



BOARD OF REGENTS

SUMMARY OF ITEM FOR ACTION,
INFORMATION OR DISCUSSION

TOPIC: The New Administration and Potential Impacts on Science and Science Policy

COMMITTEE: Committee of the Whole

DATE OF MEETING: February 17, 2017

SUMMARY: President Boesch will lead a discussion on potential impacts of actions by the new administration on science and science policy that may affect higher education in Maryland.

ALTERNATIVE(S): This is an information item.

FISCAL IMPACT: No fiscal impact.

CHANCELLOR'S RECOMMENDATION: Information item

COMMITTEE ACTION:

DATE: February 17, 2017

BOARD ACTION:

DATE:

SUBMITTED BY: Janice Doyle, jdoyle@usmd.edu, 301-445-1906

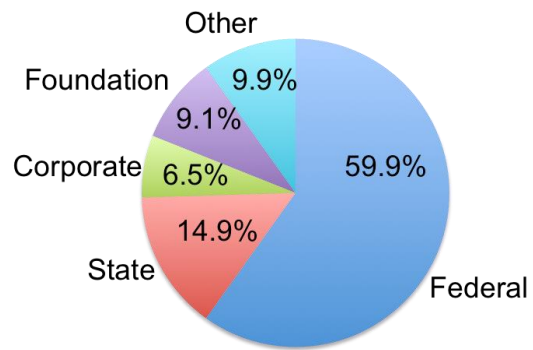
The New Federal Administration, Science Policy, and the Potential Impacts on USM Research

February 14, 2017

The new Administration and the new Congress have signaled potential changes in the scale and focus of research conducted or supported by Federal agencies. These potential changes would mean significant consequences to research within University System of Maryland institutions and Maryland's broader R&D enterprise. This brief assessment provides an overview of federally supported research within the USM; reviews campaign statements, transition recommendations, early executive actions and Congressional committee indications; and identifies potential vulnerabilities and opportunities for the USM research enterprise and Maryland's R&D economy.

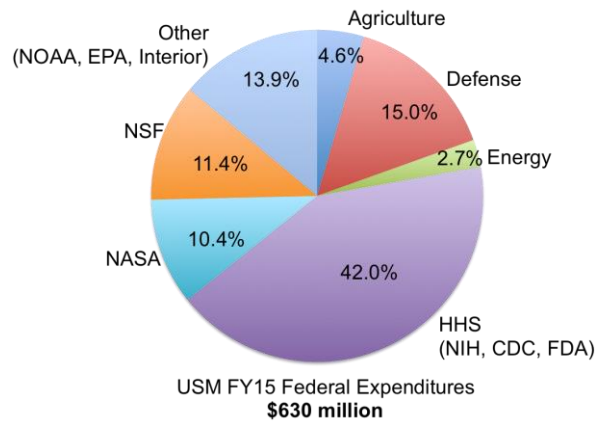
Federal Support Drives USM Research

Federal sources dominate the USM's extramural funding for research, education and public service activities. External funding, as reflected by new grant and contract awards, averaged about \$1.28 billion per year over FYs 2015 and 2016, roughly equal to the System's General Fund appropriation. Most of this funding is for advanced research. Federal sources contributed roughly 60% of these funds or \$768 million, but this is probably an understatement as a significant portion of the funds provided by State agencies comes from Federal sources.



USM Extramural Funding Awards (FY15-16 average)
\$1.28 billion per year

Funding for research and development at USM institutions comes from multiple federal agencies, as the expenditures reported by USM institutions for FY 2015 demonstrate. The Department of Health and Human Services (DHHS) is the largest research sponsor, with most of its funding provided by grants from the National Institutes of Health, but the Department of Defense (DOD), the National Science Foundation (NSF), the National Aeronautics and Space



USM FY15 Federal Expenditures
\$630 million

Administration (NASA), the National Oceanic and Atmospheric Administration (NOAA) and the Department of Agriculture (USDA) also provide significant support.

Primary Federal research sponsors differ, of course, among the USM institutions, with funding at UMB coming overwhelmingly from DHHS, while DOD, NSF and NASA are as important as DHHS or more so at UMCP.¹ Both UMCP and UMBC are very dependent on NASA funding (\$65 million combined in FY 2015 expenditures), much of it based on long-standing, close relationships with the Goddard Space Flight Center in Greenbelt. Most Federal funding for UMCP research comes from NSF, the Environmental Protection Agency (EPA) and NOAA, while UMBC depends on USDA, NOAA and NSF support.

Federal expenditures also directly support the majority of STEM graduate students and postdoctoral fellows training in Maryland's universities. Federal grants and contracts help advance the careers of junior faculty members and are critical to their promotion in research universities. The competition for these funds is already intense, and without an increase in NSF and NIH appropriations, in particular, the ability for young faculty to secure external support to build their laboratories and their research careers may be in jeopardy.

Broader Effects on Maryland's R&D Economy

In addition to the effects within the USM, Federal investments in R&D and other research have a great impact on the broader R&D enterprise in Maryland and thus the state's economy. The Federal research obligations to the Johns Hopkins University (including its Applied Physics Laboratory) are greater than any university in the nation; indeed they exceed those to the USM as a whole by more than a factor of two. Furthermore, Maryland has numerous Federal research institutes and laboratories, including NIH institutes, NASA Goddard Space Flight Center, NOAA Centers for Environmental Prediction and other programs based at NOAA's Silver Spring headquarters, National Institute of Standards and Technology, Food and Drug Administration research centers, national agricultural and wildlife research centers along the I-95 corridor, Army and Naval research laboratories, and national security agencies. In aggregate, Federal expenditures for R&D in Maryland exceed \$10 billion per year.

These federal expenditures provide jobs for untold numbers of Maryland citizens who are employed by Federal laboratories, universities, and private contractors. In turn, these citizens generate substantial tax revenues to State and local governments. Most of these are high paying jobs filled by highly educated citizens who value education and enrich our society and its quality of life.

¹ Currently, UMCP holds \$281 million in active awards from NSF, \$246 million from NASA, \$155 million from NIH, \$63 million from NOAA, and \$5 million from EPA.

Effects of Policies and Budgets on the Maryland's R&D Enterprise

While it is still very early in the new Administration and the 115th Congress, there is considerable concern within the national scientific community about disruptions to and restrictions of the U.S. research enterprise. This concern is such that a March for Science is being organized for April in support of the integrity of the research enterprise at universities and research institutions as well as evidence-based decision making on such matters as climate change and vaccine risks.

The Budget. The President has not yet submitted a budget for FY 2018 to Congress.² The nominee for the Director of the Office of Management and Budget, Representative Mick Mulvaney, has not yet been confirmed. However, most observers believe that once a Budget Secretary is confirmed and the FY 2018 budget is proposed, it could feature a rebalanced set of priorities, with increased spending on the President's priorities (e.g. infrastructure, defense, and border security) and reductions in other discretionary spending.

Furthermore, the government is presently operating under a Continuing Resolution until April 28, 2017. The CR holds appropriations to FY 2016 levels, but caps the percent of those funds that can be spent. Consequently, USM institutions are already experiencing the effects of restrained Federal research awards as agencies hold back on commitments. Congress will soon consider a budget reconciliation requiring a simple Senate majority that could result in late-year cuts to FY 2017 Federal research expenditures. Budget reconciliation, in combination with the sequestration triggers, is likely to squeeze domestic discretionary spending, including Federal R&D investments.

Basic Research. There are numerous concerns surrounding federal support for basic research. One is the level at which the Administration will continue to support the National Endowment for the Arts and National Endowment for the Humanities. While these do not provide large-dollar support for USM research, they are important for continuation of faculty research in the arts and humanities that is necessary for career advancement of faculty members in those fields. Another concern is the requirement—included in language that passed the House last year—that every research grant by the National Science Foundation be justified as “in the national interest.” This contradicts the notion that basic research should be funded on its potential for advancing scientific understanding as determined by peer review. Third, there has been an effort in recent years by some in Congress to cut substantially, if not eliminate, the funding of social science research within the NSF.

Health. Generally, health-related research has enjoyed bipartisan support. However, beyond the general fiscal pressure on domestic discretionary spending, there are concerns that certain areas of research will experience a reduction in

² Presidential budget requests are due to Congress in the first week of February, but in previous transition years these have been delayed by two to three months.

support, such as in topics related to reproduction and fetal tissue and stem-cell research. In addition, as the Administration signals a reduced interest in addressing health issues outside of the U.S., less funding of Centers of Disease Control and Prevention programs, such as that focused on the Zika virus, are possible. A particular concern of the University of Maryland School of Medicine is the continued erosion of NIH training grants that support pre- and post-doctoral fellows, another dimension of Maryland's health-care workforce challenge.

Defense. It appears that the new Congress and the new Administration support increased expenditures for national defense, but it is unclear how this will extend to R&D specifically. Budget sequestration has already affected not only R&D spending, but also civilian employment and contractors in the defense sector in a way that has slowed the growth of Maryland's tax revenues. On the positive side, initial indications are that expenditures related to homeland security, particularly cybersecurity, will likely increase.

Environment and Energy. Research on environmental and energy issues may be the most challenged under the new Administration and Congress. Research in these areas is particularly important to Maryland, ranging from its science-based commitment to restore the Chesapeake Bay to the importance of NASA and NOAA research in the state. Some transition advisors have recommended that NASA focus on outer space and leave the investigation of earth to other parts of the government. The Goddard Space Flight Center's primary mission is earth science and most of the extensive research conducted for NASA at UMCP and UMBC are in this arena. The Department of Commerce has been suggested for severe cuts and NOAA comprises 28% of the Commerce budget. NOAA climate change and fisheries research are areas of particular concern. The Environmental Protection Agency is also challenged and research grants in process were held up for a while for review for consistency with Administration priorities.

Agriculture. Expectations are that the Administration and Congress are likely to sustain funding for the Department of Agriculture, but it is not clear how much this will translate to support of agricultural research, including funding for Land Grant programs at UMCP and UMES and for the Beltsville Agricultural Research Center. In particular, research that deals with more effectively managing the environmental impacts of agriculture—particularly important for Maryland and the Chesapeake Bay—might not be a priority.

Immigration. The R&D enterprise within the USM will also be affected by changes in immigration and travel policy. Many faculty members, graduate students and postdocs in STEM fields come from abroad and many students and postdocs remain in the U.S. contributing importantly to the STEM workforce. Some fields of engineering draw students disproportionately from nations like Iran that have been singled out for restrictions.

Responding to Risks and Opportunities

1. Working as a team, the appropriate research officers of USM institutions should closely monitor developments in appointments, programs, processes and budgets within Federal agencies that support research. Where appropriate, issues should be elevated to the Academic Affairs Advisory Committee, the Council of University System Presidents, or the Board of Regents.
2. Beyond assessing risks, this USM team should look for opportunities that might be presented as a result of disruptions in Federal R&D programs. These might include streamlining grant and contract processes and accountability requirements and providing “outsourced” research personnel and services should there be strong pressure to downsize the Federal workforce.
3. The USM should collaborate with higher education associations (Association of Public and Land-grant Universities, Association of American Universities and others) and professional societies (American Association for the Advancement of Science and disciplinary organizations) to advocate for a robust Federal R&D enterprise and the integrity of science as in the nation’s best interest.
4. The USM should engage its Congressional delegation in strong support of Federal R&D investments and, in particular, programs of great importance to Maryland. For many years Senator Barbara Mikulski served a strong and effective advocate for American science as chair or ranking member of the Senate Committee on Appropriations and its Subcommittee on Commerce, Justice and Science that is responsible for appropriations for NSF, NOAA, and NIST. Newly elected Senator Chris Van Hollen now serves on that subcommittee as well as on the Committee on the Budget. In addition, Representatives Andy Harris and Dutch Ruppersberger, serve on the House Committee on Appropriations.
5. The USM should elevate attention on sustaining critically important federally supported research within Maryland with the Governor, General Assembly, and business community. This should be an “all hands on deck” exercise.

Prepared by UMCES President Donald Boesch with input from UMB Senior Vice President Bruce Jarrell, UMBC Vice President for Research Karl Steiner and UMCP Interim Vice-President for Research Amitabh Varshney.