

Labor Market Analysis for Program Review:

Heavy Equipment Operators in the Far North

Prepared by the North Far North Center of Excellence
April 2026



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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

- **Jobs for heavy equipment operators in the Far North are expected to grow at a rate on par with growth in California.** There is a 6% increase projected for heavy equipment operator jobs in the Far North and a 5% increase projected in California.
- **Heavy equipment operators' entry-level wages surpass the living wage for a single working adult.** Heavy equipment operators have entry-level wages between \$21.47 and \$28.67, which surpasses Butte College's living wage for a single working adult of \$16.77 per hour.
- **The majority of incumbent heavy equipment operators have not completed further education beyond a high school diploma.** Between 23% to 31% of incumbent workers have some college or an associate degree as their highest level of education, while 63% to 74% have a high school diploma or less as their highest level of educational attainment.
- **There is a significant supply gap for heavy equipment operators.** There are about 260 annual openings and only 60 annual awards.

Recommendation

Based on the findings, the North Far North COE recommends that community colleges **exercise caution in developing new programs related to heavy equipment operation**. Key considerations include:

- Heavy equipment operators' entry-level wages surpass the living wage for a single working adult.
- There is a significant supply gap for heavy equipment operators. There are about 260 annual openings and only 60 annual awards.
- The majority of incumbent heavy equipment operators have a high school diploma or less education. Programs developed in heavy equipment operations should ensure they provide skills that could confer a premium or prepare students for senior roles.

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

- Paving, Surfacing, and Tamping Equipment Operators (47-2071)
- Operating Engineers and Other Construction Equipment Operators (47-2073)
- Pipelayers (47-2151)
- Highway Maintenance Workers (47-4051)
- Excavating and Loading Machine and Dragline Operators, Surface Mining (47-5022)

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

- Heavy Equipment Operation (0947.30)

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

- Construction/Heavy Equipment/Earthmoving Equipment Operation (49.0202)

Occupational Demand

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

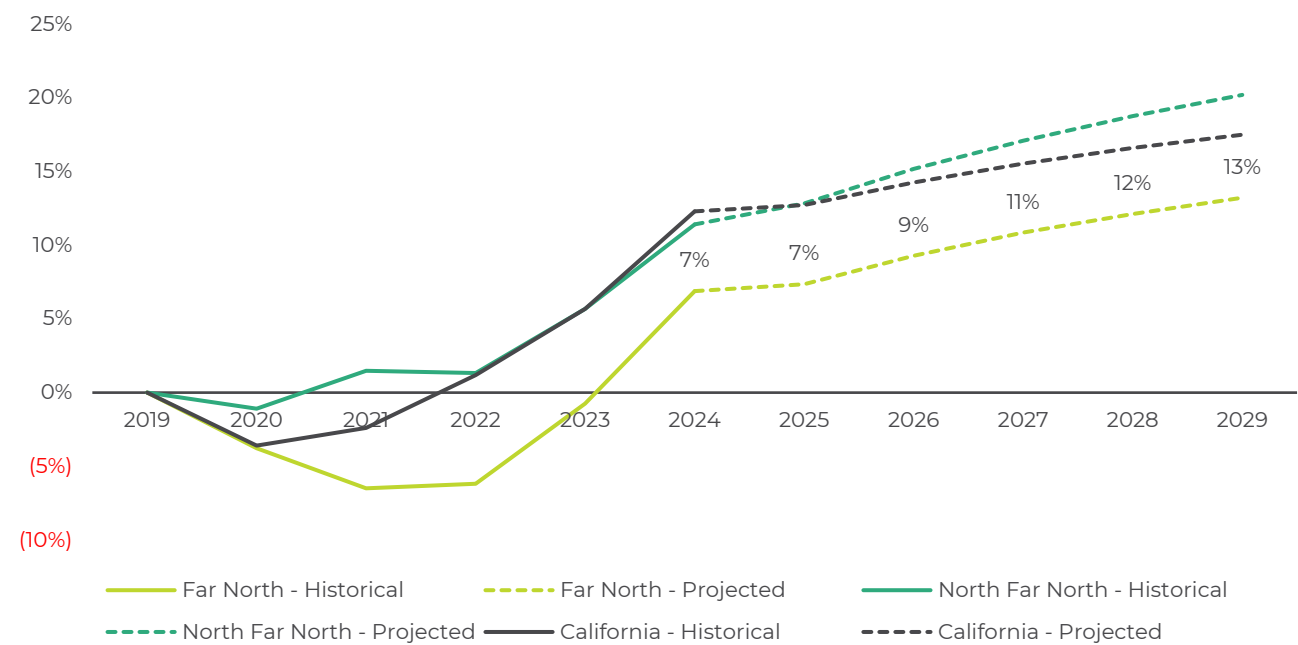
Exhibit 1. Current employment and projected occupational demand, 2024-2029

Occupational Group	2024 Jobs	2024-2029 Change	2024-2029 % Change	2024-2029 Annual Openings
Paving, Surfacing, and Tamping Equipment Operators	142	13	9%	15
Operating Engineers and Other Construction Equipment Operators	1,775	115	6%	175
Pipelayers	82	2	2%	7
Highway Maintenance Workers	650	25	4%	55
Excavating and Loading Machine and Dragline Operators, Surface Mining	67	6	9%	8
Far North	2,716	161	6%	260
Paving, Surfacing, and Tamping Equipment Operators	321	24	7%	33
Operating Engineers and Other Construction Equipment Operators	5,405	377	7%	534
Pipelayers	264	18	7%	26
Highway Maintenance Workers	1,338	158	12%	136
Excavating and Loading Machine and Dragline Operators, Surface Mining	129	11	9%	15
North Far North	7,457	588	8%	744
Paving, Surfacing, and Tamping Equipment Operators	2,740	120	4%	257
Operating Engineers and Other Construction Equipment Operators	39,254	1,496	4%	3,576
Pipelayers	2,827	-52	(2%)	230
Highway Maintenance Workers	8,024	891	11%	797
Excavating and Loading Machine and Dragline Operators, Surface Mining	1,260	50	4%	131
California	54,105	2,505	5%	4,991

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.

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 the Far North, the 22-county North Far North region, and California.

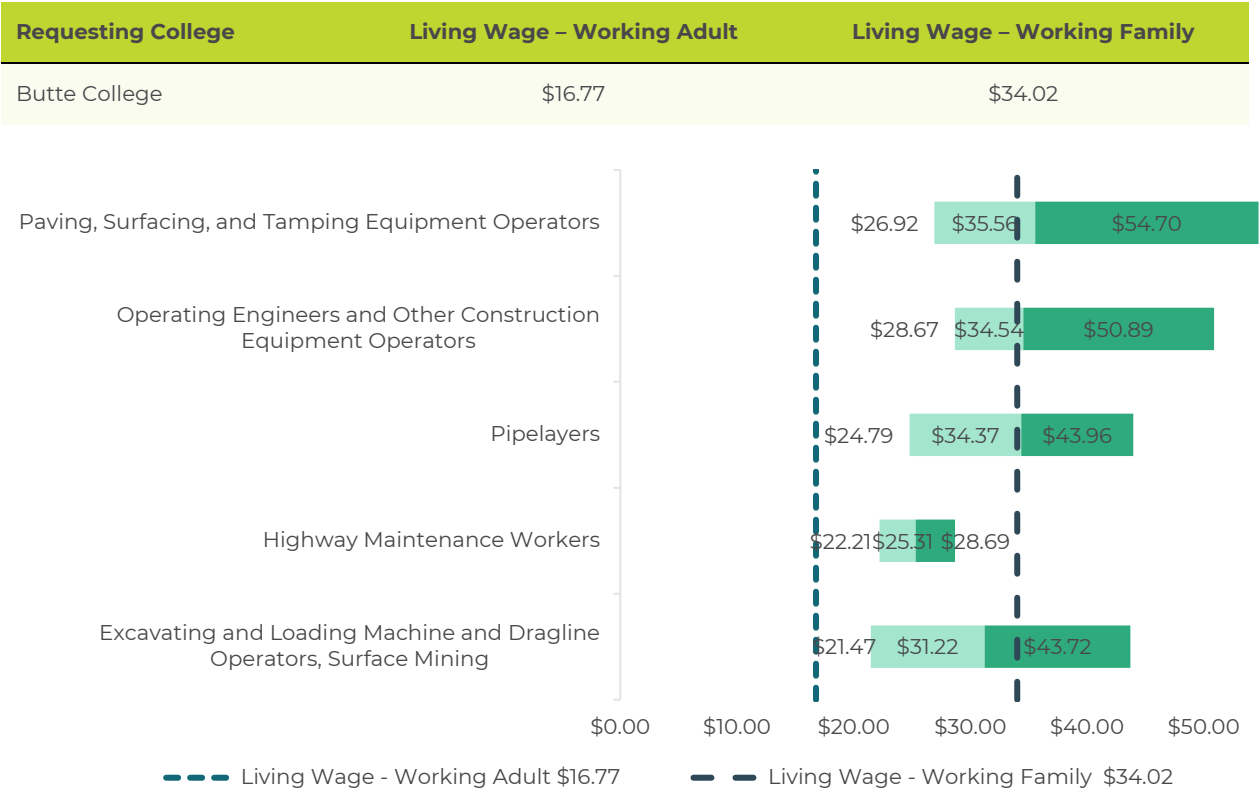
Exhibit 2. Changes in employment, 2019-2029



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 Far North 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



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).

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.

The North Far North COE identified 122 online job postings for the selected occupations across the Far North subregion. Job posting data comes from and represents unique advertisements posted online during the last 12 months, from April 2025 to March 2026.

Exhibit 4. Job postings by occupation

Occupation	Number of Job Postings	Share of Postings	Median Advertised Salary
Operating Engineers and Other Construction Equipment Operators	77	63%	\$29.91
Highway Maintenance Workers	41	34%	\$23.88
Excavating and Loading Machine and Dragline Operators, Surface Mining	3	2%	\$29.50
Paving, Surfacing, and Tamping Equipment Operators	1	1%	-
Pipelayers	0	0%	-
Total	122	100%	\$29.42

Top employers

Exhibit 5 shows the employers with the most job postings for the selected occupations across the Far North.

Exhibit 5. Employers with the most job postings

Employer	Number of Job Postings
County of Siskiyou	17
Sierra Pacific Industries	9
County of Humboldt	9

Employer	Number of Job Postings
Waste Management	7
County of Mendocino	7
JW Bamford	5
Shasta County	5
Green Diamond Resource Company	4
Mendocino Forest Products	3

Top titles

Exhibit 6 shows the job titles with the most job postings for the selected occupations across the Far North.

Exhibit 6. Job titles with the most job postings

Job title	Number of Job Postings
Road Maintenance Workers	40
Equipment Operators	30
Heavy Equipment Operators	27
Operators	4
Excavator Operators	3
Heavy Equipment Operators/ Laborers	2
Engineering Equipment Operators	2

Skills and qualifications

Exhibit 7 shows the most requested skills and certifications in job postings by occupation in the Far North.⁵

Exhibit 7. Most requested in-demand skills in job postings

Specialized Skills	Common or Employability Skills	Certifications
- Heavy Equipment Operation - Construction	- Operations - Communication - Coordinating	- CDL Class A License (35 postings) - CDL Class B License (8

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.

• Backhoes • Excavation • Snow Removal • Oil and Gas • Chainsaws • Hand Tools • Occupational Safety and Health • Drainage Systems	• Troubleshooting (Problem Solving) • Detail Oriented • Teamwork • Safe Driving • Strong Work Ethic • Lifting Ability • Customer Service	• postings) • Flagger Certification (6 postings) • Tanker Endorsement (6 postings) • CDL Class C License (3 postings) • Forklift Certification (2 postings)
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Exhibit 8 shows the employer-preferred minimum level of education in job postings related to the selected occupations in the Far North.

Exhibit 8. Employer-preferred education levels for the studied occupations

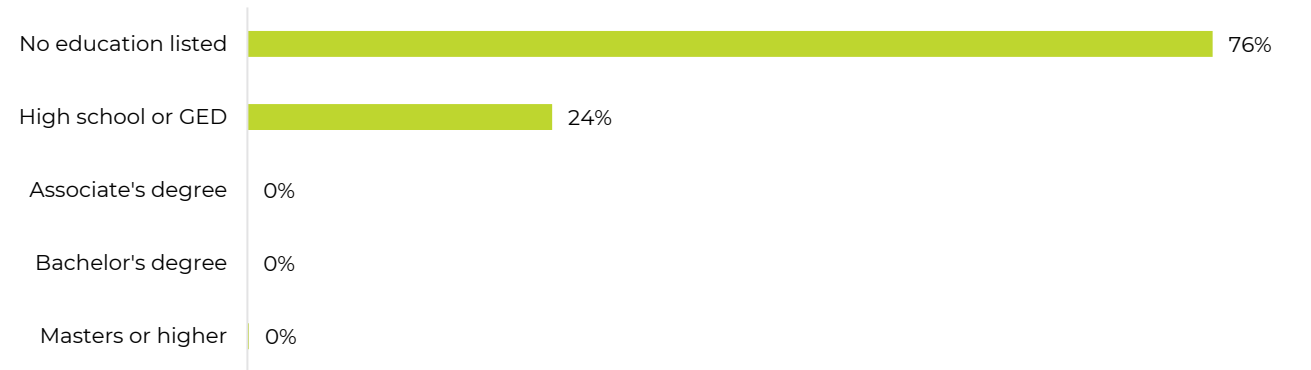
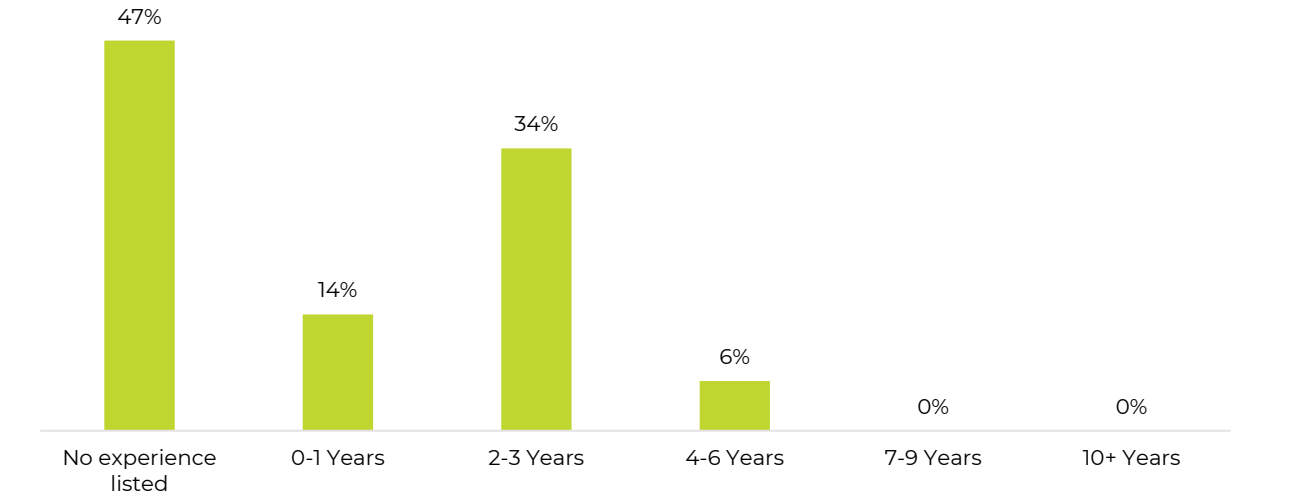


Exhibit 9 shows the employer-preferred minimum level of experience in job postings related to the selected occupations in the Far North.

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



Education and Training Requirements

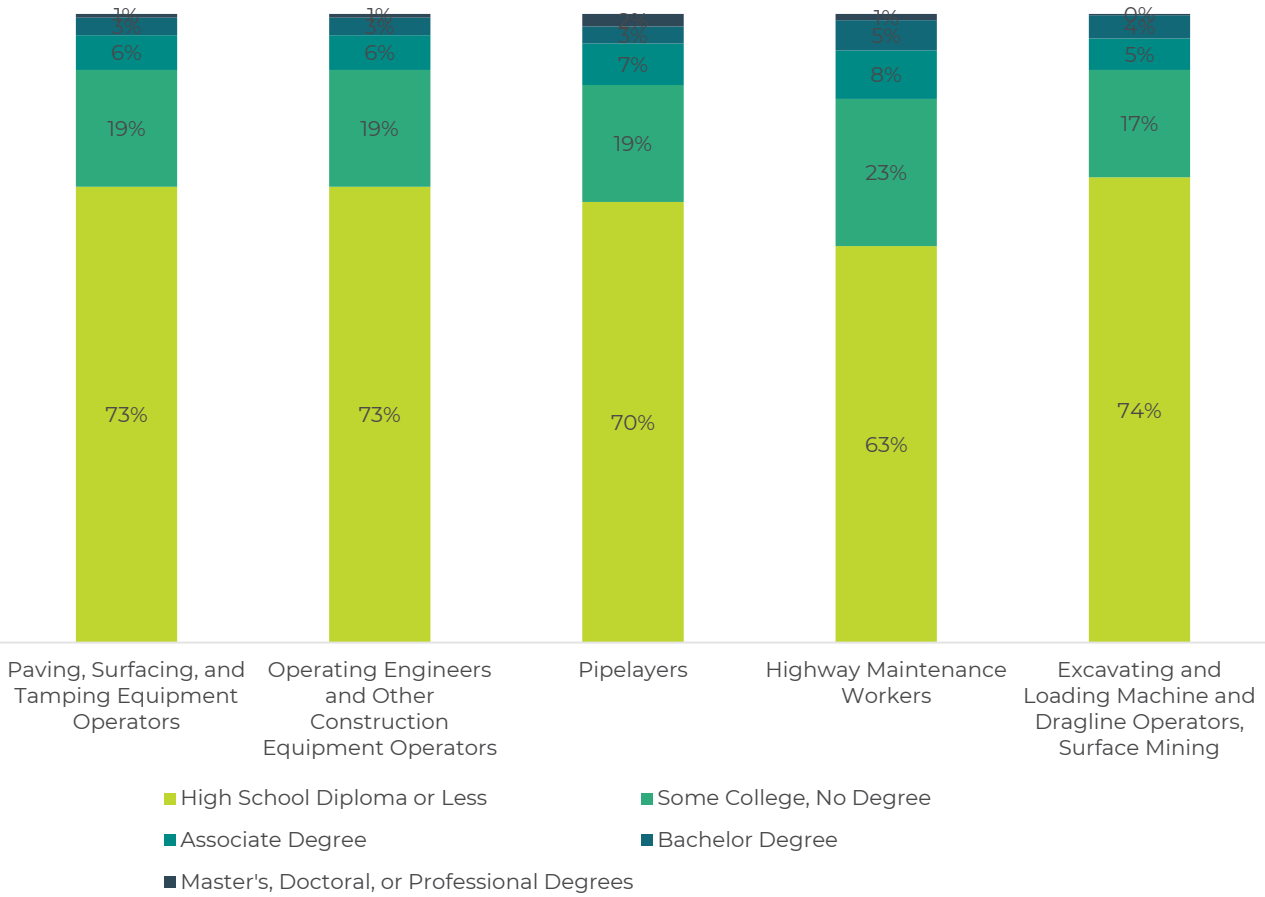
The U.S. Bureau of Labor Statistics (BLS) assigns each occupation a typical entry-level education, related work experience, and on-the-job training category in its projection data. Exhibit 10 summarizes these requirements by occupation.

Exhibit 10. Typical entry-level job requirements for the studied occupations

Occupation	Entry-Level Education	Work Experience	On-The-Job Training
Paving, Surfacing, and Tamping Equipment Operators	High school diploma or equivalent	None	Moderate-term on-the-job training
Operating Engineers and Other Construction Equipment Operators	High school diploma or equivalent	None	Moderate-term on-the-job training
Pipelayers	No formal educational credential	None	Short-term on-the-job training
Highway Maintenance Workers	High school diploma or equivalent	None	Moderate-term on-the-job training
Excavating and Loading Machine and Dragline Operators, Surface Mining	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training

The U.S. Census Bureau tracks the highest education level attained by workers in all occupations. Exhibit 11 presents this data for the current U.S. workforce in the studied occupations.

Exhibit 11. 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

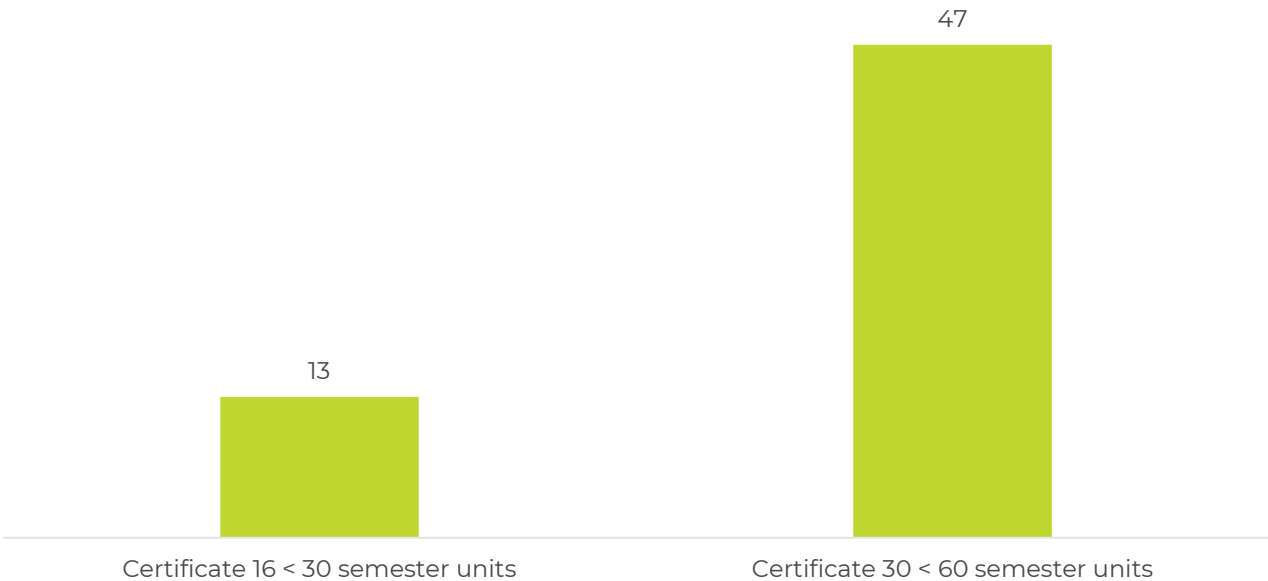
Exhibits 12 and 13 summarize the three-year average of awards (certificates and degrees) conferred by the Far North community college programs relevant to the occupations studied. The Shasta College program is specifically focused on heavy equipment logging operations and maintenance.

Exhibit 12. 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
Heavy Equipment Operation (0947.30)	Butte	37	55	48	47
	Shasta	12	11	17	13
Subtotal		49	66	65	60
Totals		49	66	65	60

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

Exhibit 13. Average annual community college awards by award type and program area



Other postsecondary supply

Within the Far North, there are no other active programs providing certificates in Construction/Heavy Equipment/Earthmoving Equipment Operation.

Conclusion and Recommendations

Data insights

Demand— Jobs for heavy equipment operators in the Far North are expected to grow at a rate on par with growth in California. There is a 6% increase projected for heavy equipment operator jobs in the Far North and a 5% increase projected in California.

Living Wage— Heavy equipment operators' entry-level wages surpass the living wage for a single working adult. Heavy equipment operators have entry-level wages between \$21.47 and \$28.67, which surpasses Butte College's living wage for a single working adult of \$16.77 per hour.

Education— The majority of incumbent heavy equipment operators have not completed further education beyond a high school diploma. Between 23% to 31% of incumbent workers have some college or an associate degree as their highest level of education, while 63% to 74% have a high school diploma or less as their highest level of educational attainment. No job postings listed any educational requirements beyond a high school diploma.

Supply Gap— There is a significant supply gap for heavy equipment operators. There are about 260 annual openings and only 60 annual awards.

Recommendation

Based on the current analysis, the North Far North COE recommends that community colleges **exercise caution** in creating new programs related to heavy equipment operation. The COE will defer to community colleges for program modifications.

While heavy equipment operators have good wages and there is a significant supply gap, the majority of incumbent heavy equipment operators do not have education beyond a high school diploma, and job posting analysis reveals that most employers only require a high school diploma.

New Program Recommendation		
Proceed	Use Caution	Do Not Proceed
☐	☒	☐

Support for Program Modification	
Yes	No
☒	☐

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://coeccc.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	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. 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/. The National Center for Education Statistics (NCES) Integrated Postsecondary Education 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.
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 2026)		\$16.90	\$35,152
Fast food (Effective April 2024)		\$20.00	\$41,600
Healthcare (Effective July 2025)		\$18.63-\$24.00, depending on facility type	\$38,750-\$49,920

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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