

A large, billowing mushroom cloud from a nuclear explosion, with a bright yellow and orange core and a dark, reddish-brown top, set against a hazy, greenish-grey sky. The cloud is the central focus of the upper half of the image.

TURNING  
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REIMAGINING  
THE  
NATIONAL  
LABS  
IN THE  
21<sup>ST</sup>  
CENTURY  
INNOVATION  
ECONOMY

NONPARTISAN POLICY REFORMS FROM

The Information Technology and Innovation Foundation

The Center for American Progress

The Heritage Foundation

# TURNING THE PAGE

## REIMAGINING THE NATIONAL LABS IN THE 21<sup>ST</sup> CENTURY INNOVATION ECONOMY

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Center for American Progress



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# EXECUTIVE SUMMARY

Since their creation in the 1940s, the Department of Energy's, or DOE's, National Labs have been a cornerstone of high-impact, federally funded research and development. The labs have helped seed society with new ideas and technologies in leading disciplines such as energy, biotechnology, nuclear physics, and material science. While the labs' primary mission must continue to focus on supporting the nation's research needs not met by the private sector, the time has come to move the DOE labs past their Cold War roots and into the 21st century.

As the United States moves deeper into the 21st century, the importance of advancing innovation becomes even more important if our nation is to thrive. Creating wealth depends on the use of traditional inputs such as natural resources, land, and labor, but most importantly, it requires the discovery and development of new ideas and technology. Today's science and technological challenges are increasingly complex and require multidisciplinary and often unique solutions that the labs can help provide.

While the pace of innovation and the complexity of national challenges have accelerated, the labs have not kept stride. Although private-sector innovation will remain the cornerstone of economic growth, lab scientists and engineers do important work that can be of significant future use to private enterprise. Examples include commercial global positioning system, or GPS, applications and genetics analysis. The problem is that the labs' tether to the market is weak, often by design. Though the mission of the labs must not be or subsidize private-sector research, efficient means for transferring scientific discovery into the market should exist. But the labs' bureaucracy remains largely unchanged and does not reflect the nimble characteristics of today's innovation-driven economy. Inefficiencies, duplicative regulations, and top-down research micromanagement are having a stifling effect on innovation. Furthermore, institutional biases against transferring market-relevant technology out of the labs and into the private sector reduce incentives for technology transfer.

The federal government must reform the labs from their 20th century atomic-energy roots to create 21st century engines of innovation. This report aims to lay the groundwork for reform by proposing a more flexible lab-management model that strengthens the labs' ability to address national needs and produce a consistent flow of innovative ideas and technologies. The underlying philosophy of this report is not to just tinker around the edges but to build policy reforms that re-envision the lab system.

The analysis presented by this working group represents a consensus between members of three organizations with diverse ideological perspectives. We may not agree on funding levels, funding priorities, or the specific role of government in technological innovation, and nothing in this report should be construed as support for or opposition to those things. Instead, the purpose of this report is to put forth a set of recommendations that will bring greater efficiency and effectiveness to the DOE lab system, produce more relevant research, and increasingly allow that research to be pulled into the private sector. These recommendations are as relevant to a large, highly funded research agenda as they are to a much more limited one.

Our analysis and policy recommendations fall into three major categories, which are summarized below.

#### TRANSFORMING LAB MANAGEMENT FROM DOE MICROMANAGEMENT TO CONTRACTOR ACCOUNTABILITY

**Creation of a high-level task force to develop DOE-actionable reforms on lab effectiveness and accountability.** The Department of Energy, together with the Office of Science and Technology Policy, should lead a top-to-bottom review of the lab-stewardship system with the goal of identifying and reducing redundant bureaucratic processes, reforming the relationships between the labs and the contractors who manage them, and developing better technology-transfer metrics. This report should be submitted to Congress within one year.

**Transition to a performance-based contractor-accountability model.** DOE should cede decision-making responsibility to lab managers instead of micromanaging the labs from Washington. This builds upon the existing contractor-assurance system, or CAS, and would free lab managers to operate more nimbly with regard to infrastructure spending, operations, human-capital management, and external partnerships. The labs should report to Congress annually during the transition period to the new accountability model to ensure critical congressional oversight of taxpayer resources.

**Expand the Performance Evaluation Management Plan process to include a new accountability model.** As an alternative to direct transactional oversight for all decisions, Management and Operation, or M&O, contractor performance should be evaluated annually via an expanded and unified review process for all the labs based on the DOE Office of Science's Performance Evaluation Management Plan, or PEMP, process.

## UNIFYING LAB STEWARDSHIP, FUNDING, AND MANAGEMENT STOVEPIPES WITH INNOVATION GOALS

**Merge the existing under secretaries of science and energy into a new Office of Science and Technology.** The new, single under secretary would have both budgeting and stewardship authority for all of the labs except for those currently managed by the National Nuclear Security Administration, or NNSA.

**Combine the research functions of the Office of Science and those of the under secretary for energy under the new Office of Science and Technology.** Congress should create new, broader program offices under the Office of Science and Technology to better coordinate activities throughout the entire research spectrum.

**Remove top-down overhead accounting rules.** Congress should remove prescriptive overhead accounting rules and allow labs greater latitude to use overhead funds to support project and mission success. This would include removing the cap on laboratory-directed research and development funds, also known as LDRD, and providing a more inclusive description of technology transfer.

## MOVING TECHNOLOGY TO MARKET WITH BETTER INCENTIVES AND MORE FLEXIBILITY

**Expand ACT agreements.** The Department of Energy should expand the Agreements for Commercializing Technology, or ACT, template to allow for use with any kind of partner, regardless of whether the partnering entity has received other federal funding.

**Allow labs to use flexible pricing for user facilities and special capabilities.** Congress should remove legal barriers to allow the labs to charge a market rate for proprietary research and to operate technical facilities and capabilities at a level informed by market demand.

**Allow labs autonomy in nonfederal funding-partnership agreements.** The secretary of energy should grant the labs the authority to implement a pilot program that allows lab managers to agree to collaborations with third parties for research within the United States—through collaborative research and development agreements, Work for Other agreements, or other partnerships—absent DOE preapproval.

**Add weight to technology transfer in the expanded PEMP process.** DOE should create a new top-level category for the expanded PEMP process called “Technology Impact,” which would evaluate labs on the transfer of technology into the U.S. private sector. The exact weight of this category would be negotiated in the M&O contract, based on the unique programs, capabilities, and strategic vision for each lab and DOE administration.

**Execute consistent guidelines on conflicts of interest.** The secretary of energy should issue new, consistent guidance to the labs encouraging research and management teams to partner with companies and entrepreneurs in the United States to avoid differing interpretations of laws and policies, including guidance on implementing consistent entrepreneurial leave and exchange programs.