FY 2016 BUDGET REQUEST AND FEDERAL AGENCY PRIORITIES

Sarah Spreitzer, Director of Federal Relations, University of Missouri System
Email: spreitzers@umsystem.edu

April 27, 2015
Current State of Play

- President Obama’s FY 2016 budget assumes the budget caps have been lifted and sequestration overturned.
- In March, House and Senate passed 10 year budgets which outlines sweeping policy goals. Budget plans also indicated support for overturning sequestration caps for Department of Defense.
- House and Senate have recently announced allocations for the annual appropriation bills. Slightly below FY 2015 funding levels.
- Congressional leadership hopes to move each appropriation bill individually. Process is likely to slow down the closer we get to the 2016 elections.
Interagency Priorities for FY 2016

Advanced Manufacturing
- RAMI legislation passes at end of 2014, establishes new program office in NIST
- NNMI proposed at USDA, DOE, DOD, and NIST

Big Data/ Precision Medicine
- Interagency priority, but focused at NIH
- New White House Chief Data Officer focused on the Big Data portion of precision medicine

Antibiotic Resistance
- Agencies involved: USDA, NIH, etc…

Clean Energy Agenda
- Renewable energy- sources and applications
- Climate research and earth observation (NOAA and NASA)

BRAIN Initiative
- Life sciences and neuroscience- continuing BRAIN initiative
- Advanced computing
Continuing Themes in Administration
Priorities

Public/ Private partnerships
- Large projects will continue to require a match from private partners.
- Administration wants to see sustainability after federal funding ends.

Industry driven
- Some topics will continue to be identified and led by industry (example: NNMI)

Broader impacts and partnerships with K-12 audiences and minority serving institutions
- Administration and Congress want to see a “bigger bang for the buck.”

These themes may continue into the next Administration…..
## FY 2016 Budget Request

<table>
<thead>
<tr>
<th>NSF Budget by Appropriation ($ in millions)</th>
<th>FY 2016 Request</th>
<th>Change over FY 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research &amp; Related Activities</td>
<td>$6,186.30</td>
<td>$252.66</td>
</tr>
<tr>
<td>Education &amp; Human Resources</td>
<td>962.57</td>
<td>96.57</td>
</tr>
<tr>
<td>Major Research Equipment &amp; Facilities Construction</td>
<td>200.31</td>
<td>-0.45</td>
</tr>
<tr>
<td>Agency Operations &amp; Award Management</td>
<td>354.84</td>
<td>29.84</td>
</tr>
<tr>
<td>National Science Board</td>
<td>4.37</td>
<td>*</td>
</tr>
<tr>
<td>Office of Inspector General</td>
<td>15.16</td>
<td>0.73</td>
</tr>
<tr>
<td><strong>Total NSF</strong></td>
<td><strong>$7,723.55</strong></td>
<td><strong>$379.34</strong></td>
</tr>
</tbody>
</table>

*Totals may not add due to rounding.

* Denotes <$500,000.

FY 2016 Cross-Foundation Investments

- **Understanding the Brain (UtB)** - NSF’s contribution to the Obama Administration’s Brain Research through Advancing Innovation and Neurotechnologies (BRAIN) initiative ($144 million)

- **Risk and Resilience** — Improve predictability and risk assessment and increase resilience to extreme natural events and man-made events in order to reduce their impact on the Nation’s quality of life, society, and economy ($58 million)

- **Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS)** — Understand, design, and model the interconnected food, energy, and water system through an interdisciplinary research effort that incorporates all areas of science and engineering and addresses the natural, social, and human-built factors involved ($75 million)

- **Inclusion across the Nation of Communities of Learners that have been Underrepresented for Diversity in Engineering and Science (NSF INCLUDES)** — Develop a national scalable initiative to increase the preparation, participation, advancement, and potential contributions of those who have been traditionally underserved and/or underrepresented in the STEM enterprise ($15 million)
Top priorities for NIST continue to include: advanced manufacturing, forensics, cybersecurity, communications, disaster resilience, and cyber physical systems for smart cities.

National Network of Manufacturing Innovation (NNMI) ($150 million)
- RAMI legislation allows NIST to establish an official Office of Advanced Manufacturing.
- FY 2016 would allow for competition of two new NIST Funding NNMI (with a pilot competition).

Advanced Manufacturing Technology Consortia (AMTECH)
- Enables industry-led consortia to identify and prioritize directed basic research projects supporting long-term industrial research needs.

Hollings Manufacturing Extension Partnership (MEP) ($141 million)
- Increased focus on expanding technology and supply chain capabilities to support technology adoption by smaller manufacturers to improve their competitiveness.
NNMI Across Agencies

- Original plan calls for 45 Institutes for Manufacturing Innovation (IMIs).
- August 2012: Pilot institute established at Youngstown, Ohio. Focuses on additive manufacturing.
- January 2014: Next Generation Power Electronics Manufacturing Innovation Institute led by North Carolina State University and based in Raleigh. Funded by DOE.
- February 2014: Digital Manufacturing and Design Innovation (DMDI) led by UI Labs and based in Chicago. Funded by DOD.
- February 2014: Lightweight and Modern Metals Manufacturing Innovation (LM3I) led by EWI and based in Detroit. Funded by DOD.
- January 2015: Manufacturing Innovation Institute for Advanced Composites led by University of Tennessee- Knoxville. Funded by DOE.
- Proposed 2015 NNMI:
  - Flexible Hybrid Electronics Manufacturing. Competition announced in February. Funded by DOD.
  - Revolutionary Fibers and Textiles. Competition announced in March. Funded by DOD.
NNMI in the FY 2016 Budget

- 2 new institutes at NIST, Topics TBD ($150 million)
- One additional institute at DOD. Topics being considered: engineered nano-materaials, electronics packaging and reliability, aerospace and space-grade composites, and modern fibers and textiles. ($17 million)
- 2 additional institutes at DOE. Topics being considered: advanced materials manufacturing, two dimensional roll-to-roll manufacturing, high efficiency modular chemical processes, and “other emerging topics in clean energy technologies.” ($140 million)
- 2 new institutes at USDA. Support for “multidisciplinary institutes” in advanced bio-manufacturing and in the development of nanocellulosics (nanomaterials derived from plant sources). ($80 million)
Department of Energy

• DOE continues to be a favored agency for the Obama Administration.
• The President’s budget request proposes significant funding increases for the Office of Energy Efficiency and Renewable Energy (EERE), the Office of Science, and Advanced Research Projects Agency-Energy (ARPA-E).
• Congress not likely to support large increases in FY 2016 appropriations process.
• The 5.4 percent increase for DOE Office of Science would support Energy Frontier Research Centers (EFRCs), provide continued support for the Hubs, and advanced computing (exascale).
• Would also cut Domestic Fusion Research by 15 percent.
DOE (continued…)

- Continuing areas of interest for DOE:
  - **Clean Energy Agenda**: DOE continues to play a major role in advancing “clean energy” in developing sources and applications.
  - **Manufacturing**: Increases for EERE directed to the Advanced Manufacturing program to create two additional Clean Energy Manufacturing Innovation Institutes and support four existing institutes.
  - **Vehicle Technologies**: The FY 2016 request includes a large increase for the Vehicle Technologies program to promote vehicle electrification and grid infrastructure, natural gas storage, and related activities.
  - **Infrastructure**: Recent Quadrennial Energy Review (QER) announcement focuses on the transmission, storage, and distribution infrastructure that links energy supplies to intermediate and end-users.
Department of Defense (DOD)

- In FY 2016, the President would reduce DOD basic research (6.1) accounts in order to increase applied research (6.2) and advanced technology development (6.3).
- If Congress is unlikely to end sequestration basic research will probably be at risk in order to fund operations and readiness accounts.
- Defense Advanced Research Projects Agency (DARPA) basic research is also flat, with increases proposed on the advanced technology side.
- Emphasis for DOD is on the advanced technology side and getting the research into the field.
In FY 2016 priorities for the DOD basic research will be aligned with the Long-range Research and Development Program Plan (LRRDPP), which is part of the Defense Innovation Initiative. Focused on:

- Air, Missile and Precision Guided Munition Defense
- Air Superiority
- Space
- Undersea
- Emerging Technologies

Initial LRRDPP will be submitted to the DOD Secretary in summer of 2015.

DOD identifies quantum information science, cognitive neuroscience, nanoscience, synthetic biology, autonomy, cybersecurity, robotics, and countering weapons of mass destruction as its top basic research priorities for FY 2016.

FY 2016 includes a new Aerospace Innovation Initiative (AII) which is “intended to reduce lead time and technological risk for the next generation tactical air capability by advancing key enabling technologies for future systems operation in denied and contested environments.” Defense Advanced Research Projects Agency (DARPA) will have a role in AII.
Department of Homeland Security (DHS)

- DHS is still a small external funder (compared to other federal agencies).

- The FY 2016 request would reorganize Research, Development, and Innovation (RD&I) towards the Apex Projects program, which seeks to “look strategically at the nation’s security and address future challenges while continuing to support today’s operation needs.” Very focused on social and behavioral sciences and big data.

- Areas of focus for DHS continues to include cybersecurity and privacy, bio-defense, flood resilience, border security, and explosives.

- Similar to last year’s budget proposal, the University Programs Office, which funds Centers of Excellence (COE), would decrease by 22 percent. DHS is interested in creating new COEs, unlikely to get funding or support from Congress.
NASA

- NASA would see a slight increase in FY 2016 funding (increase of 2.9 percent). Familiar contours to the FY 2016 request:
  - Earth Science, Space Technology, Commercial Crew program boosted
  - Cuts to Planetary Science, Astrophysics
  - Exploration Systems Development, Aeronautics funding reduced
- Administration continues to boost the **Space Technology** program (21.6 percent increase) to develop advanced technologies in areas such as **communications, sensors, materials, robotics, and propulsion**.
- Also in FY 2016, NASA plans to start an **In-Space Manufacturing and Resource Utilization Institute** within the **Exploration Mission Directorate** to, “nurture capabilities and technologies that enable in-space systems development and allow space explorers to replenish resources... Key ideas [to be] explored under the Institute include in-situ resource utilization, automated in-space manufacturing and assembly, closed loop biological systems, and digital designs for materials, structures, and systems.”
Department of Transportation (DOT)

- Congress and the Administration are working on a reauthorization of the Highway Bill. This is dependent on how it will be paid for (unlikely to support a large increase to the gas tax).

- DOT Research and Innovative Technology Administration (RITA) is still operating from the September 2013 “Research, Development, and Technology Strategic Plan for Fiscal Year 2013-2018.” Establishes five key areas:
  - Safety
  - State of Good Repair
  - Economic Competitiveness
  - Livable Communities
  - Environmental Sustainability

- These five areas of interest remain the same in the Administration’s proposed surface transportation re-authorization proposal “Grow America.”

- In the FY 2016 budget request NHTSA continues to support research to progress vehicle to vehicle (V2V) technology that would enable vehicles to “talk” with each other and share data and develop safety systems to warn drivers of danger so that they can take action to avoid it.