

# Industrial Maintenance Electrical & Instrumentation Occupational Group

*California and the Riverside-San Bernardino-Ontario Metropolitan Statistical Area (Riverside and San Bernardino counties combined)*

## Job Opportunities

In 2016, there nearly 12,000 industrial maintenance electrical & instrumentation jobs in California. About 12% or nearly 1,400 of these job opportunities were located in the Riverside-San Bernardino-Ontario MSA. Across the local region, industrial maintenance electrical & instrumentation occupational employment is projected to increase by 5% through 2021; growing slightly faster than California overall at 4%. Local employers will need to hire more than 270 more new and replacement industrial maintenance electrical & instrumentation workers over the next five years (includes retirements).

*Exhibit 1: Five-year projections for the industrial maintenance electrical & instrumentation occupational group in the Riverside-San Bernardino-Ontario MSA and California*

Region	2016 Jobs	2021 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)
Riverside-San Bernardino-Ontario MSA	1,391	1,462	71	5%	271	54
California	11,960	12,431	471	4%	1,930	386

## Earnings

The combined average entry-level wage for this occupational group is \$20.36, above the MIT Living Wage estimate of \$12.10 per hour for a single adult living in the Riverside-San Bernardino-Ontario MSA. The average annual earnings for this occupational group in the region is \$65,000 per year, assuming full-time employment. The combined average entry-level hourly wage in California is \$19.17 per hour, also above the living wage of \$13.21 for the state. Hourly wages and annual



average earnings for each occupation in this group within the Riverside-San Bernardino-Ontario MSA can be found in Appendix A.

*Exhibit 2: Average earnings for the industrial maintenance electrical & instrumentation occupational group in the Riverside-San Bernardino-Ontario MSA and California*

Region	Entry to Experienced Hourly Earnings Range*	Avg. Annual Earnings
Riverside-San Bernardino-Ontario MSA	\$20.36 to \$42.44	\$65,000
California	\$19.17 to \$44.62	\$65,600

\*Entry Hourly is 10th percentile wage, experienced is 90th percentile wage.

### Job Ads, Top Employers, Skills, and Education in the Local Region

In 2016, there were a total of 72 job advertisements (ads) for the industrial maintenance electrical & instrumentation occupational group in the Riverside-San Bernardino-Ontario MSA. There were 45 job ads for the same group of occupations in 2015, and 33 job ads in 2014.

Top employers posting job ads in the last 12 months (June 2016 – May 2017) for the industrial maintenance electrical & instrumentation occupational group included (68 total job ads, 24 job ads did not list and employer name):

- C&W Services (9 job ads)
- Cushman & Wakefield (3)
- Riverside Unified School District (3)
- Ross Dress for Less (3)
- C&W Facility Services, Inc. (3)

The top worksite cities in the region were San Bernardino, Corona, Eastvale, Rialto, Ontario, and Rancho Cucamonga.

Exhibit 3 lists the top specialized and soft skills that employers are seeking when looking for workers to fill industrial maintenance electrical & instrumentation positions. No significant job posting skills data was found for the electrical and electronics repairers, powerhouse, substation, and relay occupation.

*Exhibit 3: Top skills for the industrial maintenance electrical & instrumentation occupational group in the Riverside-San Bernardino-Ontario MSA*

Occupations	Specialized skills	Soft skills
Electrical and Electronics Repairers, Commercial and Industrial Equipment	<ul style="list-style-type: none"> <li>• Repair</li> <li>• Inspection</li> <li>• Equipment Inspection</li> <li>• Equipment Repair</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshooting</li> <li>• Quality Assurance and Control</li> <li>• Physical Demand</li> </ul>
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	N/A	N/A
Control and Valve Installers and Repairers, Except Mechanical Door	<ul style="list-style-type: none"> <li>• Programmable Logic Controller (PLC) Programming</li> <li>• Variable Frequency Drives (VFDs)</li> <li>• Electrical Schematics</li> <li>• HMI</li> <li>• Wiring</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshooting</li> <li>• Writing</li> <li>• Computer Skills</li> <li>• Organizational Skills</li> <li>• Communication Skills</li> </ul>

Exhibit 4 displays the education level requested by employers in online job ads. The majority of employers during the last year (June 2016-May 2017) were looking for a candidate with a high school diploma or vocational training. No significant job posting minimum education requirement data was found for the electrical and electronics repairers, powerhouse, substation, and relay occupation.

*Exhibit 4: Online job ads with minimum advertised education requirements for the industrial maintenance electrical & instrumentation occupational group in the Riverside-San Bernardino-Ontario MSA*

Occupations	High school diploma or vocational training	Associate degree	Bachelor's degree or higher
Electrical and Electronics Repairers, Commercial and Industrial Equipment	100%	-	-
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	N/A	N/A	N/A
Control and Valve Installers and Repairers, Except Mechanical Door	95%	5%	-

## Student Completions and Student Outcomes

Exhibit 5 shows the annual average regional community college awards (associate degrees and certificates) conferred during the three academic years between 2013 and 2016, as well as other awards granted outside the California Community Colleges from 2012-2015, with the relevant TOP code. Please note an award is not equivalent to a single person in search of a job opening since a student may earn more than one award, 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 5: Annual average community college student completions for the industrial systems technology and maintenance program in the Riverside-San Bernardino-Ontario MSA*

<b>0945.00 – Industrial Systems Technology and Maintenance</b>	<b>Headcount (2014-2015)</b>	<b>CC Annual Avg. Awards (2013-16)</b>	<b>Annual Avg. Certificates or Other Credit Awards (2012-15)</b>
Barstow	31	-	-
Victor Valley	3	-	-
<b>TOTAL Headcount</b>	<b>34</b>		
<b>TOTAL CC Awards</b>		-	-

### **0945.00 Industrial Systems Technology and Maintenance program outcomes in the Riverside-San Bernardino-Ontario MSA:**

\*No program outcome data available for this TOP code

## Summary

Industrial maintenance electrical & instrumentation occupational employment is projected to grow by 5% over the next five years within the Riverside-San Bernardino-Ontario MSA, which will yield 54 job openings per year. Further, the entry-level wages for the selected occupations are over eight dollars higher than the MIT Living Wage estimate for the local region. Only two community colleges in the region have students that are currently enrolled in the TOP code program listed above, and no corresponding completion data is available at this time.



## Sources

O\*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI) Class of Worker 2017.2

CTE LaunchBoard

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

California Community Colleges Chancellor's Office Management Information Systems (MIS)

Michael Goss, Director

Center of Excellence, Inland Empire/ Desert Region

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## **Appendix A: Occupation definitions, five-year projections, and earnings for the industrial maintenance electrical & instrumentation occupational group**

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

#### **Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094)**

Repair, test, adjust, or install electronic equipment, such as industrial controls, transmitters, and antennas.

*Entry-Level Educational Requirement: Postsecondary nondegree award*

*Training Requirement: More than 12 months*

*Percentage with Community College Award or Some Postsecondary Coursework: 57%*

#### **Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095)**

Inspect, test, repair, or maintain electrical equipment in generating stations, substations, and in-service relays.

*Entry-Level Educational Requirement: Postsecondary nondegree award*

*Training Requirement: More than 12 months*

*Percentage with Community College Award or Some Postsecondary Coursework: 57%*

#### **Control and Valve Installers and Repairers, Except Mechanical Door (49-9012)**

Install, repair, and maintain mechanical regulating and controlling devices, such as electric meters, gas regulators, thermostats, safety and flow valves, and other mechanical governors.

*Entry-Level Educational Requirement: High school diploma or equivalent*

*Training Requirement: One to 12 months*

*Percentage with Community College Award or Some Postsecondary Coursework: 49%*



Table 1. Job growth and wages for the industrial maintenance electrical & instrumentation occupational group in the Riverside-San Bernardino-Ontario MSA

Occupations (SOC code)	2016 Jobs	5-Yr Openings to 2021 (New + Replacement Jobs)	Annual Openings to 2021 (New + Replacement Jobs)	Entry to Experienced Hourly Earnings Range*	Avg. Annual Earnings
Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094)	640	100	20	\$17.62 to \$38.43	\$59,600
Control and Valve Installers and Repairers, Except Mechanical Door (49-9012)	629	152	30	\$21.24 to \$43.66	\$67,000
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095)	122	19	4	\$30.68 to \$57.78	\$83,500
<b>Total</b>	<b>1,391</b>	<b>271</b>	<b>54</b>	<b>\$20.36 to \$42.44</b>	<b>\$65,000</b>

\*Entry is 10th percentile and experienced is 90th percentile hourly earnings