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Right-Sizing the Opportunity: Semiconductor Feasibility and Advanced Manufacturing Pathways in the North San Joaquin Valley

Introduction

Semiconductors represent a key enabling technology for a vast array of digital technologies, including AI, and power a broad range of end uses, including communications, transportation, consumer electronics, industrial applications, and more.

Over the last five years, interest in reshoring semiconductor industrial capacity has grown, fueled by a realization of the downstream impacts of semiconductor supply chain disruptions that rippled through the U.S. economy during the COVID-19 pandemic.

The CHIPS and Science Act, passed on August 9, 2022, provided over $50 billion in federal funding toward domestic reshoring. Subsequent investments have also aimed to build resilience in the domestic supply chain.

This memo aims to explore the feasibility of semiconductor industry growth in the North San Joaquin Valley (NSJV), to assess whether the impacts of future education and training investments would be maximized by focusing on supporting regional semiconductor workforce pipelines.

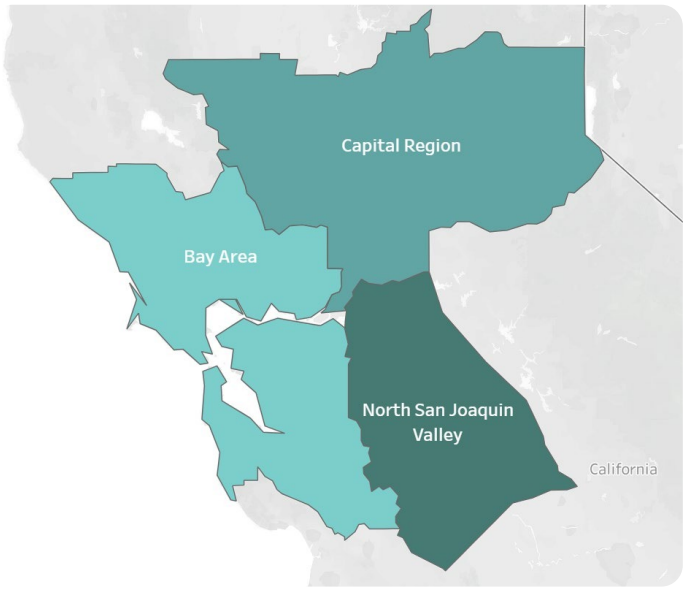

Figure 1: North San Joaquin Valley and Surrounding Mega-Region

Table of Contents

Introduction 1
Executive Summary 3
Semiconductor Industry Overview 3
Regional Employment Profile: Semiconductors 5
Regional Employment Profile: Advanced Manufacturing 7
Regional Infrastructure and Funding Profile: Semiconductors 8
Regional Infrastructure and Funding Profile: Advanced Manufacturing 10
Workforce Implications 10
Conclusions and Recommendations 11
Appendix A: Semiconductor Industry Value Chain 13
Appendix B: Industry and Employment Data 13
Appendix C: Semiconductor Industry Case Studies 17

Executive Summary

Today, the NSJV supports less than 50 semiconductor jobs, as compared to the Bay Area's 45,000+ semiconductor jobs and the Capital Region's 500+ semiconductor jobs. Even with a longstanding semiconductor fabrication presence, the Capital Region has a relatively modest employment base, illustrating the challenges of sustaining semiconductor manufacturing employment.

Given the NSJV's limited semiconductor employment base, expanding semiconductor-specific workforce training in the NSJV would primarily prepare NSJV residents for jobs outside the region. While such training could improve access to higher-paying opportunities in the Bay Area and Capital Region, it could also reinforce the NSJV's already extreme commuting patterns and dependence on distant employers.

Opportunities to secure adequate resources to grow a regional semiconductor cluster in the NSJV over the next two to four years are limited. Most major federal CHIPS manufacturing awards have already been committed to regions with established semiconductor infrastructure, research capacity, and supplier networks, or existing facilities available for conversion. The NSJV lacks comparable assets, which would require considerable time and investment to develop.[1] In addition, the semiconductor industry's cyclical nature and uncertainty around future AI-driven demand introduce additional risks for investments dependent on rapid industry growth.

Thus, the NSJV should not prioritize semiconductor-focused training investments preparing residents for jobs outside the region. Semiconductor workforce demand within the broader mega-region[2] are better served by existing local education and training assets where jobs are concentrated, particularly in the Bay Area.

Investments in transferable advanced manufacturing and technical skills aligned with existing local employers and growth opportunities offer greater regional benefits to the NSJV by strengthening the local employment base and reducing the need for long-distance commuting. Focusing workforce investments on advanced manufacturing can also improve local job quality within the NSJV, reducing out-migration of skilled workers, supporting equity and accessibility goals, and aligning directly with the 15-month advanced manufacturing regional strategy framework developed by North Valley THRIVE.

Semiconductor Industry Overview

The semiconductor industry encompasses a wide range of activities, including research and design, manufacturing, assembly, packaging, and testing.[3] Key end uses include communications, transportation, consumer electronics, and industrial applications, as well as digital technologies such as AI.[4]

1. A recent Merced College assessment, funded by North Valley THRIVE, reached a similar conclusion: that the foundational conditions to grow or establish a semiconductor industry cluster in the NSJV do not exist in the near term.
2. In this memo, "mega-region" refers to the region encompassing the Bay Area, the Capital Region, and the NSJV.
3. See Appendix A for a detailed description of the key activities in the semiconductor industry.

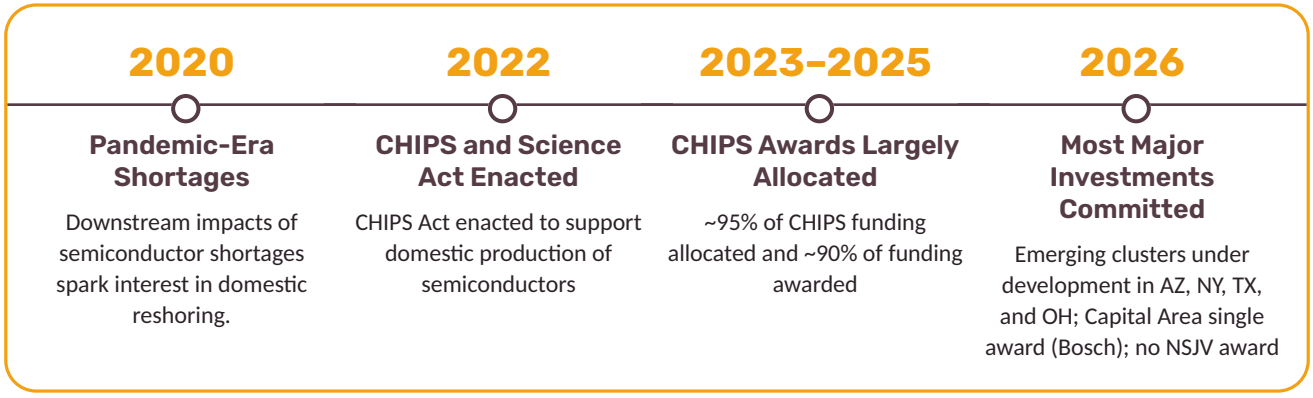

Figure 2. Timeline of Domestic Semiconductor Investments

Over the last few years, the federal government has invested heavily in domestic semiconductor via the CHIPS and Science Act. However, as shown in Figure 2, which provides a timeline of domestic semiconductor investments, CHIPS funding had largely been allocated as of 2025.[5,6]

As of 2026, most federal semiconductor funding had already been committed to regions outside the NSJV with established semiconductor assets. Consequently, for regions like the NSJV, which have not previously received major CHIPS awards and do not have significant preexisting assets to support near-term growth of a semiconductor cluster, opportunities are now limited to secure comparable investments.

Current growth forecasts for the semiconductor industry depend heavily on sustained AI-related investment, which is expected to fuel growth in leading-edge chips and memory.[7] Because future demand expectations remain uncertain, workforce investments tied directly to semiconductor industry growth forecasts carry greater risk than investments in highly transferable advanced manufacturing skills.[8]

4. Table 1 in the Appendix lists NAICS codes relevant to the respective industries.
5. Ibid.
6. Kwon, Yong W. "Semiconductor Fabrication Facilities Funded by the CHIPS Act: Project Status and Considerations for Congress." July 14, 2026.
7. McKinsey. "The $2.3 trillion horizon: How AI is rewriting the semiconductor story." September 18, 2026.
8. The Economist. "Is the semiconductor industry headed for an almighty crash?" October 15, 2026.

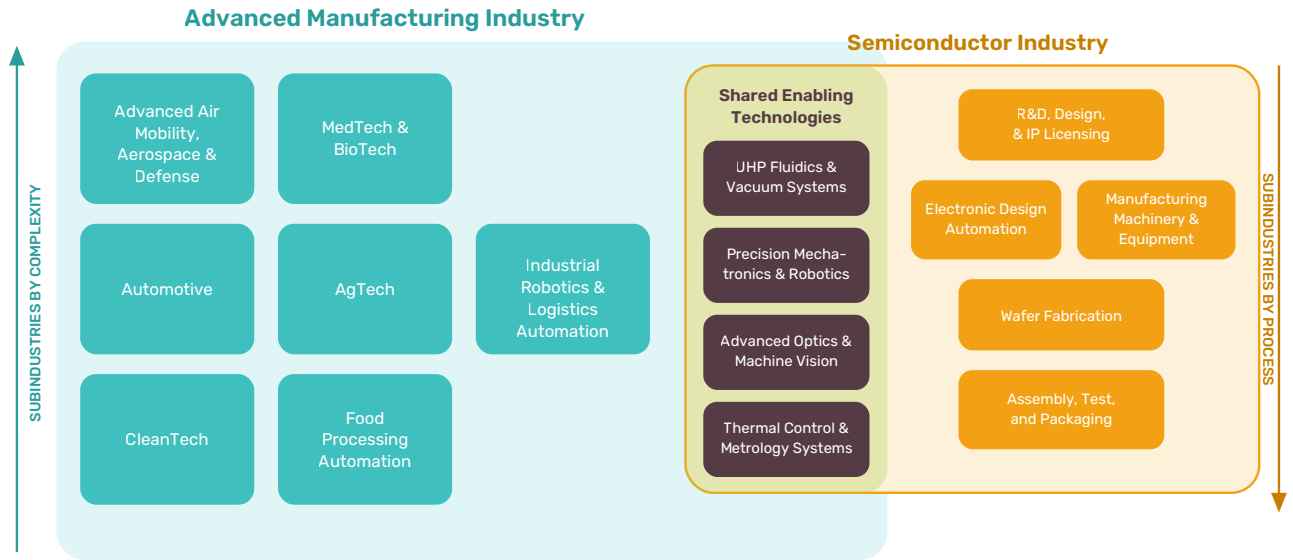

Figure 3: Relationship between the Advanced Manufacturing and Semiconductor Industries

As such, the semiconductor industry represents a highly specialized niche industry within the broader advanced manufacturing ecosystem, with limited overlaps in areas such as precision mechatronics, robotics, and advanced instrumentation. Figure 3 illustrates the relationship between the advanced manufacturing and semiconductor industries.

While the semiconductor industry is well-defined based on long-standing patterns of economic activity, the advanced manufacturing industry is broader and not as clearly delineated. Advanced manufacturing spans a breadth of emerging technologies, including aerospace and defense, industrial automation, food processing, cleantech, and agriculture. Many of these subindustries do not directly intersect with the semiconductor industry.

As shown in the following regional employment profiles, economic activity within the NSJV is more highly concentrated in industries fueled by advanced manufacturing, with very low levels of employment and regional specialization in semiconductors and a lack of infrastructure to support meaningful cluster development in the near term. In contrast, the NSJV has a high regional concentration of industry and workforce assets in food processing and primary metals manufacturing, two industries with growing demands for a skilled technical workforce to support process automation.

Regional Employment Profile: Semiconductors

Industry employment is strongly concentrated in Santa Clara County, followed by Alameda County, in the Bay Area. No other subregion comes close to the Bay Area in terms of semiconductor industry employment.

As shown in Figure 4, the Bay Area accounts for **over 48,000 semiconductor jobs**; the Capital region accounts for over 600 jobs; and NSJV supports **fewer than 50 jobs**.



Semiconductor employment in the Bay Area is **more than three orders of magnitude higher** than in the NSJV, which lacks the employment base needed to support near-term cluster development.

Figure 4. Total Semiconductor Industry Employment in the Megaregion, 2026.Q2

Figure 5 illustrates semiconductor industry concentration across the mega-region, as measured by location quotient, where a darker hue indicates a stronger regional concentration in industry employment. Software developers and engineers represent a significant share of the Bay Area's semiconductor workforce, accounting for over 12,700 jobs.[9] Many of these occupations require a bachelor's degree or higher at entry, reflecting a high level of specialization in research, engineering, and technical expertise.[10]

Major employers in the Bay Area include NVIDIA, Taiwan Semiconductor Manufacturing Company (TSMC) North America, and Intel, supporting employment primarily in design, pre-fabrication, and chip and equipment manufacturing. Major employers in the Capital Region include Bosch, which was recently awarded $225 million in CHIPS Act funding to support up to 700 manufacturing, engineering, and R&D jobs at full scale.[11]

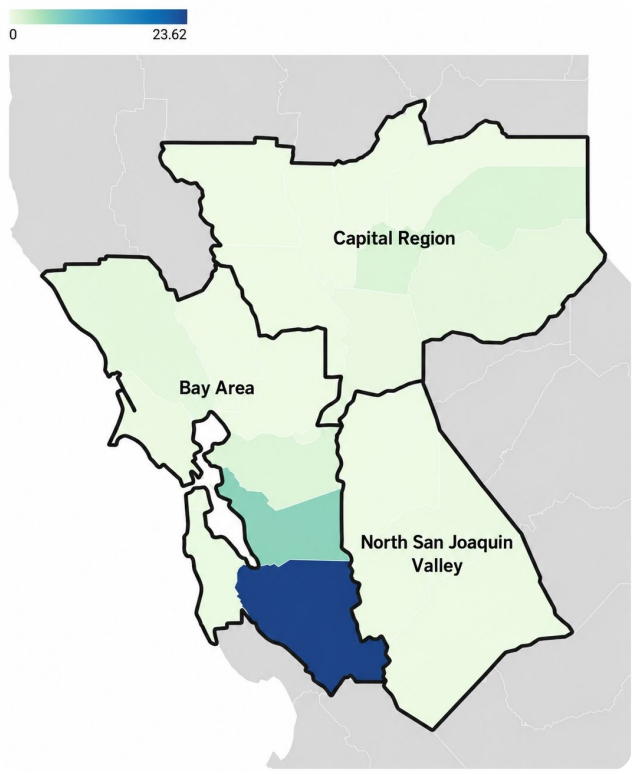

Figure 5. Regional Semiconductor Industry Concentration by Location Quotient, Q2.2026

The distant geographic concentration of these employment opportunities is particularly significant given the NSJV's exceptionally high rates of long-duration commuting.

9. See Appendix A: Industry and Employment data for the definition of software developers and engineers.
10. "Education and training assignments by detailed occupation." Bureau of Labor Statistics. 2025. https://www.bls.gov/emp/tables/education-and-training-by-occupation.htm
11. "Department of Commerce Announces Direct Funding Agreement with Bosch for a $225 Million CHIPS Program Award to Support Domestic Production of Silicon Carbide Semiconductors." National Institute of Standards and Technology. July 2026. https://www.nist.gov/news-events/news/2026/07/department-commerce-announces-direct-funding-agreement-bosch-225-million

Research published in 2026 by the University of the Pacific's Center for Business and Policy Research (CBPR) found that all three NSJV counties rank among the nation's most extreme super-commuting counties. Approximately 10.0% of San Joaquin County commuters, 9.4% of Merced County commuters, and 8.6% of Stanislaus County commuters travel 90 minutes or more each way to work, compared with 3.8% statewide and 2.7% nationally.

Together, the three counties account for approximately 58,360 super-commuters, representing 10.2% of California's total despite accounting for only 4.1% of the state's commuters. Among the 615 US counties with a population of at least 100,000, San Joaquin ranks second nationally in its super-commuter share, Merced third, and Stanislaus sixth.[12]

Given the NSJV's limited semiconductor employment base and lack of demonstrated local employer demand or credible near-term growth prospects, expanding semiconductor-specific workforce training could primarily prepare residents for jobs outside the region. While such training could improve access to higher-paying opportunities in the Bay Area and Capital Region, it could also reinforce the NSJV's already extreme commuting patterns and dependence on distant employers. In contrast, investments in transferable advanced manufacturing and technical skills aligned with existing local employers and growth opportunities may offer greater regional benefits by strengthening the local employment base and reducing the need for long-distance commuting.

Regional Employment Profile: Advanced Manufacturing

While semiconductor industry employment is largely concentrated outside the NSJV, the region exhibits strong employment concentrations in several advanced manufacturing industries that generate local demand for skilled technical workers while supporting accessibility and quality of life goals.

For example, the food manufacturing industry accounts for 22,953 NSJV jobs, with regional employment over four times the national average in Stanislaus and Merced Counties, as shown in Figure 6. As shown in Figure 7, while fabricated metal processing activities are more widely distributed across the mega-region, the NSJV outperforms Bay Area and Capital Region counties on average, indicating a higher level of specialization in the NSJV.

Food processing and manufacturing is expected to expand in the NSJV due to strong agricultural production, increasing prioritization of regional resilience, and ongoing investments in process automation and production efficiency. Rising demand in the food and beverage sectors is expected to fuel growth in demand for technicians skilled in mechatronics, industrial automation, and instrumentation.

Similarly, growing demand for precision-manufactured components across a breadth of industries and end uses is expected to boost demand for skilled technicians in fabricated metal and allied products.

12. University of the Pacific. Long Duration Commuting in San Joaquin County, San Joaquin Regional Analyst, June 2026.

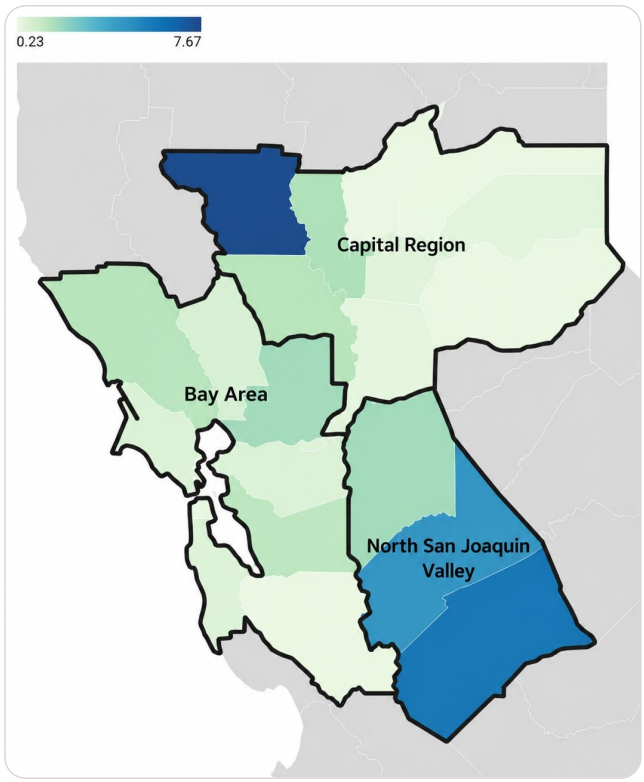

Figure 6. Regional Food Manufacturing Industry Concentration by Location Quotient, 2026 Q2

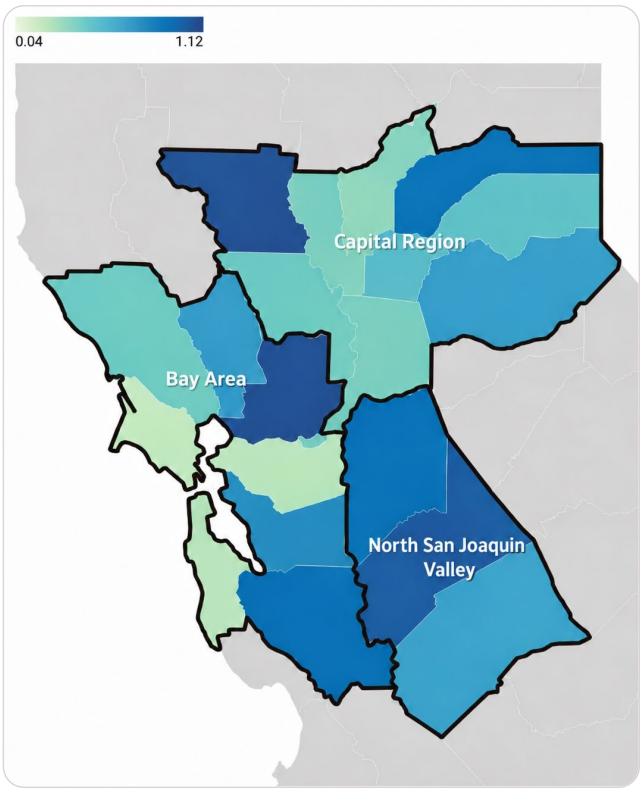

Figure 7. Regional Fabricated Metal Industry Concentration by Location Quotient, 2026 Q2

Regional Infrastructure and Funding Profile: Semiconductors

The semiconductor industry has high barriers to entry and requires the following foundational assets for current employment and future growth:

- Anchor firms
- Specialized supplier networks
- Semiconductor-ready infrastructure, including access to high-capacity electricity, ultrapure water, and wastewater systems
- Shovel-ready industrial sites
- Research universities with specialized R&D focused on semiconductors
- Favorable permitting environment
- Access to funding supporting early semiconductor cluster development, facilities, and infrastructure
- Access to specialized engineering talent
- Access to high-performance computing, labs, cleanrooms, and advanced metrology capabilities.

The NSJV cannot realistically develop a competitive semiconductor ecosystem within the next two to four years due to the following constraints:

- The NSJV lacks shovel-ready industrial sites for semiconductor manufacturing, and its permitting and regulatory environment is not sufficiently competitive with other regions.[13][14]
- Semiconductor fabrication facilities (fabs) require 2-5 years just to construct.
- Foundational requirements (anchor firms, supplier networks, and R&D capacity) to develop a semiconductor industry cluster require over a decade of investments to develop.
- CHIPS Act funding has been largely awarded and while both the Bay Area and Capital region have received investments from CHIPS, NSJV has not, resulting in limited opportunities to secure comparable funding for new semiconductor infrastructure investments in the NSJV.
- The NSJV lacks semiconductor-specific workforce pipelines, and training programs are located over an hour's commute away in the Bay Area at Foothill College and the UC system.[15]
- Semiconductor-related employment is largely concentrated outside the NSJV (<50 semiconductor jobs in the NSJV, as compared to over 48,000 jobs in the Bay Area), making comparable scale-up in the NSJV unlikely in the short term.

Case studies from Arizona and the Bay Area demonstrate that semiconductor clusters have generally emerged through a combination of anchor firms, research universities, specialized supplier networks, adequate infrastructure, and substantial investments in developing these ecosystems over several decades.[16] The Capital Region presents a different example, where recent semiconductor activity has centered on the reuse of an existing fabrication facility and associated infrastructure rather than the emergence of a broader semiconductor cluster. While this legacy industrial capacity provides an advantage, it has not translated into substantial regional semiconductor employment or the development of an extensive specialized supplier network. In contrast, the NSJV lacks both the established semiconductor ecosystem found in more developed clusters and legacy fabrication assets.

A preliminary assessment of the feasibility of semiconductor workforce development in the NSJV also aligned with the case study findings summarized above. In 2026, North Valley THRIVE awarded Merced College a $48,000 Catalyst Grant to explore and validate a place-based strategy to attract semiconductor investment, focusing on potential industry, education, and public-private partnerships. The assessment concluded that the NSJV does not possess the foundational assets needed to effectively support semiconductor technician workforce pipelines in the near term. However, the NSJV does have strong and growing advanced manufacturing assets that merit additional workforce investment.

13. "Seizing the Semiconductor Opportunity: How California can Increase its Competitiveness and Capture CHIPS Act Funding." New California Coalition. February 2023. https://www.bayareaeconomy.org/files/pdf/CHIPS-Act-Funding-Opportunity-CA-Feb2023.pdf
14. "Semiconductors: Information on Projects Funded to Strengthen U.S. Supply Chain." United State Government Accountability Office. December 2025.
15. "Long-Duration Commuting in San Joaquin County." University of the Pacific: Center for Business and Policy Research. June 2026.
16. See Appendix C for detailed case studies of emerging semiconductor clusters and requirements for cluster development.

Regional Infrastructure and Funding Profile: Advanced Manufacturing

While the NSJV lacks the assets required to support near-term semiconductor cluster development, it has strong existing industry, workforce, and educational assets needed to support growth in advanced manufacturing, particularly in food manufacturing and fabricated metal production manufacturing.

Food processing and manufacturing is the most prominent industry cluster in the NSJV, with 22,953 workers and a location quotient of 3.44, and offers an opportunity for advanced agricultural technologies and mechatronics.[17] Heightened consumer focus on food safety, traceability, and dietary requirements drive demand for robotic systems, RFID tags, and advanced sensing technologies to reduce contamination risk. As these technologies are increasingly adopted in food processing, they create new opportunities for advanced manufacturing technicians skilled in mechanics and industrial automation. UC Merced's SkillRISE program is one of several regional training assets that prepare workers for advanced manufacturing roles in automation, instrumentation, and mechatronics, and could be expanded to support emerging food processing and agricultural technologies.[18]

The NSJV also has strengths in fabricated metal production manufacturing and machinery that support a wide range of in-demand sectors and workforce opportunities. The fabricated metal industry is deeply integrated into advanced manufacturing, incorporating automated processes, CNC machining, robotic processes, 3D printing, and CAD/CAM and digital twin software to design and create complex components. In addition, the fabricated metal industry enables advanced manufacturing by creating critical inputs for robotic systems, enclosures for semiconductor manufacturing equipment, and next-generation components used in aerospace and defense manufacturing.

Statewide funding may be available to support advanced manufacturing workforce growth. The NSJV has secured California Jobs First Catalyst funding to support regional investments in advanced manufacturing, which are aligned with statewide priorities around equitable economic and workforce development.

Workforce Implications

NVT has already developed a Translation Destination Framework for the NSJV and a 15-month activation plan for advanced manufacturing. NVT's **Translation Destination Framework** outlines a place-based strategy to align policy, institutions, workforce systems, infrastructure, and industry around building durable regional capabilities that compound over time, building directly on NVT's Strategic Plan, which identified advanced manufacturing as a regional priority sector.

17. See Appendix A for industry and employment data.
18. "SkillRISE for the Northern San Joaquin Valley: Regional Interconnection Through Skills-Based Education." UC Merced. https://pace.ucmerced.edu/programs/skillrise

NVT's **Advanced Manufacturing Activation Plan** outlines target sector strategies to accelerate growth in the NSJV's advanced manufacturing sector, particularly within emerging industry clusters. The plan describes the NSJV's strengths in advanced manufacturing based on national investment trends, regional workforce assets, opportunities for economic mobility and support of accessibility goals, and institutional alignment.

As summarized in Figure 8, the plan also identifies four phased strategies to support cluster development, that provide a roadmap for economic and workforce investments that build upon existing regional assets in the NSJV. These investments ultimately support the development of **transferable advanced manufacturing skills**, including mechatronics, instrumentation, and automation, that apply across a breadth of industry verticals, including food processing, machinery, fabricated metals, clean energy manufacturing, and building materials manufacturing, among others.



Figure 8. NSJV Target Sector Strategies Defined in the Advanced Manufacturing Activation Plan

Local investments that support growth of the regional advanced manufacturing cluster reduce out-migration of skilled workers to neighboring regions, and support equity goals. Workers of color, English learners, and rural residents of the NSJV face disproportionate barriers to accessing high-wage job opportunities; however, advanced manufacturing in the NSJV offers onramps from adult education and K-12 CTE and firm-level demand for inclusive hiring that supports accessibility.

Investments in advanced manufacturing workforce development also leverage regional training strengths in mechatronics and automation and align with NVT's place-based framework for economic development.

Conclusions and Recommendations

Given the NSJV's significant employment concentrations, established employer base, and existing education and training assets in advanced manufacturing, workforce investments focused on mechatronics, automation, and advanced manufacturing technician pathways represent the highest-return strategy for supporting job quality, economic mobility, and long-term regional competitiveness in the NSJV.

In contrast, semiconductor industry-focused workforce investments would produce more limited regional impacts, as most semiconductor jobs are located outside the NSJV. Semiconductor workforce demand within the broader mega-region are better served by existing local education and training assets and talent pipelines in the areas where jobs are concentrated, primarily the Bay Area and, at much smaller scale, the Capital Region.

Meaningful near-term development of a regional semiconductor cluster in the NSJV is also unlikely, as semiconductor clusters require years of investments in specialized infrastructure, which has not occurred to date in the NSJV, and is unlikely to occur in the near term, as CHIPS funds have largely already been awarded.

Thus, future workforce investments in the NSJV should focus on building transferable skills in advanced manufacturing that leverage existing regional workforce assets rather than on supporting the semiconductor industry, an industry with a minimal local employment footprint.

Appendix A: Semiconductor Industry Value Chain

The semiconductor industry broadly includes the following subcategories by process:

- **R&D, Design, and IP Licensing** includes early-stage innovation, chip architecture, and intellectual property development
- **Electronic Design Automation** includes specialized software tools used to automate, design, verify, and optimize chips
- **Manufacturing Machinery and Equipment** includes tools and equipment used to build and operate semiconductor manufacturing facilities
- **Wafer Fabrication** encompasses the semiconductor manufacturing process
- **Assembly, Packaging, and Test** includes bonding, assembly, and verification processes to ensure chip reliability, durability, and readiness for integration into downstream products.

Appendix B: Industry and Employment Data

All data is from JobsEQ 2026 Q2, extracted from the United States Bureau of Labor Statistics, Quarterly Census of Employment and Wages. In the tables that follow, LQ denotes location quotient, an analytical statistic that measures a region's industrial specialization relative to a larger geographic unit, typically the nation.

A higher LQ indicates a higher level of regional specialization. For example, an LQ of 1.00 in semiconductor manufacturing indicates that the region and the nation share equal levels of specialization with respect to manufacturing, whereas an LQ of 1.80 indicates that the region has a higher concentration in semiconductor manufacturing relative to the nation.

Note that some figures may not sum due to rounding.

Table 1. Semiconductor Industry Employment, 2026 Q2

Industry	NAICS	NSJV		Bay Area		Capital Region	
		Employment	LQ	Employment	LQ	Employment	LQ
Semiconductor Machinery Manufacturing	333242	4	0.03	12,196	16.89	8	0.04
Semiconductor and Related Device Manufacturing	334413	32	0.04	35,675	7.47	458	0.31
Research and Development in Nanotechnology	541713	2	0.02	1,001	1.59	199	1.04
Total Semiconductor		**37**	**0.04**	**48,872**	**7.97**	**665**	**0.36**

Table 2. Food and Fabricated Metal Product Manufacturing Employment, 2026 Q2

Industry	NAICS	NSJV		Bay Area		Capital Region	
		Employment	LQ	Employment	LQ	Employment	LQ
Food Manufacturing	311	22,953	3.44	27,309	0.60	7,812	0.57
Fabricated Metal Product Manufacturing	332	4,926	0.92	19,555	0.54	4,668	0.42

Table 3. Semiconductor Production, Food Manufacturing, and Fabricated Metal Product Manufacturing Location Quotient by County, 2026 Q2

Region	County	Semiconductor Production LQ (NAICS 333242, 334413, 541713)	Food Manufacturing LQ (NAICS 311)	Fabricated Metal Product Manufacturing LQ (NAICS 332)
NSJV	Merced	0.00	5.82	0.60
	San Joaquin	0.08	1.85	0.95
	Stanislaus	0.00	4.73	1.03
Bay Area	Alameda	5.94	1.00	0.77
	Contra Costa	0.28	0.48	0.23
	Marin	0.07	0.59	0.17
	Napa	0.05	0.82	0.68
	San Francisco	0.08	0.25	0.04
	San Mateo	0.43	0.63	0.22
	Santa Clara	23.62	0.25	0.90
	Solano	0.05	1.86	1.12
	Sonoma	0.54	1.40	0.40
Capital Region	Colusa	0.00	7.67	1.08
	El Dorado	0.48	0.23	0.65
	Nevada	0.01	0.30	0.93
	Placer	0.93	0.32	0.46
	Sacramento	0.29	0.42	0.37
	Sutter	0.00	1.53	0.35
	Yolo	0.04	1.38	0.41
	Yuba	0.00	0.28	0.30

Table 4. Bay Area Semiconductor Industry Employment by Standard Occupational Classification (SOC), 2026 Q2

SOC	Occupation	Employment
All Software and Engineering Occupations		**12,721**
15-1252	Software Developers	2,387
17-2061	Computer Hardware Engineers	2,370
17-2072	Electronics Engineers, Except Computer	1,882
17-2112	Industrial Engineers	1,744
17-2141	Mechanical Engineers	961
17-2071	Electrical Engineers	821
17-2199	Engineers, All Other	529
15-1299	Computer Occupations, All Other	354
15-1253	Software Quality Assurance Analysts and Testers	262
15-1211	Computer Systems Analysts	161
15-1232	Computer User Support Specialists	152
15-2051	Data Scientists	152
15-1244	Network and Computer Systems Administrators	130
15-1221	Computer and Information Research Scientists	111
15-1212	Information Security Analysts	89
15-1241	Computer Network Architects	85
17-2131	Materials Engineers	83
15-1251	Computer Programmers	76
17-2041	Chemical Engineers	69
15-1231	Computer Network Support Specialists	55
15-1255	Web and Digital Interface Designers	54
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	35
15-2031	Operations Research Analysts	32
17-2051	Civil Engineers	26
17-2011	Aerospace Engineers	23
15-1242	Database Administrators	20
17-2081	Environmental Engineers	16
15-1243	Database Architects	15
15-1254	Web Developers	12

SOC	Occupation	Employment
17-2031	Bioengineers and Biomedical Engineers	5
15-2041	Statisticians	5
17-2161	Nuclear Engineers	4
17-2171	Petroleum Engineers	4
All Assembler and Fabricator Occupations		**7,861**
51-2028	Electrical, Electronic, and Electromechanical Equipment Assemblers, Except Coil Winders, Tapers, and Finishers	4,950
51-2092	Team Assemblers	2,432
51-2099	Assemblers and Fabricators, All Other	312
51-2021	Coil Winders, Tapers, and Finishers	78
51-2031	Engine and Other Machine Assemblers	40
51-2041	Structural Metal Fabricators and Fitters	37
51-2051	Fiberglass Laminators and Fabricators	13
All Other Occupations		**28,263**

Appendix C: Semiconductor Industry Case Studies

Arizona: Manufacturing-Driven Cluster Growth

Arizona's emerging semiconductor industry cluster has grown steadily due to a strong talent pool, a favorable business and regulatory environment, active state leadership, and access to key markets. In 2025, the state was awarded $15.4 billion in federal funding to expand its semiconductor manufacturing and fabrication capacity.

Arizona built a specialized technical workforce by aligning industry, academic, and military training pipelines. Its low income and property tax rates, supplemented by $1 billion in semiconductor-specific tax incentives, contributed to a favorable investment climate. Streamlined tax and permitting processes and regulatory clarity have also supported cluster growth. Access to Silicon Valley supply chains combined with proximity to Mexico's manufacturing and workforce pipelines, have also rendered the state a particularly attractive destination for semiconductor investments.

Bay Area: R&D-Driven Cluster Growth

In the Bay Area, growth of the semiconductor industry cluster has primarily been driven by investments in R&D, chip design, and other pre-fabrication activities. Its competitive advantages include a large and highly specialized technical workforce, extensive education and research partnerships, and robust access to venture capital.

Partnerships between Stanford University, the University of California system, national laboratories, community colleges, and industry have bridged research innovations with workforce programs, supporting emerging technical needs across semiconductors and adjacent sectors. The Bay Area's high concentration of specialized talent further reinforces its position as a market leader in R&D and design.

While statewide incentives support innovation and workforce development, high operating and construction costs and stringent regulatory requirements have limited their effectiveness to incentivize large-scale manufacturing projects. However, the Bay Area remains a global leader in semiconductor R&D, chip design, and pre-fabrication capabilities.

Capital Region: Legacy Semiconductor Assets

California's Capital Region offers a cautionary example of semiconductor redevelopment rather than broader cluster formation. Bosch's planned $2 billion conversion of an existing Roseville wafer fabrication facility to silicon carbide (SiC) production, supported by a $225 million federal CHIPS award, builds on four decades of semiconductor manufacturing, established infrastructure, and an experienced workforce. The facility currently employs more than 300 workers, with federal projections of up to 700 jobs. However, its history of employment losses and ownership changes illustrates the industry's volatility, while the long-term impacts of Bosch's investment remain uncertain. For the NSJV, the experience underscores that even substantial investment in an established facility does not guarantee sustained employment growth or broader cluster development, particularly in a region lacking comparable legacy assets.