



Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

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Summary

Energy is crucial to the operation of a modern industrial and services economy. Recently, there have been growing concerns about the availability and cost of energy and about environmental impacts of fossil energy use, especially global climate change. Those combined concerns have rekindled interest in energy efficiency, energy conservation, and the development and commercialization of renewable energy technologies.

Many of the existing efficiency and renewables programs have authorizations tracing back to the 1970s. Many of the programs have been reauthorized and redesigned repeatedly to meet changing economic factors. The programs apply broadly to sectors ranging from industry to academia, and from state and local governments to rural communities.

Since 2005, Congress has enacted several major energy laws: the Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); the Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); the Energy Improvement and Extension Act (EIEA), enacted as Division B of the Emergency Economic Stabilization Act (EESA; P.L. 110-343); and the American Reinvestment and Recovery Act (ARRA; P.L. 111-5). Each of those laws established, expanded, or modified energy efficiency and renewable energy research, development, demonstration, and deployment (RDD&D) programs. The Department of Energy (DOE) operates the greatest number of efficiency and renewable energy incentive programs. The Department of the Treasury and the Department of Agriculture (USDA) operate several programs. A few programs can also be found among the Departments of Transportation (DOT), Labor, and Housing and Urban Development (HUD).

This report describes federal programs that provide grants, loans, loan guarantees, and other direct or indirect regulatory incentives for energy efficiency, energy conservation, and renewable energy. For each program, the report provides the administering agency, authorizing statute(s), annual funding, and the program expiration date. The appendixes provide summary information in a tabular format.

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Introduction

The United States has an abundance of natural resources. For much of the nation's history, energy was not a concern as commerce and industry needs could be met by domestic supplies. However, industrialization and population growth, and the continuing development of a consumer-oriented society, soon led to the necessity of obtaining foreign sources of energy to supplement the demands of a growing economy.

Recognition of the implications of dependence on foreign sources of energy, coupled with concerns over volatility of prices driven by fluctuations in supply spurred by world events, have led to efforts to increase U.S. energy independence and reduce domestic consumption. The result has been the emergence of a number of programs focused on energy efficiency and conservation of domestic resources and on research programs that target the development of renewable sources of energy. Many of these programs have roots going back almost 40 years and have been redesigned many times over that period.

Many of the current programs have been reauthorized and redesigned periodically to meet changing economic conditions and national interests. The programs apply broadly to sectors ranging from industry to academia, and from state and local governments to rural communities. Each program has been designed to meet current needs as well as future anticipated challenges.

Since 2005, Congress has enacted several major energy laws: the Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); the Energy Independence and Security Act of 2007 (EISA, P.L. 110-140); the Energy Improvement and Extension Act (EIEA), enacted as Division B of the Emergency Economic Stabilization Act (EESA, P.L. 110-343); and the American Reinvestment and Recovery Act (ARRA, P.L. 111-5). Each of those laws established, expanded, or modified energy efficiency and renewable energy research, development, demonstration, and deployment (RDD&D) programs. The Department of Energy (DOE) operates the greatest number of efficiency and renewable energy incentive programs. The Department of the Treasury and the Department of Agriculture (USDA) operate several programs. A few programs can also be found among the Departments of Transportation (DOT), Labor, and Housing and Urban Development (HUD).

This report outlines current federal programs and provisions providing grants, loans, loan guarantees, and other direct or indirect incentives for energy efficiency, energy conservation, and renewable energy RD&D. The programs are grouped by administering agency with information on links to applicable federal agency websites. Incentives are summarized and indexed in the appendixes.

ARRA funding opportunities are available to eligible energy projects with start dates generally in 2009 and 2010. Applicants should check the DOE's ARRA website (<http://www.energy.gov/recovery/funding.htm>) for specific application deadline details.

The program descriptions were compiled from authorizing statutes, the U.S. Code, and Administration budget request documents. Program descriptions and some funding information were compiled from The Database of State Incentives for Renewables and Efficiency (DSIRE), the *Catalog of Federal Domestic Assistance* (CFDA) and the Energy Star website. Most budgetary figures were compiled from executive agency budget justifications and congressional committee reports. For more information on these resources (DSIRE, CFDA, Energy Star), please

see CRS Report R40455, *Renewable Energy and Energy Efficiency Tax Incentive Resources*, by Lynn J. Cunningham and Beth A. Roberts. For more information on agriculture-related grant programs, please also see CRS Report RL34130, *Renewable Energy Programs in the 2008 Farm Bill*, by Megan Stubbs.

I. Department of Energy Office of Energy Efficiency and Renewable Energy

Renewable Energy

Biomass

1. Biomass and Biorefinery Systems R&D Program

- Administered by: Office of Energy Efficiency and Renewable Energy (EERE)
- Authorization: Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93-577); Energy Policy and Conservation Act of 1975 (EPCA; P.L. 94-163); Energy Conservation and Production Act of 1976 (ECPA; P.L. 94-385); Department of Energy Organization Act of 1977 (P.L. 95-91); Energy Tax Act (P.L. 95-618); National Energy Conservation Policy Act of 1978 (NECPA; P.L. 95-619); Powerplants and Industrial Fuel Use Act of 1978 (P.L. 95-620); Energy Security Act of 1980 (P.L. 96-294); National Appliance Energy Conservation Act of 1987 (P.L. 100-12); Federal Energy Management Improvement Act of 1988 (P.L. 100-615); Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989 (P.L. 101-218); Clean Air Act Amendments of 1990 (P.L. 101-549); Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990 (P.L. 101-575); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Biomass Research and Development Act of 2000 (Title III of Agricultural Risk Protection Act of 2000; P.L. 106-224); Farm Security and Rural Investment Act of 2002 (P.L. 107-171); Healthy Forest Restoration Act of 2003 (P.L. 108-148); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); The Food, Conservation, and Energy Act of 2008 (P.L. 110-234); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$89.8 million for FY2006; \$196.3 million for FY2007; \$195.6 million for FY2008; \$214 million for FY2009; an additional \$777 million in FY2009 from ARRA; \$220 million for FY2010; and \$220 million requested for FY2011
- Scheduled termination: None
- Description: This program works with industrial partners, national laboratories, universities, and other stakeholders to develop the technologies and systems needed to cost-effectively transform the nation's renewable and abundant domestic biomass resources into clean, affordable, and sustainable biofuels, bioproducts, and biopower. In recent years, the program has been primarily

geared toward development and deployment of ethanol from non-food feedstocks, but is now expanding its scope to additional alternative fuels, such as bio-butanol, green gasoline, jet fuel, and diesel.

- Qualified applicant: Colleges and universities; profit organizations
- Qualified technologies: Biomass
- For more information: See CRS Report R40110, *Biofuels Incentives: A Summary of Federal Programs*, by Brent D. Yacobucci; Biomass Program overview at http://www1.eere.energy.gov/biomass/pdfs/bp_pir_program_sum.pdf; Biomass Program – Financial opportunities at http://www1.eere.energy.gov/biomass/financial_opportunities.html; and *Catalog of Federal Domestic Assistance* (CFDA) program number 81.087 at <https://www.cfda.gov>

2. Regional Biomass Energy Grant Programs

- Administered by: Office of Biomass Program, EERE
- Authorization: Department of Energy Organization Act of 1977 (P.L. 95-91); Energy and Water Development Appropriations Act for FY1987 (P.L. 99-500)
- Annual funding: \$395,000 for FY2007; an estimated \$75,131 for FY2008; an estimated \$25,705 for FY2009; an estimated \$4.8 million for FY2010; data for FY2011 is currently unavailable
- Scheduled termination: None
- Description: This program provides assistance to increase America's use of fuels, chemicals, materials, and power made from domestic biomass on a sustainable basis. Assistance may be used to develop and transfer any of several biomass energy technologies to the scientific and industrial communities. For regional programs, such technologies will be appropriate for the needs and resources of particular regions of the United States.
- Qualified applicants: State and local governments; colleges and universities; profit organizations; nonprofit organizations
- Qualified technologies: Biomass
- For more information: See CFDA program number 81.079 at <https://www.cfda.gov/>

Geothermal

3. Geothermal Technologies Program (GTP)

- Administered by: EERE
- Authorization: Geothermal Energy Research, Development, and Demonstration Act (P.L. 93-410); Department of Energy Organization Act (P.L. 95-91); Energy Tax Act of 1978 (P.L. 95-618); Energy Security Act of 1980 (P.L. 96-294); Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989 (P.L. 101-218); Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990 (P.L. 101-575); Energy Policy Act of 1992 (EPACT; P.L.

102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)

- Annual funding: \$68.2 million for FY2006; \$5 million for FY2007; \$19.3 million for FY2008; \$43.3 million for FY2009; an additional \$393 million appropriated in FY2009 from ARRA; \$44 million for FY2010; and \$55 million requested for FY2011
- Scheduled termination: None
- Description: This program partners the federal government with industry, academia, and research facilities to further the development of geothermal energy technologies. Competitive solicitations issued as Funding Opportunity Announcements (FOAs) are the principal mechanism used by the GTP to contract for cost-shared research, development, and demonstration projects.
- Qualified applicants: Profit organizations; colleges and universities
- Qualified technology: Geothermal
- For more information: See EERE's Geothermal Technologies Program Website at <http://www1.eere.energy.gov/geothermal/> and CFDA Program number 81.087 at <https://www.cfda.gov/>

Hydrogen and Fuel Cells

4. Hydrogen & Fuel Cell Technologies Program

- Administered by: EERE
- Authorization: Federal Energy Administration Act of 1974 (P.L. 93-275); Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93-577); Energy Policy and Conservation Act of 1975 (EPCA; P.L. 94-163); Electric and Hybrid Vehicle Research, Development and Demonstration Act (P.L. 94-413); Department of Energy Organization Act of 1977 (P.L. 95-91); Automotive Propulsion Research and Development Act of 1978 (Title III of Department of Energy Act of 1978-Civilian Applications; P.L. 95-238); Methane Transportation Research, Development and Demonstration Act of 1980 (P.L. 96-512); Energy Security Act of 1980 (P.L. 96-294); Alternative Motor Fuels Act of 1988 (P.L. 100-494); Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 (P.L. 101-566); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Hydrogen Future Act of 1996 (P.L. 104-271); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$153.4 million for FY2006; \$190 million for FY2007; \$206.2 million for FY2008; \$164.6 million for FY2009; an additional \$43 million appropriated in FY2009 from ARRA; \$174 million for FY2010; and \$137 million requested for FY2011
- Scheduled termination: None

- Description: This program partners with industry, academia, and national laboratories and works in close coordination with Vehicle Technologies and other programs at DOE to: overcome technical barriers through R&D of hydrogen production, delivery, and storage technologies; overcome technical barriers to fuel cell technologies for transportation, distributed stationary power, and portable power applications; address safety issues and facilitate the development of model codes and standards; validate and demonstrate hydrogen and fuel cells in real-world conditions; and educate key stakeholders whose acceptance of these technologies will determine their success in the marketplace.
- Qualified applicants: Federal government; national laboratories; colleges and universities; and profit organizations
- Qualified technologies: Hydrogen and fuel cells
- For more information: See EERE's Hydrogen and Fuel Cell Technologies Website at <http://www1.eere.energy.gov/hydrogenandfuelcells/> and CFDA Program number 81.087 at <https://www.cfda.gov/>

Solar

5. Solar Energy Technologies Program (SETP)

- Administered by: EERE
- Authorization: Energy Policy and Conservation Act of 1975 (EPCA; P.L. 94-163); Energy Conservation and Production Act of 1976 (ECPA; P.L. 94-385); Department of Energy Organization Act of 1977 (P.L. 95-91); Solar Photovoltaic Energy Research, Development and Demonstration Act of 1984 (P.L. 95-590); National Energy Conservation Policy Act of 1978 (NECPA; P.L. 95-619); Energy Security Act of 1980 (P.L. 96-294); Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989 (P.L. 101-218); Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990 (P.L. 101-575); Solar, Wind, Waste, and Geothermal Power Production Incentives Technical Amendments Act of 1991 (P.L. 102-46); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$81.8 million for FY2006; \$157 million for FY2007; \$166.3 million for FY2008; \$172.4 million for FY2009; an additional \$116 million appropriated in FY2009 from ARRA; \$247 million for FY2010; and \$302.4 million requested for FY2011
- Scheduled termination: None
- Description: SETP partners with industry, national laboratories, and universities to develop and bring reliable and affordable solar energy technologies to the marketplace. This program finances R&D in four major subprograms: Photovoltaics (PV); Concentrating Solar Power (CSP); Systems Integration for Solar Technologies; and Market Transformation for Solar Technologies.
- Qualified applicants: Industry; national laboratories; colleges and universities

- Qualified technology: Solar
- For more information: See EERE's Solar Energy Technologies Program Website at <http://www1.eere.energy.gov/solar/> and CFDA Program number 81.087 at <https://www.cfda.gov/>

Wind and Hydropower

6. Wind and Hydropower Technologies Program

- Administered by: EERE
- Authorization: Energy Policy and Conservation Act of 1975 (EPCA; P.L. 94-163); Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989 (P.L. 101-218); Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990 (P.L. 101-575); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$39.8 million for FY2006 (\$38.3 million for wind; \$495,000 for hydropower); \$48.7 million for FY2007 (\$48.7 million for wind; \$0 for hydropower); \$58.7 million for FY2008 (\$49 million for wind; \$9.7 million for hydropower); \$93.5 million for FY2009 (\$54.4 million for wind; \$39.1 million for hydropower); an additional \$138.6 million appropriated in FY2009 from ARRA (\$106.9 million for wind; \$31.7 million for hydropower); \$130 million for FY2010 (\$80 million for wind; \$50 million for hydropower); and \$163 million requested for FY2011 (\$122.5 million for wind; \$40.5 million for hydropower)
- Scheduled termination: None
- Description: The program partners with federal, state, and other stakeholder groups to conduct research and development activities through competitively selected, cost-shared research and development projects with industry to improve the performance, lower the costs, and accelerate the deployment of wind and water power technologies.
- Qualified applicants: Federal, state, local, and tribal governments; national laboratories; industry; small businesses; colleges and universities
- Qualified technologies: Wind; hydroelectric; hydrokinetic energy; wave energy; tidal energy; ocean thermal energy conversion
- For more information: See EERE's Wind and Hydropower Technologies Program website at <http://www1.eere.energy.gov/windandhydro/>
- For more information, see CFDA Program number 81.087 at <https://www.cfda.gov/>

Energy Efficiency

Buildings

7. Building Technologies Program

- Administered by: EERE
- Authorization: Energy Policy and Conservation Act of 1975 (EPCA; P.L. 94-163); Energy Conservation and Production Act of 1976 (ECPA; P.L. 94-385); Department of Energy Organization Act of 1977 (P.L. 95-91); Energy Tax Act of 1978 (P.L. 95-618); National Energy Conservation Policy Act of 1978 (NECPA; P.L. 95-619); Power Plant and Industrial Fuel Use Act of 1978 (P.L. 95-620); Energy Security Act (P.L. 96-294); National Appliance Energy Supply Act of 1987 (P.L. 100-12); National Appliance Energy Conservation Amendments of 1988 (P.L. 100-357); Federal Energy Management Improvement Act of 1988 (P.L. 100-615); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$68.2 million for FY2006; \$103 million for FY2007; \$107.4 million for FY2008; \$138.1 million for FY2009; an additional \$319.2 million appropriated in FY2009 from ARRA; \$222 million for FY2010; and \$230.7 million requested for FY2011
- Scheduled termination: None
- Description: In partnership with the private sector, state and local governments, national laboratories, and universities, the Building Technologies Program works to improve the efficiency of buildings and the equipment, components, and systems within them. The program supports research and development (R&D) activities and provides tools, guidelines, training, and access to technical and financial resources.
- Qualified applicants: State and local governments; universities; national laboratories
- Qualified technologies: Energy-efficient innovations for building envelopes, equipment, lighting, daylighting, and windows; passive solar; photovoltaics; fuel cells; advanced sensors and controls; and combined heating, cooling, and power systems
- For more information: See EERE's Building Technologies Program website at <http://www1.eere.energy.gov/buildings/>

8. Energy Efficient Appliance Rebate Program (EEARP)

- Administered by: EERE
- Authorization: Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58), Title I, Part B; American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)

- Annual funding: \$0 for FY2008; \$298.5 million in FY2009 from ARRA; \$0 for FY2010; \$0 requested for FY2011
- Scheduled termination: None
- Description: The program provides financial and technical assistance to states to establish residential Energy Star rated appliance rebate programs. The program's objectives are: to reduce fossil fuel emissions created as a result of activities within the jurisdictions of eligible entities; and to improve energy efficiency in the residential sector.
- Qualified applicants: State governments, including U.S territories and possessions
- Qualified technologies: Energy efficient appliances
- For more information: See CFDA Program number 81.127 at <https://www.cfda.gov>

9. Weatherization Assistance Program (WAP)

- Administered by: EERE
- Authorization: Energy Supply and Production Act of 1976 (ECPA; P.L. 94-385); National Energy Conservation Policy Act of 1978 (NECPA; P.L. 95-619); Energy Security Act of 1980 (P.L. 96-294); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$227.2 million for FY2008; \$450 million for FY2009; an additional \$5 billion appropriated in FY2009 from ARRA; \$270 million for FY2010; and \$385 million requested for FY2011
- Scheduled termination: None
- Description: This program reduces energy costs for low-income households by increasing the energy efficiency of their homes while ensuring their health and safety. DOE provides funding and technical guidance to states, which manage the day-to-day details of the program. Low-income families receive services from a network of more than 900 local weatherization service providers who install energy efficiency measures in the homes of qualifying homeowners free of charge.
- Qualified applicants: State and tribal governments, including U.S. territories
- Qualified technologies: Weatherization technologies include a wide range of energy efficiency measures for retrofitting homes and apartment buildings. Weatherization service providers choose the best package of efficiency measures for each home based on an energy audit of the home. Typical measures may include installing insulation, sealing ducts, tuning and repairing heating and cooling systems and if indicated, replacement of the same; mitigating air infiltration; and reducing electric base load consumption. For more information: See EERE's Weatherization Assistance Program website at

<http://apps1.eere.energy.gov/weatherization/>; and CFDA program number 81.042 at <https://www.cfda.gov>

Industrial

10. Inventions and Innovations Program

- Administered by: EERE
- Authorization: Federal Nonnuclear Energy Research and Development Policy Act (P.L. 93-577), Section 14; 42 USC 5913
- Annual funding: \$2.8 million for FY2007; \$145,000 for FY2008; \$1.8 million for FY2009; an estimated \$102,000 for FY2010; and an estimated \$150,000 for FY2011
- Scheduled termination: None
- Description: This program provides financial and technical assistance for research and development of innovative, energy-saving ideas and inventions with future commercial market potential. Inventions and Innovations support energy efficiency and renewable energy technology development in focus areas that align with Office of Energy Efficiency and Renewable Energy programs.
- Qualified applicants: Individuals; small businesses
- Qualified technologies: Specific energy efficiency and renewable energy technologies not listed
- For more information: See CFDA Program number 81.036 at <https://www.cfda.gov>. The U.S. Department of Energy's Inventions & Innovations website has been retired. To access information on financial opportunities and current solicitations, visit the Industrial Technologies Program site at <http://www1.eere.energy.gov/industry/financial/index.html>

11. Industrial Technologies Program (ITP)

- Administered by: EERE
- Authorization: Energy Policy and Conservation Act of 1975 (EPCA; P.L. 94-163); Energy Conservation and Production Act of 1976 (ECPA; P.L. 94-385); Department of Energy Organization Act of 1977 (P.L. 95-91); National Energy Conservation Policy Act of 1978 (NECPA; P.L. 95-619); Powerplant and Industrial Fuel Use Act of 1978 (P.L. 95-620); Energy Security Act of 1980 (P.L. 96-294); Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989 (P.L. 101-218); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$55.9 million for FY2006; \$55.8 million for FY2007; \$63.2 million for FY2008; \$88.2 million for FY2009; an additional \$261.5 million appropriated in FY2009 from ARRA; \$96 million for FY2010; and \$100 million requested for FY2011

- Scheduled termination: None
- Description: ITP works with industry to improve industrial energy efficiency and environmental performance while increasing productivity by: conducting R&D on new energy efficient technologies; supporting commercialization of emerging technologies; providing plants with access to proven technologies, energy assessments, software tools, and other resources; and promoting energy and carbon management in industry.
- Qualified applicants: Industrial organizations
- Qualified technologies: Crosscutting technologies that improve the efficiency of technologies that are common to many industrial processes and can benefit multiple industries. Crosscutting technology R&D areas include combustion; distributed energy; energy intensity processes; fuel and feedstock liability; industrial materials for the future; nanomanufacturing; and sensors and automation
- For more information: See EERE's Industrial Technologies Program website at <http://www1.eere.energy.gov/industry/>

Vehicles

12. Vehicle Technologies Program

- Administered by: EERE
- Authorization: Department of Energy Organization Act of 1977 (P.L. 95-91); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$178.4 million for FY2006; \$183.6 million for FY2007; \$208.4 million for FY2008; \$267.1 million for FY2009; an additional \$2.8 billion appropriated in FY2009 from ARRA; \$311.4 million for FY2010; and \$325.3 million requested for FY2011
- Scheduled termination: None
- Description: The Vehicle Technologies Program works with industry leaders to develop and deploy advanced transportation technologies that could achieve significant improvements in vehicle fuel efficiency and displace oil with other fuels that ultimately can be domestically produced in a clean and cost-competitive manner. Program activities include research, development, demonstration, testing, technology validation, technology transfer, and education.
- Qualified applicants: Industry; colleges and universities; federal, state and local governments; national laboratories
- Qualified technologies: Hybrid electric systems; biofuels or fuels technology; advanced internal combustion engines; advanced propulsion materials
- For more information: See EERE's Vehicle Technology Program website at <http://www1.eere.energy.gov/vehiclesandfuels/>; and Vehicle Technologies

Program Factsheet at http://www1.eere.energy.gov/vehiclesandfuels/pdfs/vehicles_fs.pdf

Other Energy Efficiency and Renewable Energy Programs

13. Conservation Research and Development Grants

- Administered by: EERE
- Authorization: Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93-577); Department of Energy Organization Act of 1977 (P.L. 95-91); Continuing Appropriations Act for FY1983 (P.L. 97-377); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$87.5 million for FY2008; \$203.7 million for FY2009; an estimated \$1.7 billion for FY2010; and an estimated \$180 million for FY2011
- Scheduled termination: None
- Description: This program provides project grants to conduct balanced, long-term research efforts in buildings technologies, industrial technologies, vehicle technologies, and hydrogen and fuel cell technologies.
- Qualified applicant: State, local, and tribal governments; universities; profit organizations; and private nonprofit institutions/organizations
- Qualified technologies: Hydrogen and fuel cells; energy efficient technologies; advanced battery manufacturing
- For more information: See CFDA program number 81.086 at <https://www.cfda.gov/>

14. Energy Efficiency and Conservation Block Grants Program (EECBG)

- Administered by: EERE
- Authorization: Energy Independence and Security Act of 2007 (EISA; P.L. 110-140), Title V, Subtitle E; American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$0 for FY2008; \$3.2 billion for FY2009 from ARRA; \$0 for FY2010; and \$0 requested for FY2011
- Scheduled termination: None
- Description: This program is part of DOE's Weather and Intergovernmental Program. The EECBG Program provides formula and competitive grants to empower local communities to make strategic investments to meet the nation's long-term goals for energy independence and leadership on climate change. Grants can be used for energy efficiency and conservation programs and projects community-wide, as well as renewable energy installations on government buildings.
- Qualified applicants: State, local, and tribal governments, including U.S. territories

- Qualified technologies: Energy efficient equipment and lighting; combined heating and cooling systems; combined heat and power systems; solar; wind; fuel cells; biomass
- For more information: See EERE's Energy Efficiency and Conservation Block Grants Program Website <http://www.eecbg.energy.gov/>; and CFDA program number 81.128 at <https://www.cfda.gov>

15. Energy Efficiency and Renewable Energy Information Dissemination, Outreach, Training, and Technical Analysis/Assistance Grant Program

- Administered by: EERE
- Authorization: Energy Reorganization Act of 1974 (P.L. 93-438); Department of Energy Organization Act of 1977 (P.L. 95-91); Energy Policy Act of 1992 (EPACT; P.L. 102-486)
- Annual funding: \$30 million for FY2007; \$39.7 million for FY2008; \$38 million for FY2009; an estimated \$41.2 million for FY2010; and an estimated \$45 million for FY2011
- Scheduled termination: None
- Description: This program provides financial assistance for information dissemination, outreach, training and related technical analysis/assistance that will (1) stimulate increased energy efficiency in transportation, buildings, industry and the Federal sector and encourage increased use of renewable and alternative energy; and (2) accelerate the adoption of new technologies to increase energy efficiency and the use of renewable and alternative energy through the competitive solicitation of applications.
- Qualified applicants: State and local governments; Native American organizations; individuals; universities; profit organizations; private nonprofit organizations; public nonprofit organizations; and Alaskan Native corporations
- Qualified technologies: Specific energy efficiency and renewable energy technologies not listed
- For more information: See CFDA Program number 81.117 at <https://www.cfda.gov/>

16. Energy Efficiency and Renewable Energy Technology Deployment, Demonstration, and Commercialization Grant Program

- Administered by: EERE
- Authorization: Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual Funding: \$0 for FY2008; \$21.8 million for FY2009; an estimated \$7.2 million for FY2010. It is anticipated that all funds obligated under this program in FY2010 will be Recovery Act funds. FY2011 budget unconfirmed to date

- Scheduled termination: None
- Description: This program provides financial assistance for the technology deployment, demonstration, and commercialization of energy efficiency and renewable energy technologies. This includes biomass, building technologies, federal energy management, geothermal technologies, projects involving hydrogen, fuel cells and infrastructure technologies, industrial technologies, solar energy technologies, vehicle technologies, weatherization and intergovernmental, and wind and hydropower technologies.
- Qualified applicants: State governments; profit organizations
- Qualified technologies: Biomass; geothermal; hydrogen and fuel cell technologies; solar; hydropower
- For more information: See CFDA Program number 81.129 at <https://www.cfda.gov>

17. Renewable Energy Production Incentive (REPI)

- Administered by: EERE
- Authorization: Energy Policy Act of 1992 (EPACT; P.L. 102-486), Title XII, Section 1212; Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58), Title II, Subtitle A, Section 202); 42 USC 13317
- Annual funding: \$4.95 million for FY2006; \$4.95 million for FY2007; \$4.95 million for FY2008; \$5 million for FY2009; \$0 for FY2010; \$0 requested for FY2011
- Scheduled termination: End of FY2026
- Description: This program provides incentive payments for electricity generated and sold by new qualifying renewable energy facilities. Qualifying systems are eligible for annual incentive payments of 1.5¢ per kilowatt-hour in 1993 dollars (indexed for inflation) for the first 10-year period of their operation, subject to the availability of annual appropriations in each federal fiscal year of operation.
- Qualified applicants: State, local, and tribal governments; public utilities; not-for-profit electrical cooperatives; Native American corporations
- Qualified technologies: Solar thermal electric; photovoltaics; landfill gas; wind; biomass; geothermal electric; anaerobic digestion; tidal energy; wave energy; ocean thermal
- For more information: See EERE's Renewable Energy Production Incentive Program website at [http://apps1.eere.energy.gov/rep/rep/";](http://apps1.eere.energy.gov/rep/rep/) and DSIRE at http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US33F&re=1&ee=1

18. Renewable Energy Research and Development Program

- Administered by: EERE
- Authorization: Department of Energy Organization Act of 1977 (P.L. 95-91); Department of Energy Act of 1978 - Civilian Applications (P.L. 95-238), Section 207; Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989 (P.L. 101-218); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 111-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$520 million for FY2008; \$472.8 million for FY2009; an estimated \$1.9 billion for FY2010 from ARRA funds; an estimated \$475 million for FY2011. Breakdown of additional funds appropriated from ARRA:
 - Biomass—\$800 million
 - Geothermal—\$400 million
 - Hydrogen/Fuel Cell—\$43.4 million
 - Solar—\$117.6 million
 - Wind and Hydropower—\$118 million
- Scheduled termination: None
- Description: This program provides financial assistance to conduct balanced research and development efforts in the following energy technologies: solar, biomass, hydrogen, fuel cells and infrastructure, wind and hydropower, hydrogen, and geothermal. Assistance may be used to develop and transfer renewable energy technologies to the scientific and industrial communities, states, and local governments.
- Qualified applicants: State, local, and tribal governments; colleges and universities; profit organizations; private nonprofit organizations
- Qualified technologies: Solar; biomass; hydrogen; fuel cells; wind; hydropower; geothermal
- For more information: See CFDA program number 81.087 at <https://www.cfda.gov/>

19. State Energy Program (SEP)

- Administered by: EERE
- Authorization: Energy Policy and Conservation Act of 1975 (EPCA; P.L. 94-163); Energy Supply and Production Act of 1976 (ECPA; P.L. 94-385); National Energy Conservation Policy Act of 1978 (NECPA; P.L. 95-619); State Energy Efficiency Programs Improvement Act of 1990 (P.L. 101-440); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Conservation Reauthorization Act of 1998 (P.L. 105-388); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)

- Annual funding: \$44.1 million for FY2008; \$50 million for FY2009; an additional \$3.1 billion appropriated in FY2009 from ARRA; \$50 million for FY2010; and \$75 million requested for FY2011
- Scheduled termination: None
- Description: SEP provides grants to states to design and carry out their own renewable energy and energy efficiency programs.
- Qualified applicants: State and tribal governments, including U.S. territories
- Qualified technologies: Emerging renewable energy and energy efficiency technologies
- For more information: See EERE's State Energy Program Website at http://apps1.eere.energy.gov/state_energy_program/; and CFDA program number 81.041 at <https://www.cfda.gov>

20. Tribal Energy Program

- Administered by: EERE
- Authorization: Energy Policy and Conservation Act of 1975 (EPCA; P.L. 94-163); Energy Conservation and Production Act of 1976 (ECPA; P.L. 94-385); Department of Energy Organization Act of 1977 (P.L. 95-91); Energy Tax Act of 1978 (P.L. 95-618); National Energy Conservation Policy Act of 1978 (NECPA; P.L. 95-619); Power Plant and Industrial Fuel Use Act of 1978 (P.L. 95-620); Energy Security Act (P.L. 96-294); National Appliance Energy Supply Act of 1987 (P.L. 100-12); Federal Energy Management Improvement Act of 1988 (P.L. 100-615); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$3.96 million for FY2006; \$3.96 million for FY2007; \$5.95 million for FY2008; \$6 million for FY2009; \$10 million for FY2010; and \$10 million requested for FY2011
- Scheduled termination: None
- Description: This program promotes tribal energy sufficiency, economic growth and employment on tribal lands through the development of renewable energy and energy efficiency technologies. The program provides financial assistance, technical assistance, education and training to tribes for the evaluation and development of renewable energy resources and energy efficiency measures.
- Qualified applicant: Tribal governments
- Qualified technologies: Energy efficient technologies: clothes washers; refrigerators/freezers; water heaters; lighting; lighting controls/sensors; chillers; furnaces; boilers; air conditioners; programmable thermostats; energy management; systems/building controls; caulking/weather-stripping; duct/air sealing; building insulation; windows; doors; siding; roofs; comprehensive measures/whole building; and other energy efficiency improvements may be eligible. Renewable energy technologies: passive solar space heat; solar water

heat; solar space heat; photovoltaics; wind; biomass; hydroelectric; geothermal electric; geothermal heat pumps

- For more information: See EERE's Tribal Energy Program website at <http://apps1.eere.energy.gov/tribalenergy/>; and DSIRE at http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US07F&re=1&ee=1

Other DOE Offices/Cross-Cutting Programs

21. Advanced Research Projects Energy Financial Assistance Program (ARPA-E)

- Administered by: Advanced Research Projects Agency-Energy (ARPA-E)
- Authorization: America COMPETES Act (P.L. 110-69), Section 5012
- Annual funding: \$15 million for FY2009; an additional \$388.9 million in FY2009 from ARRA; \$0 for FY2010; and \$300 million requested for FY2011
- Scheduled termination: After ARPA-E has been in operation for four years, the Secretary of Energy shall offer to enter into a contract with the National Academy of Sciences under which the National Academy shall conduct an evaluation of how well ARPA-E is achieving the goals and mission of ARPA-E. The evaluation shall include the recommendation of the National Academy of Sciences on whether ARPA-E should be continued or terminated.
- Description: This program will fund organizations that have proposed sophisticated energy technology R&D projects that (1) translate scientific discoveries and cutting-edge inventions into technological innovations and (2) accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of high technical or financial risk. Transformational energy technologies are those that have the potential to create new paradigms in how energy is produced, transmitted, used, or stored.
- Qualified applicants: ARPA-E welcomes submissions from any type of capable technology research and development entity. This includes, but is not limited to for-profit entities, academic institutions, research foundations, not-for-profit entities, collaborations, and consortia. The lead organization that will enter into the agreement with ARPA-E must be a U.S. entity.
- Qualified technologies: Transformational energy technologies
- For more information: See ARPA-E Frequently Asked Questions (FAQ) Website at <http://arpa-e.energy.gov/About/FAQs.aspx>; and CFDA program number 81.135 at <https://www.cfda.gov>

22. Electricity Delivery and Energy Reliability, Research, Development and Analysis Grant Program (Office of Electricity Delivery and Energy Reliability)

- Administered by: Office of Electricity Delivery and Energy Reliability (OE)
- Authorization: Department of Energy Organization Act of 1977 (P.L. 95-91); Energy Security Act of 1980 (P.L. 96-294); National Superconductivity and Competitiveness Act of 1988 (P.L. 100-697); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$82.8 million for FY2008; \$83.1 million for FY2009; an additional \$4.5 billion was appropriated to the Office of Electricity Delivery and Energy Reliability in FY2009 from ARRA. Approximately \$4 billion of that total was used to implement smart grid programs authorized by EISA and accelerate the deployment of smart grid technologies across the transmission and distributions¹; \$125 million for FY2010; and \$144.3 million requested for FY2011
- Scheduled termination: None
- Description: This grant program aims to develop cost-effective technology that enhances the reliability, efficiency, and resiliency of the electric grid.
- Qualified applicants: State, local, and tribal governments; universities; profit organizations; private nonprofit organizations; research organizations
- Qualified technologies: Specific technologies not listed
- For more information: See CFDA Program number 81-122 at <https://www.cfda.gov>

23. Federal Energy Management Program (FEMP)

- Administered by: EERE
- Authorization: Energy Policy and Conservation Act of 1975 (EPCA; P.L. 94-163); Energy Conservation and Production Act of 1976 (ECPA; P.L. 94-385); Department of Energy Organization Act (P.L. 95-91); National Energy Conservation Policy Act of 1978 (NECPA; P.L. 95-619); Federal Energy Management Improvement Act of 1988 (P.L. 100-615); Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Independence and Security Act of 2007 (EISA; P.L. 110-140)
- Annual funding: \$19 million for FY2006; \$19.5 million for FY2007; \$19.8 million for FY2008; \$22 million for FY2009; an additional \$22.4 million in FY2009 from ARRA; \$32 million for FY2010; and \$42.3 million requested for FY2011

¹ For more information, see page 500 in volume three of the Department of Energy's *FY 2011 Congressional Budget Request* at [http://www.cfo.doe.gov/budget/11budget/Content/Volume 3.pdf](http://www.cfo.doe.gov/budget/11budget/Content/Volume%203.pdf).

- Scheduled termination: None
- Description: FEMP assists federal agencies in developing and implementing energy efficient and renewable energy resources to meet energy management regulations and goals.
- Qualified applicants: Federal agencies
- Qualified technologies: Energy efficient technologies; solar; wind; incremental hydro; ocean; biomass; geothermal
- For more information: See EERE's Federal Energy Management Program Website at <http://www1.eere.energy.gov/femp/>

24. Financial Assistance Program (Office of Science)

- Administered by: Office of Science
- Authorization: Atomic Energy Act of 1954 (P.L. 83-703), Section 31; Energy Reorganization Act of 1974 (P.L. 93-438), Title I, Section 107; Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93-577); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
- Annual funding: \$974 million for FY2008; \$1.4 billion for FY2009; an estimated \$1.3 billion for FY2010; and an estimated \$1.3 billion for FY2011
- Scheduled termination: None
- Description: This program provides financial support for fundamental research in the basic sciences and advanced technology concepts and assessments in fields related to energy.
- Qualified applicants: State, local, and tribal governments; colleges and universities; profit commercial organizations; private nonprofit organizations; public nonprofit organizations; small businesses
- Qualified technologies: Specific advanced technologies not listed
- For more information: See CFDA Program number 81.049 at <https://www.cfda.gov>

25. Loan Guarantee Program (Office of the Chief Financial Officer)

- Administered by: Office of the Chief Financial Officer
- Authorization: Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58), Title XVII; American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5); 42 USC 16511 et seq.
- Annual funding:
 - Section 1703 Innovative Technology Loan Guarantee Program (permanent): \$4.5 million for FY2008; \$0 for FY2009; \$0 for FY2010; and a \$500 million request for FY2011
 - Section 1705 Temporary Loan Guarantee Program: \$0 for FY2008; \$6 billion was appropriated for FY2009. However, \$2 billion of that funding

has since been transferred to the “cash for clunkers” automobile trade-in program by P.L. 111-47.² An additional \$1.5 billion was rescinded for the Education Jobs and Medicaid Assistance Act, P.L. 111-226 (section 308), leaving a total of \$2.5 billion remaining from the FY2009 appropriations; \$0 for FY2010; and \$0 requested for FY2011

- Scheduled termination: None for the permanent (Section 1703) loan guarantee program. Projects authorized by the temporary loan guarantee (Section 1705) must begin construction no later than September 30, 2011
- Description: This program provides federal loan guarantees to encourage early commercial use in the United States of new or significantly improved technologies in energy projects that (1) avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and (2) employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued. Temporary loan guarantees can also be made under Section 1705 for rapid deployment of certain renewable and electric transmission projects.
- Qualified applicants: State, local, and tribal governments; universities; profit organizations; and public nonprofit organizations. No federal entity may apply
- Qualified technologies: Solar thermal electric; solar thermal process heat; photovoltaics; wind; hydroelectric; renewable transportation fuels; geothermal electric; fuel cells; manufacturing facilities; daylighting; tidal energy; wave energy; ocean thermal; biodiesel
- For more information: See CFDA Program number 81.126 at <https://www.cfda.gov>; DSIRE at http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US48F&re=1&ee=1; and DOE’s Loan Guarantee Program website at <http://www.lgprogram.energy.gov/>

26. Small Business Innovation Research Program (SBIR)/Small Business Technology Transfer Program (STTR)

- Administered by: Office of Science
- Authorization: Small Business Innovation Development Act of 1982 (P.L. 97-219); Small Business Research and Development Act of 1992 (P.L. 102-564); Consolidated Appropriations Act, 2001 (P.L. 106-554), Title I, Small Business Innovation Research Program Reauthorization Act of 2000; Small Business Technology Transfer Program Reauthorization Act of 2001 (P.L. 107-50)
- Annual funding: \$116 million for FY2007 (\$36 million for Phase I, \$80 million for Phase II); \$116 million for FY2008 (\$36 million for Phase I, \$80 million for Phase II); \$116 million for FY2009 (\$36 million for Phase I, \$80 million for Phase II); approximately \$94 million for FY2010 (\$36 million for Phase I, \$58 million for Phase II); approximately \$38 million anticipated appropriations for

² For more information, see p. 30 of CRS Report R40669, *Energy and Water Development: FY2010 Appropriations*, coordinated by Carl E. Behrens.

Phase I funding opportunities in FY2011; Anticipated appropriations for Phase II funding opportunities for FY2011 is not currently available

- Scheduled termination: The SBIR and STTR Acts expired September 30, 2009. SBIR or STTR grants may not be awarded until the programs are extended or renewed by public law
- Description: Small Business Innovation Research (SBIR) and Small Business Technology Transfers (STTR) are U.S. government programs in which federal agencies with large research and development (R&D) budgets set aside a small fraction of their funding for competitions among small businesses only. Small businesses that win awards in these programs keep the rights to any technology developed and are encouraged to commercialize the technology.
- Qualified applicants: Small businesses
- Qualified technologies: Research areas include energy production (fossil, nuclear, renewable, and fusion energy); energy use (in buildings, vehicles, and industry); fundamental energy sciences (materials, life, environmental, and computational sciences, and nuclear and high energy physics); environmental management; and nuclear nonproliferation
- For more information: See DOE's Small Business Innovation Research (SBIR) and Small Business Technology Transfers (STTR) website at <http://www.sc.doe.gov/sbir/FAQ.html>; and CFDA Program number 10.212 (SBIR) at <https://www.cfda.gov>

II. U.S Department of the Treasury

Homeowner

1. Residential Energy Efficiency Tax Credit

- Administered by: Internal Revenue Service
- Authority: Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Improvement and Extension Act of 2008 (P.L. 110-343), Division B, Section 302; American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), Division B, Section 1121; 26 USC 25C
- Scheduled Termination: December 31, 2011 (\$500 credit limit); the \$1,500 credit limit expired on December 31, 2010
- Description: The credit applies to energy efficiency improvements in the building envelope of existing homes and for the purchase of high-efficiency heating, cooling and water-heating equipment. Efficiency improvements or equipment must serve a dwelling in the United States that is owned and used by the taxpayer as a primary residence. The maximum amount of homeowner credit for all improvements combined for 2011 has been reduced from the \$1,500 for purchases in 2009 and 2010 to \$500 total for equipment purchased between 2006 and 2011.

- Qualified applicant: Residential
- Qualifying technologies: Water heaters; furnace; boilers; heat pumps; air conditioners; building insulation; windows; doors; roofs; circulating fans used in a qualifying furnace; biomass and stoves that use qualified biomass fuel
- For more information: See the Internal Revenue Service website at <http://www.irs.gov/formspubs/article/0,,id=207332,00.html>

2. Residential Renewable Energy Tax Credit

- Administered by: Internal Revenue Service
- Authority: Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Improvement and Extension Act of 2008 (P.L. 110-343); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5); 26 USC 25D (amended)
- Scheduled Termination: December 31, 2016
- Description: A taxpayer may claim a credit of 30% of qualified expenditures for a system that serves a dwelling unit located in the United States and used as a residence by the taxpayer.
- Qualified applicant: Residential
- Qualifying technologies: Solar water heat; photovoltaics; wind; fuel cells; geothermal heat pumps; other solar electric technologies
- For more information: See IRS Form 5695 & Instructions: Residential Energy Credits at <http://www.irs.gov/pub/irs-pdf/f5695.pdf>

Business

3. Business Energy Investment Tax Credit

- Administered by: Internal Revenue Service
- Authority: Energy Improvement and Extension Act of 2008 (EISA; P.L. 110-343), Division B; American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), Division B, Section 1103
- Scheduled termination: December 31, 2016. Geothermal property, with the exception of geothermal heat pumps, has no stated expiration date. The credit for solar energy property returns to 10% after December 31, 2016.
- Description: Credit is 30% for solar, fuel cells and small wind; 10% for geothermal, microturbines and CHP (Combined Heat and Power)
- Qualified Applicants: Commercial; industrial; utilities
- Qualified Technologies: Solar water heat; solar space heat; solar thermal electric; solar thermal process heat; photovoltaics; wind; biomass; geothermal electric; fuel cells; geothermal heat pumps; CHP/Cogeneration; solar hybrid lighting; direct-use geothermal; microturbines

- For more information see the DSIRE website at http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US02F&re=1&ee=0

4. Energy Efficient Commercial Buildings Tax Deduction

- Administered by: Internal Revenue Service
- Authority: Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58), Title XIII, Subtitle C, Section 1331(a); Tax Relief and Health Care Act of 2006 (P.L. 109-432), Division A, Title II, Section 204; Energy Improvement and Extension Act of 2008 (P.L. 110-343), Division B, Title III, Section 303; 26 USC § 179D
Scheduled termination: December 31, 2013
- Description: A tax deduction of \$1.80 per square foot is available to owners of new or existing buildings who install (1) interior lighting; (2) building envelope, or (3) heating, cooling, ventilation, or hot water systems that reduce the building's total energy and power cost by 50% or more in comparison to a building meeting minimum requirements set by ASHRAE Standard 90.1-2001. Energy savings must be calculated using qualified computer software approved by the IRS.
- Qualified applicants: Commercial; builder/developer; state government; federal government (deductions associated with government buildings are transferred to the designer)
- Qualified technologies: Equipment insulation; water heaters; lighting; lighting controls/sensors; chillers; furnaces; boilers; heat pumps; air conditioners; caulking/weather-stripping; duct/air sealing; building insulation; windows; doors; siding; roofs; comprehensive measures/whole building
- For more information: See the Energy Star website at http://www.energystar.gov/index.cfm?c=tax_credits.tx_comm_buildings

5. Energy-Efficient New Homes Tax Credit for Home Builders

- Administered by: Internal Revenue Service
- Authority: Tax Technical Corrections Act of 2007 (P.L. 110-172), Section 11(a)(7); Energy Improvement and Extension Act (P.L. 110-343), Division B, Title III, Section 304; 26 USC § 45L 8/8/2005 (amended 2008); P.L. 111-312 (12/31/2011 extension)
- Scheduled termination: December 31, 2011
- Description: This program provides tax credits of up to \$2,000 for builders of all new energy-efficient homes, including manufactured homes constructed in accordance with the Federal Manufactured Homes Construction and Safety Standards. This credit was created by the Energy Policy Act of 2005 for homes constructed in 2006 and 2007. It was renewed for homes constructed in 2008 and 2009, but then it expired and then was not active in 2010. The Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 (P.L. 111-312) retroactively reinstated this credit for homes acquired after December 31, 2009, and before January 1, 2012.

- Qualified applicant: Builder/developer
- Qualified technologies: Comprehensive measures/whole building
- For more information: See the IRS website at <http://www.irs.gov/pub/irs-pdf/f8908.pdf>; <http://www.irs.gov/pub/irs-drop/n-06-27.pdf>; <http://www.irs.gov/pub/irs-drop/n-06-28.pdf>

6. Renewable Energy Grants (1603 Program)

- Administered by U.S. Department of the Treasury
- Authority: Sec. 707 of H.R. 4853, Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010; H.R. 1, American Recovery and Reinvestment Act of 2010 (ARRA; P.L. 111-5) Division B, Sec 1104 & 1603, U.S. Department of Treasury: Grant Program Guidance (amended)
- Scheduled Termination: Construction must begin by December 31, 2011. Applications must be submitted before October 1, 2012.
- Description: Renewable energy grant program. To be eligible, a property must be placed in service in 2009, 2010, or 2011 or placed in service after 2011 but only if construction of the property began during 2009, 2010, or 2011. The credit termination date remains unchanged. Applications must be submitted before October 1, 2012.

The American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5) allows taxpayers eligible for the federal business energy investment tax credit (ITC) to take this credit or to receive a grant from the U.S. Treasury Department instead of taking the business ITC for new installations. The new law also allows taxpayers eligible for the renewable electricity production tax credit (PTC) to receive a grant from the U.S. Treasury Department instead of taking the PTC for new installations. (It does not allow taxpayers eligible for the residential renewable energy tax credit to receive a grant instead of taking this credit.) Taxpayers may not use more than one of these incentives. Tax credits allowed under the ITC with respect to progress expenditures on eligible energy property will be recaptured if the project receives a grant. The grant is not included in the gross income of the taxpayer. This grant cannot be taken for systems where construction began after December 31, 2011.

- Qualified applicants: Commercial, Industrial, Agricultural
- Qualified technologies: Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Solar Thermal Process Heat, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Fuel Cells, Geothermal Heat Pumps, Municipal Solid Waste, CHP/Cogeneration, Solar Hybrid Lighting, Hydrokinetic, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal, Microturbines
- For more information: See the Treasury's 1603 website at <http://www.treasury.gov/initiatives/recovery/Pages/1603.aspx>; program guidance at <http://www.treasury.gov/initiatives/recovery/Documents/guidance.pdf>; and see CRS Report R41635, *ARRA Section 1603 Grants in Lieu of Tax Credits for*

Renewable Energy: Overview, Analysis, and Policy Options, by Phillip Brown
and Molly F. Sherlock

Industry

7. Energy Efficient Appliance Tax Credit for Manufacturers

- Administered by: Internal Revenue Service
- Authority: Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58), Title XIII, Subtitle C, Section 1334(a); Energy Improvement and Extension Act of 2008 (P.L. 110-343), Division B, Section 305; 26 USC § 45M subsequently amended; H.R. 4853, Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010
- Scheduled termination: December 31, 2011
- Description: A tax credit for new appliances that meet Energy Star 2007 requirements. Each manufacturer is limited to a total of \$25 million in 2011 for all credits under this provision.
- Qualified applicants: Industrial; appliance manufacturers
- Qualified technologies: Clothes washers; dishwashers; refrigerators
- For more information: See the IRS website at <http://www.irs.gov/businesses/corporations/article/0,,id=208024,00.html>; IRS form 8909 at <http://www.irs.gov/pub/irs-pdf/f8909.pdf>

8. Qualifying Advanced Energy Manufacturing Investment Tax Credit (48C)

- Administered by: Internal Revenue Service
- Authority: American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), Division B, Section 1302; 26 USC 48C
- Scheduled termination: The applications were due to DOE by September 16, 2009, with final applications due to DOE October 16, 2009. This incentive is no longer available; an act of Congress is required to renew this tax incentive. As of February 2011, this has not yet occurred.
- Description: The U.S. Treasury Department, in consultation with the U.S. Department of Energy (DOE), is no longer accepting applications for this tax credit. The applications were due to DOE by September 16, 2009, with final applications due to DOE October 16, 2009. Only applicants accepted and ranked by the DOE were allowed to submit final applications to the Internal Revenue Service (IRS) by December 16, 2009. Approved projects were announced in January 2010.

This tax credit was designed to encourage a U.S.-based renewable energy manufacturing sector. Projects receiving awards are eligible for a tax credit of 30% of the qualified investment required for an advanced energy project. Qualified applicants: Commercial; industrial; manufacturing.

- Qualified applicants: Commercial, industrial, manufacturing

- Qualifying technologies: Lighting; lighting controls/sensors; energy conservation technologies: smart grid; solar water heat; solar thermal electric; photovoltaics; wind; geothermal electric; fuel cells; geothermal heat pumps; batteries and energy storage; advanced transmission technologies that support renewable energy generation; renewable fuels; fuel cells using renewable fuels; microturbines
- For more information: See the U.S. Department of Energy, Recovery.Gov website at <http://www.energy.gov/recovery/48C.htm>; and http://www.energy.gov/recovery/documents/ARRA_Statute-Section48C.pdf; and <http://www.whitehouse.gov/the-press-office/president-obama-awards-23-billion-new-clean-tech-manufacturing-jobs>

9. Renewable Electricity Production Tax Credit (PTC)

- Administered by: Internal Revenue Service
- Authority: Energy Policy Act of 1992 (EPACT; P.L. 102-486); Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58), Title XIII, Section 1301; Tax Relief and Health Care Act of 2006 (P.L. 109-432), Division A, Section 201; Energy Improvement and Extension Act of 2008 (P.L. 110-343); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), Division B, Section 1101 and 1102; 26 USC 45 (amended)
- Scheduled termination: The duration of the credit is generally 10 years after the date the facility is placed in service, but there are two exceptions: Open-loop biomass, geothermal, small irrigation hydro, landfill gas and municipal solid waste combustion facilities placed into service after October 22, 2004, and before enactment of the Energy Policy Act of 2005, on August 8, 2005, are only eligible for the credit for a five-year period. Open-loop biomass facilities placed in service before October 22, 2004, are eligible for a five-year period beginning January 1, 2005
- Description: The federal renewable electricity Production Tax Credit (PTC) is a per-kilowatt-hour tax credit for electricity generated by qualified energy resources and sold by the taxpayer to an unrelated person during the taxable year. The American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5) allows taxpayers eligible for the federal renewable electricity production tax credit (PTC) to take the federal business energy investment tax credit (ITC) or to receive a grant from the U.S. Treasury Department instead of taking the PTC for new installations. The grant is only available to systems where construction begins prior to December 31, 2011. The new law also allows taxpayers eligible for the business ITC to receive a grant from the U.S. Treasury Department instead of taking the business ITC for new installations. The Treasury Department issued Notice 2009-52 in June 2009, giving limited guidance on how to take the federal business energy investment tax credit instead of the federal renewable electricity production tax credit.
- Qualified applicants: Commercial; industrial
- Qualifying technologies: Landfill gas; wind; biomass; hydroelectric; geothermal electric; municipal solid waste; hydrokinetic power (i.e., flowing water);

anaerobic digestion; small hydroelectric; tidal energy; wave energy; ocean thermal

- For more information: See the IRS website at <http://www.irs.gov/pub/irs-pdf/f8835.pdf>

10. Residential Energy Conservation Subsidy Exclusion (Corporate)

- Administered by: Internal Revenue Service
- Authority: Energy Policy Act of 1992 (EPACT; P.L. 102-486), Section 1912; Small Job Protection Act of 1996 (P.L. 104-188), Section 1617; 26 USC 136 (amended)
- Scheduled termination: None
- Description: Energy conservation subsidies provided by public utilities, either directly or indirectly, are nontaxable: “Gross income shall not include the value of any subsidy provided (directly or indirectly) by a public utility to a customer for the purchase or installation of any energy conservation measure.”
- Qualified applicants: Residential; multi-family residential
- Qualifying technologies: Solar water heat; solar space heat; photovoltaics; other energy efficiency technologies not identified.
- For more information: See the IRS website at <http://www.irs.gov/publications/p525/index.html>

11. Residential Energy Conservation Subsidy Exclusion (Personal)

- Administered by: Internal Revenue Service
- Authority: Energy Policy Act of 1992 (EPACT; P.L. 102-486); Small Job Protection Act of 1996 (P.L. 104-188), Section 1617; 26 USC 136 (amended)
- Scheduled termination: None
- Description: Energy conservation subsidies provided by public utilities, either directly or indirectly, are nontaxable: “Gross income shall not include the value of any subsidy provided (directly or indirectly) by a public utility to a customer for the purchase or installation of any energy conservation measure.”
- Qualified applicant: Residential; multi-family residential
- Qualifying technologies: Specific efficiency technologies not identified; eligible renewables: Solar water heat; solar space heat; photovoltaics
- For more information: See the IRS website at <http://www.irs.gov/publications/p525/index.html>

State, Local and Tribal Governments

12. Clean Renewable Energy Bonds (CREBs)

- Administered by: Internal Revenue Service
- Authority: Established by the Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Tax Relief and Health Care Act of 2006 (P.L. 109-432); Energy Improvement and Extension Act of 2008 (P.L. 110-343), Division B; American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5); 26 USC 54 (old CREBs); 26 USC 54A (new CREBs); 26 USC 54C (new CREBs); IRS Notice 2009-33; IRS Announcement 2010-54
- Annual funding: EPACT originally allocated \$800 million of tax credit bonds to be issued between January 1, 2006, and December 31, 2007. Following the enactment of the federal Tax Relief and Health Care Act of 2006, the IRS made an additional \$400 million in CREBs financing available for 2008 through Notice 2007-26. In November 2006, the IRS announced that the original \$800 million allocation had been reserved for a total of 610 projects. The additional \$400 million (plus surrendered volume from the previous allocation) was allocated to 312 projects in February 2008. Of the \$1.2 billion total of tax-credit bond volume cap allocated to fund renewable-energy projects, state and local government borrowers were limited to \$750 million of the volume cap, with the rest reserved for qualified municipal or cooperative electric companies. The Energy Improvement and Extension Act of 2008 (Div. A, Sec. 107) allocated \$800 million for new CREBs. In February 2009, the American Recovery and Reinvestment Act of 2009 (Div. B, Sec. 1111) allocated an additional \$1.6 billion to expand the total new CREBs allocation to \$2.4 billion
- Scheduled termination: November 1, 2010 (New CREBs Electric Cooperatives Solicitation deadline, expired)
- Description: The IRS is not currently accepting applications for New CREB bond volume. CREBs are used to finance renewable energy projects. CREBs are issued, theoretically, with a 0% interest rate. The borrower pays back only the principal of the bond and the bondholder receives federal tax credits in lieu of the traditional bond interest.
- Qualified applicants: State, local, and tribal governments; municipal utility; rural electric cooperative
- Qualified technologies: Solar thermal electric; photovoltaics; landfill gas; wind; biomass; hydroelectric; geothermal electric; municipal solid waste; hydrokinetic power; anaerobic digestion; tidal energy; wave energy; ocean thermal
- For more information: See the DSIRE website at http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US45F&re=1&ee=1; and the Internal Revenue Service Website at http://www.irs.gov/irb/2007-14_IRB/ar17.html and <http://www.irs.gov/pub/irs-drop/n-09-33.pdf>

13. Qualified Energy Conservation Bonds (QECCBs)

- Administered by: Internal Revenue Service
- Authority: Energy Improvement and Extension Act of 2008 (P.L. 110-343), Division B, Section 301; American Recovery and Reinvestment Act of 2009, (ARRA; P.L. 111-5), Division B, Title I, Subtitle F, Part III, Section 1521(b)(1), (2), and Part IV, Section 1531(c)(2), and Part V, Section 1541(b)(2); 26 USC 54A ; 26 USC 54D; IRS Notice 2009-29; IRS Notice 2010-35
- Scheduled termination: None
- Description: QECCBs may be used by state, local and tribal governments to finance certain types of energy projects. These bonds are issued, theoretically, with a 0% interest rate. The borrower pays back only the principal of the bond and the bondholder receives federal tax credits in lieu of the traditional bond interest. The tax credit may be taken quarterly to offset the tax liability of the bondholder. The tax credit rate is set daily by the U.S. Treasury Department; however, energy conservation bondholders will receive only 70% of the full rate set by the Treasury Department under 26 USC 54A. Credits exceeding a bondholder's tax liability may be carried forward to the succeeding tax year, but cannot be refunded. Energy conservation bonds differ from traditional tax-exempt bonds in that the tax credits issued through the program are treated as taxable income for the bondholder. The original limit on the volume of energy conservation tax credit bonds to be issued by state and local governments was \$800 million. However, The American Recovery and Reinvestment Act of 2009, enacted in February 2009, expanded the allowable bond volume to \$3.2 billion.
- Qualified applicants: State, local, and tribal governments
- Qualified technologies: Solar thermal electric; photovoltaics; landfill gas; wind; biomass; hydroelectric; geothermal electric; municipal solid waste; hydrokinetic power; anaerobic digestion; tidal energy; wave energy; ocean thermal
- For more information: See the DSIRE website at http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US51F&re=1&ee=1

Cross-Cutting

14. Modified Accelerated Cost-Recovery System (MACRS) + Bonus Depreciation (2008-2012)

- Administered by: Internal Revenue Service
- Authority: Economic Recovery Tax Act of 1981 (P.L. 97-34); Economic Stimulus Act of 2008 (P.L. 110-185); American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), Division B, Title I, Subtitle C, Part I, Section 1201(a)(1)-(2)(D), (3)(A), (b)(1); Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 (P.L. 111-312); 26 USC 168; 26 USC 48

- Scheduled termination: The five-year schedule for most types of solar, geothermal, and wind property has been in place since 1986. December 31, 2011 (100% bonus depreciation); December 31, 2012 (50% bonus depreciation)
- Description: Under MACRS, businesses may recover investments in certain property through depreciation deductions. The MACRS establishes a set of class lives for various types of property, ranging from three to 50 years, over which the property may be depreciated. A number of renewable energy technologies are classified as five-year property (26 USC 168(e)(3)(B)(vi)) under the MACRS, which refers to 26 USC 48(a)(3)(A), often known as the Energy Investment Tax Credit or ITC to define eligible property.
- Qualified applicants: Commercial; industrial
- Qualified technologies: Solar water heat; solar space heat; solar thermal electric; solar thermal process heat; photovoltaics; landfill gas; wind; biomass; renewable transportation fuels; geothermal electric; fuel cells; geothermal heat pumps; municipal solid waste; CHP/cogeneration; solar hybrid lighting; direct use geothermal; anaerobic digestion; microturbines
- For more information: See the IRS website at <http://www.irs.gov/publications/p946/ch04.html>

15. Alternative Motor Vehicle Credit

- Administered by: Internal Revenue Service
- Authority: Energy Policy Act of 2005 (EPACT 2005; P.L. 109-58); Energy Improvement and Extension Act of 2008 (P.L. 110-343), Division B, Section 205; American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), Division B, Sections 1141-1144
- Scheduled Termination: The IRS advises taxpayers that provisions of the Alternative Motor Vehicle Credit including the Qualified Hybrid Motor Vehicle Credit, Qualified Alternative Fuel Motor Vehicle Credit (QAFMV), and Advanced Lean Burn Technology Motor Vehicle Credit expired as of December 31, 2010; the Qualified Plug-In Electric Motor Vehicle Conversion Credit expires on December 31, 2011; and the Qualified Plug-In Electric Drive Motor Vehicle Credit and the Fuel Cell Motor Vehicle Credit both expire on December 31, 2014.
- Description: A tax credit is subtracted directly from the total amount of federal tax owed, thus reducing or even eliminating the taxpayer's tax obligation. The tax credit for hybrid vehicles applies to vehicles purchased or placed in service on or after January 1, 2006. Purchasers of advanced lean burn technology motor vehicles may claim a credit of \$1,300 per vehicle.
- Qualified applicant: Taxpayers
- Qualifying technologies: Hybrid gasoline-electric; diesel; battery-electric; alternative fuel and fuel cell vehicles; advanced lean-burn technology vehicles; plug-in hybrid electric vehicles
- For more information: See the IRS website for the Alternative Motor Vehicle Credit at <http://www.irs.gov/businesses/corporations/article/0,,id=202341,00.html>

III. Department of Agriculture

1. Assistance to High Energy Cost Rural Communities Program

- Administered by: Rural Development
- Authorization: Rural Electrification Act of 1936 (P.L. 74-605); Grain Standards and Warehouse Improvement Act of 2000 (P.L. 106-472)
- Annual funding: \$18 million for FY2009; \$18 million for FY2010; FY2011 budget request was \$0
- Scheduled termination: None
- Description: This program provides financial assistance to rural communities with extremely high energy costs (exceeding 275% of the national average)
- Qualified applicants: State, local, and tribal governments (including U.S. territories); for-profit businesses; non-profit businesses; cooperatives; individuals
- Qualified technologies: Not specifically identified
- For more information: See CFDA program number 10.859 at <https://www.cfda.gov> and the USDA program website at <http://www.usda.gov/rus/electric/hecgp/index.htm>

2. Bioenergy Program for Advanced Biofuels

- Administered by: Rural Development
- Authorization: P.L. 110-234, Food, Conservation, and Energy Act of 2008, Title IX, section 9001, subsection 9005
- Annual Funding:
 - Mandatory Farm Bill authorization: \$55 million for FY2009; \$55 million for FY2010; \$85 million for FY2011
 - Discretionary: \$25 million authorized for FY2009-FY2011; \$0 appropriated for FY2009-FY2011
- Scheduled Termination: Mandatory funding authorized through FY2012
- Description: To support and ensure an expanding production of advanced biofuels by providing payments to eligible advanced biofuel producers.
- Qualified applicants: Eligible advanced biofuels producers
- Qualified technologies: Payments will be made to eligible advanced biofuel producers for the production of fuel derived from renewable biomass, other than corn kernel starch, to include biofuel derived from cellulose, hemicellulose, or lignin; biofuel derived from sugar and starch (other than Ethanol derived from corn kernel starch); biofuel derived from waste material, including crop residue, other vegetative waste material, animal waste, food waste and yard waste; diesel-equivalent fuel derived from renewable biomass, including vegetable oil and animal fat; biogas (including landfill gas and sewage waste treatment gas)

produced through the conversion of organic matter from renewable biomass; butanol or other alcohols produced through the conversion of organic matter from renewable biomass; and other fuel derived from cellulosic biomass

- For more Information: See CFDA program number 10.867 at <https://www.cfda.gov> and the USDA Program website at <https://www.rurdev.usda.gov/rbs/busp/9005Biofuels.htm>

3. Biomass Crop Assistance Program (BCAP; Sec. 9011)

- Administered by: Farm Services Agency (FSA)
- Authorization: Title IX of the Farm Security and Rural Investment Act of 2002 (FSRIA; P.L. 107-171) is amended by Title IX, section 9001 of the Food, Conservation, and Energy Act of 2008 (P.L. 110-246), creating new section 9011 under FSIRA
- Annual funding: Original mandatory funding authorization for FY2009-FY2012 authorizes “such sums as necessary.” The Supplemental Appropriations Act of 2010 (P.L. 111-212) limits mandatory spending on BCAP by allowing no more than \$552 million in FY2010 and \$432 million in FY2011. Funding in 2012 remains at “such sums as necessary.”

For more on these changes in mandatory program spending, see CRS Report R41245, *Reductions in Mandatory Agriculture Program Spending*, by Jim Monke and Megan Stubbs. For more information on the 2010 supplemental, see CRS Report R41255, *FY2010 Supplemental Appropriations for Agriculture*, by Jim Monke

- Scheduled termination: Funding authorized through FY2012
- Description: BCAP provides assistance to support the production of eligible biomass crops on land within approved BCAP project areas. In exchange for growing eligible crops, the FSA will provide annual payments through 10- to 15-year contracts. Under these contracts up to 75% of establishment costs may also be provided. FSA will also provide matching payments to eligible material owners at a rate of \$1 for each \$1 per dry ton paid by a qualified biomass conversion facility. Payments may not exceed \$45 per ton for a two-year period and matching payments are available for no more than two years per participant.
- Qualified applicants: Eligible biomass material owners and eligible biomass producers
- Qualified technologies: Eligible material for a matching payment is renewable biomass, as defined by the 2008 farm bill, with several important exclusions including harvested grains, fiber or other commodities eligible to receive payments under the Commodity Title (Title I) of the 2008 farm bill (the residues of these commodities, however, are eligible and may qualify for payment); animal waste and animal waste by-products including fats, oils, greases and manure; food waste and yard waste; and algae. Eligible crops include renewable biomass, with the exception of crops eligible to receive a payment under Title I of the 2008 farm bill and plants that are invasive or noxious, or have the potential to become invasive or noxious.

- For more Information: See the USDA website at <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap> and http://www.apfo.usda.gov/Internet/FSA_File/bcap2010.pdf; see also CRS Report R41296, *Biomass Crop Assistance Program (BCAP): Status and Issues*, by Megan Stubbs

4. Biorefinery Assistance Program (Sec. 9003)

- Administered by: Rural Development
- Authorization: Title IX of the Farm Security and Rural Investment Act of 2002 (FSRIA, P.L. 107-171) is amended by Title IX, section 9001 of the Food, Conservation and Energy Act of 2008 (P.L. 110-246) creating new section 9003 under FSIRA
- Annual Funding:
 - Mandatory authorization: \$75 million for FY2009; \$245 million for FY2010. Mandatory funding to remain available until expended.
 - Discretionary authorization: \$150 million authorized annually for FY2009-FY2012; \$0 discretionary funding appropriated FY2009-FY2011
- Scheduled Termination: Funding authorized through FY2012
- Description: The purpose is to assist in the development of new and emerging technologies for the development of advanced biofuels, so as to increase the energy independence of the United States; promote resource conservation, public health, and the environment; diversify markets for agricultural and forestry products and agriculture waste material; and create jobs and enhance the economic development of the rural economy. Loan guarantees are made to fund the development, construction, and retrofitting of commercial-scale biorefineries using eligible technology. The maximum loan guarantee is \$250 million.
- Qualified applicants: Individuals, tribal entities, state government entities, local government entities, corporations, farm cooperatives, farmer cooperative organizations, associations of agricultural producers, national laboratories, institutions of higher education, rural electric cooperatives, public power entities, and consortia of any of the previous entities
- Qualified technologies: Technologies being adopted in a viable commercial-scale operation of a biorefinery that produces an advanced biofuel; and technologies that have been demonstrated to have technical and economic potential for commercial application in a biorefinery that produces an advanced biofuel
- For more Information: See the USDA website at <http://www.rurdev.usda.gov/rbs/busp/baplg9003.htm>; CFDA program number 10.865 at <https://www.cfda.gov>; CRS Report RL34130, *Renewable Energy Programs in the 2008 Farm Bill*, by Megan Stubbs

5. Community Wood Energy Program

- Administered by: Forest Service

- Authorization: Title IX of the Farm Security and Rural Investment Act of 2002 (FSRIA, P.L. 107-171 is amended by Title IX section 9001 of the Food, Conservation, and Energy Act of 2008 (P.L. 110-246), creating new section 9013 under FSIRA
- Annual funding: Discretionary authority: \$5 million authorized annually for FY2009-FY2012; \$0 appropriated for FY2009-FY2011. The FY2012 President's budget proposed to fund the program using funds from the Hazardous Fuels program within the Forest Service. Scheduled termination: Authorized through FY2012
- Description: Grants awarded for systems smaller than 5 million Btu per hour for heating (or 2 megawatts) for electric power production as directed by statute. At least a 50% match is required from Non-Federal funds for grants. Technical assistance will be based on previous work and commitment to future work demonstrated by the applicant. The program is authorized \$5 million annually when funded. Grant awards are limited to \$50,000 by statute.
- Qualified applicants: State and local governments
- Qualified technology: Biomass
- For more information: See CRS Report RL34130, *Renewable Energy Programs in the 2008 Farm Bill*, by Megan Stubbs

6. New Era Rural Technology Competitive Grants Program

- Administered by: National Institute of Food and Agriculture
- Authorization: National Agricultural Research, Extension, and Teaching Policy Act of 1977 (P.L. 95-113); Food, Conservation, and Energy Act of 2008 (P.L. 110-246)
- Annual funding: \$875,000 for FY2010; an estimated \$875,000 for FY2011; and an estimated \$875,000 for FY2012
- Scheduled termination: Authorized through FY2012
- Description: This program provides grant funding for approved technology development, applied research, and training to develop an agriculture-based renewable energy workforce. The initiative shall support the following fields: (A) bioenergy; (B) pulp and paper manufacturing; and (C) agriculture-based renewable energy resources.
- Qualified applicants: Public or private nonprofit community colleges; advanced technology centers
- Qualified technologies: Biomass; bioenergy
- For more information: See CFDA program number 10.314 at <https://www.cfda.gov>

7. Repowering Assistance Program

- Administered by: Rural Development

- Authorization: Title IX, Section 9003 of the Farm Security and Rural Investment Act of 2002 (FSIRA, P.L. 107-171 is amended by Title IX, section 9001 of the Food, Conservation and Energy Act of 2008 (P.L. 110-246), creating new section 9004 under FSIRA
- Annual funding:
 - Mandatory authorization: \$35 million for FY2009, to remain available until expended.
 - Discretionary authorization: \$15 million authorized annually for FY2009-FY2012 ; \$0 discretionary funding appropriated FY2009-FY2011
- Scheduled termination: Authorized through FY2012
- Description: The purpose of this program is to provide financial incentives to biorefineries in existence on June 18, 2008, to replace the use of fossil fuels used to produce heat or power at their facilities by installing new systems that use renewable biomass, or to produce new energy from renewable biomass.
- Qualified applicants: Eligible biorefinery. The biorefinery must have been in existence on or before June 18, 2008
- Qualified technologies: Renewable biomass
- For more Information: See program number 10.866 on the CFDA website <https://www.cfda.gov> and the USDA program website at http://www.rurdev.usda.gov/BCP_RepoweringAssistance.html; CRS Report RL34130, *Renewable Energy Programs in the 2008 Farm Bill*, by Megan Stubbs

8. Rural Energy For America Program (REAP) Grants and Loans

- Administered by: Rural Development
- Authority: Title IX, section 9006 of the Farm Security and Rural Investment Act of 2002 (FSIRA, P.L. 107-171) is amended by Title IX, section 9001 of the Food Conservation, and Energy Act of 2008 (P.L. 110-246), creating new section 9007 under FSIRA. The new section 9007 converted the federal Renewable Energy Systems and Energy Efficiency Improvements Program into the Rural Energy for America Program (REAP)
- Annual funding:
 - Mandatory authorization: \$55 million for FY2009; \$60 million for FY2010; \$70 million for FY2011; and \$70 million for FY2012
 - Discretionary authorization: \$25 million authorized annually for FY2009-FY2012. Discretionary funding appropriated: \$5 million for FY2009; \$40 million for FY2010; and \$40 million for FY2011, based on continuing resolution through 3/4/2011 (P.L. 111-322); FY2012 budget request was \$37 million
- Scheduled termination: Authorized through FY2012

- Description: REAP promotes energy efficiency and renewable energy for agricultural producers and rural small businesses through the use of (1) grants and loan guarantees for energy efficiency improvements and renewable energy systems, and (2) grants for energy audits and renewable energy development assistance.
- Qualified applicants: Commercial; schools; state, local, and tribal governments; rural electric cooperative; agricultural; public power entities
- Qualified technologies: Solar water heat; solar space heat; solar thermal electric; photovoltaics; wind; biomass; hydroelectric; renewable transportation fuels; geothermal electric; geothermal heat pumps; CHP/cogeneration; hydrogen; direct-use geothermal; anaerobic digestion; small hydroelectric; tidal energy; wave energy; ocean thermal; renewable fuels; fuel cells using renewable fuels; microturbines. Specific energy efficiency technologies not identified
- For more information: See the program website at <http://www.rurdev.usda.gov/rbs/farbill/> and CRS Report RL34130, *Renewable Energy Programs in the 2008 Farm Bill*, by Megan Stubbs

9. Sustainable Agriculture Research and Education Program (SARE)

- Administered by: National Institute of Food and Agriculture; Agricultural Research Service; and other appropriate agencies
- Authorization: Food, Agriculture, Conservation and Trade Act of 1990 (P.L. 101-624); Food, Agriculture, Conservation and Trade Act Amendments of 1991 (P.L. 102-237); Federal Agriculture Improvement and Reform Act of 1996 (P.L. 104-127); Food, Conservation, and Energy Act of 2008 (P.L. 110-246)
- Annual funding: \$12.5 million for FY2006; \$12.4 million for FY2007; \$9.1 million for FY2008; \$14.5 million for FY2009; \$14.5 million for FY2010, \$15 million requested for FY2011
- Scheduled termination: None
- Description: The purpose of the Sustainable Agriculture Research and Education Program (SARE) is, in part, to encourage research designed to increase our knowledge concerning agricultural production systems that conserve soil, water, energy, natural resources, and fish and wildlife habitat. SARE provides grants through the agricultural bioenergy feedstock and energy efficiency research and extension initiative for projects with the purpose of enhancing the production of biomass energy crops and the energy efficiency of agricultural operations.
- Qualified applicants: Federal and state governments; colleges and universities; state agricultural experiment stations; state cooperative extension services; nonprofit organizations; individuals with demonstrable expertise
- Qualified technologies: Biomass; biofuels; other technologies not identified.
- For more information: See CFDA program number 10.215 at <https://www.cfda.gov>
- For information on additional USDA programs, see CRS Report RL34130, *Renewable Energy Programs in the 2008 Farm Bill*, by Megan Stubbs

IV. U.S. Department of Housing and Urban Development

1. Assisted Housing Stability and Energy and Green Retrofit Investments Program (Recovery Act Funded)

- Administered by: Department of Housing and Urban Development (HUD)
- Authority: American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), Title XII
- Annual funding: (Project Grants) \$0 for FY2009; \$235 million for FY2010 ; \$0 for FY2011—All obligations were to be made by September 30, 2010 Scheduled termination: Anticipated to be 100% obligated and spent within two years of passage (by February 17, 2011). Receiving property owners are required to spend the funds on the specific improvements within two years of receipt
- Description: This program will provide funding for energy and green retrofit investments to certain eligible assisted, affordable multifamily properties. Funding includes incentives for participating property owners, a set-aside for administrative functions, and a set-aside for due diligence and underwriting support. Assistance will be for specific retrofit purposes.
- Qualified applicant: Residential
- Qualifying technologies: Specific technologies not identified
- For more information: See CFDA program number 14.318 at <https://www.cfda.gov>

2. Energy Efficient Mortgages (EEMs)

- Administered by: Federal Housing Administration (FHA) and Department of Veterans Affairs (VA). Conventional mortgages: Private lenders that sell mortgage loans to Fannie Mae or Freddie Mac may offer Energy Efficient Mortgages (EEMs)
- Authority: EEMs were initially introduced by lenders in the 1980s. In 1992, three pieces of legislation passed by Congress worked towards standardizing and expanding the use of EEMs. In 1992, Congress established an FHA Energy Efficient Mortgage Pilot Program (P.L. 102-550). The program was later expanded beyond five states to become a national program. The Housing Economic Recovery Act of 2008 (HERA; P.L. 110-289) increased the maximum amount that can be added to an FHA mortgage for energy efficient improvements. The 111th Congress also passed some incentives to encourage green home improvements in the American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5).
- Scheduled termination: None
- Description: Homeowners can take advantage of EEMs to finance a variety of energy efficiency measures, including renewable energy technologies, in a new

or existing home. The U.S. federal government directly provides these loans through the FHA and VA lending programs. Fannie Mae and Freddie Mac will also purchase EEMs from primary lenders. Primary lenders may issue EEMs that do not conform to underwriting standards.

- **Qualified applicants:** The loan is available to anyone who meets the income requirements for FHA's Section 203 (b), provided the applicant can meet the monthly mortgage payments. New and existing owner-occupied homes of up to two units qualify for this loan. Cooperative units are not eligible. VA: available to qualified military personnel, reservists and veterans; Conventional: Applicants qualifying for a conventional mortgage are also eligible for an energy efficient mortgage
- **Qualifying technologies:** Passive solar space heat; solar water heat; solar space heat; photovoltaics; daylighting; and other technologies not specifically identified
- **For more information:** See the HUD, Energy Star and DSIRE websites at <http://www.hud.gov/offices/hsg/sfh/eem/eemhome.cfm>
http://www.energystar.gov/index.cfm?c=mortgages.energy_efficient_mortgages
http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US36F&re=1&ee=1V. Department of Veterans Affairs

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- **Scheduled termination:** None
- **Description:** Homeowners can take advantage of EEMs to finance a variety of energy efficiency measures, including renewable energy technologies, in a new or existing home. The U.S. federal government directly provides these loans through the FHA and VA lending programs. Fannie Mae and Freddie Mac will also purchase EEMs from primary lenders. Primary lenders may issue EEMs that do not conform to underwriting standards.
- **Qualified applicants:** The loan is available to anyone who meets the income requirements for FHA's Section 203 (b), provided the applicant can meet the monthly mortgage payments. New and existing owner-occupied homes of up to two units qualify for this loan. Cooperative units are not eligible. VA: available to qualified military personnel, reservists and veterans; Conventional: applicants

qualifying for a conventional mortgage are also eligible for an energy efficient mortgage

- Qualifying technologies: Passive solar space heat; solar water heat; solar space heat; photovoltaics; daylighting; and other technologies not specifically identified
- For more information: See the HUD, Energy Star and DSIRE websites at <http://www.hud.gov/offices/hsg/sfh/eem/eemhome.cfm>;
http://www.energystar.gov/index.cfm?c=mortgages.energy_efficient_mortgages
http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US36F&re=1&ee=1

VI. Small Business Administration

1. 7(a) Loan Guarantees

- Administered by: Small Business Administration (SBA)
- Authority: Small Business Act of 1953 (Public Law 83-163)
- Scheduled termination: None
- Annual Funding: \$80 million (\$10.2 million guaranty) for FY2010; \$127.5 million (\$83.2 million 7(a) guaranty, \$41.2 7(a) guaranty revolvers and \$3.1 million 7(a) dealer floor plan) for FY2011; and a \$129.8 budget request (\$87.5 million 7(a) guaranty, \$39.2 million 7(a) guaranty revolvers, \$3.1 million dealer floor plan) for FY2012. Also see CRS Report R41146, *Small Business Administration 7(a) Loan Guaranty Program*, by Robert Jay Dilger
- Description: To provide guaranteed loans from lenders to small businesses which are unable to obtain financing in the private credit marketplace, but can demonstrate an ability to repay loans if granted, in a timely manner. Guaranteed loans are made available to for-profit small businesses. The SBA's 7(a) lending authority includes (1) regular 7(a) (2) the Low Documentation Loan Program (Low Doc); (3) SBAExpress Program; (4) the Cap Line Program (5) PLP and (6) International Trade.
- Qualified applicant: Small businesses (meeting the size and eligibility standards)
- Qualified technologies: Not specifically listed
- For more information: See CRS Report R41146, *Small Business Administration 7(a) Loan Guaranty Program*, by Robert Jay Dilger; the SBA Website at <http://www.sba.gov/financialassistance/borrowers/guaranteed/7alp/index.html>; and CFDA program number 59.012 at <https://www.cfda.gov>

VII. Department of the Interior

1. Energy and Mineral Development Program: Minerals and Mining on Indian Lands

- Administered by: Bureau of Indian Affairs. Energy and Mineral Development Program
- Authority: Indian Self-Determination and Education Assistance Act (P.L. 93-638), 25 USC 450; Snyder Act of 1921 (P.L. 67-85), 25 USC 13; Indian Minerals Development Act (P.L. 97-382), 25 USC 2101 et seq.; Umatilla Basin Project Act (P.L. 101-557), 16 USC 1271 et seq.
- Annual funding: \$18.622 million for FY2010; \$19.998 million requested for FY2011
- Scheduled termination: None
- Description: Funding may be used to facilitate the inventory, assessment, promotion and marketing of both renewable and nonrenewable energy and mineral resources on Indian lands. Funds are awarded competitively to support assessment and inventory programs or to develop baseline data, but cannot be used for development purposes.
- Qualified applicants: Federally recognized Indian tribes; individual American Indian mineral owners
- Qualified technologies: Renewable energy technologies
- For more information: See CFDA program 15.038 at <http://www.cfda.gov>

2. Tribal Energy Development Capacity Grant Program

- Administered by: Bureau of Indian Affairs
- Authorization: Energy Policy Act of 1992 (EPACT; P.L. 102-486); Tribal Energy Resource Development and Self-Determination Act of 2005 (Title V of Energy Policy Act of 2005; P.L. 109-58)
- Annual funding: \$375,000 for FY2007; \$1 million for FY2008; no estimate available for FY2009 or FY2010
- Scheduled termination: None
- Description: This program provides grants to Indian tribes to (1) develop and sustain the managerial and technical capacity needed to develop their energy resources; and (2) properly account for resulting energy production and revenues.
- Qualified applicant: Tribal governments
- Qualified technologies: Renewable energy technologies
- For more information: See CFDA program number 15.148 at <https://www.cfda.gov>; or contact IEED, the Division of Indian Energy at (202) 219-0740

VIII. Department of Labor

1. Program of Competitive Grants for Worker Training and Placement in High Growth and Emerging Industry Sectors

- Administered by: Employment Training Administration
- Authority: American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), Title VIII
- Annual funding: (Project Grants) \$0 for FY2008; an estimated \$750 million for FY2009; \$0 for FY2010 and FY2011 Scheduled termination: None
- Description: This program provides competitive grants for worker training and placement in high growth and emerging industry sectors.
- Qualified applicants: State, local, and tribal governments; colleges and universities; private nonprofit institutions/organizations
- For more information: See the U.S. Department of Labor's (DOL's) *Training and Employment Notice* for this program at <http://wdr.doleta.gov/directives/attach/ten/TEN44-08.pdf>; and CFDA program number 17.275 at <https://www.cfda.gov>

IX. Department of Transportation

1. Hydrogen Storage Research and Development Program

- Administered by: Research and Innovative Technology Administration (RITA)
- Authorization: Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU, P.L. 109-59)
- Annual funding: \$213,878 for FY2009; \$0 for FY2010
- Scheduled termination: June 30, 2011
- Description: This program provides grants for research and development of hydrogen storage technologies.
- Qualified applicant: Public nonprofit organizations; private nonprofit organizations
- Qualified technology: Hydrogen
- For more information: See CFDA program number 20.764 at <https://www.cfda.gov>

Appendix A. Summary of Federal Renewable Energy and Energy Efficiency Incentives/Index of Programs

Table A-1. Federal Incentives by Agency

Administering Agency	Program	Description	U.S. Code Citation	FY2010 Appropriations^a	Expiration Date
Department of Energy	Advanced Research Projects Energy Financial Assistance Program (ARPA-E)	Grants to finance sophisticated energy technology R&D projects to accelerate transformation technology advances.	42 USC §16538	\$0	Program evaluation after FY2012
	Biomass and Biorefinery Systems R&D Program	Grants to develop cost-effective technologies and systems to transform domestic biomass resources into biofuels, bioproducts, and biopower.	42 USC §16232	\$220 million	None
	Building Technologies Program	Provides financial and technical assistance to improve efficiency of buildings and the equipment, components and systems within them	42 USC §17061-17124	\$222 million	None
	Conservation Research and Development Grant Program	Grants to finance long-terms R&D efforts in buildings technologies, Industrial technologies, vehicle technologies, and hydrogen/fuel cell technologies.	42 USC §5901 et seq.	Estimated \$1.7 billion	None
	Electricity Delivery and Energy Reliability, Research, Development and Analysis Grant Program	Grants to develop cost-effective technology to enhance the reliability, efficiency, and resiliency of the electric grid	42 USC §17381 et seq.	\$125 million	None
	Energy Efficiency and Conservation Block Grants Program	Grants to finance energy efficiency and conservation programs/projects in local communities and renewable energy installations on government buildings	42 USC §17151-17158	\$0	None

Administering Agency	Program	Description	U.S. Code Citation	FY2010 Appropriations^a	Expiration Date
	Energy Efficiency and Renewable Energy Information Dissemination, Outreach, Training, and Technical Analysis/Assistance Program	Provides financial assistance to stimulate increased usage of energy efficiency/ renewable energy technologies and accelerate the adoption of these technologies	See Notes field ^b	Estimated \$41.2 million	None
	Energy Efficiency and Renewable Energy Technology Deployment, Demonstration, and Commercialization Grant Program	Provides financial assistance for deployment, demonstration, and commercialization of energy efficiency and renewable energy technologies	42 USC §16191 et seq. and 42 USC §16231 et seq.	Estimated \$7.2 million	None
	Energy Efficient Appliance Rebate Program	Provides financial and technical assistance to states to establish residential Energy Star rated appliance rebate programs	42 USC §15821	\$0	End of FY2010
	Federal Energy Management Program	Provides assistance to federal agencies in developing and implementing energy efficiency and renewable energy technologies to meet energy management goals	42 USC §17131 et seq.	\$32 million	None
	Financial Assistance Program (Office of Science)	Grants support research in the basic sciences and advanced technology concepts and assessments in fields related to energy	42 USC §13503	Estimated \$1.3 billion	None
	Geothermal Technologies Program	Partners DOE with industry, academia, and research facilities to develop geothermal energy technologies	42 USC §16231 et seq. and 42 USC §17191 et seq.	\$44 million	None
	Hydrogen & Fuel Cell Technologies Program	Partners DOE with industry, academia, and national laboratories to develop hydrogen and fuel cell technologies for the marketplace	42 USC §16151 et seq.	\$174 million	None

Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

Administering Agency	Program	Description	U.S. Code Citation	FY2010 Appropriations^a	Expiration Date
	Industrial Technologies Program	Develops and supports the commercialization of new energy efficient technologies to improve industrial efficiency while increasing productivity	42 USC §17111 et seq.	\$96 million	None
	Inventions and Innovations Program	Provides financial and technical assistance to develop innovative cost-effective ideas and inventions with future commercial value. Focus on energy efficiency and renewable energy technologies.	42 USC § 5913	Estimated \$102,000	None
	Loan Guarantee Program	Loan guarantees to encourage commercial use of new or significantly improved technologies that avoid, reduce or sequester air pollutants or greenhouse gas emissions	42 USC §16511 et seq.	\$0 for the Innovative Technology Loan Guarantee Program (Section 1703) \$0 for the Temporary Loan Guarantee Program (Section 1705)	None
	Regional Biomass Energy Programs	Provides financial assistance to increase America's use of fuels, chemicals, materials, and power made from domestic biomass	See Notes field ^b	Estimated \$4.8 million	None
	Renewable Energy Production Incentive	Provides incentive payments for electricity generated and sold by new qualifying renewable energy facilities	42 USC §13317	\$0	End of FY2026
	Renewable Energy Research and Development Program	Provides financial assistance to conduct R&D efforts in renewable energy technologies	42 USC §16231 et. seq.	Estimated \$1.9 billion for FY2010 from ARRA funds	None
	Small Business Innovation Research/Small Business Technology Transfer Programs	Grants for small businesses to develop and commercialize energy technologies, including energy efficiency and renewable energy technologies	15 USC §638	\$94 million	None

Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

Administering Agency	Program	Description	U.S. Code Citation	FY2010 Appropriations^a	Expiration Date
	Solar Energy Technologies Program	Program partners with industry, universities, and national laboratories to finance R&D and bring reliable and affordable solar energy technologies to the marketplace	42 USC §16231 et seq. and 42 USC §17171 et seq.	\$247 million	None
	State Energy Program	Provides grants to states to design and implement their own renewable energy and energy efficiency programs	42 USC §6321 et seq.	\$50 million	None
	Tribal Energy Program	Provides financial and technical assistance, education, and training to tribes to evaluate and develop renewable energy sources and energy efficiency measures	25 USC §3501 et seq.	\$10 million	None
	Vehicle Technologies Program	Program partners with industry leaders to develop and deploy advanced transportation technologies to improve vehicle fuel efficiency and domestically produce clean and affordable alternative fuels	42 USC §17011 et seq.	\$311.4 million	None
	Weatherization Assistance Program	Provides financial and technical assistance to states to increase the energy efficiency of low-income households	42 USC §6861 et seq.	\$270 million	None
	Wind and Hydropower Technologies Program	Program partners with industry, states, federal entities, and other stakeholders on R&D projects to improve the performance, lower costs, and accelerate the deployment of wind and water power technologies	42 USC §16231 et. seq and 42 USC §17211 et seq.	\$130 million	None
Internal Revenue Service	Business Energy Investment Tax Credit	Provides a tax credit for 30% of total expenditures on eligible systems placed in service, except geothermal systems, microturbines, and combined heat and power systems (10%)	26 USC §48	N/A	12/31/2016 for most eligible systems (except geothermal and solar thermal)

Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

Administering Agency	Program	Description	U.S. Code Citation	FY2010 Appropriations^a	Expiration Date
	Clean Renewable Energy Bonds (CREBs)	Bonds finance renewable energy projects	26 USC §54 (Old CREBs); 26 USC §54A (New CREBs) 26 USC §54C (New CREBs) IRS Notice 2009-33	N/A	12/31/2009 (Old CREBs); 11/01/2010 (New CREBs)
	Energy-Efficient Appliance Tax Credit for Manufacturers	Provides a tax credit to manufacturers for appliances that meet Energy Star 2007 requirements	26 USC §45M (amended)	N/A	12/31/2011
	Energy Efficient Commercial Buildings Tax Deduction	Tax deduction for certain qualifying systems and buildings	26 USC §179D (amended)	N/A	12/31/2013
	Energy-Efficient New Homes Tax Credit for Home Builders	Provides tax credits of up to \$2,000 for builders of new, energy-efficient homes	26 USC §45L (amended)	N/A	12/31/2011
	Modified Accelerated Cost-Recovery System (MARCS) + Bonus Depreciation (2008-2012)	Allows businesses to recover investments in certain renewable energy property through depreciation deductions	26 USC §168 and 26 USC §48	N/A	5-year schedule for most solar, wind and geothermal. 12/31/2011 (100% bonus depreciation) and 12/31/2012 (50% bonus depreciation)
	Qualified Energy Conservation Bonds (QECBs)	Bond authority is allocated to state, local, and tribal governments to finance a broad range of energy efficiency and renewable energy projects	26 USC § 54A; 26 USC §54D; 26 USC § 643I	N/A	N/A
	Qualifying Advanced Energy Manufacturing Investment Tax Credit	Provides tax credits to encourage a U.S. based renewable energy manufacturing sector	26 USC §48C	N/A	Applications were due to DOE by 9/16/2009, with final applications due to DOE 10/16/2009.
	Renewable Energy Grants (1603 Program)	Renewable energy grant program to reimburse eligible taxpayers for a portion of the expense of placing in service specified energy property	ARRA § 1603(a)	N/A	Construction must begin by 12/31/2011 and Applications must be submitted before 10/1/2012.

Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

Administering Agency	Program	Description	U.S. Code Citation	FY2010 Appropriations^a	Expiration Date
	Renewable Energy Production Tax Credit (PTC)	Provides a per-kilowatt-hour tax credit for electricity generated by qualified renewable energy technologies and sold during the tax year	26 USC §45 (amended)	N/A	Generally, 10 years after the date the facility placed in service (with exceptions for some technology types)
	Residential Energy Conservation Subsidy Exclusion (Corporate)	Corporate tax exemption for energy-conservation subsidies are provided by public utilities, either directly or indirectly	26 USC §136 (amended)	N/A	None
	Residential Energy Conservation Subsidy Exclusion (Personal)	Personal tax exemption for energy-conservation subsidies provided by public utilities, either directly or indirectly	26 USC §136 (amended)	N/A	None
	Residential Energy Efficiency Tax Credit	Provides tax credit to residents/individuals for the installation of qualified energy efficient equipment to existing homes (primary residence)	26 USC §25C	N/A	12/31/2011
	Residential Renewable Energy Tax Credit	Provides a tax credit to residents/ individuals for the installation of qualified renewable energy systems to existing homes. Home must serve as owner's primary residence.	26 USC §25D (amended)	N/A	12/31/2016
	Alternative Motor Vehicle Credit	Provides tax credit for hybrid and lean-burn vehicles.	26 USC §30B	N/A	Varies by technology type: See Table A-2 below
Department of Agriculture	Assistance to High Energy Cost Rural Communities Program	Provides financial assistance to rural communities with high energy costs	7 USC. §918a	\$18 million	None
	Bioenergy Program for Advanced Biofuels	Supports and ensures an expanding production of advanced biofuels by providing payments to advanced biofuels producers	7 USC §8105	\$55 million	Authorized through FY2012

Administering Agency	Program	Description	U.S. Code Citation	FY2010 Appropriations^a	Expiration Date
	Biomass Crop Assistance Program (BCAP)	Provides assistance to support the production of eligible biomass crops on land within approved project areas	7 USC §8111	“Such sums as necessary” with cap of \$552 million	Authorized through FY2012
	Biorefinery Assistance Program	Assists in the development of new technologies for development of biofuels	7 USC §8103	\$245 million	Authorized through FY2012
	Community Wood Energy Program	Provides grants to states and local governments to develop community wood energy plans or acquire or upgrade community wood energy systems	7 USC §8113	\$0	Authorized through FY2012
	New Era Rural Technology Competitive Grants Program	Provides grant funding for approved technology development, applied research, and training to develop bioenergy and agriculture-based renewable energy resources	7 USC §3319e	\$875K	Authorized through FY2012
	Repowering Assistance Program	Provides financial incentives to biorefineries in existence on June 18, 2008, to replace the use of fossil fuels used to produce heat or power by installing new systems that use renewable biomass or to produce new energy from renewable biomass	7 USC §8104	\$0	Authorized through FY2012
	Rural Energy for America Program	Provides grants and loan guarantees to promote energy efficiency and renewable energy to agricultural producers and rural small businesses	7 USC §8107	\$100 million (\$60 million mandatory and \$40 million discretionary)	Authorized through 2012

Administering Agency	Program	Description	U.S. Code Citation	FY2010 Appropriations^a	Expiration Date
	Sustainable Agriculture Research and Education	Provides grants for research projects with the purpose of enhancing biomass energy crop production and increasing the energy efficiency of agricultural operations	7 USC §5801 et seq.	\$14.5 million	None
Department of Housing and Urban Development	Assisted Housing Stability and Energy Green Retrofit Investments Program	Provides grants or loans for energy retrofit and green investments in assisted, affordable multifamily housing	See Notes field ^b	\$235 million	All obligations were to be made by 9/30/2010.
	Energy Efficient Mortgages	Provides backing of loans for energy efficient mortgages to finance the installation of energy efficiency or renewable energy technologies in new or existing homes	12 USC §1701z-16	N/A	None
Department of the Interior	Energy and Mineral Development Program: Minerals and Mining on Indian Lands	Facilitate the inventory, assessment, promotion and marketing of both renewable and nonrenewable energy and mineral resources on Indian lands	25 USC §450; 25 USC §13; 25 USC §2101 et seq; 16 USC. §1271 et seq.	\$18.622 million	None
	Tribal Energy Development Capacity Grant	Grants to Indian tribes to develop and sustain the managerial and technical capacity needed to develop their energy resources and properly account for resulting energy production and revenues	25 USC §3502	No estimate available	None
Department of Labor	Program of Competitive Grants for Worker Training and Placement in High Growth and Emerging Industry Sectors	Intended to preserve and create jobs; promote economic recovery; assist those most impacted by the recession; provide investments and invest in infrastructure	See Notes field ^b	\$0	None
Small Business Administration	7(a) Loan Guarantees	Provides guaranteed loans from lenders to small businesses	15 U.S.C. 636(a)(25(B))	\$80 million	None

Administering Agency	Program	Description	U.S. Code Citation	FY2010 Appropriations ^a	Expiration Date
Department of Transportation	Hydrogen Storage Research and Development Program	This program provides grants for research and development of hydrogen storage technologies	42 USC §128	\$0	6/30/2011
Department of Veterans Affairs	Energy Efficient Mortgages	Provides backing of loans for energy efficient mortgages to finance the installation of energy efficiency or renewable energy technologies in new or existing homes	12 USC §1701z-16	N/A	None

Source: CRS.

- a. FY2010 Appropriations data compiled from executive agency budget justifications, congressional committee reports, and program descriptions from the online edition of the *Catalog of Federal Domestic Assistance*.
- b. Some programs are not specifically identified or codified in the United States Code.

Table A-2. Alternative Motor Vehicle Credit (26 USC §30B)

Type of Credit	Expiration Date
Fuel Cell Motor Vehicle Credit	12/31/2014
Advanced Lean Burn Technology Motor Vehicle Credit	12/31/2010
Qualified Plug-In Electric Drive Motor Vehicle Credit	12/31/2014
Qualified Plug-In Electric Motor Vehicle Conversion Credit	12/31/2011
Qualified Alternative Fuel Motor Vehicle Credit	12/31/2010
Qualified Hybrid Motor Vehicle Credit	12/31/2010

Source: U.S. Code and IRS

Appendix B. Index of Programs by Applicant Eligibility and Technology Type

Table B-1. Index of Programs by Applicant Eligibility

Applicant Eligibility	Program Numbers
Advanced Technology Centers	III-6
Agricultural/Extension/Biofuel Producers	II-6, III-2, III-3, III-4, III-7, III-8, III-9
Alaska Native Corporations	I-15
Builder/Developer	II-4, II-5
Commercial/Industrial/For-Profit	I-1, I-2, I-3, I-4, I-5, I-6, I-11, I-12, I-13, I-15, I-16, I-18, I-21, I-22, I-24, I-25, II-3, II-4, II-6, II-7, II-8, II-9, II-14, III-1, III-2, III-3, III-4, III-7, III-8
Cooperative/Collaborative/Consortia	I-21, II-12, III-1, III-4, III-8
Federal Government	I-4, I-6, I-12, I-23, II-4, III-9
Higher Education (Colleges and Universities)	I-1, I-2, I-3, I-4, I-5, I-6, I-7, I-12, I-13, I-15, I-18, I-21, I-22, I-24, I-25, III-4, III-6, III-9, VIII-1
Local Government	I-2, I-6, I-7, I-12, I-13, I-14, I-15, I-17, I-18, I-22, I-24, I-25, II-12, II-13, III-1, III-4, III-5, III-8, VIII-1
National Laboratories	I-4, I-5, I-6, I-7, I-12, III-4
Nonprofit	I-2, I-13, I-15, I-17, I-18, I-21, I-22, I-24, I-25, III-1, III-9, VIII-1, IX-1
Other/Cross-Cutting	I-21, II-14, II-15
Research Organization	I-21, I-22
Residential/Individual	I-10, I-15, II-1, II-2, II-10, II-11, II-15, III-1, III-4, III-9, IV-1, IV-2, V-1
Schools	III-8
Small Businesses	I-6, I-10, I-24, I-26, VI-1
State Government	I-2, I-6, I-7, I-8, I-9, I-12, I-13, I-14, I-15, I-16, I-17, I-18, I-19, I-22, I-24, I-25, II-4, II-12, II-13, III-1, III-4, III-5, III-8, III-9, VIII-1
Tribal Government	I-6, I-9, I-13, I-14, I-15, I-17, I-18, I-19, I-20, I-22, I-24, I-25, II-12, II-13, III-1, III-4, III-8, VII-1, VII-2, VIII-1
U.S. Territories	I-8, I-9, I-14, I-19,
Utilities	I-17, II-3, II-12, III-4, III-8
Veterans	IV-2, V-1

Source: CRS.

- a. Program numbers correspond to agency (roman numeral) and number assigned to each program within this document. See Table of Contents.

Table B-2. Index of Programs by Technology Type

Qualified Technologies	Program Numbers^a
Advanced Batteries	I-13,
Air Conditioners	I-20, II-1, II-4
Alternative Vehicles/Vehicle Technologies	I-12, II-8, II-14, II-15
Anaerobic Digestion	I-17, II-6, II-9, II-12, II-13, II-14, III-8
Appliances (Energy Efficient) (All)	I-8
Batteries (Energy Storage)	II-8
Biodiesel / Biofuels	I-12, I-25, III-2, III-4, III-9
Boilers	I-20, II-1, II-4
Biomass	I-1, I-2, I-14, I-16, I-17, I-18, I-20, I-23, II-1, II-3, II-6, II-9, II-12, II-13, II-14, III-2, III-3, III-4, III-5, III-6, III-7, III-8, III-9
Caulking/Weather Stripping	I-9, I-20, II-4
Chillers	I-20, II-4
Clothes Washers	I-20, II-7
Combined Systems/CHP/Energy Management Systems	I-7, I-14, I-20, II-3, II-6, II-14, III-8
Comprehensive/Whole Building	I-20, II-4, II-5
Dishwashers	II-7
Doors	I-20, II-1, II-4
Duct/Air Sealing	I-9, I-20, II-4
Equipment	I-7, I-14
Fuel Cells	I-4, I-7, I-13, I-14, I-16, I-18, I-25, II-1, II-2, II-3, II-6, II-8, II-14, II-15, III-8
Furnaces	I-20, II-1, II-4
Geothermal (All)	I-3, I-16, I-18, I-23, II-3, II-14, III-8
—Geothermal (Direct Use)	II-3, II-14, III-8
—Geothermal (Electric)	I-17, I-20, I-25, II-3, II-6, II-8, II-9, II-12, II-13, II-14, III-8
—Geothermal (Heat Pumps)	I-20, II-2, II-3, II-6, II-8, II-14, III-8
Heat Pumps	II-1, II-4
Hybrid Electric	I-12, II-15
Hydrogen	I-4, I-13, I-16, I-18, II-9, III-8, IX-1
Hydropower (All)	I-6, I-16, I-18, I-23, II-6, II-9, II-12, II-13
—Hydroelectric	I-6, I-20, I-25, II-6, II-9, II-12, II-13, III-8
—Hydrokinetic	I-6, II-6, II-9, II-12, II-13
—Ocean	I-6, I-17, I-23, I-25, II-6, II-9, II-12, II-13, III-8
—Tidal	I-6, I-17, I-25, II-6, II-9, II-12, II-13, III-8
—Wave	I-6, I-17, I-25, II-6, II-9, II-12, II-13, III-8
Insulation	I-9, I-20, II-1, II-4,
Landfill Gas	I-17, II-6, II-9, II-12, II-13, II-14

Qualified Technologies	Program Numbers^a
Lighting/Lighting Sensors	I-7, I-14, I-20, I-25, II-3, II-4, II-6, II-8, II-14, IV-2, V-1
Manufacturing Facilities	I-25
Microturbines	II-3, II-6, II-8, II-14, III-8
Municipal Solid Waste	II-6, II-9, II-12, II-13, II-14
Other Technologies ^b	I-9, I-10, I-11, I-15, I-19, I-20, I-21, I-22, I-24, I-26, II-8, II-10, II-11, III-1, III-8, III-9, IV-1, IV-2, V-1, VI-1, VII-1, VII-2
Programmable Thermostats	I-20
Refrigerators/Freezers	I-20, II-7
Renewable Transportation Fuels	I-25, II-14, III-8
Roofs	I-20, II-1, II-4
Siding	I-20, II-4
Smart Grid	II-8
Solar (All)	I-5, I-7, I-14, I-16, I-18, I-23, II-2, II-3, II-6, II-14, III-8
—Photovoltaics	I-7, I-17, I-20, I-25, II-2, II-3, II-6, II-8, II-10, II-11, II-12, II-13, II-14, III-8, IV-2, V-1
—Solar Space Heat	I-20, II-2, II-3, II-6, II-10, II-11, II-14, III-8, IV-2, V-1
—Solar Thermal Electric/Process	I-17, I-25, II-2, II-3, II-6, II-8, II-12, II-13, II-14, III-8
—Solar Water Heat	II-2, II-3, II-6, II-8, II-10, II-11, II-14, III-8, IV-2, V-1
Water Heaters	I-20, II-1, II-4
Wind	I-6, I-14, I-17, I-18, I-20, I-23, I-25, II-2, II-3, II-6, II-8, II-9, II-12, II-13, II-14, III-8
Windows	I-7, I-9, I-20, II-1, II-4

Source: CRS.

- a. Program numbers correspond to agency (roman numeral) and number assigned to each program within this document. See Table of Contents.
- b. Other technologies includes cross-cutting and advanced technologies, other unspecified technologies, all energy efficiency and/or renewable energy technologies, or not specifically identified.

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