

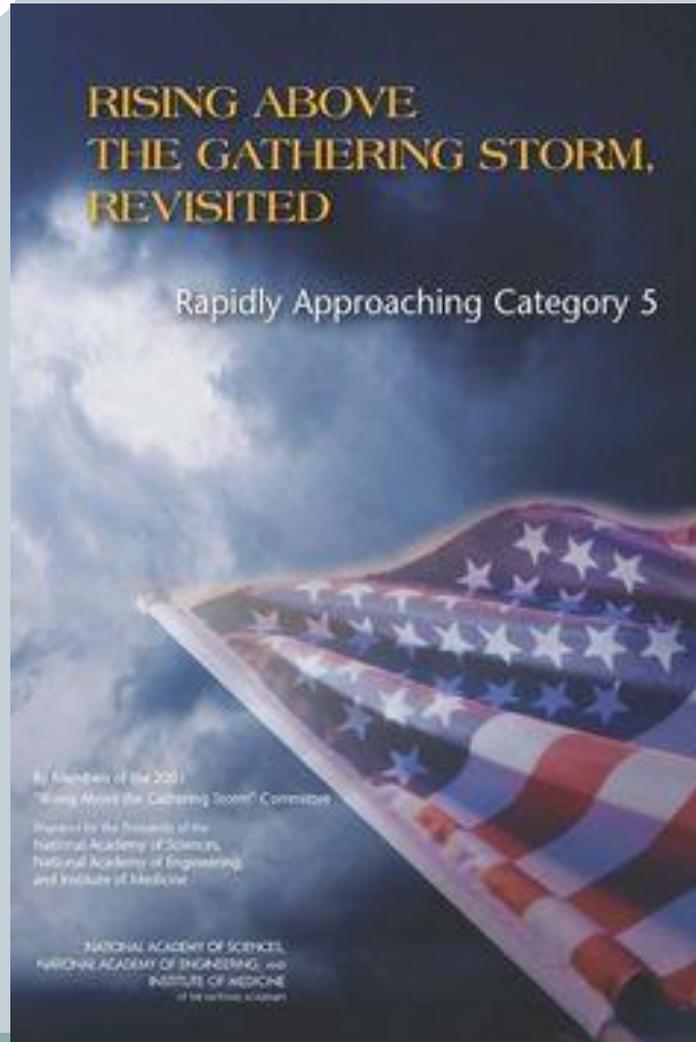
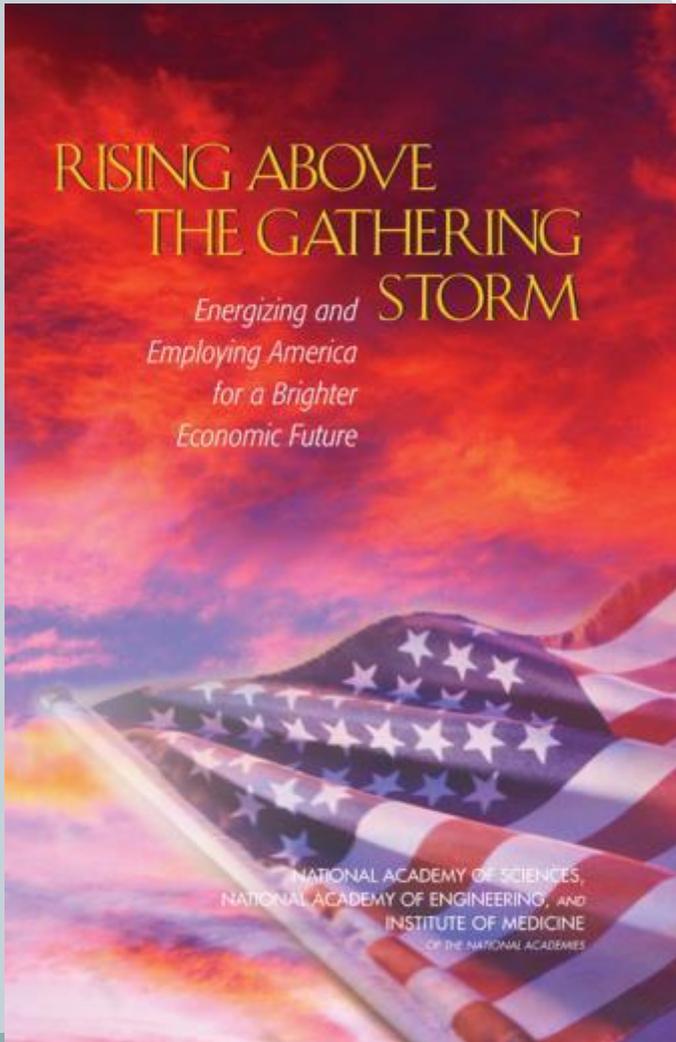
# CEOSE



**COMMITTEE ON EQUAL  
OPPORTUNITIES IN  
SCIENCE AND  
ENGINEERING**



- “If ability, and not the circumstances of family fortune, determines who shall receive higher education in science, then we shall be assured of constantly improving quality at every level of scientific activity.”
  - —Vannevar Bush, 1945, National Science Foundation, Science, the Endless Frontier, A Report to the President.

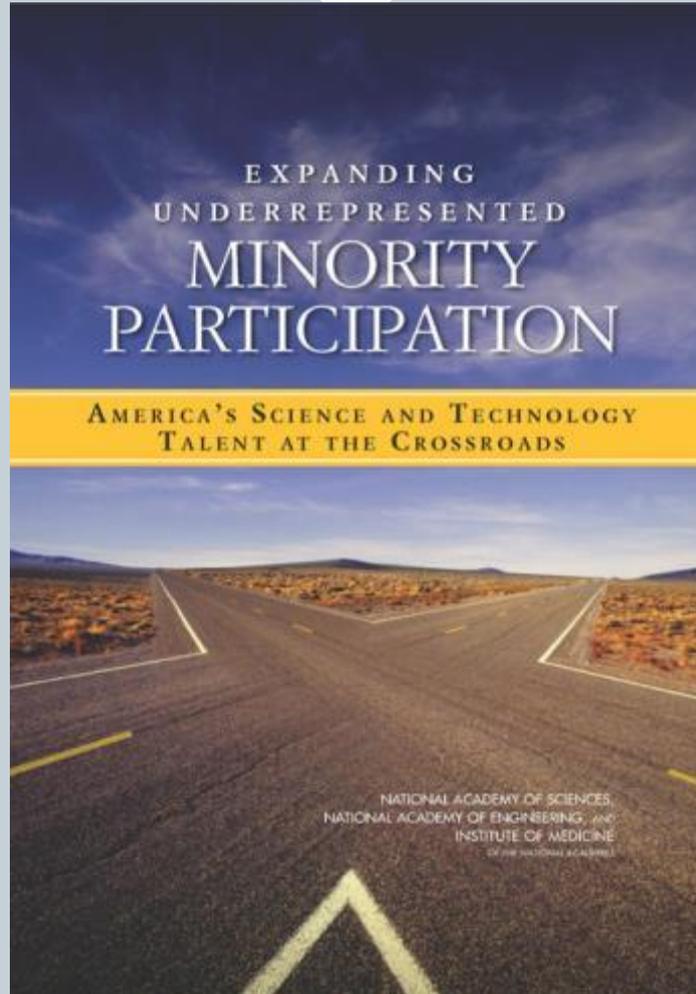




EXPANDING  
UNDERREPRESENTED  
**MINORITY  
PARTICIPATION**

**AMERICA'S SCIENCE AND TECHNOLOGY  
TALENT AT THE CROSSROADS**

NATIONAL ACADEMY OF SCIENCES,  
NATIONAL ACADEMY OF ENGINEERING, AND  
INSTITUTE OF MEDICINE  
OF THE NATIONAL ACADEMIES





**REPORT TO THE PRESIDENT  
ENGAGE TO EXCEL: PRODUCING ONE MILLION  
ADDITIONAL COLLEGE GRADUATES WITH  
DEGREES IN SCIENCE, TECHNOLOGY,  
ENGINEERING, AND MATHEMATICS**

Executive Office of the President  
President's Council of Advisors  
on Science and Technology

FEBRUARY 2012





Strategic Plan for 2014 - 2018

Investing in Science,  
Engineering, and  
Education for the  
Nation's Future



National Science Foundation

# CEOSE



The Committee on Equal Opportunities in Science and Engineering (CEOSE) is a congressionally mandated advisory committee to the National Science Foundation.

# CEOSE - U.S. Code Title 42 Chapter 16 § 1885c.



Title 42—THE PUBLIC HEALTH AND WELFARE

:

Chapter 16—NATIONAL SCIENCE FOUNDATION

:

Section 1885—Congressional statement of findings and declaration of policy respecting equal opportunities in science and engineering

Section 1885a—Women in science and engineering; support of activities by Foundation for promotion, etc

Section 1885b—Participation in science and engineering of minorities and persons with disabilities

Section 1885c—Committee on Equal Opportunities in Science and Engineering

Section 1885d—Biennial reports

# CEOSE - U.S. Code Title 42 Chapter 16 § 1885c.



## Committee on Equal Opportunities in Science and Engineering

### (a) Establishment; purposes

There is established within the Foundation a Committee on Equal Opportunities in Science and Engineering (hereinafter referred to as the “Committee”). The Committee shall provide advice to the Foundation concerning

- (1) the implementation of the provisions of sections 1885 to 1885d of this title and
- (2) other policies and activities of the Foundation to encourage full participation of women, minorities, and persons with disabilities in scientific, engineering, and professional fields



(b) Membership; Chairperson; term of members

Each member of the Committee shall be appointed by the Director. In addition, the Chairman of the National Science Board may designate a member of the Board as a member of the Committee. Members of the Committee shall be appointed to serve for a three-year term, and may be reappointed to serve one additional term of three years.

# CEOSE Membership



Dr. Wendy Raymond, CEOSE Chair  
Vice President for Academic Affairs and Dean of Faculty  
Professor of Biology  
Davidson College

Dr. Ira Harkavy, CEOSE Vice Chair  
Associate Vice President and Founding Director  
Barbara and Edward Netter Center for Community Partnerships  
University of Pennsylvania

Dr. Mary Monroe Atwater  
Professor  
Mathematics and African American Studies  
The University of Georgia

Dr. Karl S. Booksh  
Professor  
Department of Chemistry  
University of Delaware

Dr. Nancy Cantor  
Chancellor  
Rutgers University - Newark

Mr. C. Michael Gooden  
Chairman of the Board and CEO  
Integrated Systems Analysts, Inc.

Dr. Charles Isbell  
Professor and Associate Dean  
Georgia Institute of Technology

Dr. Robert J. Jones  
President  
University at Albany

Dr. Alicia Knoedler  
Associate Vice President for Research  
Director, Center for Research Program Development & Enrichment  
The University of Oklahoma

Dr. Daniela Marghitu  
Faculty Coordinator and Director, Education and Assistive Technology Lab  
Samuel Ginn College of Engineering  
Auburn University

Dr. Louis A. Martin-Vega  
Professor and Dean  
College of Engineering  
North Carolina State University

Dr. Robert Eugene Megginson  
Arthur F. Thurman Professor  
Department of Mathematics  
University of Michigan

Dr. George Middendorf  
Professor  
Department of Biology  
Howard University

Dr. Keivan Guadalupe Stassun  
Professor  
Department of Physics and Astronomy  
Vanderbilt University

Dr. Lydia Villa-Komaroff  
Board Member  
Cytonome/ST, LLC, ATCC  
Massachusetts Life Science Center

Dr. Joseph A. Whittaker  
Dean and Professor  
School of Computer, Mathematical & Natural Sciences  
Morgan State University

## NSF CONTACTS

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Office of the Director

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Office of the Director  
National Science Foundation

# CEOSE Membership



- Meets three times a year, in person and/or virtually
- In 2015, CEOSE will meet in:
  - February (at NSF)
  - June (virtual)
  - October (at NSF)

# CEOSE



## (c) Responsibilities of Committee

The Committee shall be responsible for reviewing and evaluating all Foundation matters relating to opportunities for the participation in, and the advancement of, women, minorities, and persons with disabilities in education, training, and science and engineering research programs.

# CEOSE



## (d) Standing or ad hoc subcommittees

The Committee may organize such standing or ad hoc subcommittees as the Committee finds appropriate.

## (e) Biennial report

Every two years, the Committee shall prepare and transmit to the Director a report on its activities during the previous two years and proposed activities for the next two years. The Director shall transmit to Congress the report, unaltered, together with such comments as the Director deems appropriate.

(Pub. L. 96-516, §36, Dec. 12, 1980, 94 Stat. 3012; Pub. L. 99-159, title I, §111(b)(8), Nov. 22, 1985, 99 Stat. 893; Pub. L. 100-570, title I, §105(c), Oct. 31, 1988, 102 Stat. 2868; Pub. L. 105-207, title II, §202(d)(2), July 29, 1998, 112 Stat. 874.)

# BIENNIAL REPORTS TO CONGRESS



Every two years, the Committee shall prepare and transmit to the Director a report on its activities during the previous two years and proposed activities for the next two years. The Director shall transmit to Congress the report, unaltered, together with such comments as the Director deems appropriate.

2012 Report available at:

[nsf.gov/od/iia/activities/ceose/reports/Full\\_2011-2012\\_CEOSE\\_Report\\_to\\_Congress\\_Final\\_03-04-2014.pdf](https://www.nsf.gov/od/iia/activities/ceose/reports/Full_2011-2012_CEOSE_Report_to_Congress_Final_03-04-2014.pdf)

# 2012 Biennial Report



To retain the Nation's tradition of STEM leadership and to help solve America's competitiveness dilemma, the country must increase its efforts toward successfully educating those groups within the Nation that are not being sufficiently tapped for the STEM workforce, particularly African Americans, American Indians, Hispanics, women, and persons with disabilities. Tapping this pool of talent is urgent to the well being of our country! This message has been stated multiple times before by CEOSE and others, and repeated, persuasively, in the recent report *Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads*. The more time that passes without action, the more urgent the problem becomes.

# 2012 Biennial Report



Over the past half-century, the numbers of women, minorities, and persons with disabilities earning science and engineering degrees and the numbers entering science and engineering employment have increased. This is progress, but not sufficient progress to redress the historic patterns of underrepresentation for these groups.

# 2012 Biennial Report



Women have come closest to achieving parity, yet remain underrepresented in areas like engineering, physics, computer sciences as well as among the top academic ranks in all areas of science and engineering. African Americans, Hispanics, American Indians, and persons with disabilities remain woefully underrepresented in science and engineering. Only a small percentage of African Americans, Hispanics and American Indians complete college and earn bachelor's degrees in any field, even fewer complete advanced degrees, and they remain severely underrepresented among science and engineering faculty. Students with disabilities have greater college attrition than students without disabilities; they remain a small share of the science and engineering workforce, and they have lower employment rates than those without disabilities.

# 2012 Biennial Report



“NSF should implement a bold new initiative, focused on broadening participation of underrepresented groups in STEM, similar in concept and scale to NSF’s centers, that emphasizes institutional transformation and system change; collects and makes accessible longitudinal data; defines clear benchmarks for success; supports the translation, replication and expansion of successful broadening participation efforts; and provides significant financial support to individuals who represent the very broadened participation that we seek.”



- Emphasizes institutional transformation and system change;
- Collects and makes accessible longitudinal data;
- Defines clear benchmarks for success;
- Supports the translation, replication and expansion of successful broadening participation efforts; and
- Provides significant financial support to individuals who represent the very broadened participation that we seek.

# 2012 Biennial Report



The “boldness” of this initiative rests in its focus on institutional transformation and systemic change in addition to basic research on broadening participation.

The “boldness” comes from making a long-term commitment to sufficient resources, to new resources, to alter the current trajectory in STEM employment.

# 2012 Biennial Report



In sum, the nature of the economy has changed and is changing, and so have the demographics of our nation. A democratic society in which large and rapidly growing population subgroups are unable to participate and contribute to scientific and technological advances faces a grave economic, intellectual and scientific disadvantage in an increasingly globalized competition for talent and innovation. Corrective and effective action must be taken now.

# NSF Response to the 2012 Biennial Report



- The NSF Broadening Participation Working Group examined CEOSE's request and
  - developed an array of options to augment the Foundation's on-going efforts in broadening participation in STEM
  - issued "Pathways to Broadening Participation in Response to the CEOSE 2011-2012 Recommendation Summary"  
(NSF 15-037)

# CEOSE Future Activities



Guided by Vannevar Bush's goal of a fully inclusive, fully diverse workforce, CEOSE plans to:

- Review the broadening participation efforts of NSF's Centers portfolio as well as the broadening participation data and strategic plans of NSF directorates.
- Continue engagement with Federal Liaisons for leveraging opportunities to coordinate and be more systemic in addressing diversity and equity issues in STEM.

# CEOSE Future Activities



- Continue CEOSE's emphasis on broadening participation accountability activities, including monitoring, assessment and evaluation.
- Explore and document the contributions of MSIs and programs in broadening participation to inform recommendations to NSF.
- Examine graduate admissions practices to inform recommendations for improved STEM graduate level workforce outcomes and for improved broadening participation of underrepresented groups in STEM graduate education and training.

# CEOSE Future Activities



- Explore the significance of financial wherewithal and student debt as factors influencing persistence to the doctoral degree in STEM fields.
- Investigate the potential uses of data-intensive scientific approaches and methods for better informing the Committee and its recommendations to NSF on the condition of underrepresented groups and identifying barriers to and potential strategies to enhance their access, retention, completion and advancement, that is, pathways to meaningful careers and contributions to science and engineering.

# CEOSE Future Activities



- Explore with NSF and others about hosting mini-symposia or other similar broad expert discussions focused on the condition in STEM of Hispanics and Hispanic serving Institutions, their institutional mechanisms, strategies, approaches and programs, as well as their significance and roles within U.S. higher education for broadening participation of Hispanics and other minority groups, in order to inform recommendations to NSF.
- Work with NSF to explore hosting mini-symposia or other similar broad expert discussions on the science of broadening participation.