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In our last newsletter, we noted there is uncertainty surrounding President Trump's views on science, technology and innovation. In addition to concerns about the new administration's rejection of climate change initiatives, the science and technology community was concerned that the Trump Administration would embrace the Heritage Foundation's Blueprint for a New Administration, which called for severe cuts to or elimination of some research, development and demonstration programs.

With the release of the Administration's Skinny Budget and the finalization of FY 2017 appropriations, opportunities for Federal support for technology and innovation are becoming clearer.

## The FY 2018 Skinny Budget

Fulfilling some of the science and technology community's worst fears, President Trump released "American First: A Budget Blueprint to Make America Great Again," also known as the FY 2018 "Skinny Budget," signaling some of his spending priorities.

The Skinny Budget included high-level numbers for Federal Departments and some agencies. Increases are proposed for the Departments of Defense, Homeland Security and Veterans Affairs. All other departments and agencies featured take a budget hit, with cuts ranging from a low of 0.8% for NASA, to a high of 31.4% for EPA. Agencies that take the biggest hits—above 15% cut—include USDA, Commerce, HHS, Labor, State and EPA.

The Skinny Budget did propose some significant cuts to R&D, science and technology programs:

- The budget proposes a significant cut in climate change science, including a proposed 31% cut for EPA and the elimination of Obama-era climate change initiatives.



The Skinny Budget did propose some significant cuts to R&D, science and technology programs:

- Proposed cuts to NIH are causing great consternation. NIH would take a \$5.8 billion or 20% cut to its \$30 billion budget. The budget also includes language indicating a major reorganization of NIH institutes and centers is planned.
- The budget proposes to cut \$1.7 billion or 5.6% out of the Department of Energy's \$28 billion budget. HOWEVER, with the National Nuclear Security Administration in line for more than an 11% increase, the rest of DOE—which includes its clean energy research programs—would take a large 17.9% hit. This includes a proposed \$900 million or 17% cut for the Office of Science, out of its roughly \$5.3 billion budget. The Skinny Budget also proposes to eliminate ARPA-E.
- At the Department of Commerce, the Skinny Budget proposes to eliminate the Economic Development Administration, and to discontinue Federal funding for the Manufacturing Extension Partnership.

Interestingly, the Skinny Budget did not highlight any proposed cuts to the Manufacturing USA program, or propose to entirely eliminate the DOE energy-related offices—such as the Office of Energy Efficiency and Renewable Energy, and Office of Fossil Energy—as the Heritage Foundation blueprint had recommended.

Much of what is in the Trump Skinny Budget probably won't happen, with perhaps a few exceptions. DOD is likely to get a major increase. There is growing agreement that it is needed. And, there is already strong push back on cuts to the research budget. The Omnibus appropriations act discussed below does signal what we might see out of the Congress, relatively good news.



## The FY 2017 R&D Budget

Despite the gripping fear of draconian cuts to the R&D budget, on May 4, the Congress passed an Omnibus appropriations bill, signed into law by President Trump on May 5, which funds the Federal government for the remainder of FY 2017. Surprisingly, the Act largely maintained funding for Federal R&D programs, and even included increases for a few. Here are a few highlights:

- **USDA:** \$850 million appropriated for National Institute of Food and Agriculture Research and Education activities, a \$29 million increase over FY 2016.
- **Department of Commerce:** Highlights of the DOC budget include:
  - The Economic Development Administration receives \$276 million, including \$100 million for public works and \$17 million for Regional Innovation Program Grants. This funding level is \$17 million over the request, and \$15 million over FY 2016.
  - At the National Institute of Standards and Technology, \$130 million is appropriated for the Manufacturing Extension Partnership, and \$25 million for the National Network of Manufacturing Innovation (now called Manufacturing USA), including funding for center (institute) establishment and coordination activities.
- **Department of Energy:** DOE receives \$30.7 billion overall, a one billion increase over FY 2016:
  - The Office of Energy Efficiency and Renewable Energy gets \$2 billion, with several programs receiving budget cuts, but water power and advanced manufacturing get significant increases.
  - The Office of Science receives \$5.4 billion.
  - The Office of Electricity Delivery and Energy Reliability gets \$230 million.
  - ARPA-E gets \$306 million, a \$15 million increase over FY 2016 (see chart). Other highlights include:
    - \$34 million for clean cities; \$55 million for concentrating solar power; \$59 million for marine and hydrokinetic technology R&D and deployment, including \$30 million for an open water wave energy test facility; \$84 million to fund six Clean Energy Manufacturing Innovation Institutes, which includes funding to establish one new CEMI institute; and \$20 million to establish a new Energy-Water desalination hub.

Highlights: Department of Energy Appropriations (thousands)		
Office	FY 2016 Enacted	FY 2017 Omnibus
<b>Office of Energy Efficiency and Renewable Energy</b>	2,073,000	2,090,200
• Vehicle Technologies	310,000	306,959
• Bioenergy Technologies	225,000	205,000
• Hydrogen/Fuel Cells	100,950	101,000
• Solar	241,600	207,600
• Wind	95,450	90,000
• Water Power	70,000	84,000
• Geothermal	71,000	69,500
• Advanced Manufacturing	228,500	257,500
• Building Technologies	200,500	199,141
<b>Office of Electricity Delivery and Energy Reliability</b>	206,000	230,000
• Smart Grid Research and Development	35,000	50,000
<b>Office of Science</b>	5,350,200	5,392,000
<b>ARPA-E</b>	291,000	306,000

- **Department of Defense:** Overall, defense RDT&E receives \$72 billion, about one billion over the request. Across the Department of Defense, the service branches receive increases for basic research and/or basic research at universities. The defense-wide manufacturing science and technology program receives \$158 million, the same as the request, while defense MANTECH receives \$41 million, \$10 million over the request. In addition, the Navy Energy Program receives \$71 million, about \$10 million above the request, and \$250 million was appropriated for the Defense Rapid Innovation Program.
- **Department of Labor:** The Department of Labor receives \$95 million to support Apprenticeship Grants, focused on expanding apprenticeship programs in high-growth and new industries.
- **National Institutes of Health:** NIH receives \$34 billion, \$2 billion over FY 2016, and \$3 billion over the request. A funding increase above FY 2016 is provided to every NIH Institute and Center to continue investments in research.
- **National Science Foundation:** Steady state \$6 billion for research, the same funding level as FY 2016.

## Signaling Policy Directions

President Trump's Skinny Budget included a few policy statements signaling a pull back of the Federal government role in technology development and commercialization.

The Obama Administration had expanded the government role further downstream in the innovation process. DOE was a major platform for this expansion. This included high dollar demonstration biorefineries, direct grants to companies for developing commercially promising technologies, funding of industry consortia, and—during the ARRA stimulus funding—funds to for-profit companies to construct production facilities or expand production capacity.

Using DOE as the case, the Trump Skinny Budget says there must be increased reliance on the private sector to fund later-stage research, development, and commercialization of energy technologies, and focus Federal resources toward early-stage R&D; and that DOE should focus on early-stage applied energy R&D (note the word applied, beyond the more conservative constraints of “basic research”).

**It is important now to advocate for your interests as program directions, funding, and regulation in the Trump Administration evolves, as subcabinet appointments take their places, and as the new Administration and Congress work together on budget initiatives.**

## Report on the March For Science

After months of turbulent planning over purpose and politics, on April 22, scientists came out of their labs and into the streets, carrying protest signs and advocating for the importance of science to humanity. All around the world thousands marched, wearing lab coats or dressed as science icons such as Einstein, astronauts, The Magic School Bus's Ms. Frizzle and Muppet Beaker.

In Washington, DC, 15,000 marched from the Washington Monument to the Capitol under rainy skies, led by Bill Nye the Science Guy, some stopping to take photos of themselves in front of the Environmental Protection Agency.



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