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

Energy is crucial to operating a modern industrial and services economy. Concerns about the availability and cost of energy and about environmental impacts of fossil energy use have led to a wide variety of federal incentives for renewable energy and energy efficiency. These incentives aim to implement renewable energy and energy efficiency measures and to develop and commercialize renewable energy and energy efficiency technologies.

Many of the existing energy efficiency and renewable energy programs have authorizations tracing back to the 1970s. Many 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.


The Department of Energy (DOE) operates the greatest number of efficiency and renewable energy incentive programs, including RDD&D grants and contracts, weatherization assistance, production incentives, loan guarantees, and technology transfers. DOE also provides grants to states for energy policy development and assists other federal agencies in developing and implementing energy efficient and renewable energy resources.

The Department of Agriculture (USDA) runs several programs that largely focus on biofuels, such as ethanol and wood energy. Other USDA programs include assistance to rural communities with high energy costs, biomass crop assistance, grants and loans to promote energy efficiency and renewable energy for agricultural producers and rural businesses, assistance to general consumers for rural energy savings, and sustainable agricultural research.

The Department of the Treasury administers tax credits and other incentives for energy efficiency and renewable energy. Eligible activities include energy efficient home improvements, renewable energy production, and business investments in energy efficiency and renewable energy.

Other federal agencies with energy efficiency and renewable energy programs include the following:

- Department of the Interior (DOI), with programs on tribal energy production and use;
- Department of Housing and Urban Development (HUD), with energy efficient mortgages and loan programs;
- Small Business Administration (SBA), with loan programs to help borrowers upgrade their facilities and fund energy efficiency or renewable energy projects;
- Fannie Mae, with a “Green Initiative” loan program;
- Department of Health and Human Services (HHS), which provides energy assistance to low-income households; and
- Department of Veterans Affairs (VA), which provides energy efficient mortgages.

A wide range of entities are eligible for these energy efficiency and renewable incentives, including biofuels producers; state, local, and tribal governments; businesses; schools and universities; research organizations; builders and developers; homeowners; utilities; and veterans. Eligibility also includes a variety of energy-related technologies, such as advanced batteries, heating and cooling systems, vehicles and biofuels, appliances, building envelope technologies, renewable energy production technologies, lighting, and electricity generation and transmission.
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Introduction

The United States has an abundance of natural resources. For much of the nation’s history, energy availability 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, led to growing dependence on foreign sources of energy during the 20th century to supplement the demands of a growing economy.

Recognition of the impacts of depending on foreign energy sources, coupled with concerns over the volatility of prices driven by fluctuations in supply spurred by world events, prompted federal efforts to increase U.S. energy independence and reduce domestic consumption. As a major result, numerous programs have been established, focusing on energy efficiency, domestic conservation resources, and research that targets the development of renewable sources of energy. Many of these programs have roots dating back more than 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 perceived current needs as well as future anticipated challenges.

Since 2005, Congress has passed 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 of 2008 (EESA; P.L. 110-343); and the American Recovery and Reinvestment 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 within the Department of the Interior (DOI), the Department of Housing and Urban Development (HUD), the Small Business Administration (SBA), Fannie Mae, the Department of Health and Human Services (HHS), and the Department of Veterans Affairs (VA).

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

Most program descriptions were compiled from authorizing statutes, the U.S. Code, and Administration budget request documents. Other program descriptions and some funding information were compiled from the Database of State Incentives for Renewables and Efficiency (DSIRE), the Assistance Listings (formerly the Catalog of Federal Domestic Assistance or CFDA) housed on the beta.SAM.gov website, and the Energy Star website. Most budgetary figures were compiled from executive agency budget justifications and congressional committee reports.

For more information on agriculture-related grant programs, see CRS Report R45943, The Farm Bill Energy Title: An Overview and Funding History, by Kelsi Bracmort; and CRS In Focus IF10288, Overview of Bioenergy Programs in the 2018 Farm Bill, by Kelsi Bracmort. For more
information on programs supporting the development and deployment of alternatives to conventional fuels and engines in transportation, see CRS Report R42566, *Alternative Fuel and Advanced Vehicle Technology Incentives: A Summary of Federal Programs*, by Lynn J. Cunningham et al.

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

### Renewable Energy

#### Biomass

1. **Bioenergy Technologies Office (formerly the Biomass and Biorefinery Systems R&D Program)**

   **Administered by**: Office of Energy Efficiency and Renewable Energy (EERE)

   **Authority**:
   - Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93-577)
   - Energy Policy and Conservation Act (EPCA; P.L. 94-163)
   - Energy Conservation and Production Act (ECPA; P.L. 94-385)
   - Department of Energy Organization Act (P.L. 95-91)
   - Energy Tax Act (P.L. 95-618)
   - National Energy Conservation Policy Act (NECPA; P.L. 95-619)
   - Powerplant and Industrial Fuel Use Act of 1978 (P.L. 95-620)
   - Energy Security Act (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)
   - Clean Air Act Amendments of 1990 (P.L. 101-549)
   - 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)
   - Energy Independence and Security Act of 2007 (EISA; P.L. 110-140)
   - 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**:
   - $180 million for FY2011
   - $195 million for FY2012
   - $185.2 million for FY2013
   - $182.3 million for FY2014
   - $175.9 million for FY2015
   - $225 million for FY2016
   - $205 million for FY2017
   - $221.5 million for FY2018
   - $226 million for FY2019
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

$259.5 million for FY2020
$44.5 million requested for FY2021

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 (e.g., wastes, switchgrass, algae), but it is now expanding its scope to include additional alternative fuels, such as bio-butanol, green gasoline, jet fuel, and diesel.

Qualified Applicant(s)
Colleges and universities; profit organizations

Qualified Technologies
Biomass

For More Information
See CRS Report R42566, Alternative Fuel and Advanced Vehicle Technology Incentives: A Summary of Federal Programs, by Lynn J. Cunningham et al.; DOE's Bioenergy Technologies Office overview; DOE's Bioenergy Technologies Office – Funding Opportunities online resource; and program number 81.087 at the beta.SAM.gov website.

2. Regional Biomass Energy Grant Programs

Administered by
Bioenergy Technologies Office, EERE

Authority
Department of Energy Organization Act (P.L. 95-91)

Annual Funding
$0 for FY2011-FY2020
FY2021 budget request data are currently unavailable; the FY2021 DOE budget justifications do not provide details on this program.

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. This program has not expired, but it has not been regularly funded since 2011, and it is unlikely that it will receive significant funding in future years.¹

Qualified Applicant(s)
State and local governments; colleges and universities; profit organizations; nonprofit organizations

Qualified Technologies
Biomass

For More Information
See program number 81.079 at the beta.SAM.gov website.

Geothermal

3. Geothermal Technologies Office (GTO)

Administered by
EERE

Authority
Geothermal Energy Research, Development, and Demonstration Act of 1974 (P.L. 93-410)
Department of Energy Organization Act (P.L. 95-91)
Energy Tax Act of 1978 (P.L. 95-618)

¹ According to the program description in the Assistance Listings at the beta.Sam.gov website on July 9, 2018, and, more recently, on October 18, 2019.
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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
$37 million for FY2011
$37 million for FY2012
$35 million for FY2013
$44.8 million for FY2014
$54.3 million for FY2015
$71 million for FY2016
$69.5 million for FY2017
$80.9 million for FY2018
$84 million for FY2019
$110 million for FY2020
$26 million requested for FY2021

Scheduled Termination
None

Description
This program partners the federal government with industry, academia, and research facilities to further the development and deployment of innovative geothermal energy technologies. Currently, the program’s technology portfolio has prioritized early-stage R&D in four geothermal categories: hydrothermal, enhanced geothermal systems (EGS), low temperature and co-produced resources, and systems analysis. Competitive solicitations issued as Funding Opportunity Announcements (FOAs) are the principal mechanism used by the GTO to contract for cost-shared research, development, and demonstration projects.

Qualified Applicant(s)
Profit organizations; colleges and universities

Qualified Technologies
Geothermal

For More Information
See EERE’s Geothermal Technologies Office website; and program number 81.087 at the beta.Sam.gov website.

Hydrogen and Fuel Cells


Administered by
EERE

Authority
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 (EPCA; P.L. 94-163)
Electric and Hybrid Vehicle Research, Development and Demonstration Act (P.L. 94-413)
Department of Energy Organization Act (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)
Energy Security Act (P.L. 96-294)
Methane Transportation Research, Development, and Demonstration Act of 1980 (P.L. 96-512)
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)
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

Hydrogen Future Act of 1996 (P.L. 104-271)
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
$95.8 million for FY2011
$101.3 million for FY2012
$95.8 million for FY2013
$89.5 million for FY2014
$94.8 million for FY2015
$101 million for FY2016
$101 million for FY2017
$115 million for FY2018
$120 million for FY2019
$150 million for FY2020
$42 million requested for FY2021

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 Applicant(s)
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; and program number
81.087 at the beta.Sam.gov website.

Solar

5. Solar Energy Technologies Office (SETO)

Administered by EERE
Authority
Energy Policy and Conservation Act (EPCA; P.L. 94-163)
Energy Conservation and Production Act (ECPA; P.L. 94-385)
Department of Energy Organization Act (P.L. 95-91)
Solar Photovoltaic Energy Research, Development and Demonstration Act of 1984
(P.L. 95-590)
National Energy Conservation Policy Act (NECPA; P.L. 95-619)
Energy Security Act (P.L. 96-294)
(P.L. 101-218)
101-575)
Power Production Incentives of 1990]
Energy Independence and Security Act of 2007 (EISA; P.L. 110-140)
American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
### Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Annual Funding</th>
<th>Scheduled Termination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETO</td>
<td>$259.6 million for FY2011</td>
<td>None</td>
<td>SETO partners with industry, national laboratories, and universities to develop and bring reliable and affordable solar energy technologies to the marketplace. This program finances R&amp;D in five major subprograms: Photovoltaics (PV), Concentrating Solar Power (CSP), Systems Integration for Solar Technologies, Balance of Systems Soft Cost Reduction, and Technology to Market.</td>
</tr>
<tr>
<td>Qualified Applicant(s)</td>
<td>Industry; national laboratories; colleges and universities</td>
<td></td>
<td></td>
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<tr>
<td>Qualified Technologies</td>
<td>Solar</td>
<td></td>
<td></td>
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<tr>
<td>For More Information</td>
<td>See EERE's Solar Energy Technologies Office website; and program number 81.087 at the beta.SAM.gov website.</td>
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**Water Power**

6. **Water Power Technologies Office** *(formerly Wind and Hydropower Technologies Program)*

<table>
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<th>Administered by</th>
<th>Authority</th>
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<tbody>
<tr>
<td>EERE</td>
<td>Energy Policy and Conservation Act (EPCA; P.L. 94-163)</td>
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<td>Energy Independence and Security Act of 2007 (EISA; P.L. 110-140)</td>
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<td>American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)</td>
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<table>
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<tr>
<th>Annual Funding</th>
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<tbody>
<tr>
<td>$29.2 million for FY2011</td>
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<tr>
<td>$58.1 million for FY2012</td>
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<tr>
<td>$54.7 million for FY2013</td>
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<td>$57.8 million for FY2014</td>
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<tr>
<td>$60 million for FY2015</td>
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<td>$70 million for FY2016</td>
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<td>$84 million for FY2017</td>
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<td>$105 million for FY2018</td>
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<td>$105 million for FY2019</td>
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<tr>
<td>$148 million for FY2020</td>
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<tr>
<td>$45 million requested for FY2021</td>
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</tbody>
</table>

| Scheduled Termination | None |
| Description | This program partners with the national laboratories, industry, universities, and other federal agencies to promote the development and deployment of technologies |
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capable of generating environmentally sustainable and cost-effective electricity from the nation’s water resources (both conventional and marine and hydrokinetic technologies).

Qualified Applicant(s): Federal, state, local, and tribal governments; national laboratories; industry; small businesses; colleges and universities

Qualified Technologies: Hydroelectric; hydrokinetic energy; wave energy; tidal energy; ocean thermal energy conversion

For More Information: See EERE's Water Power Technologies Office website; and program number 81.087 at the beta.SAM.gov website.

Wind Energy

7. Wind Energy Technologies Office (formerly Wind and Hydropower Technologies Program)

Administered by: EERE

Authority: Energy Policy and Conservation Act (EPCA; P.L. 94-163)
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: $78.8 million for FY2011
$91.8 million for FY2012
$86.1 million for FY2013
$87 million for FY2014
$105.9 million for FY2015
$95.5 million for FY2016
$90 million for FY2017
$92 million for FY2018
$92 million for FY2019
$104 million for FY2020
$221 million requested for FY2021

Scheduled Termination: None

Description: This 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 energy technologies.

Qualified Applicant(s): Federal, state, local, and tribal governments; national laboratories; industry; small businesses; colleges and universities

Qualified Technologies: Wind

For More Information: See EERE’s Wind Energy Office website; and program number 81.087 at the beta.SAM.gov website.
Energy Efficiency

Buildings

8. Building Technologies Office

Administered by EERE
Authority
Energy Policy and Conservation Act (EPCA; P.L. 94-163)
Energy Conservation and Production Act (ECPA; P.L. 94-385)
Department of Energy Organization Act (P.L. 95-91)
Energy Tax Act of 1978 (P.L. 95-618)
National Energy Conservation Policy Act (NECPA; P.L. 95-619)
Powerplant and Industrial Fuel Use Act of 1978 (P.L. 95-620)
Energy Security Act (P.L. 96-294)
National Appliance Energy Conservation 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 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
$207.3 million for FY2011
$214.7 million for FY2012
$204.6 million for FY2013
$173.6 million for FY2014
$168.2 million for FY2015
$200.5 million for FY2016
$199.1 million for FY2017
$220.7 million for FY2018
$226 million for FY2019
$285 million for FY2020
$61 million requested for FY2021

Scheduled Termination None
Description
In partnership with the private sector, state and local governments, national laboratories, and universities, the Building Technologies Office works to improve the efficiency of buildings and the equipment, components, and systems within them, including electric grid integration and advanced energy storage. The program supports research and development (R&D) activities and provides tools, guidelines, training, and access to technical and financial resources.

Qualified Applicant(s)
State, local, and tribal 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 Office website.

9. Weatherization Assistance Program (WAP)

Administered by EERE
Authority
Energy Conservation and Production Act (ECPA; P.L. 94-385)
National Energy Conservation Policy Act (NECPA; P.L. 95-619)
Energy Security Act (P.L. 96-294)
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
- $171 million for FY2011
- $68 million for FY2012
- $131.7 million for FY2013
- $173.9 million for FY2014
- $193 million for FY2015
- $215 million for FY2016
- $228 million for FY2017
- $251 million for FY2018
- $254 million for FY2019
- $308.5 million for FY2020
- $0 requested for FY2021

## 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 Applicant(s)
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, replacing the same; mitigating air infiltration; and reducing electric base load consumption.

## For More Information
See EERE’s Weatherization Assistance Program website; the National Association for State Community Services Program’s (NASCSP’s) WAP Clearinghouse; EERE’s Weatherization Success Stories website; program number 81.042 at the beta.SAM.gov website; and CRS Report R46418, The Weatherization Assistance Program Formula, by Corrie E. Clark and Lynn J. Cunningham.

## Industrial

### 10. Advanced Manufacturing Office (AMO, formerly the Industrial Technologies Program - ITP)

**Administered by**
- EERE

**Authority**
- Energy Policy and Conservation Act (EPCA; P.L. 94-163)
- Energy Conservation and Production Act (ECPA; P.L. 94-385)
- Department of Energy Organization Act (P.L. 95-91)
- National Energy Conservation Policy Act (NECPA; P.L. 95-619)
- Powerplant and Industrial Fuel Use Act of 1978 (P.L. 95-620)
- Energy Security Act (P.L. 96-294)
- Energy Independence and Security Act of 2007 (EISA; P.L. 110-140)
- American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
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10. Inventions and Innovations Program

Administered by EERE
Authority Federal Nonnuclear Energy Research and Development Policy Act of 1974 (P.L. 93-577)
Annual Funding $0 for FY2011
$940,000 for FY2012
$1 million for FY2013
$0 for FY2014-FY2018
$50,000 for FY2019
$0 for FY2020
FY2021 budget request data are currently unavailable; the FY2021 DOE budget justifications do not provide details on this program.

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. It supports energy efficiency and renewable energy technology development in areas that align with Office of Energy Efficiency and Renewable Energy programs. This program has not expired, but it has not been regularly funded since 2013, and it is unlikely that it will receive significant funding in future years.2

Qualified Applicant(s) Individuals; small businesses
Qualified Technologies Specific energy efficiency and renewable energy technologies not listed

11. Inventions and Innovations Program

11. Inventions and Innovations Program

Administered by EERE
Authority Federal Nonnuclear Energy Research and Development Policy Act of 1974 (P.L. 93-577)
Annual Funding $0 for FY2011
$112.7 million for FY2012
$114.3 million for FY2013
$175.4 million for FY2014
$194.2 million for FY2015
$228.5 million for FY2016
$257.5 million for FY2017
$305 million for FY2018
$320 million for FY2019
$395 million for FY2020
$94.6 million requested for FY2021

Scheduled Termination None
Description AMO 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 Applicant(s) National laboratories; companies; state, local, and tribal governments; colleges and universities
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 Advanced Manufacturing Office website.

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2 According to the program description in the Assistance Listings at the beta.Sam.gov website, noted on July 9, 2018, October 18, 2019, and, most recently, on October 26, 2020.
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For More Information
See program number 81.036 at the beta.SAM.gov website. The U.S. Department of Energy’s Inventions & Innovations website has been retired. To access information on financial opportunities and current solicitations, visit the Advanced Manufacturing Office’s (formerly the Industrial Technologies Program’s) funding opportunities website.

Vehicles

12. Vehicle Technologies Office
Administered by EERE
Authority
Department of Energy Organization Act (P.L. 95-91)
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
$293.2 million for FY2011
$321 million for FY2012
$303.2 million for FY2013
$282.2 million for FY2014
$272.5 million for FY2015
$310 million for FY2016
$307 million for FY2017
$337.5 million for FY2018
$344 million for FY2019
$396 million for FY2020
$74.4 million requested for FY2021

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 Applicant(s) 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 charging and battery systems; advanced propulsion and lightweighting materials; and technology integration

For More Information See EERE’s Vehicle Technology Program website; and EERE’s Vehicle Technologies Program Factsheet.

Other Energy Efficiency and Renewable Energy Programs

13. Conservation Research and Development Grants
Administered by EERE
Authority
Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93-577)
Department of Energy Organization Act (P.L. 95-91)
Further Continuing Appropriations Act for FY1983 (P.L. 97-377)
American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)

Annual Funding $300 million for FY2011
$188.3 million for FY2012
$164 million for FY2013
$38.5 million for FY2014
$0 for FY2015; $142.4 million was de-obligated from this CFDA program number for FY2015
$180.7 million for FY2016
$102.7 million for FY2017
$156.7 million for FY2018
$181.4 million for FY2019
$88.5 million for FY2020 (est.)
FY2021 budget request data are unavailable; the FY2021 DOE budget justifications do not provide details on this program.

Scheduled Termination: None

Description: This program provides project grants to conduct balanced, long-term research efforts in buildings, industrial, vehicle, and hydrogen and fuel cell technologies.

Qualified Applicant(s): State, local, and tribal governments; universities; profit organizations; private nonprofit institutions/organizations

Qualified Technologies: Hydrogen and fuel cells; energy efficient technologies; advanced battery manufacturing

For More Information: See program number 81.086 at the beta.SAM.gov website.


Administered by: EERE

Authority: Energy Reorganization Act of 1974 (P.L. 93-438)
Department of Energy Organization Act (P.L. 95-91)

Annual Funding
$15 million for FY2011
$32.2 million for FY2012
$36.1 million for FY2013
$27.1 million for FY2014
$33.1 million for FY2015
$19.5 million for FY2016
$41 million for FY2017
$21.7 million for FY2018
$16 million for FY2019
$8.1 million for FY2020 (est.)
FY2021 budget request data are unavailable; the FY2021 DOE budget justifications do not provide details on this program.

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 Applicant(s): State and local governments; Native American organizations; individuals; universities; profit organizations; private nonprofit organizations; public nonprofit organizations; Alaskan Native corporations and universities

Qualified Technologies: Specific energy efficiency and renewable energy technologies not listed

For More Information: See program number 81.117 at the beta.SAM.gov website.
15. **Renewable Energy Production Incentive (REPI)**

**Administered by**: EERE

**Authority**
- Energy Policy Act of 1992 (EPACT; P.L. 102-486), Title XII, Section 1212

**Annual Funding**
- $4.95 million for FY2006
- $4.95 million for FY2007
- $4.95 million for FY2008
- $5 million for FY2009
- $0 for FY2010-FY2020
- $0 requested for FY2021

**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 Applicant(s)**
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


16. **Renewable Energy Research and Development Program**

**Administered by**: EERE

**Authority**
- Department of Energy Organization Act (P.L. 95-91)
- Department of Energy Act of 1978-Civilian Applications (P.L. 95-238), Section 207
- 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**
- $114.7 million for FY2011
- $233.2 million for FY2012
- $356.6 million for FY2013
- $157.7 million for FY2014
- $0 for FY2015 (est.); $109.4 million was de-obligated from this CFDA program number for FY2015
- $245.4 million for FY2016
- $384.8 million for FY2017
- $249 million for FY2018
- $339.5 million for FY2019
- $252.2 million for FY2020 (est.)

FY2021 budget request data are unavailable; the FY2021 DOE budget justifications do not provide details on this program.

**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, waterpower, 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 Applicant(s)  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 program number 81.087 at the beta.SAM.gov website.

17. State Energy Program (SEP)

Administered by  EERE

Authority  Energy Policy and Conservation Act (EPCA; P.L. 94-163)
Energy Conservation and Production Act (ECPA; P.L. 94-385)
National Energy Conservation Policy Act (NECPA; P.L. 95-619)
State Energy Efficiency Programs Improvement Act of 1990 (P.L. 101-440)
Energy Conservation Reauthorization Act of 1998 (P.L. 105-388)
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  $50 million for FY2011
$50 million for FY2012
$47.1 million for FY2013
$50 million for FY2014
$50 million for FY2015
$50 million for FY2016
$50 million for FY2017
$55 million for FY2018
$55 million for FY2019
$62.5 million for FY2020
$0 requested for FY2021

Scheduled Termination  None

Description  SEP provides grants to states to design and carry out their own renewable energy and energy efficiency programs.

Qualified Applicant(s)  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; EERE’s State Energy Program Success Stories website; and program number 81.041 at the beta.SAM.gov website.

18. Office of Indian Energy Assistance Programs (formerly the Tribal Energy Program, TEP)

Administered by  Office of Indian Energy Policy and Programs (IE)

Authority  Energy Policy and Conservation Act (EPCA; P.L. 94-163)
Energy Conservation and Production Act (ECPA; P.L. 94-385)
Department of Energy Organization Act (P.L. 95-91)
Energy Tax Act of 1978 (P.L. 95-618)
National Energy Conservation Policy Act (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 Applicance 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 Incentives: A Summary of Federal Programs

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

- $7 million for FY2011
- $10 million for FY2012
- $9.4 million for FY2013
- $8.3 million for FY2014
- $14.7 million for FY2015
- $13.2 million for FY2016
- $13.5 million for FY2017
- $15.7 million for FY2018
- $13.2 million for FY2019
- $17 million for FY2020
- $4.5 million requested for FY2021

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. In FY2015, DOE transferred TEP from the Weatherization and Intergovernmental Program (WIP) to the new Office of Indian Energy Policy and Programs (IE).

Qualified Applicant(s)
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 the Office of Indian Energy Policy and Program's website; National Renewable Energy Laboratory's (NREL's) report: Tribal Energy Program – Assisting Tribes to Realize Their Energy Visions; and DSIRE's program summary for the Tribal Energy Program.

Other DOE Offices/Cross-Cutting Programs


Administered by Advanced Research Projects Agency-Energy (ARPA-E)
Authority
Department of Energy Organization Act (P.L. 95-91)
America COMPETES Act (P.L. 110-69), Section 5012
America COMPETES Reauthorization Act of 2010 (P.L. 111-358)

3 The Tribal Energy Program (TEP) was funded in FY2014 within the Office of Energy Efficiency and Renewable Energy appropriation.

4 In 2015, TEP was transferred to the Office of Indian Energy (IE) and funding for FY2015 and FY2016 was provided within the DOE Departmental Administration appropriation.

5 For FY2017, DOE requested funding for TEP as a separate appropriation from the Departmental Administrative appropriation “to align the budget structure with IE’s mission and activities.”
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

Annual Funding

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2011</td>
<td>$165.6 million</td>
</tr>
<tr>
<td>FY2012</td>
<td>$275 million</td>
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<td>FY2016</td>
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<td>FY2020</td>
<td>$390 million</td>
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<tr>
<td>FY2021</td>
<td>$0 requested</td>
</tr>
</tbody>
</table>

Scheduled Termination

Passed in August 2007, the America COMPETES Act (P.L. 110-69) stipulated that, “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 (NAS) under which the National Academy shall conduct an evaluation of how well ARPA-E is achieving its goals and mission.” Furthermore, the evaluation should “include the recommendation of the National Academy of Sciences on whether ARPA-E should be continued or terminated.”

NAS published its assessment of ARPA-E in 2017 and did not recommend program termination. Two key findings in the report state that “the projects ARPA-E has funded support its statutory mission and goals” and “while six years is not long enough to produce observable evidence of widespread deployment of funded technologies, there are clear indications that ARPA-E is making progress toward its statutory mission and goals.”

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 Applicant(s)

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. Individuals are typically eligible to apply for funding. However, any ARPA-E award funding would need to be made to a business entity formed by the applicant, if selected for award negotiations. 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’s Frequently Asked Questions (FAQ) website; National Academy of Sciences program evaluation: An Assessment of ARPA-E (2017); and program number 81.135 at the beta.SAM.gov website.

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

Administered by Office of Electricity (OE)

Authority Department of Energy Organization Act (P.L. 95-91)

Energy Security Act (P.L. 96-294)

National Superconductivity and Competitiveness Act of 1988 (P.L. 100-697)

The FY2021 budget request proposes to eliminate ARPA-E while incorporating APRA-E’s approach to technology development into the execution of applied energy office funding. The FY2021 budget requests no additional appropriation for new ARPA-E competitive solicitations and requests the cancellation of $332 million of unobligated balances.
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Funding</th>
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</thead>
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<td>2011</td>
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<tr>
<td>2012</td>
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<td>2013</td>
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<td>2016</td>
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<td>2019</td>
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<tr>
<td>2020</td>
<td>$173.0 m</td>
</tr>
<tr>
<td>2021</td>
<td>$175.4 m</td>
</tr>
</tbody>
</table>

Scheduled Termination: None

Description
This grant program aims to develop cost-effective technology that enhances the reliability, flexibility, efficiency, resiliency, affordability, and security of the electric grid.

Qualified Applicant(s)
State, local, and tribal governments; universities; profit organizations; private nonprofit organizations; research organizations

Qualified Technologies
Specific technologies not listed

For More Information
See OE’s Technology Development website; and program number 81.122 at the beta.SAM.gov website.


Administered by
EERE

Authority
Energy Policy and Conservation Act (EPCA; P.L. 94-163)
Energy Conservation and Production Act (ECPA; P.L. 94-385)
Department of Energy Organization Act (P.L. 95-91)
National Energy Conservation Policy Act (NECPA; P.L. 95-619)
Federal Energy Management Improvement Act of 1988 (P.L. 100-615)
Energy Independence and Security Act of 2007 (EISA; P.L. 110-140)

Annual Funding

<table>
<thead>
<tr>
<th>Year</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>$30.4 m</td>
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<tr>
<td>2012</td>
<td>$29.9 m</td>
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<tr>
<td>2013</td>
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<td>2014</td>
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<tr>
<td>2015</td>
<td>$27.0 m</td>
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<tr>
<td>2016</td>
<td>$27.0 m</td>
</tr>
<tr>
<td>2017</td>
<td>$27.0 m</td>
</tr>
</tbody>
</table>

7 For FY2019, DOE split the Electricity Delivery and Energy Reliability appropriation into two appropriations: Electricity Delivery (OE) and Cybersecurity, Energy Security, and Emergency Response (CESER). The CESER appropriation for FY2019 was $108.5 million. To compare to previous years, the combined appropriation for the now separated programs in FY2019 would be $247.5 million.

8 The CESER appropriation for FY2020 is $143 million. To compare to previous years, the combined appropriation for the now separated programs in FY2020 would be $316 million.

9 DOE’s budget request for CESER for FY2021 is $173.1 million. To compare to previous years, the combined appropriation request for FY2021 would be $348.5 million.
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

$27 million for FY2018
$30 million for FY2019
$40 million for FY2020
$8.4 million requested for FY2021

Description
FEMP assists federal agencies in developing and implementing energy efficient and renewable energy resources to meet energy management regulations and goals.

Qualified Applicant(s)
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; and FEMP’s Annual Reports to Congress on Federal Government Energy Management.

22. Financial Assistance Program (Office of Science)

Administered by
Office of Science

Authority
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
$1.3 billion for FY2011
$1 billion for FY2012
$965.1 million for FY2013
$1.1 billion for FY2014
$1.1 billion for FY2015
$1.1 billion for FY2016
$1.1 billion for FY2017 (est.)
$1.3 billion for FY2018 (est.)
$1.2 billion for FY2019 (est.)
$1.2 billion for FY2020 (est.)

FY2021 budget request data are unavailable; the FY2021 DOE budget justifications do not provide details on this program.

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 Applicant(s)
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 program number 81.049 at the beta.SAM.gov website; and the Office of Science’s Funding Opportunities website.

23. Loan Guarantee Program (Loan Programs Office)

Administered by
Loan Programs Office

Authority
American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)  
Omnibus Appropriations Act, 2009 (P.L. 111-8)  
Department of Defense and Full-Year Continuing Appropriations Act, 2011 (P.L. 112-10)

Annual Funding
Section 1703 Innovative Technology Loan Guarantee Program (permanent)
$169.6 million for FY2011
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

Section 1705 Temporary Loan Guarantee Program

$0 for FY2008
$6 billion was appropriated for FY2009. However, $2 billion of that funding was transferred to the “cash for clunkers” automobile trade-in program by P.L. 111-47. 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 FY2009-FY2010

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

None for the permanent (Section 1703) loan guarantee program. Projects authorized by the temporary loan guarantee (Section 1705) had to begin construction no later than September 30, 2011. The Loan Programs Office (LPO) continues to administer and monitor loan guarantees for Section 1705 projects.

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

$0 for FY2012
$0 for FY2013
$7.9 million for FY2014
$17 million for FY2015
$17 million for FY2016
$139,000 for FY2017
$30.9 million for FY2018
$12.3 million for FY2019
$29 million for FY2020
$0 requested for FY2021

$0 requested for FY2021

For FY2014, $42 million was enacted for administrative purposes only, but these expenses were offset by $34.1 million in collections from borrowers for a net appropriation of $7.9 million.

For FY2015, $42 million was enacted for administrative expenses. These administrative expenses were offset by $25 million in collections from borrowers for a net appropriation of $17 million.

For FY2016, $42 million was enacted for administrative expenses. These administrative expenses were offset by $25 million in collections from borrowers for a net appropriation of $17 million.

For FY2017, $37 million was enacted for administrative expenses. These administrative expenses were reduced by (1) an offset of $27 million in collections from applicants and borrowers and (2) a rescission of an additional $9.861 million of administrative appropriations from FY2012 and FY2013 (P.L. 115-31) for a net appropriation of $139,000.

For FY2018, $33 million was enacted for administrative purposes. These administrative expenses were reduced by an offset of $2.1 million in collections from applicants and borrowers for a net appropriation of $30.9 million.

For FY2019, $33 million was enacted for administrative expenses. These administrative expenses were reduced by $20.7 million in collections from applicants and borrowers for a net appropriation of $12.3 million.

For FY2020, $32 million was enacted for administrative expenses. These administrative expenses were reduced by $3 million in collections from applicants and borrowers for a net appropriation of $29 million.

For FY2021, $3 million is requested for administrative expenses. These administrative expenses are expected to be offset by an estimated $3 million for a net appropriation of $0. The FY2021 budget requests also propose to cancel an FY2011 loan subsidy appropriation of $160.7 million for the Section 1703 loan guarantee program along with $489 million in remaining, emergency designated, unobligated credit subsidy balances appropriated by the American Reinvestment and Recovery Act of 2009 (P.L. 111-5).

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

The authority to enter into new loan guarantees under Section 1705 expired on September 30, 2011, but LPO continues to administer and monitor the portfolio of loan guarantees obligated prior to the expiration date.
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

Qualified Applicant(s) State, local, and tribal governments; universities; profit organizations; 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 program number 81.126 at the beta.SAM.gov website; DSIRE’s program summary for the Loan Guarantee Program; DOE’s Loan Guarantee Program website; and CRS Insight IN11432, Department of Energy Loan Programs: Title XVII Innovative Technology Loan Guarantees, by Philip Brown, Mark Holt, Corrie Clark, and Raj Gnanarajah.

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

Administered by EERE

Authority
Small Business Innovation Development Act of 1982 (P.L. 97-219)
Small Business Technology Transfer Program Reauthorization Act of 2001 (P.L. 107-50)
SBIR/STTR Reauthorization Act of 2011 (P.L. 112-81, Div. E, Title L)

Annual Funding
$24.2 million for FY2011
$29.1 million for FY2012
$26.4 million for FY2013 (SBIR: $23.4 million; STTR: $3 million)
$30.8 million for FY2014 (SBIR: $27.4 million; STTR: $3.4 million)
$28.4 million for FY2015 (SBIR: $25.1 million; STTR: $3.3 million)
$30.2 million for FY2016 (SBIR: $26.3 million; STTR: $3.9 million)
$45.2 million for FY2017 (SBIR: $38.9 million; STTR: $6.3 million)
$58.2 million for FY2018 (SBIR: $51 million; STTR: $7.2 million)
$58.9 million for FY2019 (SBIR: $51.5 million; STTR: $7.4 million)
$67.9 million for FY2020 (SBIR: $59.5 million; STTR: $8.4 million)
$16.5 million requested for FY2021 (SBIR: $14.5 million; STTR: $2 million)


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. DOE’s SBIR-STTR program is designed to stimulate technological innovation by small advanced technology firms and provide new, cost-effective scientific and engineering solutions to challenging problems. EERE funds appropriated for SBIR/STTR are allocated to larger EERE technology programs, detailed earlier in this report, including Biomass, Geothermal, Hydrogen & Fuel Cell, Solar Energy, Water Power, Wind Energy, Advanced Manufacturing, Building Technologies, and Vehicle Technologies.

Qualified Applicant(s) Small businesses

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20 Annual funding listed for the Small Business Innovation Research (SBIR) and Small Business Technology Transfers (STTR) programs includes only those funds distributed to DOE’s energy efficiency and renewable energy programs.
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

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 EERE's Small Business Innovation Research/Small Business Technology Transfers (SBIR/STTR) website; and program number 10.212 (SBIR) at the beta.SAM.gov website.

25. Tribal Energy Loan Guarantee Program (Loan Programs Office)

Administered by
Loan Program Office

Authority
Indian Tribal Energy Development and Self-Determination Act Amendments of 2017 (P.L. 115-325), Title I, Section 101(c)

Annual Funding
$9 million for FY2017
$8.939 million for FY2018
$1 million for FY2019
$2 million for FY2020
$0 requested for FY2021

Scheduled Termination
None. However, in FY2021, LPO has proposed to terminate the Tribal Energy Loan Guarantee Program.

Description
This is a partial loan guarantee program that can guarantee up to $2 billion in loans to support economic opportunities to tribes through energy development projects and activities.

Qualified Applicant(s)
Tribal government; members of eligible Tribes, including eligible joint ventures or authorized corporate entities

Qualified Technologies
A broad range of energy-related projects can be supported, including, but not limited to solar, wind, geothermal, hydropower, electric transmission infrastructure, and energy storage.

For More Information
See LPO's Tribal Energy Loan Guarantee Program website; CRS Insight IN11452, Department of Energy Loan Programs: Tribal Energy Loan Guarantee, by Corrie E. Clark et al.

II. Department of Agriculture

1. Assistance to High Energy Cost Rural Communities Program

Administered by
Rural Development

Authority
Rural Electrification Act of 1936 (P.L. 74-605)
Grain Standards and Warehouse Improvement Act of 2000 (P.L. 106-472)

Annual Funding
$12.0 million for FY2011
$9.5 million for FY2012
$9.2 million for FY2013
$10 million for FY2014
$10 million for FY2015
$10 million for FY2016
$10 million for FY2017

21 The FY2021 budget request proposes to eliminate the Tribal Energy Loan Guarantee Program and to cancel the $8,500,000 in unobligated balances appropriated by the Consolidated Appropriations Act of 2017 (P.L. 115-31) for the cost of loan guarantees. See DOE’S FY2021 Congressional Budget Request, vol. 3, part 2, p. 404.
$10 million for FY2018
$10 million for FY2019
$10 million for FY2020
No funds requested for FY2021

Scheduled Termination
None

Description
This program provides financial assistance to rural communities with extremely high energy costs (exceeding 275% of the national average).

Qualified Applicant(s)
State, local, and tribal governments (including U.S. territories); for-profit businesses; nonprofit businesses; cooperatives; individuals

Qualified Technologies
Not specifically identified

For More Information
See USDA’s High Energy Cost Grants website; DSIRE’s program summary for the High Energy Cost Grant Program; and program number 10.859 on the beta.SAM.gov website.

2. Bioenergy Program for Advanced Biofuels

Administered by
Rural Development

Authority
Food, Conservation, and Energy Act of 2008 (P.L. 110-246), Title IX, Section 9005
Agricultural Act of 2014 (P.L. 113-79)
Agriculture Improvement Act of 2018 (P.L. 115-334)

Annual Funding
Mandatory: The 2018 farm bill (P.L. 115-334) authorized mandatory funding of $7 million annually for FY2019-FY2023 to remain available until expended. $7 million was appropriated for FY2019 and FY2020.
Discretionary: The 2018 farm bill authorized discretionary funding of $20 million annually for FY2019-FY2023. No discretionary funding was appropriated for FY2019 or FY2020.

Scheduled Termination
Mandatory funding authorized through FY2023.

Description
The 2008 farm bill established a new Bioenergy Program for Advanced Biofuels to support and expand production of advanced biofuels—that is, fuel derived from renewable biomass other than corn kernel starch—under which USDA would enter into contracts with advanced biofuel producers to pay them for production of eligible advanced biofuels. The policy goal is to create long-term, sustained increases in advanced biofuels production. Payments are of two types: one based on actual production, and a second based on incremental production increases. Not more than 5% of the funds in any year can go to facilities with total refining capacity exceeding 150 million gallons per year (7 C.F.R. Part 4288, Subpart B).

Qualified Applicant(s)
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 program number 10.867 on the beta.SAM.gov website; USDA program website; CRS In Focus IF10288, Overview of Bioenergy Programs in the 2018 Farm Bill,

For more program information, see the “Advanced Biofuel Payment Program,” RD, USDA at https://www.rd.usda.gov/programs-services/advanced-biofuel-payment-program.
3. Biomass Crop Assistance Program (BCAP)

Administered by: Farm Services Agency (FSA)

Authority: Farm Security and Rural Investment Act of 2002 (FSRIA; P.L. 107-171), Title IX Food, Conservation, and Energy Act of 2008 (P.L. 110-246), Title IX, Section 9001 created new Section 9011 under FSIRA Agricultural Act of 2014 (P.L. 113-79), Section 9010 Agriculture Improvement Act of 2018 (P.L. 115-334)

Annual Funding


Scheduled Termination: Funding authorized through FY2023.

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 5- to 15-year contracts. Under these contracts up to 50% 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. Matching payments may not exceed $20 per ton and are limited to no more than two years per participant.

Qualified Applicant(s): Eligible biomass material owners and eligible biomass producers

Qualified Technologies: Eligible material for a matching payment is renewable biomass, as defined by the 2014 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 2014 farm bill. (The residues of these commodities, however, are eligible and may qualify for payment.) Also excluded are animal waste and animal waste by-products including fats, oils, greases, and manure; food waste and yard waste; and bagasse. Eligible crops include renewable biomass, with the exception of crops eligible to receive a payment under Title I of the 2014 farm bill and plants that are invasive or noxious, or have the potential to become invasive or noxious.

For More Information: See the USDA BCAP website; CRS Report R41296, Biomass Crop Assistance Program (BCAP): Status and Issues, by Mark A. McMinimy; CRS In Focus IF10288, Overview of Bioenergy Programs in the 2018 Farm Bill, by Kelsi Bracmort; and CRS Report R45943, The Farm Bill Energy Title: An Overview and Funding History, by Kelsi Bracmort.

4. Biomass Research and Development Initiative (BRDI)

Administered by: National Institute of Food and Agriculture (USDA)/EERE (DOE)

Authority: Biomass Research and Development Act of 2000 (BRDA; P.L. 106-224), Title III Farm Security and Rural Investment Act of 2002 (FSRIA; P.L. 107-171), Title IX, Section 9008 Food, Conservation, and Energy Act of 2008 (P.L. 110-246), Title IX, Section 9008 Agricultural Act of 2014 (P.L. 113-79), Section 9010 Agriculture Improvement Act of 2018 (P.L. 115-334), Title VII, Section 7507

Annual Funding

- Mandatory: Under the 2014 farm bill, mandatory funds of $3 million were authorized for FY2014 through FY2017 to remain available until expended. No
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mandatory funds were authorized or appropriated for FY2018. The 2018 farm bill did not extend mandatory funding for BRDI.

• Discretionary: The 2018 farm bill authorized $20 million in annual appropriations for FY2019-FY2023. No discretionary funding has been appropriated through FY2020.

Scheduled Termination: Funding authorized through FY2023.

Description: BRDI is an interagency collaboration program between USDA’s National Institute of Bioenergy (Institute of Bioenergy, Climate, and Environment) and DOE’s Office of Energy Efficiency and Renewable Energy (Bioenergy Technologies Program). The program provides competitive grants, contracts, and financial assistance for research, development, and demonstration of technologies and processes for biofuels and biobased products.

Qualified Applicant(s): Colleges and universities (including 1862, 1890, and 1994 Land-Grant Colleges and Universities); national laboratories; federal research agencies; state research agencies; small businesses; nonprofit organizations; and/or a consortium of two or more entities identified as eligible.

Qualified Technologies: Biomass; biofuels; biobased products

For More Information: See program number 10.312 on the beta.Sam.gov website; CRS In Focus IF10288, Overview of Bioenergy Programs in the 2018 Farm Bill, by Kelsi Bracmort; and CRS Report R45943, The Farm Bill Energy Title: An Overview and Funding History, by Kelsi Bracmort.

5. Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program (formerly the Biorefinery Assistance Program)

Administered by: Rural Development
Authority: Food, Conservation, and Energy Act of 2008 (P.L. 110-246), Title IX, Section 9003 created the Biorefinery Assistance Program. Agricultural Act of 2014 (P.L. 113-79), Title IX, Section 9003 amended and renamed the program as the Biorefinery, Renewable Chemical and Biobased Product Manufacturing Assistance Program. Agriculture Improvement Act of 2018 (P.L. 115-334), Title IX, Section 9003.

Annual Funding: • Mandatory: Under the 2018 farm bill, mandatory Commodity Credit Corporation (CCC) funding of $50 million for FY2019 and $25 million for FY2020 (to remain available until expended) was authorized for loan guarantees. $50 million was made available for FY2019. $24 million in funding was made available for FY2020.23

• Discretionary: Funds of $75 million annually are authorized to be appropriated for FY2014-FY2018 and FY2019-FY2023. For FY2009-FY2013, $150 million was authorized to be appropriated annually. No discretionary funding has been appropriated for this program through FY2020.

Scheduled Termination: Mandatory funding authorized through FY2020 and discretionary funding authorized through FY2023.

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. Competitive grants and loan guarantees are made to fund the development, construction, and retrofitting of commercial-scale biorefineries using eligible technologies. Biorefinery grants can provide for up to 30% of total project costs. Loan guarantees are limited to $250 million or 80% of project cost.

23 The original mandatory funding of $25 million for FY2020 was reduced by $1 million for a final total of $24 million in mandatory funds made available to the Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program. This reduction is noted in the Appendix volume to the Budget of the United States Government for FY2021 on p. 142.
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Qualified Applicant(s)  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; 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, renewable chemical, or biobased product; and technologies that have been demonstrated to have technical and economic potential for commercial application in a biorefinery that produces an advanced biofuel, renewable chemical, or biobased product.

For More Information  See the USDA program website; program number 10.865 at the beta.SAM.gov website; and CRS Report R45943, The Farm Bill Energy Title: An Overview and Funding History, by Kelsi Bracmort.

6. Community Wood Energy and Wood Innovation Program

Administered by Forest Service
Authority Food, Conservation, and Energy Act of 2008 (P.L. 110-246), Title IX, Section 9013
Agricultural Act of 2014 (P.L. 113-79), Title IX, Section 9012
Agriculture Improvement Act of 2018 (P.L. 115-334), Title VIII, Section 8644
Annual Funding  • Mandatory: No mandatory funding has been authorized.
• Discretionary: Discretionary funding of $25 million annually is authorized to be appropriated for FY2019-FY2023 under the 2018 farm bill, but no funds have been appropriated through FY2020.
Scheduled Termination  Funding authorized through FY2023.
Description  The 2018 farm bill extended the program through FY2023 and changed the name to the Community Wood Energy and Wood Energy Innovation Program. The program provides matching grants for the installation of community wood energy systems or building an innovative wood product facility.
A community wood energy system is defined in the 2018 farm bill as an energy system that produces thermal energy or combined thermal energy and electricity, services public facilities owned or operated by state or local governments, and uses woody biomass. This includes single-facility central heating, district heating systems for multiple buildings, combined heat and electric systems, and other related biomass energy systems.
The 2018 farm bill added innovative wood product facilities to the program, defining such a facility as a manufacturing or processing plant or mill that produces: building components or systems using panelized wood construction; wood products derived from nanotechnology or other new technology processes; or other innovative wood products using low-value, low-quality wood.
Grants are capped at 35% of the capital cost of the system or facility (50% under special circumstances), and are awarded for systems with a nameplate capacity not exceeding 5 megawatts of thermal energy or combined thermal and electric energy as directed by statute.
Qualified Applicant(s) State and local governments
Qualified Technologies Biomass
For More Information  See the program website; CRS In Focus IF10288, Overview of Bioenergy Programs in the 2018 Farm Bill, by Kelsi Bracmort; and CRS Report R45943, The Farm Bill Energy Title: An Overview and Funding History, by Kelsi Bracmort.

7. New Era Rural Technology Competitive Grants Program

Administered by National Institute of Food and Agriculture (NIFA)
Authority 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)
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Agricultural Act of 2014 (P.L. 113-79)
Agriculture Improvement Act of 2018 (P.L. 115-334), Title VII, Section 7130

Annual Funding
The program received $875,000 for FY2010 and an estimated $875,000 for FY2011. The program authorization expired after the end of FY2012, and it received no funding through FY2018. Despite being reauthorized by the 2018 farm bill (P.L. 115-334), the program has received no funding for FY2019 and FY2020.

Scheduled Termination
Authorized through FY2023.

Description
This program provides grant funding for approved technology development, applied research, and training to develop an agriculture-based renewable energy workforce. The initiative supports bioenergy, pulp and paper manufacturing, and agriculture-based renewable energy resources. The program’s authority expired after FY2012, but the 2018 farm bill reauthorized the program for FY2019 through FY2023.

Qualified Applicant(s)
Public or private nonprofit community colleges; advanced technology centers

Qualified Technologies
Biomass; bioenergy

For More Information
See the archived CFDA web page for program number 10.314; and 7 U.S.C. §3319e

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

Administered by
Rural Development

Authority
Food Conservation, and Energy Act of 2008 (P.L. 110-246), Title IX, Section 9001(a)
Agricultural Act of 2014 (P.L. 113-79), Title IX, Section 9007
Agriculture Improvement Act of 2018 (P.L. 115-334), Title IX, Section 9007

Annual Funding
• Mandatory: The 2018 farm bill retains mandatory CCC funding of $50 million for FY2014 and each fiscal year thereafter. (Thus, unlike other farm bill renewable energy programs, REAP’s mandatory funding authority does not expire with the 2018 farm bill.) Mandatory funds are to remain available until expended.
• Discretionary: Under the 2018 farm bill, discretionary funding of $20 million annually is authorized to be appropriated for FY2019-FY2023; of this amount, $335,000 was appropriated for FY2019 and $706,000 for FY2020.

Under the 2014 farm bill, discretionary funding of $20 million annually was authorized to be appropriated for FY2014-FY2018; of this amount, $3.5 million was appropriated for FY2014, $1.35 million for FY2015, $9.5 million for FY2016, $352,000 for FY2017, and $293,000 for FY2018.

Under the 2008 farm bill, $25 million was authorized to be appropriated annually for FY2009-FY2013. Actual discretionary appropriations have been $5 million in FY2009, $39.3 million in FY2010, $5 million in FY2011, $3.4 million in FY2012 and in FY2013; $3.5 million in FY2014; and $1.35 million in FY2015.

Scheduled Termination
None

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 (EEI) and renewable energy systems (RES); (2) grants for energy audits and renewable energy development assistance; and (3) grants for conducting renewable energy systems (RES) feasibility studies (eligible entities include rural small businesses and agricultural producers).

The 2014 farm bill added new funding and a three-tiered application process with separate application processes for grants and loan guarantees for RES and EEI projects based on the project cost. It also excluded the use of REAP funds for installing retail energy dispensing equipment, such as blender pumps.

The 2018 farm bill amended the financial assistance for energy efficiency improvements and renewable energy systems section to include certain limitations for loan guarantees to purchase and install energy efficient equipment or agricultural production or processing systems. It also placed a cap of 15% of available funds per year to be imposed on loan guarantees to agricultural producers for energy efficiency equipment.
<table>
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<th>9. Rural Energy Savings Program (RESP)</th>
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| **Authority** | Agricultural Act of 2014 (P.L. 113-79), Title VI, Section 6205  
Agriculture Improvement Act of 2018 (P.L. 115-334), Title VI, Section 6303 |
| **Annual Funding** | • Mandatory: No mandatory funding has been authorized.  
• Discretionary: Under the 2014 farm bill, discretionary funding of $75 million was authorized to be appropriated for FY2014-FY2018. The 2018 farm bill extended this authorization of $75 million for FY2019-FY2023. Of this amount, no funding was appropriated for FY2015 and FY2016; $8 million was appropriated annually for FY2016-FY2018; $10 million was appropriated for FY2019; and $12 million was appropriated for FY2020. |
| **Scheduled Termination** | Funding authorized through FY2023. |
| **Description** | The Rural Energy Savings Program provides loans to entities that agree to make affordable loans to help qualified consumers implement durable and cost-effective energy efficiency upgrades or install cost-effective renewable energy or energy storage systems. The 2018 farm bill requires that loans from eligible entities to qualified consumers may not exceed 5% in interest and must be used for certain purposes (e.g., to establish a loan loss reserve). |
| **Qualified Applicant(s)** | Public power entities (public power districts and public utility districts) and rural electric cooperatives that have borrowed, repaid, prepaid, or are paying an electric loan made or guaranteed by the Rural Utilities Service (RUS); or any other entity that is determined eligible for a loan from RUS according to federal regulations (see 7 CFR 1701.101) |
| **Qualified Technologies** | On- or off-grid renewable energy systems; on- or off-grid energy storage systems; cost-effective, commercial technologies to increase energy efficiency  
Specific renewable energy, energy storage, and energy efficiency technologies not identified. |

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<th>10. Sun Grant Program</th>
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<td><strong>Administered by</strong></td>
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| **Authority** | Food, Conservation, and Energy Act of 2008 (P.L. 110-246), Title VII, Section 7526  
Agricultural Act of 2014 (P.L. 113-79), Title VII, Sections 7128, 7516  
Agriculture Improvement Act of 2018 (P.L. 115-334), Title IX, Sections 7414, 7614 |
| **Annual Funding** | • Mandatory: No mandatory funding has been authorized.  
• Discretionary: Under the previous 2008 and 2014 farm bills, discretionary funding of $75 million was authorized to be appropriated for FY2008-FY2018. The 2018 farm bill extended this authorization of $75 million for FY2019-FY2023. Of this amount,
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$2.5 million was appropriated in FY2015 and FY2016, and $3 million was appropriated for FY2017-FY2020.

Scheduled Termination
Funding authorized through FY2023.

Description
The Sun Grant Initiative (SGI) is a national network of land-grant universities and federally funded laboratories coordinated through six regional Sun Grant centers. The centers receive funding to enhance national energy security using biobased energy technologies, to promote diversification and environmental sustainability of agricultural production through biobased energy and product technologies, to promote economic diversification in rural areas through biobased energy and product technologies, and to enhance the efficiency of bioenergy and biomass research and development programs.24 Competitive grants are available to land-grant schools within each region to be used toward integrated, multistate research, extension, and education programs on technology development and implementation.

The combined six regions and subregions, covering all 50 states and U.S. territories are North-Central Region, Northeastern Region, Southeastern Region, South-Central Region, Western Region, and the Western Insular Pacific Subcenter Region.

Qualified Applicant(s)
Colleges and universities: specifically, eligible applicants must represent a consortium of 1862, 1890, and 1994 land-grant universities made up of one university from each of the (six) Sun Grant regions and subregion.

Qualified Technologies
Biomass; biofuels; biobased products

For More Information
See the program website; program number 10.320 at the beta.Sam.gov website; CRS In Focus IF10288, Overview of Bioenergy Programs in the 2018 Farm Bill, by Kelsi Bracmort; and CRS Report R45943, The Farm Bill Energy Title: An Overview and Funding History, by Kelsi Bracmort.

11. Sustainable Agriculture Research and Education Program (SARE)

Administered by
National Institute of Food and Agriculture; Agricultural Research Service; and other appropriate agencies

Authority
Food, Agriculture, Conservation and Trade Act of 1990 (P.L. 101-624)
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
$19.2 million for FY2011
$13.5 million for FY2012
$19.3 million for FY2013
$22.7 million for FY2014
$23 million for FY2015
$25 million for FY2016
$27 million for FY2017
$27 million for FY2018
$37 million for FY2019
$37 million for FY2020
$37 million requested for FY2021

Scheduled Termination
None

Description
The Sustainable Agriculture Research and Education Program (SARE) is designed to increase 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.

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Qualified Applicant(s)
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 the USDA/NIFA supported website for SARE; program number 10.215 at the beta.SAM.gov website; and CRS Report R41985, Renewable Energy Programs and the Farm Bill: Status and Issues, by Randy Schnepf.

III. U.S. Department of the Treasury


Homeowner

1. Residential Energy Conservation Subsidy Exclusion (Corporate and Personal)

Administered by Internal Revenue Service
Authority 26 U.S.C. §136
Small Business Job Protection Act of 1996 (P.L. 104-188)
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(s) Residential; multi-family residential
Qualified Technologies Technologies installed to reduce electricity or natural gas consumption or improve the management of energy demand in a dwelling unit, including, but not limited to, solar water heat, solar space heat, photovoltaics, and other energy efficiency technologies not identified.


2. Residential Energy Efficiency Tax Credit

Administered by Internal Revenue Service
Authority 26 U.S.C. §25C
Energy Improvement and Extension Act of 2008 (EIA; P.L. 110-343)
American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
American Taxpayer Relief Act of 2012 (ATRA; P.L. 112-240)
Tax Increase Prevention Act of 2014 (P.L. 113-295)
Consolidated Appropriations Act of 2016 (P.L. 114-113)
Bipartisan Budget Act of 2018 (P.L. 115-123)
Further Consolidated Appropriations Act, 2020 (P.L. 116-94)
Consolidated Appropriations Act, 2021 (P.L. 116-260)
Scheduled Termination December 31, 2021
Description A 10% credit for energy efficiency improvements to the building envelope of existing homes and capped amounts ($50-$300) for the purchase of specific types of
high-efficiency heating, cooling, and water-heating equipment. Efficiency improvements or equipment must have served a dwelling in the United States that is owned and used by the taxpayer as a primary residence. For purchases made in 2011-2020, the maximum lifetime amount of homeowner credit for all improvements combined is $500 total. For purchases made in 2009 or 2010, the maximum amount of homeowner credit was $1,500 total.

Qualified Applicant(s)  Residential
Qualified Technologies  Water heaters; furnaces; 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


3. Residential Renewable Energy Tax Credit

Administered by  Internal Revenue Service
Authority  26 U.S.C. §25D

Energy Improvement and Extension Act of 2008 (P.L. 110-343)
American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
Consolidated Appropriations Act of 2016 (P.L. 114-113)
Bipartisan Budget Act of 2018 (P.L. 115-123)
Consolidated Appropriations Act, 2021 (P.L. 116-260)

Scheduled Termination  December 31, 2023
Description  Prior to 2020, a taxpayer could claim a 30% credit for qualified expenditures for an installed system that serves a dwelling unit located in the United States and is used as a residence by the taxpayer. A 26% credit for all qualified technology systems (see below) is in place through December 31, 2022, but is reduced to 22% for 2023, the final year for the tax credit. The federal tax code (26 U.S.C. §25D) does not explicitly reference energy storage, so stand-alone energy storage systems do not qualify for the tax credit.

Qualified Applicant(s)  Residential
Qualified Technologies  Solar electric (including photovoltaics); solar water heating; small wind; fuel cells; geothermal heat pumps; qualified biomass fuel property


Business and Industry

4. Accelerated Depreciation Under the Modified Accelerated Cost-Recovery System (MACRS)

Administered by  Internal Revenue Service
Authority  26 U.S.C. §168
26 U.S.C. §48

Tax Reform Act of 1986 (P.L. 99-514)
American Taxpayer Relief Act of 2012 (ATRA; P.L. 112-240)
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Tax Increase Prevention Act of 2014 (P.L. 113-295)
Consolidated Appropriations Act of 2016 (P.L. 114-113)
Tax Cuts and Jobs Act of 2017 (P.L. 115-97)
The Bipartisan Budget Act of 2018 (P.L. 115-123)

Scheduled Termination
None

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 3 to 50 years, over which the property may be depreciated. A number of renewable energy technologies are classified as five-year property (26 U.S.C. §168(e)(3)(B)(vi)) under MACRS.

P.L. 115-97, signed in December 2017, extended the “placed in service” deadline for bonus depreciation. Equipment placed in service after September 2017 and before January 1, 2023 can qualify for 100% bonus depreciation; for equipment placed in service during the period covering 2023 through 2026, bonus depreciation reduces 20% each year: 80% for 2023, 60% for 2024, 40% for 2025, and 20% for 2026. Solar illumination, fuel cells, microturbines, CHP, and small wind property are eligible for five-year cost recovery if construction begins before January 1, 2022.

Qualified Applicant(s)
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

5. Business Energy Investment Tax Credit (ITC)

Administered by Internal Revenue Service
Authority 26 U.S.C. §48
Energy Tax Act of 1978 (P.L. 95-618)
Crude Oil Windfall Profit Tax Act of 1980 (P.L. 96-223)
Tax Reform Act of 1986 (TRA86; P.L. 99-514)
Technical and Miscellaneous Revenue Act of 1988 (P.L. 100-647)
Omnibus Budget Reconciliation Act of 1989 (P.L. 101-239)
Omnibus Budget Reconciliation Act of 1990 (P.L. 101-508)
Energy Improvement and Extension Act of 2008 (EISA; P.L. 110-343)
American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
Consolidated Appropriations Act of 2016 (P.L. 114-113)
The Bipartisan Budget Act of 2018 (P.L. 115-123)
Consolidated Appropriations Act, 2021 (P.L. 116-260)

25 Bonus depreciation applies to many classes of property or equipment other than renewable energy technologies covered by MACRS. With 100% bonus depreciation available, businesses can choose to deduct the cost of renewable energy property immediately, as opposed to recovering the cost of the investment over five years (MACRS). Beginning in 2023, when bonus depreciation reduces 20% annually through 2026 (see program description above), businesses can opt to deduct the remaining percentage immediately or the entire amount over five years under MACRS if they choose not to take the bonus depreciation deduction.
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Scheduled Termination
None for solar and geothermal (at 10% rate); see description below for termination dates for other specific technologies.

Description
The energy investment tax credit (ITC) is a credit against the cost of investments in qualified renewable-energy property. There is a permanent ITC for solar and geothermal (electric) technologies equal to 10% of the cost basis of the investment. Temporarily, the credit rate for solar was 30% through 2019, before being reduced to 26% for 2020 through 2022, and 22% for 2023 through 2025.

Investments in small wind property (i.e., a wind turbine with 100 kilowatts of capacity or less) could qualify for a 30% ITC through 2019, with the credit rate reduced to 26% for 2020 through 2022 and 22% for 2023. Investments in fuel cell power plants, fiber-optic solar, and waste energy recovery systems may qualify for the ITC at these same rates. The credit for fuel cells is limited to $1,500 per 0.5 kilowatts in capacity. Investments in microturbines, combined heat and power (CHP) systems, and geothermal heat pumps qualify for a 10% ITC through 2023.

With the passage of P.L. 116-260, offshore wind energy systems under construction prior to 2026 are eligible for a 30% tax credit.

Technologies eligible for the Production Tax Credit (PTC) are eligible to opt for the ITC in lieu of the PTC if construction commenced prior to January 1, 2021.

For More Information
See IRS Form 3468 (Investment Credit); and CRS In Focus IF10479, The Energy Credit or Energy Investment Tax Credit (ITC), by Molly F. Sherlock.


Administered by
Internal Revenue Service

Authority
26 U.S.C. §179D

Tax Relief and Health Care Act of 2006 (P.L. 109-432)
Energy Improvement and Extension Act of 2008 (P.L. 110-343)
Tax Increase Prevention Act of 2014 (P.L. 113-295)
Consolidated Appropriations Act of 2016 (P.L. 114-113)
Bipartisan Budget Act of 2018 (P.L. 115-123)
Further Consolidated Appropriations Act, 2020 (P.L. 116-94)
Consolidated Appropriations Act, 2021 (P.L. 116-260)

Scheduled Termination
No termination date. This tax deduction was made permanent with passage of the Taxpayer Certainty and Disaster Tax Relief Act of 2020 (Division EE, section 102 of the Consolidated Appropriations Act of 2021, P.L. 116-260).

Description
A tax deduction 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/IESNA Standard 90.1.

The maximum deduction allowed is $1.80 per square foot. A reduced deduction may be available if a single system is upgraded (lighting, heating and cooling, or building envelope) and the 50% reduction threshold is not met. Separate energy cost reduction percentage thresholds are specified for single-system upgrades. The
maximum deduction for a single-system improvement is $0.60 per square foot. Government entities making energy-efficiency upgrades to public buildings, such as schools, can allocate the Section 179D deduction to designers of energy-efficient commercial building property.

With the passage of P.L. 116-260, this deduction is now adjusted annually for inflation (cost-of-living adjustment).

**Qualified Applicant(s)**
- 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 DOE's 179D Commercial Buildings Energy Efficiency Tax Deduction web page; 
- *Energy Savings Modeling and Inspection Guidelines for Commercial Building Federal Tax Deductions in 2016 or Later* (September 2016) by the National Renewable Energy Laboratory (NREL); and 

### 7. Energy-Efficient New Homes Tax Credit for Home Builders

**Administrated by**
- Internal Revenue Service

**Authority**
- 26 U.S.C. §45L
  - Tax Technical Corrections Act of 2007 (P.L. 110-172)
  - Energy Improvement and Extension Act of 2008 (EIEA; P.L. 110-343)
  - Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 (P.L. 111-312)
  - American Taxpayer Relief Act of 2012 (ATRA; P.L. 112-240)
  - Tax Increase Prevention Act of 2014 (P.L. 113-295)
  - Consolidated Appropriations Act of 2016 (P.L. 114-113)
  - Bipartisan Budget Act of 2018 (P.L. 115-123)
  - Further Consolidated Appropriations Act, 2020 (P.L. 116-94)
  - Consolidated Appropriations Act, 2021 (P.L. 116-260)

**Scheduled Termination**
- December 31, 2021

**Description**
- Contractors building energy-efficient homes and producers of manufactured energy-efficient homes are eligible for a tax credit for each qualifying new home they build that is purchased before 2022. The amount of the credit is equal to $2,000 per home for homes built by contractors and $1,000 per manufactured home.

To be eligible, an energy-efficient new home is required to have annual heating and cooling consumption that is at least 50% (30% in the case of manufactured homes) below a comparable unit. The home is also required to be in accordance with the standards of the 2006 International Energy Conservation Code. Contractors and manufacturers claiming this credit are required to submit certification to an eligible certifier before claiming the credit.

**Qualified Applicant(s)**
- Builder/developer

**Qualified Technologies**
- Comprehensive measures/whole building

For More Information

### 8. Renewable Electricity Production Tax Credit

**Administrated by**
- Internal Revenue Service

**Authority**
- 26 U.S.C. §45
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

Ticket to Work and Work Incentives Improvement Act of 1999 (P.L. 106-170)
Job Creation and Worker Assistance Act of 2002 (P.L. 107-147)
Working Families Tax Relief Act of 2004 (P.L. 108-311)
American Jobs Creation Act of 2004 (P.L. 108-357)
Tax Relief and Health Care Act of 2006 (P.L. 109-432)
Energy Improvement and Extension Act of 2008 (P.L. 110-343)
American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
American Taxpayer Relief Act of 2012 (ATRA; P.L. 112-240)
Tax Increase Prevention Act of 2014 (P.L. 113-295)
Consolidated Appropriations Act of 2016 (P.L. 114-113)
Bipartisan Budget Act of 2018 (P.L. 115-123)
Further Consolidated Appropriations Act, 2020 (P.L. 116-94)
Consolidated Appropriations Act, 2021 (P.L. 116-260)

Scheduled Termination
December 31, 2021

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 duration of the credit is 10 years after the date the facility is placed in service for all facilities placed in service after August 8, 2005; unused credits may be carried forward for up to 20 years following the year they were generated or carried back one year if the taxpayer files an amended return.

P.L. 116-260 extended the expiration date for this tax credit for one year to December 31, 2021. Wind projects starting construction in either 2020 or 2021 will qualify for a production tax credit at 60% of the full rate on the electricity produced for 10 years. Tax credits for other technologies may be claimed at the full rate.

Qualified Applicant(s)
Commercial; industrial

Qualified Technologies
Wind (all); biomass; landfill gas; 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

Cross-Cutting

9. Alternative Motor Vehicle Tax Credit

Administered by
Internal Revenue Service

Authority
26 U.S.C. §30B
Energy Improvement and Extension Act of 2008 (P.L. 110-343)
American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
Consolidated Appropriations Act, 2016 (P.L. 114-113)
Bipartisan Budget Act of 2018 (P.L. 115-123)
Further Consolidated Appropriations Act, 2020 (P.L. 116-94)
Consolidated Appropriations Act, 2021 (P.L. 116-260)

Scheduled Termination
December 31, 2021, for fuel cell motor vehicles only. Tax credits for all other technology types have expired; see Table A-2 in Appendix A for a complete list.
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

Description

Qualified Applicant(s)
Taxpayers/individuals

Qualified 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; IRS News Releases, Fact Sheets and Legal Guidance on Hybrid Vehicles and Alternative Motor Vehicles; IRS Form 8910 for 2019, Alternative Motor Vehicle Credit; and IRS Instructions for Form 8910 (2019).

IV. Department of the Interior

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

Administered by
Bureau of Indian Affairs (BIA); Division of Energy and Mineral Development (DEMD)

Authority
Indian Self-Determination and Education Assistance Act (P.L. 93-638), 25 U.S.C. §450

Annual Funding
$12.87 million for FY2011
$12.7 million for FY2012
$12 million for FY2013
$9.62 million for FY2014
$5.14 million for FY2015
$6 million for FY2016
No data available for FY2017-FY2020

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 they cannot be used for development purposes.

Qualified Applicant(s)
Federally recognized Indian tribes; individual American Indian mineral owners

Qualified Technologies
Renewable energy technologies

For More Information
See BIA’s Energy and Mineral Development Program (EMDP) website; and program number 15.038 at the beta.SAM.gov website.

2. Tribal Energy Development Capacity (TEDC) Grant Program

Administered by
Bureau of Indian Affairs

Authority

Annual Funding
$250,000 for FY2011
$0 for FY2012
$400,000 for FY2013 (est.)
$700,000 for FY2014
$1.56 million for FY2015
### Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

#### V. Small Business Administration

1. **7(a) Loan Guarantees**
   - **Administered by**: Small Business Administration (SBA)
   - **Authority**: Small Business Act of 1953 (P.L. 83-163)
   - **Annual Funding**: 7(a) loan guaranty administrative costs are funded through the SBA’s appropriation for business loan administration. ($159.5 million in FY2010, $152.694 million in FY2011, $147.958 million in FY2012, $140.219 million in FY2013 (after sequestration), $151.560 million in FY2014, $147.726 million in FY2015, $152.726 million in FY2016, $152.726 million in FY2017, $152.782 million in FY2018, and $155.150 million in FY2019 and FY2020).
     - In addition, the 7(a) loan guaranty program was provided $80 million in FY2010, $80 million in FY2011, $139.4 million in FY2012, and $213.8 million in FY2013 (after sequestration) for loan credit subsidies.
   - **Scheduled Termination**: None
   - **Description**: This program guarantees loans from lenders to small businesses that are unable to obtain financing on reasonable terms and conditions 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) SBAExpress Program; (3) the CapLines Program; (4) Small/Rural Lender Advantage initiative; (5) Export Express Program; (6) Export Working Capital Program; (7) International Trade; and (8) Community Advantage initiatives.
   - **Qualified Applicant(s)**: 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; and program number 59.012 at the beta.SAM.gov website.

2. **504 Loan Guarantees**
   - **Administered by**: Small Business Administration (SBA)
   - **Authority**: Small Business Investment Act of 1958 (P.L. 85-699)
   - **Annual Funding**: 504 loan guaranty administrative costs are funded through the SBA’s appropriation for business loan administration. ($159.5 million in FY2010, $152.694 million in FY2011, $147.958 million in FY2012, $140.219 million in FY2013 (after sequestration), $151.560 million in FY2014, $147.726 million in FY2015, $152.726 million in FY2016, $152.726 million in FY2017, and $152.782 million in FY2018, and $155.150 million in FY2019 and FY2020).
     - In addition, the 504 loan guaranty program was provided $10 million in FY2010, $10 million in FY2011, $44.7 million in FY2012, and $95.4 million in FY2013 (after sequestration) for loan credit subsidies.
   - **Qualified Applicant(s)**: Small businesses meeting the size and eligibility standards
   - **Qualified Technologies**: Not specifically listed
   - **For More Information**: See CRS Report R41146, Small Business Administration 504 Loan Guaranty Program, by Robert Jay Dilger; the SBA website; and program number 59.012 at the beta.SAM.gov website.


In addition, the 504 loan guaranty program was provided $67.7 million in FY2012, $98.1 million in FY2013 (after sequestration), $107.0 million in FY2014, and $45.0 million in FY2015 for loan subsidy costs.

Scheduled Termination
None

Description
This program provides long-term fixed rate financing for major fixed assets, such as land, buildings, equipment, and machinery. Of the total project costs, a third-party lender must provide at least 50% of the financing; the Certified Development Company provides up to 40% of the financing through a 100% SBA-guaranteed debenture; and the applicant provides at least 10% of the financing. Qualified projects are required to modernize or upgrade facilities by (1) reducing energy use by at least 10%; (2) employing sustainable or low-impact design that reduces fossil fuel use; (3) planning, equipping, and/or installing process upgrades or renewable energy sources; or (4) supporting renewable fuels production by biodiesel and ethanol producers.

Qualified Applicant(s)
Small businesses meeting the size and eligibility standards

Qualified Technologies
Fossil fuels; energy efficiency equipment; renewable energy sources (unspecified); renewable fuels, including biodiesel and ethanol

For More Information
See CRS Report R41184, Small Business Administration 504/CDC Loan Guaranty Program, by Robert Jay Dilger; the SBA website; and program number 59.041 at the beta.SAM.gov website.

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

1. 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 also 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 toward 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 and 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 included 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 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 Applicant(s) The loan is available to anyone who meets the income requirements for FHA's Section 203(b) program, 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.

Qualified 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, RESNET (Residential Energy Services Network), Energy Star, and DSIRE websites.

2. FHA PowerSaver Loan Program

Administered by Federal Housing Administration (FHA)

Authority No statutory authority. HUD developed the PowerSaver as part of the Recovery Through Retrofit initiative launched in May 2009 by the White House Task Force on Middle Class Working Families to develop federal actions for expanding green job opportunities in the United States and boosting energy savings by improving home energy efficiency.

Scheduled Termination PowerSaver began as a nationwide two-year pilot program, launching in 2011. No termination date for this program is listed in online government information sources identified at this time.

Description PowerSaver offers FHA-backed loans, with three financing options for homeowners to make energy efficiency and renewable energy upgrades in their residences: (1) PowerSaver Home Energy Upgrade (up to $7,500) for smaller projects; (2) PowerSaver Second Mortgage (Title I, up to $25,000) for larger retrofit projects; and (3) PowerSaver Energy Rehab (203(k)). This 203(k) loan is for home purchase or refinance, targeting either home buyers wishing to combine home improvements with a home purchase or to homeowners wishing to include home improvements when refinancing an existing mortgage. For the 203(k), current loan limits for a single-unit property vary by area from $217,500 to $625,000. For all three PowerSaver products, borrowers must select from a list of approved PowerSaver lenders.

Qualified Applicant(s) These loans are available to homeowners who meet the following criteria: a minimum credit score of 660 and a maximum total debt to income ratio of 45% (monthly income divided by monthly debt payments). Eligible housing is limited to single unit homes that must be owner-occupied.

Qualified Technologies Energy efficient improvements, including installation of insulation, duct sealing, replacement doors and windows, HVAC systems, water heaters, home automation systems and controls (e.g., smart thermostats), solar panels, solar thermal hot water systems, small wind power, and geothermal systems.

For More Information See EERE's factsheet; DSIRE website; and FHA's approved list of lenders for PowerSaver.

VII. Department of Health and Human Services

1. Low Income Home Energy Assistance Program (LIHEAP)

Administered by Administration For Children and Families
Office of Community Services, Division of Energy Assistance

Authority Omnibus Budget Reconciliation Act of 1981 (P.L. 97-35), Title XXVI, §2602
The Human Services Amendments of 1994 (P.L. 103-252), Title III, §§302–304(a), 311(c)(1)
Community Opportunities, Accountability, and Training and Educational Services Act of 1998 (P.L. 105-285), Title III, §302,
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs


### Annual Funding

- $4.7 billion for FY2011
- $3.47 billion for FY2012
- $3.29 billion for FY2013
- $3.43 billion for FY2014
- $3.39 billion for FY2015
- $3.37 billion for FY2016
- $3.39 billion for FY2017
- $3.64 billion for FY2018
- $3.65 billion for FY2019
- $4.64 billion for FY2020

### Scheduled Termination

None

### Description

LIHEAP is a federal program that helps low-income households pay for heating or cooling their homes. In most states, it also helps people make sure their homes are more energy efficient by paying for certain home improvements, known as weatherization.

Funds are allotted to states, tribes, and territories according to a formula prescribed by the LIHEAP statute. State, tribal, and territorial governments manage the day-to-day details of the program, including the award of assistance to eligible applicants.

The LIHEAP statute limits the amount of funds that each grantee (state, tribe, or territory) may spend on weatherization to 15% of the funds available, or up to 25% with a waiver from HHS. However, in cases of floods or natural disasters, work can be done under the crisis part of the grantee's LIHEAP program, thus bypassing the weatherization limits.

### Qualified Applicant(s)

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. Typical measures may include installing insulation; sealing ducts; tuning and repairing broken or inefficient heating and cooling systems and if indicated, replacing the same; mitigating air infiltration; and reducing electric base load consumption.

### For More Information

See CRS Report RL31865, LIHEAP: Program and Funding, by Libby Perl; and the LIHEAP Frequently Asked Questions (FAQ) website.

VIII. Department of Veterans Affairs

1. **Energy Efficient Mortgages (EEMs)**

   **Administered by**
   
   FHA and VA. Conventional mortgages: Private lenders that sell mortgage loans to Fannie Mae or Freddie Mac may also offer EEMs

   **Authority**
   
   EEMs were initially introduced by lenders in the 1980s. In 1992, three pieces of legislation passed by Congress worked toward standardizing and expanding the use of

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26 The Office of Community Services (OCS), Division of Energy Assistance (DEA), initially released approximately $3.32 billion of FY2020 regular block grant funding to LIHEAP grantees on November 1, 2019. This funding was provided under the Continuing Appropriations Resolution 2020, and Health Extenders Act of 2019, (P.L. 116-59). A second release of $381 million was appropriated under the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and announced on February 27, 2020. A third round of funding of $37 million was released on April 3, 2020 under the Further Consolidated Appropriations Act, 2020 (P.L.116-94). Finally, an additional $900 million in supplemental funding was appropriated for FY2020 under the CARES Act (P.L. 116-136) on March 27, 2020. Those funds were released on May 8, 2020. The CARES Act allows LIHEAP grantees to carryover up to 100% of the supplemental funding for obligation in FY2021. Grantees must obligate at least 90% of the non-supplemental FY2020 funding by September 30, 2020.
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 and 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 included 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 Applicant(s)
The loan is available to anyone who meets the income requirements for FHA’s Section 203(b) program, 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.

Qualified 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, RESNET, Energy Star, and DSIRE websites.

IX. Fannie Mae

1. Fannie Mae Green Initiative-Loan Program

Administered by Fannie Mae
Authority Housing and Urban Development Act of 1968 (P.L. 90-448)
Scheduled Termination None

Description
This program provides owners of multifamily properties (rental or cooperative properties with five or more units) with three financing options and tools to make energy- and water-saving property improvements:
- The Green Rewards program provides up to an additional 5% of loan proceeds by including up to 50% of projected energy and water savings in the loan underwriting. Selected property upgrades must be completed within 12 months of loan closing.
- The Green Preservation Plus program provides additional loan proceeds to Multifamily Affordable Housing (MAH) properties by allowing up to an 85% Loan-to-Value (LTV) ratio; lower Debt-Service-Credit-Ratio (DSCR) up to five basis points lower than standard rates; and access to property’s equity amount equal to investments in efficiency. Energy- and water-saving improvements must equal at least 5% of the original mortgage loan amount.
- The Green Building Certification Pricing Break provides the 10-basis-point pricing break to any acquisition or refinance loan on a conventional or affordable property that has a current, eligible Green Building Certification.

Qualified Applicant(s)
Only multifamily properties are eligible for the program.

Qualified Technologies
Clothes washers, dishwashers, dehumidifiers, water heaters, lighting, furnaces, boilers, heat pumps, air conditioners, caulking/weather-stripping, duct/air sealing, building insulation, windows, roofs, comprehensive measures/whole building, custom/others pending approval, insulation, tankless water heaters

For More Information
See the Fannie Mae and DSIRE websites.
## Appendix A. Summary of Federal Renewable Energy and Energy Efficiency Incentives/Index of Programs

### Table A-1. Federal Incentives by Agency

<table>
<thead>
<tr>
<th>Administering Agency</th>
<th>Program</th>
<th>Description</th>
<th>U.S. Code Citation</th>
<th>FY2020 Appropriations</th>
<th>Expiration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Energy</td>
<td>Advanced Manufacturing Office (formerly Industrial Technologies Program)</td>
<td>Develops and supports the commercialization of new energy efficient technologies to improve industrial efficiency while increasing productivity</td>
<td>42 U.S.C. §§17111 et seq.</td>
<td>$395 million</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Advanced Research Projects</td>
<td>Grants to finance sophisticated energy technology R&amp;D projects to accelerate transformational technology advances</td>
<td>42 U.S.C. §16538</td>
<td>$390 million</td>
<td>Program evaluation after FY2012</td>
</tr>
<tr>
<td></td>
<td>Bioenergy Technologies Office (formerly Biomass and Biorefinery Systems R&amp;D Program)</td>
<td>Grants to develop cost-effective technologies and systems to transform domestic biomass resources into biofuels, bioproducts, and biopower</td>
<td>42 U.S.C. §16232</td>
<td>$259.5 million</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Building Technologies Office</td>
<td>Provides financial and technical assistance to improve efficiency of buildings and the equipment, components, and systems within them</td>
<td>42 U.S.C. §§17061-17124</td>
<td>$285 million</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Conservation Research and Development Grant Program</td>
<td>Grants to finance long-term R&amp;D efforts in buildings, industrial, vehicles, and hydrogen/fuel cell technologies</td>
<td>42 U.S.C. §§5901 et seq.</td>
<td>$88.5 million (est.)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Electricity Delivery and Energy Reliability, Research, Development and Analysis Grant Program</td>
<td>Grants to develop cost-effective technology to enhance the reliability, efficiency, and resiliency of the electric grid</td>
<td>42 U.S.C. §§17381 et seq.</td>
<td>$173 million</td>
<td>None</td>
</tr>
</tbody>
</table>
## Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

<table>
<thead>
<tr>
<th>Administering Agency</th>
<th>Program</th>
<th>Description</th>
<th>U.S. Code Citation</th>
<th>FY2020 Appropriations</th>
<th>Expiration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Efficiency and Renewable Energy</td>
<td>Information Dissemination, Outreach, Training, and Technical Analysis/Assistance Program</td>
<td>Provides financial assistance to stimulate increased usage of energy efficiency/renewable energy technologies and accelerate the adoption of these technologies</td>
<td>See Notes field(^b)</td>
<td>$8.1 million (est.)</td>
<td>None</td>
</tr>
<tr>
<td>Federal Energy Management Program</td>
<td>Provides assistance to federal agencies in developing and implementing energy efficiency and renewable energy technologies to meet energy management goals</td>
<td>42 U.S.C. §§17131 et seq.</td>
<td>$40 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Financial Assistance Program (Office of Science)</td>
<td>Grants support research in the basic sciences and advanced technology concepts and assessments in fields related to energy</td>
<td>42 U.S.C. §13503</td>
<td>$1.2 billion (est.)</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Geothermal Technologies Office</td>
<td>Partners DOE with industry, academia, and research facilities to develop geothermal energy technologies</td>
<td>42 U.S.C. §§16231 et seq. and 42 U.S.C. §§17191 et seq.</td>
<td>$110 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Hydrogen &amp; Fuel Cell Technologies Office</td>
<td>Partners DOE with industry, academia, and national laboratories to develop hydrogen and fuel cell technologies for the marketplace</td>
<td>42 U.S.C. §§16151 et seq.</td>
<td>$150 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Inventions and Innovations Program</td>
<td>Provides financial and technical assistance to develop innovative cost-effective ideas and inventions with future commercial value and focuses on energy efficiency and renewable energy technologies</td>
<td>42 U.S.C. §5913</td>
<td>$0</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Loan Guarantee Program</td>
<td>Loan guarantees to encourage commercial use of new or significantly improved technologies that avoid, reduce, or sequester</td>
<td>42 U.S.C. §§16511 et seq.</td>
<td>$29 million for the Innovative Technology Loan Guarantee Program (Section 1703)</td>
<td>None for the Section 1703 program. For Section 1705 program,</td>
<td></td>
</tr>
<tr>
<td>Administering Agency</td>
<td>Program</td>
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<tr>
<td>Office of Indian Energy Assistance Programs (formerly the Tribal Energy Program)</td>
<td>Provides financial and technical assistance, education, and training to tribes to evaluate and develop renewable energy sources and energy efficiency measures</td>
<td>25 U.S.C. §§3501 et seq.</td>
<td>$17 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Regional Biomass Energy Programs</td>
<td>Provides financial assistance to increase America’s use of fuels, chemicals, materials, and power made from domestic biomass</td>
<td>See Notes in fieldb</td>
<td>$0</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Renewable Energy Production Incentive</td>
<td>Provides incentive payments for electricity generated and sold by new qualifying renewable energy facilities</td>
<td>42 U.S.C. §13317</td>
<td>$0</td>
<td>End of FY2026</td>
<td></td>
</tr>
<tr>
<td>Renewable Energy Research and Development Program</td>
<td>Provides financial assistance to conduct R&amp;D efforts in renewable energy technologies</td>
<td>42 U.S.C. §§16231 et seq. (est.)</td>
<td>$252.2 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Small Business Innovation Research/Small Business Technology Transfer Programs</td>
<td>Grants for small businesses to develop and commercialize energy technologies, including energy efficiency and renewable energy technologies</td>
<td>15 U.S.C. §638</td>
<td>$59.5 million for SBIR</td>
<td>End of FY2022</td>
<td></td>
</tr>
<tr>
<td>Solar Energy Technologies Office</td>
<td>Partners with industry, universities, and national laboratories to finance R&amp;D and bring reliable and affordable solar energy technologies to the marketplace</td>
<td>42 U.S.C. §§16231 et seq. and 42 U.S.C. §§17171 et seq.</td>
<td>$280 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>State Energy Program</td>
<td>Provides grants to states to design and implement their own renewable energy and energy efficiency programs</td>
<td>42 U.S.C. §§6321 et seq.</td>
<td>$62.5 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Tribal Energy Loan Guarantee Program</td>
<td>A partial loan guarantee program to support economic opportunities to tribes through energy development projects and activities.</td>
<td>25 U.S.C. §3502</td>
<td>$2 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Administering Agency</td>
<td>Program</td>
<td>Description</td>
<td>U.S. Code Citation</td>
<td>FY2020 Appropriations</td>
<td>Expiration Date</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Vehicle Technologies Office</td>
<td>Partners with industry leaders to develop and deploy advanced transportation technologies to improve vehicle fuel efficiency and domestically produce clean and affordable alternative fuels</td>
<td>42 U.S.C. §§17011 seq.</td>
<td>$396 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Water Power Technologies Office</td>
<td>Partners with industry, states, federal entities, and other stakeholders on R&amp;D projects to improve performance, lower costs, and accelerate deployment of water power technologies</td>
<td>42 U.S.C. §§16231 et seq. and 42 U.S.C. §§17211 et seq.</td>
<td>$148 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Weatherization Assistance Program</td>
<td>Provides financial and technical assistance to states to increase the energy efficiency of low-income households</td>
<td>42 U.S.C. §§6861 et seq.</td>
<td>$308.5 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Wind Energy Technologies Office</td>
<td>Partners with industry, states, federal entities, and other stakeholders on R&amp;D projects to improve performance, lower costs, and accelerate deployment of wind energy technologies</td>
<td>42 U.S.C. §§16231 et seq.</td>
<td>$104 million</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Department of Agriculture</td>
<td>Assistance to High Energy Cost Rural Communities Program</td>
<td>Provides financial assistance to rural communities with high energy costs</td>
<td>7 U.S.C. §918a</td>
<td>$10 million</td>
<td>None</td>
</tr>
<tr>
<td>Bioenergy Program for Advanced Biofuels</td>
<td>Supports and ensures an expanding production of advanced biofuels by providing payments to advanced biofuels producers</td>
<td>7 U.S.C. §8105</td>
<td>Mandatory funding of $7 million annually for FY2019-FY2023 to remain available until expended Discretionary funding of $20 million authorized annually for FY2019-FY2023 No discretionary funding has been appropriated for FY2020</td>
<td>Authorized through FY2023</td>
<td></td>
</tr>
</tbody>
</table>
### Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

<table>
<thead>
<tr>
<th>Administering Agency</th>
<th>Program Description</th>
<th>U.S. Code Citation</th>
<th>FY2020(^a) Appropriations</th>
<th>Expiration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biomass Crop Assistance Program (BCAP)</strong></td>
<td>Provides assistance to support the production of eligible biomass crops on land within approved project areas</td>
<td>7 U.S.C. §8111</td>
<td>The FY2018 farm bill authorized no mandatory funding for FY2019-FY2023. Discretionary funding of $25 million authorized annually for FY2019-FY2023. No discretionary funding has been appropriated for FY2020.</td>
<td>Authorized through FY2023</td>
</tr>
<tr>
<td><strong>Biomass Research and Development Initiative</strong></td>
<td>Provides competitive grants, contracts, or financial assistance for RD&amp;D of technologies and processes for biofuels and biobased products.</td>
<td>7 U.S.C. §8108</td>
<td>Mandatory funding of $3 million for FY2014-2017 to remain available until expended; Mandatory funding not extended by 2018 farm bill. Discretionary funding of $20 million authorized annually for FY2019-FY2023. No discretionary funding has been appropriated for FY2020.</td>
<td>Authorized through FY2023</td>
</tr>
<tr>
<td><strong>Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program</strong></td>
<td>Assists in the development of new technologies for development of biofuels</td>
<td>7 U.S.C. §8103</td>
<td>$24 million in mandatory funding was made available for loan guarantees for FY2020. No discretionary funding has been appropriated through FY2020.</td>
<td>Authorized through FY2023</td>
</tr>
<tr>
<td><strong>Community Wood Energy and Wood Innovation Program</strong></td>
<td>Provides grants to states and local governments to develop community wood energy plans or acquire or upgrade community wood energy systems.</td>
<td>7 U.S.C. §8113</td>
<td>No discretionary funding has been appropriated through FY2020.</td>
<td>Authorized through FY2023</td>
</tr>
<tr>
<td><strong>New Era Rural Technology</strong></td>
<td>Provides grant funding for approved technology development, applied</td>
<td>7 U.S.C. §319e</td>
<td>No discretionary funding has been appropriated</td>
<td>Authorized through FY2023</td>
</tr>
<tr>
<td>Administering Agency</td>
<td>Program</td>
<td>Description</td>
<td>U.S. Code Citation</td>
<td>FY2020 Appropriations</td>
</tr>
<tr>
<td>----------------------------</td>
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<td>-----------------------------------------------------------------------------</td>
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<td>-------------------------------</td>
</tr>
<tr>
<td>Competitive Grants Program</td>
<td>Research, and training to develop bioenergy and agriculture-based renewable energy resources</td>
<td></td>
<td>7 U.S.C. §8107</td>
<td>appropriated through FY2020</td>
</tr>
<tr>
<td>Rural Energy for America Program</td>
<td>Provides grants and loan guarantees to promote energy efficiency and renewable energy to agricultural producers and rural small businesses</td>
<td>Mandatory CCC funds of $50 million authorized for FY2014 and each fiscal year thereafter; $706,000 in discretionary funding was appropriated for FY2020</td>
<td>7 U.S.C. §8107a</td>
<td>Mandatory CCC funds of $50 million authorized for FY2014 and each fiscal year thereafter; $706,000 in discretionary funding was appropriated for FY2020</td>
</tr>
<tr>
<td>Rural Energy Savings Program</td>
<td>Provides loans to power producing entities to make loans to consumers for durable, cost-effective energy efficiency upgrades or installation of renewable energy or energy storage systems</td>
<td>7 U.S.C. §8107a</td>
<td>$12 million for FY2020</td>
<td>Authorized through FY2023</td>
</tr>
<tr>
<td>Sun Grant Program</td>
<td>Provides grants for research projects with the purpose of enhancing biomass energy crop production and increasing the energy efficiency of agricultural operations</td>
<td>7 U.S.C. §8114</td>
<td>$3 million</td>
<td>Authorized through FY2023</td>
</tr>
<tr>
<td>Sustainable Agriculture Research and Education</td>
<td>Provides grants for research projects with the purpose of enhancing biomass energy crop production and increasing the energy efficiency of agricultural operations</td>
<td>7 U.S.C. §§801 et seq.</td>
<td>$37 million</td>
<td>None</td>
</tr>
<tr>
<td>Department of the Treasury</td>
<td>Alternative Motor Vehicle Credit</td>
<td>Provides tax credit for hybrid and lean-burn vehicles</td>
<td>26 U.S.C. §30B</td>
<td>N/A</td>
</tr>
<tr>
<td>Business Energy Investment Tax Credit</td>
<td>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%)</td>
<td>26 U.S.C. §48</td>
<td>N/A</td>
<td>12/31/2019 for large wind systems; 12/31/2021 for geothermal heat pumps, microturbines, CHP systems, hybrid solar lighting, fuel cells, small wind systems;</td>
</tr>
<tr>
<td>Administering Agency</td>
<td>Program</td>
<td>Description</td>
<td>U.S. Code Citation</td>
<td>FY2020 Appropriations</td>
</tr>
<tr>
<td>------------------------------------------</td>
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</tr>
<tr>
<td>Energy-Efficient New Homes Tax Credit for Home Builders</td>
<td>Provides tax credits of up to $2,000 for builders of new, energy-efficient homes</td>
<td>26 U.S.C. §45L (amended)</td>
<td>N/A</td>
<td>12/31/2017</td>
</tr>
<tr>
<td>Modified Accelerated Cost-Recovery System (MACRS)</td>
<td>Allows businesses to recover investments in certain renewable energy property through depreciation deductions</td>
<td>26 US.C §168 and 26 US.C §48</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Renewable Energy Production Tax Credit (PTC)</td>
<td>Provides a per-kilowatt-hour tax credit for electricity generated by qualified renewable energy technologies and sold during the tax year</td>
<td>26 U.S.C. §45 (amended)</td>
<td>N/A</td>
<td>12/31/2019 for wind energy systems 12/31/2017 for all other systems</td>
</tr>
<tr>
<td>Residential Energy Conservation Subsidy Exclusion (Corporate and Personal)</td>
<td>Corporate and personal tax exemptions for energy-conservation subsidies are provided by public utilities, either directly or indirectly</td>
<td>26 U.S.C. §136 (amended)</td>
<td>N/A</td>
<td>None</td>
</tr>
<tr>
<td>Residential Energy Efficiency Tax Credit</td>
<td>Provides tax credit to residents/individuals for the installation of qualified energy efficient equipment to existing homes (primary residence)</td>
<td>26 U.S.C. §25C</td>
<td>N/A</td>
<td>12/31/2017</td>
</tr>
<tr>
<td>Residential Renewable Energy Tax Credit</td>
<td>Provides a tax credit to residents/individuals for the installation of qualified renewable energy systems to existing homes (primary residence)</td>
<td>26 U.S.C. §25D (amended)</td>
<td>N/A</td>
<td>12/31/2021</td>
</tr>
<tr>
<td>Department of Health and Human Services</td>
<td>Low Income Energy Assistance Program</td>
<td>Provides assistance to help low income households pay for heating and cooling their homes and energy efficiency improvements</td>
<td>42 U.S.C. §§8621 et seq.</td>
<td>$4.64 billion</td>
</tr>
<tr>
<td>Administering Agency</td>
<td>Program</td>
<td>Description</td>
<td>U.S. Code Citation</td>
<td>FY2020 Appropriations</td>
</tr>
<tr>
<td>-------------------------------------------</td>
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<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Department of Housing and Urban Development</td>
<td>Energy Efficient Mortgages</td>
<td>Provides backing of loans for energy efficient mortgages to finance the installation of energy efficiency or renewable energy technologies in new or existing homes</td>
<td>12 U.S.C. §§1701z-16</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>FHA PowerSaver Loan Program</td>
<td>Offers loans backed by FHA to finance energy efficiency and renewable energy upgrades to single-unit homes</td>
<td>See Notes field²</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Tribal Energy Development Capacity Grant</td>
<td>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</td>
<td>25 U.S.C. §3502</td>
<td>$1.4 million for FY2016; no data currently available for FY2017-FY2020</td>
</tr>
<tr>
<td>Department of Veterans Affairs</td>
<td>Energy Efficient Mortgages</td>
<td>Provides backing of loans for energy efficient mortgages to finance the installation of energy efficiency or renewable energy technologies in new or existing homes</td>
<td>12 U.S.C. §§1701z-16</td>
<td>N/A</td>
</tr>
<tr>
<td>Fannie Mae</td>
<td>Fannie Mae Green Initiative- Loan Program</td>
<td>Provides owners of multifamily properties (rental or cooperative properties with 5 five or more units) with three financing options and tools to make energy- and water-saving property improvements</td>
<td>12 USC §§1716 et. seq.</td>
<td>N/A</td>
</tr>
<tr>
<td>Small Business Administration</td>
<td>7(a) Loan Guarantees</td>
<td>Provides guaranteed loans from lenders to small businesses</td>
<td>15 U.S.C. §636(a)</td>
<td>$95.9 million</td>
</tr>
</tbody>
</table>
### Table A-2. Alternative Motor Vehicle Credit (26 U.S.C. §30B)

<table>
<thead>
<tr>
<th>Type of Credit</th>
<th>Expiration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Cell Motor Vehicle Credit</td>
<td>December 31, 2021</td>
</tr>
<tr>
<td>Qualified Plug-In Electric Drive Motor Vehicle Credit</td>
<td>December 31, 2014</td>
</tr>
<tr>
<td>Qualified Plug-In Electric Motor Vehicle Conversion Credit</td>
<td>December 31, 2011</td>
</tr>
<tr>
<td>Advanced Lean Burn Technology Motor Vehicle Credit</td>
<td>December 31, 2010</td>
</tr>
<tr>
<td>Qualified Alternative Fuel Motor Vehicle Credit</td>
<td>December 31, 2010</td>
</tr>
<tr>
<td>Qualified Hybrid Motor Vehicle Credit</td>
<td>December 31, 2010</td>
</tr>
</tbody>
</table>

Source: U.S. Code and the Internal Revenue Service (IRS).
# Appendix B. Index of Programs by Applicant Eligibility and Technology Type

## Table B-1. Index of Programs by Applicant Eligibility

<table>
<thead>
<tr>
<th>Applicant Eligibility</th>
<th>Program Numbers(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Technology Centers</td>
<td>II-7</td>
</tr>
<tr>
<td>Agricultural/Extension/Biofuel Producers</td>
<td>II-2, II-3, II-5, II-8, II-11, III-5</td>
</tr>
<tr>
<td>Alaska Native Corporations</td>
<td>I-14</td>
</tr>
<tr>
<td>Builder/Developer</td>
<td>III-6, III-7</td>
</tr>
<tr>
<td>Cooperative/Collaborative/Consortia</td>
<td>I-15, I-19, II-1, II-4, II-5, II-8, II-9, II-11</td>
</tr>
<tr>
<td>Federal Government</td>
<td>I-4, I-6, I-7, I-12, I-21, I-24, II-11, III-6</td>
</tr>
<tr>
<td>Land Grant Universities (1862 1890, 1994)</td>
<td>II-4, II-10</td>
</tr>
<tr>
<td>Local Government</td>
<td>I-2, I-6, I-7, I-8, I-12, I-13, I-14, I-15, I-16, I-20, I-22, I-23, II-1, II-5, II-6, II-8</td>
</tr>
<tr>
<td>National Laboratories</td>
<td>I-4, I-5, I-6, I-7, I-8, I-12, II-4, II-5</td>
</tr>
<tr>
<td>Other/Cross-Cutting</td>
<td>I-19, III-4</td>
</tr>
<tr>
<td>Research Organization</td>
<td>I-19, I-20</td>
</tr>
<tr>
<td>Residential/Individual</td>
<td>I-11, I-14, I-19, II-1, II-5, II-11, III-1, III-2, III-3, III-9, IV-1, V-1, VI-1, VI-2, IX-1</td>
</tr>
<tr>
<td>Schools</td>
<td>II-8</td>
</tr>
<tr>
<td>State Government</td>
<td>I-2, I-6, I-7, I-8, I-9, I-12, I-13, I-14, I-15, I-16, I-17, I-20, I-22, I-23, II-1, II-4, II-5, II-6, II-8, II-11, III-6, VII-1</td>
</tr>
<tr>
<td>U.S. Territories</td>
<td>I-9, I-17, VII-1</td>
</tr>
<tr>
<td>Utilities</td>
<td>I-15, II-5, II-8, II-9, III-5</td>
</tr>
<tr>
<td>Veterans</td>
<td>VI-1, VIII-1</td>
</tr>
</tbody>
</table>

**Source:** CRS.

\(^a\) Program numbers correspond to agency (Roman numeral) and (Arabic) number assigned to each program as displayed in this report’s Table of Contents.
### Table B-2. Index of Programs by Technology Type

<table>
<thead>
<tr>
<th>Qualified Technologies</th>
<th>Program Numbers&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Batteries</td>
<td>1-12, 1-13</td>
</tr>
<tr>
<td>Air Conditioners</td>
<td>1-9, 1-18, III-2, III-6, VI-1, VI-2, VII-1, IX-1</td>
</tr>
<tr>
<td>Alternative Vehicles/Vehicle Technologies</td>
<td>1-4, 1-12, III-4, III-9</td>
</tr>
<tr>
<td>Anaerobic Digestion</td>
<td>1-16, II-7, III-4</td>
</tr>
<tr>
<td>Batteries (Energy Storage)</td>
<td>1-12, 1-13, I-20, I-25, II-9</td>
</tr>
<tr>
<td>Biodiesel / Biofuels</td>
<td>1-1, 1-12, I-23, II-2, II-4, II-5, II-10, II-11, III-4</td>
</tr>
<tr>
<td>Boilers</td>
<td>1-9, I-18, III-2, III-6, VI-1, VI-2, VII-1, IX-1</td>
</tr>
<tr>
<td>Biomass / Bioenergy</td>
<td>1-1, 1-2, I-15, I-18, I-21, II-2, II-3, II-4, II-5, II-6, II-7, II-8</td>
</tr>
<tr>
<td>Caulking/Weather Stripping</td>
<td>I-9, I-18, III-6, VI-1, VI-2, VII-1, VIII-1, IX-1</td>
</tr>
<tr>
<td>Chillers</td>
<td>1-18, III-6</td>
</tr>
<tr>
<td>Clothes Washers</td>
<td>I-18, IX-1</td>
</tr>
<tr>
<td>Comprehensive/Whole Building</td>
<td>I-18, III-6, III-7, IX-1</td>
</tr>
<tr>
<td>Doors</td>
<td>I-18, III-2, III-6, VI-1, VI-2, VIII-1, IX-1</td>
</tr>
<tr>
<td>Duct/Air Sealing</td>
<td>I-9, I-18, III-6, VI-1, VI-2, VII-1, VIII-1, IX-1</td>
</tr>
<tr>
<td>Electricity Transmission Infrastructure</td>
<td>I-25</td>
</tr>
<tr>
<td>Equipment (Energy Efficient)</td>
<td>I-8</td>
</tr>
<tr>
<td>Furnaces</td>
<td>1-9, I-18, III-2, III-6, VI-1, VI-2, VII-1, VIII-1, IX-1</td>
</tr>
<tr>
<td>Geothermal (All)</td>
<td>I-3, I-16, I-21, I-25, II-8, III-5, VI-1, VI-2, VIII-1</td>
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<tr>
<td>—Geothermal (Direct Use)</td>
<td>II-8, III-4, III-5, VI-1, VI-2, VIII-1</td>
</tr>
<tr>
<td>—Geothermal (Electric)</td>
<td>I-15, I-18, I-23, II-7, III-4, III-5, III-8, VI-1, VI-2, VIII-1</td>
</tr>
<tr>
<td>—Geothermal (Heat Pumps)</td>
<td>I-18, II-8, III-3, III-4, III-5, VI-1, VI-2, VIII-1</td>
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<tr>
<td>Heat Pumps</td>
<td>III-2, III-6, VI-1, VI-2, VIII-1, IX-1</td>
</tr>
<tr>
<td>Hybrid Electric</td>
<td>I-12, III-9</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>1-4, 1-13, I-16, II-8</td>
</tr>
<tr>
<td>Hydropower (All)</td>
<td>I-6, I-16, I-21, I-25, III-8</td>
</tr>
<tr>
<td>—Hydroelectric</td>
<td>I-6, I-18, I-23, I-25, II-8, III-8</td>
</tr>
<tr>
<td>—Hydrokinetic</td>
<td>I-6, III-8</td>
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<tr>
<td>—Ocean</td>
<td>I-6, I-15, I-21, I-23, II-8, III-8</td>
</tr>
<tr>
<td>—Tidal</td>
<td>I-6, I-15, I-23, II-8, III-8</td>
</tr>
<tr>
<td>—Wave</td>
<td>I-6, I-15, I-23, II-8, III-8</td>
</tr>
<tr>
<td>Insulation</td>
<td>I-9, I-18, III-2, III-6, VI-1, VI-2, VII-1, VIII-1, IX-1</td>
</tr>
<tr>
<td>Landfill Gas</td>
<td>I-15, III-4, III-8</td>
</tr>
<tr>
<td>Lighting/Lighting Sensors</td>
<td>I-8, I-18, I-23, III-4, III-5, III-6, VI-1, VIII-1, IX-1</td>
</tr>
<tr>
<td>Qualified Technologies</td>
<td>Program Numbersa</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Manufacturing Facilities</td>
<td>I-23</td>
</tr>
<tr>
<td>Microturbines</td>
<td>II-8, III-4, III-5</td>
</tr>
<tr>
<td>Municipal Solid Waste</td>
<td>III-4, III-8</td>
</tr>
<tr>
<td>Other Technologies&lt;sup&gt;b&lt;/sup&gt;</td>
<td>I-9, I-11, I-13, I-14, I-17, I-18, I-19, I-20, I-22, I-24, II-1, II-8, II-9, II-11, III-1, IV-1, IV-2, V-1, V-2, VI-1, VI-2, VII-1, VII-2, VII-8-1, IX-1</td>
</tr>
<tr>
<td>Smart/Programmable Thermostats</td>
<td>I-9, I-18, VI-1, VI-2, VII-1, VIII-1, IX-1</td>
</tr>
<tr>
<td>Refrigerators/Freezers</td>
<td>I-18</td>
</tr>
<tr>
<td>Renewable Transportation Fuels</td>
<td>I-23, II-8, III-4</td>
</tr>
<tr>
<td>Roofs</td>
<td>I-18, III-2, III-6, IX-1</td>
</tr>
<tr>
<td>Siding</td>
<td>I-18, III-6</td>
</tr>
<tr>
<td>Smart Grid</td>
<td>I-20</td>
</tr>
<tr>
<td>— Solar Space Heat</td>
<td>I-18, II-8, III-1, III-3, III-4, III-5, VI-1, VIII-1</td>
</tr>
<tr>
<td>— Solar Water Heat</td>
<td>II-8, III-1, III-3, III-4, III-5, VI-1, VI-2, VIII-1</td>
</tr>
<tr>
<td>Water Heaters</td>
<td>I-18, III-2, III-6, VI-1, VIII-1, IX-1</td>
</tr>
<tr>
<td>Windows</td>
<td>I-8, I-9, I-18, II-3, III-2, VI-1, VI-2, VII-1, VIII-1, IX-1</td>
</tr>
</tbody>
</table>

Source: CRS.

a. Program numbers correspond to agency (Roman numeral) and (Arabic) number assigned to each program as displayed in this report’s Table of Contents.

b. Other technologies include cross-cutting and advanced technologies; other unspecified technologies; and all energy efficiency and/or renewable energy technologies not specifically identified.
Appendix C. Expired Federal Energy Efficiency and Renewable Energy Incentive Programs

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)

   **Annual Funding**  
   (Project Grants)
   - $0 for FY2009
   - $235 million for FY2010
   - $0 for FY2011

   **Scheduled Termination**  
   9/30/2012. All obligations were to be made by September 30, 2010. Receiving property owners were required to spend the funds on the specific improvements within two years of receipt.

   **Description**  
   Program provided funding for energy and green retrofit investments to certain eligible assisted, affordable multifamily properties. Funding included incentives for participating property owners, a set-aside for administrative functions, and a set-aside for due diligence and underwriting support. Assistance was for specific retrofit purposes.

   **Qualified Applicant(s)**  
   Residential

   **Qualified Technologies**  
   Specific technologies not identified

2. **Clean Renewable Energy Bonds (CREBs)**

   **Administered by**  
   Internal Revenue Service

   **Authority**  
   26 U.S.C. 54 (CREBs or "old CREBs"); 26 U.S.C. 54A and 26 U.S.C. 54C (New CREBs)

   - Tax Relief and Health Care Act of 2006 (P.L. 109-432)
   - Energy Improvement and Extension Act of 2008 (P.L. 110-343)
   - American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
   - Tax Cuts and Jobs Act of 2017 (P.L. 115-97)

   **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, Section 107) allocated $800 million for New CREBs. In February 2009, the American Recovery and Reinvestment Act of 2009 (Div. B, Section 1111) allocated an additional $1.6 billion to expand the total New CREBs allocation to $2.4 billion. IRS Notice 2015-12 announced the availability of close to $1.4 billion in remaining volume cap for New CREBs. On March 5, 2015, the IRS opened the rolling volume-cap application window for governmental bodies and cooperative utilities, as well as a closed-end application period for public power providers.

   **Scheduled Termination**  
   December 31, 2017
Description
CREBs were used to finance renewable energy projects and were issued, theoretically, with a 0% interest rate. The borrower paid back only the principal of the bond and the bondholder received federal tax credits in lieu of the traditional bond interest. P.L. 115-97 permanently repealed several tax credit bonds, including CREBs.

Qualified Applicant(s)
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

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

Administered by EERE
Authority 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-FY2012
Scheduled Termination This program was authorized through FY2012. An act of Congress is required to reauthorize this program.
Description This program was part of DOE's Weather and Intergovernmental Program. The EECBG Program provided 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 could be used for energy efficiency and conservation programs and projects community-wide, as well as renewable energy installations on government buildings.
Qualified Applicant(s) 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; and program number 81.128 at beta.SAM.gov website.

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

Administered by EERE
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
$7.2 million for FY2010. All funds obligated under this program in FY2010 were Recovery Act funds.
$1 million for FY2011
$0 for FY2012-FY2018; all obligations under this program were made with Recovery Act (P.L. 111-5) funds. This program expired on 9/30/2015 and all awarded funds had to be expended by that date.
Scheduled Termination None
Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

4. Energy Efficiency and Renewable Energy Technology Deployment Program (ETDP)

Description
This program provided financial assistance for the technology deployment, demonstration, and commercialization of energy efficiency and renewable energy technologies. This included 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 technologies, and wind and hydropower technologies.

Qualified Applicant(s)
State governments; profit organizations

Qualified Technologies
Biomass; geothermal; hydrogen and fuel cell technologies; solar; hydropower

For More Information
See program number 81.129 at the beta.SAM.gov website

5. Energy Efficient Appliance Rebate Program (EEARP)

Administered by
EERE

Authority

Annual Funding
$0 for FY2008
$298.5 million in FY2009 from ARRA
$0 for FY2010-FY2013

Scheduled Termination
This program was authorized through FY2010. An act of Congress is required to reauthorize this program.

Description
The program provided financial and technical assistance to states to establish residential Energy Star rated appliance rebate programs. The program’s objectives were 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 Applicant(s)
State governments, including U.S. territories and possessions

Qualified Technologies
Energy efficient appliances

For More Information
See program number 81.127 at the beta.SAM.gov website.

6. Energy Efficient Appliance Tax Credit for Manufacturers

Administered by
Internal Revenue Service

Authority
26 U.S.C. §45M
Energy Improvement and Extension Act of 2008 (P.L. 110-343), Division B, Section 305
Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 (P.L. 111-312)
American Taxpayer Relief Act of 2012 (ATRA; P.L. 112-240)

Scheduled Termination
December 31, 2013

Description
A tax credit for each manufacturer was limited to a total of $25 million for 2011, 2012, and 2013 combined.

Qualified Applicant(s)
Industrial; appliance manufacturers

Qualified Technologies
Clothes washers; dishwashers; refrigerators

For More Information
See the IRS website for this credit; IRS form 8909.
7. 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
- $750 million for FY2009 from ARRA which remained available through June 30, 2010
- $0 for FY2010-FY2015
Scheduled Termination: The program had no fixed termination date. It was established and funded by the Recovery Act, but the program has not been funded since 2009. It is no longer listed in the online federal Assistance Listings (formerly the Catalog of Federal Domestic Assistance) at the beta.SAM.gov website.
Description: This program provided competitive grants for worker training and placement in high growth and emerging industry sectors.
Qualified Applicant(s): 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.

8. Qualified Energy Conservation Bonds

Administered by: Internal Revenue Service
Authority: 26 U.S.C. §54A
26 U.S.C. §54D
26 U.S.C. §6431
Energy Improvement and Extension Act of 2008 (P.L. 110-343)
American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5)
Tax Cuts and Jobs Act of 2017 (P.L. 115-97)
Scheduled Termination: December 31, 2017
Description: QECBs were used by state, local, and tribal governments to finance certain types of energy projects. QECBs, as tax credit bonds, provided federally subsidized financing to all issuers. The original limit on the volume of energy conservation tax credit bonds to be issued by state and local governments was $800 million. The American Recovery and Reinvestment Act of 2009 expanded the allowable bond volume to $3.2 billion. P.L. 115-97 permanently repealed several tax credit bonds, including QECBs.
Qualified Applicant(s): 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

9. Qualifying Advanced Energy Manufacturing Investment Tax Credit

Administered by: Internal Revenue Service
Authority: 26 U.S.C. §48C
American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), Division B, Section 1302
IRS Notice 2013-12 Qualifying Advanced Energy Project Credit Phase II


Scheduled Termination
Applications no longer accepted. Phase concept papers were due to DOE by 4/9/2013; final applications were due to DOE on 7/23/2013.

Description
This tax credit was designed to encourage a U.S.-based renewable energy manufacturing sector. Projects receiving awards were eligible for a tax credit of 30% of the qualified investment required for an advanced energy project.

Qualified Applicant(s)
Commercial; industrial; manufacturing

Qualified 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 DOE’s 48C Manufacturing Tax Credits Fact Sheet; EERE’s FAQ web page for 48C Phase II Program; and the IRS’s 48C web page.

10. Renewable Energy Grants (1603 Program)

Administered by
U.S. Department of the Treasury

Authority
Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 (P.L. 111-312), Section 707
American Recovery and Reinvestment Act of 2010 (ARRA; P.L. 111-5) Division B, Sections 1104 and 1603
U.S. Department of Treasury: Grant Program Guidance (amended)

Scheduled Termination
Construction must have begun by December 31, 2011. Applications must have been submitted before October 1, 2012.

Description
The purpose of the 1603 payment was to reimburse eligible applicants for a portion of the cost of installing specified energy property used in a trade or business or for the production of income.

Qualified Applicant(s)
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; 1603 program guidance; and archived 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.

11. Repowering Assistance Program (RAP)

Administered by
Rural Development (USDA)

Authority
Food, Conservation, and Energy Act of 2008 (P.L. 110-246), Title IX, Section 9004
Agricultural Act of 2014 (P.L. 113-79), Title IX, Section 9004
Agriculture Improvement Act of 2018 (P.L. 115-334)

Annual Funding
• Mandatory: Under the 2014 farm bill, mandatory funding of $12 million for FY2014 was authorized, to remain available until expended (i.e., no new baseline funding after FY2014). For FY2015, Congress reduced available funds by $8 million through the FY2015 agricultural appropriations act (P.L. 113-235). Under the agricultural appropriations act for FY2013 (P.L. 113-6), Congress directed that funds available for this program be reduced by $28 million. Under the 2008 farm bill (P.L. 113-79) mandatory funding of $35 million for FY2009, was authorized to remain available until expended.
• Discretionary: The 2014 farm bill authorized discretionary funding of $10 million annually to be appropriated for FY2014-FY2018, but no discretionary funding was appropriated through FY2018.
Discretionary funding of $15 million annually for FY2009-FY2013 was authorized to be appropriated under the 2008 farm bill and the American Taxpayer Relief Act of 2012 (ATRA; P.L. 112-240, §701) extension. Of this amount, $15 million was appropriated in FY2010 through FY2013.

Scheduled Termination
The program had no fixed termination date. It was authorized through FY2018, but then repealed by the 2018 farm bill.

Description
The Repowering Assistance Program (RAP) made payments to eligible biorefineries (those in existence on the June 18, 2008, enactment of the 2008 farm bill) to encourage the use of renewable biomass as a replacement for fossil fuels used to provide heat for processing or power in the operation of these eligible biorefineries. Not more than 5% of the funds were made available to eligible producers with a refining capacity exceeding 150 million gallons of advanced biofuel per year. RAP was repealed by the 2018 farm bill.

Qualified Applicant(s) Eligible biorefineries in existence on or before June 18, 2008.

Qualified Technologies Renewable biomass

For More Information
See the USDA program website; CRS In Focus IF10288, Overview of the 2018 Farm Bill Energy Title Programs, by Kelsi Bracmort; and CRS Report R43416, Energy Provisions in the 2014 Farm Bill: Status and Funding, by Kelsi Bracmort.
## Appendix D. Summary of Expired Federal Renewable Energy and Energy Efficiency Incentives/Index of Programs

### Table D-1. Expired Federal Incentives by Agency

<table>
<thead>
<tr>
<th>Administering Agency</th>
<th>Program</th>
<th>Description</th>
<th>U.S. Code Citation</th>
<th>Expiration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Agriculture</td>
<td>Repowering Assistance Program</td>
<td>Provided 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</td>
<td>7 U.S.C. §8104</td>
<td>Authorized through FY2018</td>
</tr>
<tr>
<td></td>
<td>Energy Efficient Appliance Rebate Program</td>
<td>Provided financial and technical assistance to states to establish residential Energy Star rated appliance rebate programs</td>
<td>42 U.S.C. §15821</td>
<td>Authorized through FY2010</td>
</tr>
<tr>
<td>Department of Treasury/Internal Revenue Service</td>
<td>Clean Renewable Energy Bonds (CREBs)</td>
<td>Bonds financed renewable energy projects</td>
<td>26 U.S.C. §54 (old CREBs); 26 U.S.C. §54A; and 26 U.S.C. §54C (New CREBs)</td>
<td>12/31/2017</td>
</tr>
<tr>
<td></td>
<td>Energy Efficient Appliance Tax Credit for Manufacturers</td>
<td>A tax credit for each manufacturer was limited to a total of $25 million for 2011, 2012, and 2013 combined</td>
<td>26 U.S.C. §45M</td>
<td>12/31/2013</td>
</tr>
<tr>
<td></td>
<td>Qualified Energy Conservation Bonds (QECBs)</td>
<td>Bond authority was allocated to state, local, and tribal governments to</td>
<td>26 U.S.C. §54A; 26 U.S.C. §54D; 26 U.S.C. §6431</td>
<td>12/31/2017</td>
</tr>
</tbody>
</table>
### Renewable Energy and Energy Efficiency Incentives: A Summary of Federal Programs

<table>
<thead>
<tr>
<th>Administering Agency</th>
<th>Program</th>
<th>Description</th>
<th>U.S. Code Citation</th>
<th>Expiration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qualifying Advanced Energy Manufacturing Investment Credit</td>
<td>Tax credit was designed to encourage a U.S.-based renewable energy manufacturing sector</td>
<td>26 U.S.C. §48C</td>
<td>7/23/2013</td>
</tr>
<tr>
<td></td>
<td>Renewable Energy Grants (1603 Program)</td>
<td>Purpose of the 1603 payment was to reimburse eligible applicants for a portion of the cost of installing specified energy property used in a trade or business or for the production of income</td>
<td>No U.S. Code citation; see P.L. 111-5 (ARRA) §1603(a)</td>
<td>Construction had to begin by 12/31/2011; the last day to submit applications was 10/1/2012</td>
</tr>
<tr>
<td>Department of Housing and Urban Development (HUD)</td>
<td>Assisted Housing Stability and Energy and Green Retrofit Investments Program (Recovery Act Funded)</td>
<td>Program provided funding for energy and green retrofit investments to certain eligible assisted, affordable multifamily properties. Funding included incentives for participating property owners, a set-aside for administrative functions, and a set-aside for due diligence and underwriting support. Assistance was for specific retrofit purposes</td>
<td>No U.S. Code citation; see P.L. 111-5 (ARRA)</td>
<td>End of FY2012</td>
</tr>
<tr>
<td>Department of Labor</td>
<td>Program of Competitive Grants for Worker Training and Placement in High Growth and Emerging Industry Sectors</td>
<td>Intended to preserve and create jobs; promote economic recovery; assist those most impacted by the recession; provide investments; and invest in infrastructure</td>
<td>See Notes field</td>
<td>None</td>
</tr>
</tbody>
</table>

**Source:** CRS.

**Notes:** Some programs are not specifically identified or codified in the U.S. Code.

a. The EECBG program was designed as a part of the Recovery Act (P.L. 111-5), with a one-time appropriation in FY2009. Due to the size of the appropriation, funds were let out over multiple fiscal years. DOE had an evaluation of the EECBG program. For more details, see DOE’s evaluation results website.
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