

CRS Report for Congress

Energy Independence and Security Act of 2007: A Summary of Major Provisions

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Summary

The Energy Independence and Security Act (P.L. 110-140, H.R. 6) is an omnibus energy policy law that consists mainly of provisions designed to increase energy efficiency and the availability of renewable energy. This report describes the key provisions of the enacted law, summarizes the legislative action on H.R. 6, and provides a summary of the provisions under each of the titles in the law.

The highlights of key provisions enacted into law are as follows:

- *Corporate Average Fuel Economy (CAFE)*. The law sets a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020.
- *Renewable Fuels Standard (RFS)*. The law sets a modified standard that starts at 9.0 billion gallons in 2008 and rises to 36 billion gallons by 2022.
- *Energy Efficiency Equipment Standards*. The adopted bill includes a variety of new standards for lighting and for residential and commercial appliance equipment. The equipment includes residential refrigerators, freezers, refrigerator-freezers, metal halide lamps, and commercial walk-in coolers and freezers.
- *Repeal of Oil and Gas Tax Incentives*. The enacted law includes repeal of two tax subsidies in order to offset the estimated cost to implement the CAFE provision.

The two most controversial provisions of H.R. 6 that were not included in the enacted law were the proposed Renewable Energy Portfolio Standard (RPS) and most of the proposed tax provisions, which included repeal of tax subsidies for oil and gas and new incentives for energy efficiency and renewable energy.

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Contents

Introduction	1
Key Provisions	1
Provisions Included	1
Corporate Average Fuel Economy (CAFE) Standards	1
Renewable Fuel Standard (RFS)	1
Appliance and Lighting Efficiency Standards	1
Provisions Excluded	2
Renewable Energy Portfolio Standard (RPS)	2
Energy Tax Subsidies	2
Brief Summary of Legislative Action	3
Title I: Energy Security Through Improved Vehicle Fuel Economy	4
Subtitle A, Increased Corporate Average Fuel Economy	4
Subtitle B, Improved Vehicle Technology	5
Subtitle C, Federal Vehicle Fleets	5
Title II: Energy Security Through Increased Production of Biofuels	5
Subtitle A, Renewable Fuel Standard	5
Subtitle B, Biofuels Research and Development (R&D)	6
Subtitle C, Biofuels Infrastructure	6
Subtitle D, Environmental Safeguards	6
Title III: Energy Savings Through Improved Standards for Appliances and Lighting	7
Subtitle A, Appliance Energy Efficiency	7
Subtitle B, Lighting Energy Efficiency	7
Title IV: Energy Savings in Buildings and Industry	7
Subtitle A, Residential Building Efficiency	7
Subtitle B, High-Performance Commercial Buildings	7
Subtitle C, High-Performance Federal Buildings	8
Subtitle D, Industrial Energy Efficiency	8
Subtitle E, Healthy High-Performance Schools	9
Subtitle F, Institutional Entities	9
Subtitle G, Public and Assisted Housing	9
Subtitle H, General Provisions	9
Title V: Energy Savings in Government and Public Institutions	10
Subtitle A, United States Capitol Complex	10
Subtitle B, Energy Savings Performance Contracting	10
Subtitle C, Energy Efficiency in Federal Agencies	10
Subtitle D, Energy Efficiency of Public Institutions	11
Subtitle E, Energy Efficiency and Conservation Block Grants	11

Title VI: Accelerated Research and Development	12
Subtitle A, Solar Energy	12
Subtitle B, Geothermal Energy	12
Subtitle C, Marine and Hydrokinetic Renewable Energy Technologies ...	13
Subtitle D, Energy Storage for Transportation and Electric Power	13
Subtitle E, Miscellaneous Provisions	13
Title VII: Carbon Capture and Sequestration	15
Subtitle A, Carbon Capture and Sequestration Research, Development, and Demonstration	15
Subtitle B, Carbon Capture and Sequestration Assessment and Framework	15
Title VIII: Improved Management of Energy Policy	16
Subtitle A, Management Improvements	16
Subtitle B, Prohibitions on Market Manipulation and False Information ..	17
Title IX: International Energy Programs	17
Subtitle A, Assistance to Promote Clean and Efficient Energy Technologies in Foreign Countries	17
Subtitle B, International Clean Energy Foundation	17
Subtitle C, Miscellaneous Provisions	17
Title X: Green Jobs	18
Title XI: Energy Transportation and Infrastructure	18
Subtitle A, Department of Transportation (DOT)	18
Subtitle B, Railroads	18
Subtitle C, Marine Transportation	19
Subtitle D, Highways	19
Title XII: Small Business Energy Programs	19
Title XIII: Smart Grid	20
Title XIV: Pool and Spa Safety	20
Title XV: Revenue Provisions	21
Title XVI: Effective Date	22

Energy Independence and Security Act of 2007: A Summary of Major Provisions

Introduction

The Energy Independence and Security Act (P.L. 110-140, H.R. 6) is an omnibus energy policy law that consists mainly of provisions designed to increase energy efficiency and the availability of renewable energy. This report describes the key provisions of the enacted law, summarizes the legislative action on H.R. 6, and provides a summary of the provisions under each of the titles in the law.

Many analysts in the CRS Resources, Science, and Industry Division contributed to this report; their names and contact information are located on the back of the summary page.

Key Provisions

Provisions Included

The three key provisions enacted in P.L. 110-140 are the Corporate Average Fuel Economy (CAFE) Standards, the Renewable Fuel Standard (RFS), and the appliance/lighting efficiency standards.

Corporate Average Fuel Economy (CAFE) Standards. The law sets a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020. Also, a fuel economy program is established for medium- and heavy-duty trucks, and a separate fuel economy standard is created for work trucks. (For more details on issues related to the CAFE provision, see CRS Report RL33982, *Corporate Average Fuel Economy (CAFE): A Comparison of Selected Legislation in the 110th Congress*, by Brent D. Yacobucci and Robert Bamberger, and CRS Report RL33413, *Automobile and Light Truck Fuel Economy: The CAFE Standards*, by Brent D. Yacobucci and Robert Bamberger.)

Renewable Fuel Standard (RFS). The law sets a modified standard that starts at 9.0 billion gallons of renewable fuel in 2008 and rises to 36 billion gallons by 2022. Of the latter total, 21 billion gallons is required to be obtained from cellulosic ethanol and other advanced biofuels. (For more details on issues related to the RFS provision, see CRS Report RL34265, *Selected Issues Related to an Expansion of the Renewable Fuel Standard (RFS)*.)

Appliance and Lighting Efficiency Standards. Energy efficiency standards are set for broad categories of incandescent lamps (light bulbs),

incandescent reflector lamps, and fluorescent lamps. A required target is set for lighting efficiency, and energy efficiency labeling is required for consumer electronic products. Also, efficiency standards are set by law for external power supplies, residential clothes washers, dishwashers, dehumidifiers, refrigerators, refrigerator-freezers, freezers, electric motors, residential boilers, commercial walk-in coolers, and commercial walk-in freezers. Further, DOE is directed to set standards by rulemaking for furnace fans and battery chargers.

Provisions Excluded

Two controversial provisions of H.R. 6 that were not included in the enacted law were the proposed Renewable Energy Portfolio Standard (RPS) and the proposed repeal of tax subsidies for oil and gas.

Renewable Energy Portfolio Standard (RPS). Under an RPS, retail electricity suppliers (electric utilities) must provide a minimum amount of electricity from renewable energy resources or purchase tradable credits that represent an equivalent amount of renewable energy production. The minimum requirement is often set as a percentage share of a supplier's total retail electricity sales. The second degree amendment to H.R. 6 passed by the House on December 6, 2007, proposed a national RPS target that aimed to reach 15% of total electricity sales by 2020. Up to 4 percentage points of the 15% target could be met with energy efficiency measures. This provision was stripped out by the Senate and was not included in the final version of the bill. (For more details on issues related to the RPS provision, see CRS Report RL34116, *Renewable Energy Portfolio Standard (RPS): Background and Debate Over a National Requirement*, by Fred Sissine.)

Energy Tax Subsidies. The House-passed second degree amendment to H.R. 6 contained provisions that would have repealed about \$22 billion of oil and gas subsidies that were designed to offset the cost of supporting a variety of energy efficiency and renewable energy tax incentives. These proposed incentives would have included a four-year extension of the renewable energy electricity production tax credit. Most of those provisions were stripped out by the Senate and were not included in the final bill. Enough tax revenue offsets were included to cover the estimated cost of the CAFE provision. (For more details about the proposed renewable energy incentives, see CRS Report RL34162, *Renewable Energy Issues in the 110th Congress*, by Fred Sissine. For more details about the proposed repeal of oil and gas subsidies, see CRS Report RL33578, *Energy Tax Policy*, by Salvatore Lazzari.)

Brief Summary of Legislative Action

On January 18, 2007, the House passed the 14-page CLEAN Energy Act (H.R. 6) by a vote of 264-163. The bill proposed to repeal certain oil and natural gas subsidies, thus generating revenue for an Energy Efficiency and Renewables Reserve. The Reserve was designed to reduce foreign oil dependence and serve other purposes. The actual uses of the reserve would have been determined at a later date by further legislation.¹

On June 21, 2007, the Senate passed its first degree amendments to H.R. 6 as the proposed Renewable Fuels, Consumer Protection, and Energy Efficiency Act of 2007. This action transformed H.R. 6 into a 500-page omnibus energy policy bill, with a primary focus on energy efficiency and renewable energy. The Senate's amendments were drawn primarily from the proposed Energy Savings Act of 2007 (S. 1321).² The key provisions of the Senate-passed H.R. 6 were appliance efficiency standards, an increase of the renewable fuel standard to 36 billion gallons by 2022, and an increase of the combined corporate average fuel economy standards to 35 miles per gallon (mpg) by 2020.

On August 4, 2007, the House passed the omnibus energy policy bill, H.R. 3221, which had two divisions and 13 titles. Division A contained provisions of the New Direction for Energy Independence, National Security, and Consumer Protection Act. An adopted floor amendment (H.Amdt. 748) added a 15% renewable energy portfolio standard (RPS). Division B, the Renewable Energy and Energy Conservation Tax Act of 2007, was also added as a floor amendment and contained the House-approved version of H.R. 2776. It added four titles to H.R. 3221 that included a four-year extension of the renewable electricity production tax credit and other efficiency and renewables incentives.

Because the House omnibus bill (H.R. 3221) and the Senate omnibus bill (H.R. 6) had different bill numbers, the bills could not be taken directly to conference committee.³ However, after the House completed action on H.R. 3221, informal bipartisan negotiations over the omnibus energy bills began between the House and Senate. Key issues included CAFE, the renewable fuel standard, the RPS provision in H.R. 3221, and a proposed repeal of certain oil and natural gas subsidies to offset costs for new energy efficiency and renewable energy tax incentives.

¹ For more details about the reserve, see CRS Report RS22571, *The Strategic Energy Efficiency and Renewables Reserve in the CLEAN Energy Act of 2007* (H.R. 6, by Fred Sissine).

² S. 1321 was, in turn, derived from several other Senate bills. Additional details about legislation that was incorporated into H.R. 6 are available in CRS Report RL33831, *Energy Efficiency and Renewable Energy Legislation in the 110th Congress*, by Fred Sissine, Lynn J. Cunningham, and Mark Gurevitz.

³ More details about the House and Senate bills developed up to that point are available in CRS Report RL34135, *Omnibus Energy Efficiency and Renewable Energy Legislation: A Side-by-Side Comparison of Major Provisions in House-Passed H.R. 3221 with Senate-Passed H.R. 6*, by Fred Sissine.

On December 6, 2007, the House passed by a vote of 235-181 its second-degree amendments to the Senate-passed amendments to H.R. 6. This “second version” of a House omnibus energy bill was derived primarily by trimming and modifying H.R. 3221 and adding major new provisions on CAFE and RFS. The House-passed bill included a proposed increase of the CAFE standard to 35 miles per gallon by 2020 and an increase of the renewable fuel standard to 36 billion gallons per year by 2022. The House bill also included a proposed 15% renewable electricity portfolio standard and \$21 billion of new tax incentives for energy efficiency and renewable energy measures. The bill proposed to offset the new tax incentives with a repeal of about \$21 billion in tax subsidies for oil and natural gas.

The White House threatened to veto the House-passed bill mainly because of the presence of provisions for an RPS and for the repeal of oil and gas tax subsidies.⁴ On December 7, 2007, a Senate cloture vote on the House-passed version of H.R. 6 — with provisions for an RPS and for the repeal of oil and gas subsidies — failed (52-43). After stripping out the RPS and modifying the tax package, a cloture vote on S.Amdt. 3841 failed (59-40).

On December 13, 2007, the Senate adopted S.Amdt. 3850, its second-degree substitute amendment to H.R. 6 by a vote of 86-8. The Senate substitute was nearly identical to the House-passed bill, except that the RPS provision and most tax provisions had been taken out. The House approved the Senate bill on December 18, 2007. The President signed the bill into law on December 19, 2007 (P.L. 110-140).

Title I: Energy Security Through Improved Vehicle Fuel Economy

Subtitle A, Increased Corporate Average Fuel Economy

This subtitle requires an increase in CAFE standards and a restructuring of the fuel economy program. A single CAFE standard of 35 miles per gallon (mpg) by MY2020 is established, and the distinction between the passenger car and light truck fleet is preserved. The new standards will be based on vehicle attributes and expressed in the form of a mathematical function. Interim standards will be set, beginning with MY2011. Manufacturers will be required to come within 92% of the standard for a given model year. However, manufacturers can earn credits for exceeding the standards in one vehicle class that can be applied to boost, within limitations, the CAFE of a different vehicle class that is falling short of compliance. Additionally, credits may be sold and bought between manufacturers. CAFE credits for the manufacture of flexible-fueled vehicles (FFV) are retained but phased out by MY2020. Civil penalties assessed for non-compliance will be deposited to the general fund of the U.S. Treasury to support future rulemaking and to provide grants to manufacturers for research and development, and retooling in support of

⁴ Office of Management and Budget, *Statement of Administration Policy on H.R. 6, Energy Independence and Security Act of 2007*, December 6, 2007; [http://www.whitehouse.gov/omb/legislative/sap/110-1/hr6sap-h_2.pdf].

increasing the fuel efficiency of their fleets. The law requires the development of standards for “work trucks” and commercial medium- and heavy-duty on-highway vehicles. (For additional information, see CRS Report RL33413, *Automobile and Light Truck Fuel Economy: The CAFE Standards*, by Brent D. Yacobucci and Robert Bamberger.)

Subtitle B, Improved Vehicle Technology

This subtitle establishes a loan guarantee program for advanced battery development, grant programs for plug-in hybrid vehicles, incentives for purchasing heavy-duty hybrid vehicles for fleets, and credits for various electric vehicles.

Subtitle C, Federal Vehicle Fleets

Federal agencies are prohibited from acquiring any light-duty motor vehicle or medium-duty passenger vehicle that is not “a low greenhouse gas emitting vehicle” as defined in this subtitle. Alternatively, the agency may demonstrate that it has adopted cost-effective policies to reduce its petroleum consumption sufficiently to achieve a comparable reduction in greenhouse gas emissions. By 2015, federal agencies are required to achieve at least a 20% reduction in annual petroleum consumption and a 10% increase in annual alternative fuel consumption. These increases are to be calculated from a 2005 baseline. Interim milestones will be established and agencies will report annually on their progress. The regulations governing this program are required to be issued not later than 18 months after enactment.

Title II: Energy Security Through Increased Production of Biofuels

Subtitle A, Renewable Fuel Standard

This subtitle extends and increases the renewable fuel standard (RFS) set by P.L. 109-58 (§1501). The RFS requires minimum annual levels of renewable fuel in U.S. transportation fuel. The previous standard was 5.4 billion gallons for 2008, rising to 7.5 billion by 2012. The new standard starts at 9.0 billion gallons in 2008 and rises to 36 billion gallons in 2022. Starting in 2016, all of the increase in the RFS target must be met with advanced biofuels, defined as cellulosic ethanol and other biofuels derived from feedstock other than corn starch — with explicit carve-outs for cellulosic biofuels and biomass-based diesel. The EPA Administrator is given authority to temporarily waive part of the biofuels mandate, if it were determined that a significant renewable feedstock disruption or other market circumstance might occur. Renewable fuels produced from new biorefineries will be required to reduce by at least 20% the life cycle greenhouse gas (GHG) emissions relative to life cycle emissions from gasoline and diesel. Fuels produced from biorefineries that displace more than 80% of the fossil-derived processing fuels used to operate a biofuel production facility will qualify for cash awards. Several studies are required on the impacts of an RFS expansion on various sectors of the economy. (For more details on issues related to the RFS proposal, see CRS Report RL34265,

Selected Issues Related to an Expansion of the Renewable Fuel Standard (RFS), by Brent D. Yacobucci and Randy Schnepf.)

Subtitle B, Biofuels Research and Development (R&D)

This subtitle promotes research on the expansion of the use of biodiesel and biogas as motor fuels. Grants are authorized for R&D and commercial applications of cellulosic biofuels technologies and for the conversion of existing corn-based ethanol plants to produce cellulosic biofuels. The Secretary of Energy is required to report to Congress on the feasibility of algae as a feedstock for biofuels production. The subtitle also promotes university-based R&D on biofuels.

Subtitle C, Biofuels Infrastructure

This subtitle aims to improve information about federal biofuels research programs, focus research on infrastructure and biorefineries, study potential impacts of increased biofuels use, and increase authorized funding for DOE biofuels research. A funding authorization of \$25 million is established to provide grants for biofuels research, development, and demonstration (RD&D) and commercial applications in states that have low rates of ethanol production. A university-based program is authorized to provide grants of up to \$2 million for R&D on renewable energy technologies. Priority is given to universities in low-income and rural communities with proximity to trees dying of disease or insect infestation.

DOE is directed to create a grant program to help establish or convert infrastructure to use renewable fuels, including E85 (85% ethanol). The Energy Policy Act of 2005 (EPACT, P.L. 109-58) authorization for grants to support cellulosic ethanol production is increased. A grant program is authorized to support production of flexible-fueled vehicles. Studies are also required on the market penetration of flexible-fueled vehicles, the feasibility of constructing dedicated ethanol pipelines, the feasibility of using greater percentages of ethanol in fuel blends, and the adequacy of railroad transportation for delivery of ethanol fuel.

Subtitle D, Environmental Safeguards

Previously, under the Clean Air Act (§211[f]), no new fuels or fuel additives could be introduced into commerce unless granted a waiver by the Environmental Protection Agency (EPA). If EPA did not act within 180 days of receiving a waiver request, the waiver was treated as granted.⁵ Section 251 tightens the waiver provision. It amends the Clean Air Act to prohibit the introduction of new fuels or fuel additives unless EPA explicitly grants a waiver. After receiving a waiver request, EPA will now have 270 days to take final action.

⁵ See 42 U.S.C. 7545(f).

Title III: Energy Savings Through Improved Standards for Appliances and Lighting

Subtitle A, Appliance Energy Efficiency

This title sets, by statute, new efficiency standards for external power supplies, residential clothes washers, dishwashers, dehumidifiers, refrigerators, refrigerator-freezers, freezers, electric motors, and residential boilers. DOE is allowed to establish regional variations in standards for heating and air conditioning equipment. DOE is required to complete a rulemaking process for furnace fans by 2013. Federal agencies are directed to purchase devices that limit standby power use. DOE is directed to issue a final rule that sets efficiency standards for battery chargers. Certain energy efficiency measures for walk-in coolers and walk-in freezers are set by law. Also, several procedural changes are now in place to expedite the DOE rulemaking process.

Subtitle B, Lighting Energy Efficiency

Section 321 sets an energy efficiency standard for general service incandescent lamps, provides for consumer education and lamp labeling, and requires market assessments and a consumer awareness program. Section 322 sets energy efficiency standards for incandescent reflector lamps and fluorescent lamps. For federal buildings, Section 323 sets energy efficiency requirements for GSA-leased space and for use of energy efficient lighting fixtures and bulbs in those leased spaces. Section 324 sets energy efficiency standards for metal halide lamp fixtures designed to be operated with lamps rated between 150 watts and 500 watts. Section 325 directs the Consumer Product Safety Commission to set energy efficiency labeling requirements for consumer electronic products.

Title IV: Energy Savings in Buildings and Industry

Subtitle A, Residential Building Efficiency

Section 411 increases the funding authorization for DOE's Weatherization Program, providing \$3.75 billion over five years. Under Section 412, DOE is directed to conduct a study of the renewable energy system rebate program described in §206(c) of the Energy Policy Act of 2005. The study aims to determine the minimum funding the program would need to be viable. Further, DOE is directed to propose an implementation plan. Section 413 requires DOE to establish energy efficiency standards for manufactured housing.

Subtitle B, High-Performance Commercial Buildings

This subtitle encourages the development of more energy-efficient "green" commercial buildings. Section 421 creates an Office of Commercial High Performance Green Buildings at DOE. Section 422 establishes a zero-energy commercial buildings initiative. A national goal is set to achieve zero-net-energy use

for new commercial buildings built after 2025. A further goal is to retrofit all pre-2025 buildings to zero-net-energy use by 2050. Section 423 requires that DOE establish a national clearinghouse for information and public outreach about high-performance green buildings.

Subtitle C, High-Performance Federal Buildings

Section 431 requires that total energy use in federal buildings, relative to the 2005 level, be reduced 30% by 2015. Section 432 directs that federal energy managers conduct a comprehensive energy and water evaluation for each facility at least once every four years. For new federal buildings and major renovations, Section 433 requires that fossil-fuel energy use — relative to the 2003 level — be reduced 55% by 2010 and be eliminated (100% reduction) by 2030. Section 434 requires that each federal agency ensure that major replacements of installed equipment (such as heating and cooling systems), or renovation or expansion of existing space, employ the most energy efficient designs, systems, equipment, and controls that are life-cycle cost effective. Section 435 prohibits federal agencies from leasing buildings that have not earned an EPA Energy Star label. Section 436 requires GSA to establish an Office of Federal High-Performance Green Buildings to coordinate green building information and activities within GSA and with other federal agencies. The Office must also develop standards for federal facilities, establish green practices, review budget and life-cycle costing issues, and promote demonstration of innovative technologies. Section 437 directs the Government Accountability Office (GAO) to audit the implementation of activities required under this subtitle. The audit must cover budget, life-cycle costing, contracting, best practices, and agency coordination. Section 438 requires federal facility development projects with a footprint exceeding 5,000 square feet to use site planning, design, construction, and maintenance strategies to control storm water runoff. Section 439 directs GSA to review the current use of, and design a strategy for increased use of, cost-effective lighting, ground source heat pumps, and other technologies in GSA facilities. Section 440 authorizes \$4 million per year over five years to support work under sections 434-439 and 482. For the purpose of conducting life-cycle cost calculations, Section 441 increases the time period from 25 years, in prior law, to 40 years.

Subtitle D, Industrial Energy Efficiency

Section 451 directs DOE to conduct research on, develop, and demonstrate new processes, technologies, and operating practices and techniques to significantly improve the energy efficiency of equipment and processes used by energy-intensive industries. Section 452 directs EPA to establish a recoverable waste energy inventory program. This program must include an ongoing survey of all major industrial and large commercial combustion sources in the United States. EPA is required to identify the potential for economically feasible waste energy recovery, create a grant program to support waste energy recovery, and strengthen “clean energy centers” that analyze waste energy recovery. Section 453 directs DOE to initiate a voluntary national information program for widely used data centers and data center equipment for which there is significant potential for energy savings.

DOE is also tasked with helping to devise strategies to improve energy efficiency at these data centers.

Subtitle E, Healthy High-Performance Schools

Section 461 creates a grant program for *Healthy High-Performance Schools* that aims to encourage states, local governments, and school systems to build green schools. EPA, in consultation with the Department of Education, is allowed to provide grants to state agencies to provide technical assistance and help with the development of state plans for school building design. Also, EPA is directed to develop model voluntary guidelines for school site selection. In addition to other environmental aspects, the grants and guidelines must have a focus on energy efficiency, natural daylighting, and other energy-related features. Section 462 directs EPA to lead a detailed study of how sustainable building features, such as energy efficiency, affect multiple perceived indoor environmental quality stressors on students in K-12 schools.

Subtitle F, Institutional Entities

Section 471 creates a program of grants and loans to support energy efficiency and energy sustainability projects at public institutions.

Subtitle G, Public and Assisted Housing

Section 481 directs the Department of Housing and Urban Development (HUD) to update energy efficiency standards for all public and assisted housing.

Subtitle H, General Provisions

Section 491 calls for the DOE Office of Commercial High Performance Buildings and the GSA Office of Federal High Performance Buildings to jointly develop guidelines for demonstration projects. In accordance with the guidelines, one federal project must be undertaken annually over a five-year period, supported by a \$10 million funding authorization. Also, a total of four projects are to be undertaken at different universities over the five-year period, supported by an additional \$10 million funding authorization. Section 492 calls for these two offices to undertake a joint survey of research on green buildings, coordinate efforts to develop a research plan, and identify potential benefits of green buildings for security, natural disasters, and emergency needs of the federal government. Section 493 requires EPA to create a program of competitive grants to local governments for green building demonstration projects. Section 494 directs the Office of Commercial High Performance Buildings and the Office of Federal High Performance Buildings to jointly appoint a Green Building Advisory Committee with representatives from a variety of backgrounds, including federal agencies, state and local governments, building industry experts, security advisors, and environmental health experts. Section 495 calls for DOE to create an advisory committee on energy efficiency finance to help lower costs and increase investment for energy efficiency technologies.

Title V: Energy Savings in Government and Public Institutions

Subtitle A, United States Capitol Complex

Section 501 allows the Architect of the Capitol (AOC) to perform a feasibility study regarding construction of a photovoltaic roof for the Rayburn House Office Building. Under Section 502, the AOC is allowed to construct a fuel tank and pumping system for E85 (85% ethanol) fuel at or within close proximity to the Capitol Grounds Fuel Station. Section 503 requires the AOC, to the maximum extent practicable, to include energy efficiency measures, climate change mitigation measures, and other appropriate environmental measures in the Capitol Complex Master Plan. Under Section 504, the AOC is directed to operate the steam boilers and chiller plant at the Capitol Power Plant in the most energy efficient manner possible to minimize carbon emissions and operating costs. Further, Section 505 requires the AOC to install technologies for the capture and storage or use of carbon dioxide emitted from coal combustion in the Capitol Power Plant.

Subtitle B, Energy Savings Performance Contracting

Section 511 eliminates the advance reporting requirement for Energy Savings Performance Contracts (ESPCs) that have a cancellation ceiling exceeding \$10 million. Section 512 increases ESPC funding flexibility by allowing a combination of appropriated funds and private financing. Section 513 restricts federal agencies from limiting the duration of ESPCs to less than 25 years or limiting the total amount of obligations. Further, this section permits the criteria for savings verification to satisfy the requirement for energy audits. Also, it directs federal agencies to modify existing ESPCs to conform with the requirements of this subtitle. Section 514 permanently authorizes ESPCs.

Section 515 extends the definition of energy savings reduction to include increased use of an existing energy source by cogeneration or heat recovery, use of excess electrical or thermal energy generated from onsite renewable sources or cogeneration, and increased energy-efficient use of water resources. Section 516 permits agencies to retain the full amount of energy and water cost savings obtained from utility incentive programs. Section 517 authorizes \$750,000 per year over five years for a program to train contract officers in negotiating ESPCs. Section 518 directs the Department of Defense (DOD) and DOE to study the potential use of ESPCs in nonbuilding applications, which is defined to include vehicles and federally owned equipment to generate electricity or transport water.

Subtitle C, Energy Efficiency in Federal Agencies

Under Section 521, GSA is directed to use up to \$30 million — subject to appropriation — from FY2007 and prior years' unobligated balances of the Federal Buildings Fund to support the installation of a solar photovoltaic system for the DOE headquarters building in the District of Columbia. Section 522 prohibits, except under certain circumstances, the purchase of incandescent light bulbs for use in Coast Guard office buildings. Section 523 requires 30% of the hot water demand in new

federal buildings (and major renovations) to be met with solar hot water equipment, provided it is life-cycle cost-effective. Section 524 encourages federal agencies to minimize standby energy use in purchases of energy-using equipment. Section 525 requires federal procurement to focus on use of Energy Star and Federal Energy Management Program (FEMP)-designated products. Section 526 prohibits federal agencies from procuring synfuel unless its life cycle GHG emissions are less than those for conventional petroleum sources. Section 527 directs each federal agency subject to any requirements under this title to issue an annual report that describes the status of initiatives to improve energy efficiency, reduce energy costs, and reduce GHG emissions. Section 528 requires the Office of Management and Budget (OMB) to submit an annual report to Congress that summarizes the information reported under Section 527, evaluates overall progress toward the goals of Section 527, and recommends additional actions needed to meet those goals. Section 529 directs the Federal Energy Regulatory Commission (FERC) to conduct a national assessment of demand response, including an estimate of nationwide demand response out to a 10-year horizon. Further, FERC is required to prepare a National Action Plan on Demand Response, with cooperation from industry. Annual funding of \$10 million per year is authorized over three years.

Subtitle D, Energy Efficiency of Public Institutions

Section 531 increases annual funding authorizations for DOE's state energy programs. Under Section 532, electric and natural gas utilities are required to make energy efficiency a priority resource and to integrate energy efficiency into resource plans and planning processes. Further, the utilities are directed to modify their rates to align their incentives with the delivery of cost-effective energy efficiency and promote energy efficiency investments. Utilities are encouraged to consider several policy options for achieving those goals.

Subtitle E, Energy Efficiency and Conservation Block Grants

This subtitle establishes an energy efficiency block grant program. Section 541 provides definitions of program elements. Section 542 directs DOE to establish an energy efficiency and conservation block grant program to help reduce energy use and emissions at the local and regional level. Section 543 establishes allocation percentages for grants provided under this subtitle. Section 544 enumerates the allowed purposes for the use of funds provided under this subtitle, which includes strategic planning, consultant services, and energy audits. Section 545 provides eligibility requirements for grants under this program, including payment of prevailing wage rates, submission of a strategic plan, and sharing of information. Section 546 sets criteria for minimum allocations of competitive grant funding. Section 547 specifies that DOE may review and evaluate the performance of grant recipients and withhold funds from those it deems have failed to achieve compliance. To support the grant program, Section 548 authorizes \$2 billion annually over five years. Additional funding is authorized to cover administrative costs of the program. Section 548 stresses that funding will supplement, not replace, funding provided by DOE under the Weatherization and State Energy programs.

Title VI: Accelerated Research and Development

Subtitle A, Solar Energy

Section 602 aims to improve the cost and effectiveness of thermal energy storage technologies that could improve the operation of concentrating solar power electric generating plants. Section 603 calls for improved integration of concentrating solar power into regional electricity transmission systems.

Subtitle B, Geothermal Energy

DOE is directed to support programs of R&D, demonstration, and commercial application to expand the use of geothermal energy. Section 613 directs DOE to support programs that (1) develop advanced prospecting tools to locate and develop hidden geothermal resources, and (2) demonstrate advanced exploratory drilling technologies and techniques with industry partners. Section 614 directs DOE to support programs to develop components and systems necessary to develop, produce, monitor, and model the performance of geothermal reservoirs used to produce geothermal energy. In addition, Section 614 directs DOE to support programs that mitigate or prevent environmental damage from geothermal energy development.

Section 615 directs DOE to support enhanced geothermal system development, whereby geothermal reservoir systems are engineered (as opposed to naturally occurring systems) by creating fractures and permeable conduits via reservoir stimulation. DOE would support R&D programs for enhanced geothermal system technologies and for reservoir stimulation and support demonstration projects at a minimum of four sites.

DOE is directed to establish a program of R&D, demonstration, and commercial application for geothermal energy production from oil and gas fields and from geopressed resources.⁶ Section 616 directs DOE to implement a grant program for at least three demonstration projects that use geothermal techniques to extract energy from marginal, unproductive, and productive oil and gas fields. Also, DOE is directed to establish a grant program for the recovery of energy from geopressed resources.

Section 618 directs DOE to establish a Center for Geothermal Technology Transfer, via a grant to an institution of higher learning or consortium thereof, that would serve as an information clearinghouse for the geothermal industry, make data available to the public, and coordinate R&D efforts among national and international partners. Section 619 would rename DOE's GeoPowering the West program as "GeoPowering America" and expand its geothermal technology transfer activities to cover the entire United States. Section 620 would award a grant on a competitive basis to an institution of higher education to establish a geothermal-powered energy generation facility on the institution's campus.

⁶ Geopressed resources are geothermal deposits of hot water or steam found in sedimentary rocks under higher than normal pressures and that are saturated with oil and gas.

Section 624 directs DOE to support international geothermal energy development through collaborative efforts to promote geothermal R&D and deployment of geothermal technologies. Section 625 directs DOE to make grants to eligible entities from “high-cost regions”⁷ of the United States for a feasibility study, demonstration, and commercial application of technologies related to geothermal energy.

Subtitle B authorizes \$90 million annually for geothermal activities, of which \$10 million is designated for activities under Section 616. An additional \$5 million is authorized annually for the Intermountain West Geothermal Consortium, and \$5 million is authorized annually for Section 624. All of the foregoing authorizations are in effect from 2008 to 2012.

Subtitle C, Marine and Hydrokinetic Renewable Energy Technologies

DOE is directed to create an R&D program focused on technology that produces electricity from waves, tides, currents, and ocean thermal differences (§633). A report to Congress is required. Further, DOE is instructed to award grants to institutions of higher education (or consortia thereof) to establish National Marine Renewable Energy Research, Development, and Demonstration Centers (§634).

Subtitle D, Energy Storage for Transportation and Electric Power

The U.S. Energy Storage Competitiveness Act of 2007 directs DOE to conduct a cost-shared RD&D program to support the ability of the nation to remain globally competitive in energy storage systems for electric drive vehicles, stationary applications, and electricity transmission and distribution. An Energy Storage Advisory Council will be created, with responsibility for preparing a five-year research plan. Also, through competitive bids, DOE will establish four energy storage research centers managed by the Office of Science. DOE is required to conduct energy storage demonstration projects. Also, DOE is to investigate secondary applications of energy storage equipment and to examine technologies and processes for final recycling and disposal of energy storage equipment. After five years of program operation, the law will require a review of the program by the National Academy of Sciences. A total authorization of nearly \$3 billion is provided over a 10-year period.

Subtitle E, Miscellaneous Provisions

Section 651 directs DOE to establish an RD&D program to determine ways in which the weight of motor vehicles could be reduced to improve fuel efficiency without compromising passenger safety. This will focus on the development of new

⁷ These “high cost” regions are defined as places where the average cost of retail power exceeds 150% of the national average.

materials and on reducing the cost of lightweight materials. An \$80 million authorization is provided over a five-year period.

Section 652 directs DOE to report on the state of technology development for “advanced” insulation with an R-value greater than R35 per inch. The report is to include an estimate of potential cost savings by applying such insulation to covered refrigeration units. If sufficient cost savings are projected, DOE will then be directed to conduct a cost-shared demonstration program to show actual cost savings. An \$8 million funding authorization is provided for that program.

Section 653 changes the sulfur dioxide (SO₂) criterion for clean coal power plants from a percentage basis (99% of SO₂ removed) to a weight-by-energy basis (no more than 0.04 pounds of SO₂ per million Btu).

Section 654 on the “H-Prize” directs DOE to conduct a competitive program to award cash prizes to advance R&D, demonstration, and commercial application of hydrogen energy technologies. Prizes can be a mix of federal appropriations and funds provided by an entity that DOE chooses to administer the program. The program sunsets in 2018. Prize categories include technology advancements in hydrogen production, storage, distribution, and use; prototypes of hydrogen vehicles and products; and technologies that “transform” distribution or production. DOE is required to report to Congress annually, identifying award recipients, technologies developed, and specific actions undertaken to commercialize the technologies. More than \$1 billion is authorized over a 10-year period.

Section 655 directs DOE to create the “Bright Tomorrow” lighting prizes for solid state (LED) lighting developments that achieve targeted levels of energy efficiency and other traits. Two specific categories are a solid state replacement for a 60-watt incandescent light and a replacement for the PAR Type 38 halogen light. Also, a prize is established for a “twenty-first century lamp” that achieves certain output, efficiency, and color targets. After the awards are made, DOE is required to develop guidelines for federal agency purchases of the incandescent and halogen replacements, with the goal of complete replacement within five years.

Section 656 directs DOE to establish a cost-shared Renewable Energy Innovation Manufacturing Partnership Program to make awards to support RD&D on advanced manufacturing processes, materials, and infrastructure for renewable energy technologies. Further goals are to increase domestic renewable energy production and better coordinate federal, state, and private resources through partnerships. Solar, wind, biomass, geothermal, energy storage, and fuel cell systems are eligible forms of equipment.

Title VII: Carbon Capture and Sequestration

Subtitle A, Carbon Capture and Sequestration Research, Development, and Demonstration

DOE's program for carbon capture and sequestration R&D is expanded and will include large-scale demonstration projects. DOE is directed to engage the National Academy of Sciences (NAS) to conduct a review of the program. DOE is directed to work with the NAS to develop interdisciplinary graduate degree programs with emphasis on geologic sequestration science. A university-based R&D grant program will be established to study carbon capture and sequestration using various types of coal. EPA is directed to assess potential impacts of carbon sequestration on public health and safety and the environment. Further, injection and sequestration activities under this subtitle are subject to the requirements of the Safe Drinking Water Act.

Subtitle B, Carbon Capture and Sequestration Assessment and Framework

Section 711 directs the Department of the Interior (DOI) to develop a methodology for an assessment of the national potential for geologic storage of carbon dioxide. Following publication of the methodology, DOI will be required to complete an assessment of national capacity for carbon dioxide storage in accordance with the methodology.

Section 712 directs DOI to develop a methodology for an assessment of the total capacity of ecosystems to sequester carbon and the ability of ecosystems to reduce emissions of carbon dioxide, methane, and nitrous oxides in ecosystems through management practices. Following publication of the methodology, DOI will be required to complete a national assessment of the quantity of carbon stored in and released from ecosystems, and the annual flux of carbon dioxide, methane, and nitrous oxides in and out of ecosystems.

Section 713 calls for DOI to maintain records, and an inventory, of the quantity of carbon dioxide stored within federal mineral leaseholds.

Section 714 directs DOI to submit a report on a recommended regulatory framework for managing geologic carbon sequestration on public lands. The report must include an assessment of options to ensure that the United States receives fair market value for the use of public land, the proposed procedures for public review and comment, procedures for protecting natural and cultural resources of the public land overlying the geologic sequestration sites, a description of the status of liability issues related to the storage of carbon dioxide in public land, identification of legal and regulatory issues for cases where the United States owns title to the mineral resources but not the overlying land, identification of issues related to carbon dioxide pipeline rights-of-way, and recommendations for additional legislation that may be required for adequate public land management and leasing to accommodate geologic sequestration of carbon dioxide and pipeline rights-of-way.

Title VIII: Improved Management of Energy Policy

Subtitle A, Management Improvements

Section 801 directs DOE to conduct a 10-year national media campaign to educate consumers to save energy and reduce oil use. Competitive bidding is required for contracting the media services. A funding authorization of \$5 million per year is provided for five years. An annual report to Congress is required.

Section 802 authorizes the Federal Coordinator for the Alaska Natural Gas Transportation Projects to appoint and terminate personnel and to pay appointed and temporary personnel up to a maximum of the level III rate of the Executive Schedule. The Federal Coordinator is granted authority to establish various payment requirements and to use funds raised without further appropriation. This authority does not affect the authority of the Secretary of the Interior.

Section 803 creates a 50% matching grant program for constructing small renewable energy projects that will have an electrical generation capacity less than 15 megawatts. Eligible applicants include local governments, utilities, and Indian tribes. Such sums as necessary are authorized for the program.

Section 804 requires the Energy Information Administration (EIA) to monitor planned petroleum refinery outages and report to the Secretary of Energy when such outages are affecting the price or availability of petroleum products. The Secretary will then be required to share data with refinery operators and encourage reductions in out-of-service refinery capacity.

Section 805 requires the Administrator of the Energy Information Administration (EIA) to develop a five-year plan for enhancing the scope, quality, and timeliness of the agency's data collection efforts. In addition, it requires closer coordination by EIA with state energy officials and with the Federal Energy Regulatory Commission. The section addresses state-level data in several respects and requires the Administrator to submit to Congress within a year an assessment of state level energy data needs. EIA is directed to revisit certain data series that had been terminated due to budget constraints and to identify data gaps that may have resulted from those terminations. To implement this section, \$10 million is authorized for 2008, and additional sums are authorized through 2012.

Section 806 expresses the sense of Congress that there is a national goal to use renewable energy resources from agricultural, forestry, and working lands of the nation to provide at least 25% of the nation's energy use by 2025.

Section 807 directs the Department of the Interior's U.S. Geological Survey to conduct a comprehensive assessment of geothermal energy resources in the United States and report the findings of that assessment to Congress.

Subtitle B, Prohibitions on Market Manipulation and False Information

This subtitle prohibits crude oil and petroleum product wholesalers from using any technique to manipulate the market or provide false information. The law directs the Federal Trade Commission to treat such action as an unfair or deceptive practice, subject to civil penalties of not more than \$1 million per incident.

Title IX: International Energy Programs

This title authorizes assistance to promote clean and efficient energy technologies in foreign countries, and it establishes an International Clean Energy Foundation.

Subtitle A, Assistance to Promote Clean and Efficient Energy Technologies in Foreign Countries

The U.S. Agency for International Development (USAID) is directed to report to Congress on efforts to support policies for clean and efficient energy technologies. The Department of Commerce is directed to increase efforts to export such technologies and report to Congress on the results. Other U.S. agencies with export promotion responsibilities are required to increase efforts to support these technologies. Also, a multi-agency Task Force on International Cooperation for Clean and Efficient Energy Technologies is created to support the implementation of clean energy markets in key developing countries.

Section 917 creates a U.S.-Israel Energy Cooperation partnership to support research, development, and deployment (RD&D) of energy efficiency and renewable energy measures.

Subtitle B, International Clean Energy Foundation

The Foundation is established with the long-term goal of reducing GHG emissions. It is directed to use the funds authorized by this subtitle to make grants to promote projects outside of the United States that serve as models of how to reduce emissions. An annual report to Congress is required.

Subtitle C, Miscellaneous Provisions

Section 931 calls for the Secretary of State to ensure that energy security is integrated into the core mission of the Department of State. Energy advisors are required at key embassies, and the Department is required to report to Congress every two years on its energy-related activities. Section 932 adds the Secretary of Energy to the National Security Council. Section 933 calls for the President to submit to Congress a comprehensive annual report that describes a national energy security strategy for the nation.

Section 934 implements the Convention on Supplementary Compensation for Nuclear Damage that was opened for signature in 1997. The convention has since been signed by the United States and 12 other countries but has not yet entered into force. Each party to the convention will be required to establish a compensation system within its borders for nuclear damages to the public. In the United States, this obligation will be fulfilled by the existing Price-Anderson Act (§170 of the Atomic Energy Act of 1954). The convention will also establish a second tier of damage compensation to be paid by all parties. Section 934 requires the U.S. contribution to the second tier to be paid by suppliers of nuclear equipment and services, under a formula to be developed by DOE. Supporters of the convention contend that it will help U.S. exporters of nuclear technology by establishing a predictable international liability system.

Section 935 has the stated purpose of improving national energy security by promoting anti-corruption initiatives in oil and natural gas rich countries and of improving global energy security by promoting programs such as the Extractive Industries Transparency Initiative (EITI) that aim to increase transparency and accountability into extractive resource payments. The sense of Congress is expressed that global energy security should be furthered by encouraging further participation in EITI by eligible countries and companies and by promoting the effectiveness of the EITI program by ensuring that a robust and candid review mechanism is put in place. The Secretary of State is required to report to Congress on progress made in promoting transparency in extractive industries resource payments. An authorization of \$3 million is provided to support U.S. contributions to the Multi-Donor Trust Fund of EITI.

Title X: Green Jobs

This title authorizes up to \$125 million in funding to establish national and state job training programs, administered by the Department of Labor, to help address job shortages that are impairing growth in green industries, such as energy efficient buildings and construction, renewable electric power, energy efficient vehicles, and biofuels development.

Title XI: Energy Transportation and Infrastructure

Subtitle A, Department of Transportation (DOT)

An Office of Climate Change and Environment is established at DOT to plan, coordinate, and implement strategies to reduce transportation-related energy use, mitigate the effects of climate change, and address the impact of climate change on transportation systems and infrastructure.

Subtitle B, Railroads

This subtitle directs DOT, in coordination with EPA, to establish and conduct a pilot grant program to assist railroad carriers in purchasing hybrid locomotives,

including hybrid switch locomotives, in order to demonstrate the extent to which such locomotives increase fuel economy, reduce emissions, and lower costs of operation. Also, DOT is directed to create a program of capital grants for the rehabilitation, preservation, or improvement of railroad track (including roadbed, bridges, and related track structures) of class II and class III railroads.

Subtitle C, Marine Transportation

Short sea transportation is defined as commercial waterborne transportation that originates at a port in the United States and ends at another port in the United States or at a port in Canada located in the Great Lakes Saint Lawrence Seaway System. The same definition applies for the case where origination and end points are reversed.⁸ This subtitle directs DOT to establish a short sea transportation program and designate short sea transportation projects to be conducted under the program to mitigate landside congestion. Short sea shipping activities are made eligible for support from DOT's capital construction fund. A report to Congress on the short sea transportation program is required.

Subtitle D, Highways

Section 1131 increases the federal share for congestion mitigation and air quality (CMAQ) projects up to 100% of project or program cost. Under Section 1132, DOT is directed to redistribute within each state any unobligated balances of the Highway Trust Fund that are rescinded in FY2008 or FY2009. Section 1133 expresses a sense of Congress that, in constructing new roadways or rehabilitating existing facilities, state and local governments should employ policies designed to accommodate all users, including motorists, pedestrians, cyclists, transit riders, and people of all ages and abilities.

Title XII: Small Business Energy Programs

Loans, grants, and debentures are established to help small businesses develop, invest in, and purchase energy efficient buildings, fixtures, equipment, and technology. Section 1201 empowers the Small Business Administration (SBA) to make "express" loans for certain energy efficiency and renewable energy projects. Section 1202 creates a two-year pilot loan program for purchasing energy efficient technologies under Section 7(a) of the Small Business Act at half the cost that would have otherwise been required. After the pilot program terminates, GAO is required to prepare a report to Congress that describes its energy-saving impact. Section 1203 creates small business energy efficiency, sustainability, and telecommuting programs. Reports to Congress are required for each of those programs. Section 1204 raises the Small Business Investment Act (SBIA) loan ceilings for certain energy efficiency and renewable energy projects undertaken by small businesses. Section 1205 enables qualified small business investment companies to issue energy-saving debentures.

⁸ This is the definition offered in Section 1122. Also, see the definition provided in *Short Sea Shipping: Practices, Opportunities, and Challenges*, by Gary A. Lombardo, [http://www.insourceaudit.com/WhitePapers/Short_Sea_Shipping.asp].

Section 1206 expands certain SBIA provisions to include investments in energy-saving small businesses. Section 1207 creates a Renewable Fuel Capital Investment (RFCI) pilot program that taps into venture capital to help small firms develop renewable energy sources and new technologies. A funding authorization of \$30 million is provided for RFCI over two years. Section 1208 requires SBA to study the RFCI program and issue a report to Congress on its findings.

Title XIII: Smart Grid

Section 1301 establishes a federal policy to modernize the electric utility transmission and distribution system to maintain reliability and infrastructure protection. The term “Smart Grid” refers to a distribution system that allows for flow of information from a customer’s meter in two directions: both inside the house to thermostats, appliances, and other devices, and from the house back to the utility.⁹ Smart Grid is defined to include a variety of operational and energy measures — including smart meters, smart appliances, renewable energy resources, and energy efficiency resources. Section 1302 calls for DOE to report to Congress on the deployment of Smart Grid technologies and any barriers to deployment. Section 1303 directs DOE to establish a Smart Grid Advisory Committee and a Smart Grid Task Force to assist with implementation. Section 1304 directs DOE to conduct Smart Grid RD&D and to develop measurement strategies to assess energy savings and other aspects of implementation. Section 1305 directs the National Institute of Standards and Technology to establish protocols and standards to increase the flexibility of use for Smart Grid equipment and systems. Section 1306 directs DOE to create a program that reimburses 20% of qualifying Smart Grid investments. Section 1307 directs states to encourage utilities to employ Smart Grid technology and allows utilities to recover Smart Grid investments through rates. Section 1308 requires DOE to prepare a report to Congress on the effect of private wire laws on the development of combined heat and power facilities. Section 1309 directs DOE to report to Congress on the potential impacts of Smart Grid deployment on the security of electricity infrastructure and operating capability. (For additional information, see CRS Report RL34288, *Smart Grid Provisions in H.R. 6, 110th Congress*, by Amy Abel.)

Title XIV: Pool and Spa Safety

Section 1401 identifies this title as the “Virginia Graeme Baker Pool and Spa Safety Act.” Section 1402 finds that proper use of barriers or fencing could substantially reduce the number of childhood residential swimming and pool drownings. Section 1403 provides several definitions employed throughout this subtitle. Section 1404 sets an industry standard (ASME/ANSI A112.19.8) as a

⁹ The Smart Grid could allow appliances to be turned off during periods of high electrical demand and cost and give customers real-time information on constantly changing electric rates. The goal is to use advanced, information-based technologies to increase power grid efficiency, reliability, and flexibility, and reduce the rate at which additional electric utility infrastructure needs to be built.

national performance standard for swimming pool and spa drain cover equipment. Section 1405 establishes a grant program and requires that at least 50% of the funding be used to assist states in hiring and training enforcement personnel to implement and enforce standards. The remaining funds must be used to educate pool construction and installation companies, pool owners and operators, and pool service companies, about the standard. Also, funding of \$2 million per year over two years is authorized for the federal Consumer Product Safety Commission to implement the grant program. Section 1406 specifies minimum state law requirements to qualify for a grant under Section 1405. The requirement includes the enclosure of all outdoor residential pools and spas, installation of devices to prevent entrapment by pool or spa drains, and notification to pool owners about entrapment protection standards. Also, in setting minimum state law requirements, the Commission is directed to consider current or revised national standards for barrier and entrapment equipment, and to ensure that the requirements are consistent with the Commission's existing publications on pool safety guidelines. Section 1407 directs the Commission to conduct a public education program on methods to prevent drowning and entrapment in swimming pools. A funding authorization of \$5 million per year is provided over five years. Section 1408 directs the Commission to submit a report to Congress that evaluates the implementation of the state grant program.

Title XV: Revenue Provisions

Section 1500 specifies that, unless expressed otherwise, all tax provisions in this act refer to provisions of the Internal Revenue Code of 1986.

Section 1501 extends Federal Unemployment Tax Act (FUTA) taxes for one year. FUTA imposes a 6.2% gross tax rate on the first \$7,000 paid annually by covered employers to each employee. In 1976, Congress passed a temporary surtax of 0.2% of taxable wages to be added to the permanent FUTA tax rate. The temporary surtax was subsequently extended through 2007. The President's FY2008 Budget had proposed extending the FUTA surtax. The Treasury Department stated that "extending the surtax will support the continued solvency of the federal unemployment trust funds and maintain the ability of the unemployment system to adjust to any economic downturns." This section enacts the President's proposal for one year, 2008. This provision is estimated to raise \$1.446 billion over 10 calendar years.

Under Section 1502, the geological and geophysical costs of a major integrated oil company will be amortized (deducted proportionally) over a seven-year period instead of the current five-year period. (A major integrated oil company is defined as one with an average world production of at least 500,000 barrels per day, with 2005 gross receipts exceeding \$1 billion, and which has at least a 15% interest in refinery operations.)

Title XVI: Effective Date

Section 1601 specifies that this act and the amendments it makes will take effect one day after enactment.