GOVERNMENT FINANCE RESEARCH CENTER

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Research Funding by the Office of Energy Efficiency and Renewable Energy 2002–2021

Policy Bite

Federally funded research, particularly through the U.S. Department of Energy (DOE), is essential in preparing the nation to address energy challenges. Within the DOE, the Office of Energy Efficiency and Renewable Energy (EERE) has been instrumental in driving clean energy advancements and enhancing energy-efficient technologies. This brief is based on a report by the Government Finance Research Center at the University of Illinois Chicago, which examines the history of EERE research funding and contextualizes observed funding shifts.

- EERE's aggregate R&D research funding can be categorized into three distinct periods. Before the American Recovery and Reinvestment Act (ARRA), the first period (2002–2008) primarily saw year-over-year declines in obligations, with only two years of increases. The second period (2009–2011), driven by ARRA obligations, averaged $3.8 billion annually, compared to $734 million in the prior period. The final period (2012–2021) averaged $611 million, showing a relatively stable funding cycle.
- Through a review of budget documents, legislation, and news articles, it was established that the primary drivers of EERE funding shifts are policy responses to crises and administration changes reflecting different priorities. Interviews with former EERE staff further contextualized these shifts, confirming that EERE R&D funding follows a cyclical pattern, with spikes triggered by crises and quieter periods shaped by administrative and congressional priorities. Industry trends, advocacy efforts, and global competition influence these priorities through political agendas and multi-year planning documents.
- Collaboration within EERE, and across the broader DOE, strengthened over the analysis period, evolving from minimal coordination to formalized efforts resulting in multiple Energy Earthshots.
- Restructuring offices, a common practice among administrations to maintain influence over R&D funding decisions, was described by interviewees as disruptive and not always a Pareto improvement. Instead, increasing efforts toward institutionalized collaboration can yield more effective outcomes.
- Adopting a comprehensive approach to R&D funding—one that considers manufacturing capacity, infrastructure, workforce development, regulatory conditions, market demand, and other factors—would better ensure long-term success.

Research Brief

In this analysis, EERE's research and development (R&D) funding refers to financial assistance awards, including grants and cooperative agreements, that support innovation in renewable energy and energy efficiency. However, this definition excludes contracts, such as those used to fund national laboratories. Specifically, the EERE R&D funding that was examined focuses on four key areas: (1) expanding the use of sustainable, domestically produced fuels, chemicals, materials, and power; (2) advancing technologies in buildings, vehicles, solid-state lighting, advanced materials, manufacturing, and industrial efficiency; (3) supporting research in solar, biomass, hydrogen and fuel cells, wind, hydropower, and geothermal energy; and (4) promoting the deployment, demonstration, and commercialization of clean energy technologies.

From 2002 to 2021, only 35% of EERE's financial assistance awards were directed toward R&D, with the majority going to government entities for other purposes. Over this period, EERE R&D funding can be divided into

three distinct phases (see Figure 1). Before the American Recovery and Reinvestment Act (ARRA), funding between 2002 and 2008 generally declined year over year, with only two years of increases. A brief spike in 2004 reflected the Bush administration's emphasis on hydrogen investments, while a rise in 2008 marked the beginning of expanded spending driven by the Energy Policy Act (EPAct) and the Energy Independence and Security Act (EISA). The second phase (2009–2011) saw a surge in funding due to ARRA, averaging $3.8 billion annually—substantially higher than the $734 million average of the previous phase. The final phase (2012–2021) saw a return to lower levels, averaging $611 million per year, with funding following a more predictable cycle. Figure 2 maps per capita obligations.

R&D funding trends vary widely across different technology areas, reflecting shifting priorities among policymakers, industry leaders, and advocacy groups. While administration priorities have the greatest influence, major legislative actions in response to crises have also shaped funding patterns. For example, during the Bush administration, hydrogen research received strong support, whereas the Obama administration prioritized wind energy. Broader economic events also played a role—following the Great Recession and the passage of ARRA, funding increased for nearly all technologies, except hydrogen. During this time, vehicle technology funding surged above all other areas, aligning with the Obama administration's focus on electric and fuel-efficient vehicles.

Overall, the largest spikes in EERE R&D funding were triggered by legislation, while smaller, steady increases reflected administration priorities through annual budget appropriations. Hydrogen was a notable exception, with its peak funding driven by the Bush administration rather than congressional action. Vehicle technology R&D consistently received bipartisan support, and solar energy and manufacturing efficiency saw sustained investment in the post-ARRA years. ARRA provided a transformational boost to vehicle technologies, bioenergy, building efficiency, and solar energy research. In contrast, geothermal, wind, and water power R&D historically received lower funding, with their highest levels occurring under the Obama administration.

Interviews with former EERE staff further contextualized these trends, reinforcing that EERE R&D funding follows a cyclical pattern. Funding spikes are typically driven by crises, while quieter periods reflect administration and congressional priorities shaped by industry trends, advocacy efforts, market dynamics, and global competition. Collaboration within EERE and DOE has significantly evolved, moving from minimal coordination to structured initiatives, culminating in large-scale energy initiatives like the Energy Earthshots.

This historical analysis highlights how federal energy R&D priorities are shaped by each administration, while congressional oversight provides a moderating influence by incorporating a broader range of stakeholder interests. Administrative restructuring of EERE offices, often used to maintain influence over funding decisions, has been described as disruptive and not always beneficial. A more effective approach would be strengthening institutional collaboration. Additionally, adopting a comprehensive R&D funding strategy—one that considers manufacturing capacity, infrastructure, workforce development, regulatory policies, and market demand—would improve long-term outcomes.

Finally, the frequent restructuring of EERE and DOE websites, including domain changes, poses challenges for researchers who rely on these sites for context on energy R&D funding shifts. Regularly archiving this information would enhance government transparency and help preserve critical records from historical moments.

Read the full report HERE.

The **Government Finance Research Center** at the University of Illinois Chicago shapes and informs public policy and scholarly discourse on government and public finance by identifying, planning, and executing research, providing reports and informed analyses, delivering educational opportunities and technical training, and offering inclusive venues to convene national and local discussion on fiscal and governance issues.

Figure 1. R&D Obligations, FY 2002–2021

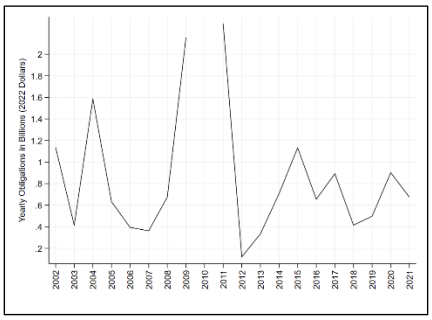
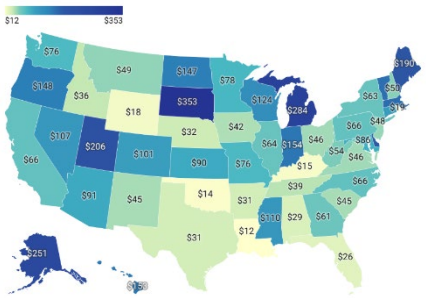
Figure 2. Per Capita R&D Obligations, FY 2002–2021