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