



**Statement Before the
House Committee on Energy and Commerce
Subcommittee on Energy**

***“DOE Modernization: Advancing DOE’s Mission
for National, Economic, and Energy Security of
the United States”***

A Testimony by:

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Introduction and Main Points

Good morning Chairman Upton, Ranking Member Rush and members of the committee. It is my pleasure to be here today to speak with you about DOE Modernization: Advancing DOE's Mission for National, Economic, and Energy Security of the United States. My name is Sarah Ladislaw and I direct the Energy and National Security Program at the Center for Strategic and International Studies (CSIS). CSIS is a bipartisan, nonprofit organization headquartered in Washington, D.C. The CSIS Energy and National Security Program provides strategic insights and policy solutions related to the dynamic and changing global energy landscape. My remarks and written testimony represent my views and not the views of my colleagues or CSIS as an institution.

The perspectives I will share with you today are related to my role as an energy analyst but also informed by my time working at, and with officials from, the Department of Energy over the course of my career, as well as the mentorship I have received from colleagues who were around during the creation of the department and sought to steward its development over the years.

History and Performance

The Department of Energy was created in the late 1970s during a strategic inflection point in the American energy narrative. Energy demand was outstripping energy supply and our growing dependence on imported energy resources, particularly oil, emerged as a strategic vulnerability in the wake of the Arab oil embargoes and war in the Middle East, and in the face of successive shortages and price spikes related to U.S. regulation and price controls. Also faced with forecasts of further declines in U.S. oil production, in April 1977, the Carter Administration issued the first National Energy Plan, laying out a vision for how to address the nation's energy challenges. It said:

"The diagnosis of the U.S. energy crisis is quite simple: demand for energy is increasing, while supplies of oil and natural gas are diminishing. Unless the U.S. makes a timely adjustment before world oil becomes very scarce and very expensive in the 1980's, the nation's economic security and the American way of life will be gravely endangered. The steps the U.S. must take now are small compared to the drastic measures that will be needed if the U.S. does nothing until it is too late."¹

Congress, in agreement with the administration's concerns, passed the Department of Energy Organization Act in 1977 which states:

"The Congress of the United States finds that –

- (1) The United States faces an increasing shortage of nonrenewable energy resources;
- (2) This energy shortage and our increasing dependence on foreign energy supplies present a serious threat to the national security of the United States and to the health, safety and welfare of its citizen;

¹ Carter, Jimmy. "National Energy Plan Message of the President." The American Presidency Project. 29 Apr. 1977, www.presidency.ucsb.edu/ws/index.php?pid=7423.

- (3) A strong national energy program is needed to meet the present and future energy needs of the Nation consistent with overall national economic, environmental and social goals;
- (4) Responsibility for energy policy, regulation, and research, development and demonstration is fragmented in many departments and agencies and thus does not allow for the comprehensive centralized focus necessary for effective coordination of energy supply and conservation programs; and
- (5) Formulation and implementation of a national energy program require the integration of major Federal energy functions into a single department in the executive branch”²

To meet these needs, the Department of Energy Organization Act pulled together disparate and important authorities and programs from around the federal government including the Federal Energy Administration (FEA) and the Energy Research and Development Administration (ERDA), among others, to “secure effective management [of those programs]...and coordinated national energy policy.”³ The Department did not absorb all energy-relevant federal authorities – like public lands and offshore minerals leasing or environmental regulation which are now housed in the Department of Interior and the Environmental Protection Agency respectively – but it did bring under one roof the nation’s laboratory system and the civilian control of nuclear weapons stockpile stewardship, both of which gave the new agency enormous standing and authority.⁴

Over the years, DOE’s most important contributions, in addition to successful nuclear stockpile stewardship and world-class scientific research, have been:

- (1) removing energy price controls;
- (2) working with Congress to establish some of the major energy policies and regulations that have shaped the U.S. energy landscape over the last 40 years;
- (3) establishing the United States as a technological leader across a range of fields including energy, transportation, medicine, and computer science;
- (4) protecting against and responding to energy supply disruptions, natural disasters, and critical infrastructure threats (not least of which in the maintenance of the Strategic Petroleum Reserve); and
- (5) creating a first-in-its-class statistical organization, the Energy Information Administration or EIA, to provide policymakers and the public with consistent access to unbiased and transparent energy data and analysis.

The Department has proactively shaped the nation’s energy landscape and has played an important role in navigating a range of energy crises from oil supply disruptions, major blackouts, environmental disasters, cyber incidents, and addressing nuclear non-proliferation issues. DOE has advanced development of new technologies and helped inform the public about important energy innovations over the years from nuclear power, oil sands development,

² “Department of Energy Organization Act”. (91 Stat. 565; 42 U.S.C. § 7101 note).
<https://www.usbr.gov/power/legislation/doeorg.pdf>.

³ Curtis, Charles B. “Reflections on James Schlesinger -- the Man, His Times, and the Department of Energy.” Dept. of Energy Schlesinger Medal Ceremony, 19 Jan. 2017.

⁴ Ibid

liquefied natural gas, smart meters, and countless others. DOE has played a major role in creating and maintaining relationship with other countries based on common energy interests and challenges. It has supported global energy institutions and technology partnership and has played an important coordinating role in domestic energy policy formation.

New Energy Inflection Point

Today, the United States faces a new energy inflection point. For the majority of the last forty years, the overarching goal of U.S. energy policy has been to secure affordable and reliable energy supplies within the context of presumed increasing scarcity. Now, the United States is leading the world in a new age of perceived energy abundance. The most recognized face of this abundance is oil and natural gas. Over the last decade, the US resurgence in oil and natural gas production, thanks to onshore tight oil and shale gas resources, has been nothing short of remarkable.⁵ In the last 10 years, crude oil production grew by 75 percent and natural gas production by 45 percent, making the United States the largest oil and gas producer in the world. As a result, oil exports from the United States are growing (despite the fact that the United States still imports approximately 8 million barrels a day as well). During the first half of 2017, the United States reached a new record by exporting more than 6 million barrels per day of crude oil and products to nearly 27 countries around the world.⁶ In 2017, the United States became a net exporter of natural gas, and going forward exports of gas are expected to increase substantially as new liquefied natural gas export facilities come online. This development of U.S. oil and gas resources provided a significant boost to the U.S. economy and created a large number of jobs in the wake of the 2008 financial crisis and has had an important impact on global oil and natural gas markets.⁷

This abundance narrative extends far beyond oil and gas, however. Over the last decade renewable and advanced energy resources (like batteries, micro-grids, and other smart energy technologies) have become more affordable nearly everywhere in the world. Many of these advancements were aided by U.S. investments in research and development and the supportive policy environment fostered at a federal and state level. The combination of improving economics and performance, along with policy support, means that renewable energy penetration has soared in recent years as consumers no longer question the cost-competitiveness of these resources. According to a 2017 DOE report (graphic depiction by The New York Times below) the renewable energy industry provides a substantial number of jobs in the U.S. economy. By most accounts, demand for renewable energy resources will grow faster (albeit from a smaller base) than any other fuel source over the next several decades.

⁵ In the World Energy Outlook 2017, the International Energy Agency states that the growth in US oil production over the last decade is the largest ramp-up in oil production in history.

⁶ French, Matthew, and Joseph Rabovsky. "Crude Oil and Petroleum Product Exports Reach Record Levels in the First Half of 2017." Today in Energy, U.S. Energy Information Administration, 18 Oct. 2017, www.eia.gov/todayinenergy/detail.php?id=33372.

⁷ For more information please see two recent CSIS publications: U.S. Oil in the Global Economy (<https://www.csis.org/features/us-oil-global-economy>) and U.S. Natural Gas in the Global Economy (<https://www.csis.org/features/us-natural-gas-global-economy>)

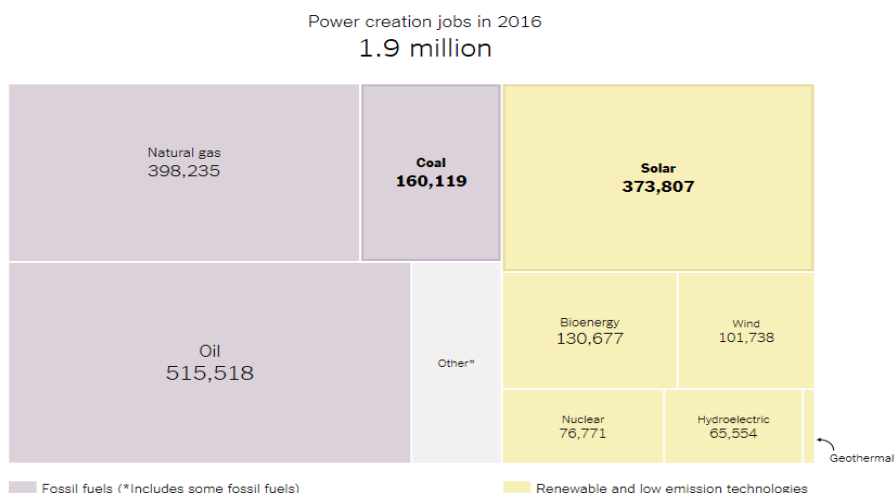


Figure 1: Power Creation Jobs in 2016⁸

This new reality poses many new challenges and opportunities to governments, industry, innovators, and consumers. For example, despite being the largest oil and gas producer in the world, the United States is still vulnerable to energy supply disruptions in a globally integrated market. The United States experienced widespread production and refinery outages in the Gulf Coast of the United States just this past year and a major oil or to a less extent natural gas supply disruption elsewhere in the world would impact the prices and availability of resources upon which we and our allies rely.

Electric power systems are becoming more distributed and sophisticated. This brings enormous benefits but also poses challenges to regulators and system operators, traditional utilities and power providers, as well as new market entrants and innovators. The electricity sector remains deeply interconnected with information systems upon which modern society increasingly relies. The proliferation of smart technologies will increase these interconnections and make them more complex. Industry and government are working hard to maintain system resilience and reliability in the face of cyber threats to our critical infrastructure.

Countries around the world are competing to create new technologies, capture markets, and create economic opportunity for their citizens. Energy plays an important role in this dynamic. Cheap energy is a powerful stimulus to economic growth putting more money in the pockets of industry and consumers. The energy sector provides direct and indirect jobs that underpin local and regional economies and local communities. Energy resource and technology development provide trade and export opportunities that link the United States with larger market opportunities around the world. The competitive environment around energy has become more intense as energy supplies are more readily available. Providers of energy are looking to secure

⁸ Popovich, Nadja. "Today's Energy Jobs Are in Solar, Not Coal." The New York Times, 25 Apr. 2017, www.nytimes.com/interactive/2017/04/25/climate/todays-energy-jobs-are-in-solar-not-coal.html.

new relationships in growing energy markets with implications for global energy trade and geopolitics. Governments are devising new strategies to grow the technologies of the future at home and ensure their competitiveness abroad.

Concerns over air pollution, water resources, and the global climate challenge are increasingly shaping the decisions of policymakers, regulators, investors, corporations and citizens. Energy stakeholders that do not consider the very real environmental security risks that must be addressed by society have fewer and fewer places to act unabated. Driven by these priorities countries around the world are enacting new policies and regulation, companies and investors are investing in cleaner energy technologies, and consumers are realizing more choice when it comes to the energy they choose they make. Examples of this include the proliferation of rooftop solar, energy efficient appliances and infrastructure, electric vehicles, and other new forms of technology. The current energy inflection point is one in which the United States has a great many inherent advantages but in which the potential for disruptive changes is higher than ever.

Modernizing the Department of Energy

The Department of Energy has an important role to play in addressing all of these challenges. Other representatives on the panel can speak to needs and capabilities of the department in the areas of stockpile stewardship, non-proliferation, and environmental remediation better than I can. I will just note as others have done that wide range of its mandates and expertise have given the department a schizophrenic identity at times; one that the public and even policymakers do not well understand. Managing the weapons, environmental remediation, scientific research and energy portions of the department of energy has been tricky to navigate over the years and is frequently cited as one of the shortcomings of the department. The last administration sought to separate out the managerial functions of the department into a separate undersecretary, consolidate the environmental stewardship functions, and bring together the various components of the research and development activities under one umbrella. Of course, each administration can exercise its own prerogative to arrange the various programs and offices as it sees fit, to best meet the missions of the department and or match the expertise of officials it chooses to appoint in various positions of leadership. The critical question is what configuration will best enable the department leadership, its employees and its contractors to fulfill those missions.

The areas around which I have specific recommendations have to do with the department's role in preparing the United States for energy challenges of the present and the future.

The DOE should take a leadership role in conducting analysis regarding the safety, reliability, and optimization of the nation's energy infrastructure. As stated earlier, the United States has increasing amounts of nearly all the fuels it consumes. Abundant supply does not, however equal energy security. Transmission, delivery and distribution infrastructure is critically important to ensuring adequate supplies of energy. The department recently sent a notice of proposed rulemaking (NPR) to the Federal Energy Regulatory Commission (FERC) asking it to take action to ensure reliable supplies of electricity for our nation's energy grid. While I do not agree with the problem as described or solution suggestion by the DOE NPR, the DOE can and should play an active role in discussions and analysis of the adequacy and reliability of the country's energy infrastructure. The last administration also contributed important insights and

suggestions regarding the nation's transmission, distribution and mid-stream infrastructure as part of the first installment of the Quadrennial Energy Review. The administration before that, working with Congress, established new capacity to transmission congestion and established an office of electricity delivery and reliability. The DOE has a role to play in evaluating and recommending actions that might be taken by other agencies and departments to evaluate and address systemic risks to the nation's vital energy infrastructures.

The DOE should continue to maintain emergency preparedness planning and response functions.

Most notably, DOE manages the nation's Strategic Petroleum Reserve, the world's largest government-owned and managed emergency stockpile of crude oil and home heating oil. The SPR plays an important role in ensuring the nation's ability to provide crude oil during time of disruption. While it has its shortcomings, the SPR has been released during times of disruption, most recently during the hurricanes that hit the Gulf Coast in 2017. As I stated in my testimony SPR modernization to the Senate Energy and Natural Resource Committee in 2016 "the SPR is part of a much larger, globally coordinated system of emergency petroleum supplies that have been around since the oil market disruptions in the mid-1970s. These strategic stockpiles are perhaps one of the most visible and enduring examples of shared energy security policies among the world's major energy consumers. The SPR is a fundamental pillar of that system. At the same time, a great deal has changed since the advent of the global strategic stock system and the creation of the U.S. SPR. While the current context of oversupplied markets, low oil prices, and record levels of U.S. production may obscure the dangers of an oil supply disruption, it is important to be clear-eyed about existing threats facing global oil markets and the economic vulnerability associated with a potential disruption. The last forty years have proven time and again that we as analysts, policymakers, and market participants should be humble about our ability forecast future oil market dynamics and take prudent measures to protect against unanticipated supply disruptions."⁹ The DOE should maintain (modernize), and Congress should safeguard this important asset but further analysis is warranted about size, composition and location of the reserve given the changing oil crude and product flows and infrastructure required to adequately access the reserve in times of emergency. DOE should also consider how the international strategic stock systems (also created in the 1970s and including the U.S. SPR) is currently positioned and whether it could be configured to better meet the needs of a changing global oil market.

Energy efficiency promotion should remain a core mandate of the DOE. One of the core original mandates of the Department of Energy under the National Energy Plan was to enact efficiency standards and mandates. The efficiency gains of the United States have been our secret weapon to increase the energy productivity of our economy and reduce import reliance. According to the Alliance to Save Energy efficiency gains in the United States has doubled the energy

⁹ Ladislaw, Sarah. "Modernization of the Strategic Petroleum Reserve and Related Energy Security Considerations." Statement before the Senate Committee on Energy and Natural Resources. 6 Oct. 2015, csis-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/attachments/ts151006_Ladislaw.pdf.

productivity of the U.S. economy between 1980 and 2014.¹⁰ The energy efficiency sector now employs 2.2 million people and saves hundreds of millions of dollars a year.¹¹ The role that the Department plays in setting efficiency standards is often overlooked but has paid important economic and security dividends.

Innovation is essential to meeting DOE missions across the board and should be strengthened.

As other panelists will also explain, the role that DOE and the national laboratories play in the national research and development ecosystem is critical. At the beginning of this year DOE released a first ever state of the lab report that provided a detailed overview of the performance of the laboratory complex toward meeting their collective missions. It noted, “the extraordinary system of National Labs is unique and, along with America’s research universities, underpins our innovation edge for economic productivity and job creation, security and environmental stewardship.”¹² Several other key documents produced by the Department like the Quadrennial Technology Review and the crosscut report have been important ways in which the Department can evaluate its progress toward providing the innovations needed to meet the nation’s energy challenges.

The proper role of government in research and development is not universally agreed upon with some arguing for a more limited role in either scope (i.e. limit to basic research) or level (i.e. budget cuts requested by the Trump administration). Government does not constitute the entirety of the U.S. innovation landscape but can make important contributions through funding research not undertaken by private interests, feeding into the personnel and intellectual supply chain of the research community, and working collaboratively with private industry and universities to catalyze important areas of research. According to a recent report, since its inception, the Advanced Research Project Agency for Energy or ARPA-E has invested over \$1.5 billion in research funding distributed across more than 35 programs and 500 projects, of which 45 projects have received follow-on funding from the private sector totaling \$1.8 billion and 36 have resulted in the formation of new companies.¹³ While it is just one of the offices engaged in research and development across the department, ARPA-E was born out a bipartisan mandate to provide vehicle for the department to identify and promote revolutionary advancement in fundamental and applied sciences. A recent National Academies review found that it was well on its way to fulfilling that mission.¹⁴

¹⁰ Van Wie McGrory, Laura. “Energy Productivity: Communicating the Economic Benefits of Energy Efficiency.” Energy Efficiency: The Prosperity Fuel CSIS. Energy Efficiency: The Prosperity Fuel CSIS, 29 June 2017, CSIS.

¹¹ Ibid

¹² United States Department of Energy, Cohen, Adam, et al. “Annual Report on the State of the DOE National Laboratories January 2017.” Jan. 2017. energy.gov/sites/prod/files/2017/02/f34/DOE%20State%20of%20the%20National%20Labs%20Report%2002132017.pdf.

¹³ Ladislav, Sarah. Partnerships for Energy Innovation. CSIS, 27 Feb. 2017, www.csis.org/analysis/partnerships-energy-innovation.

¹⁴ National Academies of Sciences, Engineering, and Medicine. 2017. An Assessment of ARPA-E. Washington, DC: The National Academies Press. Chapter 2. <https://doi.org/10.17226/24778>.

Finally, climate change is clearly not a challenge around which this administration seems inclined to orient its energy policy. However, innovation will play an important role in any energy future, including a carbon constrained one that effectively addresses global climate change. DOE has important contributions to make toward meeting this challenge, a great many of them in the area of research, development, and deployment arena. Many of these innovations would have important economic and security co-benefits that the administration does support – like the development of competitive advanced nuclear reactors, cost-effective carbon capture, utilization, and storage strategies, and many others. The DOE should pursue innovation pathways that advance multiple objectives including the reduction of CO₂ and other greenhouse gases in the atmosphere.

Energy strategy and analysis are more important than ever so the DOE should maintain and strengthen its energy policy and analysis function. Given the important mandates DOE must fulfill and the strong technical expertise required to fulfill those missions, the Department has often been dismissed as a technical agency rather than one with policy oversight. Despite the clear role as a coordinator of energy policy across the government set out for it in the DOE organization act, the energy policy role has ebbed and flowed over the years depending on focus of a given administration. Over the years the policy office at DOE has been moved, renamed and reorganized a number of times and its staffing and standing within the department have fluctuated. It is critically important for DOE to have a strong energy policy and analysis function. The policy office provides critical input to the Secretary and the offices throughout the agency about energy trends, market developments, and policy options. Having a strong policy and analysis function also enables the department leadership to play a more active and authoritative role within the interagency policymaking process, and provides an excellent resource for industry and other energy stakeholders to engage in important areas of policymaking. One area where the policy office could be particularly helpful at this moment is to develop a deeper understanding of the ways in which the U.S. can harness its energy advantage to increase opportunity and mobility within the economy. The last administration made an investment in the policy analysis function at the department. It is an important investment that this administration should continue.

Independent and impartial energy information is essential to the good policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment. The government and the nation have consistently been served by the data collection, reporting and analytical function of the Energy Information Administration (EIA). EIA is a world-class organization that provides important data and analysis to the federal government and the public. EIA has done a remarkable job establishing itself as trusted source of reputable information. It provides market-relevant research on a regular basis, daily, weekly, monthly and annual reports. It responds to requests for information and analysis from Congress and its officials provide an important, policy-neutral voice in the energy policymaking process. Countries from around the world come to EIA to learn about how to replicate its form and function in their own government so they can derive the same benefits from an independent analytical agency within their own government system. Needless to say, EIA should continue to play this role going forward.

DOE should increase its capabilities when it comes to understanding, managing and engaging in global energy issues. DOE plays an underreported role in managing international affairs and geopolitics as they relate to energy. DOE has within its organizational structure an office of International Affairs led by an assistant secretary. The office not only staffs the department leadership on their travel abroad and engagement with foreign counterparts but structures ongoing cooperative initiatives with other countries and serves as the point people for substantive engagement in international energy institutions and consortiums. This office should be strengthened and expanded to have a stronger analytical function designed to inform the secretary and DOE leadership's thinking about global energy trends and challenges. In recent years, the Department of State created an Energy Bureau to elevate the role of energy in foreign policy decision-making. This is an important goal and function at the Department of State that should be supported given the complex relationship between energy and many of our foreign policy objectives, but it should not detract from the need to have strong analytical capabilities at the Department of Energy as the United States must formulate its energy policy based on the expert understanding of a complex global array of policy, technology and commercial trends. Moreover, it is important for DOE to maintain its dominant analytical capabilities on energy because it practically serves as the lead agency on energy relations with other countries not least of which because most other countries around the world see their energy ministers as the top emissaries for energy discussion with other countries. This will only become more important as the United States seeks to forge new and different trade relationships with countries that are accustomed to have an honorary government role, if not direct involvement in (which I do not recommend), energy investment and trade deals. Relatedly, there has been a great deal of discussion about whether and how the Department of Energy should permit or approve exports of natural gas exports. In my view, the DOE played a useful, if not lengthy, role in evaluating the remarkable surge in U.S. natural gas production, its sustainability over time, and the potential impact exports of various amounts would have on natural gas prices and availability. The process for clearing through these approvals is moving much more quickly than when the issue initially arose and while there is room for Congress to hold DOE to a firm schedule for export approvals, I find it implausible that Congress would remove this authority from the department altogether. As we have seen recently in Australia, natural gas shortages can occur in even the most energy abundant countries and when that happens, governments value their ability to manage exports to protect domestic consumers.

Conclusion

The Department of Energy carries an important history of supporting the nation's security, economic, and environmental priorities and objectives. It was born during a time when the nation's energy outlook had shifted and the future looked dangerous and uncertain. Today's energy outlook is no less uncertain as the country prepares for more interconnected and interdependent energy system, driven by new consumers, new priorities, and stiff competition. Preparing for this future requires the same amount of dedication and commitment that the DOE has delivered for the last forty years. Thank you for the opportunity to provide my thoughts on DOE modernization. I look forward to taking your questions.