November 13, 2017

Ms. Jennifer Bell-Ellwanger
U.S. Department of Education
400 Maryland Avenue SW., Room 6W231
Washington, DC 20202
Comments submitted via www.regulations.gov

RE: Docket ID: ED-2017-OS-0078

Dear Ms. Bell-Ellwanger:

As an alliance of more than 600 education, business, and professional organizations from across the country, the STEM Education Coalition is united in the goal of advocating for policies that will improve science, technology, engineering, and mathematics (STEM) education at every level. We believe strongly that our nation must improve the way our students learn STEM subjects in order for the United States to remain an economic and technological leader in the global marketplace.

We believe very strongly that STEM education must be elevated as a national priority as reflected through education reforms, policies to drive innovation, and federal spending priorities. America must have a world-class education system that focuses on 21st Century skills so we can prepare the best workforce in the world. The best, highest-paying jobs of today are nearly all in the STEM fields and these jobs demand problem-solving, teamwork, and creativity – all skills that are best cultivated through high quality learning opportunities in STEM.

We appreciate the opportunity to provide the Department of Education with feedback on its proposed priorities for competitively awarded federal grant funding, published in the Federal register under Docket ED-2017-OS-0078. Our comments are directed at Proposed Priority 6—*Promoting Science, Technology, Engineering, and Math (STEM) Education, With a Particular Focus on Computer Science.*

<u>General Comments:</u>

- **Directed Funding for STEM Education:** The Department's final priorities should include an affirmation of the Presidential Memorandum to the Secretary of Education of September 25, 2017 directing that *"The Secretary shall, to the extent consistent with law, establish a goal of devoting at least $200 million in grant funds per year to the promotion of highquality STEM education, including Computer Science in particular."* Given this target, STEM education should be established as an absolute, explicit, and global priority for each of the Department's competitive grant programs. The Department's priorities should also include outline of how funds accruing to this target that will be tracked and on what schedule.

- **STEM Education and Its Related Fields Should Be Defined Inclusively**: We support an inclusive definition and use of the term "STEM education" by federal programs that is not practically limited to only math and science, which are frequently the focus of state accountability systems, but also embraces engineering and technology, and broadly encompasses related STEM fields, such as Computer Science (CS), and their unique needs. While we appreciate the Department's particular mentions of CS throughout Priority 6, the Department should not implement this priority in practice as an exclusive focus on the developments of CS skills, which both CS and STEM advocates would agree constitutes only a single aspect of a well-rounded STEM education.

- **High-Need Focus of STEM Initiatives:** Priority 6 mentions an emphasis on rural student populations, but not other underrepresented high-need populations within the STEM fields. The Department should support comprehensive efforts to expand the capacity and diversity of STEM education initiatives that address underrepresented minorities, women, girls and other high-need socioeconomic populations. There are many parts of American society that are being left out of the STEM economy and high-need focus that is driven by data on the various areas and populations of need should be central to the Department's STEM strategy. Further, it is important to not just improve achievement for high-need populations as defined by particular large scaled assessments but rather improved student learning which includes enduring practices which are not as easily measured by large scale assessments.

- Subpriority (i) on *"Utilizing technology to provide access to educational choice (as defined in this notice)"* seems misplaced. This recommendation relates exclusively to school choice and should be address in Priority 1, not 6, as using technology to expand school choice options is not about learning STEM skills.

<u>Further Specific Recommendations on Subpriorities (with edits to language in underlined bold):</u>

- *(b) Supporting student mastery of key prerequisites (e.g. Algebra I) to ensure success in all STEM fields, but particularly computer science coursework (notwithstanding the definition in this notice), and exposing students to building block skills (such as critical thinking and problem solving, gained through hands-on, inquiry-based learning), as well as the proficient use of computer applications necessary to transition from a user of technologies, particularly computer technologies, to a developer of them.* **<u>Continuing afterschool that supplements in-school STEM education should be promoted, especially programs that offer practical application of STEM topics, such as robotics and other forms of STEM competitions.</u>**

- *(c) Identifying and implementing instructional strategies in STEM fields, including computer science (as defined in this notice), that are supported by strong or moderate evidence (as defined in <u>34 CFR 77.1</u>),* **<u>including afterschool programs, such as STEM competitions, which supplement the in-school educational experience and promote fun and safe learning environments.</u>**

- *(f) Creating or expanding partnerships between schools, LEAs and/or SEAs, local businesses, not-for-profit organizations, or institutes of higher education to give students access to internships, apprenticeships, or other work-based* **<u>or informal</u>** *learning experiences in STEM fields, including computer science (as defined in this notice).*

- Addition of **<u>(m) Supporting afterschool STEM programming that supports the in-school curriculum with hands-on active learning through practical applications such as STEM competitions. Such programs should foster STEM learning and provide a fun and safe learning environment outside of the classroom.</u>**

<u>Recommendations on Areas of STEM Focus for Existing Department of Education Programs:</u>

- **Education and Innovative Research Grants:** Research projects should focus on three dimensional learning and teaching of STEM and science that includes project based learning, incorporates engineering concepts, and includes a strong focus on partnerships and collaborative design. STEM based projects should also promote and encourage equity through connecting to students' interests, experiences, and identities.   In order to assist STEM efforts in rural schools, districts, and communities it is important to include targeted research designed for the realities of rural schools not just include rural schools as part of bigger studies that include urban or suburban places.   *All* grade levels (PreK-12) should be considered as research sites

- **Magnet Schools Assistance:** In application for this grant States must give priority for a percentage of the grant to be used to design and implement new STEM charter schools in the state that incorporate or to replicate successful STEM charter schools with proven track record of success. Priority funding should be provided for districts to fully establish new STEM magnet programs in their schools. Highly effective STEM programs will increase student outcomes and participation in literacy, math and science and increase parent and community support.

- **Teacher and School Leader Incentive Program:**   Priority for grants where collaborative partners (State educational agencies, Local Education Agency or a consortium of local educational agencies, and nonprofits) would create a STEM Master Teacher program geared to improving the effectiveness of science, technology, engineering, and mathematics or computer science teachers and increase the retention of such teachers. Grantees would create the process to identify, select and train STEM Master Teachers. STEM master Teachers would receive research-based professional development on instructional leadership and effective teaching methods for science, technology, engineering, mathematics and computer science subjects. STEM Master Teachers with be provided with a salary supplement in recognition of their teaching accomplishments, leadership, and increased responsibilities, for each year such teacher serves as a member of the corps. STEM Master Teachers would be responsible for providing instructional leadership such as mentoring beginning science, technology, engineering, mathematics and computer science teachers, selecting and creating quality curriculum and STEM related activities, and leading professional development activities for teachers.   They should also be given the explicit authority to provide instructional leadership, etc. STEM Master Teachers would be encouraged to network, collaborate, and to share best practices and resources with each other.   Candidates for the STEM Master Teacher program must teach in a participating high-need school or agree to teach in a participating high-need school in the region served by the grant.

- **Supporting Effective Educator Development Grant Program:** Projects should focus on three dimensional learning and teaching of STEM and science that includes project based learning, incorporates engineering concepts and computing principles, and includes a strong focus on partnerships and collaborative design. Projects should focus on preparing and supporting teachers at any grade level – including elementary grades

Thank you for consideration of our Coalition's recommendations.

Respectfully,

James Brown
Executive Director
STEM Education Coalition