



# Energy Provisions in the American Recovery and Reinvestment Act of 2009 (P.L. 111-5)

**Fred Sissine, Coordinator**  
Specialist in Energy Policy

**Anthony Andrews**  
Specialist in Energy and Energy Infrastructure Policy

**Peter Folger**  
Specialist in Energy and Natural Resources Policy

**Stan Mark Kaplan**  
Specialist in Energy and Environmental Policy

**Daniel Morgan**  
Analyst in Science and Technology Policy

**Deborah D. Stine**  
Specialist in Science and Technology Policy

**Brent D. Yacobucci**  
Specialist in Energy and Environmental Policy

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## Summary

The American Recovery and Reinvestment Act of 2009 (ARRA, P.L. 111-5) emphasizes jobs, economic recovery, and assistance to those most impacted by the recession. It also stresses investments in technology, transportation, environmental protection, and other infrastructure and proposes strategies to stabilize state and local government budgets.

Energy provisions are a featured part of ARRA. More than \$42 billion is provided in appropriations for energy programs, mainly for energy efficiency and renewable energy. Most funding must be obligated by the end of FY2010. ARRA also provides more than \$21 billion in energy tax incentives, primarily for energy efficiency and renewable energy.

More than \$11 billion is provided in grants for state and local governments through three Department of Energy programs. They are the Weatherization Assistance Program, which provides energy efficiency services to low-income households; the State Energy Program, which provides states with discretionary funding that can be used for various energy efficiency and renewable energy purposes; and the new Energy Efficiency and Conservation Block Grant Program, which aims to help reduce energy use and greenhouse gas emissions. The law conditions eligibility for most of the State Energy Program funding on enactment of new building codes and adoption of electric utility rate “decoupling” to encourage energy efficiency. For the Department of Education, about \$8.8 billion is provided for “Other Government Services,” which may include renovations of schools and college facilities that meet green building criteria. The Department of Housing and Urban Development (\$2 billion), and the Environmental Protection Agency (\$1 billion) receive multi-purpose funds that can be used for energy efficiency measures in public housing and state and tribal facilities.

New transportation-related grant programs support state and local government and transit agency purchases of alternative fuel and advanced technology vehicles, multi-modal use of transportation electrification, and manufacturers’ development of facilities for advanced battery production.

Nearly \$5 billion is provided for “leadership by example” efforts to improve energy efficiency in federal buildings and facilities. The law puts the General Services Administration (GSA) at the forefront of this effort, with \$4.5 billion for “high performance” federal facilities. For Department of Defense facilities, ARRA provides \$3.7 billion for improvements that have a focus on energy efficiency. ARRA provides \$100 million to the Department of Transportation for “reducing energy consumption or greenhouse gases.” The Department of the Interior (\$1 billion) and Department of Veterans Affairs (\$1 billion) receive multi-purpose funds that can be applied to “energy efficiency” or “energy projects.” Also, GSA receives \$300 million for federal purchases of alternative fuel vehicles.

Nearly \$8 billion is provided for energy and other R&D programs, \$2.4 billion for energy technology and facility development grants, and \$14 billion for electric power transmission grid infrastructure development and energy storage development (including \$6 billion for loan guarantees). Also, the \$21 billion in tax incentives include \$14.1 billion for renewable energy, \$2.3 billion for energy efficiency, \$2.2 billion for transportation, \$1.6 billion for manufacturing, and \$1.4 billion for state and local government energy bonds. In response to the weakening value of renewable energy tax credits, caused by the economic recession, ARRA provides a cash grant alternative to both production and investment credits during 2009 and 2010.

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## Background<sup>1</sup>

The American Recovery and Reinvestment Act of 2009 (ARRA, P.L. 111-5) was signed into law by President Obama on February 17, 2009. The stated purposes of the law include the following:

1. To preserve and create jobs and promote economic recovery.
2. To assist those most impacted by the recession.
3. To provide investments needed to increase economic efficiency by spurring technological advances in science and health.
4. To invest in transportation, environmental protection, and other infrastructure that will provide long-term economic benefits.
5. To stabilize state and local government budgets, in order to minimize and avoid reductions in essential services and counterproductive state and local tax increases.

Several energy provisions in the law are designed to help address these purposes, including a number of appropriations provisions in Division A and several tax incentive provisions in Division B.

For appropriation provisions with a specific energy funding figure, House and Senate action on H.R. 1 is included in addition to the final ARRA appropriation. For appropriation provisions that do not have a specific energy funding figure, only the final ARRA appropriation is reported.

## Summary of Provisions

### Appropriations Provisions (Division A)

Division A of ARRA includes several energy appropriations provisions. Highlights of ARRA funding for selected departments and agencies is provided in **Table 1** below.

**Table 1. Energy Program Appropriations for Selected Departments**

Department/Agency	Funding (\$ billions)
Department of Defense <sup>a</sup>	\$0.3
Department of Energy <sup>b</sup>	36.0
General Services Administration	4.8
Department of the Interior <sup>c</sup>	n.s.
Environmental Protection Agency	0.3
Department of Labor <sup>d</sup>	0.5
Department of Veterans Affairs <sup>e</sup>	n.s.

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<sup>1</sup> Prepared by Gene Whitney, 7-7231, gwhitney@crs.loc.gov.

Department/Agency	Funding (\$ billions)
Department of Transportation	0.1
Department of Housing and Urban Development <sup>f</sup>	n.s.
Department of Education <sup>g</sup>	n.s.
<b>Total, Energy Programs in Selected Departments<sup>g</sup></b>	<b>42.0</b>

**Sources:** P.L. 111-5, H.Rept. 111-16.

**Notes:** ARRA provides non-specific amounts of energy funding for some departments. Most often in those cases, ARRA designates funding for multiple purposes, which include energy programs or projects as one allowed purpose.

- a. In addition to the \$300 million noted in the table, ARRA provides \$3.69 billion for DOD's Facilities account with the purpose of investing in energy efficiency and other activities to repair and modernize DOD facilities.
- b. For more details about DOE appropriations, see **Table 2** and the description under Title IV, below.
- c. No specific amount is indicated. ARRA provides \$884 million for construction projects under the Department of the Interior, which may include "energy efficiency projects." See the description under Title VII, below.
- d. The law provides more than \$500 million for energy efficiency and renewable energy jobs.
- e. No specific amount is indicated. ARRA provides \$1 billion for medical facilities, which may include "energy projects."
- f. No specific amount is indicated. The law provides more than \$4.0 billion for HUD public housing and grant programs, for which "energy conservation" is one allowed use. See the description under Title XII, below.
- g. No specific amount is indicated. ARRA provides about \$8.8 billion for "Other Government Services," which may include renovations of schools and college facilities that meet green building criteria.

For each of the departments and agencies listed in **Table 1**, more details about program authorizations and ARRA funding is provided under the section below entitled "Division A-Appropriations Provisions."

## Tax Incentive Provisions (Division B)

Division B of ARRA includes several energy tax provisions. Highlights of ARRA funding for selected provisions is provided in **Table 2** below.

**Table 2. Selected Energy Tax Incentives (Division B)**

Tax Incentive Provision <sup>a</sup>	Estimated Budget Effect (\$ billions)
<b>Renewable Energy Tax Credits</b>	
Renewable Energy Electricity Production Tax Credit (PTC)	\$13.1
Investment Tax Credit (ITC) in Place of the PTC	0.3
Grants in Place of Tax Credits <sup>a</sup>	n.s.
Business ITC, Repeal of Limit with Subsidized Financing <sup>b</sup>	n.s.
Business ITC, Repeal of Credit Caps	0.6
<b>Clean Renewable Energy Bonds (CREBs)</b>	<b>0.6</b>

Tax Incentive Provision <sup>a</sup>	Estimated Budget Effect (\$ billions)
<b>Energy Conservation Bonds (ECBs)</b>	0.8
<b>Labor Standards for Energy Bonds<sup>c</sup></b>	n.s.
<b>Energy Efficiency Tax Credits</b>	n.s.
Efficiency Improvements to Existing Homes <sup>d</sup>	2.0
Efficiency and Renewables Equipment, Credit Limit	0.3
Advanced Energy Manufacturing Facility	1.6
Parity for Transportation Fringe Benefits	0.2
<b>Alternative Fuels &amp; Vehicles Tax Credits</b>	
Alternative Fuel Refueling Infrastructure Tax Credit <sup>e</sup>	n.s.
Plug-In Vehicle Tax Credit	2.0
<b>Total, Selected Energy Tax Incentives</b>	<b>\$21.6<sup>f</sup></b>

**Source:** Joint Committee on Taxation (JCT), "Estimated Budget Effects of the Revenue Provisions Contained In the Conference Agreement for H.R. 1, The 'American Recovery and Reinvestment Tax Act OF 2009,' Fiscal Years 2009 – 2019," <http://www.house.gov/jct/x-19-09.pdf>.

**Notes:** The energy tax incentives appear under Subtitles B, D, and G.

- a. No specific amount is indicated. The grant provision is scored as an appropriation, not as a tax provision. ARRA appropriates "such sums as may be necessary" to support the grants.
- b. No specific amount is indicated. The estimated cost of repeal of limits for the ITC is included as part of the JCT estimated cost for repeal of the credit caps.
- c. No specific amount is indicated. The labor standards are regulatory provisions that condition eligibility for CREBs and ECBs.
- d. The "nonbusiness" efficiency credit for home owners expired during 2008, but was modified and re-established for 2009 and 2010.
- e. No specific amount is indicated. The JCT cost estimate for refueling stations is included as part of the estimated cost for plug-in hybrid vehicles.
- f. The total includes only the tax incentives listed above. It does not include appropriations for the grant provision.

For each of the tax provisions listed in **Table 2**, more details about the background and significance of the provision are provided under the section below entitled "Division B—Tax Provisions."

## Division A—Appropriations Provisions

Each of the energy program funding provisions described below includes a brief explanation and the enacted appropriation figure. Most of the energy efficiency and renewable energy spending initiatives in ARRA are contained under Title IV. The law specifies (§1603 of Division A) that unless otherwise provided in the act, all appropriations are to be obligated by the end of fiscal year 2010 (FY2010).

## **Title III—Department of Defense (DOD)<sup>2</sup>**

### **Facility Infrastructure Investments**

Of the \$4.24 billion that ARRA provides for DOD’s Facilities Sustainment, Restoration, and Modernization (FSRM) account, ARRA directs that \$3.69 billion be used “to invest in energy efficiency projects and to repair and modernize” DOD facilities.

DOD accounts for approximately 63% of the energy consumed by federal buildings and other facilities.<sup>3</sup> The department’s activities occupy more than 316,000 buildings and an additional 182,000 structures on 536 military installations worldwide. DOD’s annual spending on facility energy use stood at more than \$3.4 billion in 2007. This makes DOD the single largest energy consumer in the nation, even though the agency consumption comprises only 1% of the national total for site-delivered energy. The FSRM account covers expenses associated with maintaining the physical plant at DOD posts, camps and stations. The conference report directs that FSRM funding is available only for facilities in the United States and its territories.

### **Near Term Energy Efficiency Technology Demonstrations and Research**

ARRA provides \$300 million for this program, encompassing \$75 million each for Army, Air Force, Navy, and Defense-wide funding of research, development, test and evaluation projects, including pilot projects, demonstrations and energy-efficient manufacturing enhancements.

The House-passed version of H.R. 1 recommended \$350 million for “Energy Research and Development,” including \$87.5 million for each of the above-noted accounts. The Senate-passed version of H.R. 1 recommended \$200 million for “Research, Development, Test, and Evaluation Defense-Wide, but made no specific mention of energy.

The ARRA conference report specifies that “funds are for improvements in energy generation and efficiency, transmission, regulation, storage, and for use on military installations and within operational forces, to include research and development of energy from fuel cells, wind, solar, and other renewable energy sources to include biofuels and bioenergy.”<sup>4</sup>

## **Title IV – Department of Energy (DOE)**

ARRA provides funding for several Department of Energy (DOE) offices and programs.

### **Summary of DOE Appropriations**

Highlights of ARRA funding for selected DOE offices and programs are provided in **Table 3** below.

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<sup>2</sup> Prepared by Anthony Andrews, 7-6843, aandrews@crs.loc.gov.

<sup>3</sup> CRS Report R40111, *Department of Defense Facilities Energy Conservation Policies and Spending*, by Anthony Andrews.

<sup>4</sup> H.Rept. 111-16, p. 422-423.



**Table 3. DOE Funding for Selected Offices and Programs**

DOE Office or Program	Funding (\$billions)
<b>Office of Energy Efficiency and Renewable Energy (EERE)</b>	
R&D (includes Biomass [\$800 million] and Geothermal [\$400 million])	2.5
Energy Efficiency and Conservation Block Grants	3.2
Weatherization Assistance Grant Program	5.0
State Energy Grant Program	3.1
Grants for Advanced Battery/Battery Component Manufacturing Facilities	2.0
Grants for Electric Vehicle Technologies	0.4
Total for EERE (including programs not shown above)	\$16.8 <sup>a</sup>
<b>Office of Electricity Reliability and Energy Delivery (OE)</b>	
Grid Modernization/Smart Grid/Electricity Storage	4.5
<b>Office of Chief Financial Officer</b>	
—Loan Guarantee Program for Renewable Energy and Transmission	6.0
<b>Power Marketing Administrations (BPA and WAPA) Transmission</b>	3.3
<b>Office of Fossil Energy</b>	3.4
<b>Office of Science<sup>b</sup></b>	1.6
<b>Advanced Research Projects Agency (ARPA-E)</b>	0.4

**Sources:** P.L. 111-5 and H.Rept. 111-16.

- a. Most of the EERE subtotal was identified as specific amounts for the particular programs listed. However, DOE was given discretion to decide how to apply the remaining portion (about \$600 million) of the subtotal.
- b. The majority of funding for the Office of Science supports physics and science programs that are not directly related to energy use.

For each of the offices listed in **Table 3**, more details about program authorizations and ARRA funding follows.

### **Office of Energy Efficiency and Renewable Energy (EERE)**

#### *DOE Energy Efficiency and Renewable Energy Research<sup>5</sup>*

ARRA provides \$2.5 billion for applied research, development, demonstration and deployment activities at DOE's Office of Energy Efficiency and Renewable Energy (EERE). Of this total, \$800 million is slated for biomass energy projects and \$400 million for geothermal projects. The conference report (H.Rept. 111-16) further directs that DOE use \$50 million for R&D to increase the efficiency of information and communications technology and to improve standards.

<sup>5</sup> Prepared by Fred Sissine, 7-7039, fsissine@crs.loc.gov.

The House-passed version of H.R. 1 recommended an appropriation of \$2.5 billion for these programs, while the Senate-passed version recommended \$2.6 billion.

Annual funding for EERE programs stood at about \$1.72 billion in FY2008. For FY2009, the continuing resolution (P.L. 110-329) provided for continued funding (through March 6, 2009) at the same level as FY2008.

### ***DOE Energy Efficiency and Conservation Block Grants<sup>6</sup>***

ARRA provides \$3.2 billion for an Energy Efficiency and Conservation Block Grants (EECBGs) program. Of that total, \$400 million is to be awarded on a competitive basis to grant applicants.

The House-passed version of H.R. 1 recommended \$4.2 billion for the program, while the Senate-passed version recommended \$3.5 billion.

The Energy Independence and Security Act (EISA, P.L. 110-140) established the program structure for the EECBG program. The goals of the program are to help reduce energy use and carbon emissions at the local and regional level. EISA set allocation percentages and listed the allowed purposes for the use of funds, which includes strategic planning, consultant services, and energy audits. Eligibility requirements include payment of prevailing wage rates, submission of a strategic plan, and sharing of information. The House-passed version of H.R. 1 recommended \$3.5 billion for the program, while the Senate-passed version recommended \$4.2 billion.

### ***DOE Weatherization Program<sup>7</sup>***

ARRA provides \$5.0 billion for the DOE Weatherization Program.

The House-passed version of H.R. 1 recommended \$6.2 billion for the program, while the Senate-passed version recommended \$2.9 billion.

The Weatherization Assistance Program enables low-income families to permanently reduce their energy bills by making their homes more energy efficient. DOE program guidelines specify that a variety of energy efficiency measures are eligible for support under the program. Such measures include insulation, space-heating equipment, energy-efficient windows, water heaters, and efficient air conditioners. The guidelines further specify that the income level of eligible households must be less than 150% of the poverty level.

DOE employs a formula to allocate funding to each of the states and territories.<sup>8</sup> Each state and territory, in turn, decides how to allocate its share of the funding to local governments and jurisdictions.

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<sup>6</sup> Prepared by Fred Sissine, 7-7039, [fsissine@crs.loc.gov](mailto:fsissine@crs.loc.gov).

<sup>7</sup> Prepared by Stan Kaplan, 7-9529, [skaplan@crs.loc.gov](mailto:skaplan@crs.loc.gov), and by Fred Sissine.

<sup>8</sup> The DOE allocation formula is described at [http://apps1.eere.energy.gov/weatherization/allocation\\_formula.cfm](http://apps1.eere.energy.gov/weatherization/allocation_formula.cfm). For details about allocations or the period of time required for DOE to make an allocation, contact Jean Diggs with the DOE Weatherization Program at 202-586-8506, or [jean.diggs@hq.doe.gov](mailto:jean.diggs@hq.doe.gov).

DOE Weatherization Program funding stood at \$227.2 million in FY2008. For FY2009, the continuing resolution (P.L. 110-329) provides for continued funding (through March 6, 2009) at the same level as FY2008, plus a special one-time additional appropriation of \$250.0 million.<sup>9</sup>

### ***DOE State Energy Program and Decoupling Provision***

ARRA provides \$3.1 billion for DOE's State Energy Program (SEP). However, as discussed below, allocation of nearly all of this funding appears to depend on whether or not states adopt utility rate "decoupling" and new building codes.

The House-passed version of H.R. 1 recommended \$3.4 billion for SEP, while the Senate-passed version recommended \$0.5 billion.

SEP provides grants to states and directs funding to state energy offices from technology programs in DOE's Office of Energy Efficiency and Renewable Energy (EERE). The states design and carry out their own renewable energy and energy efficiency programs. SEP funding goes to state energy offices in all states and U.S. territories. SEP projects are managed by state energy offices, not by DOE.<sup>10</sup>

The decoupling problem involves efforts to encourage utilities to promote customer use of energy efficiency measures. An issue in promoting efficient use of electricity is that the profitability of electric utilities depends in large part on how much power they sell. Utility profits also increase with greater capital investment, such as in power plants. These utilities therefore have limited motivation to implement conservation programs that would slow or even reverse the growth of electricity demand. A solution to this problem is a regulatory approach called decoupling, under which utilities that meet energy conservation targets receive payments (funded by ratepayers) that compensate the utility for lost sales. The approach therefore decouples growth in sales from profitability. Decoupling has been implemented in varying forms in some states, probably most notably in California.<sup>11</sup>

Retail rate design, of which decoupling is a part, has historically been under exclusive state or local authority.<sup>12</sup> ARRA follows this precedent by offering incentives, instead of creating mandates, for the implementation of decoupling by the states. Specifically, §410 of Division A authorizes DOE to make about \$3.05 billion of energy efficiency and renewable energy funds available to states in excess of normal allocation methods if a state meets certain criteria. One criterion is that the governor of a state certifies in writing that the "applicable state regulatory authority *will seek to implement*" decoupling rules [emphasis added]; note that this is a guarantee of best efforts, not a guarantee that decoupling will be adopted. In contrast, to qualify for the additional funds the governor must, in addition to pursuing decoupling, also provide assurances that the state or its local governments "will implement" new, energy efficient building codes. In

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<sup>9</sup> However, the House Appropriations Committee recommended about \$2.5 billion (H.Rept. 110-921) and the Senate Appropriations Committee recommended about \$1.9 billion (S.Rept. 110-416).

<sup>10</sup> For more about SEP, see [http://apps1.eere.energy.gov/state\\_energy\\_program/](http://apps1.eere.energy.gov/state_energy_program/).

<sup>11</sup> For information on California's decoupling program, see the state's utility commission website at <http://www.cpuc.ca.gov/cleanenergy/design/docs/Decouplinglowres.pdf>.

<sup>12</sup> The rates of investor owned utilities are regulated by state utility commissions. The rates of public power entities, such as municipal utilities and rural electric cooperatives, are set by the entity governing board, such as a city council.

the case of the building code criteria best efforts is not enough; the regulatory change must actually be made by the state.<sup>13</sup>

The funds available for allocation to the states that meet these criteria (decoupling and building codes) are about \$3.05 billion of the total of \$3.1 billion, compared to the allocation of \$1 million per state which, as cited by §410 of ARRA, is specified in section 365(f) of the Energy Policy and Conservation Act (P.L. 94-163).<sup>14</sup>

### ***Advanced Battery Manufacturing Grants***<sup>15</sup>

ARRA establishes a new program of \$2.0 billion for facility funding grants to manufacturers of advanced battery and battery system components. Covered activities include the production of lithium ion batteries, hybrid electrical systems, system components, and software.<sup>16</sup>

The House-passed version of H.R. 1 recommended \$1.0 billion for the program, while the Senate-passed version recommended \$2.0 billion.

In a related action, the Continuing Resolution for FY2009 (P.L. 110-329) provided \$7.5 billion to leverage a \$25 billion loan program to retool facilities to produce fuel-efficient advanced technology vehicles.

### ***Alternative-Fueled Vehicles***<sup>17</sup>

ARRA appropriates \$300 million to provide grants to states, localities, and metropolitan transit agencies for the purchase of alternative fuel and advanced technology vehicles.

The House-passed version of H.R. 1 recommended \$400 million for the program, while the Senate-passed version recommended \$350 million.

The structure for this program was established by §721 of the Energy Policy Act of 2005 (EPAAct2005, P.L. 109-58). Under §721, grants may be used for the purchase of alternative fuel, fuel cell, and advanced diesel vehicles, including buses, heavy-duty vehicles, light-duty vehicles, motorized two-wheeled vehicles, and airport ground support vehicles. Grants may also be used to install infrastructure to support those vehicles. EPAAct2005 originally authorized a total of \$200 million over the life of the program.

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<sup>13</sup> Also note that state regulators typically have rate making authority over investor-owned utilities, but not over public power entities, such as municipal utilities. Therefore, state regulators would not (in fact, could not) be responsible for implementing rate decoupling for public power utilities. Rate decoupling has been controversial, and is viewed by some as a regulatory approach that makes payments to utilities for energy savings that cannot be firmly verified. For example, see Rebecca Smith, "Less Demand, Same Great Revenue," *The Wall Street Journal*, February 8, 2009, <http://online.wsj.com/article/SB123378473766549301.html#printMode>, and H.J. Cummins, "Decoupling Plan is Splitting Fans and Foes of the Strategy," *Minneapolis Star Tribune*, September 13, 2008.

<sup>14</sup> See 42 USC §6321 et seq., and especially §6323(f), which corresponds to section 365(f) of the law. Note that "state" is defined to include the District of Columbia, Puerto Rico, and the U.S. territories (42 USC §6202).

<sup>15</sup> Prepared by Brent Yacobucci, 7-9662, [byacobucci@crs.loc.gov](mailto:byacobucci@crs.loc.gov).

<sup>16</sup> For more information on alternative fuel and advanced vehicle technology provisions in ARRA, see CRS Report R40168, *Alternative Fuels and Advanced Technology Vehicles: Issues in Congress*, by Brent D. Yacobucci.

<sup>17</sup> Prepared by Brent Yacobucci, 7-9662, [byacobucci@crs.loc.gov](mailto:byacobucci@crs.loc.gov).

### ***Transportation Electrification***<sup>18</sup>

ARRA provides \$400 million in transportation electrification grants.

The House-passed version of H.R. 1 recommended \$200 million for the program, and the Senate-passed version also recommended \$200 million.

EISA (§131) directed DOE to establish a program that provides electrification grants for a variety of transportation modes, including highway vehicles, airport ground support vehicles, and ships. EISA authorized \$185 million annually for the grant program.

### ***Energy Efficient Appliance Rebate***<sup>19</sup>

ARRA provides \$300 million to provide consumers with rebates to buy energy-efficient Energy Star products to replace old appliances and help lower energy bills.

The House-passed version of H.R. 1 (Title V) proposed \$300 million, but there was no similar provision in the Senate-passed bill.

The program is authorized by EAct2005 (§124), which directed DOE to fund rebate programs in eligible states to support residential end-user purchases of Energy Star products.<sup>20</sup>

### **Office of Electricity Delivery and Energy Reliability (OE)**<sup>21</sup>

ARRA (Title IV) provides \$4.5 billion to the Office of Electricity Delivery and Energy Reliability, for grid modernization and related technologies, such as electricity storage.<sup>22</sup> It includes funds for the smart grid and grid modernization provisions in EISA (Title 13).<sup>23</sup>

The House-passed version of H.R. 1 and the Senate-passed version were identical to each other and to the enacted law.

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<sup>18</sup> Prepared by Brent Yacobucci, 7-96662, byacobucci@crs.loc.gov.

<sup>19</sup> Prepared by Fred Sissine, 7-7039, fsissine@crs.loc.gov.

<sup>20</sup> Energy Star is a joint program of DOE and the Environmental Protection Agency that identifies the most energy-efficient consumer products and appliances.

<sup>21</sup> Prepared by Stan Kaplan, 7-9529, skaplan@crs.loc.gov.

<sup>22</sup> The funding provisions are described on page 25 of the conference report.

<sup>23</sup> The electric transmission system (grid) is the network of high voltage power lines used to move electricity long distances from power plants to load centers. Concerns have been raised about the adequacy of the existing transmission grid to meet current and, in particular, future needs. These concerns touch many issues, including system reliability, capacity compared to the demand for power, expansion of the system to reach new sources of renewable power (especially wind) located in remote western locations, and modernization of the grid. Modernization, in the sense of creating the “smart grid,” encompasses the transmission system broadly defined to include the control centers that operate the power system and final distribution of power to individual businesses and residences. Under the smart grid concept, the power system would automatically and interactively facilitate energy conservation and the hookup of new renewable power systems (even at the level of, for example, home rooftop solar energy units), and it would detect and respond to incipient failures in order to prevent or minimize blackouts. The smart grid primarily involves the development of software and small-scale technology (e.g., smart meters for homes and businesses that would interface with grid controls) rather than construction of new transmission lines. Other grid issues, such as expansion to reach renewable energy production areas and other capacity expansion, does involve building new lines.

Of the \$4.5 billion appropriated, ARRA specifies that \$100 million be available for worker training. Also, \$80 million will be available for regional transmission planning, addressing a concern that multistate planning is needed to provide a framework for expanding the transmission system.<sup>24</sup> Further, \$10 million is provided for ongoing work by the National Institute of Standards and Technology to develop electronic system communication (“interoperability”) standards needed for the wide scale use of the smart grid.<sup>25</sup>

ARRA §405 modifies the smart grid demonstration program established by EISA to specifically direct funds to projects in rural, urban, suburban, and tribal areas; and it directs funds to both public power and privately owned transmission systems. Funding is also made available to nonutility project developers; and all participants are required to provide data to a new smart grid information clearinghouse open to the public. Also, the federal matching fund requirement for smart grid investments that was set at 20% in EISA is increased to 50%.<sup>26</sup>

ARRA §409 directs DOE to analyze transmission needs and constraints related to renewable energy as part of its 2009 National Electric Transmission Congestion Study.<sup>27</sup>

### **Loan Guarantee Program (Office of Chief Financial Officer)**

ARRA provides \$6.0 billion for a “temporary program for rapid deployment of renewable energy and electric power transmission.”<sup>28</sup> The appropriations are expected to leverage more than \$60 billion in loan guarantees for transmission grid construction that supports renewable energy projects.

The House-passed version of H.R. 1 (Title V and Sec. 7003) recommended \$8.0 billion for the program, and the Senate-passed version (Title IV) recommended \$8.5 billion. ARRA followed the language of the House-passed bill, but with a smaller total appropriation.

This provision complements the \$4.5 billion provided to OE for smart grid research and planning, noted above. This new loan guarantee program expands the existing innovative technology loan guarantee program created by EAct2005 (Title 17).<sup>29</sup> While the program set up in EAct2005 is

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<sup>24</sup> As an example of regional planning, see the recent Joint Coordinated System Plan study for the eastern United States, <http://www.jcspstudy.org/>.

<sup>25</sup> This application is authorized by EISA §1305.

<sup>26</sup> Further, ARRA extends the energy investment tax credit (Division B, §1302) to include investment in manufacturing facilities that produce equipment for “electric grids to support the transmission of intermittent sources of renewable energy (such as wind and solar energy), including storage of such energy.”

<sup>27</sup> Section 409 appears on pages 33-34 of the conference report. EAct2005 directed DOE to conduct triennial studies of transmission system congestion (16 USC §824p). For additional information see the DOE website at <http://www.oe.energy.gov/congestion.htm>.

<sup>28</sup> The \$6.0 billion appropriation appears in the conference report (H.Rept. 111-16) on page 26 under the heading “Title XVII – Innovative Technology Loan Guarantee Program.” The description of the special focus and temporary nature of the new \$6.0 billion program appears under §406 on page 31.

<sup>29</sup> EAct2005 (Title 17) created a DOE loan guarantee program for “innovative” energy technology projects (renewables, efficiency, nuclear, fossil) that could improve energy security, curb air pollution, and reduce greenhouse gas emissions. For further information on the loan guarantee program see 42 USC §16511 et seq and the DOE website at <http://www.lgprogram.energy.gov/>. The \$6 billion in funding would be directed to renewables and transmission by a new section 1705 added to EAct2005 (“Temporary program for rapid deployment of renewable energy and electric power transmission projects”) by section 406 of ARRA. Note that although the loan guarantee program was established in 2005, as of early 2009 no guarantees had been awarded to any type of technology. The slow progress of the program (continued...)

limited to supporting “pre-commercial” innovative technology, the new program can also support commercial technology used for transmission and renewable electricity projects.<sup>30</sup> Of the total appropriated, ARRA specifies that \$10 million be used for administrative expenses that support the Advanced Technology Vehicles Manufacturing Loan program. Qualifying projects must be capable of starting construction no later than September 30, 2011.

## **Bonneville and Western Area Power Administrations**

ARRA provides \$3.25 billion in new borrowing authority for the Bonneville Power Administration (BPA, §401) and \$3.25 billion for the Western Area Power Administration (WAPA, §402).

The House-passed version of H.R. 1 (Sec. 5001 and 5002), and the Senate-passed version (Sec. 401 and Sec. 402) were identical with each other and with the final law.

For both BPA and WAPA, the purpose of the new borrowing authority is to support transmission system planning, operations, and construction. In the case of WAPA, ARRA states that funds can be used for the specific purpose of delivering power from renewable power plants constructed after the date of enactment. Any lines constructed by WAPA must connect to the existing WAPA system and, from a practical standpoint, the same would presumably be true for BPA.<sup>31</sup>

## **Office of Fossil Energy Research and Development<sup>32</sup>**

ARRA provides \$3.4 billion for DOE’s Fossil Energy R&D program.

The House-passed version of H.R. 1 (Title V) recommended \$2.4 billion, and the Senate version (Title IV) recommended \$4.6 billion.

Of the \$3.4 billion appropriation, the conference report specifies that \$1.52 billion will support a competitive solicitation for industrial carbon capture and energy efficiency improvement projects.<sup>33</sup> This provision likely refers to a program for large-scale demonstration projects that capture carbon dioxide (CO<sub>2</sub>) from a range of industrial sources. A small portion of the \$1.52 billion would be allocated for developing innovative concepts for reusing CO<sub>2</sub>. Of the remaining \$1.88 billion, \$1.0 billion would be available for fossil energy R&D programs. However, the conference report does not say how the funding would be distributed across programs. Of the remaining \$880 million, the report specifies that \$800 million will be designated for DOE’s Clean

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was the subject of a hearing by the Senate Energy and Natural Resources committee on February 12, 2009; see [http://energy.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing\\_ID=3e5bbb28-ae11-75e6-3270-3112e03faaca](http://energy.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=3e5bbb28-ae11-75e6-3270-3112e03faaca).

<sup>30</sup> In contrast, biofuel projects must be “leading edge” to qualify for these loan guarantees, and are subject to an individual-project loan-guarantee cap of \$500 million (no individual-project cap applies to transmission or renewable electricity projects). The conference agreement did not include a Senate proposal for \$50 billion in additional loan authority for commitments to guarantee loans for other technologies, such as nuclear power plants.

<sup>31</sup> For information on BPA and WAPA, including a map of their service areas, see CRS Report RS22564, *Power Marketing Administrations: Background and Current Issues*, by Nic Lane.

<sup>32</sup> Prepared by Peter Folger, 7-1517, pfolger@crs.loc.gov.

<sup>33</sup> H.Rept. 111-16, p. 428.

Coal Power Initiative Round III solicitations. That program targets coal-based systems that capture and sequester, or reuse, CO<sub>2</sub> emissions. Lastly, \$50 million is allocated for site characterization activities for geologic formations (for the storage component of CCS activities), \$20 million for geologic sequestration training and research, and \$10 million for unspecified program activities.

If the majority of the \$3.4 billion for fossil energy R&D is used for CCS activities, it would constitute a major increase of funding relative to the current level. It would also be a large and rapid increase in funding over what DOE spent on CCS *cumulatively* over the 11 years from FY1997 through FY2007 (slightly less than \$500 million). Moreover, the majority of DOE's CCS program would shift to the capture component of CCS, unless funding for the storage component increases commensurately in annual appropriations.

### **Office of Science<sup>34</sup>**

ARRA provides \$1.6 billion for the Office of Science. The act gives no specific guidance on how this sum will be allocated.<sup>35</sup>

The enacted funding level for Science is the same as that proposed in the House-passed version of H.R. 1, instead of \$330 million as proposed by the Senate. However, the conference agreement excludes \$100 million for advanced scientific computing as proposed in the House bill.

The office conducts the majority of DOE's basic research.<sup>36</sup> Most programs emphasize research in the physical sciences and the construction and operation of large scientific user facilities. The office also funds research on biological and environmental science and advanced scientific computing. Some of the programs address long-term basic research related to DOE energy technology programs. Under the Bush Administration's American Competitiveness Initiative (ACI), funding for the Office of Science and two other agencies would double over the 10 years from FY2006.<sup>37</sup> Congress set even faster growth targets in the America COMPETES Act (P.L. 110-69), which authorized doubling in just seven years. Actual appropriations, however, have not yet met these targets.

### **Advanced Research Projects Agency – Energy (ARPA-E)<sup>38</sup>**

ARRA provides \$400 million for ARPA-E. The act gives no specific guidance on how this sum will be allocated.<sup>39</sup>

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<sup>34</sup> Prepared by Daniel Morgan, 7-5849, dmorgan@crs.loc.gov.

<sup>35</sup> H.Rept. 111-16, p. 429.

<sup>36</sup> For more details about DOE Office of Science activities, see CRS Report RL34448, *Federal Research and Development Funding: FY2009*, coordinated by John F. Sargent Jr.

<sup>37</sup> The February 2006 White House document American Competitiveness Initiative: Leading the World in Innovation states that "ACI doubles total research fund; individual agency allocations remain to be determined." The three ACI agencies could individually receive more or less than the amount required to double their separate FY2006 levels.

<sup>38</sup> Prepared by Deborah Stine, 7-8431, dstine@crs.loc.gov.

<sup>39</sup> H.Rept. 111-16, p. 429.



The enacted appropriation is the same as the amount recommended in the House-passed version of H.R. 1 under “Science.” The Senate-passed version of the bill carried no similar provision.

The organizational structure and purpose for ARPA-E was established by the America COMPETES Act (P.L. 110-69).<sup>40</sup> The purpose of ARPA-E is to support “transformational” or “breakthrough” energy research, with the broad goal of enhancing the nation’s economic and energy security. P.L. 110-69 authorized \$300 million for ARPA-E in FY2008 and “such sums as are necessary” for FY2009 and FY2010. However, no appropriations were provided in FY2008, nor was funding provided in the FY2009 Continuing Resolution (P.L. 110-329).

## **Title V – General Services Administration (GSA)**

### **High-Performance Green Buildings<sup>41</sup>**

ARRA provides \$5.5 billion for the Federal Buildings Fund, of which at least \$4.5 billion is to be used to convert GSA facilities to high-performance green buildings as defined in EISA.

For GSA green buildings, the House-passed version of H.R. 1 (Title VI) recommended \$6.0 billion, and the Senate version (Title V) recommended \$2.5 billion.

ARRA also provides \$4 million to support the operations of GSA’s Office of Green Buildings.

The House-passed version of H.R. 1 recommended \$4.0 million for the operations of GSA’s Office of Green Buildings, and the Senate-passed version recommended the same amount.

EISA (Title IV, Subtitle C) established the structure for an Office of Federal High-Performance Green Buildings in the General Services Administration (GSA).<sup>42</sup> The office has responsibility for developing a program to reduce total energy use (relative to the 2005 level) in federal buildings 30% by 2015. Further, for new federal buildings and major renovations, fossil energy use (relative to the 2003 level) is to be reduced 55% by 2010 and eliminated by 2030. EISA required 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.

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<sup>40</sup> America COMPETES Act (P.L. 110-69), §5012. For more information on ARPA-E, see CRS Report RL34497, *Advanced Research Projects Agency - Energy (ARPA-E): Background, Status, and Selected Issues for Congress*, by Deborah D. Stine. For more information on the America COMPETES Act, see CRS Report RL34328, *America COMPETES Act: Programs, Funding, and Selected Issues*, by Deborah D. Stine, and CRS Report RL34396, *The America COMPETES Act and the FY2009 Budget*, by Deborah D. Stine.

<sup>41</sup> Prepared by Fred Sissine, 7-7039, fsissine@crs.loc.gov.

<sup>42</sup> For more information on federal green building programs, see CRS Report R40147, *Issues in Green Building and the Federal Response: An Introduction*, by Eric A. Fischer.

## **High Fuel Economy Vehicles<sup>43</sup>**

ARRA appropriates \$300 million to GSA for the procurement of energy-efficient motor vehicles for use in federal agency fleets. Eligible vehicles include hybrids, plug-in hybrids, and pure electric vehicles.

The House-passed version of H.R. 1 (Title VI) recommended \$600 million, and the Senate version (Title V) recommended \$300 million.

Under the Energy Policy Act of 1992 (P.L. 102-486), of the vehicles purchased by federal agencies in a given fiscal year, in most cases, 75% of those vehicles are required to be alternative fuel vehicles, including hybrid and electric vehicles.

## **Title VII – Department of the Interior and Environmental Protection Agency**

### **Department of the Interior<sup>44</sup>**

For the Bureau of Land Management, ARRA provides \$180 million for construction activities that may include energy-efficient retrofits of existing facilities. For the U.S. Fish and Wildlife Service, ARRA provides \$115 million for construction activities that may include energy-efficient retrofits of existing facilities. Under the National Park Service, ARRA provides \$589 million for construction activities that may include energy-efficient retrofits of existing facilities.

### **Environmental Protection Agency (EPA)<sup>45</sup>**

#### *State and Tribal Assistance Grants*

Energy efficiency measures are one allowed type of use for \$1.2 billion in ARRA funding for EPA state revolving loan funds. ARRA provides \$4.0 billion for the Clean Water State Revolving Funds and \$2.0 billion for the Drinking Water State Revolving Funds. The enacted law requires

not less than 20% of each Revolving Fund be available for projects to address to green infrastructure, water and/or energy efficiency, innovative water quality improvements, decentralized wastewater treatment, stormwater runoff mitigation, and water conservation. The bill allows States to use less than 20% for these types of projects only if the States lack sufficient applications. Further, the States must certify to the Agency that they lack sufficient, eligible applications for these types of projects prior to using funds for conventional projects.<sup>46</sup>

Thus, absent the exceptional conditions noted, \$800 million will be the minimum available for the Clean Water State Revolving Funds and \$400 million will be the minimum available for the

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<sup>43</sup> Prepared by Brent Yacobucci, 7-9662, byacobucci@crs.loc.gov.

<sup>44</sup> Prepared by Fred Sissine, 7-7039, fsissine@crs.loc.gov.

<sup>45</sup> Prepared by Brent Yacobucci, 7-9662, byacobucci@crs.loc.gov.

<sup>46</sup> H.Rept. 111-16, p. 443-444.

Drinking Water State Revolving Funds. Taken together, there is a total of \$1.2 billion available for several water-related uses, including energy efficiency.

ARRA appropriates \$300 million to EPA for the Diesel Emissions Reduction Program. The House-passed version of H.R. 1 and the Senate-passed version had identical provisions to the enacted law provision. The grant program was authorized by EPLAW2005 (Title VII, Subtitle G). In recent years, funding for the program averaged about \$50 million annually. The grants may be used to retrofit or replace diesel engines in various applications, including school buses, heavy trucks, off-road equipment, and locomotives.

## **Title VIII – Department of Labor**

### **Employment and Training Administration**

#### *Energy Efficiency and Renewable Energy*

ARRA provides \$500 million under Training and Employment Services for research, labor exchange, and job training projects that prepare workers for careers in energy efficiency and renewable energy.

The House-passed version of H.R. 1 (Title IX) recommended \$500 million for energy efficiency and renewable energy job training, and the Senate-passed version (Title VIII) proposed \$250 million. The enacted law follows the House provision.

EISA (Title 10) added a new section (§171[e]) to the Workforce Investment Act of 1998 that established a new Energy Efficiency and Renewable Energy Worker Training Program. This grant program was authorized up to \$125 million per year 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.

### **Departmental Management**

ARRA provides an additional \$250 million to the Office of Job Corps for construction, rehabilitation, and acquisition of Job Corps Centers. The Secretary is allowed to transfer up to 15% (\$37.5 million) of those funds for career training in the energy efficiency, renewable energy, and environmental protection industries. The funds are available through the end of June 2010. The House-passed bill included \$250 million under the dislocated worker national reserve for a program of competitive grants for worker training, with a priority for energy efficiency and renewable energy careers. The Senate version recommended \$500 million for the reserve, but with no mention of efficiency and renewables.

## **Title X – Department of Veterans Affairs**

For medical facilities of the Department of Veterans Affairs, ARRA includes \$1 billion for “non-recurring maintenance, including energy projects,” which is to remain available for obligation through the end of FY2010. The House-passed version of H.R. 1 had no provision for such energy projects. The Senate-passed version recommended (Title X) \$323 million for “energy

efficiency initiatives” at medical facilities. The enacted provision differs from both the House and Senate recommendations.

ARRA provides an additional \$50 million to the National Cemetery Administration for monument and memorial repairs, “including energy projects.” The House-passed version of H.R. 1 included \$50 million for the repairs, but with no mention of energy projects. The Senate-passed version recommended \$59.5 million for repairs, including \$5.5 million for “energy efficiency initiatives.”

## **Title XII – Departments of Transportation (DOT) and Housing and Urban Development (HUD)<sup>47</sup>**

### **DOT Federal Transit Administration**

Under the Federal Transit Administration, ARRA provides \$100 million as discretionary grants to public transit agencies for capital improvements that will assist in “reducing energy consumption or greenhouse gas emissions” of their public transit systems.

The House-passed version of H.R. 1 (Title IX) recommended \$200 million., The Senate-passed version (Title VIII) recommended \$1.0 billion for the capital improvements program, but made no specific mention of energy improvements for public transit agencies.

### **HUD Public Housing Capital Fund**

The HUD Public Housing Capital Fund provides support to local public housing authorities to modernize public housing property. Of the \$4 billion provided by ARRA, \$1 billion is to be awarded competitively for “priority investments, including investments that leverage private sector funding or financing for renovations and energy conservation retrofit investments.” While the funding for the account is to remain available for obligation until September 30, 2011, HUD is directed to award the competitive funds by September 30, 2009.

### **HUD Native American Housing Block Grants**

The Indian Housing Block Grant program provides funding to tribes for a variety of affordable housing activities. Of the \$510 million provided by ARRA, \$255 million is to be awarded to tribes using the existing formula and must be used for new construction, acquisition, and rehabilitation, including energy efficiency, energy conservation, and infrastructure development. The funding is to remain available for obligation until September 30, 2011.

### **HUD Energy Retrofit and Green Investments (Assisted Housing Stability)**

ARRA provides \$250 million for grants or loans for energy retrofit and “green” investments in HUD-assisted housing.<sup>48</sup>

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<sup>47</sup> Prepared by Maggie McCarty, 7-2163, mmcarty@crs.loc.gov.

<sup>48</sup> The conference report (pp. 109-110) does not define “green investments.” However, it does specify that the grants and loans should be administered in a way that “ensure[s] the maintenance and preservation of the property, the (continued...)”

The House-passed version of H.R. 1 (Title XII) did not include a specific recommendation for the energy retrofit and green investment program, but gave HUD the authority to set aside funds for “an efficiency incentive payable upon satisfactory completion of energy retrofit investments.” The Senate-passed version of H.R. 1 (Title XII) recommended \$118 million for the program.

Of the \$2.25 billion total appropriated for the HUD Assisted Housing Stability program, \$250 million was provided for the energy retrofit and green investments program. The term “assisted housing” typically refers to multifamily housing properties owned by private landlords which serve low-income tenants and receive rental assistance payments from HUD. The funds will be awarded by HUD to owners of properties assisted under the Section 8 project-based rental assistance program, the Section 202 Supportive Housing for the Elderly program, and the Section 811 Supportive Housing for Persons with Disabilities program. The funding is to remain available for obligation until September 30, 2012.

## **Title XIV – Department of Education (DOED)**

For DOED, ARRA provides \$53.6 billion for a State Fiscal Stabilization Fund. Of that amount, about \$48.32 billion is made available for DOED “State Allocations.”<sup>49</sup> Further, the provision for “State Uses of Funds”(§14002) specifies that

The Governor shall use 18.2% of the State’s allocation under §14001 for public safety and other government services ... and for modernization, renovation, or repair of public school facilities and institutions of higher education facilities, including modernization, renovation, and repairs that are consistent with a recognized green building rating system.<sup>50</sup>

There are at least four recognized “green building rating systems” in use in the United States.<sup>51</sup> Each rating system includes the use of energy efficiency and renewable energy features as a major criterion.

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continued operation and maintenance of energy efficiency technologies, and the timely expenditure of funds.” These funds will likely be administered through HUD’s Office of Affordable Housing Preservation, as a part of its “Green Initiative,” which is designed to “encourage owners and purchasers of affordable, multifamily properties to rehabilitate and operate their properties using sustainable Green Building principles.” For more information about this initiative, see <http://www.hud.gov/offices/hsg/omhar/paes/greenini.cfm>.

<sup>49</sup> This amount is specified under §14001(d).

<sup>50</sup> Applying 18.2% to the total national amount of \$48.32 billion to be allocated to the states yields about \$8.79 billion as a national total available for “Other Government Services.”

<sup>51</sup> The four ratings systems are: Leadership in Energy and Environmental Design (U.S. Green Building Council), National Green Building Standard (National Association of Home Builders), Green Globes (Green Building Initiative), and Green Communities (Enterprise Community Partners).

## **Division B – Title I: Tax Provisions**

### **Subtitle B – Energy Incentives**

#### **Renewable Energy Tax Credits<sup>52</sup>**

##### ***Renewable Energy Electricity Production Tax Credit (PTC)***

The House (§1601) and Senate (§1101) versions of H.R. 1 were identical. The enacted law (§1101) would extend the placed-in-service date for wind facilities for three years, through the end of 2012. For other qualifying resource facilities (closed-loop biomass, open-loop biomass, geothermal, small irrigation, incremental hydropower, landfill gas, municipal waste, and marine/hydrokinetic), the PTC would be extended through the end of 2013. The Joint Committee on Taxation (JCT) estimates the cost at \$13.1 billion over 10 years.<sup>53</sup>

##### ***Investment Tax Credit (ITC) in Place of the PTC***

The renewable energy industry found that current market conditions have created an uncertain future tax position for potential investors in PTC-supported projects, making financing difficult. As a temporary alternative to the PTC, the House proposed (Sec. 1602) that PTC-eligible facilities that are placed in service in 2009 and 2010 would be allowed to choose a 30% investment tax credit (ITC) in place of the production credit.<sup>54</sup> The Senate provision (Sec. 1102) was identical, except that it would set the same expiration dates as those set for the PTC (Sec. 1101), namely, a four-year period (through the end of 2012) for wind facilities and a five-year period (through the end of 2013) for other renewable energy facilities. The law follows the Senate proposal. JCT estimates the cost at \$285 million over 10 years.

[Note: Subtitle G has a provision regarding a temporary program for grants in place of the PTC and ITC programs.]

##### ***Investment Tax Credit (ITC), Repeal of Limit When Used with Subsidized Energy Financing***

Under previous law, the ITC had to be reduced if the qualifying property was also financed with industrial development bonds (IDBs) or with any other federal, state, or local subsidized financing program. The House proposed (Sec. 1603b) to repeal that limit on the ITC, allowing businesses and individuals to qualify for the full ITC even if the property is financed with IDBs or other subsidized financing. The Senate provision (Sec. 1103b) was identical to the House

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<sup>52</sup> Prepared by Fred Sissine, 7-7039, [fsissine@crs.loc.gov](mailto:fsissine@crs.loc.gov).

<sup>53</sup> Joint Committee on Taxation (JCT), “Estimated Budget Effects of the Revenue Provisions Contained in Division B, Titles I and III, of H.R. 1, as Passed by the House of Representatives on January 28, 2009,” [<http://www.house.gov/jct/x-14-09.pdf>]

<sup>54</sup> Under P.L. 110-343, the 30% ITC is available to facilities that produce electricity from solar energy. The ITC is to be claimed in the year that the facility is placed in service.

proposal, as is the law (§1103b). The JCT cost estimate is included as part of the estimated cost of the next provision.

### ***Investment Tax Credit, Repeal of Caps (Dollar Limits) on Certain Equipment***

Under previous law, businesses were allowed to claim a 30% tax credit for qualified small wind-energy property (capped at \$4,000) and individuals were allowed to claim a 30% tax credit for qualified solar water-heating property (capped at \$2,000), qualified small wind-energy property (capped \$4,000), and qualified geothermal heat pumps (capped at \$2,000). The House (Sec. 1603a) proposed to repeal all of the dollar caps. The Senate provision (Sec. 1103a) was identical, as is the law (§1103a). JCT estimates the cost at \$604 million over 10 years.

### **Clean Renewable Energy Bonds (CREBs)<sup>55</sup>**

The House provision (Sec. 1611), Senate provision (Sec. 1111), and conference provision (§1111) are identical. For nonprofit entities, \$1.6 billion of new clean renewable energy bonds would be authorized to finance facilities that generate electricity from wind, closed-loop biomass, open-loop biomass, geothermal, small irrigation, hydropower, landfill gas, marine renewable, and municipal waste (trash) combustion facilities. Of the \$1.6 billion authorization for such projects, one-third would be available to state/local/tribal governments, one-third to public power providers, and one-third to electric cooperatives. JCT estimates the cost at \$578 million over 10 years.

### **Energy Conservation Bonds (ECBs)**

The organizational structure and purpose of this program, and an initial \$800 million authorization, were established by the Emergency Economic Stabilization Act of 2008 (P.L. 110-343, Division B, §301).<sup>56</sup> State and local governments can issue the bonds for a broad range of purposes that include capital expenditures to reduce energy use in publicly owned buildings by at least 20%; implementing green community programs; rural development involving electricity production from renewables; research facilities and grants for the development of cellulosic ethanol or other nonfossil fuels; technologies to capture and sequester carbon dioxide produced by fossil fuel use; increasing the efficiency of technologies for producing nonfossil fuels; automobile battery technologies and other technologies to reduce fossil fuel use in transportation, or technologies to reduce energy use in buildings; mass commuting facilities that reduce energy use (including pollution reduction for vehicles used for mass commuting); demonstration projects that promote commercialization of green building technology; conversion of agricultural waste for fuel production; advanced battery manufacturing technologies; technologies to reduce peak electricity demand; technologies that capture and sequester carbon dioxide emitted from fossil-fuel-fired power facilities; and public education campaigns to promote energy efficiency.

The House provision (Sec. 1612) and conference provision (§1112) are identical. The Senate provision (Sec. 1112) differed from the House-passed version only in that it did not address private activity bonds. ARRA authorizes \$2.4 billion of Energy Conservation Bonds (ECBs) to finance state, municipal and tribal government programs, greenhouse gas reduction initiatives,

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<sup>55</sup> Prepared by Fred Sissine, 7-7039, fsissine@crs.loc.gov.

<sup>56</sup> Division B contains the Energy Incentives Extension Act.

and loans and grants to implement green community programs. JCT estimates the cost at \$803 million over 10 years.

[Note: Subtitle G has a provision regarding labor standards for CREB and ECB programs.]

## **Energy Efficiency Tax Credits<sup>57</sup>**

### ***Energy Efficiency Improvements to Existing Homes***

EESA (P.L. 110-343, Division B) re-established for one year (2009) a 10% investment tax credit for home energy efficiency improvements, with caps of \$50 for fans, \$150 for furnaces and boilers, and \$300 for shell improvements. The House-passed ARRA bill (Sec. 1621), Senate-passed bill (Sec. 1121), and enacted law (§1121) have identical provisions. ARRA increases the credit to 30% for 2009 and extends it through 2010. Also, ARRA eliminates the individual equipment dollar caps and sets a new aggregate cap of \$1,500. JCT estimates the cost at \$2.03 billion over three years.

### ***Residential Efficiency and Renewables Equipment, Adjustment of Credit Limit***

EESA (P.L. 110-343, Division B) established a 30% ITC for a variety of residential energy efficiency and renewable energy equipment. Under that law, caps were set on the credit for certain equipment and the credit had to be reduced if the qualifying residence received subsidized financing. The House version of H.R. 1 proposed (Sec. 1622) to repeal the several caps and to allow the full ITC, even if the property received subsidized financing. The Senate provision (Sec. 1122) was identical to the House proposal, as is the law (§1122). ARRA eliminates the caps on residential wind, geothermal, and solar thermal equipment. It also repeals the subsidized financing reduction for residential solar, geothermal, wind, and fuel cells. JCT estimates the cost at \$268 million over nine years.

### ***Parity for Transportation Fringe Benefits***

Qualified transportation fringe benefits provided by an employer are excluded from an employee's gross income for income tax purposes and from an employee's wages for payroll tax purposes. The benefits include parking, transit passes, vanpool benefits, and qualified bicycle commuting reimbursements. Under previous law, up to \$230 (for 2009) per month of employer-provided parking was excludable from income. Up to \$120 (for 2009) per month of employer-provided transit and vanpool benefits was excludable from gross income. The Senate-passed bill (Sec. 1251) proposed to increase the monthly exclusion for employer-provided transit, vanpool, and bicycle commuting benefits to the same level as the exclusion for employer-provided parking. There was no similar provision in the House bill. ARRA (§1151) includes the text of the Senate proposal, increasing the benefit for transit, vanpools, and bicycle commuting to \$230 per month. The provision is scheduled to expire at the end of 2010. JCT estimates the cost at \$192 million over 10 years.

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<sup>57</sup> Prepared by Fred Sissine, 7-7039, [fsissine@crs.loc.gov](mailto:fsissine@crs.loc.gov).



## **Alternative Fuels and Vehicles Tax Credits<sup>58</sup>**

### ***Alternative Fuel Refueling Infrastructure Tax Credit***

EPAAct2005 established tax credits for the installation of retail and residential alternative fuel refueling systems. Eligible fuels include ethanol, natural gas, liquefied petroleum gas, and hydrogen. The retail credit is valued at 30% of the system, up to \$30,000. For residential systems, the credit is capped at \$1,000.

For calendar years 2009 and 2010, ARRA increases the tax credit to 50% for all fuels except hydrogen, and raises the limitations to \$50,000 for retail systems and \$2,000 for residential systems. For hydrogen, the 30% credit is maintained, but the credit limit is raised to \$200,000. The JCT cost estimate is included as part of the estimated cost of the next provision.

### ***Plug-In Vehicle Tax Credit***

EESA (P.L. 110-343) established a tax credit for the purchase of new plug-in vehicles (plug-in hybrids and pure electric vehicles). The credit is based on the battery capacity of the vehicle, and is capped at \$7,500 for light-duty vehicles and up to \$15,000 for the heaviest vehicles. When total U.S. sales of vehicles eligible for the credit reaches 250,000, the credit begins to phase out.

ARRA modifies the existing tax credit to cap the per-vehicle credit at \$7,500 for light-duty vehicles and heavy-duty vehicles up to 14,000 pounds gross weight. It also replaces the 250,000 total vehicle limit for phase-out of the credit with a 200,000 per-manufacturer limit. Further, ARRA eliminates the credit for heavier vehicles (after 2009), and establishes a credit of up to \$2,500 for low-speed four-wheeled vehicles, as well as two- and three-wheeled electric vehicles. It also establishes a credit of up to \$4,000 for the conversion of an existing vehicle to battery power. ARRA also allows taxpayers otherwise subject to the Alternative Minimum Tax (AMT) to claim plug-in credit (as well as other alternative fuel and advanced vehicle credits). JCT estimates the cost at \$2.0 billion over 10 years.

## **Subtitle D – Manufacturing Recovery Provisions**

### **Advanced Energy Manufacturing Facility Investment Tax Credit**

The Senate bill (Sec. 1302) proposed to establish a new 30% percent ITC to support the development of facilities that manufacture “advanced energy property.” There was no similar provision in the House-passed bill. The enacted law (§1302) establishes a credit that can be used to re-equip, expand, or establish a facility that is designed to manufacture equipment that is used to produce renewable energy (solar, wind geothermal, and other), fuel cells, microturbines, energy storage systems for electric/hybrid vehicles, certain electric grid equipment, renewable fuels property, energy efficiency technologies, smart grid equipment, plug-in hybrid vehicles, and equipment to capture and sequester carbon dioxide. ARRA allows up to \$2.3 billion in credits to be allocated. JCT estimates the cost at \$1.6 billion over 10 years.

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<sup>58</sup> Prepared by Brent Yacobucci, 7-9662, byacobucci@crs.loc.gov.

## **Subtitle G – Other Provisions**

### **Grants in Place of Tax Credits**

The renewable energy industry found that current market conditions have created an uncertain future tax position for potential investors in ITC-supported projects, in addition to PTC-supported projects, making financing difficult. As an additional temporary alternative, the House proposed (Sec. 1721) that projects eligible for the PTC or ITC could substitute a grant worth up to 30% of the project cost. DOE would administer the grant program, which would be in place only for tax years 2009 and 2010. Also, certain existing dollar caps set for the tax credits, such as the caps for fuel cells and microturbines, would have remained in place for the grants. A similar proposal in the Senate did not get incorporated into the Senate-passed version of H.R. 1. It differed from the House provision in that it would be administered by the Department of the Treasury and it would require that applicants “share ownership” with the department by providing stock warrants, debt instruments, or other measures that might be required by the department.<sup>59</sup> The enacted provision (§1603) follows the House proposal, except that Treasury will administer the program, not DOE. The law appropriates “such sums as may be necessary” and it terminates on September 30, 2011. JCT estimates the cost at \$5 million over 10 years.

### **Labor Standards for Energy Bond Programs<sup>60</sup>**

The House (Sec. 1701) and Senate (Sec. 1901) proposed, and the law (§1601) requires, that living wage provisions be applied to projects financed by Clean Renewable Energy Bonds (CREBs) and Energy Conservation Bonds (ECBs).

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<sup>59</sup>Senate Committee on Energy and Natural Resources. Senator Bingaman’s Grant Plan for Renewable Energy. [http://energy.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease\\_id=2d88670f-4045-4ac8-b9e1-1fedce29e75c&Month=2&Year=2009&Party=0](http://energy.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease_id=2d88670f-4045-4ac8-b9e1-1fedce29e75c&Month=2&Year=2009&Party=0)

<sup>60</sup> Prepared by Fred Sissine, 7-7039, [fsissine@crs.loc.gov](mailto:fsissine@crs.loc.gov).

## **Author Contact Information**

Fred Sissine, Coordinator  
Specialist in Energy Policy  
fsissine@crs.loc.gov, 7-7039

Anthony Andrews  
Specialist in Energy and Energy Infrastructure  
Policy  
aandrews@crs.loc.gov, 7-6843

Peter Folger  
Specialist in Energy and Natural Resources Policy  
pfolger@crs.loc.gov, 7-1517

Stan Mark Kaplan  
Specialist in Energy and Environmental Policy  
skaplan@crs.loc.gov, 7-9529

Daniel Morgan  
Analyst in Science and Technology Policy  
dmorgan@crs.loc.gov, 7-5849

Deborah D. Stine  
Specialist in Science and Technology Policy  
dstine@crs.loc.gov, 7-8431

Brent D. Yacobucci  
Specialist in Energy and Environmental Policy  
byacobucci@crs.loc.gov, 7-9662

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