



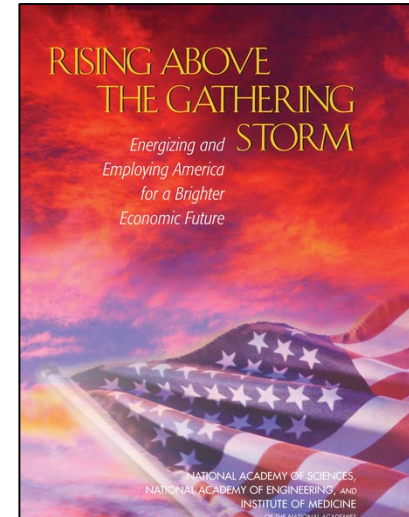
*BLUE
COLLAR
STEM*

National Science Board
February 21

Victor R. McCrary

Blue Collar STEM: The Big Picture

- STEM plays an important role in a nation's technological innovation & economic growth*
- Two STEM economies: workers with 4-year & graduate degrees ('white collar') **AND** workers with high school, vocational training, or 2-year degrees ('blue collar')**
- Estimated 6M to 26M US STEM-based jobs total**
- For workers with less than a 4-year degree:
 - **6M** STEM jobs using narrow definition
 - **13M** STEM jobs using a skills-based definition
 - Context: 1M STEM workers with a PhD



* *Rising Above the Gathering Storm*, National Academies

** *S&E Indicators* and *The Hidden STEM Economy*, Brookings Institute

Blue Collar STEM: What is It?

Blue Collar Workers – *Who Are They?*

- **Old View:** Professional workers in an office vs. workers performing manual labor in a blue uniform
- **We need a new definition.**
 - *Wired Magazine:* “The Next Big Blue-Collar Job Is Coding”
 - *Forbes:* “The Future of Digital Jobs is Blue Collar”

Blue Collar STEM

The technical skills and infrastructure required for workers with less than a 4-year degree to contribute to and take full advantage of today's economy.

Blue-Collar STEM

College

(Traditional –
White Collar)

- Scientist
- Designer
- Theorist

Community

College /
Vocational Tech.

- Laboratory
Managers
- Equipment
Managers

On-the-Job
Training

- Technicians
- Testers

Blue Collar STEM: Opportunities

- These jobs provide opportunities for workers hard hit by changing domestic and global economy
- Blue Collar STEM jobs are well-paying*
- Unemployment rate of Blue Collar STEM workers is relatively low*
- Blue Collar STEM workers are more diverse (race/ethnicity,* geographic**)
- ***Important to NSF...***



* S&E Indicators

** *The Hidden STEM Economy*, Brookings Institute

NSF's Role in Blue Collar STEM

Context

- 2-year institutions support a diverse population of students
- NSF/EHR supports both two-year institutions and students enrolled in associate's degree programs: undergraduate research, institutional capacity building, and through direct student support

Programmatic Examples

- [Advanced Technical Education \(ATE\) Program](#)
- [Scholarships in Science, Technology, Engineering, and Mathematics \(S-STEM\) Program](#)
- [Cyber Corps: Scholarships for Service \(SFS\) Program](#)

Research and Evaluation

- EHR-supported study at the National Academies:
[The Supply Chain for Middle-Skills Jobs: Education, Training, and Certification Pathways](#)

Blue Collar STEM: Proposed Next Steps

- Form an internal working group to explore the issue, pinpoint NSF's niche, research what else has been done...
- Stakeholder Outreach:
 - Industry
 - Skilled trade representatives
 - Defense
 - Educational institutions
 - Congress/Administration
 - Local/state governments
- Report back to the NSB with focused objectives
- Organize and execute a 1-1.5 day symposium (Fall 2017) on Blue Collar STEM for these stakeholders discuss this issue and its impact on economic development and technological advancement

