lighting systems (many of these fans also include lights). A major manufacturer has recently introduced an improved design that reduces energy use by 40%. The incremental cost of this efficient model relative to standard models with similar features is about $20, resulting in a simple payback to the consumer of about 3 ½ years.[9] The Energy Star program is launching

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[3] GAMA. *October 2000 Consumers' Directory of Certified Efficiency Ratings*. Arlington, VA: Gas Appliance Manufacturers Association.

[4] Kubo, Sachs and Nadel. 2001. *Opportunities for New Appliance and Equipment Efficiency Standards: Energy and Economic Savings Beyond NAECA and EPAct* (draft). Washington, DC: American Council for an Energy-Efficient Economy.

[5] Rainer, Greenberg and Meier. 1996. "You Won't Find These Leaks with a Blower Door: The Latest in 'Leaking Electricity' in Homes." In*Proceedings 1996 ACEEE Summer Study on Energy Efficiency in Buildings.* Pp. 1.187-1.191. Washington, DC: American Council for an Energy-Efficient Economy.

[6] Kubo et al. See note 4.

[7] Calculations by ACEEE from incremental cost and energy savings estimates in Krauss, Hewett, and Lobenstein. 1992. *Commercial Gas Space Heating Equipment: Opportunities to Increase Energy Efficiency.* Minneapolis, MN: Center for Energy and the Urban Environment.

[8] DOE. 2001. "Energy Efficiency Program for Commercial and Industrial Equipment: Efficiency Standards for Commercial Heating, Air Conditioning and Water Heating Equipment; Final Rule." *Federal Register* (66)9, Jan.1 2, pp. 3336-3356.

[9] E Source Tech News -- 5/15/01.

a program this fall for residential ceiling fans that will require better blade/motor designs and more efficient lighting.[10] DOE should be directed to review the new Energy Star specification and set minimum efficiency standards that build upon this specification.

Distribution transformers. Distribution transformers are used in many commercial and industrial buildings to reduce voltage from line voltage to voltages used to power building systems. These systems are typically purchased on the basis of first costs, leaving significant opportunities for cost-effective energy savings. The National Electrical Manufacturers Association (NEMA) has developed a recommended standard that reduces the energy losses associated with this equipment by an average of about one-third, with the added cost of the more efficient equipment paying back in about three years.[11] Massachusetts and Minnesota have adopted the NEMA standard as a mandatory standard and California and New York are now in similar adoption processes. DOE was instructed in the Energy Policy Act of 1992 to develop standards for these products but nine years later this process is still dragging on. We recommend that Congress adopt the NEMA standard, thereby saving the time and expense of continuing the DOE rulemaking process.

Vending machines. Vending machines are primarily purchased by beverage distributors and placed in a variety of locations at no cost to the property owner. However, the property owner does pay for the electricity to operate these machines. Since the purchaser does not pay operating costs, there is little incentive to purchase efficient machines and most vending machines are inefficient as a result. A study by Arthur D. Little Company for DOE estimated that the energy use of vending machines can be reduced by 44-51% using measures with an average simple payback of 2.4-3.2 years.[12] However, there is insufficient information on the energy use of the full range of machines sold today, so further data collection is needed before standards can be set. The CEC is now planning to collect this data. DOE should be directed to set new standards based on this data and its own technical and economic analyses.

Commercial refrigerators and freezers. Federal standards currently cover residential refrigerators and freezers but do not cover the larger commercial units used in restaurants, hotels, hospitals and other commercial applications. Research by Arthur D. Little Company for DOE found that the energy use of typical commercial refrigerators and freezers can be reduced by 45-55% using improvements with an average simple payback to the user of just over 2 years.[13] The California Energy Commission (CEC) has developed minimum efficiency standards for these products based on the energy use of the average product on the market today.[14] These same standards should be adopted as national standards.

Traffic lights. Like exit signs, most traffic lights use incandescent bulbs, but new "light emitting diode" (LED) are now available that reduce energy use about 90% and have additional maintenance and safety benefits Unlike incandescent lamps, the LED lights operate for many years without bulb changes, and when LEDs age, they just get dimmer until they are replaced, avoiding the safety problems that can happen when a lamp in a traffic light burns out.[15] The Energy Star program has established an energy and safety

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[10] Ecos Consulting. 2001. "Final Draft Energy Star® Specification for Residential Ceiling Fans. June.

[11] Barnes, Das, McConnell, and Van Dyke. 1997. *Supplement to the 'Determination Analysis" and Analysis of kthe NEMA Efficiency Standard for Distribution Transformers*. Oak Ridge, TN: Oak Ridge National Laboratory.

[12] Arthur D. Little Co. 1996. *Energy Savings Potential for Commercial Refrigeration Equipment*. Washington, DC: U.S. Dept. of Energy.

[13] *Ibid*.

[14] CEC 2001. See note 2.

[15] Kubo et al. 2001. See note 4.

performance specification for the more-efficient traffic signals.[16] California is in the process of adopting this specification as a mandatory minimum performance standard.[17] A similar standard should be adopted at the national level. Such a standard should apply to red and green lights, since these account for the vast majority of traffic light energy use, and have the most favorable economics (typically simple payback periods of 1-4 years, depending on the application).[18]

Exit signs. Many exit signs use incandescent bulbs (40 Watts is typical), and since they are continuously illuminated, typically cost around $30 per year to operate. New exit sign designs use LEDs and consume on the order of 3 Watts, reducing energy use by more than 90% relative to an incandescent sign. The simple payback for using LED signs instead of incandescent signs is generally less than two years. In addition, the LED signs do not require periodic bulb changes, resulting in substantial maintenance cost savings.[19] As with traffic lights, there is an Energy Star specification that California is now adopting as a mandatory state standard.[20] A similar national standard should be adopted.

Ice-makers. Ice-makers are commonly used in hotels, motels, restaurants and hospitals to produce ice in large quantities. Ice-makers use a substantial amount of energy in order to freeze water, and then keep the ice cold. Products now on the market vary substantially in efficiency, with the most efficient products typically using about 30% less energy than the least efficient. Relative to the least efficient machines, the most efficient ones typically have a simple payback of one year or less.[21] The Federal Energy Management Program (FEMP) has developed a specification that identifies the top performing units on the market today for each product category (features and size).[22] This specification should be adopted as a national standard.

Energy and economic savings. My organization, ACEEE, is now completing an analysis of the energy and economic savings from adopting standards on these products. Our preliminary results indicate that these standards will save approximately 73 billion kWh of electricity in 2010 and 164 billion kWh in 2020. The savings in 2020 amount to about 5% of projected residential and commercial electricity use in that year, and reduce peak electrical demand by the equivalent of 40-50 power plants (300 MW each). In addition, the unit heater standard by itself will reduce commercial building gas consumption by about 3% in 2020, a remarkable achievement for a product with annual sales of only about 1/4 million units. These standards will also result in substantial economic savings to consumers and businesses. Our preliminary analysis indicates that for products purchased through 2020, discounted net benefits (benefits minus costs) will total about $80 billion, with a benefit-cost ratio of more than 5:1. Furthermore, as noted in the Administration National Energy Policy, the energy savings will reduce air pollutant emissions. We estimate that these standards will reduce carbon emissions by more than 20 million metric tonnes (MMT) in 2020, which can be a useful component of U.S. efforts to reduce greenhouse gas emissions. Standards will also

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[16] EPA. " Energy Star Program Requirements for Traffic Signals." Washingrton, DC: U.S. Environmental Protection Agency. Also, CEC 2001 (see note 2).

[17] CEC 2001. See note 2.

[18] Kubo et al. 2001. See note 4.

[19] Kubo et al. 2001. See note 4.

[20] EPA. " Energy Star Program Requirements for Exit Signs." Washingrton, DC: U.S. Environmental Protection Agency.

[21] Kubo, Nadel and Suozzo. 2000. "Commercial Packaged Refrigeration: An Untapped Lode for Energy Efficiency. In *Proceedings 2000 ACEEE Summer Study on Energy Efficiency in Buildings.* Pp. 3.203-3.218. Washington, DC: American Council for an Energy-Efficient Economy.

[22] FEMP. *Commercial Ice-Maker Efficiency Recommendation.* Washington, DC: Federal Energy Management Program, U.S. Dept. of Energy.

result in significant reductions in SO2, NOx, and mercury emissions, thereby helping power companies to meet new standards that might be set in near-term amendments to the Clean Air Act.

New Standards for Residential Central Air Conditioners and Heat Pumps

When Congress passed the National Appliance Energy Conservation Act of 1987, it established initial efficiency standards for residential central air conditioners and heat pumps and called for DOE to set revised standards no later than January 1, 1994. The rulemaking formally began in September 1993 and a final rule was published in January 2001 in the closing days of the Clinton Administration. This final rule was the result of more than seven years of effort, but was seven years behind schedule. In our opinion, while this rule fell short in several respects,[23] it was a reasonable one. This rule established a new minimum efficiency standard of SEER 13, effective January 2006 (SEER is the Seasonal Energy Efficiency Ratio, a measure of average unit efficiency over the full cooling season). There are now more than 600 distinct models on the market that meet this standard, including models from most manufacturers. We estimate that a SEER 13 standard will cost the consumer an average of about $170,[24] but that the more efficient models will reduce electricity bills by an average of about $50 per year, resulting in a simple payback to the consumer of about 3 ½ years. Furthermore, this rule is an important part of efforts to avert future electric reliability problems. This rule will reduce peak electric demand by about 57,000 MW over the next three decades, averting the need for about 190 new 300-MW power plants.[25]

Unfortunately, in April 2001, the Administration announced that it will soon propose rolling back the standard from SEER 13 to SEER 12.[26] We believe this action is misguided and may well be illegal. This action is misguided because it will substantially reduce the energy, peak demand, and economic savings achieved by the new standard. This decision is also misguided because it relies on several unreasonable analysis assumptions, assumptions which need to be corrected if DOE is going to proceed with a new rule. This decision is probably illegal because it ignores a Congressional directive in NAECA as well as several Court decisions.

The difference in energy, peak demand and financial savings between SEER 12 and SEER 13 is very substantial. According to analyses by ACEEE, relative to a SEER 12 standard, a SEER 13 standard will:

- Reduce peak demand by 13,000 MW by 2020 and 18,000 MW by 2030, the equivalent of 43 and 60 new power plants respectively (300 MW each);
- Increase energy savings by 45% or more;
- Reduce consumer electric bills by more than $18 billion over the next 30 years;

[23] The rule fails to address two very important issues: high temperature performance (which affects utility peak loads) and the ability to maintain high efficiency across a broad range of outdoor temperatures and installation conditions. There are straightforward solutions to both of these issues, but unfortunately these were not included in the final rule.

[24] DOE estimates the incremental cost at about $340, but we reduce the DOE estimate by 50% to account for DOE's long history of overestimating incremental costs for new appliance standards (see note 35).

[25] Our peak demand estimates are different from DOE's because DOE used only two field studies to estimate peak demand savings, including one that is inconsistent with all other available data. ACEEE used five studies from various regions of the country.

[26] DOE. 2001. "DOE to Propose New 20% Increase in Energy Efficiency Standards for Residential Air Conditioners and Heat Pumps." Press Release, April 13. Washington, DC: U.S. Dept. of Energy.

- Have a typical simple payback period to the consumer of less than four years.[27]

DOE estimates that a SEER 13 split air conditioner will cost the average consumer $122 more than a SEER 12 unit, which is 5% more than a SEER 12 unit. While we believe that DOE has overestimated the price increase, even the DOE cost estimate is small relative to the benefits I have just described.

In recent statements before Congress, Administration officials have defended the Administration's decision to propose a SEER 12 standard, arguing that this decision was based on analyses by career staff that showed that low-income consumers would be disadvantaged by a SEER 13 standards, that a SEER 13 standard could increase the use of electric resistance heat, and that a SEER 13 standard would adversely affect competition. However, such statements ignore the fact that only 21% of low-income households have central air conditioners in their homes and the majority of low-income households rent and do not own their homes.[28] Renters will benefit from standards, for without standards most landlords will purchase a low-price unit for their tenants. For these and other reasons, many low-income advocacy organizations support the SEER 13 standard.[29] If the Administration is truly concerned about low-income households, it should set up a program to help low-income households replace their present air conditioners (recall that the difference between SEER 12 and 13 is only $122) rather than weakening standards for all American households.

Similarly, the Administration alleges that the difference in price between a SEER 12 and SEER 13 split heat pump ($188) will cause many households to switch from heat pumps to electric resistance heat, despite the fact that electric resistance heat will approximately double heating bills relative to use of a heat pump (such a doubling will increase average *annual* heating bills by about $350,[30] making for a very poor return on the first cost savings).

And with regard to competition, concerns about impacts on competition are contained in a Department of Justice (DoJ) letter, but this letter does not provide an explanation for these concerns nor does it state how DoJ arrived at its concerns.[31] We do know that DoJ staff interviewed many manufacturers, but DoJ did not to our knowledge interview efficiency advocates, state government officials, or other interested parties. Thus, the DoJ process is a "black box" and a potentially biased process. DoJ needs a broader and better documented process for its concerns to receive the same weight as other data in this rulemaking that have been publically-vetted and documented.

From material published by DOE, concerns about impacts on manufacturers and competition primarily relate to the fact that many manufacturers make much of their profits on "high-end" units with extra features and above average efficiency. The concern is that a minimum standard at SEER 13 will make it hard to differentiate a higher efficiency unit for high-end sales. We disagree for two reasons. First, with new compressors, new heat exchangers, and other technical improvements it is possible to produce

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[27] This estimate is based on DOE's estimate of the cost difference between a SEER 12 and 13 unit, reduced by 50% (see note 24) divided by annual operating cost savings of $19 which reflects a 2.5 cents/kWh summer electricity price differential not included in the DOE analysis.

[28] EIA. *A Look at Residential Energy Consumption 1997*. Washington, DC: Energy Information Administration, U.S. Dept. of Energy.

[29] Organizations that have written letters in support of the SEER 13 standard include the Consumer Federation of America, National Consumers League, and several low-income weatherization agencies.

[30] The average annual cost for space heating for homes with heat pumps was $352 in 1993 (EIA. *Household Energy Consumption and Expenditures, 1993*. Washington, DC: Energy Information Administration, U.S. Dept. of Energy).

[31] Nannes, John. Letter to Eric Fygi, Acting General Counsel, DOE, dated April 5, 2001. Washington, DC: U.S. Dept. of Justice.

reasonably-priced SEER 14 and SEER 15 units. For example, just this week Amana announced a full line of SEER 15 units that use single-speed compressors (single-speed compressors are less expensive than the multi-speed compressors that many other manufactures use to achieve SEER 15).[32] Second, we believe it is possible for manufacturers to develop and successfully market value-added SEER 13 and SEER 14 units that perform better in the field than baseline SEER 13 units. Due to common installation problems as well as optimization of many air conditioner designs for a single test temperature, many air conditioners perform at a lower efficiency in the field than in a laboratory. My organization is now working with utilities, federal, state and regional organizations, and some manufacturers to develop a voluntary program to promote "robust" air conditioners that warrant a price premium because they perform better in the field.[33] It is products like these that will allow manufacturers to continue to sell high-end products and continue to earn the profits they depend on.

Statements by DOE officials also ignore several major errors in the DOE analysis. First, the DOE analysis is based on summer 1996 electricity prices, adjusted downward for assumed long-term declines in electricity prices. In reality, as wholesale markets and many retail markets have restructured, electricity pricing is increasingly based on season of use (and often time of use as well). A December 2000 analysis of U.S. wholesale electricity prices in 1998-2000 by Synapse Energy Economics found that electricity prices in the summer afternoons and evenings when air conditioners are primarily used are 2-9 cents per kWh higher than the 1996 prices used by DOE.[34] Second, the DOE analysis is based on today's technologies for achieving improved efficiencies. New technology developments and continuing productivity improvements will bring these costs down by 2006 when the new standard goes into effect, just as they substantially reduced the costs of the current SEER 10 standard relative to prior DOE and industry projections.[35] If DOE is going to reassess the central air conditioner standard, it needs to correct these analysis errors before proceeding.

The Administration's attempt to roll back the air conditioner standard also ignores clear language in NAECA that new standards cannot be set that are weaker than previous standards, and several court decisions that a new Administration faces a high burden of proof before it can roll back final rules of a previous Administration. When Congress passed NAECA it was concerned about administrative roll-backs of standard levels and added a specific provision that "The Secretary may not prescribe any amended standard which increases the maximum allowable energy use, or decreases the minimum required energy efficiency of a covered product." The Bush Administration's proposal to roll back the air conditioner standard violates this provision. The Bush Administration proposal also is based on very limited technical arguments, and will probably have trouble getting past the Supreme Court decision that "an agency changing its course by rescinding a rule is obligated to supply a reasoned basis for the change beyond that which may be required when an agency does not act in the first instance."[36] Finally, all of the

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[32] Schultz, Matt, Product Manager, Amana Heating and Air Conditioning. Email dated July 9, 2001.

[33] Sachs. 2001. "raft Prospectus: Sustained High Performance Central Air Conditioners and Heat Pumps: Delivering Energy Efficiency in Use." Washington, DC: American Council for an Energy-Efficient Economy.

[34] Woolf, Biewald, Allen, White and Johnston. 2000. *Marginal Price Assumptions for Estimating Customer Benefits of Air Conditioner Efficiency Standards.* Cambridge, MA: Synapse Energy Economics.

[35] In 1982, DOE estimated that the incremental cost to raise air conditioner efficiency to SEER 10 would be $349 (DOE, 1982, *Consumer Products Efficiency Standards, Engineering Analysis Document*). U.S. Census Bureau data shows that when the SEER 10 standard took effect, air conditioner prices did not go up at all (Current Industrial Reports, Refrigeration, Air Conditioning, and Warm Air Heating Equipment). Interestingly, the Air Conditioning and Refrigeration Institute (the industry trade association) was even farther off the mark; in the early 1980's they estimated that the incremental cost of a SEER 10 unit would be $762 (as cited in CEC. 1984. "Staff Report on Proposed Revision of Appliance Efficiency Standards for Central Air Conditioners Under 65,000 Btu/Hour, P400-84-015. Sacramento, CA: California Energy Commission).

[36] Motor Vehicle Manufacturers Association v. State Farm Mutual Ins. Co. et al., 463 U.S. 29 (1983).

actions to date to roll back the standard have been made without any opportunity for public comment, which appears to be in violation of the Administrative Procedures Act. Several state attorney generals and environmental, consumer and low-income advocacy organizations recently brought suit challenging these actions.[37] Given the energy problems facing the U.S., it would be far more productive to put resources into developing and implementing new policies to save energy, rather than using large amounts of resources to pursue a legally-questionable action that will increase energy use.

At today's hearing the President of the Air Conditioning and Refrigeration Institute (ARI) will also testify. Based on past ARI statements, in addition to some of the some arguments DOE is making, he is likely to argue that DOE underestimated the installation costs of meeting a new air conditioner standard, that a SEER 13 standard would be particularly burdensome in manufactured housing, that a SEER 13 standard would eliminate approximately 85% of current units from the market, and that a SEER 13 standard will raise unemployment.[38] In our opinion, most of these allegations are wrong and others are half-truths. Specifically:

- DOE's analysis does consider installation costs. While some SEER 13 units are significantly larger than current units, others are not. For example, Goodman Manufacturing's SEER 13 units are only about three inches larger than basic units. The size of the unit depends on the technologies that a manufacturer uses to improve efficiency, and some of these technologies do not increase unit size.

- DOE's final rule specifically treats "space constrained products," such as units for manufactured housing, as a separate product class. Required efficiency levels for this special class have yet to be decided.

- Manufacturers are correct that a substantial majority of current products do not meet the SEER 13 standard. However, an even higher percentage of then-current products did not meet the SEER 10 standard when it was enacted and manufacturers had little difficultly meeting that standard.[39]

- A SEER 13 standard will increase employment, not reduce it. According to DOE's analysis, employment in the industry will modestly increase since SEER 13 units require more materials and labor than SEER 10 units.[40] An old DOE analysis does find that overall national employment will modestly decline with a SEER 13 standard due to the impacts of higher air conditioner costs on consumer purchases,[41] but that analysis was based on very high estimates of the extra cost to

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[37] State of New York and State of Connecticut, Petitioners against Spencer Abraham. June 18, 2001. "Petion for Review." New York, NY: U.S. District Count, Southern District of New York. Also, a similar suit was filed the same day by Natural Resources Defense Council, Consumer Federation of America, and Public Utility Law Project.

[38] ARI. "ARI Asks DOE to Increase Efficiency by Fairer 20 Percent," press release. April 6, 2001. Arlington, VA: Air Conditioning and Refrigeration Institute.

[39] In 1986, when NAECA was negotiated, probably less than 10% of then-current models met the 1992/93 NAECA standards. ARI data from 1984 (in "ARI Comparative Study of Energy Efficiency Ratios") indicate that 6.8% of unitary air conditioner shipments had a SEER of 10 or more while only 4.8% of heat pumps exceeded a SEER of 10. We do not have 1986 data, but during the mid-1980s, SEER grew only modestly, hence our estimate that less than 10% of models in 1986 had a SEER of 10 or more.

[40] DOE. 2000. *Technical Support Document: Energy Efficiency Standards for Consumer Products: Residential Central Air Conditioners and Heat Pumps.* Oct. Washington, DC: U.S. Dept. of Energy.

[41] *Ibid.*

produce SEER 13 units. DOE has substantially decreased its cost estimates but did not revise the national employment analysis before publishing the SEER 13 final rule.

Senator Barbara Boxer has introduced a resolution (S.J. Res. 15) calling for Congressional disapproval of the rule submitted by DOE relating to the postponement of the effective date of central air conditioner standards under the terms of the Congressional Review Act of 1995. We thank Senator Boxer for introducing this resolution and for bringing attention to this important issue. We recommend that this Committee should do all it can to encourage the Administration to drop its rollback proposal.

Revisions to Other Current Standards

Under existing legislation, DOE is supposed to review and revise existing appliance and equipment efficiency standards every five years. Unfortunately, DOE is very far behind in this process. For example, DOE is just now starting a proceeding to revise the residential furnace standard, a proceeding that under current legislation should have been completed by Jan. 1, 1994. Similarly, DOE has not yet started the revision process for dishwashers, even though that process should have been completed in 1996. And I discussed earlier, DOE is still working on a rulemaking for distribution transformers that was originally called for in the Energy Policy Act of 1992. There is a need to work through this backlog which will require improved management at DOE as well as increased annual appropriations.

According to our analysis, if DOE can complete the major scheduled rules, substantial energy and financial savings will result. Our analysis includes development of new standards on commercial air conditioners, dishwashers, commercial boilers, and reflector lamps over the next few years, and further revisions to refrigerator, water heater, and residential air conditioner standards in the longer term. We estimate that in 2020 these standard revisions can save 53 billion kWh of electricity and 187 trillion Btu's of natural gas. The electricity and gas savings together will reduce consumer energy bills by more than $4 billion annually by 2020.

Under DOE's appliance standards "Process Improvement Rule" priorities are set in the summer for rulemakings for the new fiscal year. With the change in Administration, this annual process is modestly delayed but is scheduled to begin soon. We recommend that after this annual process is completed in September or October, that this Committee schedule an oversite hearing to review DOE plans for standards rulemakings in 2002, including any new rulemakings that may be called for under comprehensive energy legislation that will likely be pending at that time. Such an oversite hearing should explore options for "picking up the pace" so that rulemakings can be completed in a more timely manner, and perhaps also with less controversy than some of the recent rulemakings.

Conclusion

Appliance and equipment efficiency standards have been one of the federal government's most effective energy-saving policies. These standards have also provided substantial net economic benefits to consumers and businesses and contributed to reduced emissions of air pollutants. It has been nearly a decade since the scope of the appliance and equipment standards program has changed. Based on state and voluntary standards developed over this past decade, Congress should expand the scope of the standards program to include 11 additional products. These additional standards will reduce energy use in the residential and commercial sectors by about 5% in 2020, reduce peak electrical demand by the equivalent of 40-50 new power plants, and result in net savings to consumers and businesses of more than $80 billion. The standards we recommend are primarily based on state and voluntary standards that are either now in effect or that are expected to be finalized in the next month or so. These state and voluntary standards have not been controversial. Hopefully these same standards can also be adopted at the national level without controversy. To the extent issues arise, ACEEE stands ready to provide technical information

and to negotiate in good faith with affected trade organizations, similar to the role we played prior to the adoption of standards legislation in 1987, 1988, and 1992.

With the savings from standards on new products, plus savings from existing standards (including the SEER 13 air conditioner standard) and from new standards now being considered by DOE, U.S. electricity use in 2020 will be reduced by more than 10% relative to what use would be without the federal standards program. While these savings will not solve U.S. energy problems, they will make a significant contribution towards bringing U.S. energy supply and demand into better balance, helping our environment, our economy, and our pocketbooks.

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