Workforce Working Group Update to IAC

December 8, 2022

IAC Workforce Working Group

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Charge to Workforce Working Group

1. Examine workforce needs across the U.S. microelectronics industry
   - from high-level R&D personnel to factory workers
2. Review programs that will increase the interest and availability of the necessary skills for the U.S. to lead the world in semiconductor R&D and manufacturing

…to inform IAC's recommendations on how the R&D programs should advance building the talent, leaders, and innovators of tomorrow.

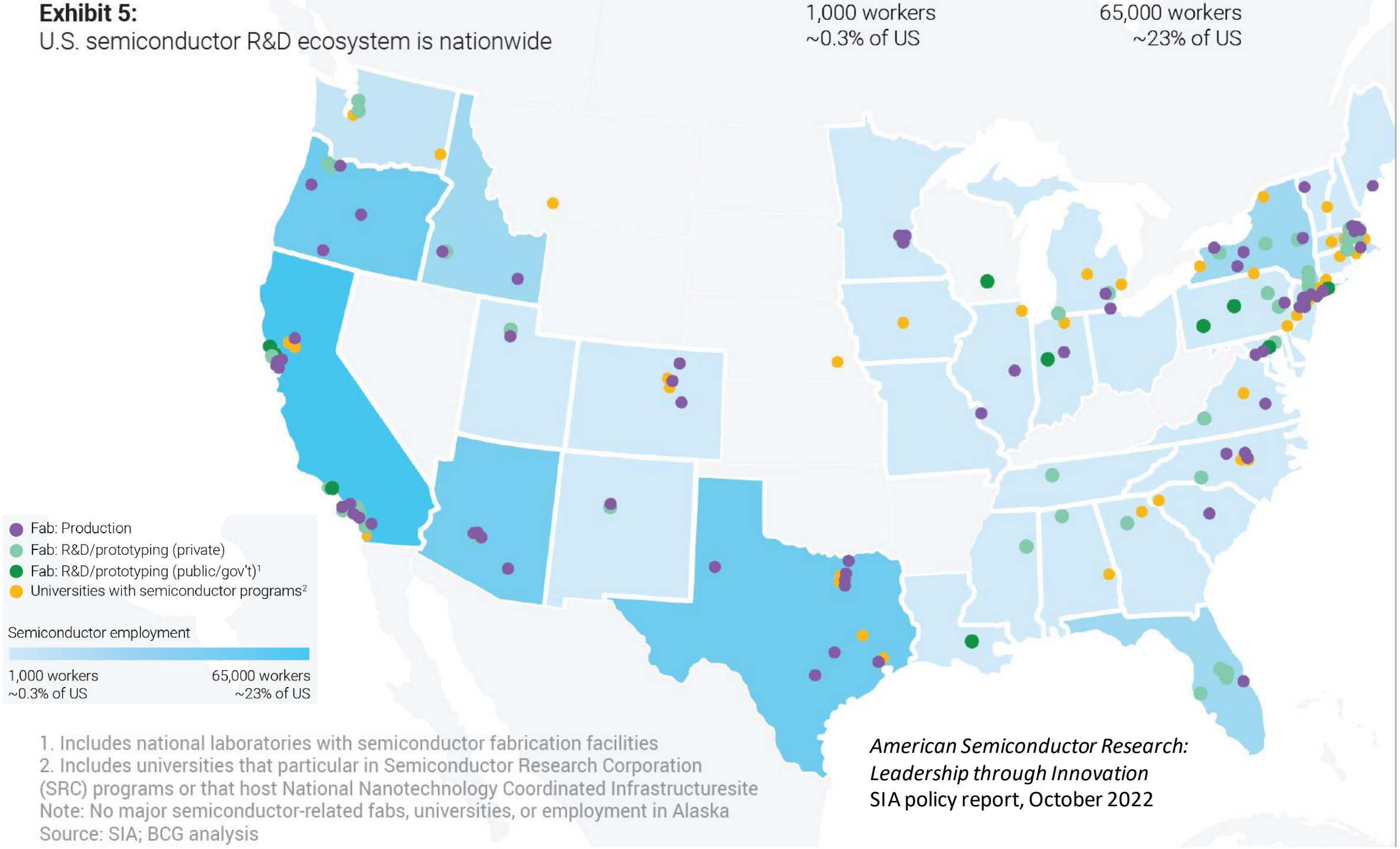
Working Group Meetings

- November 23: Charter and draft work plan, member homework
- December 5: Workforce needs, WG membership and invited speakers
- December 8: Refined work plan and schedule

Documents Reviewed

- Responses to DoC RFI “Incentives, Infrastructure, and Research and Development Needs To Support a Strong Domestic Semiconductor Industry” (Mar’22)
  - American Semiconductor Innovation Coalition (ASIC)
  - MITRE Engenuity
- NIST Special Publication 1282: Summary of Responses to RFI (Aug’22)
- ASA-SEMI Vision Paper “Fueling American Innovation & Growth” (Aug’22)
- PCAST report “Revitalizing the U.S. Semicoductor Ecosystem” (Sep’22)
- Draft National Strategy on Microelectronics Research (Sep’22)
- SIA policy report “American Semiconductor Research” (Oct’22)

Exhibit 5:
U.S. semiconductor R&D ecosystem is nationwide



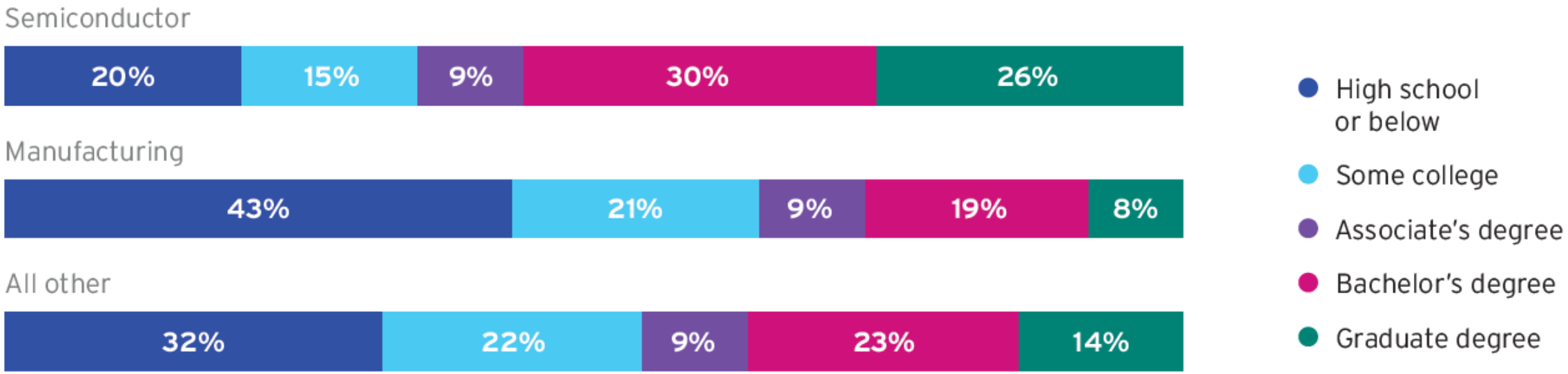
1. Includes national laboratories with semiconductor fabrication facilities
2. Includes universities that particular in Semiconductor Research Corporation (SRC) programs or that host National Nanotechnology Coordinated Infrastructuresite
Note: No major semiconductor-related fabs, universities, or employment in Alaska
Source: SIA; BCG analysis

American Semiconductor Research: Leadership through Innovation
SIA policy report, October 2022

3.3.3 Educational attainment

The semiconductor industry employs a higher share of workers with college degrees compared to manufacturing and all other industries. Still, one in five workers in the semiconductor industry has not attended university. This highlights how the semiconductor industry is an increasingly rare example of an industry that provides opportunities across the education and skills spectrum in which jobs exist for workers to earn family-sustaining wages.

FIG. 12: Educational attainment in the semiconductor industry

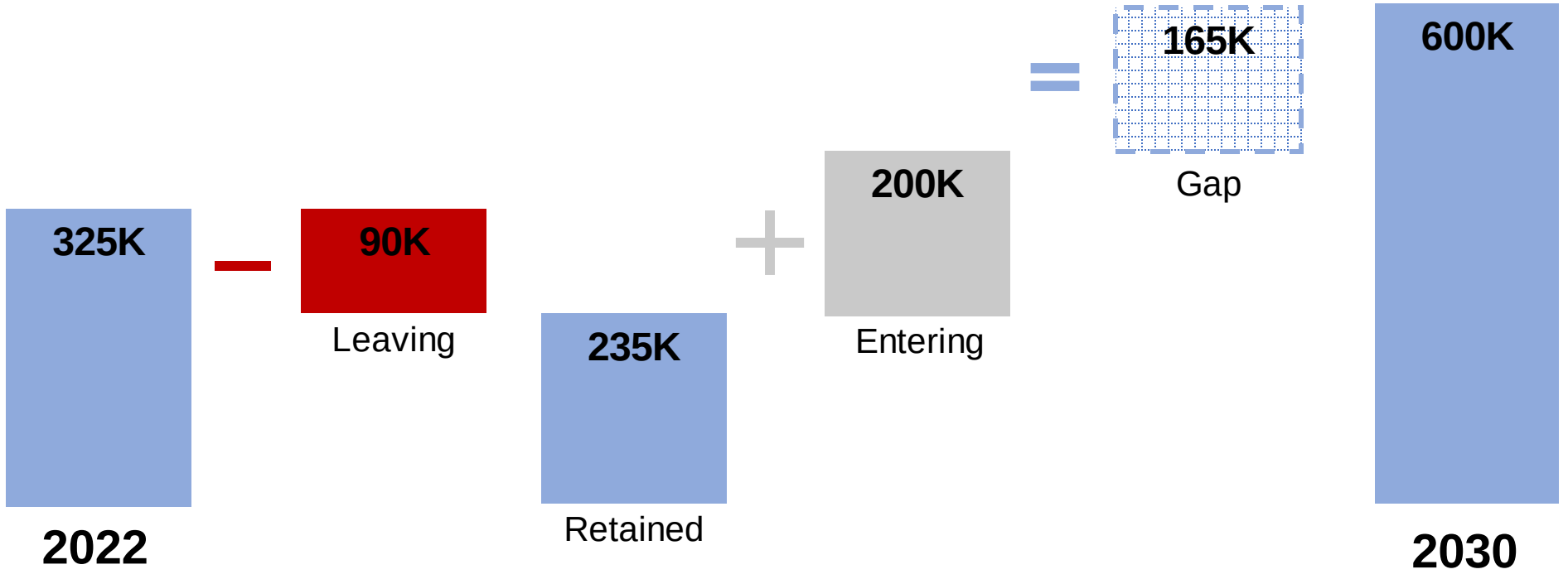


Source: ACS 2019, Oxford Economics tabulations

SIA-Oxford Economics report (https://www.semiconductors.org/chipping-in-sia-jobs-report/), May 2021

U.S. Semiconductor Industry Talent Shortage

Talent Supply & Demand Projections (high-skilled positions)

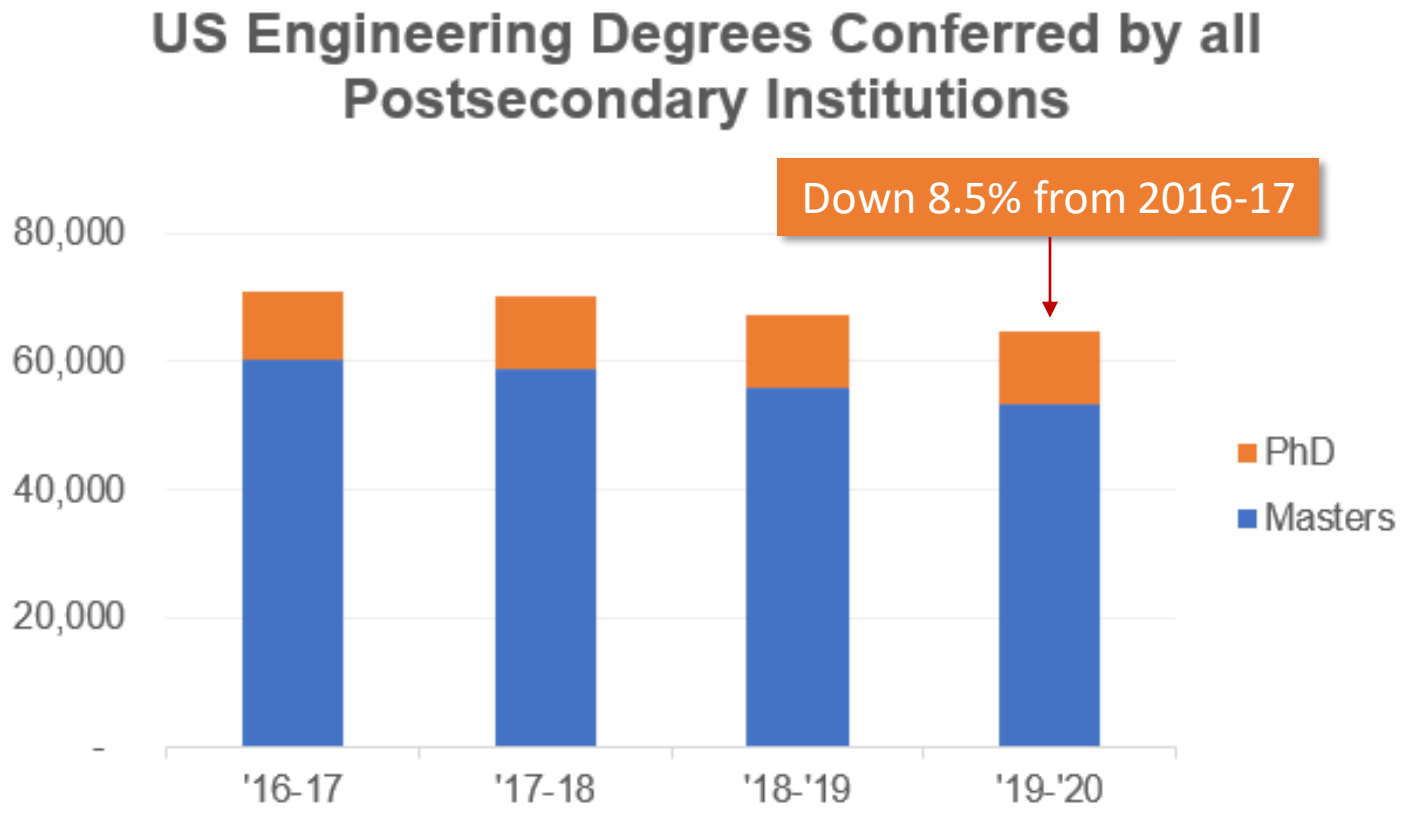


Note: Figures assume 8% yoy talent demand growth, 2.5% industry exits yoy, and entrance rate of 5% yoy

Sources: SIA, Chipping In, May '21; Oxford Economics; Semi Foundation; Semi Foundation & Burning Glass, Jul. 2021; NCES: National Center for Education Statistics, McKinsey 04/22 Semi Industry analysis, Josh Bersin Partners, Applied's Workforce Strategy & Intelligence Group.

Source: Om Nalamasu, Applied Materials, SEMI International Trade Partners Conference (Big Island, HI USA), Nov 2, 2022

Headwinds for Higher Education



Source: National Center for Education Statistics, September 2022

Source: Om Nalamasu, Applied Materials, SEMI International Trade Partners Conference (Big Island, HI USA), Nov 2, 2022

Working Group Membership

Additional institutions/organizations to be represented (incomplete list):

- GLOBALFOUNDRIES
- Industry/trade association (e.g., IPC)
- Faculty at minority serving institution (e.g., HBCU, HSI)
- Faculty at community college?
- State government

Draft Work Plan

- Take inventory of existing education & training programs
  - By geographical region, educational level
- Interview experts
  - ASIC & MITRE Engenuity
  - Industry WF need experts
  - Exemplar educational programs
  - Chip design education infrastructure
  - SEMI Foundation
- Identify gaps
- Summarize findings and draft recommendations