



US Senate releases possible successor to America COMPETES

Governmental investment in science has long been a means to achieving political goals such as increasing global competitiveness, advancing economic stability, improving public health, and enhancing national security. Many scientists—materials and otherwise—depend on government funds to support themselves as well as graduate students and postdoctoral researchers, to finance their research, and to pay for equipment and facilities. The nexus in the United States between science and policy means that science funding, especially for basic sciences, depends heavily on the legislative process.

A new bill to authorize funding and provide policy goals for basic sciences research was introduced in the US Senate and passed favorably through the Commerce, Science, and Transportation Committee in June. The American Innovation and Competitiveness Act (S. 3084) is the product of a bipartisan group of senators, led by Cory Gardner (R-Col.) and Gary Peters (D-Mich.), tasked with drafting a successor to the America COMPETES (Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science) Act.

For nearly a decade, US investment in basic sciences had been governed by the America COMPETES Act. First passed in 2007 and reauthorized in 2010, COMPETES garnered broad bipartisan support in Congress and provided a significant boost to the basic sciences research budget as it was spread across the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST), and the Department of Energy (DOE) Office of Science. Although appropriations never met the legislative goal of doubling US investment in basic sciences, COMPETES has widely been hailed as a success in both the government and science communities because it was responsible for the establishment of the Advanced Research Projects Agency-Energy (ARPA-E), it created programs to develop science, technology, engineering, and mathematics (STEM) education, and it provided for a significant increase in the overall basic sciences research budget.

Despite the success of COMPETES, it was allowed to expire during a time of significant congressional turmoil just before the US government shutdown in October 2013. Since then, there has been no legislation providing a roadmap or driving investment in basic sciences research, leaving the budget entirely in the hands of the appropriators. The American Innovation and Competitiveness Act is by no means the first bill to attempt to fill the void left by the expiration of COMPETES—over the last two congresses, several bills have been introduced in both the Senate and the House.

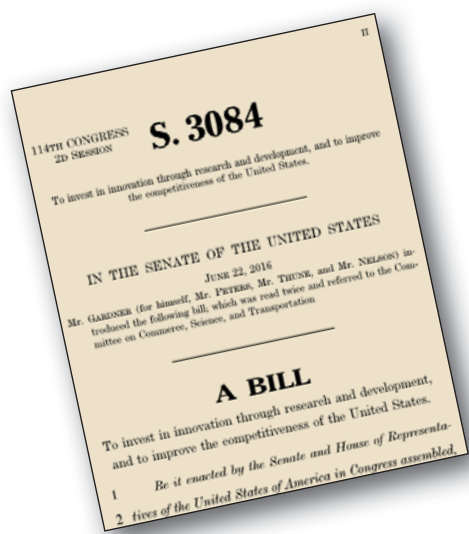
These bills include the Frontiers in Innovation, Research, Science, and Technology (FIRST) Act of 2014; the Department of Energy Research and Development Act of 2014 (also known as the Enabling Innovation for Science,

Technology, and Energy in America—EINSTEIN—Act of 2014); the America Competes Reauthorization Acts of 2014 and 2015 (offered by House Democrats); and the America COMPETES Reauthorization Act of 2015 (offered by House Republicans and passed on a mostly party-line vote by the House in May 2015).

The American Innovation and Competitiveness Act differs significantly from the other COMPETES alternative bills both in the input considered by its authors and in its mandates. It is the product of a bipartisan effort that included three roundtable discussions with members of the science community—across academia, government, and industry—to help inform the policy priorities for the bill. “This is a strong bipartisan effort in the Senate, and the heart of the bill really reflects that,” says Damon Dozier, Director of Government Affairs for the Materials Research Society.

Titles I and II of the bill focus on maximizing basic research and reducing administrative and regulatory burdens, the topics of the first roundtable discussion. Importantly, the bill sets the tone by expressing support for the merit review process currently used by the NSF. This statement is in line with the sentiments of the scientific community and in direct contrast to the House-passed COMPETES legislation that mandates significant changes to the process.

In addition to the roundtable discussions, the bill’s authors used researcher surveys and recommendations from the National Academies to revise the grant application process. They state within the bill, “it is the sense of Congress that administrative burdens faced by researchers may be reducing the return on investment of federally funded research and development.” The bill directs the Office



of Management and Budget (OMB) to coordinate with the Office of Science and Technology Policy (OSTP) and establish an interagency working group that is tasked with reducing administrative burdens, while protecting public interests such as transparency and accountability for federally funded research. Two specific tasks, stipulated within the bill, are to develop a simplified and uniform grant format as well as a centralized researcher database to be used across all relevant federal agencies.

Title II also addresses an area of significant concern for the materials community—scientific and technical conference attendance for federally funded researchers. The bill states, “it is the policy of the United States to encourage broad dissemination of federal research findings and engagement of federal researchers with the scientific and technical community,” and directs the OMB to consult with the OSTP and other relevant agencies to streamline the process for attendance at scientific and technical conferences.

The topic of STEM education, discussed at the second roundtable, is addressed in Title III. Mandates of interest in this title include the establishment of a STEM Education Advisory Panel to provide advice to the National Science and Technology Council’s Committee on STEM Education, continued and expanded support to broaden participation and promote inclusion of underrepresented groups (including women) in STEM fields, and

the expected submission of recommendations from federal agencies for the expansion of research opportunities for undergraduate students.

The last three titles of the bill cover private sector involvement (IV), manufacturing (V), and innovation, commercialization, and technology transfer (VI). These titles include provisions that allow more flexibility in federal prize competitions, encourage crowdsourcing and citizen science to fulfill agency missions, extend manufacturing partnerships with the private sector, and provide continued support for commercialization of federally funded research.

It is important to note that unlike the original COMPETES legislation, the American Innovation and Competitiveness Act does not address policy changes or authorize funding for the DOE Office of Science. Rather, a separate bill, the Energy Title of America COMPETES Reauthorization Act of 2015 (S.1398), was introduced by Senator Lamar Alexander (R-Tenn.) and has been incorporated in part in the comprehensive bipartisan Energy Policy Modernization Act of 2016 that has passed both the Senate and House. A conference committee is currently resolving differences between the bills. The version passed by the Senate authorizes a 7% increase in funding for each of the next five years for basic energy research within the DOE (Office of Science and ARPA-E), while

also eliminating and consolidating a number of inactive or duplicative DOE programs.

The American Innovation and Competitiveness Act covers the remainder of the basic sciences budget and authorizes appropriations for NIST and the NSF for fiscal years (FYs) 2017 and 2018. Authorized levels for NIST increase 1% for FY 2017 and 5% for FY 2018, while levels for the NSF increase 0.05% for FY 2017 and 4.6% for FY 2018 (from baseline FY 2016 funding levels). Despite the relatively modest authorization numbers, the lack of identified offsets may make passage difficult in a Republican-led Congress that has adopted a protocol known as “cut-go” that requires new or increased authorizations to be offset by terminating or reducing funding for a current program.

In addition to not meeting the “cut-go” protocol, the small number of legislative days left and the upcoming US elections make passage of the American Innovation and Competitiveness Act unlikely before the expiration of this session of Congress. “The hope is that this is a marker that would be taken up again in the next session of Congress,” says Dozier, adding “it defines how the Senate views the reauthorization of COMPETES, and is much more in line with the scientific community than any alternative legislation offered to date.”

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Inaugural Mission Innovation Ministerial pledges unprecedented support for clean energy R&D <http://mission-innovation.net>

At the inaugural Mission Innovation (MI) Ministerial, an international organization, held in June, ministers from all Mission Innovation partners released their respective governments’ plans to double clean energy research and development (R&D) funding over five years. Ministers also welcomed the European Commission on behalf of the EU as the 21st partner.

“The European Commission is honored to be part of Mission Innovation,” said

European Commission Vice President for Energy Union Maroš Šefčovič. “Scaling up clean energy innovation is key to the success of the European Energy Union and to the implementation of the Paris Agreement on Climate Change. It also represents a major global economic and industrial opportunity.”

Ministers met with leaders of the Breakthrough Energy Coalition and other leading energy investors, underscoring the critical link between government innovation

and entrepreneurship to bring affordable clean energy technologies to market.

“Our support for Mission Innovation is crucial to funding the basic scientific research and development that will underpin the advanced clean energy solutions needed to combat climate change in the 21st century,” said US Secretary of Energy Ernest Moniz. “These technologies will help drive down adoption costs to grow low-carbon economies and create entirely new markets for the solutions that will reduce heat-trapping emissions.”

In recent years, due to advances in research worldwide, significant progress has been made in driving down the cost