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.

<u>(A)(1) Developing and Adopting Common Standards</u>
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