

Department of Energy

Reduce Bureaucracy at the Department of Energy's National Laboratories

RECOMMENDATION

Reduce bureaucracy at the Department of Energy's (DOE's) national laboratories.

RATIONALE

The DOE national labs house exceptional staff and research facilities. The operating culture and business model of the national labs need to be transformed to engage more with the private sector. Increased access through contract agreements would unlock valuable research and resources for the private sector to develop advances in human knowledge and innovative technologies. It would also leverage private-sector investments to help maintain lab infrastructure.

However, both private-sector access to the labs' assets and research and lab employees' ability to turn research into market applications are stifled by complex and overly restrictive conflict-of-interest and intellectual-property-rights regulations. For example, current contract structures between labs and the private sector are rigid and complex, effectively discouraging private-sector engagement. Draconian intellectual-property rules are still on the books in some labs, acting as a disincentive to individuals with patents from working in related fields at a national lab.¹

In order to increase access to national lab resources, DOE Secretary Rick Perry should:

- Adopt reforms to increase lab autonomy;
- Engage in contractual work with the federal government, private sector, nonprofits, and universities;
- Implement alternative financing options;
- Explore ways to consolidate overhead spending; and
- Encourage a strong culture in the labs of active engagement with the private sector.

More independence and flexibility at the national labs will extend the value of research funding and infrastructure. Furthermore, additional managerial and financial authority to the lab contractors would empower them to effectively manage capabilities and create a quicker process for collaborative efforts with third parties, whether with another government agency, another lab, or the private sector. Although these activities are occurring now, such cooperation should become part of the culture of the national labs rather than the occasional exception.

ADDITIONAL READING

- James Jay Carafano, Jack Spencer, Bridget Mudd, and Katie Tubb, "Science Policy: Priorities and Reforms for the 45th President," Heritage Foundation *Backgrounder* No. 3128, June 13, 2016.
- Nicolas Loris, "INNOVATES Act Creates a More Effective National Lab System," Heritage Foundation *Issue Brief* No. 4141, January 30, 2014.
- Katie Tubb, Nicolas Loris, and Jack Spencer, "DOE Reset: Focus the Department of Energy on Core Missions and Decrease Distractions," Heritage Foundation *Backgrounder* No. 3196, March 2, 2017.

Prioritize Office of Science Spending

RECOMMENDATION

Prioritize Office of Science spending.

RATIONALE

The DOE manages one of the largest research and development (R&D) budgets in the federal government.² While much of the DOE's R&D infrastructure grew out of a mission to support World War II and Cold War efforts, it has since lost focus. The DOE has become notorious for spending R&D resources on commercial energy technologies that may be promising but are nevertheless well beyond the constitutional role of the federal government. To carry out its programs of basic and applied research, the DOE has a National Laboratory system. Seventeen labs around the country conduct research to advance understanding and discovery in a variety of fields, including basic energy sciences, high-energy physics, fusion power, biological and environmental research, nuclear physics, and advanced scientific computing research.

The DOE should engage in R&D only when meeting a clear government objective and when the private sector is not already involved. Government objectives could, for instance, include research, development, and demonstration of technology to meet national security needs, support nuclear stockpile cleanup efforts, or advance human knowledge through basic research where the private sector is not engaged.

No matter how diligent or transparent an Administration is, federal funding for R&D beyond these basic conditions will pick winners and losers among companies and technologies. Activities with the purpose of commercialization, regardless of where they lie on the technological development spectrum, are not legitimate functions of the federal government.

Secretary Perry can move forward confidently with **ADDITIONAL READING**

- James Jay Carafano, Jack Spencer, Bridget Mudd, and Katie Tubb, "Science Policy: Priorities and Reforms for the 45th President," Heritage Foundation *Backgrounder* No. 3128, June 13, 2016.
- Nicolas Loris, "INNOVATES Act Creates a More Effective National Lab System," Heritage Foundation *Issue Brief* No. 4141, January 30, 2014.
- Katie Tubb, Nicolas Loris, and Jack Spencer, "DOE Reset: Focus the Department of Energy on Core Missions and Decrease Distractions," Heritage Foundation *Backgrounder* No. 3196, March 2, 2017.

reform, knowing that the private sector is more than capable of financing R&D. According to the National Science Foundation:

- Total research and development funding in the U.S. was \$456.1 billion in 2013, 65 percent of which came from the business sector.
- The federal government came in a distant second with \$127.3 billion in R&D funding.³

The perception of spending within the Office of Science is that the federal government is allocating money to research that is basic and far removed from increasing the technological readiness of certain energy sources. In some instances, this is true; research at the national laboratories focuses on scientific discovery. Infrastructure at the national labs, such as the photon light source or the synchrotron light source, enables scientists to study the basic elements of matter, explore new scientific frontiers, and cultivate new discoveries. In other instances, however, the funded research may be basic in nature but has an end goal of creating a cost-effective alternative energy source. In such cases, Congress should call even the basic research into question. For instance, Congress tasks scientists at the DOE with studying the basic elements of biological matter but with the objective of creating a cost-effective biofuel—a policy priority that should not exist in the first place. Congress should eliminate all Office of Science spending on activities that are aimed at promoting specific energy sources and technologies.

Eliminate the Office of Nuclear Energy

RECOMMENDATION

Eliminate the DOE Office of Nuclear Energy and shift funding for some of its programs to the Office of Science’s Office of Civilian Radioactive Waste Management (OCRWM).

RATIONALE

The Office of Nuclear Energy aims to advance nuclear power in the U.S. and address technical, cost, safety, security, and regulatory issues. As is the case with spending on conventional fuels and renewables, it is not an appropriate function of the federal government to spend tax money on nuclear projects that should be conducted by the private sector. For example, the Office of Nuclear Energy includes tens of millions of dollars for small modular reactor (SMR) licensing and support programs. While SMRs have great potential, commercialization must be shouldered by the private sector. Government funding should be redirected to the Nuclear Regulatory Commission for SMR-licensing preparation. Work that clearly falls under basic R&D should be moved to the OCRWM.

Congress should reprogram some of the funds to reconstitute the statutorily required OCRWM, and support the Nuclear Regulatory Commission’s

license review of Yucca Mountain. Before the Obama Administration eliminated the OCRWM, the office was responsible for overseeing the DOE’s activities for storage of nuclear waste from commercial nuclear power plants. In particular, the OCRWM managed the permit application for a deep geologic repository at Yucca Mountain. Despite the Obama Administration’s refusal to support the program, the 1982 Nuclear Waste Policy Act, as amended, legally mandates that the DOE carry out a licensing process for a repository at Yucca Mountain in Nevada. Regardless of the ultimate fate of Yucca Mountain, completing the review makes all of the information available for how to proceed with the geologic repository. Ultimately, the DOE should work with Congress to initiate market reforms for long-term waste management, establishing industry responsibility for managing waste, market pricing, and giving Nevadans more control over any nuclear waste facility there.

ADDITIONAL READING

- Katie Tubb, Nicolas Loris and Jack Spencer, “DOE Reset: Focus the Department of Energy on Core Missions and Decrease Distractions,” Heritage Foundation *Backgrounder* No. 3196, March 2, 2017.

Eliminate the Office of Fossil Energy

RECOMMENDATION

Eliminate the Office of Fossil Energy (FE), eliminating DOE spending on all fossil-fuel-related activities and technologies.

RATIONALE

The federal government’s involvement in fossil energy dates back more than a century. After the Department of Energy’s creation in 1977, fossil energy programs fell under the Assistant Secretary for Energy Technology, and two years later, the fossil energy program was created with an Assistant Secretary of its own.⁴ Through FE, the federal government has spent billions of dollars on fossil-fuel research and development, including funding for unconventional oil, gas, and coal exploration. FE spends money on a clean-coal power initiative, fuels and power systems to reduce fossil power plant emissions, innovations for existing plants, integrated-gasification-combined-cycle (IGCC) research, advanced turbines, carbon sequestration, and natural gas technologies. Part of the DOE’s strategic plan is to bring down the cost and increase the scalability of carbon-and-capture sequestration. FE also authorizes imports and exports of natural gas and manages the government-controlled stockpile of oil, the Strategic Petroleum Reserve.

Coal, oil, and natural gas provide nearly 80 percent of America’s energy needs and more than 80 percent of the world’s energy needs. Each year, fossil fuel companies operating in the United States and

Canada alone stand to make hundreds of billions of dollars in profits.⁵ These companies can invest their own money to innovate and meet consumers’ energy needs. The federal government has already wasted money attempting to commercialize carbon-capture-and-sequestration technology and should not throw good money after bad. Proponents of government funding for energy technologies argue that the DOE was integral in promoting the hydraulic fracturing (fracking) revolution in the United States.⁶ Though the government assisted in the fracking boom and helped George Mitchell, the pioneer of fracking, it is a mistake to attribute the company’s success to the DOE role. If anything, the money spent by the DOE was a subsidy to Mitchell Energy, a company destined for a large-scale success. As former vice president of Mitchell Energy, Dan Steward said, “George probably could have done it without the government. The government would not have done it without George.”⁷ No matter what role the federal government played in any company’s success, it does not justify the legitimacy of the spending or future spending. The office should be eliminated.

ADDITIONAL READING

- James Jay Carafano, Jack Spencer, Bridget Mudd, and Katie Tubb, “Science Policy: Priorities and Reforms for the 45th President,” Heritage Foundation *Background* No. 3128, June 13, 2016.
- Nicolas D. Loris, “Department of Energy Budget Cuts: Time to End the Hidden Green Stimulus,” Heritage Foundation *Background* No. 2668, March 26, 2012.

Liquidate the Strategic Petroleum Reserve

RECOMMENDATION

Liquidate the Strategic Petroleum Reserve (SPR) and other petroleum reserves.

RATIONALE

As part of the U.S. commitment to the International Energy Agency, the federal government created the SPR through the Energy Policy and Conservation Act (EPCA) in 1975.⁸ Congress initially authorized the SPR to store up to one billion barrels of petroleum products, and mandated a minimum of 150 million barrels of petroleum products.⁹ The SPR, which opened in 1977, currently has the capacity for 727 million barrels of crude oil and currently holds 685 million barrels.¹⁰

Created in response to the Arab oil embargo and the creation of OPEC in the 1970s, the SPR has been a futile tool for responding to supply shocks. The free market is much more effective at responding to price signals. The United States is awash in natural resources and holds more crude and petroleum products in private inventory than it does under government

control. Furthermore, prices play a critical role in the market by efficiently allocating resources to their highest valued use. Whether a shortage or a surplus exists, the federal government should not distort the role of price signals.

Congress should authorize the DOE to sell off the entire reserve, specifying that the revenues go solely toward deficit reduction. Congress should instruct the DOE to sell the oil held by the SPR by auctioning 10 percent of the country's previous month's total crude production until the reserve is completely depleted. The DOE should then decommission the storage space or sell it to private companies.

Similarly, Congress should also authorize the depletion of the Naval Petroleum & Oil Shale Reserves.

ADDITIONAL READING

- Nicolas D. Loris, "Why Congress Should Pull the Plug on the Strategic Petroleum Reserve," Heritage Foundation *Backgrounder* No. 3046, August 20, 2015.

Eliminate the Advanced Research Projects Agency-Energy

RECOMMENDATION

Eliminate the Advanced Research Projects Agency-Energy (ARPA-E).

RATIONALE

ARPA-E, which President George W. Bush created through the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act in 2007,¹¹ spends money on high-risk, high-reward energy projects in which the private sector ostensibly would not invest on its own. ARPA-E's mission is to reduce energy imports, increase energy efficiency, or reduce energy-related emissions, including greenhouse gases. Congress allocated \$400 million to ARPA-E in FY 2009 and the program has funded more than 400 projects since its initial funding. Some of the successes of the program that the DOE identifies are that it:

- Developed a 1 megawatt silicon carbide transistor the size of a fingernail;
- Engineered microbes that use hydrogen and carbon dioxide to make liquid transportation fuel; and
- Pioneered a near-isothermal compressed air energy storage system.¹²

ARPA-E has experienced several problems. The purpose of ARPA-E is to fund technologies through the alleged investment valley of death where good ideas

cannot secure private finance. However, the Government Accountability Office found that 18 projects previously received private-sector investment for a similar technology and 12 companies received private-sector funding prior to their ARPA-E award.¹³ A DOE Inspector General (IG) report also found that taxpayer money spent under ARPA-E was used for “meetings with bankers to raise capital” and a “fee to appear on a local television show.” The DOE IG noted in its report that ARPA-E cited the two tasks as allowable costs under its Technology Transfer and Outreach policy.¹⁴

More problematic than the flaws of the program, however, is the legitimacy of the program. ARPA-E is not a legitimate function of the federal government. The number of investment opportunities is broad and expansive, but the capital to finance them is not. This requires that choices be made among the different investments. Whether a technology ultimately fails or succeeds, it is not the role of the federal government to skew those decisions through programs like ARPA-E. Good investment ideas will overcome the investment valley of death through private financing. ARPA-E should be eliminated.

ADDITIONAL READING

- James Jay Carafano, Jack Spencer, Bridget Mudd, and Katie Tubb, “Science Policy: Priorities and Reforms for the 45th President,” Heritage Foundation *Backgrounder* No. 3128, June 13, 2016.
- Nicolas D. Loris, “Department of Energy Budget Cuts: Time to End the Hidden Green Stimulus,” Heritage Foundation *Backgrounder* No. 2668, March 26, 2012.

Eliminate the DOE Loan Programs Office

RECOMMENDATION

Eliminate the Loan Programs Office and transfer existing loan management and oversight to private banks.

RATIONALE

The DOE has a loan portfolio that includes Sections 1703 and 1705 of the Loan Guarantee Program¹⁵ and the Advanced Technology Vehicles Manufacturing (ATVM) loan program. The 1703 loan guarantee, created under the Energy Policy Act of 2005, offers taxpayer-backed loans for politically preferred sources of energy, including “biomass, hydrogen, solar, wind/hydropower, nuclear, advanced fossil energy coal, carbon sequestration practices/technologies, electricity delivery and energy reliability, alternative fuel vehicles, industrial energy efficiency projects, and pollution control equipment.”¹⁶ The ATVM program, established in Section 136 of the Energy Independence and Security Act of 2007, provides direct loans for alternative-vehicle technologies and for manufacturers to retool their factories to produce qualifying vehicles.¹⁷

- Several patterns and problems stand out throughout the portfolio, which are discussed in more detail following the review of each project. When analyzing all of the projects, the following themes are pervasive:
- Failed companies that could not survive even with the federal government’s help.

- Projects labeled as success stories but are still in the infancy of their operation. It is too early to tell if they will succeed in the long run.
- Projects that have the backing of companies with large market capitalizations and substantial private investors. These companies should have no trouble financing a project without government-backed loans if they believe it is worth the investment.
- Private investors hedging their bets and congregating toward public money. These projects appear on the surface to be financial losers, but government involvement entices companies to take a chance on them.
- Companies and projects that benefit from a plethora of federal, state, and local policies that push renewable energy.
- Government incompetence in administering and overseeing the loans.

Eliminating the Loan Programs Office would revoke any existing ability to administer government-backed loans or loan guarantees. Congress should empower the Secretary to auction the servicing rights of existing loans and loan guarantees to private banks.

ADDITIONAL READING

- Nicolas D. Loris, “Examining the Department of Energy’s Loan Portfolio,” testimony before the Subcommittee on Energy and Subcommittee on Oversight, Committee on Science, Space and Technology, U.S. House of Representatives, March 3, 2016.

Eliminate the Office of Electricity Deliverability and Reliable Energy

RECOMMENDATION

Eliminate the Office of Electricity Deliverability and Reliable Energy (OE).

RATIONALE

In 2003, the DOE created the Office of Electric Transmission and Distribution to advance and modernize America's power grid, and an Office of Energy Assurance to coordinate federal responses during energy emergencies.¹⁸ In 2005, the DOE merged the offices and established the Office of Electricity Delivery and Energy Reliability. Under the Obama Administration, through the American Recovery and Reinvestment Act of 2009, OE spent \$4.5 billion to promote electric vehicles, renewable energy, and grid modernization. OE focuses on advanced grid technology R&D, transmission permitting and assistance for states and tribes, infrastructure security, and cybersecurity R&D.

While upgrading the nation's electricity grid to enable more competition and innovation, investment

should occur at private, local, state, and regional levels. OE's role is redundant with the Federal Energy Regulatory Commission (FERC), the North American Electric Reliability Corporation (NERC), regional independent system operators (ISOs), and the private sector. Rather than subsidizing advanced renewable energy resources or smart-grid technology, the federal government's role should be to reduce unnecessary regulatory burden on grid siting and upgrades. National security concerns, for example in cybersecurity or for a cooperative public-private role for grid protection, could very well fall under the Department of Homeland Security's purview. The office should be eliminated.

ADDITIONAL READING

- Steven P. Bucci, Paul Rosenzweig, and David Inserra, "A Congressional Guide: Seven Steps to U.S. Security, Prosperity, and Freedom in Cyberspace," Heritage Foundation *Backgrounder* No. 2785, April 1, 2013.
- Nicolas D. Loris, "Department of Energy Budget Cuts: Time to End the Hidden Green Stimulus," Heritage Foundation *Backgrounder* No. 2668, March 26, 2012.

Privatize the Power Marketing Administrations and the Tennessee Valley Authority

RECOMMENDATION

The federal government should not be in the business of managing and selling power. The Trump Administration should state that the missions of the four power marketing administrations (PMAs) and the Tennessee Valley Authority (TVA) have been completed, and propose legislation to Congress for the sale of PMA power-generation assets and the TVA to the private sector. It should also end appropriations to the PMAs and any new borrowing privileges from the Treasury Department.

The DOE should prepare legislation for transmittal to Congress to achieve the sale and begin collecting information on each PMA needed for prospective bidders.

RATIONALE

The four PMAs—(1) the Southeastern Power Administration, (2) the Southwestern Power Administration, (3) the Western Area Power Administration, and (4) the Bonneville Power Administration—and the TVA, a federal corporation, were intended to provide cheap electricity to rural areas, development in economically depressed regions, and to pay off federal irrigation and dam construction. They operate electricity generation, reservoirs, land, waterways, and locks. They sell deeply subsidized power to municipal utilities and cooperatives in their regions that include the Southeast and West.

Three of the four PMAs are funded annually by appropriations to the Department of Energy; the Bonneville Power Administration and TVA are self-financed. The PMAs use revenues generated from electricity sales to reimburse construction and operation costs financed and subsidized by taxpayers through DOE appropriations and Treasury loans at below-market interest rates. They also are exempt from federal and state taxes and many other federal regulations, including antitrust and labor regulations.

The four PMAs and TVA are outmoded forms of providing rural areas with electricity. First, their mission has more than been completed. The PMAs now supply power to areas like Los Angeles, Vail, and Las Vegas, and the region serviced by the TVA has long been economically competitive with neighboring states since the Great Depression when the TVA was conceived.

Second, electric power generation and distribution is a private-sector function and has been for decades. The federal government should not be in the business of generating and distributing electric power and in the process providing subsidized power to politically favored groups at the cost of U.S. taxpayers.

Third, political management has had unintended economic and environmental consequences. Subsidized loans from the Treasury Department, and tax exemption privileges, have interfered with market competition. The PMAs' funding mechanism also provides little or no incentive to innovate, as investments must be justified to and financed by the government. In the case of the TVA, lack of effective oversight from either the private sector or government has resulted in costly decisions, environmental damage, excessive expenses, high electricity rates, and growing liabilities for all U.S. taxpayers.¹⁹ It has not reduced its taxpayer-backed debt despite three major debt-reduction efforts in recent history.

The Reagan and Clinton Administrations attempted to divest the PMAs, and the Clinton Administration was successful in privatizing the Alaska Power Administration. Its FY 1996 budget request recommended privatizing all but Bonneville, with expected proceeds of \$3.7 billion,²⁰ and proposed legislation for privatizing Southeastern in FY 1997, and Southwestern and Western Area in FY 1998. A November 1997 Congressional Budget Office report valued them at \$23 billion to \$31 billion.²¹

ADDITIONAL READING

- Ken G. Glozer, "Time for the Sun to Set on the Tennessee Valley Authority," Heritage Foundation *Backgrounders* No. 2904, May 6, 2014.

Privatize the Energy Information Administration

RECOMMENDATION

Congress should privatize the Energy Information Administration (EIA).

RATIONALE

The EIA is a relic of policies responding to the 1970s energy crisis.²² It collects and publishes data on energy sources and trends “to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment.” The EIA provides information on the sources and uses of energy technologies, market trends and forecasts, short-term and annual energy outlooks, production and consumption trends, environmental data, state-level data, and international data.

The EIA provides quality data on energy markets, but that does not need to be a function of the federal government. Members of Congress do not need information on energy market trends to create sound policy. In fact, the federal government should have a minimal, if any, role in energy markets. Further, information has value. Investors who need this information can and do obtain it from private parties. Should the federal government need information on energy markets, it can pay for it as well.

ADDITIONAL READING

- The Heritage Foundation, *Blueprint for Reform: A Comprehensive Policy Agenda for a New Administration in 2017*, July 14, 2016, pp. 50 and 51.

End Executive Branch Use of the “Social Cost of Carbon” Metrics

RECOMMENDATION

To improve the accountability and accuracy of agency regulatory impact analyses, all executive branch departments and agencies should cease use of social cost of carbon (SCC) metrics and revisit existing regulations that employed them. This is consistent with the President’s executive order dated January 27, 2017.

RATIONALE

In response to a 2008 federal court decision, agencies began incorporating the social cost of greenhouse gases in regulatory cost-benefit analyses.²³ So-called social costs of carbon dioxide, methane, and nitrous oxides attempt to assign a dollar value to emissions as an alleged cost to society, on the premise that emissions exacerbate dangerous amounts of global warming over the next 300 years.²⁴ These metrics amplify the benefits of regulations that decrease greenhouse gas (GHG) emissions and the costs of government actions that increase emissions. The DOE has used SCC in regulations more than any other federal agency, particularly in setting energy-efficiency regulations, but SCC and GHG metrics are also employed by the

Environmental Protection Agency and the Departments of Agriculture, Housing and Urban Development, the Interior, and Transportation.²⁵

Wildly different estimates for these metrics result from minor adjustments to the underlying models. For example, using the Office of Management and Budget recommended discount rate of 7 percent and more recent equilibrium climate-sensitivity distributions²⁶ can yield negative values for these metrics, indicating that emissions are a net *benefit* to society.²⁷ Because the underlying modeling assumptions of these metrics are arbitrary and employ outdated climate data, using these metrics miscommunicates projected costs and benefits of regulations and other government actions.

ADDITIONAL READING

- Kevin D. Dayaratna, “An Analysis of the Obama Administration’s Social Cost of Carbon,” testimony before the Committee on Natural Resources, U.S. House of Representatives, July 23, 2015.
- Kevin D. Dayaratna and Nicolas D. Loris, “Rolling the DICE on Environmental Regulations: A Close Look at the Social Cost of Methane and Nitrous Oxide,” Heritage Foundation *Backgrounder* No. 3184, January 19, 2017.

Eliminate the Office of Energy Efficiency and Renewable Energy

RECOMMENDATION

Eliminate the Office of Energy Efficiency and Renewable Energy (EERE), considering the mission of all research, development, and demonstration programs to be completed. Until Congress reforms the Energy Conservation and Production Act, such as proposed in the Energy Efficiency Free Market Act,²⁸ the DOE should meet the minimum requirements of the law while refraining from tightening existing efficiency standards or creating testing procedures or standards for additional ones.

RATIONALE

The DOE's EERE houses research, development, and demonstration programs for hydrogen technology, wind energy, solar energy, biofuels and bio-refineries, geothermal power, advanced manufacturing, vehicle technology, and building and weatherization technologies. It further collaborates with the private sector to inform energy-efficiency provisions in building codes and implements the Energy Policy and Conservation Act of 1975.

These functions are redundant with activities by and information from the private sector and states. The federal government should have no role in energy efficiency outside the scope of improving the efficiency of federal facilities.²⁹ Efficiency regulations take away consumer choice by prioritizing the DOE's definition of energy efficiency over other preferences of customers and businesses, such as safety, size, convenience, and durability. They also ignore and undermine the natural incentive of customers and businesses to move toward efficiency. Thanks to advances in technology, Americans have become almost 60 percent more energy efficient over the past half century.³⁰

Further, most of the technologies in which EERE is engaged have existed for decades, and market opportunities for clean-energy investments abound in the United States and abroad. DOE interference in renewable technology commercialization or energy markets directs private-sector investment toward politically preferred technologies, potentially narrowing the scope of innovation.³¹ These programs also harm the long-term health of the very industries the government intends to help by propping up

companies and technologies that are less competitive, and rewarding political connections rather than innovation.³²

Government funding for commercial energy technology research, development, and demonstration was never appropriate and is now even less necessary. Many of the programs initiated under EERE were developed under the premise that the U.S. lacked domestic supplies of energy resources. The Solar Energy Research, Development, and Demonstration Act of 1974 was intended to address a perceived extreme shortage in domestic energy supplies and investment in solar technology with \$1 billion from the federal government.³³ This work should be considered accomplished.

Regardless of any energy shortage in 1974, that certainly does not accurately describe energy markets today: America is experiencing an energy revolution in traditional fuels, there are over 9,000 solar companies in the U.S.,³⁴ and U.S. renewable energy infrastructure investments totaled \$59 billion in 2016.³⁵ Adequate funding also exists for science and technology R&D. According to the National Science Foundation, the business sector funded \$297.3 billion in research and development in science and technology, or 65 percent of the total \$456.1 billion spent in 2013.³⁶

Rather than a value statement on the merit of renewable energy technologies, closing out EERE activities is a recognition of the appropriate roles of the federal government, states, and the private sector. Doing so will also enable the DOE to better focus on what ought to be its central focus—maintaining the nuclear weapons complex and nuclear clean-up.³⁷

ADDITIONAL READING

- James Jay Carafano, Jack Spencer, Bridget Mudd, and Katie Tubb, "Science Policy: Priorities and Reforms for the 45th President," Heritage Foundation *Backgrounder* No. 3128, June 13, 2016.
- Nicolas D. Loris, "Department of Energy Budget Cuts: Time to End the Hidden Green Stimulus," Heritage Foundation *Backgrounder* No. 2668, March 26, 2012.
- Nicolas D. Loris, "Examining the Department of Energy's Loan Portfolio," testimony before the Subcommittees on Energy and Oversight, Committee on Science, Space, and Technology, U.S. House of Representatives, March 3, 2016.

Focus National Nuclear Security Administration Spending on Weapons Programs

RECOMMENDATION

The Administration should halt growth in DOE National Nuclear Security Administration (NNSA) programs that do not directly contribute to advancing the country’s nuclear weapons programs. The primary goal of the NNSA must be to prioritize funding that keeps the U.S. nuclear weapon stockpile safe, secure, and reliable.

RATIONALE

The DOE is responsible for the Navy’s nuclear reactors program and the weapons activities program. Nuclear warheads themselves are operated by the Defense Department. Each year, the DOE is allotted roughly between \$16 billion and \$17 billion to fund defense-related activities. This figure, however, includes funding for activities that do not directly contribute to the maintenance of the U.S. nuclear weapon stockpile but rather advance nonproliferation and

arms control objectives, thus inflating the true cost of U.S. nuclear warhead-related activities. Instead of prioritizing activities related to creating conditions for a world without nuclear weapons—the previous Administration’s misguided priority—the Trump Administration ought to emphasize programs that are directly related to U.S. nuclear warheads and disentangle them from other activities.

ADDITIONAL READING

- Michaela Dodge, “The Trump Administration’s Nuclear Weapons Policy: First Steps,” Heritage Foundation *Issue Brief* No. 4634, November 30, 2016.
- Michaela Dodge and Baker Spring, “Bait and Switch on Nuclear Modernization Must Stop,” Heritage Foundation *Background* No. 2755, January 4, 2013.

ENDNOTES

1. Matthew Stepp, Sean Pool, Nick Loris, and Jack Spencer, "Turning the Page: Reimagining the National Labs in the 21st Century Innovation Economy," The Information Technology and Innovation Foundation, The Center for American Progress, and The Heritage Foundation, June 2013, http://www2.itif.org/2013-turning-page-national-lab-executive-summary.pdf?_ga=1.238496128.1484445840.1442263666 (accessed May 11, 2017).
2. James Jay Carafano, Jack Spencer, Bridget Mudd, and Katie Tubb, "Science Policy: Priorities and Reforms for the 45th President," Heritage Foundation *Backgrounder* No. 3128, June 13, 2016, <http://www.heritage.org/research/reports/2016/06/science-policy-priorities-and-reforms-for-the-45th-president>.
3. National Science Foundation, "Research and Development: National Trends and International Comparisons," in Science & Engineering Indicators 2016 (Arlington, VA: National Science Foundation, 2016), <http://www.nsf.gov/statistics/2016/nsb20161/uploads/1/7/chapter-4.pdf> (accessed May 11, 2017).
4. Department of Energy Office of Fossil Energy, "Our History," <https://energy.gov/fe/about-us/our-history> (accessed May 23, 2017).
5. Oil Change International, "Profits for Oil, Gas & Coal Companies Operating in the U.S. and Canada," May 2015, <http://priceofoil.org/profits-oil-gas-coal-companies-operating-u-s-canada/> (accessed May 23, 2015).
6. Michael Shellenberger, "Interview with Dan Steward, Former Mitchell Energy Vice President," The Breakthrough, December 12, 2011, http://thebreakthrough.org/archive/interview_with_dan_steward_for (accessed May 23, 2017).
7. Ibid.
8. 42 U.S. Code 6201, Energy Policy and Conservation Act, Public Law 94-163, Sec. 154, <https://www.govtrack.us/congress/bills/94/s622/text> (accessed May 23, 2017).
9. Ibid.
10. U.S. Department of Energy, "Strategic Petroleum Reserve Inventory: Current SPR Inventory as of May 19, 2017," <http://www.spr.doe.gov/dir/dir.html> (accessed May 23, 2017).
11. America Competes Act, Public Law 110-69, August 9, 2007, <https://arpa-e.energy.gov/sites/default/files/documents/PL-110-69.pdf> (accessed May 23, 2017).
12. Ibid.
13. Government Accountability Office, "Department of Energy: Advanced Research Projects Agency-Energy Could Benefit from Information on Applicants' Prior Funding," January 2012, <http://www.gao.gov/assets/590/587667.pdf> (accessed May 23, 2017).
14. U.S. Department of Energy Office of Inspector General, "The Advanced Research Projects Agency-Energy," *Audit Report*, August 2011, <http://science.house.gov/sites/republicans.science.house.gov/files/documents/hearings/2011%2008%20DOE%20IG%20ARPA-E%20Audit.pdf> (accessed May 23, 2017).
15. The 1705 program, created under the American Recovery and Reinvestment Act of 2009, provided loan guarantees similar to those provided by the 1703 program, but only for renewable energy projects. The program expired in 2011.
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