

LABOR MARKET ANALYSIS

FOR PROGRAM RECOMMENDATION



WATER AND WASTEWATER IN THE FAR NORTH SUBREGION

North Far North
Center of Excellence

OCTOBER 2024

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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 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. 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.

Key findings include:

- The Far North subregion 727 held water and wastewater jobs in 2023. These jobs are projected to increase by 6% over the next five years, adding 45 new jobs to the subregion by 2028.
- Over the next five years, water and wastewater jobs are projected to have 79 annual openings across the Far North subregion.
- Analysis of wage data shows that workers in the water and wastewater earn a median hourly wage that's \$10 above the Shasta community college district's living wage of \$21.93 per hour. (See Appendix B for additional information about FY 2024 changes to the living wage).
- Analysis of awards data shows that postsecondary training providers conferred an average of one award in water and wastewater programs over the last three academic years. This award came from a community college.

Recommendations include:

- The North Far North Center of Excellence recommends moving forward with the proposed change to the program.

INTRODUCTION

The North Far North Center of Excellence (COE) was asked to provide labor market information for a career education 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 usually less than a four-year degree:

- Water and Wastewater Treatment Plant and System Operators (51-8031)

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 the studied occupations in the Far North subregion and across the 22-county North Far North region and California.¹

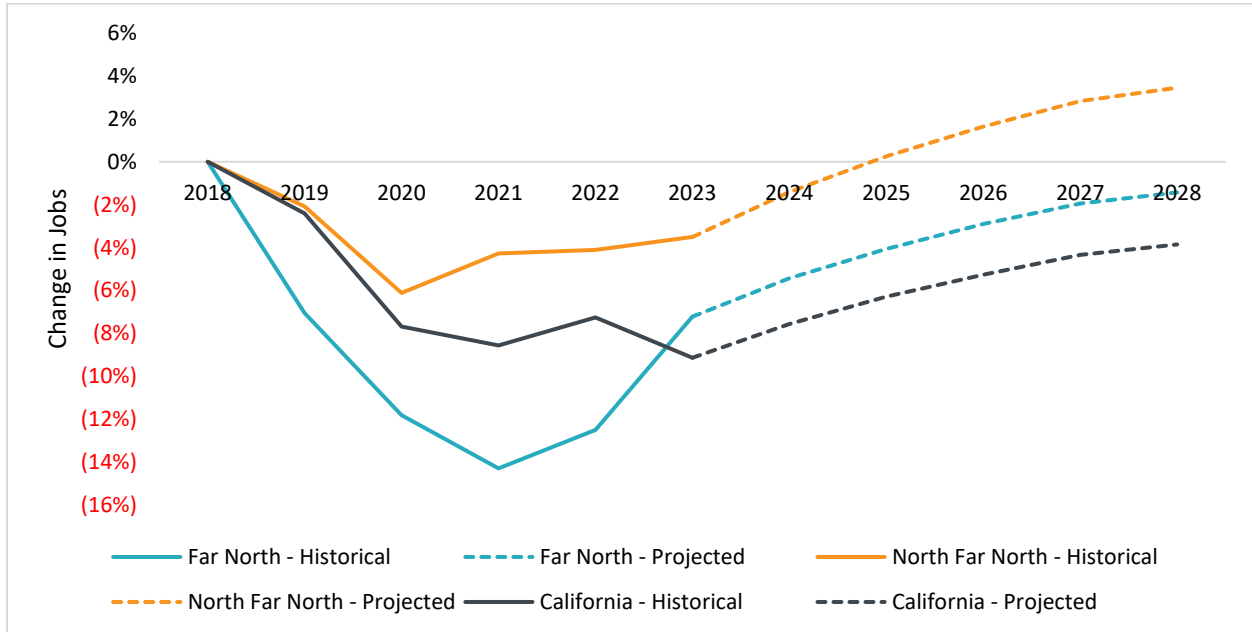
Exhibit 1. Employment and projected demand, 2023-2028

Occupation	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	2023-2028 Annual Openings
Water and Wastewater Treatment Plant and System Operators	727	773	45	6%	79
Far North Subregion	727	773	45	6%	79
Water and Wastewater Treatment Plant and System Operators	1,745	1,871	126	7%	194
North Far North	1,745	1,871	126	7%	194
Water and Wastewater Treatment Plant and System Operators	10,806	11,434	628	6%	1,162
California	10,806	11,434	628	6%	1,162

¹ 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.

Exhibit 2 compares ten years' worth of historical and projected annual changes in employment to the base number of jobs in 2018 for the selected subregion and across the 22-county North Far North region and California.

Exhibit 2. Changes in employment, 2018-2028



OCCUPATIONAL EARNINGS

Exhibits 3 and 4 compare 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.^{2,3} For additional information about changes to NFN COE's living wage comparisons, see Appendix B.

Shasta College requested this report. The living wage for a single working adult residing in the same county as the community college's district office is \$21.93 per hour.

Please note that the 25th and 75th percentile hourly earnings are used to estimate entry-level and experienced worker wages.

² 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 proxy for entry-level and experienced-level wages.

³ A small family is defined as one working adult and one school aged child (between the ages of 5 and 12 years).

Exhibit 3. Hourly earnings by occupation, 2023

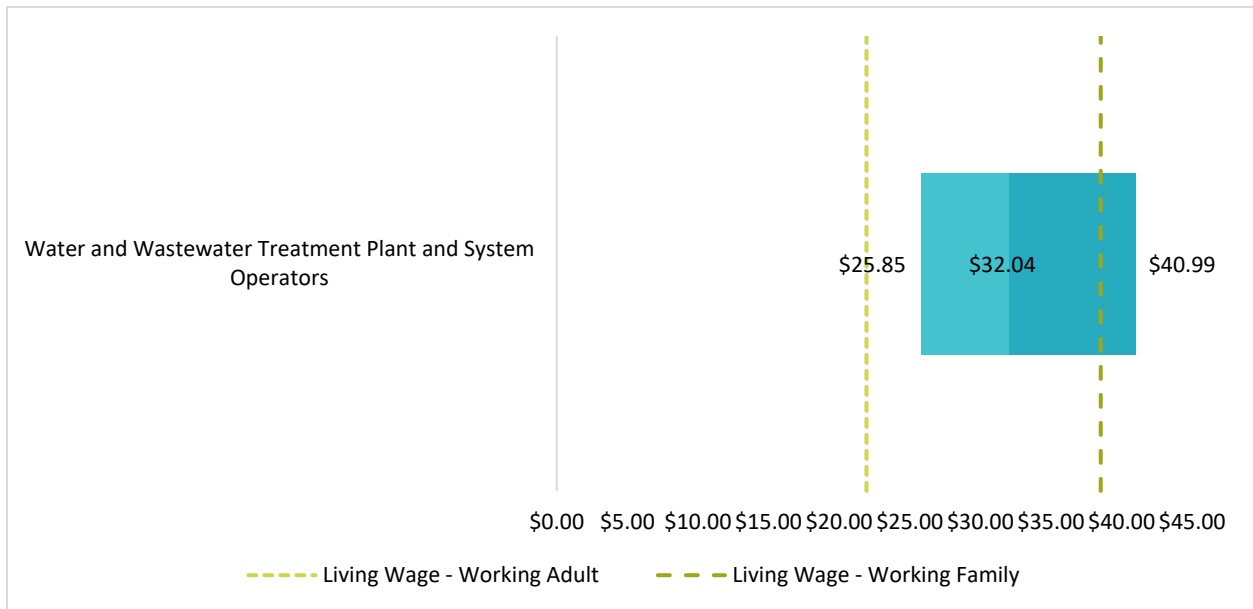


Exhibit 4. Median occupational earnings vs. Community College District's County living wage

Occupation	Median Hourly Earnings	Difference from Working Adult Living Wage (Negative is below LW)
Water and Wastewater Treatment Plant and System Operators	\$32.04	\$10.11

JOB POSTINGS

About Job Postings Analysis

This section of the report analyzes recent data from online job postings. Online job postings may provide additional insight into recent changes in the labor market that are not captured by historical trends. However, job postings are not the same as labor market demand; demand is based on projected annual openings.

There are several limitations to analyzing and interpreting online job postings. Employers may post a position multiple times to increase the number of job applicants. Job postings may remain online after a business chooses not to fill a position. Employers may advertise one posting to fill multiple vacancies. And not all jobs are posted online.

Job posting analyses should be used to inform community college curriculum development and to identify potential employers for targeted experiential learning opportunities.

The North Far North COE identified 35 online job postings for the selected occupation across the Far North subregion. Job posting data comes from and represents unique advertisements newly posted online during the last 12 months, from October 1, 2023 through September 30, 2024.

Top Employers and Job Titles

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

Exhibit 4. Job postings by occupation

Occupation	Unique Job Postings	Share of Job Postings
Water and Wastewater Treatment Plant and System Operators	35	100%
Total Job Postings	35	100%

Exhibit 5 shows the job titles with the most job postings for the selected occupations across the studied subregion.

Exhibit 5. Jobs titles with the most job postings

Job Title	Number of Job Postings
Water Distribution Operators	5
Utility Systems Operators	4
Water Treatment Operators	4
Wastewater Operators	3
Utility Workers	2
WWTP Operators	2
Continuous Improvement Specialists	1
Watershed Managers	1
Landfill Operations Managers	1
Water Quality Managers	1

Exhibit 6 shows the employers with the most job postings for the selected occupations across the studied subregion.

Exhibit 6. Employers with the most job postings

Employer	Number of Job Postings
City Of Eureka	3
Jacobs Engineering Group	2
Adams Vegetable Oils	2
American States Water Company	2
Nice Mutual Water Company	2
Golden State Water Company	2
City Of Eureka, Ca	2

Employer	Number of Job Postings
Kimberly-Clark	1
PG&E	1
Wilbur-Ellis	1

Most Requested Qualifications and Skills

Exhibit 7 shows the certifications most requested by employers for the selected occupations across the studied subregion.

Exhibit 7. Most in-demand certifications

Certification	Job Postings
CDL Class B License	2
Wastewater Operator Certification	2
CDL Class C License	2
Operator Certification	2
CDL Class A License	1

Exhibit 8 shows the most requested specialized, common, and software skills for the studied occupations across the studied subregion.⁴

Exhibit 8. Most in-demand skills

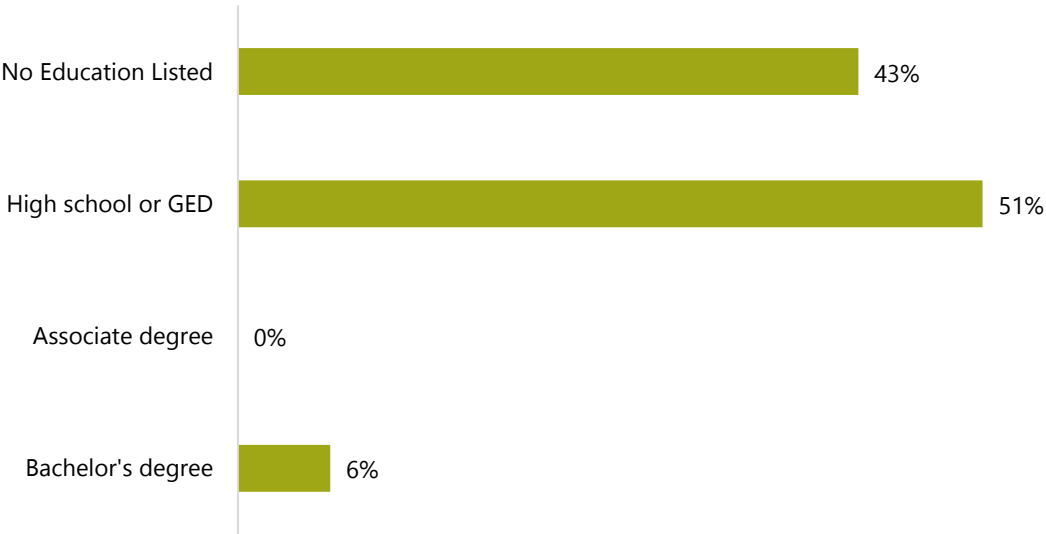
Specialized Skills	Common Skills	Software Skills
Valves (Piping)	Operations	Microsoft Excel
Water Distribution	Communication	Microsoft Outlook
Wastewater	Management	Microsoft Word
Water Metering	Lifting Ability	Microsoft Office
Water Treatment	Good Driving Record	Spreadsheets

⁴ 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.

Specialized Skills	Common Skills	Software Skills
Water Supply Networks	Customer Service	Operational Data Store
Sewage Treatments	Troubleshooting (Problem Solving)	
Water Resources	Accountability	
Water Services	Investigation	
Disinfecting	Mathematics	

Exhibit 9 shows the employer-preferred minimum level of education for job postings related to the studied occupations across the subregion.

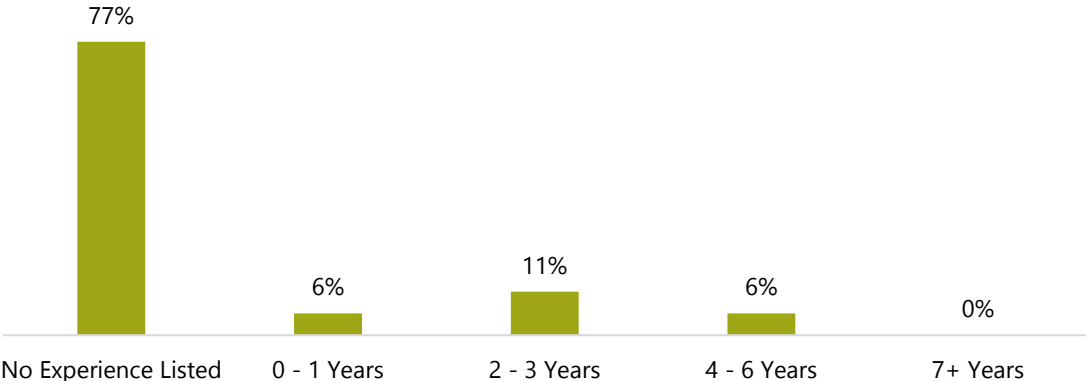
Exhibit 9. Employer-preferred education levels for the studied occupations



Note: Employers may include more than one level of education as a hiring requirement in a job posting. As a result, the values in the chart may sum to greater than 100%.

Exhibit 10 shows the employer-preferred minimum level of experience for job postings related to the studied occupations across the subregion.

Exhibit 10. Employer-preferred job experience for the studied occupations

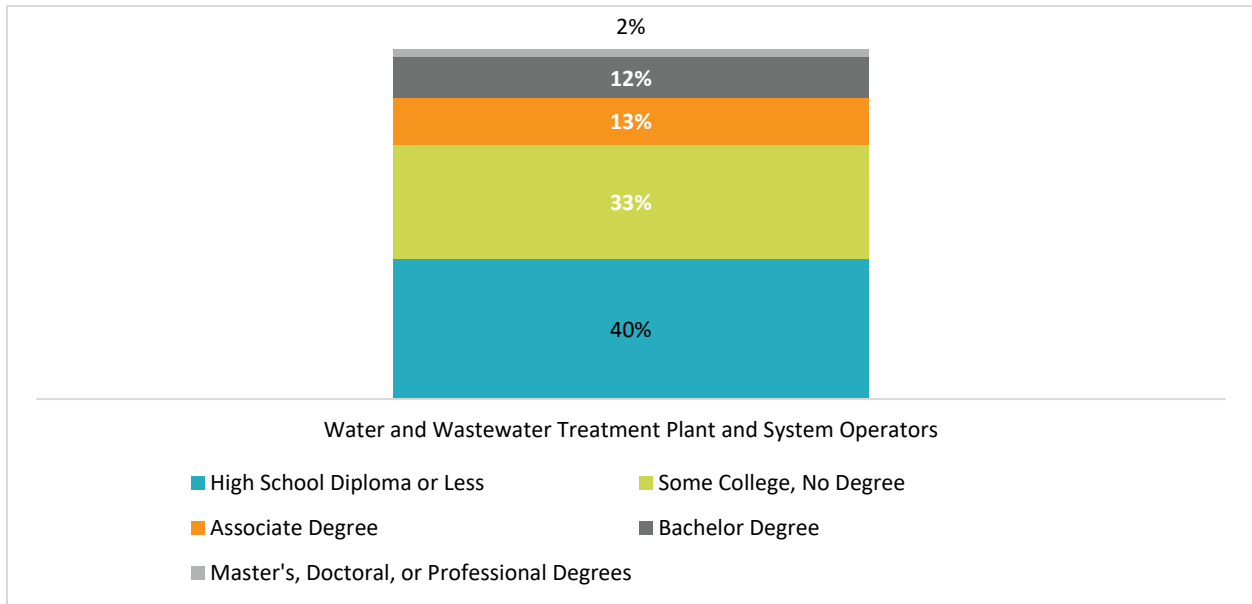


Note: Employers may include more than one level of education as a hiring requirement in a job posting. As a result, the values in the chart may sum to greater than 100%.

EDUCATION AND TRAINING REQUIREMENTS

The U.S. Census Bureau collects data on the highest education level achieved by workers across all occupations. Exhibit 11 shows the educational attainment of the current workforce employed in the studied occupations across the United States.

Exhibit 11. U.S. educational attainment for workers 25 years and older by occupation, 2019 and 2021



The U.S. Bureau of Labor Statistics (BLS) uses a categorical system to assign typical entry-level education and job requirements to each occupation for which the BLS publishes projection data. These categories include entry-level education, work experience in a related occupation, and on-the-job training. Exhibit 12 shows the typical entry-level job requirement by occupation.

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

Occupation	Entry-level Education Requirements	Work Experience Requirements	On-The-Job Training Requirements
Water and Wastewater Treatment Plant and System Operators	High school diploma or equivalent	None	Long-term on-the-job training

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
<ul style="list-style-type: none"> Water and Wastewater Technology (0958.00) 	<ul style="list-style-type: none"> Water Quality and Wastewater Treatment Management and Recycling Technology/Technician (15.0506)

Community College Supply

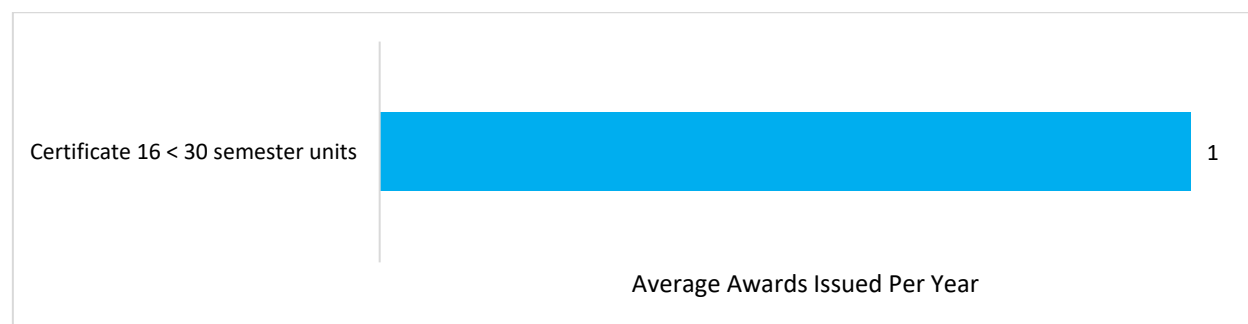
Exhibits 14 and 15 summarize the three-year average of certificates and degrees conferred by the selected subregion's community college programs relevant to the studied occupations.

Exhibit 14. Average annual community college awards by TOP program

TOP Program and Code	College	Annual Awards 2020-21	Annual Awards 2021-22	Annual Awards 2022-23	3-Yr Annual Awards Average
Water and Wastewater Technology (0958.00)	Shasta	4	0	0	1
	Grand Total	4	0	0	1

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



Other Postsecondary Supply

No local non-community college postsecondary training provider offered training related to the studied occupations between the 2020-21 and 2022-23 academic years. Please note that non-community college awards data often lags by one year.

FINDINGS

This report focuses on one occupation in the water and wastewater career pathway: water and wastewater treatment plant and system operators.

Occupational Demand

- The Far North subregion held 727 water and wastewater jobs in 2023. These jobs are projected to increase by 6% over the next five years, adding 45 new jobs to the subregion by 2028.
- Water and wastewater jobs are projected to grow at the same rate in the Far North as in California.
- Over the next five years, water and wastewater jobs are projected to have 79 annual openings in the Far North subregion.

Wages

- Analysis of wage data shows that water and wastewater occupations earn a median hourly wage that's \$10 above the single working adult living wage of \$21.93 per hour in Shasta community college district.
- Water and wastewater occupations earn median wages that are \$6 below the living wage for a small family (\$38.52 per hour).

Job Postings

- In the last 12 months, there were 35 online job postings for water and wastewater occupations.

Education and Training Requirements

- 23% of incumbent workers in the studied occupations have educational attainment levels consistent with community college offerings (some college or associate degrees).
- Another 12% of workers in these occupations hold a bachelor's degree.
- Although the majority of online job postings did not request an educational requirement (43%), 51% requested a high school diploma.

Postsecondary Supply

- One Far North community college offers degrees and certificates in programs related to water and wastewater. This program conferred an average of one award (certificates and associate degrees) in water and wastewater programs over the last three academic years (2020-21 through 2022-23).
- No local non-community college postsecondary training provider offered training related to the studied occupations between the 2020-21 and 2022-23 academic years. Please note that non-community college awards data often lags by one year.

RECOMMENDATIONS

Supply Gap

- A comparison of occupational demand to educational supply suggests an undersupply in the water and wastewater career pathway. There are 79 projected annual job openings across the Far North subregion and one annual average award conferred by community colleges and other postsecondary institutions across the Far North subregion.

Living Wage

- 100% of annual job openings for occupations in the water and wastewater career pathway have median hourly wages that meet or exceed the living wage of \$21.93 for a single working adult residing in the same county as Shasta College.

Education

- The occupation has educational training requirements that align with community college offerings. 23% of workers in this occupation have completed some college or an associate degree as their highest level of education.

Program Modification	
Move forward with program modifications. <input checked="" type="checkbox"/>	Program modifications are not recommended. <input type="checkbox"/>

APPENDIX A. METHODOLOGY AND SOURCES

This report includes occupations identified by using the Center of Excellence TOP-to-CIP-to-SOC crosswalk and the O*Net OnLine education crosswalk. This report's findings were primarily determined with labor market and educational supply data from the Bureau of Labor Statistics (BLS), Lightcast, and the California Community Colleges Chancellor's Office.

Data sources include:

"The Chancellor's Office Curriculum Inventory System (COCI)." California Community Colleges Curriculum Inventory (COCI), 2024. <https://coci2.ccctechcenter.org/>.

Glasmeier, Amy K. "Living Wage Calculator." Living Wage Calculator, 2024. <https://livingwage.mit.edu/>.

Integrated Postsecondary Education Data System (IPEDS). National Center for Education Statistics. U.S. Department of Education. <https://nces.ed.gov/ipeds/>.

Labor Market Information Division. California Employment Development Department. <https://labormarketinfo.edd.ca.gov/>.

Lightcast 2023.3; QCEW Employees, Non-QCEW Employees, and Self-Employed. <https://lightcast.io/>.
(Notes: 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 Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors)).

Management Information Systems (MIS) Data Mart. California Community Colleges Chancellor's Office. <https://datamart.cccco.edu/>.

O*NET OnLine. U.S. Department of Labor/Employment and Training Administration (DOL ETA). <https://www.onetonline.org/>.

Self-Sufficiency Standard Tool for California. The University of Washington. <http://www.selfsufficiencystandard.org/>

"Taxonomy of Programs." California Community Colleges Chancellor's Office. June 2012, 6th 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.ashx>

"TOP-CIP-SOC Crosswalk." Centers of Excellence for Labor Market Research. June 2021 Edition. <http://coecc.net/>

APPENDIX B. WAGES AND THE LIVING WAGE

About Occupational Earnings

Occupational earnings data comes from the Bureau of Labor Statistics' Occupational Employment Statistics dataset. It is collected from the employer's perspective, meaning that earning data is pre-tax and based on the place of the employee's work (rather than where they live). Occupational earnings are reported based on hourly income and include base rate pay, commissions, cost of living allowances, guaranteed pay, hazard pay, incentive pay, longevity pay, production bonuses, and tips. Occupational earnings do not include bonuses, reimbursements, overtime pay, relocation allowances, severance pay, etc.

The NFN COE reports on occupational earnings using percentile earnings. Percentile earnings are typically broken into 10th, 25th, 50th (median), 75th, and 90th percentiles and are used to show the distribution of wages for workers employed within an occupation. For example, the 25th percentile hourly earnings for childcare workers employed across the North Far North (NFN) region is \$15.50. This means that in 2023, 25% of the North Far North's childcare workers earned up to but no more than \$15.50 per hour. Childcare workers in the North Far North have a 90th percentile wage of \$23.72, meaning that 90% of childcare workers employed across the region earn up to \$23.72 per hour. The NFN COE uses the 25th and 75th percentile hourly wages as a proxy to estimate wages for entry-level and experienced workers.

Living Wage

A living wage is the level of income one adult working full-time must earn to meet their minimum basic needs where they live, all while being self-sufficient. The basic needs that factor into a living wage calculation include food, housing, childcare (for those with children), healthcare, transportation, broadband and mobile access, taxes, and other necessities (like clothing, personal care products, and household furnishings and supplies).

The NFN COE currently uses the most recent version of the [MIT Living Wage Calculator](#) to estimate the living wage for each community college district and uses the living wage for a single, working adult without dependents. A working adult is assumed to work 2,080 full-time hours, which is equivalent to 40 hours a week for 52 weeks per year. The NFN COE will revise this practice as needed to ensure continued alignment with the Chancellor's Office.

Comparing occupational earnings to the living wage

Prior to the 2024-25 fiscal year, the NFN COE compared the 25th percentile hourly earnings of an occupation employed in the subregion to a subregional average living wage for one single, working adult (no dependents) residing in a county located in the North or Far North subregions.

Beginning in the fall of the 2024-25 fiscal year, the NFN COE will compare the median hourly earnings of an occupation employed in the subregion to the living wage for one single, working adult (no dependents) residing in the same county as the community college district that initially requested this report. This change aligns with the definition used by the Chancellor's Office to determine the proportion of students who attained a living wage after exiting the California Community College system in the Student Success Metrics (SM 802Sx) and Community College Pipeline (CP 802). The NFN COE will revise this practice as needed to ensure continued alignment with the Chancellor's Office.

Living Wage by County of Community College District Office Location

Community College District (CCD)	Location of District Office (County)	2024 Living Wage – One Working Adult
Butte-Glenn	Butte	\$21.95
Feather River	Plumas	\$21.39
Lake Tahoe	El Dorado	\$27.15
Lassen	Lassen	\$21.13
Los Rios	Sacramento	\$25.19
Mendocino-Lake	Mendocino	\$23.08
Redwoods	Humboldt	\$21.48
Shasta-Tehama-Trinity Joint	Shasta	\$21.93
Sierra Joint	Placer	\$28.33
Siskiyou Joint	Siskiyou	\$20.89
Yuba	Sutter	\$23.22
<i>California minimum wage - all industries except fast food and healthcare</i>		\$16.00
<i>California minimum wage - fast food (eff. April 1, 2024)</i>		\$20.00
<i>California minimum wage – Healthcare (effective date is unknown)</i>		\$18-23, depending on type of facility

Sources: 1) MIT Living Wage Calculator (<https://livingwage.mit.edu/>) and 2) State of California Department of Industrial Relations (https://www.dir.ca.gov/dlse/minimum_wage.htm).

Funding Acknowledgement: This report was made available with Strong Workforce Program funding from the North Far North Regional Consortium.

COVID-19 Statement: This report includes employment projection data produced by Lightcast (formerly EMSI). Employment projections are developed using models based on historical data, which in this set of projections covers the period through 2021. Most input data, therefore, precedes the pandemic. Employment projections are long-term projections intended to capture structural changes in the economy, not cyclical fluctuations. As such, projections data are not intended to capture the impacts of the recession that began in February 2020. Cyclical fluctuations, like recessions, impact projections when they become part of the historical data set.

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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Centers of Excellence for Labor Market Research, Economic and
Workforce Development Program



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