

American Mathematical Society
Committee on Science Policy Meeting
April 7-9, 2005
Washington, DC

Summary Report

This year's Committee on Science Policy meeting followed the same format as last year. Organized as a Forum, the meeting was designed to allow for free flowing discussion on issues of policy and funding for the mathematical sciences, as well as discussion of overall federal funding for science. The Forum provided an opportunity for participants to interact with Capitol Hill and federal agency staff.

The meeting was held immediately preceding the AMS Council meeting so Council members were invited to attend the Forum. In addition, as in past years, chairs of mathematics departments were also invited to participate in the Forum. The meeting was well attended with over eighty participants and consisted of presentations from Administration and Congressional officials and federal agency representatives in addition to some open discussion on Saturday morning.

Highlights from presentations given by Administration, Congressional and federal agency officials:

Kei Koizumi – Director, R&D Budget and Policy Program
American Association for the Advancement of Science (AAAS)

Kei Koizumi began his presentation on the FY2006 federal budget request by examining the current deficit situation. He reported that the FY2005 budget deficit could be a record \$427 billion. Policy makers want to reduce this deficit by half over the next five years. This means that any increases in federal R&D investments will stall in the near term as discretionary spending, from which these investments are made, will bear the brunt of any deficit reduction.

Koizumi went on to present statistical data related to the FY2006 R&D budget request, including total outlays, trends in discretionary spending, total R&D by agency, and trends in defense and non-defense R&D spending. He explained that the FY2006 budget request represents a downward shift from recent trends in overall R&D spending, with funds declining for most R&D programs, stagnant defense R&D spending and only moderate increases in R&D for space exploration and homeland security.

Arden Bement, Director
National Science Foundation

Dr. Arden Bement discussed the FY2006 NSF budget request of \$5.605 billion, which represents a 2.4% increase over FY2005. This request includes a sustained level of \$200 million for the Division of Mathematical Sciences. It also includes funds for interdisciplinary programs that involve mathematics through other directorates.

Dr. Bement went on to talk about the importance of mathematics to scientific knowledge and how strengthening support for mathematics through programs like the Vertical Integration of Research and Education (VIGRE) program has helped enhance workforce preparation. Since VIGRE's inception in 1999, the number of U.S. graduate students receiving research support has more than doubled.

Raymond Orbach, Director, Office of Science
U.S. Department of Energy

Ray Orbach started his presentation by giving some background on the Office of Science at DOE. He pointed out that at 42%, the Office of Science is the single largest federal supporter of basic research in the physical sciences in the U.S. It maintains a diverse research portfolio, managing programs in basic energy sciences, biological and environmental sciences and computational science. It also supports

materials and chemical sciences and U.S. research in climate change, geophysics, genomics, life sciences and science education.

Orbach discussed current funding for the Office of Science noting that the FY2006 budget request of \$3.462 billion is 3.8% below the FY2005 appropriation – only 0.9% above the FY2005 request. Although it will be a difficult budget year, the Office of Science will make major investments in the areas of fusion, leadership class computing, spallation neutron source, nanotechnology, x-ray free electron lasers, high energy physics, nuclear physics, climate change and genomics.

***William Bonvillian, Legislative Director
Office of Senator Joseph Lieberman***

Bill Bonvillian explained that funding for research and development remains relatively flat as a result of unprecedented budget deficits that the nation is experiencing. He suggested that current deficits will preclude the federal government from making investments in research and development in the future. In fact, he cited studies that show that there will be no other revenues available for any other part of government beyond entitlement programs and defense and homeland security spending by as early as 2013 if the current tax structure is not altered.

Bonvillian stressed that the future of federal R&D investments is in real trouble. He encouraged the broader science community to take a lesson from the life sciences and integrate business and industry into its advocacy efforts, in addition to mustering a groundswell of support through grassroots initiatives. He also suggested developing collaborative relationships with the White House, including the Office of Management and Budget and the Office of Science and Technology Policy.

***James Turner, Chief Counsel, Minority
House Science Committee***

Jim Turner began his presentation by noting that in a second term of any Administration, legislation may be harder to pass because the White House and the Congress often have different agendas – the President wants to leave a legacy and the Congress has their own interests in mind. Currently, our nation has a very large budget deficit. It also has some large long-term solvency problems that must be addressed (i.e. Social Security and Medicare). All of these things put real pressure on the budget process. With so many different interests battling for the same limited amount of discretionary spending dollars, the competition is fierce.

Turner encouraged mathematicians to use their large institutional employers to give them the clout they need to make their voices heard. Universities are often the largest employer in a given Congressional district – this is an advantage that should be utilized when lobbying for those scarce R&D investment dollars. Additionally, Turner encouraged mathematicians to form partnerships and to highlight the mathematics contributing to the success of other projects in their arguments for increased R&D funding.

***David Attis, Deputy Director, National Innovation Initiative
Council on Competitiveness***

David Attis gave attendees some background information on the Council on Competitiveness. It's mission is to set a public policy action agenda to drive U.S. productivity growth, higher living standards and success in global markets. He noted that there have been numerous articles published in recent years that describe the decline of U.S. competitiveness in the world market. Of course, the U.S. still dominates in many fields, but the case can be made that things will change in the future.

Innovation has historically been a U.S. advantage and it will be the single most important factor in determining its success through the 21st century. However, the nature of global competition is changing. Corporate strategies are becoming more global in nature, new markets are opening, and the world is becoming more competitive and more collaborative. These changes bring new challenges to the U.S.

The National Innovation Initiative has brought together over 600 leaders from industry, academia, labor and government to identify a policy agenda that will address these challenges. Their recommendations have been published in a report entitled *Innovate America*, and are based on three platforms: talent, investment and infrastructure. The Council on Competitiveness has begun work on implementing this agenda by meeting with federal policy makers on proposed legislation, by building constituencies, by collaborating on a regional and global level through innovation summits, and by researching innovation metrics.

***Penrose Albright, Assistant Secretary and Principal Deputy, Office of Science and Technology
U.S. Department of Homeland Security***

Dr. Albright began his presentation by discussing the Department of Homeland Security's (DHS) vision, mission and goals. He then turned to the Science and Technology Directorate and outlined its organizational structure, mission and objectives. There are four divisions within the S&T Directorate. Dr. Albright heads the Programs, Plans & Budget (PPB) division, which provides strategic and technical vision for the Directorate. He also discussed the work of the other three divisions: the Office of Research and Development; the Advanced Research Projects Agency; and the Systems Engineering and Development division.

The Office of Science and Technology's budget request for FY 2006 is \$1.368 billion and its activities are grouped into three portfolios: Countermeasure Portfolios – which includes biological, chemical, explosives and radiological and nuclear countermeasures; Support to DHS Component Portfolios – which includes critical infrastructure protection, cyber security, the U.S. Coast Guard and U.S. Secret Service; and Cross Cutting Portfolios – which includes rapid prototyping, standards, and university and fellowship programs.

Dr. Albright presented more detail on a few of these portfolios discussing their missions, strategic objectives and Homeland Security impact. He also provided a summary of budget estimates for the DHS Office of Science and Technology for FY 2004 – FY 2006.

***David Trinkle, Staff Specialist
Office of Management and Budget***

David Trinkle noted that the budget priorities reflected in the FY 2006 budget request are not very different from last year's, which focused on the war on terrorism and economic recovery. Spending in these areas will prohibit real growth in other areas of the budget, including funding for basic research. In fact, research and development funding as a whole in the FY 2006 budget request is up only slightly over FY 2005.

Trinkle spoke in broad terms about support on Capitol Hill for basic research and noted that it is generally recognized as an investment in the future. However, since funding for basic research must be balanced with other funding priorities, the argument for increasing its share must be articulated more effectively. Trinkle also spoke briefly about the federal budget process timeline and noted that the federal agencies are already working on the FY 2007 budget request.

***Deborah Lockhart, Executive Officer, Division of Mathematical Sciences
National Science Foundation***

Deborah Lockhart began with a brief outline of the structure of the National Science Foundation (NSF), the Mathematical and Physical Sciences (MPS) Directorate and the Division of Mathematical Sciences (DMS), which has a number of program areas. She also gave an update on the budget of the DMS with a look at FY 2004 – FY 2006. She noted that the FY 2006 request of \$200.38 million reflects no change from FY 2005.

The budget priorities for FY2006 include what DMS calls "core" programs, broadening participation, and cyber infrastructure. There are four budget areas: connections (investments in institutes, workshops, etc);

workforce (targeted programs like VIGRE, Research Training Groups, etc.); interdisciplinary interactions (focused competitions); and the “core” (individual investigator grants, plus small group projects).

Lockhart briefly described some of the training activities in DMS, including Enhancing the Mathematical Sciences Workforce in the 21st Century (EMSW21), Research Training Groups (RTG), Mentoring Through Critical Path Transition Points in the Mathematical Sciences (MCTP), and Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences (UBM). She also reported on the number of awards for 2004 in each of these areas.

The DMS solicited input from the mathematics community and found broad support for the idea of building networks among mathematicians on a long-term and large-scale basis. As a result of this input, the DMS has created new “special” meetings which will reach out to a broader range of mathematicians and help them to develop the connections they need to participate more fully in the community. These meetings will have an award size in the range of \$50-150K per year with duration of up to three years.

CSP Activities at Joint Mathematics Meetings, San Antonio 2006

After some discussion on suggested topics for CSP activities at the Joint Meetings in San Antonio in January 2006, the committee decided it would host a panel on visas. The panel will include representatives from departments of mathematics with experience on the issues surrounding visas in today’s national security climate.

In addition, much discussion centered on who the AMS-MAA government speaker should be for the 2006 Joint Meetings. Senator Kay Bailey Hutchinson (R-TX) was suggested as an appropriate person to invite since she is a member of the Senate Appropriations Committee Subcommittee on Commerce, Justice and Science ... and a Texan.

Report from the Washington Office

Sam Rankin gave a brief report on the activities of the Washington Office. He reported on AMS participation in several coalitions and collaborative efforts, including the Task Force for Innovation, which supports the idea of innovation as the basic component of America’s future success in the world marketplace. The AMS is also involved in the Bridging the Sciences Coalition, which employs a lobbyist to push for funding of interdisciplinary work at the National Institutes of Health (NIH).

Rankin, along with others in the science community, has been meeting with Congressional representatives to discuss the need for increased funding for the NSF in the FY 2006 budget. The budget committees in the House and Senate develop a budget resolution each year and the science community has been able to have language on the NSF inserted into the FY 2006 Senate Budget Resolution.

The AMS will again participate in Congressional Visits Day this year in mid-May where 200-300 scientists from academia and industry to go to Capitol Hill and talk about science, including mathematics. Sam is also chair of a group called the Coalition for National Science Funding, which is an advocacy group for NSF funding. The coalition hosts an annual exhibition on Capitol Hill to highlight NSF-funded projects. Last year’s exhibition drew over 300 attendees, including Members of Congress, the Science Advisor to the President, and the Director of NSF. The AMS is one of the 30-35 exhibitors each year.

The Washington Office is currently working with others in the science community on a Dear Colleague letter penned by Rep. Vernon Ehlers (R-MI) and Rep. Rush Holt (D-NJ), which asks for support for a funding level of \$6.1 billion for the NSF in FY 2006. The idea is to garner as much support as possible via signatures of House Members on a letter that will be sent to the chair and minority of the appropriations subcommittee with jurisdiction over the NSF.

The AMS, in conjunction with the AAAS, will sponsor a Congressional Fellow from September 2005 through August 2006. The AMS Fellow will spend the year working on the staff of a Member of Congress or a congressional committee, working as a special legislative assistant in legislative and policy areas requiring scientific and technical input. The selection process is ongoing and a decision will be made by May 1.

Open Discussion

The open discussion centered on the concern that not enough mathematicians receive federal research support and that this is having an effect on morale. Since over 70% of federally funded academic research support for mathematics comes from the NSF, it was decided that a letter would be sent to the Division of Mathematical Science recommending that it redirect some NSF funds in order to increase the number of individual investigator grants, focus research grants and their equivalent.

Date of Next Meeting

The next meeting of the AMS Committee on Science Policy was scheduled for Tuesday-Thursday, April 25-27, 2006 in Washington, DC. These dates represent a change in the usual timing of the meeting and its format so that it may include meetings on Capitol Hill during the week when Congress is in town.