

# Advancing K-12 Science, Technology and Engineering Education

August 28, 2009

The Honorable Arne Duncan  
Secretary  
U.S. Department of Education  
400 Maryland Avenue, SW  
Washington, D.C. 20202

Docket ID: ED-2009-OESE-0006

Dear Secretary Duncan:

On behalf of the undersigned organizations, we are pleased to submit the following comments regarding the proposed priorities, requirements, definitions, and selection criteria for the Race to the Top (RTT) Fund.

We are extremely appreciative that you plan to give competitive preference to applications with an emphasis on science, technology education, engineering, and mathematics (STEM). This action by the Department reinforces the importance of K-12 STEM education as championed by the Administration's STEM agenda as well as a number of national reports and findings over the last decade. As you work to implement RTT, we implore the Department to stand fast with this prioritization.

In the past, we have seen initiatives by various public and private entities calling for a STEM-focus that in practice concentrated exclusively on science and mathematics. However, technology and engineering are equally important and integrative components to K-12 STEM education. Technological literacy is basic literacy for the 21st century. We live in a technological world and need to understand how human-made things are created and how they work. To ensure our nation's competitiveness, we also need to promote engineering as a future profession. Offering technology and engineering coursework in the K-12 system increases the likelihood of students becoming interested in pursuing such degrees and careers. RTT's STEM competitive preference is an opportunity for the Department to promote and encourage States to strengthen K-12 technology and engineering education. We recommend the Department use the following RTT selection criteria to advance this goal.

## (A)(1) Developing and Adopting Common Standards

Current efforts around common standards have focused primarily on reading and mathematics. We urge the Department to also encourage states to begin working together to develop common core Science, Technology and Engineering standards that include content and skill sets. Massachusetts, for example, was the first state in the

nation to adopt science, technology and engineering standards, and others are following suit. Many states were encouraged by the National Governors Association's recommendation in 2007 that states develop technology and engineering standards and assessments and align K-12 STEM standards to postsecondary and workforce expectations. We believe new common core standards are necessary for Science, Technology and Engineering that more fully integrate these interdependent subjects and we urge you to give states bonus points for committing to the development of such standards.

#### (A)(2) Developing and Implementing Common, High-Quality Assessments

Similar to our recommendations regarding common standards, we ask that you provide bonus points for states that commit to developing a common core Science, Technology & Engineering assessment. The National Assessment Governing Board is currently promoting such efforts and we believe RTT should support similar concepts as well. Specifically, the new NAEP Science 2009 Framework includes a portion of items that will assess "technology design skills", which address the engineering design process. In addition, there is a NAEP Technological Literacy Probe Study being developed that will cover the engineering design process, the ability to use technology, and the relationship between technology and society.

#### (A)(3) Supporting Transition to Enhanced Standards and High-Quality Assessments

We believe the required plan for transitioning to enhanced standards and assessments is another opportunity to address the STEM priority and technology and engineering. We urge the Department to encourage and reward applicants that enhance the rigor of their high school graduation requirements by including 4 years of science, technology, and/or engineering courses. Texas is one example of a state working toward this end. We encourage the development of plans that provide for district and leadership training, including those that educate teachers and administrators about technology and engineering standards and assessments. This will enable LEAs to receive the appropriate direction and support necessary for implementing new standards and assessment expectations.

#### (C)(1) Providing Alternative Pathways for Aspiring Teachers and Principals

The STEM priority should also reward applicants that recruit engineers and others from the technical workforce into STEM classrooms. Similarly, applicants that create or recognize a STEM credential or certification for teachers and/or curricula specialists should be awarded bonus points. Finally, states that utilize informal science education centers as resources for professional development should receive an additional credit as well.

RTT presents an historic opportunity to move this country ahead in terms of its preparation of a globally competitive workforce and a technologically literate society. We are excited by the potential for states to advance STEM education nationwide and stand ready to assist however possible. If you have any questions or need further information, please contact Patti Curtis, National Center for Technological Literacy, at 571.237.6367.

Respectfully,

Alabama Mathematics, Science, and Technology Education Coalition  
American Institute of Aeronautics and Astronautics  
American Society for Engineering Education  
American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.  
ASME Center for Public Awareness  
Association for Career & Technical Education, Engineering & Technology Education  
Division  
Association of Mathematics Teachers of New York State  
ASTRA, The Alliance for Science & Technology Research in America  
Brecksville-Broadview Heights High School  
Building Engineering and Science Talent  
Center for Minority Achievement in Science and Technology  
Chicago Educational Publishing Companion  
Cuyahoga Falls High School Industrial Technology Department  
EAST Initiative  
Elementary Science Coalition  
Engineering/Technology Educators of Indiana  
Engineers without Borders-USA  
Hofstra Center for Technological Literacy  
Illinois Mathematics and Science Academy  
Inquiry Facilitators, Inc  
Intel Corporation  
International Technology Education Association  
Kentucky Engineering & Technology Education Association  
Miami Science Museum  
Minnesota Technology Education Association  
Museum of Science, Boston  
Museum of Science and Industry, Chicago  
National Center for Technological Literacy  
National Girls Collaborative Project  
National Society for Professional Engineers  
New Hampshire Technology Education Association  
New Jersey Technology Education Association  
New York Hall of Science  
New York State Technology Education Association  
North East Ohio Technology Education Association and  
Ohio Mathematics and Science Coalition  
Ohio Technology Education Advisory Council  
Pennsylvania Technology Student Association  
Pittsburgh Regional Center for Science Teachers  
Project Lead the Way  
PTC-MIT Consortium  
Real World Design Challenge  
School Specialty Science

SkillsUSA  
Society of Women Engineers  
SouthEast Educational, Inc.  
Southern Illinois University, Department of Workforce Education & Development  
Stevens Institute of Technology, Hoboken, NJ  
Teachers Clearinghouse for Science and Society Education  
Teaching Institute for Excellence in STEM  
Technology Education Association of Massachusetts  
Technology Education Association of Pennsylvania  
Technology is Elementary  
Technology Student Association  
The Colorado Technology Education Association  
The Ohio Academy of Science  
Triangle Coalition  
University of Pittsburgh – Johnstown  
Valley City State University, ND  
Virginia Technology Education Association