

# LABOR MARKET ANALYSIS

FOR PROGRAM RECOMMENDATION



**C·O·E**

CENTERS OF EXCELLENCE  
FOR LABOR MARKET RESEARCH

## DRINKING WATER AND WASTEWATER TREATMENT TECHNOLOGY IN THE GREATER SACRAMENTO REGION

North (Greater Sacramento)  
Center of Excellence

**MARCH 2022**

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## SUMMARY

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The North (Greater Sacramento) Center of Excellence for Labor Market Research prepared this report to provide a labor market analysis of educational supply and occupational demand for middle-skilled career pathways in the North (Greater Sacramento) subregion. 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.

This report primarily focuses on training that leads to jobs in middle-skilled occupations - jobs that typically require education beyond a high school diploma but less than a Bachelor's degree - but may include higher-skilled occupations for training pathways that lead to a bachelor's degree. Lower skilled occupations are rarely considered in this type of analysis due to the lessened barriers for entry-level work, such as no formal education and on-the-job training requirements.

Key findings include:

- The North (Greater Sacramento) subregion held 921 water and wastewater treatment jobs in 2020. These jobs are projected to increase by 5% over the next five years, adding 46 new jobs to the subregion by 2025.
- Over the next five years, water and wastewater treatment jobs are projected to have 97 annual openings in the North (Greater Sacramento) subregion.
- Wage data shows that water and wastewater treatment occupations earn \$10 to \$14 above the subregion's living wage of \$14.53 per hour.
- Awards data analysis shows that North (Greater Sacramento) training providers conferred an average of 8 awards (certificates and associate degrees) in drinking water and wastewater technology programs over the last three academic years.

Recommendations include:

- The North (Greater Sacramento) Center of Excellence recommends moving forward.

# INTRODUCTION

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The North (Greater Sacramento) Center of Excellence (COE) was asked to provide labor market information for a proposed program at a regional community college. This report focuses on the following Standard Occupational Classification (SOC) occupations and codes:

- These middle-skill occupations require more education and training beyond a high school diploma but less than a four-year degree:
  - Water and Wastewater Treatment Plant and System Operators (51-8031)
  - Environmental Engineering Technologists and Technicians (17-3025)

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

- Water and Wastewater Technology (0958.00)

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

- Water Quality and Wastewater Treatment Management and Recycling Technology/Technician (15.0506)

# OCCUPATIONAL DEMAND

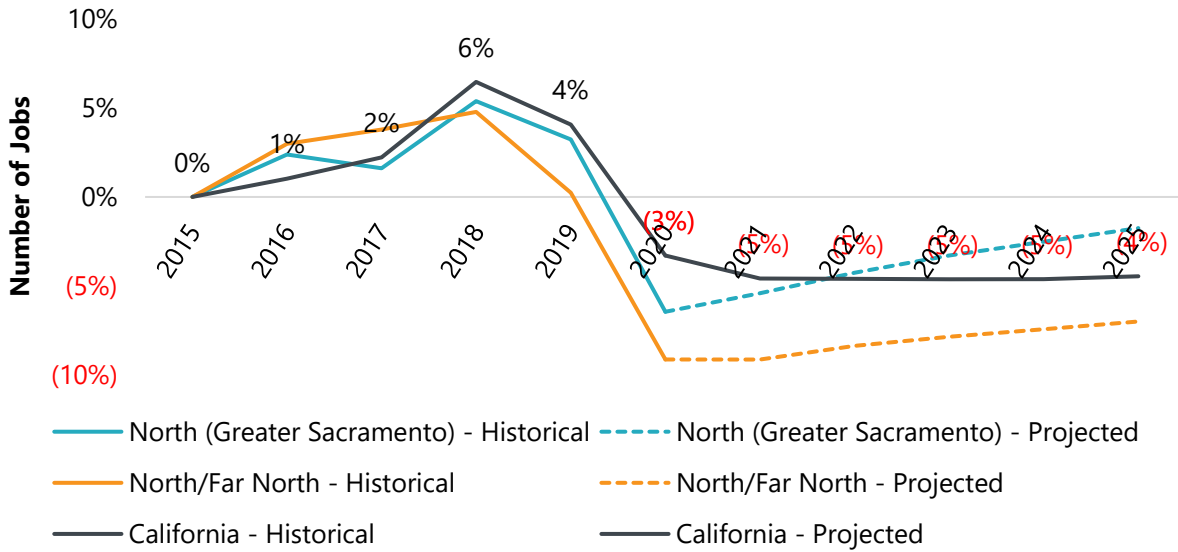
Exhibit 1 summarizes the five-year projected job growth for middle-skill and high-skill occupations in the North, North/Far North, and California.

**Exhibit 1. Employment and projected demand, 2020-2025**

Occupation	2020 Jobs	2025 Jobs	2020-2025 Change	2020-2025 % Change	2020-2025 Annual Openings
Water and Wastewater Treatment Plant and System Operators	811	850	39	5%	85
Environmental Engineering Technologists and Technicians	111	117	7	6%	12
<b>North (Greater Sacramento)</b>	<b>921</b>	<b>968</b>	<b>46</b>	<b>5%</b>	<b>97</b>
Water and Wastewater Treatment Plant and System Operators	1,489	1,525	36	2%	149
Environmental Engineering Technologists and Technicians	211	214	4	2%	21
<b>North/Far North</b>	<b>1,699</b>	<b>1,739</b>	<b>40</b>	<b>2%</b>	<b>170</b>
Water and Wastewater Treatment Plant and System Operators	10,681	10,467	(214)	(2%)	979
Environmental Engineering Technologists and Technicians	2,862	2,913	51	2%	281
<b>California</b>	<b>13,542</b>	<b>13,380</b>	<b>(163)</b>	<b>(1%)</b>	<b>1,260</b>

Exhibit 2 compares the percent change in jobs between 2015 through 2020 and the projected changes through 2025. The rate of change is indexed to the total number of jobs in 2015.

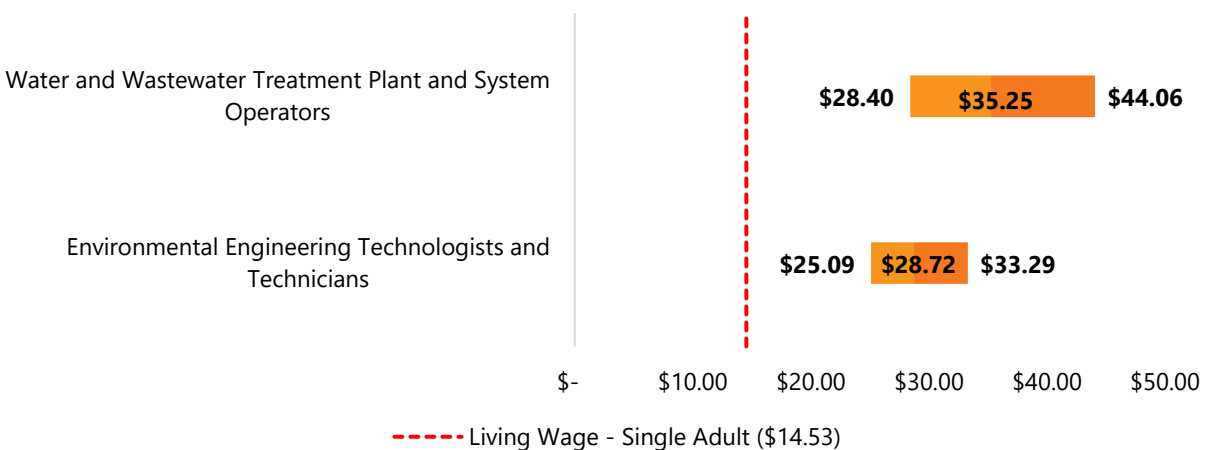
**Exhibit 2. Changes in employment, 2015-2025**



## WAGES

Exhibit 3 compares the entry-level, median, and experienced wages for the selected occupations to the North (Greater Sacramento) living wage for a single adult - \$14.53 per hour.<sup>1</sup>

**Exhibit 3. Comparison of wages by occupation, 2020**



<sup>1</sup> Living wage is defined as the level of income a single adult with no children must earn to meet basic needs, including food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs. The 25th-percentile and 75th-percentile hourly wages are used as proxy for entry-level and experienced-level wages.

# JOB POSTINGS

This section analyzes recent data from online job postings (real-time LMI). Online job postings may provide additional insight into recent changes in the labor market that are not captured by historical trends.

The North COE identified 76 online job postings for the selected occupations in the Greater Sacramento subregion. Job postings data comes from Burning Glass Labor Insights and represents new listings posted online within the last year, from March 1, 2021, to February 28, 2022.

## Occupations and Job Titles

Exhibit 4 details the number of online job postings for the selected occupations.

### Exhibit 4. Number of job postings by occupation

Occupation	Job Postings	Share of Job Postings
Water and Wastewater Treatment Plant and System Operators	66	87%
Environmental Engineering Technicians	10	13%
<b>Total Job Postings</b>	<b>76</b>	<b>100%</b>

Exhibit 5 shows the top 10 job titles with the most job postings and the share. All job postings included a job title.

### Exhibit 5. Top jobs titles

Job Title	Job Postings	Share of Job Postings
Water Systems Operator	8	11%
Water Treatment Technician	5	7%
Air Quality Control Engineer	4	5%
Lead Water Technician	3	4%
SCADA Specialist	3	4%
Senior Water Treatment Operator	3	4%

Job Title	Job Postings	Share of Job Postings
Wastewater Operator	3	4%
Water Technician	3	4%
Water Treatment Plant Operator II, III, IV, V	3	4%
Wastewater Permitting Specialist	2	3%

## Employers

Exhibit 6 shows the top 10 employers with the most job postings for the selected occupations. Twelve percent (n = 9) of job postings did not include an employer.

### Exhibit 6. Employers with the most job postings

Employer	Job Postings	Share of Job Postings
County of Sacramento	13	17%
The County Of El Dorado	4	5%
El Dorado Irrigation District	4	5%
Aquality Water Management	3	4%
Active Treatment Systems Inc.	3	4%
Stantec, Inc.	2	3%
Sacramento Municipal Utility District	2	3%
PAE Incorporated	2	3%
Golden State Water	2	3%
State of California	1	1%
WSA Compliance	1	1%



## Certifications, Skills, and Experience

Exhibit 7 shows the most relevant certifications requested by employers for the selected occupations. Thirty-eight percent (n = 29) of job postings did not include certification information.

### Exhibit 7. Most in-demand certifications

Certification	Job Postings	Share of Job Postings
Wastewater Treatment Plant Operator	27	36%
Commercial Driver's License (CDL) Class C	5	7%
Wastewater Treatment Plant Operator Grade IV	3	4%
Wastewater Treatment Plant Operator Grade III	3	4%
Wastewater Treatment Plant Operator Grade II	3	4%
Wastewater Treatment Certification	2	3%
OSHA Forklift Certification	2	3%

Exhibit 8 shows the top 10 skills across three categories for the studied occupations: specialized, human-centered, and technical skills.

### Exhibit 8. Most in-demand specialized skills

Top 10 Specialized Skills	Top 10 Human-Centered Skills	Top 10 Technical Skills
Water Treatment	Physical Abilities	SCADA
Repair	Building Effective Relationships	Word Processing
Wastewater Treatment	English	Microsoft Office
SCADA	Writing	Microsoft Excel
Water Distribution	Troubleshooting	Microsoft Word
Physical Disability	Preventive Maintenance	Software Maintenance
Laboratory Testing	Word Processing	AutoCAD
Plumbing	Communication Skills	Microsoft Outlook

Top 10 Specialized Skills	Top 10 Human-Centered Skills	Top 10 Technical Skills
Backhoes	Detail-Oriented	Microsoft PowerPoint
Forklift Operation	Microsoft Office	Microsoft SQL

Exhibit 9 shows employers' minimum level of education for job postings for the selected occupations. Fifty percent (n = 38) of job postings did not include a preferred education level.

**Exhibit 9. Employer-preferred minimum education levels**

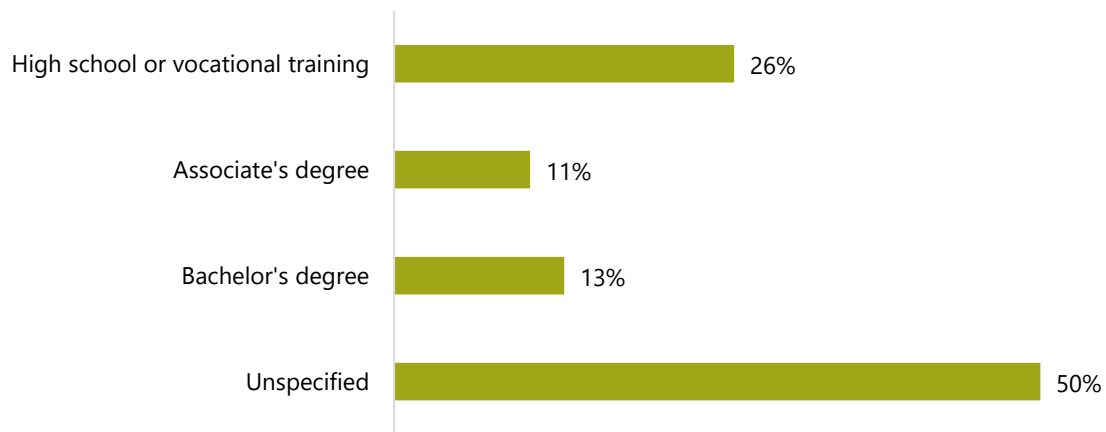
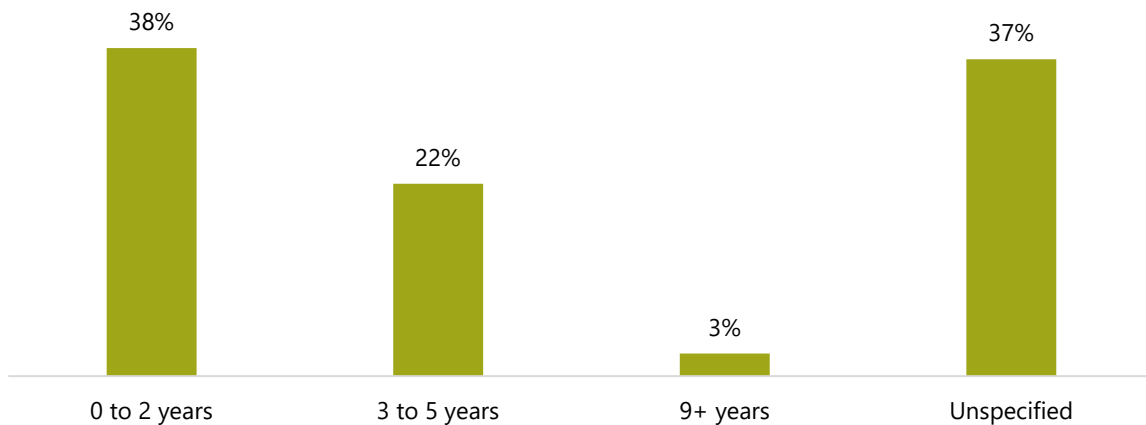


Exhibit 10 shows the experience levels required by employers for job postings for the selected occupations. Thirty-seven percent (n = 28) of job postings did not include a preferred experience level.

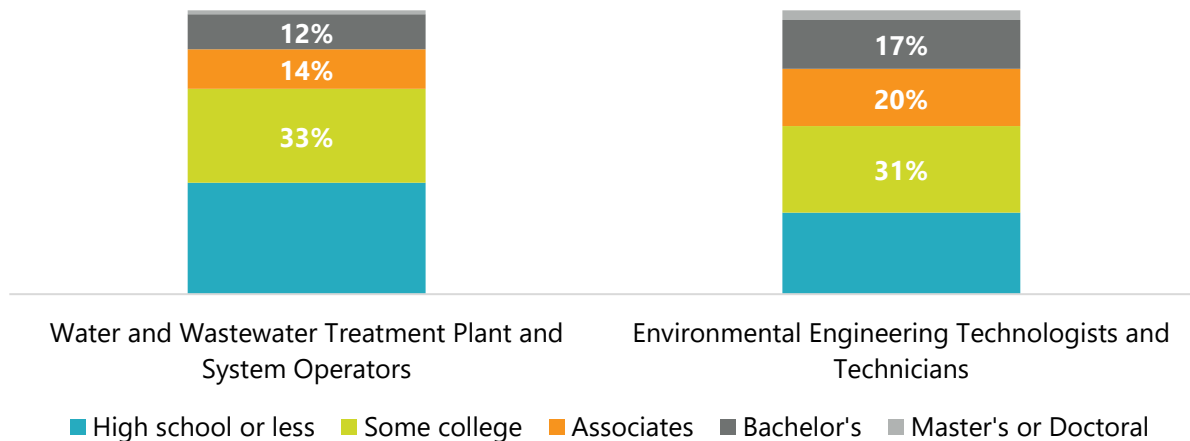
**Exhibit 10. Employer-preferred experience levels**



## EDUCATION AND TRAINING

The U.S. Census Bureau and Bureau of Labor Statistics collected data on education achieved by workers employed in occupations. Exhibit 11 shows the national-level educational attainment of the current workforce in the selected occupations.

**Exhibit 11. National worker educational attainment for selected occupations, 2019**



The Bureau of Labor Statistics (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 the BLS publishes projections data. Exhibit 12 shows the skill level and entry-level job requirements for the selected occupations.

**Exhibit 12. Typical education, work experience, and on-the-job training requirements**

Occupation	Typical Entry-level Education	Work Experience Required	On-the-job Training Required
Water and Wastewater Treatment Plant and System Operators	High school diploma or equivalent	None	Long-term on-the-job training
Environmental Engineering Technologists and Technicians	Associate's degree	None	None

## 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. Exhibit 13 shows the TOP and CIP codes for educational programs related to the selected occupations.

**Exhibit 13. TOP and CIP codes for training programs related to the selected occupations**

TOP Programs and Codes	Aligned CIP Programs and Codes
Water and Wastewater Technology (0958.00)	Water Quality and Wastewater Treatment Management and Recycling Technology/Technician (15.0506)

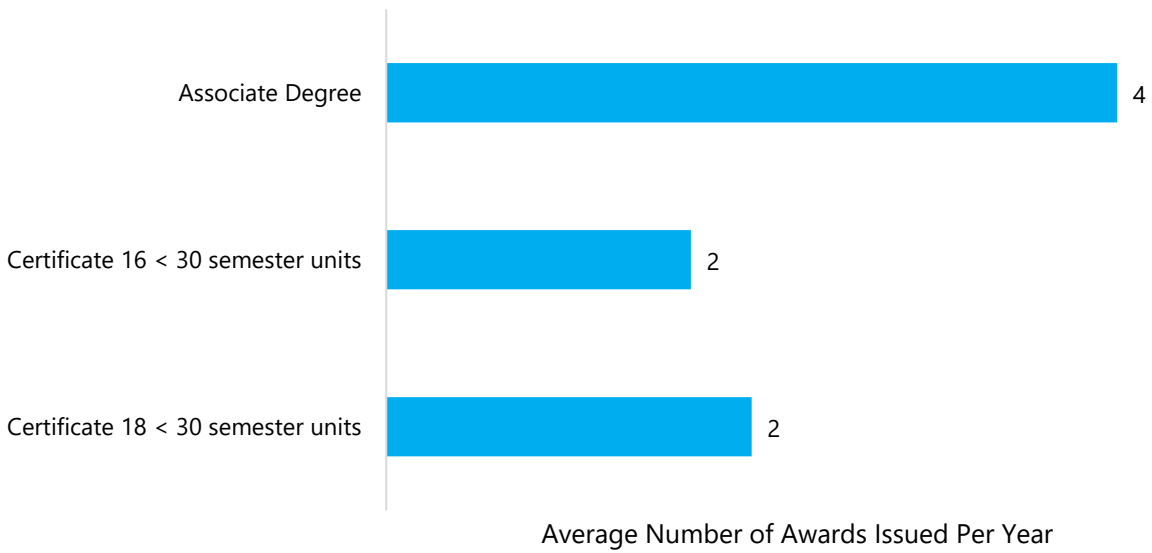
### Community College Supply

Exhibits 14 and 15 compare the average number of certificates and degrees conferred in selected community college programs over the last three academic years. Please note that data does not exist for the 2018-2019 academic year.

**Exhibit 14. Annual average community college awards by program, 2017-18 through 2020-21**

Program - TOP Code	College	Annual Awards 2017-18	Annual Awards 2019-20	Annual Awards 2020-21	3-Yr Annual Awards Average
Water and Wastewater Technology (0958.00)	Folsom Lake	6	3	2	4
	Woodland	--	8	4	4
	<b>Grand Total</b>	<b>6</b>	<b>11</b>	<b>6</b>	<b>8</b>

**Exhibit 15. Annual average community college awards by type, 2018-19 through 2020-21**



### Other Postsecondary Supply

There were no other Water Quality and Wastewater Treatment Management and Recycling Technology/Technician (15.0506) programs in the Greater Sacramento subregion.

## FINDINGS

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- This report focuses on two occupations in the water and wastewater treatment pathway, including water and wastewater treatment plant and system operators and environmental engineering technologists and technicians.
- The North (Greater Sacramento) subregion held 921 water and wastewater treatment jobs in 2020. These jobs are projected to increase by 5% over the next five years, adding 46 new jobs to the subregion by 2025.
- Jobs for water and wastewater treatment jobs are projected to grow faster in the North (Greater Sacramento) subregion than in California.
- Over the next five years, water and wastewater treatment jobs are projected to have 97 annual openings in the North (Greater Sacramento) subregion.
- Wage data shows that water and wastewater treatment occupations earn \$10 to \$14 above the subregion's living wage of \$14.53 per hour.
- According to real-time labor market information, there were about 76 online job postings for water and wastewater treatment occupations between March 1, 2021, to February 28, 2022.
- Between 47% and 51% of incumbent workers in the studied occupations have educational attainment levels consistent with community college offerings (some college or associate degrees).
- Two North (Greater Sacramento) community colleges offer degrees and certificates in drinking water and wastewater technology programs. Together, these programs conferred an average of 8 awards (certificates and associate degrees) in drinking water and wastewater technology programs over the last three academic years (2018-19 through 2020-21).

# RECOMMENDATIONS

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- Based on a three-year average of annual awards in the North (Greater Sacramento) subregion drinking water and wastewater technology programs and projected yearly openings, the supply gap analysis shows that the region seems to have room for additional training.
  - Together, community colleges and other postsecondary training providers issued an average of 8 awards over the last three years.
  - There are 97 projected annual openings for water and wastewater treatment jobs.
- The North (Greater Sacramento) Center of Excellence recommends moving forward with the program.

<b>COE Recommendation</b>		
<b>Move forward with the program</b>	<b>Proceed with caution</b>	<b>Program is not recommended</b>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## APPENDIX A. METHODOLOGY AND SOURCES

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This report identified Occupations using the Center of Excellence TOP-to-CIP-to-SOC crosswalk and O\*Net OnLine. This report's findings were determined using labor market data from the Bureau of Labor Statistics (BLS), U.S. Census Bureau data from Emsi, and jobs posting data from Burning Glass.

Cal-PASS Plus LaunchBoard. California Community Colleges Chancellor's Office.

<https://www.calpassplus.org/LaunchBoard/Home.aspx>.

Emsi 2021.4; QCEW Employees, Non-QCEW Employees, and Self-Employed.

<https://www.economicmodeling.com/>. EMSI occupational employment data are based on final EMSI industry data and final EMSI staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors).

Educational Attainment for Workers 25 Years and Older by Detailed Occupation, 2016-2017.

Bureau of Labor Statistics. <https://www.bls.gov/emp/tables/educational-attainment.htm#>.

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Self-Sufficiency Standard Tool for California. The University of Washington.

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"Taxonomy of Programs." California Community Colleges Chancellor's Office. June 2012, 6<sup>th</sup> Edition. <https://www.cccco.edu/-/media/CCCCO-Website/About->



[Us/Divisions/Educational-Services-and-Support/Academic-Affairs/What-we-do/Curriculum-and-Instruction-Unit/Files/TOPmanual6200909corrected12513pdf.aspx](https://www.coecc.net/Us/Divisions/Educational-Services-and-Support/Academic-Affairs/What-we-do/Curriculum-and-Instruction-Unit/Files/TOPmanual6200909corrected12513pdf.aspx)

"TOP-CIP-SOC Crosswalk." Centers of Excellence for Labor Market Research. November 2015 Edition. <http://coecc.net/>

**COVID-19 Statement:** This report includes employment projection data by EMSI. EMSI's projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy during the projection period will be at approximately full employment or potential output. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, they may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Other measures such as unemployment rates and monthly industry employment estimates will reflect the most recent information on employment and jobs in the state and, in combination with input from local employers, may help validate current and future employment needs as depicted here.

**Important Disclaimer:** All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. Efforts have been made to qualify and validate the accuracy of the data and the reported findings; however, neither the Centers of Excellence, COE host District, nor California Community Colleges Chancellor's Office are responsible for applications or decisions made by recipient community colleges or their representatives based upon components or recommendations contained in this study.

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FOR MORE INFORMATION,  
PLEASE CONTACT:

Ebony J. Benzing, Research  
Manager

North (Greater Sacramento)  
Center of Excellence

[Ebony.Benzing@losrios.edu](mailto:Ebony.Benzing@losrios.edu)