Testimony of Anthony F. (Bud) Rock  
President and Chief Executive Officer, Association of Science-Technology Centers  
submitted to the House Appropriations Subcommittee  
on Commerce, Justice, Science, and Related Agencies  
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Seeking Support for the Following Agencies and Programs in FY 2015:  
National Aeronautics and Space Administration – CP4SMP+  
National Oceanic and Atmospheric Administration – B-WET and ELG  
National Science Foundation – AISL

Introduction
Chairman Wolf, Ranking Member Fattah, and Members of the Subcommittee, thank you for the opportunity to submit written testimony for the record. My name is Anthony (Bud) Rock, and I serve as the President and Chief Executive Officer of the Association of Science-Technology Centers (ASTC). My testimony today addresses the importance of science, technology, engineering, and mathematics (STEM) education, and will focus specifically on the fiscal year (FY) 2015 budgets for four specific programs at three Federal agencies over which your Subcommittee has jurisdiction, including: (1) the Competitive Program for Science Museums, Planetariums, and NASA Visitor Centers Plus Other Opportunities (CP4SMP+) at the National Aeronautics and Space Administration (NASA), which would not be funded under the President’s FY 2015 Request; the Bay-Watershed Education and Training (B-WET) Regional Programs and Environmental Literacy Grants (ELG) Program at the National Oceanic and Atmospheric Administration (NOAA), which would not be funded under the President’s FY 2015 Request; and the Advancing Informal STEM Learning (AISL) program at the National Science Foundation (NSF), which would receive $55 million under the President’s FY 2015 Request.

Our Request
On behalf of ASTC and the nearly 400 science centers and museums the Association represents here in the United States, I urge the Subcommittee to continue its strong support for critical STEM education programs within NASA, NOAA, and NSF as the Commerce, Justice, Science, and Related Agencies Appropriations Bill for FY 2015 moves forward. Specifically, I ask that you:

- Provide $10 million for the Competitive Program for Science Museums, Planetariums, and NASA Visitor Centers Plus Other Opportunities at the National Aeronautics and Space Administration.
- Provide $12 million for the Bay-Watershed Education and Training Regional Programs and $8 million for the Environmental Literacy Grants Program at the National Oceanic and Atmospheric Administration.
- Provide $63 million for the Advancing Informal STEM Learning program at the National Science Foundation.
- Continue to closely examine any proposals that would seek to consolidate and/or reorganize Federal STEM education programs in an effort to ensure that stakeholder input has been sought and that proven, successful programs are maintained.
Before going into more detail about ASTC and the science center and museum field, I want to first offer a brief snapshot of these Federal programs and why they are so essential.

**National Aeronautics and Space Administration**

**NASA’s Competitive Program for Science Museums, Planetariums, and NASA Visitor Centers Plus Other Opportunities** (which is offered through the agency’s STEM Education and Accountability Program) provides resources for education or research engagement projects, exhibits, and/or partnerships with K-12 schools to support inquiry- or experiential-based activities led by informal education institutions—like science centers and museums—that feature NASA missions, science, engineering, explorations, or technologies. In December 2013, NASA announced that it would be awarding grants to six museums and four NASA visitor centers in ten states in an effort to further its laudable goal of attracting more students to STEM careers. Awardees will create interactive exhibits, virtual worlds, professional development activities, and community-based programs to engage students, teachers and the public in STEM. In but one example, the U.S. Space & Rocket Center in Huntsville, Alabama (which serves as the official visitor information center for NASA’s Marshall Space Flight Center), will create a new permanent exhibit and develop and deliver a professional development program for educators, both featuring the International Space Station and the future of space exploration. The professional development program will include a special emphasis on recruiting formal educators serving in Title I schools in an effort to ensure that 40% of the total attendees are from this demographic.

Though Congress provided $9.3 million in FY 2013 (the FY 2014 funding level has not yet been released), the President did not include funding for the program in his FY 2015 Budget Request. I encourage the Subcommittee to continue its strong support for the CP4SMP+ by providing $10 million in FY 2015 funding.

**National Oceanic and Atmospheric Administration**

**NOAA’s Bay-Watershed Education and Training Regional Programs** are environmental education programs that promote locally relevant, experiential learning in the K-12 environment. The program aims to promote environmental literacy in society, supporting individuals to understand, protect, and restore watersheds and related ocean, coastal, and Great Lakes ecosystems; in 2012 alone, B-WET reached over 60,000 students and 5,000 teachers, and it currently serves seven areas of the country: California, the Chesapeake Bay, the Great Lakes, the Gulf of Mexico, Hawai‘i, New England, and the Pacific Northwest.

NOAA’s Office of Education advances public environmental literacy and STEM learning through the **Environmental Literacy Grants Program**, a competitive offering that supports formal and informal education projects that are implemented on regional to national scales. The ELG Program’s primary mission is to increase the understanding and use of environmental information to promote stewardship and increase informed decision making by U.S. educators, students, and the public, which directly contributes to NOAA’s mission. To date, more than 80 competitive awards have been made, supporting a wide range of projects including teacher training, experiential learning for youth and families, and the development of media products and public opinion research; the ELG Program advances STEM education at a national level by
providing more than 54 million people annually with access to compelling, up-to-date information on the ocean, coasts, Great Lakes, weather, and climate.

Unfortunately, the President’s FY 2015 Budget Request once again proposes the termination of both the B-WET and the ELG programs, which received $7.2 million and $3.6 million for FY 2014, respectfully. For FY 2015, I urge you to remain supportive of the programs by providing $12 million in funding for B-WET and $8 million in funding for the ELG Program.

National Science Foundation
The Advancing Informal STEM Learning program, offered by the Directorate for Education and Human Resources and the Division of Research on Learning in Formal and Informal Settings, seeks to advance new approaches to and evidence-based understanding of the design and development of STEM learning in informal environments; provide multiple pathways for broadening access to and engagement in STEM learning experiences; advance innovative research on and assessment of STEM learning in informal environments; and develop understandings of deeper learning by participants. In 2012, Philadelphia’s Franklin Institute was awarded a grant that builds on a previous pilot study that focused on the Philadelphia area and found that children and families learned and assimilated STEM concepts better when there was an integrated system that combined children's literature and hands-on/inquiry-based STEM experiments. The new phase will explore this further and adds 10 more sites across the country.

The President’s FY 2015 Budget Request includes $55 million—the FY 2014 appropriated level—for AISL. I encourage the Subcommittee to provide $63 million for the program, which would restore it to its FY 2012 level.

STEM Education Consolidation and Reorganization
With regard to the Federal STEM education consolidation plan released by the Administration last year, I recognize the importance of creating efficiencies within the Federal government whenever possible. Nevertheless, I had serious concerns about a proposal that would altogether eliminate programs that support informal STEM education. Integral Federal investments, including the NASA and NOAA offerings I’ve touched upon, were slated for elimination, with their associated resources directed to the Department of Education, NSF, and the Smithsonian Institution. Again, I sincerely appreciate the Subcommittee’s thoughtful consideration of the harmful effect the proposed terminations would have had and all you did to save these programs.

For FY 2015, the Administration is offering what they call a “fresh reorganization” of Federal STEM education programs, which I urge the Subcommittee to closely examine. While I am pleased that some priority programs (including the Science Education Partnership Award program at the National Institutes of Health) are no longer slated for termination, I am troubled that the aforementioned STEM education programs at NASA and NOAA are once again zeroed-out in the FY 2015 Budget Request.

About ASTC and Science Centers
The Association of Science-Technology Centers is a global organization providing collective voice, professional support, and programming opportunities for science centers, museums, and related institutions, whose innovative approaches to science learning inspire people of all ages about the wonders and the meaning of science in their lives. Science centers are sites for
informal learning, and are places to discover, explore, and test ideas about science, technology, engineering, mathematics, health, and the environment. They feature interactive exhibits, hands-on science experiences for children, professional development opportunities for teachers, and educational programs for adults. In science centers, visitors become adventurous explorers who together discover answers to the myriad questions of how the world works—and why. As Members of this Subcommittee know, it is imperative that we spark an interest in STEM fields at an early age—a key role for community-based science centers and museums, who often undertake this effort with the aforementioned modest—but important—support from NASA, NOAA, and NSF, in addition to other Federal agencies.

ASTC works with science centers and museums to address critical societal issues, locally and globally, where understanding of and engagement with science are essential. As liaisons between the science community and the public, science centers are ideally positioned to heighten awareness of critical issues like agriculture, energy, the environment, infectious diseases, and space; increase understanding of—and exposure to—important and exciting new technologies; and promote meaningful exchange and debate between scientists and local communities.

ASTC now counts 651 members, including 490 operating or developing science centers and museums in 45 countries. Collectively, our institutions garner 93 million visits worldwide each year. Here in the United States alone, our guests—and your constituents—pass through science center doors more than 66 million times to participate in intriguing educational science activities and explorations of scientific phenomena. The National Science Board’s recently released Science and Engineering Indicators 2014 generally supports this data, reporting that 58% of Americans said they had visited a zoo, aquarium, natural history museum, or science and technology museum in the 12 months prior to the 2012 survey. Indicators also found that:

U.S. residents may also come in contact with science and technology (S&T) through America’s rich and diverse informal science and cultural institutions. Many of these institutions actively try to broaden and deepen Americans’ intellectual and emotional engagement with science (Bell, Lewenstein, Shouse, and Feder 2009). By offering visitors the flexibility to pursue individual curiosity, such institutions provide exposure to S&T that is well-suited to helping people develop their interests and improve their knowledge, and such institutions can sometimes even change patrons’ attitudes.

Science centers come in all shapes and sizes, from larger institutions in big metropolitan areas to smaller centers in somewhat less populated ones. ASTC represents institutions as diverse as the Academy of Natural Sciences of Drexel University and the Franklin Institute in Philadelphia, Pennsylvania; the Mary G. Harden Center for Cultural Arts in Gadsden, Alabama; the Mayborn Science Theatre in Killeen, Texas; the Shenandoah Discovery Museum in Winchester, Virginia; and the Terry Lee Wells Nevada Discovery Museum in Reno, Nevada.

Science Centers as an Integral Part of the Nation’s Educational Infrastructure
Science centers are physical—and virtual—places where science and citizens meet. Many have scientists on staff, and some feature research facilities on-site. Through exhibits and programming—like lectures and science cafés—science centers bring current research findings
to the public while encouraging discussion and debate of current science issues. More and more, science centers are also getting members of the public involved in research projects themselves.

Our centers reach a wide audience, a significant portion of which are school groups. Here in the U.S., 94% of our members offer school field trips, and we estimate that more than 13 million children attend science centers and museums as part of those groups each year. Field trips, however, are truly just the beginning of what science centers and museums contribute to our country’s educational infrastructure, as: 92% offer classes and demonstrations; 90% offer school outreach programs; 76% offer workshops or institutes for teachers; 74% offer programs for home-schoolers; 67% offer programs that target adult audiences; 65% offer curriculum materials; 50% offer after-school programs; 34% offer youth employment programs; and 22% offer citizen science projects.

As Subcommittee Members know, there is a strong consensus that improving STEM education is critical to the nation’s economic strength and global competitiveness in the 21st century. In order to improve STEM education, of course, we must be willing to draw on a full range of learning opportunities and experiences, including those that occur outside of the classroom. In its report entitled *Learning Science in Informal Environments: People, Places, and Pursuits* (2009), the National Research Council (NRC) of the National Academies said “beyond the schoolhouse door, opportunities for science learning abound...” The NRC found, among other things, that there is ample evidence to suggest that science learning takes place throughout the lifespan and across venues in non-school settings. Furthermore, the report highlighted the role of after-school STEM education in promoting diversity and broadening participation, finding that non-school environments can have a significant impact on STEM learning outcomes in historically underrepresented groups, and that these environments may be uniquely positioned to make STEM education accessible to all.

**Conclusion**

With this in mind, and while I am fully aware of the significant budget challenges that face this Subcommittee, Congress, and the nation, I hope you will continue to recognize the important educational offerings science centers and museums make available to students, families, and teachers, along with the essential Federal support they receive from NASA, NOAA, and NSF.

Again, I respectfully request that you provide $10 million for the Competitive Program for Science Museums, Planetariums, and NASA Visitor Centers Plus Other Opportunities at the National Aeronautics and Space Administration; $12 million for the Bay-Watershed Education and Training Regional Programs and $8 million for the Environmental Literacy Grants Program at the National Oceanic and Atmospheric Administration; and $63 million for the Advancing Informal STEM Learning program at the National Science Foundation. In addition, please continue to closely examine any proposals that would seek to consolidate and/or reorganize Federal STEM education programs in an effort to ensure that stakeholder input has been sought and that proven, successful programs are maintained.

Thank you once again for your strong support for America’s science centers and museums—and for the opportunity to present these views. My staff and I would be happy to respond to any questions or provide additional information as needed by the Subcommittee.