

Building Energy Systems

Inland Empire/Desert Region (Riverside-San Bernardino-Ontario Metropolitan Statistical Area)

Summary

- Employment for the building energy systems occupational group is expected to **increase by 7% between 2017 and 2022** in the Inland Empire/Desert Region. Nearly **18,100 job openings** will be available over the five-year timeframe.
- The entry-level wage for each occupation in the building energy systems occupational group is **above the MIT Living Wage estimate of \$12.30 per hour** for a single adult living in the Inland Empire/Desert Region.
- There appears to be an opportunity for program growth based on the average annual number of program completions for the selected community college programs (**136 average annual community college credentials**), and the annual openings for building energy systems occupations in the local region (**3,620 annual job openings**).

Introduction

Building energy systems prepares individuals for careers in the green economy by providing them with the necessary knowledge and skills to design and construct energy-efficient buildings. The knowledge gained from training in this program should include the theory and methods of energy conservation applied to heating, cooling, and related systems as well as construction management and building systems. The occupations included in the building energy systems occupational group are:

- Construction Manager
- Energy Auditors
- Heating, Air Conditioning, and Refrigeration Mechanics, and Installers
- Insulation Workers, Floor, Ceiling, and Wall
- Solar Energy Installation Managers
- Solar Photovoltaic Installers
- Solar Sales Representatives and Assessors
- Solar Thermal Installers and Technicians
- Weatherization Installers and Technicians
- Wind Energy Project Managers

Job Opportunities

In 2017, there were more than 34,700 building energy systems jobs in the Inland Empire/Desert Region. This occupational group is projecting to increase employment by 7% in the Inland Empire/Desert Region by 2022. Employers in the region will need to hire nearly 18,100 workers over the next five years to backfill jobs that workers are permanently vacating (includes retirements). Appendix A, Table 1 shows the projected job growth, wages, education, training, and work experience required for each of the occupations in this group.

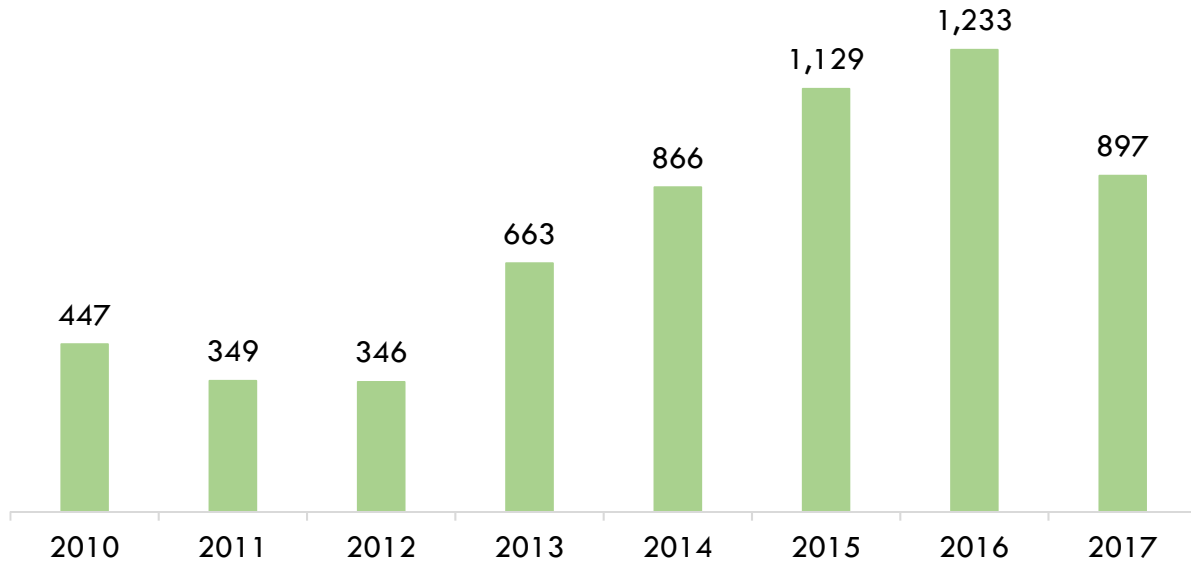
Exhibit 1: Five-year projections for the building energy systems occupational group in the Inland Empire/Desert Region

Region	2017 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Inland Empire/Desert	34,718	7%	18,098	3,620	28%

Source: EMSI 2018.2

Over the last 12 months (August 2017 to July 2018), there were 1,215 advertisements (ads) for jobs in the building energy systems occupational group in the Inland Empire/Desert Region. From 2010 to 2017, there was an annual average of 741 job ads per year (Exhibit 2).

Exhibit 2: Number of online job postings for the building energy systems occupational group in the Inland Empire/Desert Region, 2010 to 2017



Source: Burning Glass – Labor Insights

On average, local employers fill online job posting for the building energy systems occupational group within 50 days. Regional employers in this take an average of six days longer to find qualified candidates than the national average, suggesting that it is slightly more challenging to find workers in these occupations. Exhibit 3 shows the number of job ads posted during the last 12 months along with the regional and national average time to fill.

Exhibit 3: Job ads by each of the building energy systems occupations in the Inland Empire/Desert Region and time to fill, August 2017 – July 2018

Occupation	Job Ads	Regional Average Time to Fill (Days)	National Average Time to Fill (Days)
Construction Manager	608	49	42
Heating, Air Conditioning, and Refrigeration Mechanics, and Installers	384	42	38
Solar Photovoltaic Installers	79	60	52
Solar Sales Representatives and Assessors	67	48	49
Energy Auditors	50	48	39
Insulation Workers, Floor, Ceiling, and Wall	19	60	52
Weatherization Installers and Technicians	3	47	41
Solar Energy Installation Managers	2	42	34
Solar Thermal Installers and Technicians	2	60	52
Wind Energy Project Managers	1	42	34
TOTAL	1,215	-	-

Source: Burning Glass – Labor Insights

Earnings

The entry-level wage for each of the occupations in the building energy systems occupational group is above the MIT Living Wage estimate of \$12.30 per hour for a single adult living in the Inland Empire/Desert Region. These wages are sufficient for an adult living in a household with one other working adult and one child (\$14.50 per hour, per adult or \$30,160 annually for each adult). Exhibit 4 displays wage information for this occupational group in the Inland Empire/Desert Region.

Exhibit 4: Earnings for building energy systems occupations in the Inland Empire/Desert Region

Occupation	Entry to Experienced Hourly Earnings Range*	Median Wage*	Average Annual Earnings
Solar Sales Representatives and Assessors ¹	\$25.01 to \$43.96	\$30.99	\$74,400
Energy Auditors ²	\$23.14 to \$39.89	\$30.98	\$68,000
Solar Energy Installation Managers ³	\$20.20 to \$40.84	\$29.91	\$64,600
Construction Managers	\$15.47 to \$49.93	\$29.24	\$77,700
Insulation Workers, Floor, Ceiling, and Wall ³	\$20.35 to \$38.77	\$28.44	\$62,500
Solar Photovoltaic Installers	\$16.04 to \$25.16	\$20.50	\$45,500
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	\$15.76 to \$26.19	\$20.29	\$45,300
Solar Thermal Installers and Technicians & Weatherization Installers and Technicians ⁴	\$16.25 to \$24.69	\$19.36	\$43,100
Wind Energy Project Managers ⁵	\$16.07 to \$33.03	\$18.95	\$58,000

Source: EMSI 2018.2

*Entry Hourly is 25th percentile wage, the median is 50th percentile wage, experienced is 75th percentile wage.

¹Included in Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products

²Included in Business Operations Specialists, All Other

³Included in First-Line Supervisors of Construction Trades and Extraction Workers

⁴Included in Construction and Related Workers, All Other

⁵Included in Managers, All Other

Employers, Skills, and Education

Exhibit 5 displays the top employers posting job ads for each occupation during the last 12 months. The occupations, Solar Thermal Installers and Technicians and Wind Energy Project Managers, are excluded from the following tables due to lack of employer job postings.

Exhibit 5: The top employers for the building energy systems occupational group in the Inland Empire/Desert Region, August 2017 – July 2018

Occupation	Top Employers
Construction Managers (n=434)	<ul style="list-style-type: none"> • Hal Hays Construction Incorporated • Lennar Corporation
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (n=280)	<ul style="list-style-type: none"> • Sansborn’s Air Conditioning & Heating • Alliance Residential Company
Solar Photovoltaic Installers (n=48)	<ul style="list-style-type: none"> • Horizon Solar Power, Inc. • Sunrun Solar
Solar Sales Representatives and Assessors (n=63)	<ul style="list-style-type: none"> • Horizon Solar Power • Vivint Solar, Inc.
Energy Auditors (n=43)	<ul style="list-style-type: none"> • Tesla, Inc. • Vivint Solar, Inc.
Insulation Workers, Floor, Ceiling, and Wall (n=16)	<ul style="list-style-type: none"> • Installed Building Products • TruTeam
Weatherization Installers and Technicians (n=2)	<ul style="list-style-type: none"> • TruTeam • TopBuild
Solar Energy Installation Managers (n=2)	<ul style="list-style-type: none"> • Horizon Solar Power • Energy Renovation Center

Source: Burning Glass – Labor Insights

Exhibit 6 lists a sample of in-demand specialized and soft skills that employers are seeking when looking for workers to fill building energy systems positions.

Exhibit 6: Sample of in-demand skills from employer job ads for building energy systems occupations in the Inland Empire/Desert Region, August 2017 – July 2018

Occupation	Specialized skills	Soft skills	Software and Programming skills
Construction Managers (n=548)	<ul style="list-style-type: none"> • Scheduling • Budgeting • Occupational Health and Safety 	<ul style="list-style-type: none"> • Communication Skills • Planning • Computer Literacy 	<ul style="list-style-type: none"> • Microsoft Office
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (n=346)	<ul style="list-style-type: none"> • Repair • Predictive/Preventive Maintenance • Ventilation 	<ul style="list-style-type: none"> • Troubleshooting • Communication Skills • Teamwork/ Collaboration 	<ul style="list-style-type: none"> • Microsoft Office

Occupation	Specialized skills	Soft skills	Software and Programming skills
Solar Photovoltaic Installers (n=63)	<ul style="list-style-type: none"> Customer Service Lifting Ability Repair 	<ul style="list-style-type: none"> Communication Skills Writing Troubleshooting 	<ul style="list-style-type: none"> Microsoft Office
Solar Sales Representatives and Assessors (n=56)	<ul style="list-style-type: none"> Solar Energy Direct Sales Appointment Setting 	<ul style="list-style-type: none"> Communication Skills Energetic Building Effective Relationships 	<ul style="list-style-type: none"> Microsoft Office
Energy Auditors (n=35)	<ul style="list-style-type: none"> Customer Contact Energy Management Project Management 	<ul style="list-style-type: none"> Teamwork/ Collaboration Communication Skills Building Effective Relationships 	<ul style="list-style-type: none"> Microsoft Office Customer Relationship Management (CRM)
Insulation Workers, Floor, Ceiling, and Wall (n=19)	<ul style="list-style-type: none"> Occupational Health and Safety Repair Drywall 	<ul style="list-style-type: none"> Prioritizing Tasks Multi-Tasking Writing 	<ul style="list-style-type: none"> N/A
Weatherization Installers and Technicians (n=3)	<ul style="list-style-type: none"> Repair Occupational Health and Safety Construction Industry Knowledge 	<ul style="list-style-type: none"> Bilingual Spanish 	<ul style="list-style-type: none"> N/A
Solar Energy Installation Managers (n=2)	<ul style="list-style-type: none"> Project Management Solar Energy Construction Monitoring 	<ul style="list-style-type: none"> Communication Skills Presentation Skills Meeting Deadlines 	<ul style="list-style-type: none"> N/A

Source: Burning Glass – Labor Insights

Exhibit 7 displays the entry-level education level education typically required to enter each occupation according to the Bureau of Labor Statistics, educational attainment for incumbent workers with “some college, no degree” and an “associate degree” according to the U.S. Census, and the minimum advertised education requirement requested by employers in online job ads.

Exhibit 7: Educational attainment and online job ads with minimum advertised education requirements for building energy systems occupations in the Inland Empire/Desert Region, August 2017 – July 2018

Occupation	Typical Entry-Level Education Requirement	Educational Attainment*	Minimum Advertised Education Requirement from Job Ads			
			Number of Job Postings (n=)	High school diploma or vocational training	Associate degree	Bachelor's degree or higher
Construction Managers	Bachelor's degree	33%	307	31%	6%	63%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Postsecondary nondegree award	42%	166	96%	4%	-
Solar Photovoltaic Installers	High school diploma or equivalent	31%	13	92%	8%	-
Solar Sales Representatives and Assessors	Bachelor's degree	31%	11	82%	9%	9%
Energy Auditors	Bachelor's degree	24%	13	46%	-	54%
Insulation Workers, Floor, Ceiling, and Wall	No formal educational credential	23%	15	100%	-	-
Weatherization Installers and Technicians	High school diploma or equivalent	31%	3	100%	-	-
Solar Energy Installation Managers	High school diploma or equivalent	32%	2	50%	-	50%

Source: EMSI 2018.2 Burning Glass – Labor Insights

*Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework

Student Completions

Exhibits 8 – 12 show the annual average regional community college credentials (associate degrees and certificates) conferred during the three academic years between 2014 and 2017, with the relevant TOP code as well as the program title used at each college, sourced from the Chancellor's Office Curriculum Inventory (COCI). Exhibit 10 displays awards granted from 2013 to 2016 outside of the California Community Colleges along with the relevant CIP code. Please note, a credential is not equivalent to a single person in search of a job opening since a student may earn more than one credential, such as an associate degree in addition to a certificate. Community College student outcome information was obtained from the CTE LaunchBoard based on the selected TOP code(s) and region.

Exhibit 8: Annual average community college student completions for environmental control technology programs in the Inland Empire/Desert Region

0946.00 Environmental Control Technology	Annual Community College Headcount (2016-17)	Community College Annual Average Credentials (2014-17)
Desert	138	
Associate Degree		3
Certificate 18 to < 30 semester units		17
Riverside	234	
Associate Degree		6
Certificate 18 to < 30 semester units		34
San Bernardino	122	
Associate Degree		3
Certificate 30 to < 60 semester units		14
Victor Valley	51	
Total Community College Headcount (2016-17)	544	
Total Annual Average Community College Credentials (2014-17)		77

Source: LaunchBoard, IPEDS, COCI

College	Program Titles for 0946.00 from COCI
Desert	<i>Air Conditioning & Refrigeration, Air Properties and Economizer Performance, Building Automation Control, Commercial Gas Heating, Facilities Operations Technician, Green HVAC Commercial, Green HVAC Residential, Heat Pumps, Proper HVAC System Preparation and System Charging, Refrigerant Management and EPA-608 Preparation, Residential Gas Heating</i>
Riverside	<i>Air Conditioning & Refrigeration</i>
San Bernardino	<i>Heating, Ventilation, Air Conditioning and Refrigeration, Refrigeration Service Engineer Society (HVAC) Certificate</i>

0946.00 Environmental Control Technology program Strong Workforce outcomes in the Inland Empire/Desert Region in the academic year 2015-16 [unless noted otherwise]:

- Number of course enrollments: 1,231 (CA Median: 305) [2016-17]
- Number of students who transferred to a 4-year institution: N/A (CA: 0)
- Employed in the second fiscal quarter after exit: 69% (CA: 74%)
- Median earnings in the second fiscal quarter after exit: \$9,797 (CA: \$10,656)
- Employed in the fourth fiscal quarter after exit: 69% (CA: 69%)
- Job closely related to the field of study: 88% (CA: 80%) [2014-15]
- Median annual earnings: \$35,657 (CA: \$41,292)
- Median change in earnings: 27% (CA: 33%)
- The proportion of students who attained a living wage: 57% (CA: 72%)

Exhibit 9: Annual average community college student completions for energy systems technology programs in the Inland Empire/Desert Region

0946.10 Energy Systems Technology	Annual Community College Headcount (2016-17)	Community College Annual Average Credentials (2014-17)
Desert	44	
Certificate 18 to < 30 semester units		*1
Victor Valley	61	
Total Community College Headcount (2016-17)	105	
Total Annual Average Community College Credentials (2014-17)		*1

Source: LaunchBoard, IPEDS, COCI

*College of the Desert issued one certificate in 2016-17

College	Program Titles for 0946.10 from COCI
Desert	<i>Building Commissioning Technician, Building Energy Consultant, Energy Systems Technology, Residential Solar Installation, Residential Solar Surveying & Planning, Solar Battery Storage Installation & Maintenance, Solar Site Planning Project, Zero Net Energy (ZNE), Zero Net Energy (ZNE) Technology</i>

0946.10 Energy Systems Technology program Strong Workforce outcomes in the Inland Empire/Desert Region in the academic year 2015-16 [unless noted otherwise]:

- Number of course enrollments: 149 (CA Median: 39) [2016-17]
- Number of students who transferred to a 4-year institution: N/A (CA: 0)
- Employed in the second fiscal quarter after exit: 44% (CA: 57%)
- Median earnings in the second fiscal quarter after exit: \$6,452 (CA: \$11,183)
- Employed in the fourth fiscal quarter after exit: N/A (CA: 60%)
- Job closely related to the field of study: N/A (CA: 100%) [2014-15]
- Median annual earnings: \$10,917 (CA: \$30,667)
- Median change in earnings: N/A (CA: 54%)
- The proportion of students who attained a living wage: N/A (CA: 70%)

Exhibit 10: Annual average other educational institutions student completions for solar energy technology/technician programs in the Inland Empire/Desert Region

15.0505 Solar Energy Technology/Technician CIP Program	Other Educational Institutions Annual Average Certificates or Other Credit Awards (2013-16)
Coast Career Institute	
Award < 1 academic yr	30
Total annual average other awards	30

Source: IPEDS

Exhibit 11: Annual average community college student completions for civil and construction management technology programs in the Inland Empire/Desert Region

0957.00 Civil and Construction Management Technology	Annual Community College Headcount (2016-17)	Community College Annual Average Credentials (2014-17)
Desert	37	
Associate Degree		3
Certificate 18 to < 30 semester units		1
San Bernardino	47	
Victor Valley	5	
Total Community College Headcount (2016-17)	89	
Total Annual Average Community College Credentials (2014-17)		5

Source: LaunchBoard, IPEDS, COCI

College	Program Titles for 0957.00 from COCI
Desert	Construction Management, Real Estate Development
Victor Valley	Construction Management

0957.00 Civil and Construction Management Technology program Strong Workforce outcomes in the Inland Empire/Desert Region in the academic year 2015-16 [unless noted otherwise]:

- Number of course enrollments: 99 (CA Median: 123) [2016-17]
- Number of students who transferred to a 4-year institution: N/A (CA: 0)
- Employed in the second fiscal quarter after exit: 61% (CA: 73%)
- Median earnings in the second fiscal quarter after exit: \$8,804 (CA: \$11,668)
- Employed in the fourth fiscal quarter after exit: 58% (CA: 74%)
- Job closely related to the field of study: N/A (CA: 100%) [2014-15]
- Median annual earnings: \$29,618 (CA: \$48,418)
- Median change in earnings: 58% (CA: 47%)
- The proportion of students who attained a living wage: 67% (CA: 75%)

Exhibit 12: Annual average community college student completions for construction inspection programs in the Inland Empire/Desert Region

0957.20 Construction Inspection	Annual Community College Headcount (2016-17)	Community College Annual Average Credentials (2014-17)
Desert	67	
Certificate 18 to < 30 semester units		3
Norco College	113	
Associate Degree		4
Certificate 30 to < 60 semester units		12
Riverside		
Associate Degree		*1
San Bernardino	58	
Associate Degree		1
Certificate 30 to < 60 semester units		2
Total Community College Headcount (2016-17)	238	
Total Annual Average Community College Credentials (2014-17)		23

Source: LaunchBoard, IPEDS, COCI

*Riverside issued one associate degree in 2015-16

College	Program Titles for 0957.20 from COCI
Desert	<i>Building Inspection Technology</i>
Norco	<i>Construction Technology</i>
Riverside	<i>Construction Technology</i>
San Bernardino	<i>Inspection Technology</i>

0957.20 Construction Inspection program Strong Workforce outcomes in the Inland Empire/Desert Region in the academic year 2015-16 [unless noted otherwise]:

- Number of course enrollments: 470 (CA Median: 112) [2016-17]
- Number of students who transferred to a 4-year institution: N/A (CA: 0)
- Employed in the second fiscal quarter after exit: 68% (CA: 77%)
- Median earnings in the second fiscal quarter after exit: \$12,668 (CA: \$14,355)
- Employed in the fourth fiscal quarter after exit: 71% (CA: 78%)
- Job closely related to the field of study: 91% (CA: 94%) [2014-15]
- Median annual earnings: \$40,758 (CA: \$55,677)
- Median change in earnings: 33% (CA: 42%)
- The proportion of students who attained a living wage: 75% (CA: 82%)



Sources

O*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard

MIT Living Wage Calculator

Chancellor's Office Curriculum Inventory (COCI, version 2.0)

The Integrated Postsecondary Education Data System (IPEDS)

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Appendix A: Occupation definitions, sample job titles, five-year projections, and earnings for building energy systems occupational group

Occupation Definitions (SOC code), Education and Training Requirement, Community College Education Attainment

Construction Managers (11-9021)

Plan, direct, or coordinate, usually through subordinate supervisory personnel, activities concerned with the construction and maintenance of structures, facilities, and systems. Participate in the conceptual development of a construction project and oversee its organization, scheduling, budgeting, and implementation. Includes managers in specialized construction fields, such as carpentry or plumbing.

Sample job titles: Concrete Foreman, Construction Area Manager, Construction Foreman, Construction Manager, Construction Superintendent, General Contractor, Job Superintendent, Project Executive, Project Manager, Project Superintendent

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: One to twelve months of on-the-job training

Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework: 33%

Wind Energy Project Managers (11-9199.10)

Lead or manage the development and evaluation of potential wind energy business opportunities, including environmental studies, permitting, and proposals. May also manage construction of projects.

Sample job titles: Business Developer, Business Development Director, Business Development Manager, Development Associate, Development Director, Development Manager, Project Developer, Project Development Leader, Project Manager, Renewable Project Management and Construction Director

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: None

Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework: 26%



Energy Auditors (13-1199.01)

Conduct energy audits of buildings, building systems, or process systems. May also conduct investment grade audits of buildings or systems.

Sample job titles: Building Energy Consultant, Building Performance Consultant, Building Performance Specialist, Energy Auditor, Energy Consultant, Energy Rater, Home Energy Rater, Home Performance Consultant, Quality Assurance Supervisor, Residential Energy Auditor

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: None

Percentage of incumbent workers with a Community College Credential or Some Postsecondary

Coursework: 24%

Solar Sales Representatives and Assessors (41-4011.07)

Contact new or existing customers to determine their solar equipment needs, suggest systems or equipment, or estimate costs.

Sample job titles: Commercial Sales Manager, Energy Consultant, Sales, Sales Associate, Sales Manager, Sales Rep, Sales Representative, Salesman, Solar Consultant, Solar Sales Representative

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: One to twelve months of on-the-job training

Percentage of incumbent workers with a Community College Credential or Some Postsecondary

Coursework: 31%

Solar Energy Installation Managers (47-1011.03)

Direct work crews installing residential or commercial solar photovoltaic or thermal systems.

Sample job titles: Branch Operations Manager, Crew Lead, Crew Leader, Foreman, Installation Manager, Installation Technician, Residential Field Manager, Solar Energy Installation Manager, Solar Installation Manager, Solar Installation Supervisor

Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: None

Percentage of incumbent workers with a Community College Credential or Some Postsecondary

Coursework: 32%



Insulation Workers, Floor, Ceiling, and Wall (47-2131)

Line and cover structures with insulating materials. May work with batt, roll, or blown insulation materials.

Sample job titles: Attic Blower, Installer, Insulation Estimator, Insulation Installer, Insulation Mechanic, Insulation Worker, Insulator, Retrofit Installer, Spray Foam Installer, Warehouse Insulation Worker

Entry-Level Educational Requirement: No formal educational credential

Training Requirement: Less than one-month of on-the-job training

Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework: 23%

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.

Sample job titles: Installer, Photovoltaic Installer (PV Installer), PV Design and Installation Technician, Solar Designer/Installer, Solar Installer, Solar Installer Technician, Solar Photovoltaic Installer (Solar PV Installer), Solar Technician

Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: One to twelve months of on-the-job training

Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework: 31%



Solar Thermal Installers and Technicians (47-4099.02)

Install or repair solar energy systems designed to collect, store, and circulate solar-heated water for residential, commercial or industrial use.

Sample job titles: Installer, Maintenance Technician, Service Technician, Solar Energy Technician, Solar Hot Water Installer (SHW Installer), Solar Installer, Solar Maintenance Technician, Solar System Installer, Solar Technician, Solar Thermal Installer

Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: One to twelve months of on-the-job training

Percentage of incumbent workers with a Community College Credential or Some Postsecondary

Coursework: 31%

Weatherization Installers and Technicians (47-4099.03)

Perform a variety of activities to weatherize homes and make them more energy efficient. Duties include repairing windows, insulating ducts, and performing heating, ventilating, and air-conditioning (HVAC) work. May perform energy audits and advise clients on energy conservation measures.

Sample job titles: Building Analyst/Supervisor, Director of Housing and Energy Services, Energy Administrator, Energy Assistant, Energy Auditor, Energy Conservation Director, Housing Director, Lead Weatherization Installer-Technician, Weatherization Director, Weatherization Installer

Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: One to twelve months of on-the-job training

Percentage of incumbent workers with a Community College Credential or Some Postsecondary

Coursework: 31%



Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)

Install or repair heating, central air conditioning, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves.

Sample job titles: A/C Tech (Air Conditioning Technician); HVAC Installer (Heating, Ventilation, Air Conditioning Installer); HVAC Mechanic (Heating, Ventilation, Air Conditioning Mechanic); HVAC Service Tech (Heating, Ventilation, Air Conditioning Service Technician); HVAC Service Technician (Heating, Ventilation, Air Conditioning Service Technician); HVAC Specialist (Heating, Ventilation, and Air Conditioning Specialist); HVAC Technician (Heating, Ventilation, Air Conditioning Technician); HVAC Technician (Heating, Ventilation, and Air Conditioning Technician); Service Technician; Systems Mechanic, Ammonia Refrigeration Technician; Heating, Ventilation, Air Conditioning / Refrigeration Technician (HVAC / R Technician); HVAC/R Service Technician (Heating, Ventilation, and Air Conditioning/Refrigeration Service Technician); Refrigeration Mechanic; Refrigeration Operator; Refrigeration Technician; Transportation Refrigeration Technician

Entry-Level Educational Requirement: Postsecondary nondegree award

Training Requirement: More than twelve months of on-the-job training

Percentage of incumbent workers with a Community College Credential or Some Postsecondary

Coursework: 42%



Table 1. 2017 to 2022 job growth, wages, education, training, and work experience required for the building energy systems occupational group, Inland Empire/Desert Region

Occupation (SOC)	2017 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage*	Median Hourly Wage*	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Managers, All Other (11-9199) ¹	8,573	736	9%	762	\$16.07 to \$33.03	\$18.95	\$58,000	Bachelor's degree & None	Less than 5 years
Business Operations Specialists, All Other (13-1199) ²	7,567	580	8%	814	\$23.14 to \$39.89	\$30.98	\$68,000	Bachelor's degree & None	None
First-Line Supervisors of Construction Trades and Extraction Workers (47-1011) ³	7,006	362	5%	793	\$20.20 to \$40.84	\$29.91	\$64,600	High school diploma or equivalent & None	5 years or more
Construction Managers (11-9021)	4,949	(26)	(1%)	368	\$15.47 to \$49.93	\$29.24	\$77,700	Bachelor's degree & 1-12 months	None
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)	3,567	658	18%	500	\$15.76 to \$26.19	\$20.29	\$45,300	Postsecondary nondegree award & more than 12 months	None
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products (41-4011) ⁴	1,735	142	8%	212	\$25.01 to \$43.96	\$30.99	\$74,400	Bachelor's degree & 1-12 months	None

Occupation (SOC)	2017 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage*	Median Hourly Wage*	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Insulation Workers, Floor, Ceiling, and Wall (47-2131)	504	25	5%	63	\$20.35 to \$38.77	\$28.44	\$62,500	No formal educational credential & 1 month	None
Solar Photovoltaic Installers (47-2231)	428	62	14%	60	\$16.04 to \$25.16	\$20.50	\$45,500	High school diploma or equivalent & 1-12 months	None
Construction and Related Workers, All Other (47-4099) ⁵	391	29	7%	48	\$16.25 to \$24.69	\$19.36	\$43,100	High school diploma or equivalent & 1-12 months	None
Total	34,718	2,569	7%	3,620					

Source: EMSI 2018.2

*Entry Hourly is 25th percentile wage, the median is 50th percentile wage, experienced is 75th percentile wage.

¹ Includes figures for Wind Energy Project Managers (11-9199.10)

² Includes figures for Energy Auditors (13-1199.01)

³ Includes figures for Solar Energy Installation Managers (47-1011.03)

⁴ Includes figures for Solar Sales Representatives and Assessors (41-4011.07)

⁵ Includes figures for Solar Thermal Installers and Technicians (47-4099.02) and Weatherization Installers and Technicians (47-4099.03)