The Energy Policy Act of 2005: Energy Efficiency Provisions and Implications for Future Policy Efforts

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ABSTRACT

In August, 2005, the Energy Policy Act of 2005 was signed into law. Five years in the making, this law of over 1,000 pages addresses a broad array of energy issues, from energy efficiency to fossil fuels, to nuclear power. This is the first major piece of federal energy legislation since 1992. The new law includes two major energy efficiency provisions: (1) manufacturer and consumer tax incentives for advanced energy-saving technologies and practices; and (2) minimum energy efficiency standards on 16 products. The law also includes a host of smaller efficiency provisions.

So far, implementation of the majority of the efficiency provisions is on track, although there have been difficulties with some provisions, especially those that require funding appropriations. Overall, ACEEE estimates that the efficiency provisions in the new law will reduce U.S. energy use in 2020 by about 1.5%. While these savings are significant, they are far smaller than what would be saved if the new law also addressed passenger vehicle fuel economy, setting energy-saving targets for utilities, and several other provisions that were discussed but ultimately not included in the legislation. Some of these provisions may be considered by Congress in the near future, potentially tripling energy savings relative to the 2005 bill. However, federal action is far from assured. In the interim, we recommend that states take action on energy efficiency policies, laying the groundwork for future federal action.

Introduction

Congress has worked on new energy legislation since 2001. This is the first major piece of federal energy legislation since the Energy Policy Act of 1992. A bill was almost enacted in 2003, but ultimately failed when the Senate refused to approve a conference report developed by a limited number of Senators and Representatives. In 2005, Congress started work afresh. The House passed a new bill in April 2005 and the Senate followed suit in June. A House-Senate conference committee worked hard through July and the conference report was approved by both houses of Congress in late July and signed into law by the President on August 8, 2005. The 2005 effort was successful because the Senate and conference worked in a bipartisan manner and ultimately agreed to drop several controversial provisions that had unified opposition to the 2003 conference agreement.

The new law contains 18 titles dealing with such subjects as energy efficiency, renewable energy, oil and gas, coal, nuclear power, vehicles and fuel, hydrogen, research and development, electricity, tax incentives, ethanol, and motor fuels (U.S. Congress 2005). The new legislation contains several energy efficiency provisions, which are the subject of this paper. We discuss the different energy efficiency provisions in the bill, the current status of implementation of these provisions, and estimated energy savings from these efficiency provisions. We then discuss

provisions that were talked about but ultimately not included in the bill and the implications of what was and was not included for future energy policy efforts.

Energy Efficiency Provisions in the Bill

The new law contains two significant energy efficiency provisions that deserve particular attention. First, it sets new minimum-efficiency standards on several products and directs the U.S. Department of Energy (DOE) to set standards on several other products. Second, it contains tax incentives for several types of advanced energy-saving technologies and practices. In the following sections, we discuss these two major provisions. We then more briefly discuss the other efficiency provisions in the bill.

Equipment Efficiency Standards

The legislation includes provisions setting new federal minimum-efficiency standards on 16 specific products and directing DOE to set standards on several other products. Table 1 summarizes the standards set in the legislation. Table 2 summarizes the DOE rulemakings called for under the bill.

Table 1. Standards Set in the Energy Policy Act of 2005

Product	Effective Date*	Standard
Residential		
Ceiling fan light kits	2007	Packaged with ENERGY STAR® v2 screw-in CFLs or meet ENERGY STAR Residential Light Fixture v4 specification. Standard for specialized products determined by DOE by 1/1/07.
Dehumidifiers	Oct. 2007	ENERGY STAR v1 specification
Compact fluorescent lamps	2006	ENERGY STAR v2 specification
Torchiere lighting fixtures	2006	190 W maximum
Commercial		
Air conditioners and heat pumps (unitary equipment 240–760k Btu/hr)	2010	*Capacity* *Minimum EER (AC/HP)* 65–134k Btu/hr 11.2/11.0 (for both AC &HP, EER 0.2 135–239 11.0/10.6 lower for units with integrated 240–759 10.0/9.5 heating that is not elec. resistance) For HP, also 3.2 COP@47˚F except 3.3 for 65–134k Btu/hr units.
Clothes washers	2007	MEF at least 1.26 and WF no more than 9.5
Distribution transformers (low voltage)	2007	Meet NEMA standard TP-1-2002
Exit signs	2006	ENERGY STAR v2 specification
Fluorescent lamp ballasts (F34 and F96ES types)	2009	Closes loophole in DOE regulations so that these ballasts will be electronic, like other covered ballasts
Ice-makers (cube type, 50–2,500 lbs/day)	2010	California Energy Commission (CEC) standard, which is almost identical to Consortium for Energy Efficiency (CEE) Tier 1.
Mercury vapor lamp ballasts	2008	Bans sale of mercury vapor lamp ballasts
Pedestrian signals	2006	ENERGY STAR v.1.1 specification
Pre-rinse spray valves	2006	Maximum 1.6 gallon/minute
Refrigerators and freezers (packaged)	2010	CEC standard, which is almost identical to ENERGY STAR specification
Traffic signals	2006	ENERGY STAR v1.1 specification
Unit heaters	Aug. 2008	Must be equipped with an intermittent ignition device and have power venting or an automatic flue damper

* Effective in January unless otherwise specified.

Table 2. Standards to Be Set by DOE Rulemaking

Product	Rulemaking Completion Date
Ceiling fan light kits (niche products—candelabra base, halogen, etc.)	Jan. 1, 2007
Battery chargers	Aug. 8, 2008
External power supplies	Aug. 8, 2008
Commercial refrigeration—ice-cream freezers, packaged units without doors, and remote-condensing equipment	Jan. 1, 2009
Refrigerated beverage vending machines	Aug. 8, 2009
Dehumidifiers (revised standard)	Oct. 1, 2009
Commercial clothes washers (revised standards)	Jan. 1, 2010 and Jan. 1, 2015
Commercial packaged refrigerators & freezers (revised standards)	Jan. 1, 2013 and 3 years after revised standard takes effect
Ice-makers (revised standards)	Jan. 1, 2015 and 5 years after revised standard takes effect

In addition, the bill allows DOE to consider and set standards on fans used in residential furnaces to distribute heated or cooled air throughout a house. DOE has been investigating such a standard but questioned whether it had the legal authority to set this. This provision ends this uncertainty. In a similar manner, the law authorizes but does not require DOE to set air movement standards for ceiling fans (the law regulates ceiling fan *light kits* but leaves air movement efficiency standards to DOE's discretion). Finally, the new law includes a provision requiring DOE to regularly report to Congress on efforts to catch-up with a backlog of rulemakings required under earlier legislation.

Tax Incentives

The new law includes substantial energy efficiency tax incentives. According to Congress' Joint Tax Committee, the bill provides more than $2 billion for energy efficiency tax credits (including efficient vehicles), primarily in 2006 and 2007 (JCT 2005). For the most part, the tax incentives are designed to cover the very highest levels of efficiency now being sold (e.g., equipment and practices with less than a 5% current market share) with the intent that these incentives will make these measures more widely available and used. The subsections below describe these energy efficiency provisions in the new law. Further information on these provisions is provided in a report by Nadel (2005).

New homes. The new legislation includes a credit of $2,000 for builders who build homes that use 50 percent less energy for space heating and cooling than homes built according to the 2004 supplement to the International Energy Conservation Code (IECC). In addition, there is a $1,000 manufacturer tax credit for manufactured homes that either use 30 percent less energy than this reference code or that meet the then-current ENERGY STAR criteria for manufactured homes. For homes meeting the 50 or 30 percent savings criteria, at least 10 percent savings (one-third of the 30 percent savings or one-fifth of the 50 percent savings) must be obtained through building envelope improvements—all the savings cannot be obtained with heating, ventilating, and air conditioning (HVAC) improvements. These tax credits cover homes acquired between January 1, 2006 and December 31, 2007. Details on how new homes will be certified were recently set by the Internal Revenue Service (IRS 2006). Many state and utility programs are now working on ways to integrate these performance levels into their residential new construction programs, such as by using a good/better (ENERGY STAR/tax credit eligible) approach.

New commercial buildings and major upgrades to existing buildings. The new law provides a tax deduction of up to $1.80 per square foot for new commercial buildings that reduce regulated energy use by 50 percent relative to the requirements in the 2001 new construction standard developed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE 90.1). The law also allows owners of new and existing buildings (those placed in service prior to the date of enactment) to earn a partial deduction of $0.60 per square foot per system for upgrading one or two major building systems (envelope, lighting, or HVAC) to 50 percent more efficient than ASHRAE 90.1 standards, instead of all three (e.g., a $1.20 per square foot deduction for upgrading lighting and HVAC). Detailed implementing regulations are to be developed by the Treasury Department, with input from DOE. These deductions apply to new buildings placed in service between the date of enactment and December 31, 2007 or retrofits to existing buildings during the same period. Due to the multiyear period generally required to design and build commercial buildings, this provision is likely to affect only a few buildings unless the effective period is extended.

The lighting section includes additional provisions and merits a little more explanation. While long-term rules will be developed by the Secretary of the Treasury, the law establishes interim rules allowing a deduction of $0.30 per square foot for buildings (or portions of buildings) that achieve at least 25 percent lighting savings relative to the ASHRAE 90.1-2001 lighting power density (Watts per square foot) requirements (but excluding ASHRAE's "additional lighting power allowances") *and* that also use bi-level switching. This credit increases progressively to $0.60 per square foot for using bi-level switching and achieving 40 percent lighting savings. This section can provide an incentive for major upgrades to lighting systems in existing buildings, particularly in buildings that still have inefficient lighting systems (the combination of large savings plus the "sweetener" from the Treasury could push many building owners to remodel the lighting in their existing buildings).

Appliances. The new legislation provides credits to the manufacturer for very efficient refrigerators, clothes washers, and dishwashers. Unless otherwise noted below, the incentives are for products sold in 2006 and 2007, relative to sales of efficient qualifying models by each manufacturer in the previous three years (i.e., if a manufacturer sold an average of 50,000 eligible clothes washers in the preceding three years, then only sales beyond 50,000 earn an incentive). For refrigerators, there are three efficiency tiers—a $75 credit (2006 only) for refrigerators that use 15–19.9 percent less energy than a unit just meeting the 2001 federal minimum-efficiency standard (15 percent savings is the current ENERGY STAR level), a $125 credit for units saving 20–24.9 percent, and a $175 credit for units saving 25 percent or more.[1] For clothes washers there is only one efficiency tier—a $100 credit for units meeting the 2007 ENERGY STAR level. DOE has recently determined that this level means a Modified Energy Factor (MEF) of 1.72 or more and a Water Factor (WF) of 8.0 or less (DOE 2005). For dishwashers, there is also one efficiency tier based on the 2007 ENERGY STAR level, which DOE just set at an Energy Factor (EF) of 0.65 (DOE 2006a). Given the 0.65 ENERGY STAR requirement, the credit per unit is $32.31. All of the appliance credits only apply to products produced in the United States, which could affect the foreign production plans of U.S. manufacturers and also means that imported products are not eligible. There is also a total cap per manufacturer of $75 million, a figure some of the larger manufacturers may reach but the

[1] For refrigerators, there is one additional quirk—baseline sales are multiplied by 110 percent before determining the number of units that earn an incentive (e.g., 50,000 in the example above becomes 55,000).

smaller manufacturers will not. Manufacturers have recently introduced some new qualifying products to the market, but informal discussions with manufacturers indicate that many more qualifying models will be introduced in 2006 and early 2007.

Air conditioners, heat pumps, furnaces, and water heaters. The bill provides tax credits for very efficient new central air conditioners, heat pumps, furnaces, and water heaters used in non-business applications. The credits apply to equipment placed in service in 2006 and 2007. Specific eligibility levels and amounts are summarized in Table 3. Some manufacturers have been introducing new models into the market that qualify for these credits.

Table 3. Summary of HVAC Tax Credits

Equipment Type	Qualifying Efficiency	Credit Amount
Central air conditioners	15 SEER and 12.5 EER for split systems* 14 SEER & 12.0 EER for single-package systems*	$300/unit
Central air-source heat pumps	15 SEER, 9 HSPF, and 13 EER	$300
Ground-source heat pumps	All systems must provide water heating	
Closed loop	14.1 EER and 3.3 COP**	$300
Open loop	16.2 EER and 3.6 COP**	$300
Direct expansion (DX)	15.0 EER and 3.5 COP**	$300
Gas, oil, or propane furnace or boiler	95% AFUE	$150
Furnace blower	Electricity use <2% of total furnace site energy use***	$50
Electric heat pump water heater	2.0 EF	$300
Natural gas, propane, or oil water heater	0.80 EF	$300

* For central air conditioning, the bill refers to the highest efficiency tier of CEE, in effect as of Jan. 1, 2006. The levels shown here correspond to this tier.
** These are the same as the ENERGY STAR specification.
*** This is the CEE/GAMA specification.
Note: There is a $500 lifetime cap per taxpayer for the HVAC and existing home credits combined. Lifetime means in 2006 *plus* subsequent years.

Envelope improvements to existing homes. The new bill provides a 10 percent tax credit up to $500 for upgrading building envelope components to be in compliance with model codes for new homes (however, for replacement windows, the cap is $200). This $500 limit applies to 2006 plus subsequent tax years (e.g., if $400 is used in 2006, only $100 is available for subsequent years). HVAC incentives (discussed in the section above) also count against the $500 cap. The details of the provision are oriented towards new windows, insulation upgrades, and ENERGY STAR metal roofs, although the IRS has ruled that "any… seal to limit infiltration …that is specifically and primarily designed to …limit heat loss or gain of a dwelling unit…" is also eligible. This appears to include both sealing to limit air infiltration and duct sealing. The catch is that only material costs qualify for the tax incentives and not the cost of labor to install the insulation or conduct sealing (IRS 2006). These credits apply to upgrades installed between January 1, 2006 and December 31, 2007.

Stationary fuel cells and microturbines. The new law includes several provisions related to fuel cells. First, the bill provides a 30 percent business or individual tax credit for stationary fuel cell power plants up to $1,000/kW (stated as $500 per 500 watts). As current system costs are roughly $5,000/kW or more, the credit will generally be at the $1,000/kW ceiling. For business applications, the fuel cell system must be 500 kW or greater and have an efficiency of 30 percent

or more (details on how to determine efficiency will be provided in implementing regulations that have yet to be issued). For residential applications, the 500 kW and 30 percent efficiency floors do not apply. Both of these credits apply to systems placed in service during 2006 and 2007.

Second, the electricity title of the bill includes the possibility of production tax credits under the Advanced Power System Technology Incentive Program (Section 1224). However, this section is subject to annual appropriations from Congress, an uncertain proposition.

Third, fuel cells are sprinkled liberally throughout other sections of the bill, including the possibility of grants under the clean coal and hydrogen titles of the bill.

In the case of microturbines, the law provides for a 10 percent investment tax credit for "stationary microturbine power plants." The credit is capped at $200/kW and only applies to systems with a capacity of less than 2,000 kW that have an efficiency of at least 26 percent (measured at ISO conditions). As with the other credits, the microturbine provision applies to systems placed in service during 2006 and 2007.

Hybrid, fuel cell, and advanced diesel vehicles. The new law provides credits for hybrid, fuel cell, and **"**advanced**"** diesel vehicles. Alternative fuel vehicles are eligible for credits as well but are not discussed here.

For hybrid and lean-burn light-duty vehicles (those 8,500 pounds or under), the credit includes two components—one for fuel economy improvement relative to the average fuel economy for vehicles of similar type and weight sold in 2002, and one for annual fuel savings relative to the equivalent 2002 vehicle fuel economy baseline. In addition, to be eligible, vehicles 6,000 pounds or under must meet the fairly stringent Tier 2 bin 5 emissions limits, while vehicles of 6,001–8,500 pounds need to meet the far less stringent Tier 2 bin 8 emissions limits. Approximately 10 models now on the market are eligible for the credits. Other eligible vehicles will be introduced over the next few years. Information on eligible vehicles and tax incentive amounts for each vehicle can be found at www.aceee.org/transportation/hybtaxcred.htm. To provide a couple of examples, the 2006 Toyota Prius is eligible for a $3,150 fuel economy credit, mostly due to its high fuel economy. On the other hand, a hybrid 2-wheel-drive Chevy Silverado pickup truck that gets 18 miles per gallon will get no credit for improving fuel economy relative to the 16.1 mpg average for its weight and class in 2002, but would receive $250 for saving approximately 1,400 gallons of fuel over its lifetime.

These credits generally apply to vehicles purchased between January 1, 2006 and December 31, 2010. However, each manufacturer is allowed sales of only 60,000 vehicles before credits ramp down to zero over about a 15-month period. In the case of Toyota and Honda, which have been actively selling hybrid vehicles for several years, the 60,000 vehicle level will likely be reached in the second half of 2006 for Toyota and in 2007 for Honda.

The bill also provides for credits for hybrid vehicles of 8,500 pounds or more, with credits ranging from 20–40 percent of the "qualified incremental hybrid cost of the vehicle" relative to a "comparable" non-hybrid vehicle, with the percentage depending on the fuel economy improvement attributable to the hybrid. Many details need to be worked out via regulation including test procedure specifics and how to define "comparable vehicle." Other than buses, heavy-duty hybrids have very limited availability, but vehicles of many types are now being tested. These credits expire at the end of 2009.

In addition, the bill provides tax credits for fuel cell vehicles purchased through 2014. Again there is a fuel economy component, with credits of $1,000–4,000 depending on fuel

economy. In addition, a second component gives credits for fuel cell vehicles based on weight, from a credit of $8,000 for vehicles under 8,500 pounds ($4,000 for models placed in service after December 31, 2009) to one of $40,000 for vehicles over 26,000 pounds. Currently no fuel cell vehicles are commercially available.

Other Efficiency Provisions

In addition to these two major efficiency provisions, the new energy bill included a variety of other smaller efficiency provisions as follows.

- *Industrial voluntary commitments:* Encourages DOE to enter into agreements with large industrial firms and/or their trade associations to achieve improvements in energy intensity (energy use per unit of product produced) of at least 2.5 percent per year (in excess of recent trends). DOE will provide technical assistance, assuming Congress appropriates the necessary funds.
- *Appliance labeling:* Directs the Federal Trade Commission (FTC) to review the effectiveness of its current Energy Guide label and to make appropriate revisions. This provision could lead to improvements in the current labeling program and thereby make the program more effective in achieving its goals of informing consumers and providing energy savings.
- *ENERGY STAR:* Authorizes the ENERGY STAR program and makes clear Congress' support for it. Previously, the program was proceeding under broad authority granted to DOE and EPA to save energy and reduce pollution. This new legislative provision is general enough that it will not have much direct impact on the program, other than calling for notification and comment on key ENERGY STAR program changes, but this provision could contribute to increased appropriations for the program. One specific item in the legislation is a directive to generally provide nine months lead time to manufacturers between when a new or major revision to an ENERGY STAR specification is published and when it takes effect. Federal agencies, however, retain the right to waive this requirement.
- *Consumer education on HVAC maintenance:* Directs DOE to conduct an education program on the benefits of proper air conditioning, heating, and ventilation maintenance. It is unclear whether DOE will have funding for this program, but if the program is funded it could be a useful complement to local programs that promote improved HVAC installation and maintenance practices.
- *Appliance rebates:* Establishes a program to provide federal matching funds for state energy office-run ENERGY STAR appliance rebate programs and authorizes up to $50 million annually for five years. However, the funds are dependent on annual appropriations.
- *Federal energy efficiency:* Establishes updated targets for energy used in federal buildings and also addresses equipment procurement and performance contracting, providing additional tools to help federal facilities to achieve these targets. It reauthorizes DOE's Energy Service Performance Contracting (ESPC) program for ten years. This is a key step in sustaining the private funding for federal efficiency projects. The bill also sets updated performance standards for new federal buildings and asks DOE to consider even more stringent performance levels.

- *Research, development, and demonstration programs:* Authorizes funding of $783 million for Fiscal Year 2007 energy efficiency research, development, and demonstration programs, more than double recent-year appropriations (this does not include grants programs). Actual accomplishments will depend on Congressional appropriations.
- *Efficient public buildings:* Creates a grants program for energy-efficient public buildings, including both new and renovated buildings. The bill authorizes $30 million annually, but as with the appliance rebate program, how much gets accomplished will depend on funding.
- *Housing:* Includes a housing provision that creates a public housing energy office at U.S. Housing and Urban Development. Allows longer terms for performance contracts to enable more comprehensive improvements to public housing through energy service companies. Requires public housing to purchase ENERGY STAR equipment, public housing agencies to integrate capital planning and utility management, and new public housing construction to meet recent energy codes.
- *Combined heat and power (CHP):* Directs states to consider adopting model interconnection standards. Provides for a study by DOE on the potential benefits of distributed generation and methods for valuing these benefits. To the extent states improve their interconnection standards and correctly value the benefits of distributed generation, CHP and other distributed generation will increase. Another provision retains special provisions for "qualifying facilities" under the Public Utilities Regulatory Act of 1978 until FERC determines that a competitive electricity market exists at the location of the facility. This was a compromise and retains "qualifying facility" incentives for longer than the utility industry wanted.
- *Net metering and smart metering:* Directs states to consider and determine standards for net metering and smart metering. The net metering provision primarily affects renewable and other distributed energy sources. The smart metering provision is designed to facilitate real time pricing and other demand response programs.
- *Public awareness campaign:* Authorizes a major campaign by DOE on how to save energy and the benefits of doing so. It has been many years since DOE undertook such a campaign. If done well, such campaigns can provide substantial energy savings, as shown by the campaign undertaken by the state of California to help address its 2001 electricity crisis (Global Energy Partners 2003). A federal campaign, however, will be dependent on appropriations from Congress.
- *Energy efficiency resource standards:* Energy efficiency resource standards are energy savings targets that electric and/or gas utilities must meet. Such programs have already been established in several states (Nadel 2006). The federal legislation authorizes a pilot program with additional states and calls for a study by DOE in consultation with the National Association of Regulatory Utility Commissioners (NARUC) and the National Association of State Energy Officials (NASEO) on state and regional policies to promote energy efficiency, with an emphasis on programs carried out by utilities. The study may provide useful information to states. The pilot programs are dependent on Congress appropriating funds.
- *Building energy codes:* Prior law established a technical assistance program to states on building code adoption. This provision adds to prior law by calling for increased funding and adding a component on code implementation. Like many other provisions, this provision is dependent on Congress appropriating funds.

- *Daylight savings time:* The new law extends daylight savings time by one month (three weeks in the spring, one week in the fall). This provision should modestly reduce evening electricity use.

Implementation Status

As of this writing (May 2006), implementation of the majority of these provisions is on track, but with some significant exceptions. First, most efficiency provisions that require Congressional appropriations appear to be going no where as none of these provisions appear to be included in the President's Fiscal Year 2007 budget. Second, a rulemaking to set efficiency standards on furnace fans has been delayed until 2012 (at the earliest) as DOE has decided that this rulemaking is optional and not mandatory (DOE 2006b). This will delay achievement of significant energy savings. Third, states are moving slowly to consider regulatory changes related to CHP and real time pricing, and thus savings from these provisions may be reduced. Fourth, the initial FERC proposal for qualifying facilities set a very loose definition of competitive market, and if finalized in its current form, could impede some development of CHP, renewable energy, and other distributed energy systems (FERC 2006). Table 4 summarizes the current implementation status of the various efficiency provisions.

Estimated Energy Savings

In the fall of 2005, ACEEE published estimates of the energy savings from the energy efficiency provisions of the new law (Nadel 2005). In light of the lack of funding for many of the provisions outside of efficiency standards and tax incentives plus the delay in setting efficiency standards for furnace fans, we have since revised these figures (the revisions reduce projected savings in 2020 by about 25%). Our revised estimates are summarized in Figure 1. We now estimate that the energy efficiency sections of the new law will reduce U.S. energy use in 2020 by about 1.8 quadrillion Btu (quads), which is about 1.5 percent of projected U.S. energy use in that year. In 2010, savings are only about 0.4 quads, which is about 0.4 percent of projected U.S. energy use in that year. Savings are much lower in 2010 since savings from many provisions mount over time as existing equipment is replaced with more efficient equipment. Of the 2020 savings, just over half is due to new standards, about one quarter to tax incentives, and the remaining 22 percent to various other provisions, particularly increased research and development authorizations and the CHP interconnection provisions. Included in the 2020 savings are natural gas savings of nearly one trillion cubic feet and peak electric savings of about 41,000 MW, energy bill reductions of more than $14 billion, and about 34 million metric tons of carbon reductions (carbon, in the form of carbon dioxide, is a major contributor to global warming).

Provisions Discussed but Not Included in the Bill

While the law contains some useful efficiency provisions that had broad support, more significant and far-reaching provisions were jettisoned. This applies to efficiency provisions such as updating Corporate Average Fuel Economy (CAFE) standards for vehicles as well as to

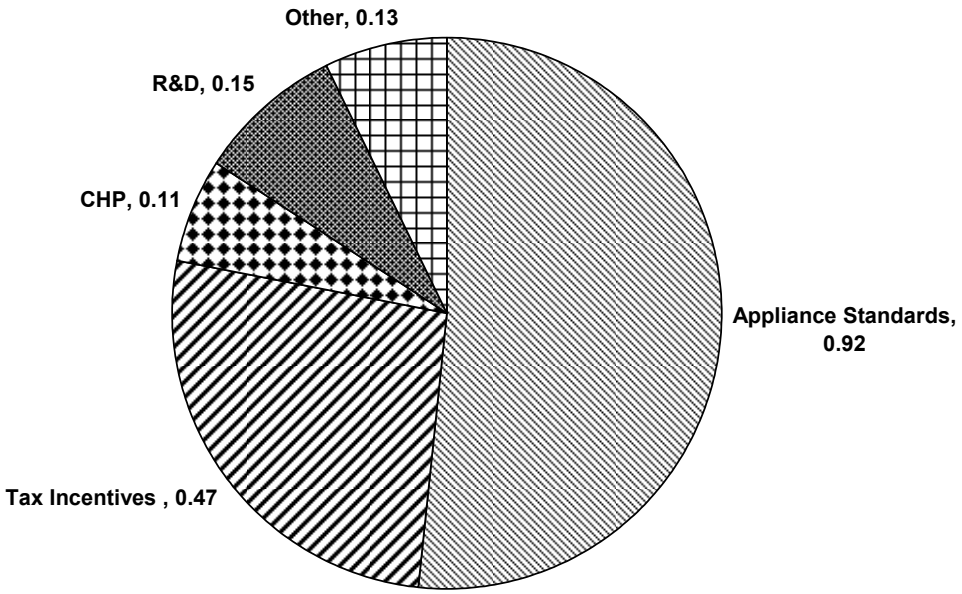
Table 4. Current Status of Major Energy Efficiency Provisions

Provision	Current Status
Appliance standards	Largely on track with new standards; implementing regulations mostly issued, preparations for EPAct 2005 rulemakings have begun. However, furnace fan rulemaking has been delayed to 2012. Initial report to Congress completed on catching up on rulemakings called for in earlier legislation.
Tax incentives	IRS guidance issued on passenger vehicle, new home, existing home, and HVAC credits. Still waiting for guidance on other provisions. In absence of guidance, taxpayers may still earn tax incentives but there is uncertainty as to exactly what qualifies.
CHP and recycled energy	DOE is working on the study of the potential benefits of distributed generation required by Section 1817. States are just beginning consideration of interconnection standards. So far, Ohio and Virginia have opened dockets. FERC issued draft rules on when a competitive market exists and therefore special protections are not needed. The draft has a very low threshold for defining a competitive market and the CHP industry is pushing back for a more restrictive definition.
RD&D authorizations	Requested funding up for solid-state lighting. Otherwise, 2007 budget request does not reflect increases in line with the authorizations in EPAct 2005.
Building energy codes	Funding for existing program eliminated in President's budget; no funding included for expanded program authorized in EPAct.
Public awareness campaign	Small campaign offered in fall 2005; no funding in President's budget for larger campaign envisioned in EPAct. Zeroing out the request for DOE's "Gateway Deployment" programs indicates a move in the opposite direction from the intent of Congress to increase public outreach and education.
Voluntary industrial commitments	The 2007 budget request calls for another major cut in the Industrial Technologies program, and the budget language shows nothing that reflects this provision of the Act.
Appliance labeling	FTC has begun rulemaking to revise the Energy Guide label and plans to begin some market research soon. Some changes in the label are likely, but unclear if major changes will be made.
Federal facilities	DOE has issued metering guidance to agencies; OMB reviewing procurement guidance. Agencies working on implementation plans. 2007 budget request cuts FEMP funding by about $2 million.
High performance public buildings	No funding proposed in President's budget.
AC maintenance education	No funding proposed in President's budget.
Public housing	The bill authorizes expanded use of energy services performance contracting in public housing, requires public housing agencies to purchase ENERGY STAR appliances where cost-effective, updates building code references for HOPE VI assisted housing to the 2003 IECC energy code, and requires HUD to develop an energy strategy within one year. HUD has issued regulations on appliances, is in the process of updating HOPE VI standards, and is in the process of updating its energy action plan.
Smart metering and demand response	States have 2 years to consider whether some form of time-based pricing is appropriate for their utilities; to date, a few states have opened dockets. DOE had 180 days to prepare a report on the benefits of demand response and completed this report in Feb. 2006. FERC has one year to prepare a more detailed study on demand response; work is underway.
Energy efficiency resource standards	Work begun on study called for in EPAct. President's budget contains no funds for pilot programs.
Daylight savings time	Change effective March 1, 2007; DOE study due Dec. 1, 2007.

controversial energy supply measures such as oil and gas drilling in Alaska and off the East Coast. Several efficiency items received extensive discussion but ultimately are not in the bill. Many of these were perceived by a majority of Congress as overly meddling in markets. First,

the bill does virtually nothing to reduce U.S. oil use. Neither the House nor the Senate elected to take any significant action regarding passenger vehicle fuel economy. For example, an amendment offered by Rep. Boehlert to increase CAFE standards to 33 mpg by 2015 failed in the House by a vote of 177 to 254. In fact, the bill marginally weakens the existing CAFE situation by extending the "dual-fuel loophole" that gives manufacturers CAFE credit for making vehicles than can burn an alcohol fuel, even if the vehicle never uses such fuel. ACEEE analysis indicates that full use of this loophole could erode actual fuel economy of the U.S. fleet by up to 5 percent (Langer 2003).

Figure 1. Estimated 2020 Savings from Energy Efficiency Provisions in EPAct 2005 (in quadrillion Btu's)



Likewise, the final bill also left out a major oil savings provision in the Senate bill, which would have required the President to take steps that would save 1 million barrels of oil annually by the year 2013. Under this provision, the President would have worked with agencies to identify and pursue actions to meet this target, such as promoting biofuels, improving vehicle efficiency, and reducing oil use in buildings and industry. This section was opposed by the Administration and rejected by the House.

Second, the bill included neither a renewable portfolio standard (RPS) nor an expanded standard that would have included renewable energy, energy efficiency, and possibly other energy sources. The Senate passed a RPS provision requiring that 10 percent of electricity be renewable by 2020. The House responded with an offer that added clean coal, nuclear power, distributed generation systems (such as CHP systems and fuel cells), and demand-side management. A possible compromise advanced by ACEEE that received some interest was to include renewable energy, energy efficiency, CHP, and recycled energy (use of waste heat), but not nuclear or clean coal. However, this compromise was not advanced by either the House or Senate in conference and ultimately no provision was included as the House and Senate remained far apart.

Third, several tax incentives included in the 2005 Senate bill (and included in bills passed by the House in earlier years) were dropped as part of conference negotiations. The items

eliminated included three tax incentive provisions—for CHP plants, site-built homes reducing energy use by 30 percent but less than 50 percent, and accelerated depreciation for advanced meters used in demand response programs. Also, the final bill shortened most of the tax incentives from three or four years in the Senate bill to two years in the final bill. All of these cuts were part of efforts to reduce the overall cost of the bill and to include more "supply-side" tax incentives demanded by the House. In general, the efficiency tax incentives in the final 2005 bill were not as generous as those in the 2003 House–Senate conference report.

As a result, the final bill saves only about half the energy of the Senate bill and less than one-quarter of the energy of ACEEE's estimates for a bill that would contain robust efficiency provisions including vehicle fuel economy standards, an energy efficiency resource standard, and a well-funded energy efficiency public information campaign (this larger package is described in Nadel, Elliott, and Langer 2005).

Implications for Future Energy Policy Efforts

The 2005 energy bill represents the lowest common denominator of what a majority of Congress can accept. Provisions that were controversial were jettisoned. However, with energy prices rising, particularly oil prices, there is a chance that Congress will again try to address energy issues, possibly in 2006 (although the 2006 Congressional calendar is probably too short to include energy legislation), more likely in 2007. If federal legislation is again considered, several efficiency provisions will likely receive serious discussion.

First, several additional consensus equipment efficiency standards are now being discussed, and several agreements are likely to be completed in time for inclusion in the next federal energy bill.

Second, most of the tax incentives in the 2005 bill will expire in 2007. A colloquy in the *Congressional Record* indicated that an extension of the commercial building tax incentive will be a priority, as two years is too short a time to influence new building design and construction practices (Congressional Record 2005). For the same reason, we expect that there is a very good chance that the new homes provision will be extended. In fact, in March 2006 the Chairman and Ranking Member of the Senate Finance Committee introduced a bill (S. 2401) to extend both the commercial building and new homes tax credits by three years. There is also a reasonable chance for an extension of the appliance credits, but with updated efficiency requirements. Discussions among interested parties to develop an improved existing homes provision are also underway.

Third, bills have been introduced in both the Senate (S. 2025) and House (H. 4409) with broad bipartisan support to set targets for oil use reductions, including, in the Senate bill, savings of 2.5 million barrels per day by 2016, ramping up to 10 million barrels per day by 2031 (the House bill is slightly different). These bills leave it to the Executive Branch to develop and implement a plan to achieve these targets, and require regular reports to Congress on progress. However, they do not include an explicit enforcement mechanism to ensure that the targets are met. There is a reasonable chance that a provision along these lines will be included in any new federal energy bill that emerges from Congress.

Fourth, the Senate has passed a renewable portfolio standard several times and House leadership recognizes that this issue merits serious consideration. Both the House and Senate leadership would like to expand an RPS to include other energy sources such as nuclear power, "clean" coal, and energy efficiency. There appears to be some support to include at least energy efficiency in a compromise provision; prospects for clean coal and nuclear are less clear. In

addition to what resources are included, there is the question of target level. The Senate-passed RPS called for renewable resources accounting for 10% of U.S. electricity consumption by 2020; if efficiency and/or other resources are added, the 10% target will probably need to be increased.

Fifth, there is growing recognition by members of Congress that global warming is starting to happen and steps to reduce emissions of greenhouse gases are needed. For example, the Senate-passed bill included a non-binding resolution that "Congress should enact a comprehensive and effective national program of mandatory, market-based limits and incentives on emissions of greenhouse gases that slow, stop and reverse the growth of such emissions…" However, the Chair of the Senate Environment Committee (which has jurisdiction over this issue) is strongly opposed to global warming legislation, as are many members of the House leadership and the President. Given this opposition, it is unlikely that global warming legislation can be enacted before the 2008 election.

Based on an earlier ACEEE analysis, new federal legislation that includes additional efficiency standards, extends the energy efficiency tax incentives, sets oil savings targets, and includes a combined efficiency and renewable energy standard could reduce U.S. increase energy savings relative to the 2005 bill by about four-fold (Nadel, Elliott, and Langer 2005).

However, federal action is far from assured. In order to fill the policy vacuum, we recommend that states increase their energy policy efforts, hopefully laying the groundwork for future federal action when and if Congress is ready to make the compromises needed to truly address the energy challenges facing the U.S. In particular, we recommend that states adopt energy savings targets for utilities and pursue policies to reduce oil use as these are the biggest shortfalls in the Energy Policy Act of 2005.

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