Seeking Support for the Following Programs in FY 2014:

National Science Foundation:
Education & Human Resources/Advancing Informal Science Learning

National Oceanic and Atmospheric Administration:
Environmental Literacy Grants Program

National Aeronautics and Space Administration:
Competitive Program for Science Museums, Planetariums and NASA Visitor Centers Plus Other Opportunities

Introduction

Chairman Wolf, Ranking Member Fattah, and Members of the Subcommittee—thank you for the opportunity to submit testimony to the House Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies. My name is Anthony (Bud) Rock, and I serve as the Chief Executive Officer of the Association of Science-Technology Centers (ASTC). My testimony will address the importance of informal science, technology, engineering, and mathematics (STEM) education, with a specific focus on the fiscal year (FY) 2014 budgets for programs at three federal agencies over which this subcommittee has jurisdiction: (1) the Advancing Informal STEM Learning (AISL) program at the National Science Foundation (NSF), which would have received $47.82 million in FY 2013 under President Obama’s budget request, a $13.58 million (22%) cut from the FY 2012 estimated level of $61.40 million; (2) the Environmental Literacy Grants (ELG) Program at the National Oceanic and Atmospheric Administration (NOAA), which was slated for termination under the President’s FY 2013 budget request after receiving an estimated level of $5.1 million for FY 2012; and (3) the Competitive Program for Science Museums, Planetariums and NASA Visitor Centers Plus Other Opportunities (CP4SMP+) at the National Aeronautics and Space Administration (NASA), which also was not funded in the President’s FY 2013 budget request but received $7 million in estimated funding as recently as FY 2010.

Our Request

On behalf of ASTC and the 383 science centers and museums we represent here in the United States, I urge the Subcommittee to continue its strong support for informal STEM education programs within the three federal agencies cited above as its work on the Commerce, Justice, Science, and Related Agencies (CJS) Appropriations Bill for fiscal year 2014 progresses. In particular, I urge you to do all you can to maintain funding for NSF’s AISL program, NOAA’s ELG Program, and NASA’s CP4SMP+. Furthermore, I hope you will once again consider including the following suggested report language that would clearly direct NSF to use the AISL program to continue to support public engagement in STEM:
The AISL program will invest in the design, development, and implementation of models, resources, and public engagement programs for STEM learning throughout the lifespan. Proposals can use a broad range of communication formats and experiences, such as mobile and broadcast media, virtual learning environments, exhibitions, TV, radio, films, citizen science, and after-school and/or out-of-school programs.

Including this report language in the FY 2014 CJS Appropriations Bill remains a priority for ASTC, and it is offered in response to a change in the AISL program’s focus that has lessened the positive community impact science centers and museums can have through securing AISL awards. ASTC regularly hears from members expressing concerns that the AISL program has become centrally focused on formal (university-led) research at the expense of educational and public engagement efforts conducted through science centers.

About ASTC and Science Centers

ASTC is a nonprofit organization of science centers and museums dedicated to providing quality educational experiences to students and their families as well as furthering public engagement with science among increasingly diverse audiences. Now, more than ever before, we must spark the interests of our young people in all that science has to offer. This is exactly why community-based science centers throughout the country are providing unique educational programs that excite, energize, and enrich our understanding of science and its many applications—often with support from NSF, NOAA, and NASA, in addition to other federal agencies.

ASTC now counts 628 members, including 481 operating or developing science centers and museums in 45 countries. Collectively, these institutions garner 95 million visits worldwide every year. Here in the United States, your constituents pass through science center doors over 65 million times to participate in intriguing educational science activities and explorations of scientific phenomena.

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 Children’s Science Center (Herndon, VA), the Franklin Institute (Philadelphia, PA), the Mary G. Harden Center for Cultural Arts (Gadsden, AL), the Children’s Museum of Houston (Houston, TX), the California Science Center (Los Angeles, CA), and the Imaginarium Science Center (Fort Myers, FL). As part of its mission, ASTC works with these science centers and museums—small, large, and everywhere in-between—to educate and inform visitors on 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 including energy, the environment, infectious diseases, and space; increase understanding of important new technologies; and promote meaningful informed debate between citizens, scientists, policymakers, and the local community.

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., 90% of our members offer school field trips, and we estimate that nearly 11 million children attend science centers and museums as part of those groups each year. Field trips, however, are just the beginning of what science centers and museums contribute to our country’s educational infrastructure: 90% offer classes and demonstrations; 89% offer school outreach programs; 82% offer workshops or institutes for teachers; 75% offer curriculum materials; 71% offer programs for home-schoolers; 56% offer after-school programs; 41% offer programs that target senior citizens, and; 39% offer youth employment programs.

The Importance of Federal Support for STEM Education

As the Subcommittee knows, there is a strong consensus that improving STEM education is critical to the nation’s economic strength and global competitiveness in the 21st century. Well-known reports like the National Academies’ Rising Above the Gathering Storm (2005) and the President’s Council of Advisors on Science and Technology’s Prepare and Inspire (2010) have emphasized the need to attract and educate the next generation of American scientists and innovators, and have recommended that we increase our talent pool by vastly improving K-12 STEM education. 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. The report also 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.

Last year, the United States Conference of Mayors (USCM) recognized the important ties between science centers and museums and the federal government. At its 80th Annual Meeting, the USCM adopted a resolution calling on Congress and the President to fully fund federal informal science education programs. The resolution also recognized the unique and essential role that American science centers play in providing math and science education for students of all ages while acknowledging the vital learning that goes on in science centers throughout the country.

National Science Foundation

Located within NSF’s Directorate for Education and Human Resources (EHR) and the Division of Research on Learning in Formal and Informal Settings (DRL), the Advancing Informal STEM Learning program (formerly known as “Informal Science Education”) invests in research and development of innovative and field-advancing out-of-school STEM learning and emerging STEM learning environments.
For years, AISL funding has supported museum-community partnerships like “Lupe’s Story,” where the Children's Museum of San Jose, in collaboration with developmental psychology researchers at UC Santa Cruz (UCSC) and science and education staff of the UC Berkeley Museum of Paleontology (UCMP), is conducting a 48-month long project that focuses on children's use of evidence to construct scientific explanations. Key deliverables are: a 2,300 square-foot paleontology exhibit with an Evidence Central area; three "evidence hubs" at the Children's Museum of San Jose; an educational website developed by UCMP; research on children's use of evidence conducted by UCSC; a "state of the children's museum field" study on varieties of perspectives on "science" and "evidence;" and professional development experiences for staff at children's museums. Additional partners include the children's museums in Austin, TX, Madison, WI, and Providence, RI and local Vietnamese and Latino organizations in the museum's neighborhood.

Funding for NSF’s AISL program has hovered between $61 million and $65.8 million since FY 2003. For FY 2013, NSF requested $47.8 million, a $13.58 million reduction from the FY 2012 estimated level of $61.4 million.

National Oceanic and Atmospheric Administration

Since 2005, NOAA’s Office of Education has helped advance public environmental literacy and STEM learning through the Environmental Literacy Grants (ELG) Program, a competitive grant program that supports formal and informal education projects 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. The ELG Program is the longest standing and most comprehensive national grants program focused on environmental literacy, and through this focus, makes a distinctive contribution to STEM education. To date, 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. Demand for these awards is very high, and the agency has been able to fund only 13% of the full applications received. In FY 2011-12, 216 pre-proposals and 104 full applications were reviewed and 8 new awards were made.

In 2010, NOAA provided funding to help the Nurture Nature Center (NNC) (Easton, PA) install the Science on a Sphere spherical display system and develop a new SOS module about climate and flooding. Working with the Maryland Science Center (Baltimore), the Da Vinci Science Center (Allentown, PA), and science advisers from NOAA and research universities, NNC will use existing SOS datasets, as well as new data formats, to create a docent-guided program that explains the connections between climate patterns and flooding. The Flood Forums: Education to Action program will engage audiences in deliberative forum programming to promote public understanding of the atmospheric, oceanic, and other climatic factors affecting flooding in some regional communities.

Over the last two fiscal years, the NOAA Education Program Base has received $24.95 million (FY 2011 spending plan) and $25.09 million (FY 2012 estimated), while Competitive Education Grants saw $8.04 million in funding (estimated) in FY 2012. For FY 2013,
NOAA proposed cutting $6.3 million from its Education Program Base, which included a termination of its Competitive Education Grants/Environmental Literacy Grants Program.

National Aeronautics and Space Administration

NASA’s education programs inspire interest in STEM among America’s youth and have a positive impact on the number of students who are proficient in STEM and choose to pursue careers in STEM fields. Through the Competitive Program for Science Museums, Planetariums and NASA Visitor Centers Plus Other Opportunities—offered through the STEM Education and Accountability program—NASA’s Office of Education solicits proposals for uniquely NASA 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 that feature NASA missions, science, engineering, explorations, or technologies. The current solicitation seeks projects featuring NASA-themed content in space exploration, aeronautics, space science, Earth science, or microgravity, or a combination of these topics to support NASA education outcomes.

In 2009, NASA’s CP4SMP+ provided the Museum of Science and Industry (Tampa, FL) with funding to create “Mission LEAP: Lunar Expedition for Astronaut Pioneers,” a simulated prototypical lunar colony outpost where the LEAP pioneer astronauts live on the moon and evaluate NASA’s competing design strategies for refueling stations, transport centers, living quarters, asset stowage, mining operations and sustaining life there and beyond. LEAP is an innovative hands-on immersive mixed reality exhibition incorporating challenging STEM content, cooperative learning for problem solving, decision-making, team building and scientific inquiry skills in lunar and planetary surface systems.

NASA’s STEM Education and Accountability projects received $50 million in funding (estimated) for FY 2012. For FY 2013, NASA proposes $37 million, a $13 million reduction; no FY 2013 funding was proposed for CP4SMP+.

Conclusion

While I appreciate the budget constraints facing the Subcommittee, I urge you to recognize the key STEM education offerings provided by science centers and museums in your communities—and the integral related federal support offered by NSF, NOAA, and NASA—by: (1) including report language that will ensure NSF returns the focus of its AISL program towards supporting public engagement in science; (2) restoring funding for the AISL program to its FY 2012 estimated funding level; (3) rejecting the proposed termination of NOAA’s Competitive Education Grant Program and restoring the NOAA Education Program Base and the Competitive Education Grants/Environmental Literacy grant programs to their FY 2012 estimated funding levels; and (4) providing funding for the Competitive Program for Science Museums, Planetariums and NASA Visitor Centers Plus Other Opportunities and rejecting proposed cuts to NASA’s STEM Education and Accountability program by providing the FY 2012 funding level.

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