

CEOSE

Committee on Equal Opportunities in Science and Engineering



INVESTING IN DIVERSE COMMUNITY VOICES

An inclusive science, technology, engineering and mathematics (STEM) workforce is needed to maintain America's leadership in the scientific enterprise. Increasing the participation of underrepresented groups including African Americans, Hispanic/Latino Americans, American Indians/Alaska Natives, persons with disabilities and women requires national attention to fully engage the nation's citizens in transforming its STEM enterprise.

Involving diverse community voices in research projects, especially community-based, community-engaged, and community-focused research projects, has numerous benefits, including serving as a means for increasing broadening participation of underrepresented groups in STEM and improving science and engineering (S&E). However, it requires performing research differently and rejecting the assumption that applied and theoretical research should be distinct. Understanding that application and theory are interconnected and mutually enhancing in place-based research through problem-solving projects such as NSF's Big Idea Navigating the New Arctic is fundamental.

CEOSE proposes developing and implementing a recursive, iterative approach that is based on the following propositions: (1) significant societal problems cannot be solved without the unfettered full inclusion of underrepresented populations; (2) full inclusion, in turn, will result in better, more innovative and transformative S&E, as well as a better, more decent and just society; and (3) developing community-based research initiatives that are carried out with community members with a focus on local scientific problems is a promising strategy to help achieve the interrelated goals of full inclusion, better S&E, and a better society.

Based on these perspectives, activities and propositions, CEOSE calls on NSF to increase support for place-based implementation research projects that are grounded in and engage local communities. To realize this more integrative vision for inclusiveness in the STEM enterprise, CEOSE recommends:

“NSF give increased attention to including diverse community voices across its research and education portfolios through community-driven projects.”

ADVANCING KNOWLEDGE AND BROADENING PARTICIPATION



An important goal of broadening participation is to be the means of bringing diversity and intellectual breadth to the transformation of science itself. Diversity contributes to better learning, and problem-solving.

The changing landscape of science as expressed within NSF's 10 Big Ideas, especially NSF INCLUDES, Navigating the New Arctic and Future of Work at the Human Technology Frontier, provides invaluable opportunities for emphasizing the need to include community members who are experiencing the very problems of interest to scientists and engineers involved in the research projects. Community members, in effect, have information and resources and possess knowledge essential for developing the methods, approaches, findings and theories necessary for solving the problem at hand.



New opportunities must be provided to help the nation increase its use of diverse communities to help solve highly complex, real-world problems. Moreover, the talent of all Americans is needed to improve the health and education of communities; decrease poverty; increase the number and percentage of historically underrepresented groups in STEM; and bring new approaches to the strategic goals of scientific discovery and learning.

NSF's investments address the agency's STEM workforce strategic objective to "foster the growth of a more capable and diverse research workforce and advance the scientific and innovation skills of

the Nation." Some of these efforts include:

- **NSF INCLUDES** - catalyzes novel approaches in broadening participation in STEM by incentivizing the building of collaborative infrastructures that proactively seeks and effectively develops STEM talent from all sectors and groups in the nation.
- **GEO Directorate's Opportunities for Leadership in Diversity (GOLD)** - facilitates the design, pilot implementation and evaluation of innovative professional development curricula that can unleash the potential of geoscientists with interests in broadening participation to become impactful leaders in the community.
- **Improving Undergraduate STEM Education: Hispanic-Serving Institutions (HSI) Program** - provides support to HSIs to enhance the quality of undergraduate STEM education and to increase retention and graduation rates of undergraduate students pursuing degrees in STEM fields at HSIs.
- **Historically Black Colleges and Universities Excellence in Research Program** - promotes sustainable improvements to the research and development capacity and competitiveness of HBCUs.
- **Tribal Enterprise Advancement (TEA) Centers** - supports tribal colleges and universities to establish centers that are addressing environmental, social, educational and economic challenges and promoting community-relevant STEM opportunities.
- **Louis Stokes Regional Centers of Excellence in Broadening Participation (LSRCEs)** serve as exemplar research and dissemination sites designed to produce innovative science, technology, engineering and mathematics (STEM) broadening participation practices that support the recruitment and retention of historically underrepresented and underserved students and faculty in these disciplines.
- **Pursuing Meaningful Actions in Support of Broadening Participation in Computing (BPC)** - enhances the community's awareness of and barriers to BPC, as well as to provide information and resources to principal investigators (PIs) so that they can develop interest, skills, and activities in support of BPC at all levels (K-12, undergraduate, graduate, and postgraduate).

