

LABOR MARKET ANALYSIS

FOR PROGRAM RECOMMENDATION



C·O·E

CENTERS OF EXCELLENCE
FOR LABOR MARKET RESEARCH

FACILITIES AUTOMATION & BUILDING ENERGY TECHNICIANS IN THE GREATER SACRAMENTO REGION

North (Greater Sacramento)
Center of Excellence

February 2024

TABLE OF CONTENTS

| | |
|---|----|
| Summary | 3 |
| Introduction..... | 4 |
| About Building Automation..... | 4 |
| Occupational Demand..... | 5 |
| Wages | 8 |
| Job Postings..... | 9 |
| About Job Postings Analysis..... | 9 |
| Top Employers and Job Titles..... | 9 |
| Top Skills and Qualifications..... | 12 |
| Education and Training Requirements | 14 |
| Educational Supply..... | 16 |
| Community College Supply | 16 |
| Other Postsecondary Supply | 17 |
| Findings..... | 18 |
| Recommendations | 20 |
| Appendix A. Methodology and Sources..... | 21 |
| Appendix B. Glossary..... | 22 |

If, for any reason, this document is not accessible or if you have specific needs for readability, please contact us, and we will do our utmost to accommodate you with a modified version. To make a request, contact Ebony J. Benzing by phone at (916) 563-3215 or by email at Ebony.Benzing@losrios.edu.

SUMMARY

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 careers 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. Lowered skilled occupations are rarely considered in this analysis due to the lessened barriers for entry-level work, such as no formal education and fewer on-the-job training requirements.

Key findings include:

- The North (Greater Sacramento) subregion held 5,377 facilities automation and building energy-related jobs in 2022. These jobs are projected to increase by 12% over the next five years, adding 623 new jobs to the subregion by 2027.
- Over the next five years, facilities automation and building energy-related occupations are projected to have 613 annual openings in the North (Greater Sacramento) subregion.
- Analysis of entry-level (25th percentile) wage data shows that the facilities automation and building energy-related occupations included in this report earn \$21.99 to \$30.72 per hour, which is above the subregion's living wage of \$18.72 per hour. (See Appendix B for notes about the updated living wage).
- Awards data analysis shows that North (Greater Sacramento) training providers conferred an average of 79 awards across three relevant programs over the last three academic years.

Recommendations include:

- The North (Greater Sacramento) Center of Excellence recommends that community colleges develop new programs focused on building energy technician roles and expanding existing programs to meet local demand.
- However, care should be taken when developing programs solely focused on automation as demand for building and industrial automation skills represents a smaller share of the overall building energy workforce skillset. Community colleges should ensure that current and future building automation programs are explicitly connected to local employers looking for workers with these skills. Community colleges should ensure their building automation curriculum aligns with those employers' needs.

INTRODUCTION

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:

- Electro-Mechanical and Mechatronics Technologists and Technicians (17-3024)
- Engineering Technologists and Technicians, Except Drafters, All Other (17-3029)
- Control and Valve Installers and Repairers, Except Mechanical Door (49-9012)
- Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)
- Stationary Engineers and Boiler Operators (51-8021)

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

- Industrial Systems Technology and Maintenance (0945.00)
- Environmental Control Technology (0946.00)
- Energy Systems Technology (0946.10)

The corresponding Classification of Instructional Program (CIP) titles and codes are:

- Industrial Mechanics and Maintenance Technology/Technician (47.0303)
- Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/Technician (15.0501)
- Energy Systems Technology/Technician (15.1701)
- Energy Systems Installation and Repair Technology/Technician (47.0701)

About Building Automation

Building automation encompasses the organization and coordination of various devices crucial for the operation of a contemporary building, such as electric, water, HVAC, lighting, security systems, and more. Its overarching objective is to monitor, control, and optimize these systems to enhance efficiency, elevate occupant comfort, and optimize overall building performance. Through the seamless integration and intelligent management of these diverse systems, building automation facilitates a holistic approach to building management, offering economic and environmental benefits while ensuring a conducive and sustainable built environment.

OCCUPATIONAL DEMAND

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

Exhibit 1. Employment and projected demand, 2022-2027

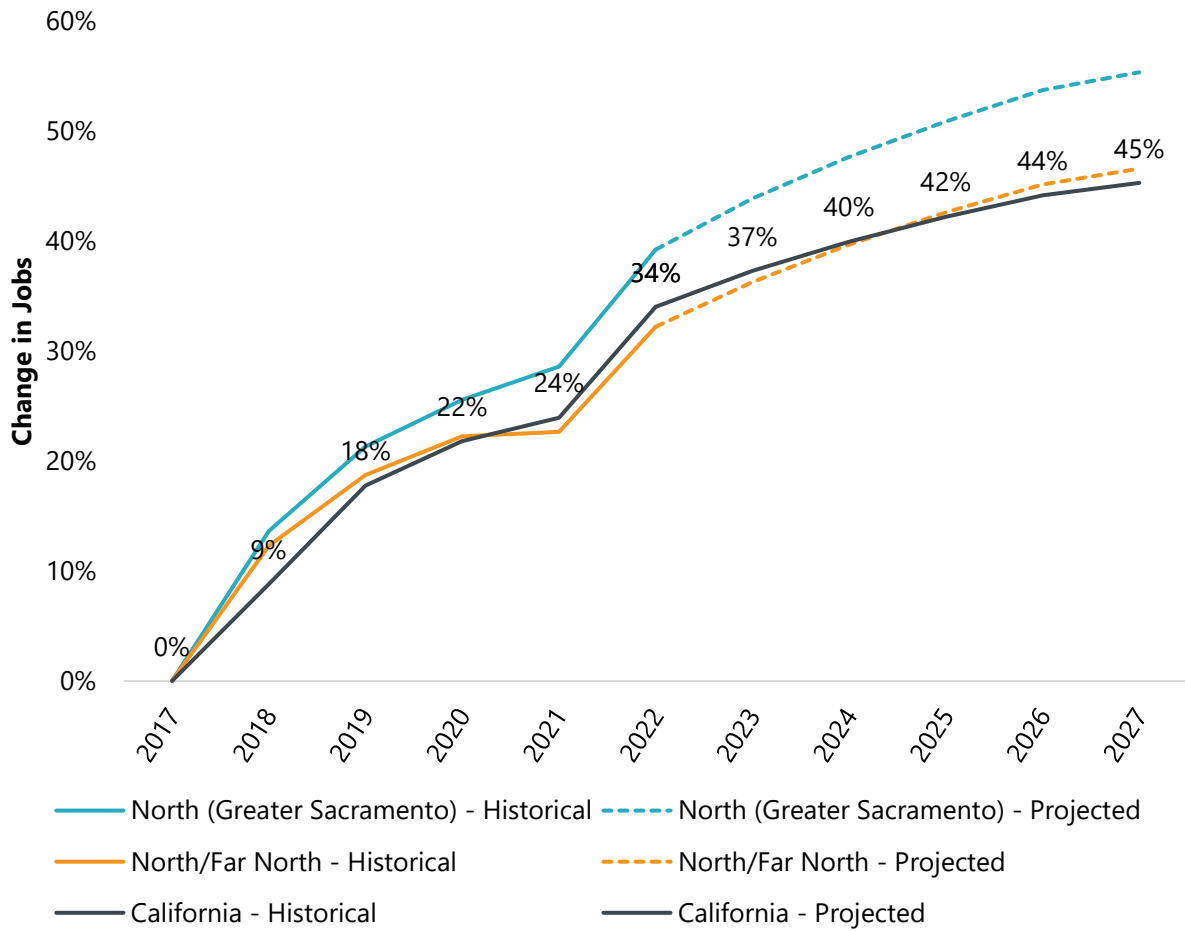
| Occupation | 2022 Jobs | 2027 Jobs | 2022-2027 Change | 2022-2027 % Change | 2022-2027 Annual Openings |
|---|--------------|--------------|------------------|--------------------|---------------------------|
| Electro-Mechanical and Mechatronics Technologists and Technicians | 54 | 61 | 6 | 12% | 6 |
| Engineering Technologists and Technicians, Except Drafters, All Other | 502 | 551 | 48 | 10% | 57 |
| Control and Valve Installers and Repairers, Except Mechanical Door | 402 | 472 | 70 | 17% | 47 |
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 3,749 | 4,202 | 452 | 12% | 422 |
| Stationary Engineers and Boiler Operators | 668 | 715 | 47 | 7% | 80 |
| North (Greater Sacramento) | 5,377 | 6,000 | 623 | 12% | 613 |
| Electro-Mechanical and Mechatronics Technologists and Technicians | 55 | 63 | 7 | 13% | 7 |
| Engineering Technologists and Technicians, Except Drafters, All Other | 578 | 631 | 53 | 9% | 65 |
| Control and Valve Installers and Repairers, Except Mechanical Door | 511 | 585 | 73 | 14% | 57 |

¹ The North (Greater Sacramento) subregion covers seven counties, including El Dorado, Nevada, Placer, Sacramento, Sutter, Yolo, and Yuba.

| Occupation | 2022 Jobs | 2027 Jobs | 2022-2027 Change | 2022-2027 % Change | 2022-2027 Annual Openings |
|---|---------------|---------------|---------------------|-----------------------|---------------------------------|
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 4,523 | 5,045 | 522 | 12% | 505 |
| Stationary Engineers and Boiler Operators | 850 | 904 | 53 | 6% | 101 |
| North/Far North | 6,517 | 7,227 | 709 | 11% | 736 |
| Electro-Mechanical and Mechatronics Technologists and Technicians | 2,045 | 2,148 | 103 | 5% | 214 |
| Engineering Technologists and Technicians, Except Drafters, All Other | 12,124 | 12,825 | 701 | 6% | 1,263 |
| Control and Valve Installers and Repairers, Except Mechanical Door | 4,981 | 5,308 | 327 | 7% | 458 |
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 44,769 | 49,272 | 4,503 | 10% | 4,814 |
| Stationary Engineers and Boiler Operators | 8,026 | 8,444 | 418 | 5% | 933 |
| California | 71,944 | 77,996 | 6,052 | 8% | 7,682 |

Exhibit 2 compares the net changes in jobs between 2017 through 2022 and the projected changes through 2027. The rate of change is indexed to the total number of jobs in 2017.

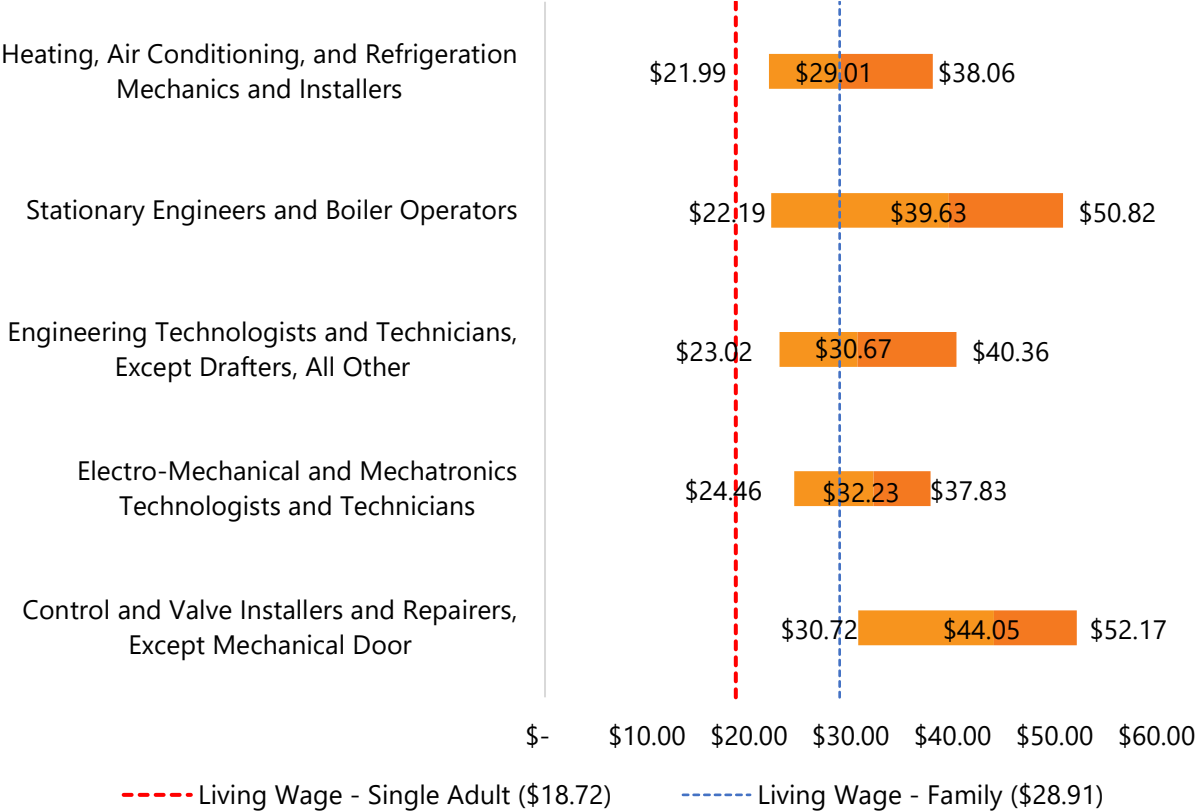
Exhibit 2. Changes in employment, 2017-2027



WAGES

Exhibit 3 compares the 25th percentile, median, and 75th percentile hourly wages for the five facilities automation and building energy-related occupations to the Greater Sacramento living wage for one working adult (\$18.72 per hour) and a small family (\$28.91 per hour).^{2,3} The 25th and 75th percentile hourly wages are used to estimate entry-level and experienced worker wages.

Exhibit 3. Hourly wages by occupation, 2022



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).

JOB POSTINGS

About Job Postings Analysis

This section 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 differ from labor market demand; demand is based on projected annual openings. Job postings should be used to inform community college curriculum development and identify potential employers for targeted experiential learning opportunities.

Please note 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.

The North COE identified 1,115 online job postings for the selected occupations in the seven-county Greater Sacramento subregion. Job posting data comes from Lightcast (formerly Emsi Burning Glass) and represents unique advertisements newly posted online during the last 12 months, from January through December 2023.

NOTE: Of the 1,115 online job postings, 335 listed "building automation" or "industrial automation."

Top Employers and Job Titles

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

Exhibit 4. Job postings by occupation

| Occupation | Unique Job Postings | Share of Job Postings |
|---|---------------------|-----------------------|
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 650 | 58% |
| Electro-Mechanical and Mechatronics Technologists and Technicians | 205 | 18% |
| Engineering Technologists and Technicians, Except Drafters, All Other | 155 | 14% |
| Control and Valve Installers and Repairers, Except Mechanical Door | 64 | 6% |
| Stationary Engineers and Boiler Operators | 41 | 4% |
| Total Job Postings | 1,115 | 100% |

Exhibit 5 shows the top relevant job titles with the most job postings.

Exhibit 5. Top jobs titles

| Job Title | Number of Job Postings |
|---------------------------|------------------------|
| HVAC Technicians | 67 |
| HVAC Service Technicians | 56 |
| Calibration Technicians | 45 |
| HVAC Installers | 43 |
| Stationary Engineers | 36 |
| Controls Technicians | 29 |
| Service Technicians | 26 |
| HVAC Lead Installers | 22 |
| Refrigeration Technicians | 20 |
| Engineering Technicians | 18 |

Exhibit 6 shows the top relevant employers with the most job postings for the selected occupations.

Exhibit 6. Top Employers

| Employer | Number of Job Postings |
|--|------------------------|
| Tellus Solutions | 33 |
| University of California | 27 |
| Sutter Health | 19 |
| Target | 17 |
| EMCOR Group | 17 |
| United States Department of Veterans Affairs | 16 |
| Coolsys | 16 |
| Blue Mountain Air Incorporated | 14 |
| Siemens | 14 |
| Mark III Construction | 12 |

Top Skills and Qualifications

Exhibit 7 shows the top skills across three categories for the five facilities automation and building energy-related occupations: specialized, essential, and software skills.⁴

Exhibit 7. Most in-demand skills

| Specialized Skills | Common Skills | Software Skills |
|------------------------|---------------------|---------------------------|
| HVAC | Communication | Microsoft Excel |
| Preventive Maintenance | Troubleshooting | Microsoft Windows |
| Plumbing | Customer Service | Microsoft Office |
| Calibration | Operations | Microsoft Outlook |
| Hand Tools | Management | Microsoft PowerPoint |
| Blueprinting | Lifting Ability | Microsoft Word |
| Construction | Good Driving Record | Operating Systems |
| Ventilation | Problem-Solving | Airflow |
| Automation | Detail Oriented | Inventory Control Systems |
| Power Tool Operation | Computer Literacy | AutoCAD |

⁴ Specialized skills are those primarily required to perform specific tasks in an occupation. Essential skills are typically related to employability. These are skills that are prevalent across many occupations, and include both interpersonal attributes and learned skills (aka "soft skills"). Software skills are specific to any software tool or programming component used to support a job.

Exhibit 8 shows the minimum level of education employers prefer for the five facilities automation and building energy-related occupations in the Greater Sacramento subregion.⁵

Exhibit 8. Employer-preferred education

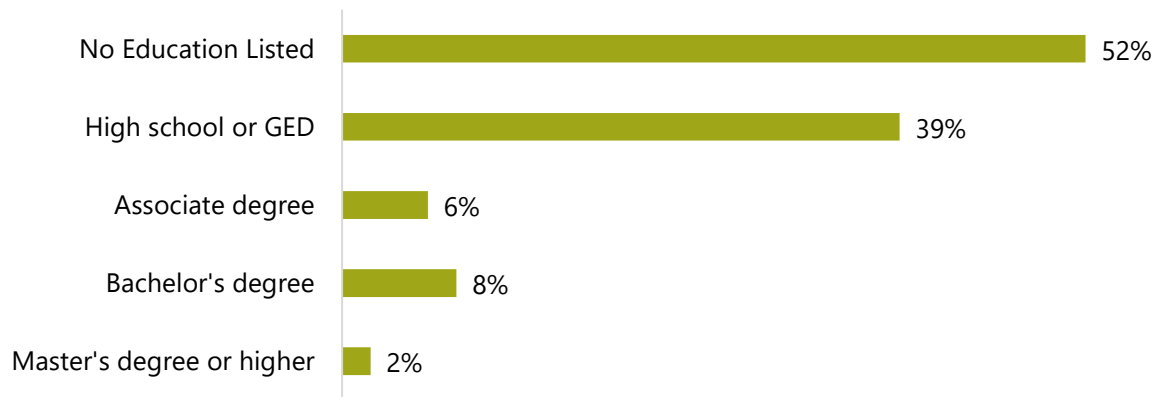
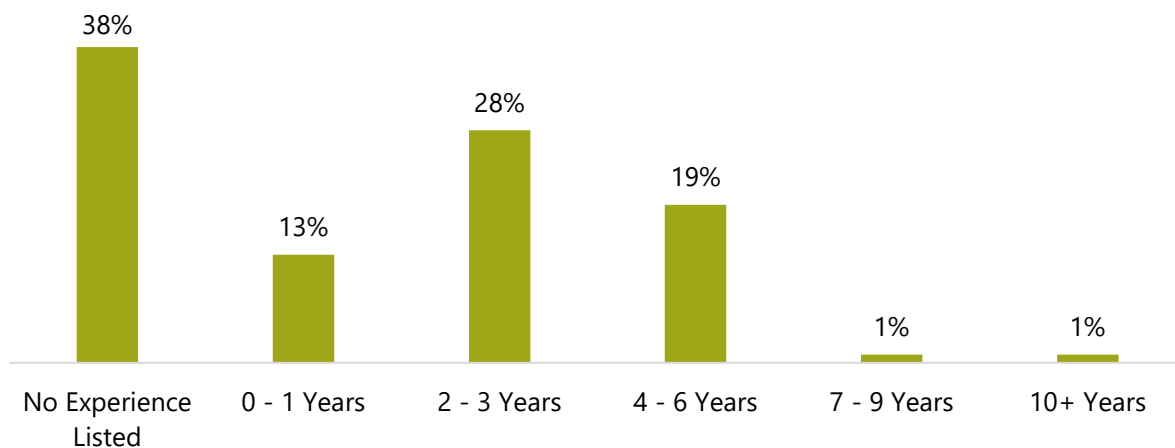


Exhibit 9 shows the minimum level of experience employers prefer for the five facilities automation and building energy-related occupations in the Greater Sacramento subregion.⁶

Exhibit 9. Employer-preferred job experience



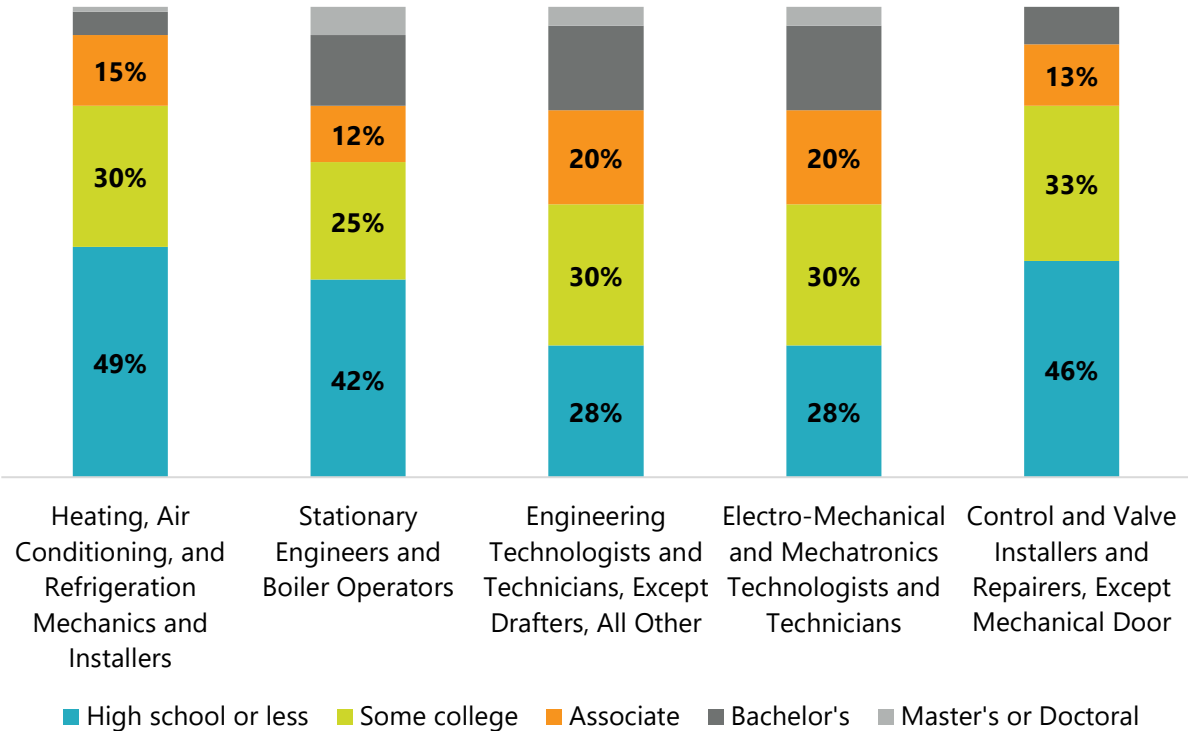
⁵ Employers may include more than one level of education as a hiring requirement in a job posting. As a result, the values in exhibit 8 may sum to greater than 100%.

⁶ Employers may include more than one level of experience as a hiring requirement in a job posting. As a result, the values in exhibit 9 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 10 shows California's educational attainment of the current workforce in the selected occupations.

Exhibit 10. California educational attainment for facilities automation and building energy-related occupations, 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 11 shows the typical entry-level job requirements for each occupation included in this report.

Exhibit 11. Typical entry-level job requirements

| Occupation | Entry-level Education Requirements | Work Experience Requirements | On-The-Job Training Requirements |
|---|------------------------------------|------------------------------|-----------------------------------|
| Electro-Mechanical and Mechatronics Technologists and Technicians | Associate degree | None | None |
| Engineering Technologists and Technicians, Except Drafters, All Other | Associate degree | None | None |
| Control and Valve Installers and Repairers, Except Mechanical Door | High school diploma or equivalent | None | Moderate-term on-the-job training |
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | Postsecondary nondegree award | None | Long-term on-the-job training |
| Stationary Engineers and Boiler 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 12 shows the TOP and CIP codes for educational programs related to the five facility automation and building energy-related occupations included in this report.

Exhibit 12. TOP and CIP codes for training programs related to facilities automation and building energy-related

| TOP Programs and Codes | Aligned CIP Programs and Codes |
|---|--|
| Industrial Systems Technology and Maintenance (0945.00) | Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/Technician (15.0501) |
| Environmental Control Technology (0946.00) | Energy Systems Technology/Technician (15.1701) |
| Energy Systems Technology (0946.10) | Energy Systems Installation and Repair Technology/Technician (47.0701) |
| | Industrial Mechanics and Maintenance Technology/Technician (47.0303) |

Community College Supply

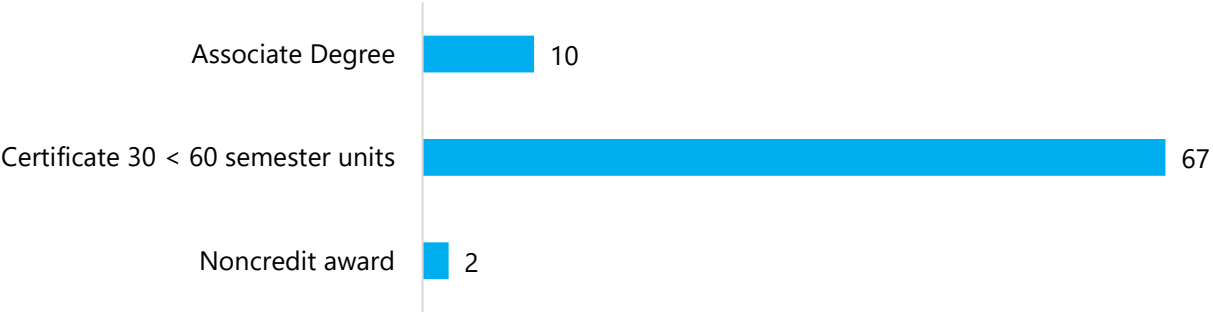
Exhibits 13 and 14 compare the average number of certificates and degrees from the selected Greater Sacramento Community College programs over the last three academic years. Three community colleges in the subregion awarded an average of 79 awards over the previous three academic years.

Exhibit 13. Annual average community college awards by program

| Program - TOP Code | College | Annual Awards 2019-20 | Annual Awards 2020-21 | Annual Awards 2021-22 | 3-Yr Annual Awards Average |
|---|-----------------|-----------------------|-----------------------|-----------------------|----------------------------|
| Industrial Systems Technology and Maintenance (0945.00) | American River | - | - | 2 | 1 |
| | Subtotal | - | - | 2 | 1 |

| Program - TOP Code | College | Annual Awards 2019-20 | Annual Awards 2020-21 | Annual Awards 2021-22 | 3-Yr Annual Awards Average |
|--|--------------------|-----------------------|-----------------------|-----------------------|----------------------------|
| Environmental Control Technology (0946.00) | Sacramento City | 96 | 72 | 60 | 76 |
| | Subtotal | 96 | 72 | 60 | 76 |
| Energy Systems Technology (0946.10) | Sierra | 7 | 1 | - | 3 |
| | Subtotal | 7 | 1 | - | 3 |
| | Grand Total | 103 | 73 | 62 | 79 |

Exhibit 14. Annual average community college awards by type, 2019-20 through 2021-22



Other Postsecondary Supply

There were no programs offered in related CIP codes within the study region.

FINDINGS

This report focuses on the following five facility automation and building energy-related occupations: Electro-Mechanical and Mechatronics Technologists and Technicians (17-3024); Engineering Technologists and Technicians, Except Drafters, All Other (17-3029); Control and Valve Installers and Repairers, Except Mechanical Door (49-9012); Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021); and Stationary Engineers and Boiler Operators (51-8021).

Occupational Demand

- The Greater Sacramento subregion held 5,377 jobs for the five facility automation and building energy-related occupations in 2022. These jobs are projected to increase by 12% over the next five years, adding 623 new jobs to the subregion by 2027.
- Over the next five years, facility automation and building energy-related occupations are projected to have 613 annual openings in the North (Greater Sacramento) subregion.
- Jobs for the occupations included in this report are projected to grow faster in the Greater Sacramento subregion (12%) than in California (8%).

Wages

- Entry-level (25th percentile) wage data shows that the occupations included in this report earn \$21.99 to \$30.72 per hour, which is above the subregion's living wage of \$18.72 per hour. (See Appendix B for notes about the updated living wage).

Job Postings

- In the last 12 months, 1,115 online job postings were posted for the five facility automation- and building energy-related occupations.
- Of the 1,115 online job postings in the subregion, 335 listed "building automation" or "industrial automation" in the job description.
- Tellus Solutions is the employer with the highest number of job postings (33).

Education and Training Requirements

- The typical entry-level education for the occupations included in this ranges from a high school diploma (or its equivalent) to an associate degree.
- Between 37% and 50% of incumbent workers in the studied occupations have educational attainment levels consistent with community college offerings (some college or associate degrees).

Postsecondary Supply

- Over the last three academic years, three Greater Sacramento community colleges conferred an average of 79 degrees and certificates across three relevant programs.
- No local non-community college postsecondary training providers have conferred awards in programs related to the occupations of interest.

RECOMMENDATIONS

- A comparison of annual openings to average annual awards suggests an undersupply of building energy technicians across the Greater Sacramento subregion.
 - Three community colleges (American River, Sacramento City, and Sierra) in the Greater Sacramento subregion issued an average of 79 awards over the last three years (2019-21 to 2021-22).
 - There are 613 projected annual openings for the five facility automation and building energy-related occupations included in this report.
- The North (Greater Sacramento) Center of Excellence recommends that community colleges develop new programs focused on building energy technician roles and expanding existing programs to meet local demand.
- However, care should be taken when developing programs solely focused on automation as demand for building and industrial automation skills represents a smaller share of the overall building energy workforce skillset. Of the 1,115 online job postings in the subregion, 335 listed "building automation" or "industrial automation" in the job description. Community colleges should ensure that current and future building automation programs are explicitly connected to local employers looking for workers with these skills. Community colleges should ensure their building automation curriculum aligns with those employers' needs.

| New Program Recommendation | | |
|--|-----------------------------|---|
| Move forward with the new program | Proceed with caution | A new program is not recommended |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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

APPENDIX A. METHODOLOGY AND SOURCES

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.

"The Chancellor's Office Curriculum Inventory System (COCI)." California Community Colleges Curriculum Inventory (COCI), 2023. <https://coci2.ccctechcenter.org/>.

Glasmeier, Amy K. "Living Wage Calculator." Living Wage Calculator, 2023. <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 (Formerly EMSI/Burning Glass) 2023.3; QCEW Employees, Non-QCEW Employees, and Self-Employed. <https://www.economicmodeling.com/>. (Note: 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)).

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. GLOSSARY

| Key Terms | Definition |
|-----------------------------------|--|
| Occupation | <p>Occupation refers to a category of jobs, careers, or professions that are similar regarding the work performed and the skills the workers possess. Workers who perform essentially the same tasks are in the same occupation, whether in the same industry. Some occupations are concentrated in a few industries, while others are found in many industries.</p> <p>Occupations differ from jobs in that jobs show the number of positions held in each occupation.</p> |
| Jobs | <p>A job is a specific instance of employment and includes any position where a worker provides labor for monetary compensation.</p> <p>Job numbers include employees (those who work for businesses) and proprietors (those who work for themselves). Full- and part-time jobs are included and counted equally (i.e., not adjusted to full-time equivalents). Data for jobs, or employment, are annual averages.</p> |
| Employment | <p>Employment refers to filled jobs, whether full- or part-time, temporary or permanent. The scope of "who" is counted as employed is noted in Appendix A. Methodology and Sources.</p> |
| Job Change | <p>Job change is the net increase or decrease of jobs over a given timeframe.</p> |
| Job Opening | <p>Job openings are the projected number of positions available for workers entering an occupation.</p> <p>Openings include growth and replacement job counts. Growth job counts are the positive change in the total number of workers employed. Replacement job counts are the estimates of new workers needed to replace workers permanently leaving the occupation.</p> |
| Percentile Wage (or wages) | <p>A percentile wage is the value of a wage at which a certain percentage of workers falls below. For example, a 25th percentile hourly wage of \$15.00 indicates that 25% of workers earn less than \$15.00, while 75% earn more. Percentile wages are specific to the geography shown in the report.</p> <p>The 25th-percentile and 75th-percentile hourly wages are used as a proxy for entry-level and experienced-level wages.</p> |
| Living Wage | <p>The living wage is the level of income a single, working adult with no children must earn to meet basic needs. The living wage is calculated using basic allowances for food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs, and assumes full-time employment (40 hours per week, 52 weeks a year).</p> <p>Beginning in 2023-24, NFN COE adopted the MIT calculations for a living wage better aligned to the economic conditions following the pandemic. For additional information, please visit https://livingwage.mit.edu/.</p> |

| Key Terms | Definition |
|--|--|
| Educational Attainment | Educational attainment is the highest level of education achieved by workers in an occupation. The data include workers aged 25 years and older. |
| Typical Entry-level Education | <p>The education level most workers need to gain employment in an occupation. Categories range from "no formal educational credential" and "high school diploma or equivalent" to "doctoral or professional degree." The types most relevant to community training are "some college, no degree," "postsecondary nondegree award," and "associate degree."</p> <p>The typical entry-level education may differ from the actual educational levels attained by workers employed in an occupation.</p> |
| Typical Work Experience | The relevant prior experience a worker needs to gain employment in an occupation. Categories include "5 years or more", "less than five years," and "none." |
| Typical On-The-Job (OTJ) Training | The level of on-the-job training a worker needs to obtain for competency in the skills required for an occupation. Categories include "none," "short-term (1 month or less)," "moderate-term (more than one month but less than 12 months)," "long-term (more than 12 months)," "apprenticeship," and "internship/residency." |
| Awards | Awards are the number of certificates and degrees conferred for a specific course of study each year. Awards count "papers" and, as a result, may be greater than the number of students who complete a program. |

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.

© 2024 California Community Colleges Chancellor's Office,
Centers of Excellence for Labor Market Research, Economic and
Workforce Development Program



CENTERS OF EXCELLENCE
FOR LABOR MARKET RESEARCH

**FOR MORE INFORMATION,
PLEASE CONTACT:**

Ebony J. Benzing,
Interim Director
North (Greater Sacramento)
Center of Excellence

Ebony.Benzing@losrios.edu

(916) 563 - 3215