



Program Endorsement Brief

MECHANIZED AGRICULTURE TECHNICIANS IN THE NORTH
(GREATER SACRAMENTO) REGION

North/Far North Center of Excellence
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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.

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Summary

The North/Far North Center of Excellence for Labor Market Research prepared this report to provide regional labor market supply and demand data related to mechanized agricultural technicians in the North (Greater Sacramento) region. This report focuses on three middle-skill occupations: farm equipment mechanics and service technicians, mobile heavy equipment mechanics (except engines), and machinery maintenance workers.¹ This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from existing community college programs.

Key findings include:

- The North (Greater Sacramento) region held 1,376 jobs related to mechanized agricultural technicians in 2019.
- Jobs related to mechanized agricultural technicians are projected to increase by 8% by 2024.
- Over the next five years, jobs related to mechanized agricultural technicians are projected to have 169 annual openings in the North (Greater Sacramento) region.
- Analysis of wage data shows that individuals in jobs related to mechanized agricultural technicians tend to earn more than the subregion's living wage of \$13.18 per hour.
- Between 38% and 39% of incumbent workers have education consistent with community college offerings (some college or associate degrees).
- There are no postsecondary training providers, community colleges or otherwise, for mechanized agricultural technicians in the North (Greater Sacramento) region.

¹ The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

Introduction

The North/Far North Center of Excellence 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:

- Farm equipment mechanics and service technicians (49-3041)
- Mobile heavy equipment mechanics, except engines(49-3042)
- Maintenance workers, machinery (49-9043)

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

- Agricultural Power Equipment Technology (0116.00)

The corresponding Classification of Instructional Programs (CIP) code(s) are:

- Agricultural Mechanics and Equipment/Machine Technology (01.0205)
- Agricultural Power Machinery Operation (01.0204)
- Agricultural Mechanization, General (01.0201)

The SOC titles, SOC codes, and job descriptions from the Bureau of Labor Statistics (BLS) and O*Net OnLine are shown below.

Farm equipment mechanics and service technicians (49-3041)

Diagnose, adjust, repair, or overhaul farm machinery and vehicles, such as tractors, harvesters, dairy equipment, and irrigation systems.

Mobile heavy equipment mechanics, except engines(49-3042)

Diagnose, adjust, repair, or overhaul mobile mechanical, hydraulic, and pneumatic equipment, such as cranes, bulldozers, graders, and conveyors, used in construction, logging, and surface mining.

Maintenance workers, machinery (49-9043)

Lubricate machinery, change parts, or perform other routine machinery maintenance.

Occupational Demand

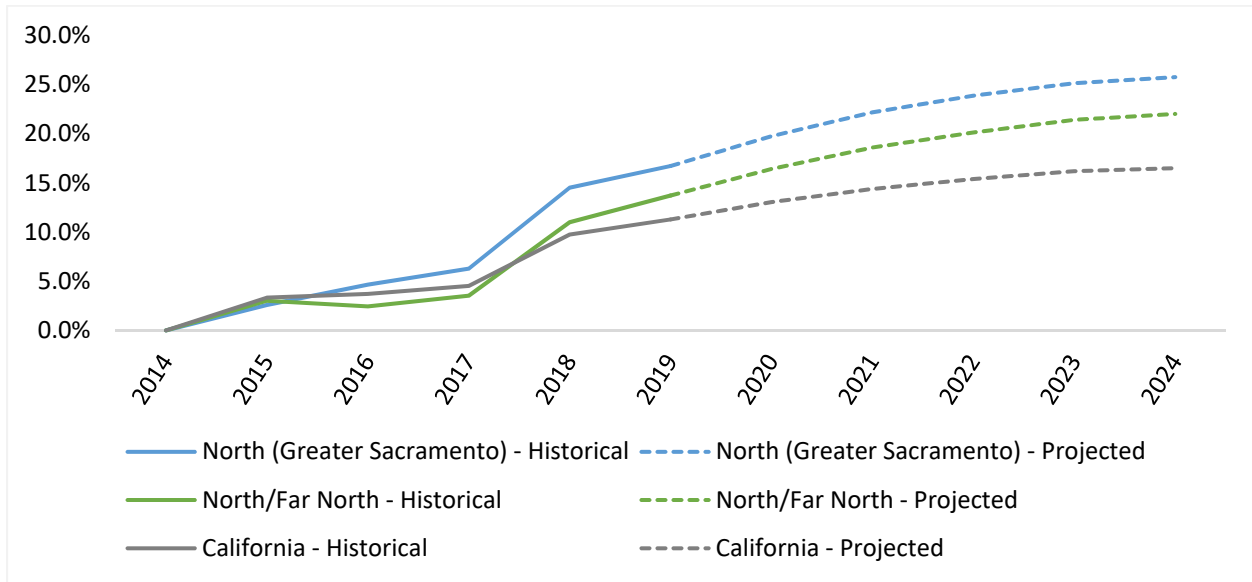
Exhibit 1 summarizes the five-year projected job growth for the selected occupations in the North (Greater Sacramento), North/Far North, and California.

Exhibit 1. Employment and projected demand, 2019-2024

Occupation	SOC	2019 Jobs	2024 Jobs	2019-2024 Jobs Change	2019-2024 Jobs % Change	2019-2024 Annual Openings
Farm Equipment Mechanics and Service Technicians	49-3041	143	162	19	13.6%	19
Mobile Heavy Equipment Mechanics, Except Engines	49-3042	918	972	54	5.9%	113
Maintenance Workers, Machinery	49-9043	316	348	33	10.4%	37
North (Greater Sacramento) region	TOTAL	1,376	1,483	106	7.7%	169
Farm Equipment Mechanics and Service Technicians	49-3041	287	325	37	12.9%	41
Mobile Heavy Equipment Mechanics, Except Engines	49-3042	1,357	1,434	77	5.7%	168
Maintenance Workers, Machinery	49-9043	460	499	39	8.6%	53
North/Far North region	TOTAL	2,104	2,258	153	7.3%	262
Farm Equipment Mechanics and Service Technicians	49-3041	3,147	3,093	(54)	(1.7%)	407
Mobile Heavy Equipment Mechanics, Except Engines	49-3042	12,300	12,693	393	3.2%	15,434
Maintenance Workers, Machinery	49-9043	8,576	8,323	(253)	(2.9%)	7,607
California	TOTAL	24,022	24,108	86	0.4%	23,448

Exhibit 2 compares the percent change in the number of jobs between 2014 through 2019 and the projected changes through 2024. The rate of change is indexed to the total number of jobs in 2014 and compares the North (Greater Sacramento) region, the North/Far North region, and California.

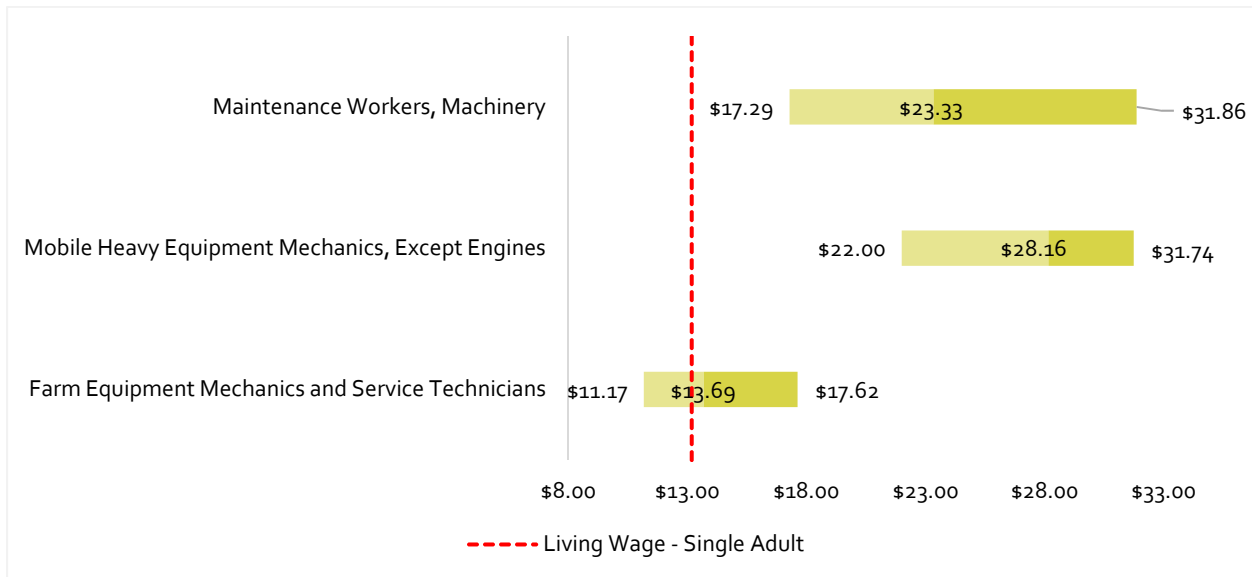
Exhibit 2. Changes in employment, 2014-2024



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.²

Exhibit 3. Comparison of wages by occupation, North (Greater Sacramento) region



² 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 of the report 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 data. Job postings data comes from Burning Glass Labor Insights and represents new listings posted online within the last year, from October 1, 2019, to September 30, 2020.

Occupations and Job Titles

Exhibit 4 details the number of online job postings for the selected occupations. Burning Glass identified a pool of 218 job postings for the selected occupations in the North (Greater Sacramento) region.

Exhibit 4. Number of job postings by occupation

Occupation	Job Postings	Share of Job Postings
Mobile Heavy Equipment Mechanics, Except Engines	187	86%
Maintenance Workers, Machinery	22	10%
Farm Equipment Mechanics and Service Technicians	9	4%
Total Job Postings	218	100%

Exhibit 5 shows the top 10 job titles with the most job postings and the share of job postings. All 218 job postings included a job title.

Exhibit 5. Top jobs titles for selected occupations in the North (Greater Sacramento) region

Job Title	Job Postings	Share of Job Postings
Heavy Equipment Mechanic	51	23%
Heavy Equipment Technician	22	10%
Heavy Duty Plant Mechanic/Welder	4	2%
Warehouse Technician Forklift	3	1%
Truck Equipment Installer/Mechanic	3	1%
Heavy Duty Mechanic	3	1%
Forklift Technician	3	1%
Field Service Technician	3	1%

Employers

Exhibit 6 shows the top 10 employers for job postings related to the selected occupations.

Exhibit 6. Top employers for selected occupations in the North (Greater Sacramento) region

Employer	Job Postings	Share of Job Postings
Sonsray Machinery	9	4%
EquipmentShare	7	3%
City of Sacramento	7	3%
Pacific Gas and Electric Company	6	3%
State of California	5	2%
NorCal Beverage Company Incorporated	5	2%
Syarconcrete	4	2%
San Juan Unified School District	4	2%
County of Sacramento	4	2%
United Rentals	3	1%

Skills and Certifications

Exhibit 7 shows the top 10 specialized skills for the selected occupations. Specialized skills are those that help to define the occupations.

Exhibit 7. Top skills for selected occupations in the North (Greater Sacramento) region

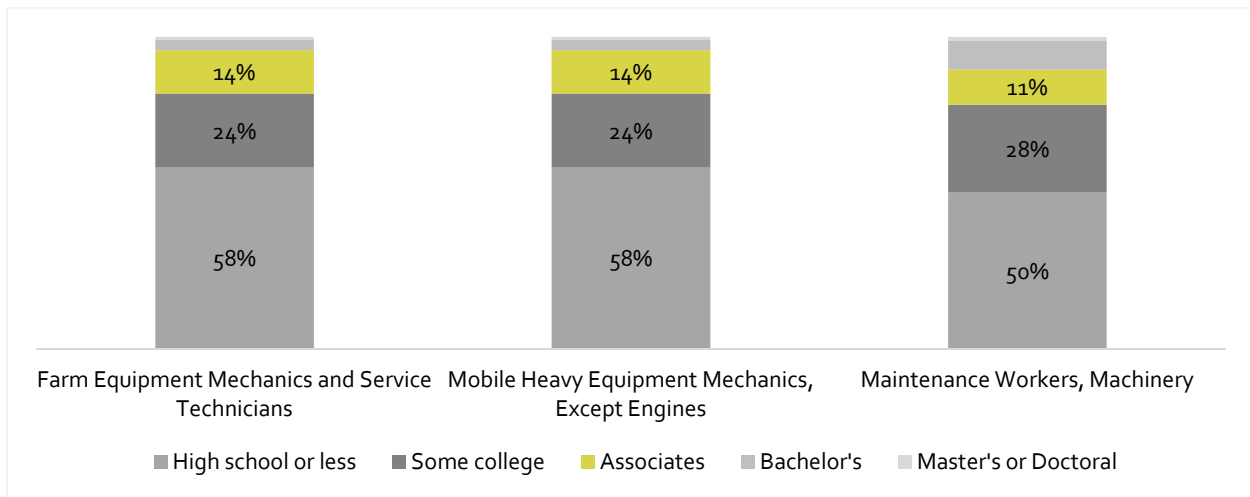
Specialized Skill	Job Postings	Share of Job Postings
Repair	186	85%
Heavy Equipment	87	40%
Welding	72	33%
Predictive / Preventative Maintenance	52	24%
Forklift Operation	44	20%
Hydraulics	35	16%
Machinery	35	16%

Specialized Skill	Job Postings	Share of Job Postings
Hand Tools	34	16%
Scheduling	26	12%
Schematic Diagrams	25	11%

Education and Training Requirements

The U.S. Census Bureau and Bureau of Labor Statistics collects data on the level of education achieved by workers employed in occupations. Exhibit 8 shows the national-level educational attainment of the current workforce in the selected occupations.

Exhibit 8. Educational attainment for selected occupations, 2018



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 9 shows the entry-level job requirements for the selected occupations.

Exhibit 9. Typical education, training, and work experience for selected occupations

Occupation	Typical Entry-Level Education Required	Work Experience Required	Typical On-the-job Training Required
Farm Equipment Mechanics and Service Technicians	High school diploma or equivalent	None	Long-term on-the-job training
Mobile Heavy Equipment Mechanics, Except Engines	High school diploma or equivalent	None	Long-term on-the-job training
Maintenance Workers, Machinery	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 10 shows the TOP and CIP codes related to the selected occupations.

Exhibit 10. Related TOP and CIP programs and codes for the selected occupations

TOP Programs and Codes	Aligned CIP Programs and Codes
Agricultural Power Equipment Technology (0116.00)	Agricultural Mechanics and Equipment/Machine Technology (01.0205) Agricultural Power Machinery Operation (01.0204) Agricultural Mechanization, General (01.0201)

Community College Supply

There are no training programs related to mechanized agricultural technicians in the North (Greater Sacramento) region.

Other Postsecondary Supply

It is crucial to consider the supply from non-community college institutions in the region that provides training for the selected occupations.

No other postsecondary training providers in the North (Greater Sacramento) region offer training related to mechanized agriculture technicians.

Findings

- The North (Greater Sacramento) region held 1,376 jobs related to mechanized agricultural technicians in 2019. Most positions (n=918) were held by mobile heavy equipment mechanics, while machinery maintenance workers held 316 jobs and farm equipment mechanics and service technicians held 143 jobs.
- Jobs related to mechanized agricultural technicians are projected to increase by 8% over the next five years, adding 106 jobs by 2024. Most job growth will happen among mobile heavy equipment mechanics, adding 54 new jobs by 2024. Machinery maintenance workers are projected to add 33 new jobs, while farm equipment mechanics and service technicians will add 19 jobs through 2024.
- Over the next five years, jobs related to mechanized agricultural technicians are projected to have 169 annual openings in the North (Greater Sacramento) region. Most job openings (n=113) will be for mobile heavy equipment mechanics.
- Analysis of wage data shows that individuals in jobs related to mechanized agricultural technicians tend to earn more than the subregion's living wage of \$13.18 per hour. Median hourly wages for the studied occupations range from \$13.69 per hour to \$28.16 per hour.
- According to real-time labor market information, there were 218 online job postings for the studied occupations between October 1, 2019, and September 30, 2020. Eighty-six percent of job postings were for mobile heavy equipment mechanics.

- Between 38% and 39% of incumbent workers have education consistent with community college offerings (some college or associate degrees).
- There are no postsecondary training providers, community colleges or otherwise, for mechanized agricultural technicians in the North (Greater Sacramento) region.

Recommendations

- Based on a three-year average of annual awards in related North (Greater Sacramento) region programs (0 certificates and degrees) and projected yearly openings (169 openings), the region seems to have room for new training programs related to the occupations.
- The North/Far North Center of Excellence recommends moving forward with programmatic changes.

COE Recommendation		
Move forward with the program	Program is not recommended	Additional information needed
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix A. Methodology and Sources

Occupations in this report were identified using O*Net. This report's findings were determined using labor market data from the Bureau of Labor Statistics (BLS) and U.S. Census Bureau data from Emsi, and jobs posting data from Burning Glass.

Sources used for data analysis purposes in this report include:

- U.S. Department of Labor/Employment and Training Administration (DOL ETA) O*NET Online
- Burning Glass, Labor Insight/Jobs
- Economic Modeling Specialists, International (EMSI)
- California Employment Development Department, Labor Market Information Division (EDD, LMID)
- Bureau of Labor Statistics, Occupational Employment Statistics (OES)
- California Community Colleges Chancellor's Office, Cal-PASS Plus LaunchBoard
- Living Insight Center for Community Economic Development, Self-Sufficiency Standard Tool for California
- California Community Colleges Chancellor's Office Management Information Systems (MIS Data Mart)
- U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

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