Mathematical Association of America
Testimony for the
President's Council of Advisors on Science and Technology
Friday, May 25, 2012

Those parts of this document in italics will not be read as part of the oral testimony.

Delivered by Michael Pearson, Executive Director of the MAA.

Dr. Holdren, Dr. Lander, and distinguished members of PCAST: we thank you for the opportunity to be here today.

The Mathematical Association of America was established in 1915. Our mission -- "to advance the mathematical sciences, especially at the collegiate level" -- and our activities align closely with the goals and purposes of the recent PCAST report, "Engage to Excel."

MAA's 20,000 members include university, college, and high school teachers; graduate and undergraduate students; pure and applied mathematicians; computer scientists; statisticians; and many others in academia, government, business, and industry.

For over 50 years MAA has shaped the undergraduate program in mathematics. We provide a wide range of resources for mathematics teaching and learning through our extensive publications and professional development programs. MAA meetings provide venues for faculty to share, collaborate, and learn from each other. Students use our meetings to present research results, interact with peers and faculty from around the country, and discover career opportunities.

In 10 days, Dr. Holdren will join us at our annual banquet where we recognize the top performers in this year's U.S.A. Mathematical Olympiad. The USAMO is the highest level of the MAA American Mathematics Competition, a program dedicated to strengthening the mathematical capabilities of our nation's youth. Approximately 350,000 middle and high school students participate in this program every year; in July, MAA will take six of these students to the International Mathematical Olympiad, in which we have participated since 1974. Last year, the U.S. team placed second among the 101 participating countries; all six members of the team were awarded gold medals. So, in addition to the challenges identified in "Engage to Excel," there are also stories of remarkable mathematical achievement.

MAA programs support development and testing of innovative approaches to mathematics education, including the preparation of future teachers. MAA promotes research-supported strategies for attracting and retaining STEM students: these include mentoring, community-building, inquiry-based learning techniques in the classroom, and engaging students in undergraduate research. *In this context, MAA acknowledges the critical role NSF plays across the STEM community in supporting the foundational work required to advance efforts to improve student learning at all levels.*

MAA's Committee on the Undergraduate Program in Mathematics makes recommendations that guide departments in designing undergraduate mathematics curricula. These recommendations, published as a guide roughly once a decade, have consistently insisted that mathematical sciences departments understand and address the diverse strengths, weaknesses, career plans, fields of study, and aspirations of mathematics students.

Quoting from a CUPM report:

> *From the scientific standpoint, one must take into account the extended mathematical needs of modern engineering and physical science. At the same time such sciences as econometrics, physiology, sociology, and genetics seem to demand, in part at least, entirely new mathematics.*

In fact, that quote comes from a 1955 report. The most recent report, published in 2004 and available at www.maa.org/cupm, echoes similar themes, though of course adjusted to reflect the dramatically different environment we now face.

Work on the next CUPM curriculum guide, due about 2014, is well underway.

MAA is dedicated, through its history and its mission, to the centrality of undergraduate mathematics in the STEM enterprise. We hope that these comments, together with our written response, will promote a robust and sustained discussion of how to leverage MAA's expertise in undergraduate mathematics to prepare and inspire students to pursue STEM majors and careers.

We welcome the opportunity to promote and facilitate adaptation and implementation of model programs, and look forward to working with PCAST, leadership at NSF, and other partners to carry this important work forward.