

Idaho's Semiconductor Workforce: An Overview

Idaho's Future in the Semiconductor Industry

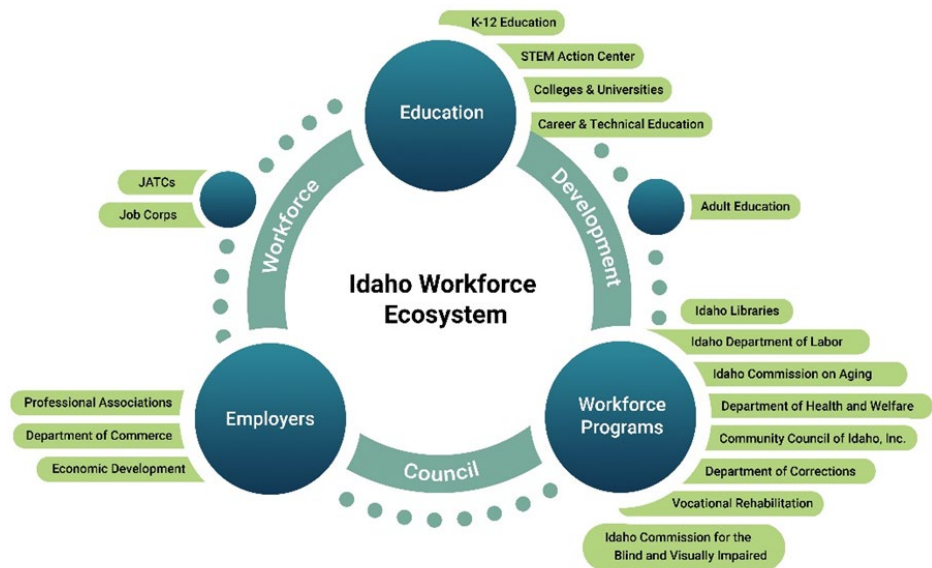
The State of Idaho boasts a concentration of semiconductor manufacturing jobs six times greater than the average national rate, ranking just second in the nation behind the State of Oregon. With an average annual wage of \$160,000, these professions provide a substantive degree of economic security and resilience for workers and play an integral role within Idaho's economy. Out of 74,000 manufacturing jobs currently extant in Idaho, nearly 8,000 of them are in the semiconductor workforce. The CHIPS act is only expected to bolster these numbers. While Idaho is already contributing 3.4% of the United States' semiconductor manufacturing workforce, it is projected that CHIPS funding will increase this amount by another 2,000 initial jobs.

Idaho presents unique challenges and opportunities for semiconductor workforce development. With a population of just under 2 million people spread over 88,000 square miles, the state has many small, isolated, and geographically distributed communities. However, the social and professional environment has long relied upon tightly knit relationships, allowing for close collaboration and rapid adaptation. Additionally, while educational and training pathways into the semiconductor workforce have been limited in the past, the recent combination of CHIPS and state level investments has resulted in new pathways that expand opportunities for all Idahoans.

This brief introduces Idaho's semiconductor talent landscape and highlights recent statewide efforts among industry partners, educational and training institutions, and state agencies to broaden and deepen the talent pool. While many investments are just beginning, Idaho has the benefit of dedicated and long-lasting partnerships to help direct efforts that are both thorough and efficient.

A Comprehensive Workforce

Complexity and interconnectedness are a core feature of Idaho's workforce. To support the success of any sector, it is essential to invest in many other parts of the ecosystem. The semiconductor workforce is therefore dependent on construction workers to create office buildings and new homes, on childcare workers to support their families, and on a thriving health system to ensure their wellbeing.



In addition, Idaho's nonprofits, businesses, government agencies, and educational institutions must collaborate to ensure the success of our workforce, our economy, and our future together. The diagram above describes how Idaho's workforce ecosystem functions to provide training opportunities and supports to individuals to facilitate business' success and keep Idaho moving forward toward prosperity.

Opportunities for All Idahoans

The semiconductor workforce in Idaho is not currently representative of the state’s demographics, specifically regarding gender equity and the growing Hispanic/Latino population. Females make up 24.2% of the semiconductor workforce in Idaho, while being 50% of the statewide population. Latest statistics also identify 6.9% of the semiconductor workforce as Hispanic/Latino, while the statewide population is 13.3%.

To support economic opportunities for all Idahoans, Idaho is embracing thoughtful strategies to engage members of underrepresented and underserved communities in the semiconductor industry. For example, to confront the historically low gender diversity in engineering, Micron operates Girls Going Tech and actively seeks out business partners in underrepresented communities, including rural areas. Partners in the semiconductor workforce system are actively collaborating to fit efforts together and provide comprehensive support for a diverse and thriving workforce. The industry must work intentionally to open equitable pathways, for example by participating in programs like those run by the Idaho Commission on Hispanic Affairs to illuminate the career opportunities available to Hispanic/Latino students.

Semiconductor Workforce Development Grants

Idaho’s recent investments in the semiconductor workforce include grants run by various organizations, targeting a variety of populations, with a focus on rural and underserved communities.

Grants Approved

Source*	Grant Type	Approved	Focus	Organization / Project
WDTF	Innovation	12/2022	Educators	Micron – Educator Externship
WDTF	Industry Sector	5/2023	Students	Boise State University – Semiconductor for All
ARPA	Industry Sector	5/2023	Students	College of Western Idaho – Manufacturing / Mechatronics
WDTF	Industry Sector	10/2023	Educators	Idaho STEM Action Center – iSTEM
WDTF	Industry Sector	10/2023	Community	Idaho Business for Education – Idaho STEM EcosySTEM
WDTF	Industry Sector	11/2023	Community	University of Idaho – 4-H
WDTF	Industry Sector	11/2023	Community	Idaho Out-of-School Network
ARPA	Industry Sector	12/2023	Students	College of Eastern Idaho - Mechatronics/Energy Systems
ARPA	Industry Sector	12/2023	Students	College of Southern Idaho - Engineering/Mechatronics
WDTF	Innovation	12/2023	Educators	University of Idaho – IKEEP – Indigenous Educators
WDTF	Innovation	12/2023	Students	Idaho Business for Education - Youth Apprenticeship Program
WDTF	Innovation	12/2023	Community	Interfaith Sanctuary – Construction pre-apprenticeship
ARPA	Employer Grant	12/2023	Employer	Micron
ARPA	Industry Sector	12/2023	Students	University of Idaho – Advanced Semiconductors Across Idaho

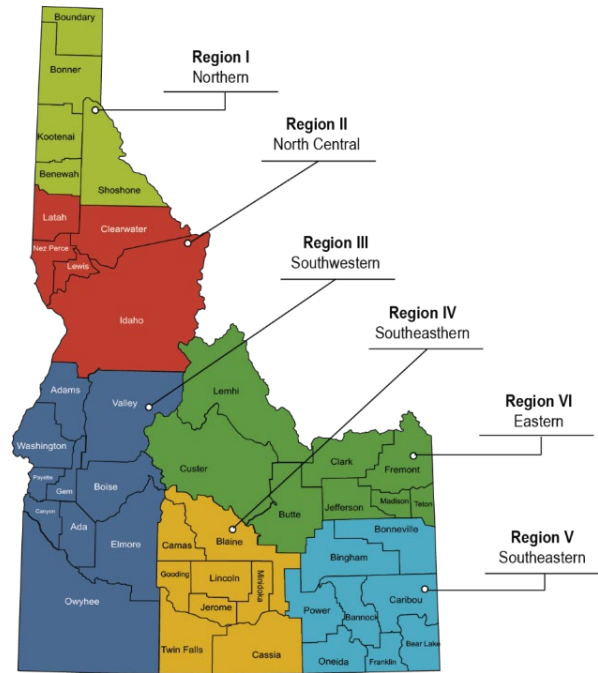
Source* - WDTF – Workforce Development Training Funds / ARPA – Federal American Rescue Plan Act

Idaho's Partnerships in Developing the Semiconductor and Advanced Manufacturing Workforce

The Idaho Workforce Development Council

The Idaho Workforce Development Council (WDC) is designated by the Governor of Idaho as the State Workforce Development Board under the federal Workforce Innovation and Opportunity Act (WIOA) and also serves as the local board. Further, as the coordinating body within Idaho's workforce development ecosystem, the WDC is uniquely positioned to track, support, and communicate semiconductor workforce efforts throughout the system. The WDC is comprised of 37 private and public sector committee members, representing Idaho's key industries and geographic diversity, and plays a pivotal role in facilitating workforce training and development initiatives that empower Idaho's businesses and individuals to thrive in a rapidly evolving economy.

As the state organization responsible for administering WIOA, the WDC engages deeply in supporting underserved and underrepresented communities through grant programs like Idaho LAUNCH, Childcare Expansion, and Outreach Grants. These programs target a wide range of marginalized, underserved, and underrepresented populations in the state, including women, veterans, people of color, Hispanic people, and residents of rural areas.



Supporting Agencies and Workforce Programs

A variety of government agencies are involved in supporting Idaho's technology workforce. In 2015, the Idaho legislature enacted HB302, creating the STEM Action Center as a central hub to coordinate and support STEM opportunities throughout the state. The STEM Action Center's programs include awareness events, science and technology fairs, educator awards, teacher professional development, externships to expose educators to the real-world environments that students need to be prepared for, and many other opportunities.

Other various entities in the workforce ecosystem are all engaged or able to be engaged; primary entities include Vocational Rehabilitation, the Idaho Department of Labor, and Career & Technical Education.

Collaborating Employers

Semiconductor workforce development is an effort that spans public and private organizations, across education providers and employers. Micron, Idaho National Laboratory, Idaho Power, and other companies each have outreach programs that help develop their talent pipelines. Idaho's youth are seeing increasing outreach and investment from employers and government entities alike, as is detailed in the following section.

Idaho's Pathways to Semiconductor Jobs

K-12 Opportunities

The STEM environment has also become more diverse in recent years, with the Idaho Out-of-School Network operating mobile Think Make Create labs, and the Idaho STEM Ecosystem supporting increased business engagement in STEM activities. The Idaho Out-of-School Network supports 28 Think Make Create (TMC) labs used at schools, afterschool activities, summer camps, and other events across the state to bring STEM directly to students, primarily to those who are underserved. Since 2021, more than 20,000 youth have used Think Make Create (TMC) mobile makerspace labs. Youth "do science," have fun, and learn how to tinker, make, and create. Each independently operated TMC Lab serves a different youth program from pre-K to 12th grade. Each TMC Lab offers hands-on STEM learning through a quality out-of-school time program.

Additionally, the STEM Action Center and Workforce Development Council operate an annual summer externship program that exposes educators to the real-world environments that students need to be prepared for. By working directly in jobs outside education, educators can better understand the skills their students will need to be successful.

These programs and those listed below intersect to create a system that enhances each student's chances of exposure to their dream job, then acclimates them to the pathway that will get them there.

Micron's Efforts in Youth STEM

Micron Technology's mission is to transform how the world uses information to enrich life for all. The Micron Foundation builds on this mission to enrich lives by providing equitable opportunities for underrepresented populations, enriching our communities, and increasing access to STEM education to create lasting social impact. The focus of all Micron STEM programs are exploration, innovation, and discovery.

Micron's Signature Youth Programs

- Chip Camp is a free, three-day camp filled with hands-on STEM activities related to semiconductor manufacturing and engineering jobs. Activities are designed to provide a conceptual base for understanding semiconductors, as well as to introduce students to the electrical components in a memory device.
- Girls Going Tech focuses on middle school-aged girls offering a combination of hands-on STEM and career discussions with mentorship from women professionals.
- Careers in a High-Tech World connects high schoolers to semiconductor professionals for a 'day-in-the life' career experience.

Idaho Power's Efforts in Youth STEM

Idaho Power's education and outreach energy advisors work with schools and community groups to increase understanding about the energy industry and how Idaho Power delivers affordable, clean, reliable energy to our communities.

Idaho Power Youth STEM Programs

- Career Presentations for 7th-12th graders.
- Energy Wise Program
- Tours at Idaho Power locations
- Teacher programs
- Grants for Educators
- Scholarships for graduating high school students.

Idaho National Laboratory's Efforts in Youth STEM

As one of 17 national labs in the U.S. Department of Energy complex, Idaho National Laboratory (INL) is home to more than 6,100 researchers and support staff focused on innovations in nuclear research, renewable energy systems and security solutions that are changing the world. The mission of INL's K-12 Education Enrichment Programs is to inspire Idaho's future STEM workforce; impact students, teachers, and families by integrating best practices in STEM education; and empower employees to become STEM mentors to transform K-12 Education Enrichment into a driver for innovation.

INL Youth STEM Programs

- STEM in the Lab is a K-12 initiative that aims to inspire Idaho's future workforce and increase access to learning and career exploration opportunities.
- Resource Library at INL offers various flipbooks, available in English and Spanish, along with some links to useful resources for educators, students and families.
- Explore STEM Careers at INL through videos on their K-12 website.

Higher-Education Opportunities Related to Semiconductor and Advanced Manufacturing

[Boise State University - BSU](#) The BSU College of Engineering is the largest in the state of Idaho, seeing enrollment in engineering, construction management and computer science majors increase nearly 60 percent since 2005. BSU's newest building, opened in 2021, is the 'Micron Center for Material Science Research' and contains the newly established 'Microelectronics Education and Research Institute'.

Within the College of Engineering in 2022, in partnership with Micron, BSU created the Micron Student Success Center (MSSC) which centralizes key student resources necessary for students to succeed while seeking their degrees and mapping their careers. MSSC ensures equity for all and a core competency for leadership in a global environment. Other areas of study that support Semiconductor education are in the College of Science with Chemistry and Physics, College of Business with Supply Chain emphasis. BSU is the recipient of WDC grants that support the future semiconductor workforce: (1) Semiconductor for All, (2) Current Military & Veterans Outreach, (3) Cleanroom Renovations.

[College of Eastern Idaho - CEI](#) offers programs of study for students in Energy Systems, Cybersecurity, Information Technology and their newly planned Mechatronics Engineering Technology, expansion of these programs funded by a WDC grant. As a community college serving the southeastern region of the state, this institution provides regionally relevant workforce training and continuing education. Additionally, CEI is a recent co-awardee of a Tech Hub grant and is an active member in the Intermountain-West Nuclear Energy Corridor, and has also received a WDC grant to launch a new Mechatronics Program, supporting advanced manufacturing careers throughout the region.

[College of Southern Idaho - CSI](#), a Hispanic-serving institution, offers a number of opportunities for students to build skills related to semiconductor and advanced manufacturing, including Automation Engineering / Mechatronics and Industrial Systems Maintenance Technology at their main campus, and expanding to satellite campuses in more rural communities. Like CEI and CWI, the College of Southern Idaho has also received a WDC grant to enhance and expand their new Mechatronics program. Altogether, these programs provide training opportunities throughout southern Idaho.

[College of Western Idaho - CWI](#) offers Associate of Science degrees in Engineering, specifically Advanced Mechatronics Engineering Technology, as well as Machine Tool Technology and Robotics. The college is partnering with Micron Technology on a newly launched Registered Apprenticeship Program, an earn while you learn model for current CWI students. This apprenticeship is designed to train highly qualified technicians for the new leading-edge memory manufacturing fabrication facility in Boise, Idaho. Additionally, CWI is the recipient of a Workforce Development Council grant to expand their Advanced Mechatronics Engineering Technology Program.

[Idaho State University – ISU](#) through the [ISU College of Technology](#) provides students in southeast Idaho with the opportunity to explore AS/AAS programs related to advanced manufacturing and related trades. Programs include Electrical Engineering Technology, Systems Mechanical Engineering Technology, Robotics and Communication Systems and Instrumentation Engineering Technology. ISU also provides transfer opportunities for students looking to continue their education from ISU’s [College of Science and Engineering Programs](#).

[Lewis Clark State College – LCSC](#) offers Industrial Electronics Technology certificate and AAS programs that prepare northern Idaho students for roles in the industry related to Electronic Engineering Technicians and Electro-mechanical technicians. These programs are closely tied to skills needed for technicians in the advanced manufacturing industry.

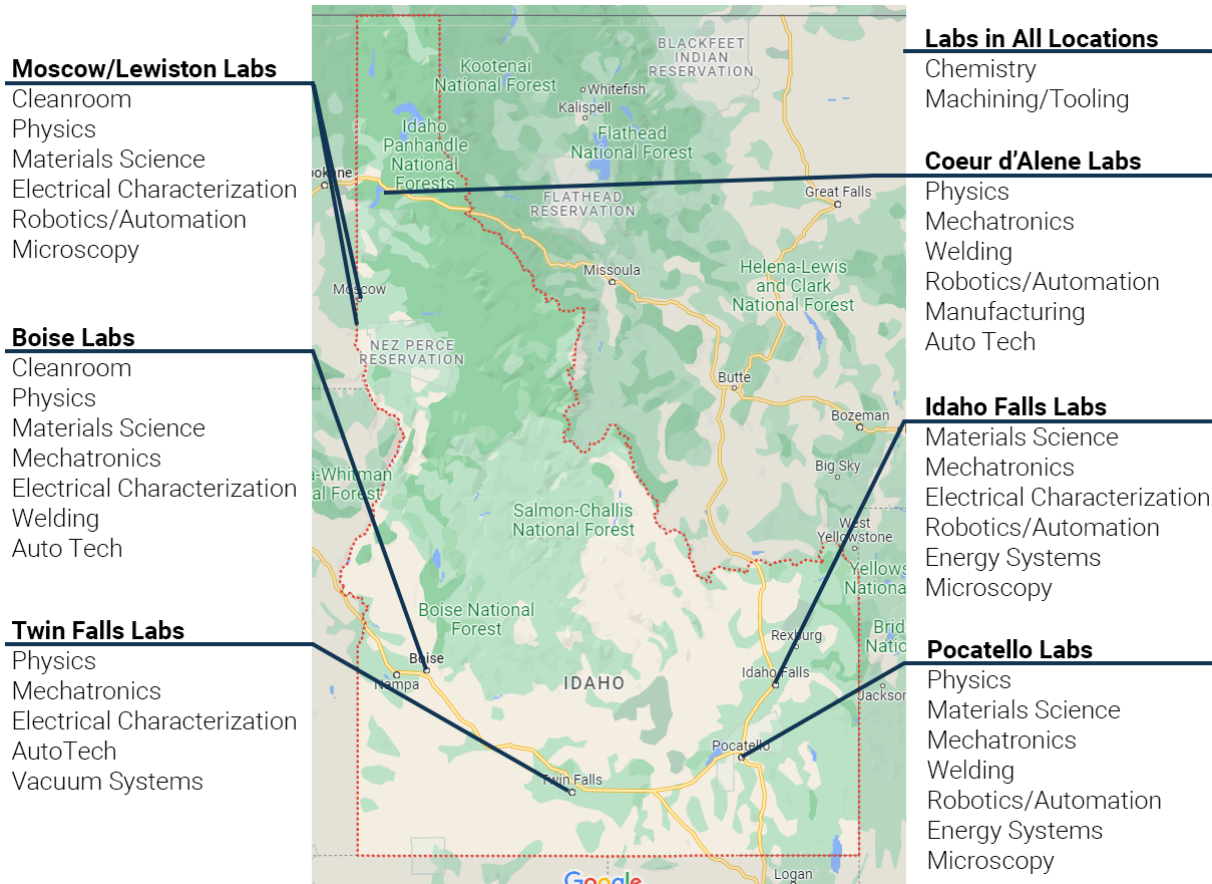
[North Idaho College – NIC](#) equips students with training and education in science and technology, benefiting a rich and competent workforce. Programs include Mechatronics that may support advanced manufacturing technician workforce, as well as traditional trades that are needed to support Industrial Facility maintenance (HVAC, Plumbing, Electrical.)

[University of Idaho – UI](#) Being Idaho’s Land-Grant university and the state’s oldest public university, the University of Idaho is unique in how it offers programs in all 44 counties across Idaho. There are UI Regional Centers in Coeur d’Alene, Idaho Falls and Boise, in addition to the main campus in Moscow. In 2018, the College of Engineering unveiled the Micron Student Center which provides key services and resources to not only help the existing students persist through the engineering curriculum, but also attract and retain engineering students, which is especially important for women and underrepresented groups that are less likely to consider engineering as an education and career option. University of Idaho is the recipient of WDC grants that support students and the community: (1) 4-H, (2) Indigenous Knowledge Educator Experience Program (IKEEP), (3) Advancing Semiconductors Across Idaho (ASAI).

Note that each of these educational institutions accepts LAUNCH funding from the State of Idaho for in-demand career paths, making education more accessible to all Idahoans and broadening the talent pool for semiconductors and advanced manufacturing.

Each college and university include STEM and business management education pathways such as chemistry, computer science, operations management, electrical engineering, supply chain management, and many others that are essential to a successful manufacturing environment.

Inventory of Lab Spaces across Idaho – Fall 2023 – Each higher-ed institution participated in this survey of lab space offered across their regions. The result is to be used to assess gaps and opportunities where learning can be shared and what is lacking regionally.



Summary

Developing a talent pool takes time, which is why Idaho has spent recent years creating programs and pathways for the semiconductor workforce to thrive in an environment that fully supports their success. Infrastructure and labs have already been constructed across the state, collaborative relationships are operating across public and private sector organizations, schools and training entities are standing up programs to give workers necessary skills, and outreach to youth has been generating enthusiasm for their future careers. The final element in an analysis of Idaho’s semiconductor workforce capacity therefore becomes a question: what’s next?

Upcoming Goals

- Identify additional companies to engage in talent development and collaboration
- Refine and establish the newly formed Idaho Workforce Education Consortium
- Continue to grow awareness statewide of the importance of having a STEM-ready workforce

For More Information

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For more information about examples featured in this document, please contact institutions or organizations directly.