Science, Technology, Engineering and Math (STEM) Education

America must provide students with a strong education in science, technology, engineering, and mathematics (STEM) to prepare them to succeed in the global economy. Scientists and engineers create many of the innovations that drive our Nation's competitiveness, yet many American students are unprepared in math and science, particularly students from underrepresented groups, and the nation's STEM workforce needs are not being met.

Federal agencies have developed a range of programs over the years in order to advance STEM education, but recognize the need for continued improvement. In 2014, the President's Budget proposed a framework for delivering STEM education to more students and more teachers more effectively. The Administration has also published a Federal STEM Education Five-Year Strategic Plan to help align the framework with key goals and strategies. The major areas of priority for this plan include: improving pre-kindergarten-through-grade-twelve (pre-K-12) STEM instruction; increasing and sustaining youth and public engagement in STEM; enhancing the STEM experience of undergraduate students; better serving groups historically underrepresented in STEM; and designing graduate education for tomorrow's STEM workforce.

Over the past year, agencies have made considerable progress towards a stronger and more cohesive infrastructure for delivering STEM education. For example, federal agencies have increased their coordination and are identifying ways to leverage existing resources to improve the reach of agency assets, including over 200,000 federally-employed STEM professionals, laboratory facilities, and cutting-edge research and development. The 2015 Budget for the Department of Education builds on these efforts and also proposes additional goals that focus on identifying and using evidence-based practices and finding new models for leveraging assets and expertise. Key 2015 investments aimed at improving P-12 STEM education and learning include the following:

- **STEM Innovation Networks ($110 million).** This program would provide competitive awards to local educational agencies (LEAs) in partnership with institutions of higher education (IHEs), nonprofit organizations, other public agencies, and businesses to transform STEM teaching and learning by accelerating the adoption of practices in P-12 education that help increase the number of students who seek out and are effectively prepared for postsecondary education and careers in STEM fields. Projects will develop and validate evidence-based practices in a set of "platform schools" and implement them across broader, regional networks of participating schools following validation of effectiveness. Potential strategies include the recruitment, preparation, and professional development of effective STEM educators; the development and testing of teaching and learning models that enable students to successfully meet STEM-focused college- and career-ready standards; and student engagement in STEM subjects.

- **National STEM Master Teacher Corps ($20 million).** In July 2012, the President proposed creating a national STEM Master Teacher Corps that would enlist America's best and brightest science and math teachers to improve STEM education. This proposal would identify, share, and expand models to help transform thousands of excellent STEM teachers into national STEM teacher leaders who help improve STEM teaching and learning nationwide. Through participation in the Corps, teachers would build their leadership capacity, enhance the professional learning of other STEM teachers; identify and share promising practices in schools, districts, and States; participate in local, state, and national STEM policy forums; and help students excel in STEM subjects while taking on coaching and mentorship roles in their schools and communities.

- **STEM Teacher Pathways ($40 million).** To support the President's ambitious goal of preparing 100,000 excellent STEM teachers over the next decade, STEM Teacher Pathways will provide competitive grants to recruit, prepare, and place effective and highly effective STEM teachers in high-need schools.

- **Effective Teaching and Learning: STEM ($150 million).** Formerly the Mathematics and Science Partnerships program, this component of the Administration's reauthorization proposal for the Elementary and Secondary Education Act would fund partnerships between LEAs and IHEs that will help States improve teaching and learning in STEM subjects and fields. In 2015, the reauthorization proposal will be revised to retain this program as a formula grant to States to complement the competitive STEM Innovation Networks. Funds would be used to support State implementation of comprehensive, evidence-based plans; professional development that aligns Federal, State, and local resources to promote high-quality STEM instruction; and for subgrants to high-need LEAs to support comprehensive STEM instruction in the grades and schools with the greatest needs.

In addition to the proposed P-12 investments described above, the FY15 budget request includes the following programs to support STEM at the undergraduate level and beyond:

- **Minority Science and Engineering Improvement Program ($9 million)**. MSEIP supports discretionary grants to predominantly minority institutions to help them make long-range improvements in science and engineering education and to increase the participation of underrepresented ethnic and racial minorities in scientific and technological careers.

- **Upward Bound Math Science Program ($43.1 million)**. The request for TRIO programs includes funding for the Upward Bound Math/Science Program, which supports projects designed to prepare high school students from disadvantaged backgrounds for postsecondary education programs that lead to careers in the fields of math and science.

- **Hispanic-Serving Institutions STEM and Articulation Program ($100 million)**. Authorized under Title III, Part F of the HEA, the HSI STEM and Articulation Program is designed to increase the number of Hispanic and other low-income students attaining degrees in fields of science, technology, engineering, and mathematics (STEM) and to develop model transfer and articulation agreements between 2-year and 4-year HSIs in such fields. The Student Aid and Fiscal Responsibility Act (SAFRA) amended the Higher Education Act of 1965 to provide $100 million in mandatory funding per year for fiscal years 2010 through 2019 for this program.