



Labor Market Analysis for Program Recommendation

Solar Technology Occupations

College of Marin

Prepared by the San Francisco Bay Center of Excellence for Labor Market Research

December 2023

Recommendation

Based on all available data, there appears to be an “undersupply” of Solar Technology workers compared to the demand for this cluster of occupations in the Bay region and in the North Bay sub-region (Marin, Napa, Solano, Sonoma counties). There is a projected annual gap of about 1,661 students in the Bay region and 260 students in the North Bay Sub-Region.

Introduction

This report provides student outcomes data on employment and earnings for TOP 0946.10 - Energy Systems Technology programs in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at College of Marin and in the region.

This report profiles Solar Technology Occupations in the 12 county Bay region and in the North Bay sub-region for a proposed new program at College of Marin.

- **Plumbers, Pipefitters, and Steamfitters (47-2152):** Assemble, install, alter, and repair pipelines or pipe systems that carry water, steam, air, or other liquids or gases. May install heating and cooling equipment and mechanical control systems. Includes sprinklerfitters.
Entry-Level Educational Requirement: High school diploma or equivalent
Training Requirement: Apprenticeship
Percentage of Community College Award Holders or Some Postsecondary Coursework: 34%
- **Solar Photovoltaic Installers (47-2231):** Assemble, install, or maintain solar photovoltaic (PV) systems on roofs or other structures in compliance with site assessment and schematics. May include measuring, cutting, assembling, and bolting structural framing and solar modules. May perform minor electrical work such as current checks. Excludes solar thermal installers who are included in “Plumbers, Pipefitters, and Steamfitters” (47-2152). Excludes solar PV electricians who are included in “Electricians” (47-2111).
Entry-Level Educational Requirement: High school diploma or equivalent
Training Requirement: Moderate-term on-the-job training
Percentage of Community College Award Holders or Some Postsecondary Coursework: 52%

Occupational Demand

Table 1. Employment Outlook for Solar Technology Occupations in Bay Region

Occupation	2021 Jobs	2026 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Plumbers, Pipefitters, and Steamfitters	11,995	12,622	626	5%	6,905	1,381	\$25	\$34
Solar Photovoltaic Installers	1,985	2,333	348	18%	1,497	299	\$23	\$26
Total	13,980	14,955	975	7%	8,401	1,680		

Source: Lightcast 2022.3

Bay Region includes: Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

Table 2. Employment Outlook for Solar Technology Occupations in North Bay Sub-region

Occupation	2021 Jobs	2026 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Plumbers, Pipefitters, and Steamfitters	1,854	2,005	151	8%	1,131	226	\$22	\$30
Solar Photovoltaic Installers	236	270	34	14%	168	34	\$21	\$25
Total	2,090	2,275	185	9%	1,299	260		

Source: Lightcast 2022.3

North Bay Sub-Region includes: Marin, Napa, Solano, Sonoma Counties

Job Postings in Bay Region and North Bay Sub-Region

Table 3. Number of Job Postings by Occupation for latest 12 months (Dec. 2022 - Nov. 2023)

Occupation	Bay Region	North Bay
Plumbers, Pipefitters, and Steamfitters	663	122
Solar Photovoltaic Installers	335	75

Source: Lightcast

**Table 4a. Top Job Titles for Solar Technology Occupations for latest 12 months (Dec. 2022 - Nov. 2023)
Bay Region**

Title	Bay	Title	Bay
Solar Installers	185	Service Plumbers	27
Plumbers	123	Fire Sprinkler Fitters	16
Plumbing Technicians	83	Plumbers/Steamfitters	14
Plumbing Service Technicians	65	Commercial Plumbers	13
Journeyman Plumbers	55	Maintenance Plumbers	11
Solar Technicians	50	Solar PV Installers	11
Lead Solar Installers	45	Steamfitters	10

Title	Bay	Title	Bay
Pipefitters	32	Fire Sprinkler Installers	9

Source: Lightcast

**Table 4b. Top Job Titles for Solar Technology Occupations for latest 12 months (Dec. 2022 - Nov. 2023)
North Bay Sub-Region**

Title	North Bay	Title	North Bay
Solar Installers	44	Residential Solar Consultants	3
Plumbers	41	Service Plumbers	3
Plumbing Technicians	29	Solar PV Installers	3
Plumbing Service Technicians	13	Spray Technicians	3
Solar Technicians	10	Commercial Plumbers	2
Lead Solar Installers	7	Pipe Fabricators	2
Fire Sprinkler Installers	3	Pipefitters	2
Journeyman Plumbers	3	Plumbing Installers	2
Plumbing Service Managers	3		

Source: Lightcast

Industry Concentration

Table 5. Industries hiring Solar Technology Workers in Bay Region

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2021)	Jobs in Industry (2026)	% Change (2021-26)	% Occupation Group in Industry (2022)
Plumbing, Heating, and Air-Conditioning Contractors	7,670	7,867	3%	54%
Electrical Contractors and Other Wiring Installation Contractors	1,531	1,689	10%	10%
Temporary Help Services	179	634	255%	4%
Natural Gas Distribution	527	631	20%	4%
Residential Remodelers	434	476	10%	3%
Local Government, Excluding Education and Hospitals	223	266	19%	2%
Commercial and Institutional Building Construction	216	243	13%	2%
New Single-Family Housing Construction (except For-Sale Builders)	201	200	-1%	1%
All Other Specialty Trade Contractors	173	166	-4%	1%
Water and Sewer Line and Related Structures Construction	193	181	-6%	1%

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2021)	Jobs in Industry (2026)	% Change (2021-26)	% Occupation Group in Industry (2022)
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Source: Lightcast 2022.3

Table 6. Top Employers Posting Solar Technology Occupations in Bay Region and North Bay Sub-Region (Dec. 2022 - Nov. 2023)

Employer	Bay	Employer	North Bay
SunPower Corp.	42	Aerotek	9
Kaiser Permanente	35	Burkell Plumbing	7
Aerotek	33	Gotelli Plumbing	6
Shepherd Plumbing Heating	33	Marin H2O	6
Talent Avenue	25	PeopleReady	6
In Demand Plumbing	24	Solarcraft	6

Source: Lightcast

Educational Supply

There are four (4) community colleges in the Bay Region issuing 19 awards on average annually (last 3 years ending 2021-22) on TOP 0946.10 - Energy Systems Technology. In the North Bay Sub-Region, there are no community colleges that issued awards on average annually (last 3 years) on this TOP code.

Table 7a. Community College Awards on TOP 0946.10 - Energy Systems Technology in Bay Region

College	Subregion	Associate Degree	Low unit Certificate	Total
Cabrillo	SC-Monterey	1	1	2
De Anza	Silicon Valley	2	4	6
Diablo Valley	East Bay	1	1	2
Skyline	Mid-Peninsula	0	9	9
Total		4	15	19

Source: Data Mart

Note: The annual average for awards is 2019-20 to 2021-22.

Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 1,680 annual openings for the Solar Technology occupational cluster and 19 annual (3-year average) awards for an annual undersupply of 1,661 students. In the North Bay Sub-Region, there is also a gap with 260 annual openings and no annual (3-year average) awards for an annual undersupply of 260 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0946.10 - Energy Systems Technology

Metric Outcomes	Bay All CTE Programs	College of Marin All CTE Programs	State 0946.10	Bay 0946.10	North Bay 0946.10	College of Marin 0946.10
Students with a Job Closely Related to Their Field of Study	74%	71%	57%	50%	N/A	N/A
Median Annual Earnings for SWP Exiting Students	\$53,090	\$45,210	\$39,572	\$47,288	N/A	N/A
Median Change in Earnings for SWP Exiting Students	24%	23%	29%	19%	N/A	N/A
Exiting Students Who Attained the Living Wage	54%	29%	53%	49%	N/A	N/A

Source: Launchboard Strong Workforce Program Median of 2018 to 2021.

Skills, Certifications and Education

Table 9. Top Skills for Solar Technology Occupations in Bay Region (Dec. 2022 - Nov. 2023)

Skill	Posting	Skill	Posting
Plumbing	446	Solar Energy Systems Installation	98
Construction	198	Blueprinting	90
Water Heaters	180	Pipe (Fluid Conveyance)	84
Roofing	170	Plumbing Codes	83
Plumbing Systems	153	Warehousing	75
Power Tool Operation	146	Building Codes	72
Hand Tools	137	Plumbing Fixtures	61
Electrical Wiring	113	Electrical Systems	60
Electrical Equipment	107	Pipe Threading	58
Valves (Piping)	102	HVAC	56

Source: Lightcast

Table 10. Certifications for Solar Technology Occupations in Bay Region (Dec. 2022 - Nov. 2023)

Certification	Posting	Certification	Posting
Valid Driver's License	470	National Center For Construction Education & Research (NCCER) Certification	5
NABCEP Certified Energy Practitioner	56	Contractor License	5

Certification	Posting	Certification	Posting
30-Hour OSHA General Industry Card	39	Asbestos Abatement Worker License/Certification	4
10-Hour OSHA General Industry Card	37	CFC Refrigeration Certification	4
CDL Class C License	21	First Aid Certification	4
Journeyman Electrician	11	NICET Level II Certification	3
Certified Welder	10	Forklift Certification	3
Security Clearance	6		

Source: Lightcast

Table 11. Education Requirements for Solar Technology Occupations in Bay Region

Education Level	Job Postings	% of Total
High school or GED	227	64%
Associate degree	87	25%
Bachelor's degree & higher	40	11%

Source: Lightcast

Note: 71% of records have been excluded because they do not include a degree level. As a result, the chart above may not be representative of the full sample.

Methodology

Occupations for this report were identified by use of job descriptions and skills listed in O*Net. Labor demand data is sourced from Lightcast occupation and job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CCCCO Data Mart and CTE Launchboard.

Sources

O*Net Online

Lightcast

CTE LaunchBoard www.calpassplus.org

Launchboard

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

Chancellor's Office MIS system

Contacts

For more information, please contact:

- Leila Jamoosian, Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (COE), leila@baccc.net
- John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, jcarrese@ccsf.edu or (415) 267-6544