

Labor Market Analysis for Program Recommendation:

Architectural and Civil Drafters
and Engineering Technicians in
Greater Sacramento

Prepared by the North Far North Center of Excellence
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FOR LABOR MARKET RESEARCH
NORTH FAR NORTH

Summary

The North Far North Center of Excellence for Labor Market Research (NFN COE) prepared this report to provide an analysis of occupational demand and educational supply for selected occupations employed across the 22-county North Far North region. This report aims to determine if demand in the local labor market is unmet by the supply from existing community college programs and other postsecondary training providers, with a primary focus on training that leads to living wage jobs in middle-skilled occupations.¹

Key Findings

- **Flat growth is projected for architectural and civil drafters, but civil engineering technologists and technicians are expected to experience rapid growth in Greater Sacramento.** While jobs are expected to remain stable for architectural and civil drafters, jobs for civil engineering technologists and technicians are expected to grow 9%, outpacing average job growth for the subregion.
- **Civil engineering technologists and technicians are more likely to work for the government than architectural and civil drafters.** Eighty-five percent of civil engineering technologists and technicians are employed in governmental industries compared to only 6% of architectural and civil drafters.
- **Civil and architectural drafters are more likely to have a bachelor's degree or higher than civil engineering technologists and technicians.** Thirty-three percent of architectural and civil drafters have a bachelor's degree or more advanced education as their highest educational attainment, compared to only 25% of civil engineering technologists and technicians. This is consistent with job postings, where 46% of postings for architectural and civil drafters requested at least a bachelor's degree, while none of the postings for civil engineering technologists and technicians requested more than an associate's degree.
- **There is a significant supply gap for both occupation groups in civil engineering design and technology.** There are 143 annual job openings and an average of only 42 annual awards.

Recommendation

Based on the findings, the North Far North COE recommends that community colleges **proceed** in creating new programs related to construction management. The COE will also defer to the community colleges for making program modifications to better suit the needs of the labor market. Key considerations include:

- There is a significant undersupply for occupations in civil engineering design and technology.
- Those in civil engineering design and technology occupations make above the living wage for a single working adult.

¹ Pursuant to California Education Code §78015, labor market information (LMI) is required for all new career education certificate and degree program proposals, and the North Far North Regional Consortium (NFNRC) requires LMI to come from the NFN COE. This report should serve to satisfy those requirements.

Introduction

The North Far North Center of Excellence (COE) was asked to provide labor market data to support a proposed new career education program or modifications to existing programs at a regional community college (see Appendix A for methodology and data sources).

This report aims to identify the industries and nuances between the two main occupations in the civil engineering design and technology field.

This report focuses on the following Standard Occupational Classification (SOC) occupations and codes:

- Architectural and Civil Drafters (17-3011)
- Civil Engineering Technologists and Technicians (47-1011)

A review of related programs revealed the following Taxonomy of Programs (TOP) title(s) and code(s) are appropriate for inclusion in this report:

- Drafting Technology (0953.00)
- Civil Drafting (0953.20)
- Civil and Construction Management Technology (0957.00)

The corresponding Classification of Instructional Program (CIP) title(s) and code(s) are:

- Drafting and Design Technology/Technician, General (15.1301)
- CAD/CADD Drafting and/or Design Technology/Technician (15.1302)
- Civil Drafting and Civil Engineering CAD/CADD (15.1304)
- Civil Engineering Technologies/Technicians (15.0201)
- Building Construction Technology/Technician (46.0415)

Occupational Demand

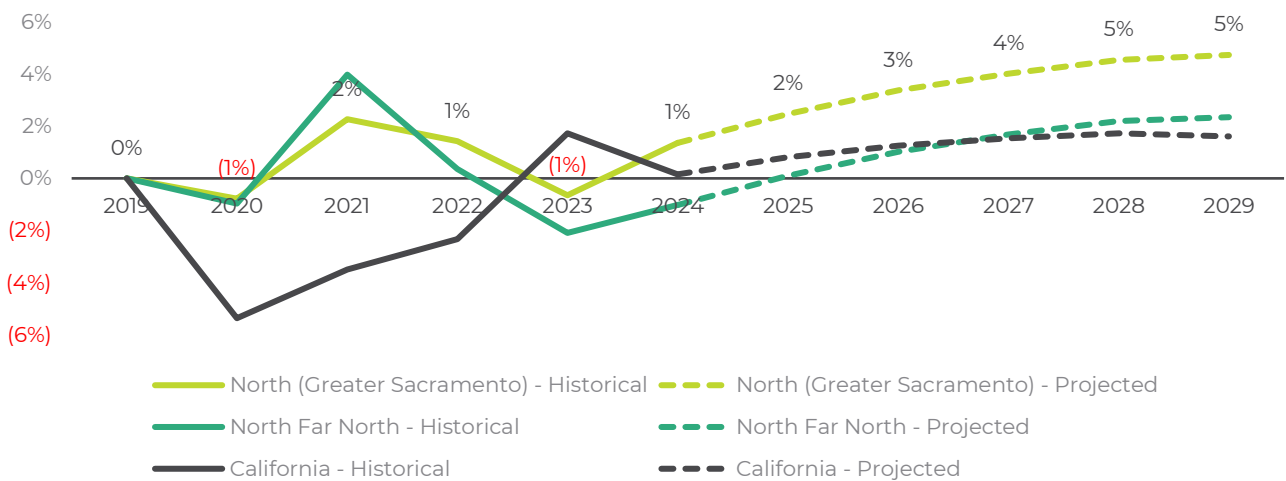
Exhibit 1 summarizes the five-year projected job growth for the targeted occupational groups in the Greater Sacramento subregion, the 22-county North Far North region, and California.²

Exhibit 1. Current employment and projected occupational demand, 2024-2029

Occupational Group	2024 Jobs	2024-2029 Change	2024-2029 % Change	2024-2029 Annual Openings
Architectural and Civil Drafters	975	0	0%	81
Civil Engineering Technologists and Technicians	590	52	9%	62
Greater Sacramento	1,565	52	3%	143
Architectural and Civil Drafters	1,163	9	1%	100
Civil Engineering Technologists and Technicians	780	57	7%	80
North Far North	1,943	66	3%	180
Architectural and Civil Drafters	13,144	75	1%	1,117
Civil Engineering Technologists and Technicians	7,460	224	3%	689
California	20,604	299	1%	1,806

Exhibit 2 compares historical and projected annual change in employment for the period 2019 to 2029 with the base number of jobs in 2019 for Greater Sacramento, the 22-county North Far North region, and California.

Exhibit 2. Changes in employment, 2019-2029



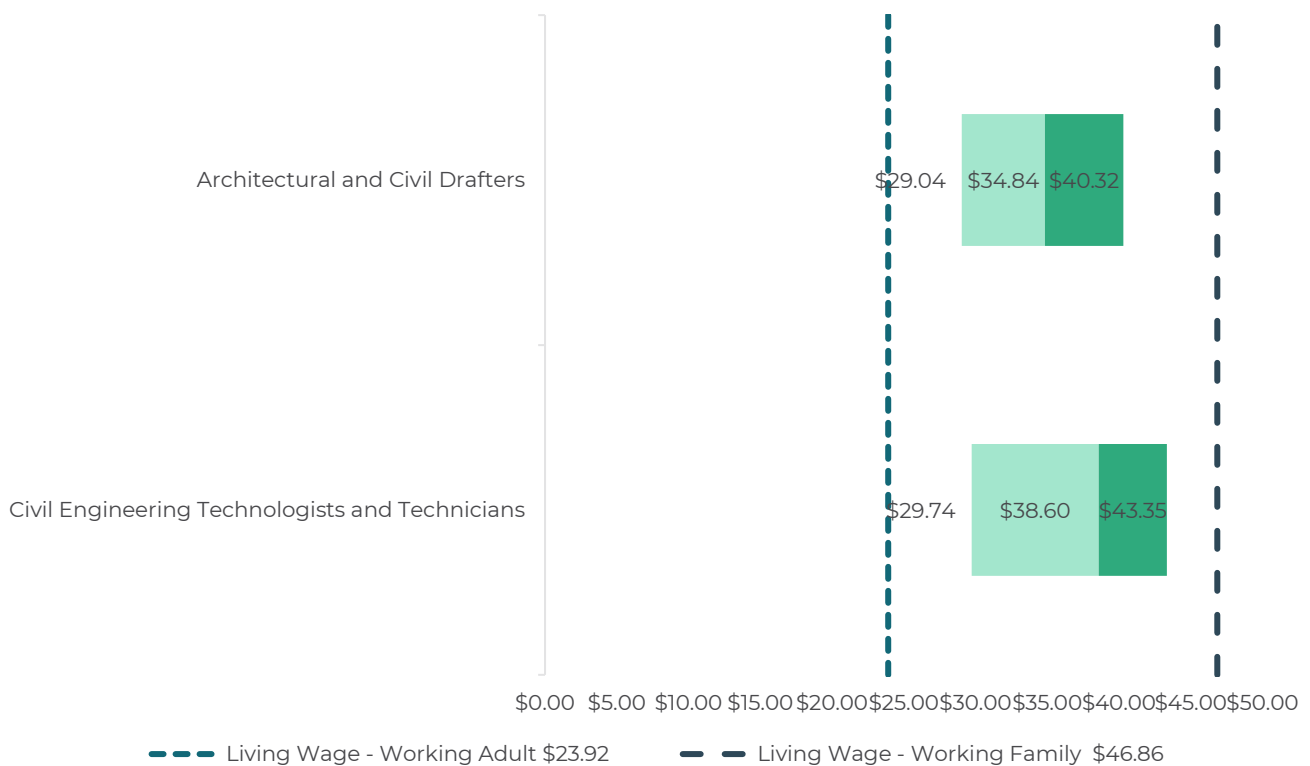
² The 22-county North Far North is a dual region. It is represented by the North (Greater Sacramento) subregion that covers seven counties, including El Dorado, Nevada, Placer, Sacramento, Sutter, Yolo, and Yuba, and the 15-county Far North subregion which includes Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Sierra, Siskiyou, Tehama, and Trinity.

Earnings

Exhibit 3 compares the percentile hourly earnings for the selected occupations to the living wage for a single working adult and a working family residing in the county of the community college district that requested this report.^{3,4} Earnings data includes wages from employed and self-employed workers. Also, it's important to note that living wage thresholds vary by county, and in the Greater Sacramento subregion, range from \$17 to \$24 per hour for a single working adult.

Exhibit 3. Hourly earnings compared to the community college district's living wage

Requesting College	Living Wage – Working Adult	Living Wage – Working Family
Sierra College	\$23.92	\$46.86



³ A “living wage” is defined as the level of income one working adult with no children must earn to meet basic needs, including food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs. Please note that the 25th-percentile and 75th-percentile hourly wages are used as proxies for entry-level and experienced-level wages.

⁴ A “working family” is defined as one working adult and one infant (between the ages of 0 and 2 years).

Industries of Employment

Exhibits 4 and 5 list the top 10 industries employing civil and architectural drafters and civil engineering technologists and technicians. Compared to civil and architectural drafters, civil engineering technologists and technicians are more concentrated in state, local, and federal government.

Exhibit 4. Top 10 industries employing civil and architectural drafters

Industry	2024 Occupation Jobs in Industry	% of Occupation in Industry	% of Total Jobs in Industry
Engineering Services	309	32%	4%
Architectural Services	201	21%	13%
Landscape Architectural Services	52	5%	11%
Residential Building Construction	45	5%	0%
State Government, Excluding Education and Hospitals	41	4%	0%
Building Inspection Services	36	4%	11%
Commercial and Institutional Building Construction	20	2%	0%
Plumbing, Heating, and Air-Conditioning Contractors	19	2%	0%
Surveying and Mapping (except Geophysical) Services	19	2%	12%
Framing Contractors	18	2%	0%

Exhibit 5. Top 10 industries employing civil engineering technologists and technicians

Industry	2024 Occupation Jobs in Industry	% of Occupation in Industry	% of Total Jobs in Industry
State Government, Excluding Education and Hospitals	390	66%	0%
Local Government, Excluding Education and Hospitals	88	15%	0%
Engineering Services	58	10%	1%
Federal Government, Military	24	4%	0%
Testing Laboratories and Services	<10	1%	0%
Management Consulting Services	<10	1%	0%
Architectural Services	<10	0%	0%
Education (State Government)	<10	0%	0%
Commercial and Institutional Building Construction	<10	0%	0%

Industry	2024 Occupation Jobs in Industry	% of Occupation in Industry	% of Total Jobs in Industry
Power and Communication Line and Related Structures Construction	<10	0%	0%

Job Postings

Analysis of online job postings can offer additional insights into recent labor market changes not reflected in historical trends. However, it is important to note that job postings do not equate to actual labor market demand, which is based on projected annual job openings.

There are several limitations to interpreting online job postings. Employers may repost the same position multiple times to attract more applicants, or job postings may remain active even if the position is no longer being filled. Additionally, a single job posting can be used to hire for multiple openings, and not all job opportunities are advertised online. Despite these limitations, job posting analyses can be valuable for guiding community college curriculum development and identifying potential employers for targeted experiential learning opportunities.

Job postings are aggregated through Lightcast based on their in-house taxonomy, and then manually filtered by the COE. However, some job postings lack detail or contain confusing wording, leading to ambiguity when coding them into occupations and extracting relevant details.

The North Far North COE identified 208 online job postings for the selected occupations across the Greater Sacramento subregion. Job posting data comes from and represents unique advertisements posted online during the last 12 months, from November 2024 to October 2025. The differences between Civil Engineering Technologists and Technicians and Civil and Architectural Drafters are explored in this analysis, but conclusions are limited due to the limited number of identified unique job postings for Civil Engineering Technologists and Technicians.

Exhibit 6. Job postings by occupation

Occupation	Number of Job Postings	Share of Postings	Median Advertised Salary
Civil and Architectural Drafters	188	90%	\$37.78
Civil Engineering Technologists and Technicians	20	10%	\$40.74
Total	208	100%	\$38.52

Top employers

Exhibit 7 shows the employers with the most job postings for the selected occupations across Greater Sacramento.

Exhibit 7. Employers with the most job postings by Occupation

Employer	Job Postings – Civil and Architectural Drafters	Job Postings – Civil Engineering Technologists and Technicians
Stantec	12	0
LPA	12	0
Norr Agency	9	0

Employer	Job Postings – Civil and Architectural Drafters	Job Postings – Civil Engineering Technologists and Technicians
HDR	8	0
KPFF Consulting Engineers	5	0
Placer County	0	5
Us Department of Transportation	3	2
Challenge Works	5	0
Ruhnau Clarke & Associates	5	0

Top titles

Exhibit 8 shows the job titles with the most job postings for the selected occupations across Greater Sacramento.

Exhibit 8. Job titles with the most job postings

Job title	Number of Job Postings
Designers	25
Architectural Designers	20
Engineering Technicians	13
Civil Designers	12
Architectural Drafters	11
Structural Designers	8
Civil 3D Designers	6
Building Technicians	5

Skills and qualifications

Exhibit 9 shows the most requested skills in job postings by occupation in Greater Sacramento.⁵ Skills shared between occupations are highlighted in yellow.

⁵ Specialized skills are those primarily required to perform specific tasks in an occupation. Common skills are typically related to employability; these are skills that are prevalent across many occupations and usually include a mix of interpersonal attributes and soft skills. Software skills are specific to any software tool or programming component used to accomplish tasks in a job.

Exhibit 9. Most requested in-demand skills in job postings

Occupation	Specialized Skills	Common or Employability Skills	Software and Technology Skills
Civil and Architectural Drafters	<ul style="list-style-type: none"> • Project Management • Building Codes • Construction • Architectural drawing • Civil Engineering • Building Information Model • Construction Management • Civil Design • Schematic Diagrams • 3D Modeling 	<ul style="list-style-type: none"> • Communication • Coordinating • Presentations • Research • Detail Oriented • Planning • Management • Organizational Skills • Problem Solving • Mentorship 	<ul style="list-style-type: none"> • AutoCAD • Autodesk Revit • Microsoft Office/ Microsoft Excel • AutoCAD Civil 3D • SketchUp (3D Modeling Software) • Adobe Creative Suite • Rhinoceros 3D • Adobe Photoshop • MicroStation • Lumion
Civil Engineering Technologists and Technicians	<ul style="list-style-type: none"> • Construction Inspection • Surveying • Public Works • Construction • Project Management • Change Orders • Construction Management • Systems Engineering • Contract Management • Architectural Design 	<ul style="list-style-type: none"> • Planning • Mathematics • Research • Report Writing • Operations • Process Reporting • Record Keeping • Communication • Customer Service 	<ul style="list-style-type: none"> • Project Management Software • Spreadsheets • AutoCAD Civil 3D

Exhibit 10 shows the employer-preferred minimum level of education in job postings related to the selected occupations in Greater Sacramento. Compared to Civil Engineering Technologists and Technicians, Architectural and Civil Drafter job postings were more likely to require a bachelor's degree.

Exhibit 10. Employer-preferred education levels for the studied occupations

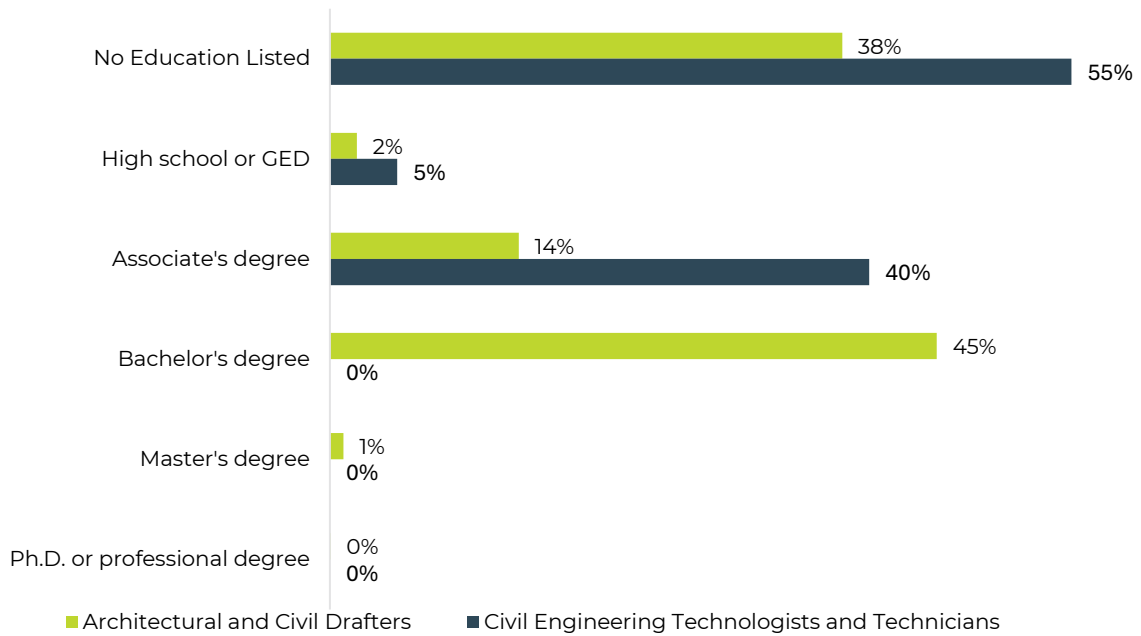
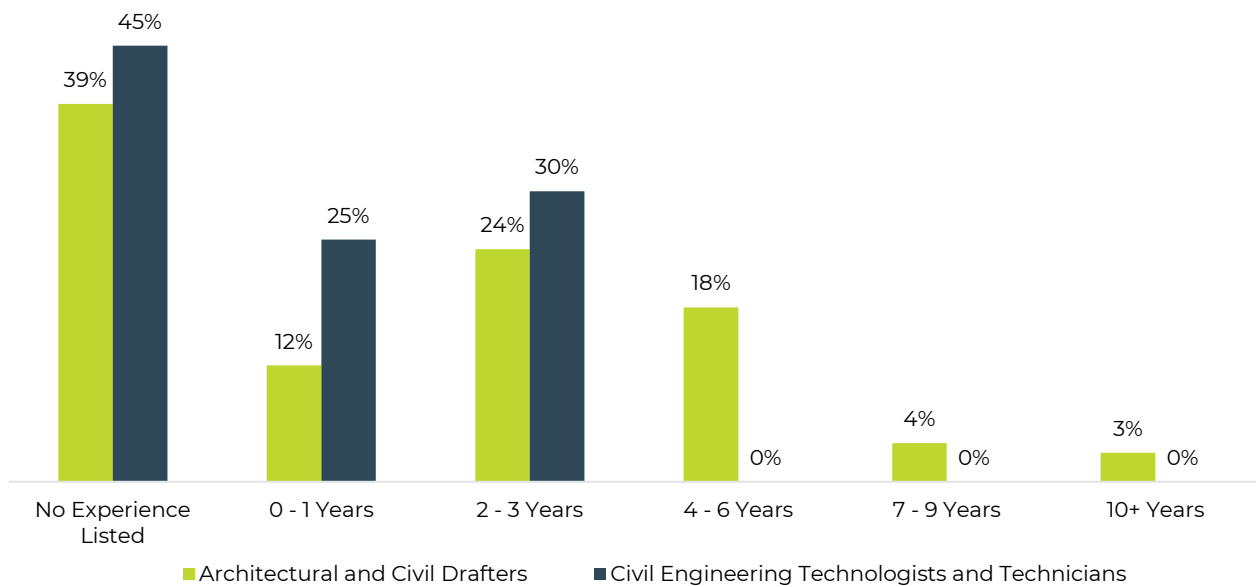


Exhibit 11 shows the employer-preferred minimum level of experience in job postings related to the selected occupations in Greater Sacramento. Architectural and civil drafter job postings generally required more experience than those for civil engineering technician and technologist job postings.

Exhibit 11. Employer-preferred experience levels for the studied occupations



Education and Training Requirements

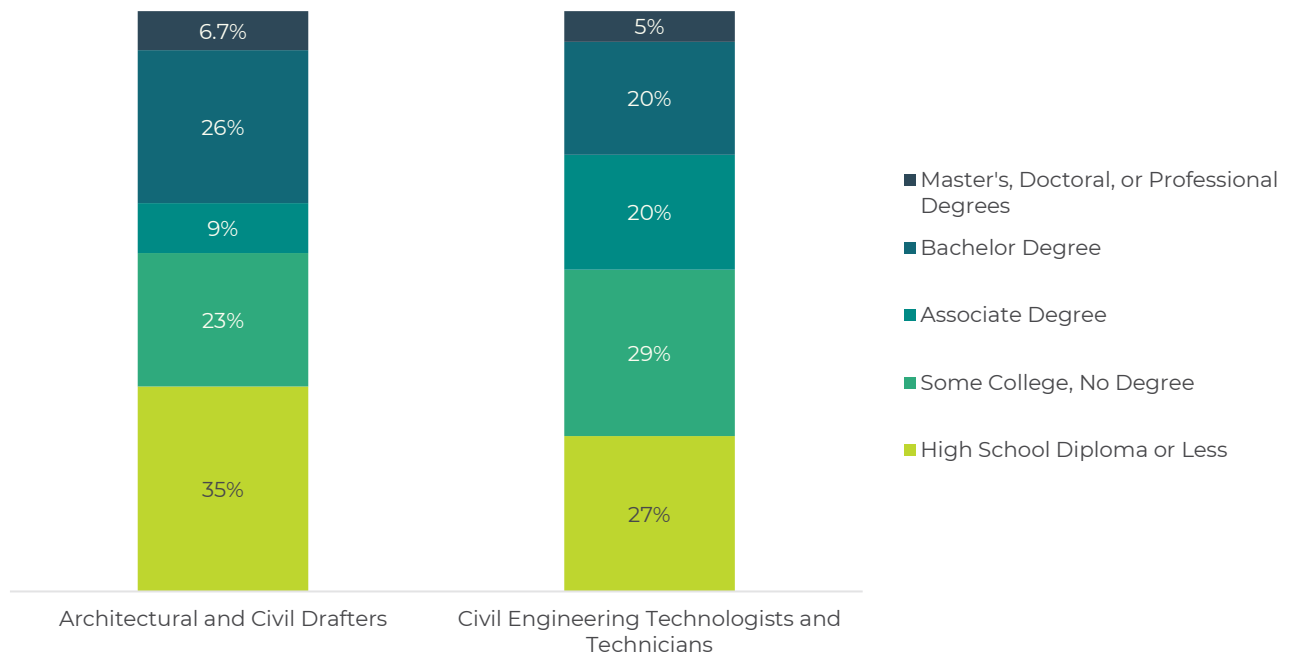
The U.S. Bureau of Labor Statistics (BLS) assigns each occupation a typical entry-level education, related work experience, and on-the-job training category in its projection data. Exhibit 12 summarizes these requirements by occupation.

Exhibit 12. Typical entry-level job requirements for the studied occupations

Occupation	Entry-Level Education	Work Experience	On-The-Job Training
Architectural and Civil Drafters	Associate's degree	None	None
Civil Engineering Technologists and Technicians	Associate's degree	None	None

The U.S. Census Bureau tracks the highest education level attained by workers in all occupations. Exhibit 13 presents this data for the current U.S. workforce in the studied occupations.

Exhibit 13. Educational attainment for workers 25 years and older by occupation, 2021-22



Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards issued in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.

Community college supply

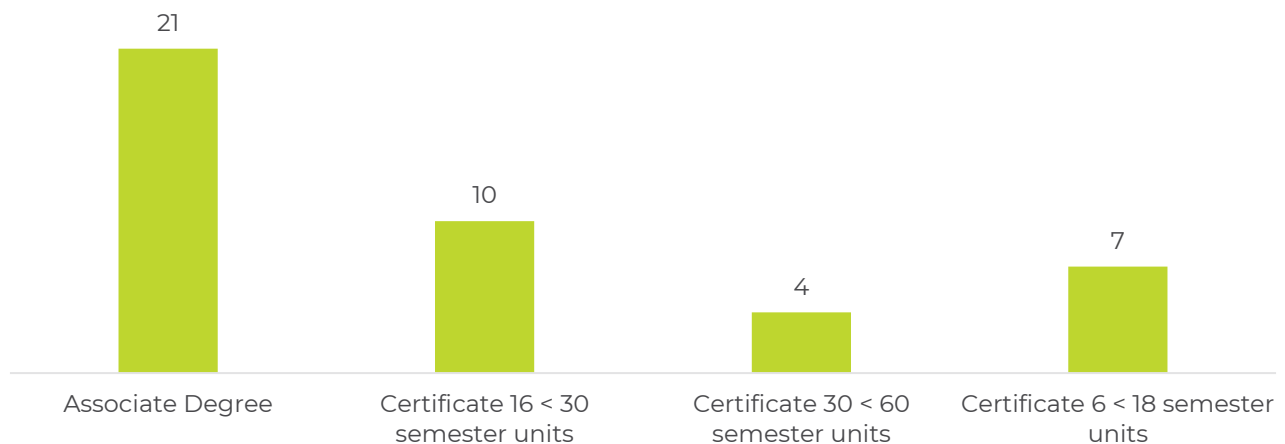
Exhibits 14 and 15 summarize the three-year average of awards (certificates and degrees) conferred by the Greater Sacramento community college programs relevant to the occupations studied. There are no awards from other post-secondary institutions in the Greater Sacramento subregion that are relevant to the studied occupations.

Exhibit 14. Average annual community college awards by TOP program

TOP Program and Code	College	2022-23 Annual Awards	2023-24 Annual Awards	2024-25 Annual Awards	Three-Year Average Awards
Civil and Construction Management Technology (0957.00)	Consumnes River	23	21	7	17
	Sierra	8	4	1	4
Subtotal		31	25	8	21
Drafting Technology (0953.00)	American River	8	6	16	10
	Sacramento City	4	6	10	7
	Sierra	5	5	3	4
Subtotal		17	17	29	21
Totals		48	42	37	42

Note: Values in the table are rounded to the nearest whole number. However, subtotals and totals are calculated using unrounded values.

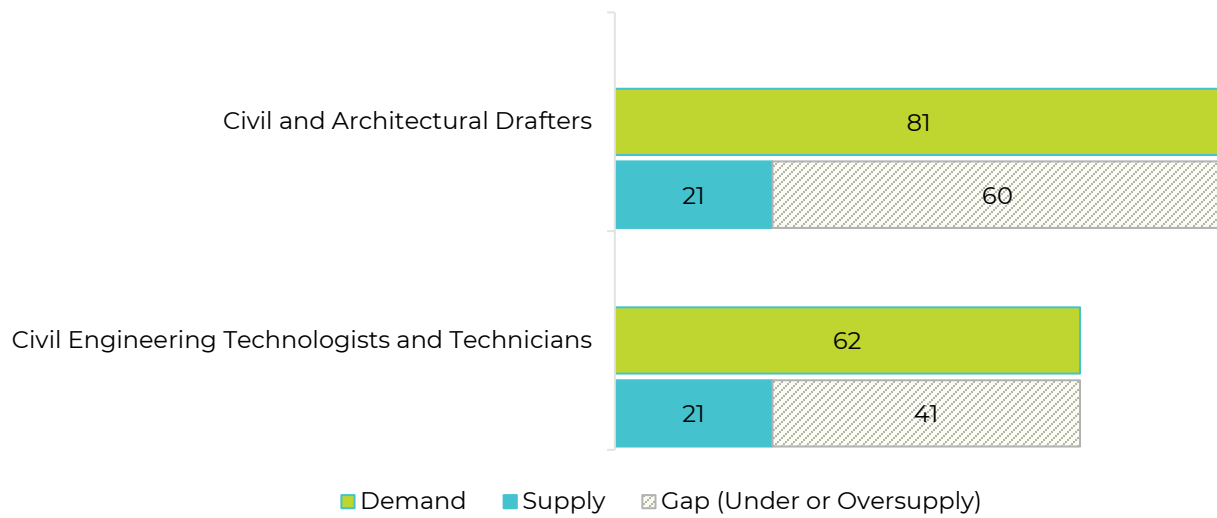
Exhibit 15. Average annual community college awards by award type and program area



Supply-Gap

Exhibit 16 compares labor market demand (annual job openings) for the studied occupations to supply (number of awards) from all postsecondary institutions.

Exhibit 16. Supply-demand gaps by occupational group



Conclusion and Recommendations

Data insights

Demand— While 0% growth is expected for architectural and civil drafters, civil engineering technologists and technicians civil engineering design and technology occupations are expected to grow 9%, outpacing general job growth for the region.

Living Wage— Those in civil engineering design and technology occupations make above the living wage for a single working adult. The living wage for a single working adult is \$23.92 per hour, and entry-level wages for civil engineering design and technology are between \$5.12 and \$5.82 above that.

Education— Thirty-three percent of architectural and civil drafters have a bachelor’s degree or more advanced education as their highest educational attainment, compared to only 25% of civil engineering technologists and technicians. This is consistent with job postings, where 46% of postings for architectural and civil drafters requested a bachelor’s degree or more advanced education, while none of the postings for civil engineering technologists and technicians requested more than an associate’s degree.

Supply Gap— There is a supply gap for civil engineering design and technology occupations. There are 143 annual job openings and an average of only 42 annual awards.

Recommendation

Based on the current analysis, the North Far North COE recommends that community colleges **proceed** in creating new programs related to civil engineering design and technology. The COE also will defer to the community colleges for program modifications to better suit the needs of the labor market.

New Program Recommendation		
Proceed	Use Caution	Do Not Proceed
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Support for Program Modification	
Yes	No
<input checked="" type="checkbox"/>	<input type="checkbox"/>

Appendix A. Methodology and Data Sources

Labor market and educational supply data compiled in this report derive from a variety of sources. Occupations were identified by using the Center of Excellence TOP-to-CIP-to-SOC Crosswalk: <http://coecc.net/>. This report's findings were primarily determined with labor market and educational supply data from the Bureau of Labor Statistics (BLS), the economic modeling firm and job postings aggregator Lightcast, and the California Community Colleges Chancellor's Office.

Data Sources

The following table summarizes the data sources used in this study.

Data Type	Source
Labor Market Information and Job Postings	Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast's occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and non-QCEW employee classes of worker) and the American Community Survey (self-employed and extended proprietors). For more information, see https://lightcast.io/ .
Living Wage	The living wage is derived from the Insight Center's California Family Needs Calculator, which measures the income necessary for an individual or family to afford basic expenses. The data assesses the cost of housing, food, childcare, health care, transportation, and taxes. The Chancellor's Office uses wage data to calculate the percentage of students who attained a regional living wage. For more information, visit https://selfsufficiencystandard.org/California/ .
Typical Education Level, On-the-job Training, and Educational Attainment	The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, visit https://www.bls.gov/emp/documentation/education/tech.htm .
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	The O*NET database includes information on skills, abilities, knowledge areas, work activities, and interests associated with occupations. For more information, visit https://www.onetonline.org/help/online/ .
Labor Force, Employment and Unemployment Estimates	The California Employment Development Department's Labor Market Information Division is a source of labor market and workforce data. For more information, visit labormarketinfo.edd.ca.gov .
Educational Supply	<p>The CCCCO Management Information Systems (MIS) Data Mart provides information about students, courses, student services, outcomes, and faculty and staff. For more information, visit https://datamart.cccco.edu.</p> <p>The Chancellor's Office Curriculum Inventory System (COCI) collects data on courses and programs offered by the California Community Colleges. For more information, visit https://coci2.ccctechcenter.org/.</p> <p>The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data from providers of postsecondary education, including the number of postsecondary awards earned (completions). For more information, visit https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions.</p>
Student Metrics and Demographics	DataVista, a statewide data system supported by the Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, visit https://datavista.cccco.edu/ .

Living Wage

Beginning in October 2024, to determine if an occupation meets the living wage threshold, the NFN COE compared the 25th percentile hourly wage of an occupation in the subregion to the living wage for a single adult (no dependents) living in the county where the requesting community college district was located.

This change aligned with the Chancellor’s Office methodology for calculating the share of students earning a living wage after leaving the California Community College system, as reported in the Data Vista living wage metric (802S). For details, see the *DataVista Metric Definition Dictionary*.

The NFN COE updated this practice as needed to remain consistent with the Chancellor’s Office. The table below summarizes hourly living wages by community college district and county.

2024 Single Adult Living Wage			
Community College District	County	Hourly	Annual
Butte-Glenn	Butte	\$16.77	\$35,416
Feather River	Plumas	\$15.11	\$31,909
Lake Tahoe	El Dorado	\$22.11	\$46,703
Lassen	Lassen	\$14.81	\$31,274
Los Rios	Sacramento	\$21.17	\$44,709
Mendocino-Lake	Mendocino	\$17.06	\$36,039
Redwoods	Humboldt	\$16.59	\$35,046
Shasta-Tehama-Trinity Joint	Shasta	\$16.99	\$35,874
Sierra Joint	Placer	\$23.92	\$50,519
Siskiyou Joint	Siskiyou	\$14.51	\$30,639
Yuba	Sutter	\$17.08	\$36,074
California Minimum Wages			
All industries, except fast food and healthcare (Effective January 2025)		\$16.00	\$33,280
Fast food (Effective April 2024)		\$20.00	\$41,600
Healthcare (Effective October 2024)		\$18.00-\$23.00, depending on facility type	\$37,440-\$47,840

Sources: University of Washington Self Sufficiency Standard and State of California Department of Industrial Relations, “Minimum Wage,” https://www.dir.ca.gov/dlse/minimum_wage.htm

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