“… I will not walk away from the promise of clean energy. I will not walk away from workers … I will not cede the wind or solar or battery industry … It’s time … to double down on a clean energy industry that has never been more promising.”

- President Obama, State of the Union, 24 January 2012
U.S. Energy Supplies and Demand in 2009

Primary Energy Use by Sector
- Transportation
- Residential
- Commercial
- Industrial
Total: 94.5 Quadrillion BTU, 2009

Electricity Use by Sector
- Transportation
- Industrial
- Residential
- Commercial
Total: 3.6 billion kWh
(12.2 Quadrillion BTU delivered from 38.3 primary)

Liquid Fuel by Source
- Biofuel
- Petroleum
Total: 36.1 Quadrillion BTU

Electricity Generation by Source
- Nuclear
- Coal
- Natural Gas
- Petroleum
- Hydroelectric
- Wind
- Biomass
- Other Renewables
* Includes Geothermal and Solar
EERE Budget Trends: FY 2004 – FY 2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Appropriation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2004</td>
<td>$1,220</td>
</tr>
<tr>
<td>FY 2005</td>
<td>$1,234</td>
</tr>
<tr>
<td>FY 2006</td>
<td>$1,163</td>
</tr>
<tr>
<td>FY 2007</td>
<td>$1,457</td>
</tr>
<tr>
<td>FY 2008</td>
<td>$1,704</td>
</tr>
<tr>
<td>FY 2009</td>
<td>$2,157</td>
</tr>
<tr>
<td>FY 2010</td>
<td>$2,216</td>
</tr>
<tr>
<td>FY 2011</td>
<td>$1,772</td>
</tr>
<tr>
<td>FY 2012</td>
<td>$1,810</td>
</tr>
<tr>
<td>FY 2013</td>
<td>$2,267</td>
</tr>
</tbody>
</table>
# EERE Budget Summary

<table>
<thead>
<tr>
<th>Programs</th>
<th>FY 2011 Current</th>
<th>FY 2012 Enacted</th>
<th>FY 2013 Request</th>
<th>FY13 vs FY12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Renewable Energy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renewable Energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass and Biorefinery R&amp;D</td>
<td>179,979</td>
<td>199,276</td>
<td>270,000</td>
<td>70,724, 35.49%</td>
</tr>
<tr>
<td>Geothermal Technology</td>
<td>36,992</td>
<td>37,862</td>
<td>65,000</td>
<td>27,138, 71.68%</td>
</tr>
<tr>
<td>Hydrogen and Fuel Cell Technologies</td>
<td>95,847</td>
<td>103,624</td>
<td>80,000</td>
<td>(23,624), -22.80%</td>
</tr>
<tr>
<td>Solar Energy</td>
<td>259,556</td>
<td>288,951</td>
<td>310,000</td>
<td>21,049, 7.28%</td>
</tr>
<tr>
<td>Water Power</td>
<td>29,201</td>
<td>58,787</td>
<td>20,000</td>
<td>(38,787), -65.98%</td>
</tr>
<tr>
<td>Wind Energy</td>
<td>78,834</td>
<td>93,254</td>
<td>95,000</td>
<td>1,746, 1.87%</td>
</tr>
<tr>
<td><strong>Energy Efficiency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Manufacturing</td>
<td>105,899</td>
<td>115,580</td>
<td>290,000</td>
<td>174,420, 150.91%</td>
</tr>
<tr>
<td>Building Technologies</td>
<td>207,310</td>
<td>219,204</td>
<td>310,000</td>
<td>90,796, 41.42%</td>
</tr>
<tr>
<td>Federal Energy Management Program</td>
<td>30,402</td>
<td>29,891</td>
<td>32,000</td>
<td>2,109, 7.06%</td>
</tr>
<tr>
<td>Vehicle Technologies</td>
<td>293,151</td>
<td>328,807</td>
<td>420,000</td>
<td>91,193, 27.73%</td>
</tr>
<tr>
<td>Weatherization &amp; Intergovernmental</td>
<td>231,300</td>
<td>128,000</td>
<td>195,000</td>
<td>67,000, 52.34%</td>
</tr>
<tr>
<td><strong>Corporate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities and Infrastructure</td>
<td>51,000</td>
<td>26,311</td>
<td>26,400</td>
<td>89, 0.34%</td>
</tr>
<tr>
<td>Program Direction</td>
<td>170,000</td>
<td>165,000</td>
<td>164,700</td>
<td>(300), -0.18%</td>
</tr>
<tr>
<td>Strategic Programs</td>
<td>32,000</td>
<td>25,000</td>
<td>58,900</td>
<td>33,900, 135.60%</td>
</tr>
<tr>
<td><strong>Subtotal, EERE</strong></td>
<td>1,801,471</td>
<td>1,819,547</td>
<td>2,337,000</td>
<td>567,463, 31.49%</td>
</tr>
<tr>
<td>Use of Prior Year Balances</td>
<td>(29,750)</td>
<td>(9,909)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Cancellation of Prior Year Balances</td>
<td>0</td>
<td>0</td>
<td>(69,667)</td>
<td></td>
</tr>
<tr>
<td><strong>Total, EERE</strong></td>
<td>1,771,721</td>
<td>1,809,638</td>
<td>2,267,333</td>
<td></td>
</tr>
</tbody>
</table>
EERE Impact

Strategic EERE and private sector innovation and investments have led to wider clean energy deployment and better products now commonly used or near market entry:

- **Refrigerators**: Half the price and 75 percent more efficient.
- **Windows**: 3x better performance (insulation) widely available; 5x better now on the market.
- **Lighting**: 75 percent+ lower cost to operate (LEDs and CFLs).
- **Batteries**: 35 percent cost reduction for hybrid and EV car batteries; Nearly every hybrid electric vehicle sold in the U.S. today uses battery technology initially developed with Energy Dept. support.
- **Federal Energy Management**: 44% reduction in the energy intensity of Federal buildings from 1975 to 2011.
**EERE Impact**

*Solar:* Innovations contributing to 10x PV cost reduction up to 2010.

*Wind:* Nearly 47 GW of installed capacity in the U.S.; wind energy installations represent over 35 percent of all new installed capacity over the last 4 years.

*Biofuels:* Cellulosic (non-food) biofuels are becoming close to cost-competitive with other fuels.

*Vehicles:* Technologies that saved businesses more than $7.5 billion and helped manufacturers meet fuel economy standards.

*Fuel Cells:* R&D contributing to more than 80 percent estimated cost reduction of automotive fuel cell technologies since 2002.

*Manufacturing:* Combined Heat and Power sites increased by 9x, reducing energy costs by up to 50 percent for some manufacturers.
EERE Recent Accomplishments

**Appliances:** Standards issued since 2009 will save consumers hundreds of billions of dollars through 2030; plan to issue nine new standards through 2013 to save consumers an additional hundreds of billions over 35 years.

**Renewables:** Industry added enough non-hydro renewable generation in 2010 to power 2M homes; renewables now provide 10 percent of U.S. generation.

**Weatherization:** Improved the energy performance of 830,000 homes for low-income and other Americans since 2009, supporting more than 13,200 jobs in the quarter ending December 2011.

**Batteries:** Licensed technology that can pack 50-100 percent more energy into the same space compared to conventional cathodes, enabling smaller, lighter batteries.

**Solar:** $60M in EERE-funded research leveraged more than $1.6B in private capital since 2007.
Program Request

Energy Efficiency
- Building Technologies
- Vehicle Technologies
- Advanced Manufacturing
- Federal Energy Management Program
- Weatherization & Intergovernmental

Renewable Energy
- Solar Energy
- Wind Energy
- Geothermal Technology
- Water Power
- Hydrogen & Fuel Cell Technologies
- Biomass & Biorefinery R&D

Corporate
- Strategic Programs
Building Technologies

- Residential Buildings Integration
- Commercial Buildings Integration
- Codes and Standards
- Sensors and Control R&D
- Solid-State Lighting
Vehicle Technologies

- Battery/Energy Storage
- Advanced Combustion Engines
- Power Electronics and Electric Motors
- Materials Research
Advanced Manufacturing

- Next Generation Manufacturing Processes R&D's
- Next Generation Materials R&D
- Technology Deployment
Federal Energy Management Program

- Project Financing
- Technical Guidance and Assistance
- Planning, Reporting and Evaluation
- Federal Fleet
- Federal Energy Efficiency Fund
- DOE Specific Investments
Weatherization and Intergovernmental Activities

- Weatherization Assistance Program (WAP)
- State Energy Program (SEP)
- Tribal Energy Activities
Solar Energy

• Photovoltaic (PV) Module
• Innovations in Manufacturing R&D
• Concentrated Solar Power (CSP) Systems
• Power Electronics & Systems
• Balance of Systems (BOS)
Wind Energy

• Technology R&D

• Innovation Concepts and Emerging Technologies

• System Integration

• Market Barriers
Geothermal Technology

- Enhanced Geothermal Systems (EGS)
- Hydrothermal and Resource Confirmation (HRC)
- Resource Assessment
Water Power

• Marine and Hydrokinetics (MHK) Technology

• Conventional Hydropower Technology
Hydrogen and Fuel Cell Technologies

- Fuel Cell R&D
- Hydrogen Fuel R&D
- Safety, Codes and Standards
- Manufacturing R&D
- Systems Analysis
Biomass

- Integrated Biorefineries
- Biochemical Conversion
- Thermochemical Conversion
- Algae
- Feedstock Logistics
- Biopower
Strategic Programs

- Communications & Outreach
- Innovation & Deployment
  - Green Jobs Training
  - Research Management
  - Innovation
  - Information Management
- International
- Strategic Priorities & Analysis