**Solar Occupations**

**Labor Market Information Report**

**Santa Rosa Junior College**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

May 2020

# Recommendation

Based on all available data, there appears to be an undersupply of Solar workers compared to the demand for this cluster of occupations in the Bay region and in the North Bay sub-region (Solano, Marin, Napa, and Sonoma). There is a projected annual gap of about 4,374 students in the Bay region and 580 students in the North Bay Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0946.10 - Energy Systems Technology 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 Santa Rosa Junior College and in the region.

# Introduction

This report profiles Solar Occupations in the 12 county Bay region and in the North Bay sub-region for a proposed new program at Santa Rosa Junior College. Labor market information (LMI) is not available at the eight-digit SOC Code level for Solar Thermal Installers and Technicians (47-4099.02) or for Solar Sales Representatives and Assessors (41-4011.07) therefore, the data shown in Tables 1 and 2 is for Miscellaneous Construction and Related Workers and Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products (at the six digit SOC level) and likely overstates demand for Solar Thermal Installers and Technicians and Solar Sales Representatives and Assessors. Tables 3, 4, 6, 9, 10 and 11 use job postings data from Burning Glass at the eight-digit SOC Code level for Solar Thermal Installers and Technicians (47-4099.02) and Solar Sales Representatives and Assessors (41-4011.07).

|  |
| --- |
| * **Solar Photovoltaic Installers (SOC 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: 30% |
| * **First-Line Supervisors of Construction Trades and Extraction Workers (SOC 47-1011)**: Directly supervise and coordinate activities of construction or extraction workers.
 |
| Entry-Level Educational Requirement: High *school diploma or equivalent* |
| Training Requirement: None |
| * **Miscellaneous Construction and Related Workers (SOC 47-4098):** "All Other" titles represent occupations with a wide range of characteristics which do not fit into one of the detailed O\*NET-SOC occupations.
 |
| 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: 0*%* |
| * **Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products (SOC 41-4011**): Sell goods for wholesalers or manufacturers where technical or scientific knowledge is required in such areas as biology, engineering, chemistry, and electronics, normally obtained from at least 2 years of post-secondary education. Excludes “Sales Engineers” (41-9031).
 |
| Entry-Level Educational Requirement: Bachelor's *degree* |
| Training Requirement: Moderate-term *on-the-job training* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 31*%* |

# Occupational Demand

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2019 Jobs | 2024 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 25% Hourly Wage | Median Hourly Wage |
| Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products |  17,208  |  18,291  | 1,083 | 6% |  10,500  |  2,100  | $28.68 | $40.19 |
| First-Line Supervisors of Construction Trades and Extraction Workers |  16,134  |  17,736  | 1,602 | 10% |  10,532  |  2,106  | $29.48 | $41.19 |
| Solar Photovoltaic Installers |  963  |  1,221  | 258 | 27% |  928  |  186  | $18.16 | $22.07 |
| Miscellaneous Construction and Related Workers |  694  |  767  | 73 | 10% |  501  |  100  | $16.10 | $21.86 |
| **TOTAL** |  **34,998**  |  **38,014**  | **3,017** | **9%** |  **22,460**  |  **4,492**  | **$28.51** | **$39.79** |

*Source: EMSI 2020.1*

**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 Occupations in North Bay Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2019 Jobs | 2024 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 25% Hourly Wage | Median Hourly Wage |
| Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products |  926  |  980  | 54 | 6% |  564  |  113  | $30.39 | $42.26 |
| First-Line Supervisors of Construction Trades and Extraction Workers |  2,815  |  3,240  | 424 | 15% |  2,036  |  407  | $28.40 | $37.97 |
| Solar Photovoltaic Installers |  300  |  374  | 74 | 25% |  281  |  56  | $17.75 | $22.01 |
| Miscellaneous Construction and Related Workers |  134  |  152  | 18 | 14% |  102  |  20  | $18.28 | $26.04 |
| **TOTAL** |  **4,175**  |  **4,745**  | **570** | **14%** |  **2,983**  |  **597**  | **$27.75** | **$37.39** |

*Source: EMSI 2020.1*

**North Bay Sub-Region** includes Solano, Marin, Napa, and Sonoma

### Job Postings in Bay Region and North Bay Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (May 2019 - April 2020)**

| Occupation | Bay Region | North Bay |
| --- | --- | --- |
|  Solar Photovoltaic Installers | 521 | 112 |
|  Solar Sales Representatives and Assessors | 479 | 69 |
|  Solar Energy Installation Managers | 72 | 7 |
|  Solar Thermal Installers and Technicians | 3 | 2 |
|  **TOTAL** | **1,075** | **190** |

*Source: Burning Glass*

**Table 4a. Top Job Titles for Solar Occupations for latest 12 months (May 2019 - April 2020) Bay Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Bay | Common Title | Bay |
| Solar Installer | 275 | Installation Subcontractor | 8 |
| Sales Consultant | 156 | Solar Subcontractor | 7 |
| Solar Sales Representative | 141 | Project Manager, Solar | 7 |
| Solar Technician | 46 | Solar Sales/Advisor, Retail Industry | 6 |
| Lead Solar Installer | 44 | Inspection Technician, Residential, Solar | 6 |
| Solar Consultant | 29 | Commercial Solar Installer | 6 |
| Solar Sales, Training | 16 | Technician | 5 |
| Residential Solar Installer | 13 | Solar Residential Foreman | 5 |
| Solar Installer, Information And Technology Industry | 12 | Lead Solar Installer/Foreman | 5 |
| Solar Project Manager | 11 | Lead Solar Installation Foreman | 5 |
| Solar Energy Consultant | 10 | Solar Sales/Advisor | 4 |
| Entry Solar Technician | 10 | Solar Photovoltaic Crew Lead | 4 |

**Table 4b. Top Job Titles for Solar Occupations for latest 12 months (May 2019 - April 2020) North Bay Sub-Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | North Bay | Common Title | North Bay |
| Solar Installer | 82 | Solar Sales/Canvasser | 1 |
| Solar Sales Representative | 27 | Solar Sales/Advisor | 1 |
| Sales Consultant | 20 | Solar Sales, Support | 1 |
| Lead Solar Installer | 11 | Solar Sales | 1 |
| Solar Technician | 9 | Solar Roof Senior | 1 |
| Solar Sales, Training | 4 | Solar Project Manager | 1 |
| Solar Installer, Information And Technology Industry | 3 | Solar Photovoltaic Installer | 1 |
| Construction Manager | 3 | Solar Mechanical Installer/Laborer | 1 |
| Solar Energy Consultant | 2 | Solar Installation Foreman | 1 |
| Solar Consultant | 2 | Solar Heating Pool Technician | 1 |
| Solar Advisor | 2 | Solar Energy Crew Lead | 1 |
| Roofer | 2 | Solar | 1 |
| Lead Solar Installer, Information And Technology Industry | 2 | Sales, Solar, Training | 1 |
| Solar Subcontractor | 1 | Sales Specialist | 1 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Solar Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2019) | Jobs in Industry (2022) | % Change (2019-24) | % Occupation Group in Industry (2019) |
| Software Publishers (511210) | 2,368 | 2,942 | 24% | 7% |
| Commercial and Institutional Building Construction (236220) | 2,084 | 2,435 | 17% | 6% |
| Electronic Computer Manufacturing (334111) | 2,061 | 2,203 | 7% | 6% |
| Residential Remodelers (236118) | 1,918 | 2,204 | 15% | 5% |
| Custom Computer Programming Services (541511) | 1,670 | 2,011 | 20% | 5% |
| Electrical Contractors and Other Wiring Installation Contractors (238210) | 1,664 | 1,887 | 13% | 5% |
| Plumbing, Heating, and Air-Conditioning Contractors (238220) | 1,614 | 1,904 | 18% | 5% |
| New Single-Family Housing Construction (except For-Sale Builders) (236115) | 1,324 | 1,393 | 5% | 4% |
| Computer and Computer Peripheral Equipment and Software Merchant Wholesalers (423430) | 1,319 | 1,011 | -23% | 4% |
| Computer Systems Design Services (541512) | 999 | 1,170 | 17% | 3% |
| Local Government, Excluding Education and Hospitals (903999) | 822 | 865 | 5% | 2% |
| All Other Specialty Trade Contractors (238990) | 808 | 835 | 3% | 2% |
| Pharmaceutical Preparation Manufacturing (325412) | 713 | 675 | -5% | 2% |
| Site Preparation Contractors (238910) | 606 | 633 | 4% | 2% |
| Painting and Wall Covering Contractors (238320) | 562 | 579 | 3% | 2% |

*Source: EMSI 2019.4*

**Table 6. Top Employers Posting Solar Occupations in Bay Region and North Bay Sub-Region (May 2019 - April 2020)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | North Bay |
| Vivint Solar | 76 | Sunrun, Inc | 9 | Blue Mountain Air Inc | 16 |
| Sunrun | 49 | Solar Technologies | 9 | Sunrun | 11 |
| Freedom Forever | 39 | Peopleready | 9 | Vivint Solar | 9 |
| Empower America | 21 | Horizon Solar Power | 9 | Simply Solar | 6 |
| Golden Valley Energy | 17 | Bay Sun Solar | 9 | Sunrun Inc | 5 |
| Simply Solar | 16 | Apricot Solar | 9 | Peopleready | 5 |
| Semper Solaris | 16 | Phoenix Solar Energy | 8 | Golden Valley Energy | 5 |
| Renewable Energy Sales | 16 | Hub Consulting | 8 | Solarcraft Incorporated | 4 |
| Green Energy California | 16 | Empire Solar Group | 8 | Petersendean Roofing & Solar | 4 |
| Blue Mountain Air Incorporated | 16 | Solarit | 7 | Lgcy Power | 4 |
| Residential Solar Company | 15 | Shade Power Corporation | 7 | Sunrun, Inc | 3 |
| Wavsys | 14 | Lgcy Power | 7 | Sun Solar Electric Inc | 3 |
| American Media Llc | 14 | Infinity Energy Inc | 7 | Pure Power Solutions | 3 |
| Villara Building Systems | 13 | CBS Broadcasting | 7 | Hub Consulting | 3 |
| Eco Conscious Company | 13 | Brycon Construction | 7 | Green Energy California | 3 |
| Canopy Energy | 11 | Sunsystem Technology | 6 | First Solar | 3 |
| Petersendean Roofing & Solar | 10 | Simply Solar California | 6 | Empower America | 3 |

*Source: Burning Glass*

# Educational Supply

There are five (5) community colleges in the Bay Region issuing 17 awards on average annually (last 3 years ending in 2017-18) on TOP 0946.10 - Energy Systems Technology. There is one college (SRJC) in the North Bay Sub-Region issuing two (2) awards on average annually (last 3 years) on this TOP code.

There are three (3) Other Educational Institutions in the Bay Region issuing 101awards on average annually (last 3 years ending in 2016-17) on TOP 0946.10 - Energy Systems Technology. There is one (1) Other Educational Institution in the North Bay Sub-Region issuing 15 awards on average annually (last 3 years) on this TOP code.

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | Certificate 18+ Units | Certificate Low Unit | Total |
| Cabrillo | Santa Cruz-Monterey |  1  |  |  1  |  2  |
| De Anza | Silicon Valley |  2  |  3  |  4  |  9  |
| Diablo Valley | East Bay |  1  |  |  1  |  2  |
| Santa Rosa | North Bay |  |  |  2  |  2  |
| Skyline | Mid-Peninsula |  1  |  |  1  |  2  |
| **Total Bay Region** |  **5**  |  **3**  |  **9**  |  **17**  |
| **Total North Bay Sub-Region** | **0** | **0** | **2** | **2** |

# Source: Data Mart

Note: The annual average for awards is 2015-16 to 2017-18.

**Table 7b. Other Educational Institution Awards on TOP 0946.10 - Energy Systems Technology in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **College** | **Sub-Region** | **Award < 1 academic yr** | **Award 1 < 2 academic yrs** | **Total** |
| CET-Sobrato | Silicon Valley |  |  21  |  21  |
| Institute for Business and Technology | Silicon Valley |  65  |  |  65  |
| InterCoast Colleges-Fairfield | North Bay |  |  15  |  15  |
| **Total Bay Region** | **65** | **36** | **101** |
| **Total North Bay Sub-Region** | **0** | **15** | **15** |

# Source: Data Mart

Note: The annual average for awards is 2014-15 to 2016-17.

# Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 4,492 annual openings for the Solar occupational cluster and 118 annual (3-year average) awards for an annual undersupply of 4,374 students. In the North Bay Sub-Region, there is also a gap with 597 annual openings and 17 annual (3-year average) awards for an annual undersupply of 580 students.

# Student Outcomes

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay (All CTE Programs) | Santa Rosa Junior College (All CTE Programs) | State (0946.10) | Bay (0946.10) | North Bay (0946.10) | Santa Rosa Junior College (0946.10) |
| % Employed Four Quarters After Exit | 74% | 76% | 60% | 50% | n/a | n/a |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $9,839 | $9,027 | $10,185 | n/a | n/a |
| Median % Change in Earnings | 46% | 50% | 48% | 27% | n/a | n/a |
| % of Students Earning a Living Wage | 63% | 62% | 55% | 47% | n/a | n/a |

*Source: Launchboard Pipeline (version available on 4/27/20)*

# Skills, Certifications and Education

**Table 9. Top Skills for Solar Occupations in Bay Region (May 2019 - April 2020)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| Sales | 442 | Scheduling | 96 | Lifting Ability | 59 |
| Solar Sales | 360 | Sales Goals | 90 | Materials Transport | 59 |
| Solar Installation | 277 | Project Management | 81 | Fall Protection | 58 |
| Customer Service | 272 | Electrical Experience | 78 | Site Assessments | 58 |
| Roofing | 208 | Outside Sales | 78 | Cold Calling | 57 |
| Photovoltaic (PV) Systems | 191 | Repair | 76 | Electrical Work | 57 |
| Customer Contact | 159 | Wiring | 74 | Sales Management | 56 |
| Solar Energy | 151 | Schematic Diagrams | 72 | Hand Tools | 54 |
| Power Tools | 132 | Product Sales | 69 | Negotiation Skills | 54 |
| Solar Systems | 120 | Occupational Health and Safety | 68 | Framing | 45 |
| Solar Panels | 118 | Salesforce | 66 | Business Development | 44 |
| Prospective Clients | 116 | Solar Products | 66 | Solar Photovoltaic Installation | 44 |
| Inverters | 107 | Solar Consultation | 60 | Conduit Bending | 43 |
| Appointment Setting | 102 | Commissioning | 59 | Customer Relationship Management (CRM) | 43 |
| Renewable Energy | 99 | Electrical Wiring | 59 | Quality Assurance and Control | 43 |

*Source: Burning Glass*

**Table 10. Certifications for Solar Occupations in Bay Region (May 2019 - April 2020)**

Note: 67% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

|  |  |  |  |
| --- | --- | --- | --- |
| Certification | Postings | Certification | Postings |
| Driver's License | 327 | AutoCAD Certification | 3 |
| North American Board of Energy Practitioners (NABCEP) | 35 | Licensed Professional Engineer | 2 |
| Contractors License | 20 | Security Clearance | 1 |
| Project Management Certification | 16 | Real Estate Certification | 1 |
| Occupational Safety and Health Administration Certification | 16 | Photovoltaic Installer | 1 |
| Project Management Professional (PMP) | 14 | Photovoltaic (PV) Installer Certification | 1 |
| Electrician Certification | 12 | CDL Class C | 1 |
| First Aid CPR AED | 5 | CDL Class A | 1 |
| Electrical Certification | 5 | Building Performance Institute (BPI) | 1 |

*Source: Burning Glass*

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

Note: 74% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

|  |  |  |
| --- | --- | --- |
| Education (minimum advertised) | Latest 12 Mos. Postings | Percent 12 Mos. Postings |
| High school or vocational training | 216 | 78% |
| Associate Degree | 5 | 2% |
| Bachelor’s Degree or Higher | 55 | 20% |

*Source: Burning Glass*

# Methodology

Occupations for this report were identified by use of skills listed in O\*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCO Data Mart.

# Sources

O\*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard [www.calpassplus.org/Launchboard/](http://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:

* Doreen O’Donovan, Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (CoE), doreen@baccc.net or (831) 479-6481
* John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, jcarrese@ccsf.edu or (415) 267-6544