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NAS Joint Meeting on S&E
Workforce Diversity

Diversity in the STEM Workforce

**U.S. Department of Energy
Office of Science**

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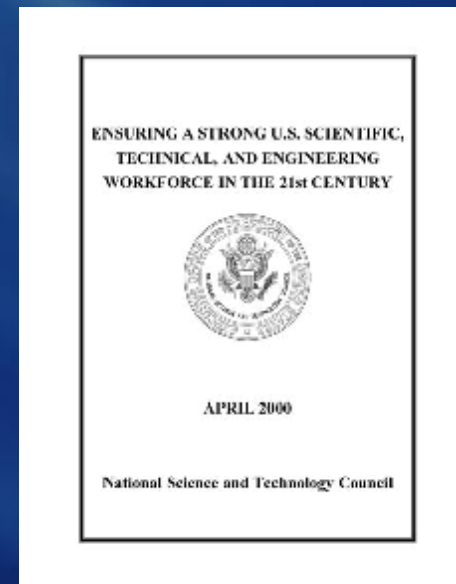
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Diversity in the STEM Workforce: A Longstanding Federal Issue

§ NSTC Report: *Ensuring A Strong U.S. Scientific, Technical, and Engineering Workforce in the 21st Century*, 2000

- We knew there was a problem – the U.S. needed to invest immediately to grow the pipeline
- Recommendations in 2000:
 - Evaluate current programs
 - Examine barriers
 - Recruit minorities
 - Create a website



2000 Data is Still Current & Relevant

Figure 3-3. Earned BS/BA degrees in ST&E fields, by Race/Ethnicity, 1977-1997 (U.S. citizens and permanent residents)

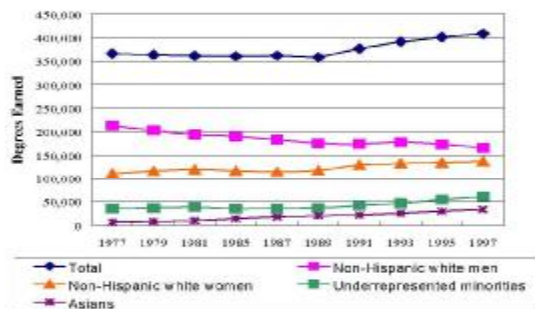


Figure 3-3. Earned BS/BA degrees in ST&E fields, by Race/Ethnicity, 1977-1997 (U.S. citizens and permanent residents). Source data are provided in the figure references.

Figure 2-1. Percentage of Population, S&E Bachelor's Degrees Awarded, S&E Graduate School Enrollment and S&E Labor Force

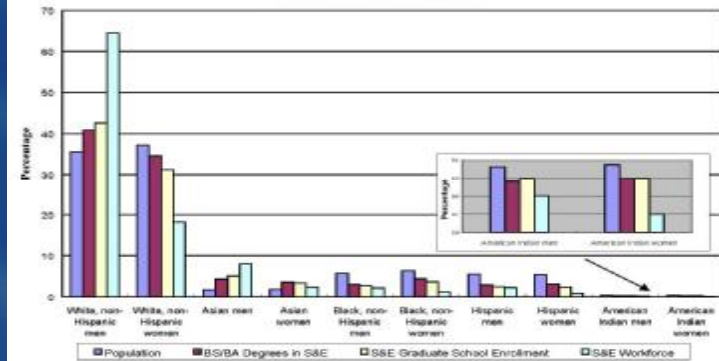


Figure 2-1. Percentage of Population (1997), S&E Bachelor's Degrees Awarded (1996), S&E Graduate School Enrollment (1997), and S&E Labor Force (1997). See figure references.

Figure 3-2. Calculated percentage of 22-year-olds that would earn S&E bachelor's degrees by year

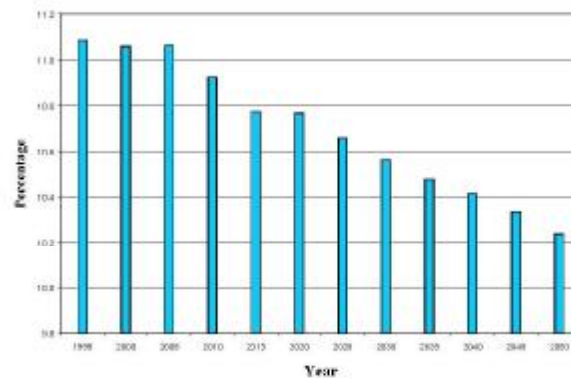


Figure 3-2. Calculated percentage of 22-year-olds earning S&E bachelor's degrees. The percentages were calculated using the U.S. Census population projections by race and gender and the assumption that the same fraction of graduation-age people (taken as 22-year-olds) in each ethnic or gender group—non-Hispanic white males, non-Hispanic white females, African-Americans, Hispanics and Asians—will graduate with S&E bachelor's degrees as did in 1995. See figure references.

Ten Years Later

§ Actions We Have Taken

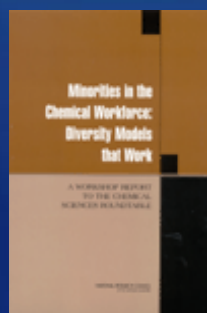
- Evaluation process was begun by the ACC/OMB/OSTP
- Barriers have not been remedied
- Diversity recruiting programs have remained static
- Still no Website – OMB/OSTP are developing one



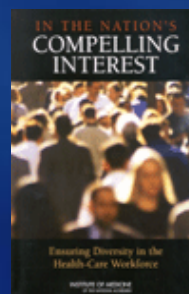
§ Meanwhile, new research reinforces the 2000 data and we need to make up for lost time and opportunities



Diversity in Engineering, 2002



Minorities in the Chemical Workforce, 2003



...Diversity in the Health Care Workforce, 2004



...Clinical Research Workforce Diversity Needs for 2010, 2006

Academic Competitiveness Council

§ ACC process, for the discerning reader, identified big gaps in our knowledge

- Identified programs that might be effective
- Identified where additional investments could be made
- Outlined the nature of the Federal effort

§ \$3.1 billion in STEM education programs, but little coordination

- 57 of 115 programs in the ACC Inventory listed Underrepresented Populations as one of their target audiences
- These programs totaled \$2.1 billion

§ Called for evaluation and the sharing of best practices

- NSTC – Education Subcommittee is investigating
- Honda-Obama legislation also attempts to address these issues



Current Barriers -- IMHO



- § Federal business practices are not aligned with the problem set we are facing
 - “Special Emphasis Programs” are not part of the R&D infrastructure at R&D Agencies
- § Family and cultural barriers
 - STEM careers are not perceived as valuable
- § Resources – It’s not a question of “how much”?, but of “how effectively?”
- § Federal R&D agencies have an unclear mandate and guidance
- § Lack of institutional infrastructure and support for R&D at MSI’s
- § Absence of mechanisms to work with States, industry and non-profits.

We Need a New Definition of Diversity

- § Old definition - grew out of the Civil Rights movement and was aimed at addressing social and economic inequalities
- § New definition – recognizes the unique realities of the STEM workforce. The focus should be on new entrants and the large segments of the US population who have not been presented with the opportunity to pursue STEM careers.
 - We need to step back and ask: “What makes STEM different?”
 - The definition should include rural workers, women, disabled, non-traditional students
 - And it should address many barriers:
 - Family
 - Cultural
 - Geographic
 - Economic
- § Finally, it should be aligned with the programs and resources that enable a STEM education and/or career (EPSCoR vs. Small Business)





Role of Federal Agencies

- § There has been a tremendous absence of critical analysis (despite a very fine 2000 OSTP Report); we need a better analysis of the problem set we are dealing with
- § Any solution will require systemic changes to bring underrepresented individuals and institutions into the core missions of the Federal Agencies
- § A focused outreach effort is required to:
 - Provide opportunities
 - Close the cultural, geographic, and family divides
 - Identify the “best and brightest” who already have an affinity for STEM
- § We need to build upon effective models, which may include:
 - EPSCoR-like programs to build institutional research capacity at minority-serving institutions
 - Outreach to professional societies that can link the Federal workforce to underserved populations (SHPE, NSBP, etc.)
 - Programs such as the Department of Energy’s FaST program that allow faculty members to develop the relationships and capacity to undertake research with Federal mission agencies
 - Mentored research opportunities that provide opportunities for those with an affinity for STEM to become acquainted with STEM opportunities and see the value of a STEM career

Questions and Comments

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