

**Program Endorsement Brief: 0952.20/Electrical**  
**Energy Solar Photovoltaic Systems Technician Certificate of Achievement**  
**Electrical Trainee**

Orange County Center of Excellence, September 2021

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**Summary Analysis**

<b>Program Endorsement:</b>	<b>Endorsed: All Criteria Met</b> <input checked="" type="checkbox"/>	<b>Endorsed: Some Criteria Met</b> <input type="checkbox"/>	<b>Not Endorsed</b> <input type="checkbox"/>
<b>Program Endorsement Criteria</b>			
<b>Supply Gap:</b>	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>
<b>Living Wage: (Entry-Level, 25<sup>th</sup>)</b>	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>
<b>Education:</b>	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>
<b>Emerging Occupation(s)</b>			
	Yes <input type="checkbox"/>		No <input checked="" type="checkbox"/>

The Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data related to two middle-skill occupations: *Electricians (47-2111)* and *Solar Photovoltaic Installers (47-2231)*. Middle-skill occupations typically require some postsecondary education, but less than a bachelor’s degree.<sup>1</sup> This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.

Based on the available data there appears to be a supply gap for these electrical occupations in the region. Though the occupations in this report typically require a high school diploma or equivalent, over one-third of workers in the field have completed some college or an associate degree and entry-level wages exceed the living wage in both Los Angeles and Orange counties. **Therefore, due to all of the criteria being met, the COE endorses this proposed program.** Detailed reasons include:

**Demand:**

- **Supply Gap Criteria** – Over the next five years, there is projected to be **3,301 jobs available annually** in the region due to new job growth and replacements **which is more than the 980 awards conferred annually** by educational institutions in the region.

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<sup>1</sup> The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor’s degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

- Over the past 12 months, there were **2,360 online job postings related to these electrical occupations**. The highest number of job postings were for Electrician, Journeyman Electrician, and Solar Installer.
- **Living Wage Criteria** –Within Orange County, the **majority (95%) of annual job openings** for these electrical occupations have **entry-level wages above the county’s living wage** (\$20.63/hour).<sup>2</sup>
- **Educational Criteria** – Within the LA/OC region, **all the annual job openings** for these electrical occupations **typically require a high school diploma or equivalent**.
  - However, the national-level educational attainment data indicates **between 45.8% and 51.6% of workers in the field have completed some college or an associate degree** as their highest level of education.

**Supply:**

- There are **21 community colleges** in the LA/OC region that issue awards related to these occupations, conferring an average of **575 awards annually** between 2017 and 2020.
- Between 2016 and 2019, there was an average of **405 awards conferred annually** in related training programs by non-community college institutions, all of which were generated by **4 individual educational institutions throughout** the region.

**Occupational Demand**

Exhibit 1 shows the five-year occupational demand projections for these electrical occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 7% through 2025. There will be more than 3,300 job openings per year through 2025 due to job growth and replacements.

*This report includes employment projection data by Emsi which uses EDD information. Emsi’s projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy, during the projection period, will be at approximately full employment. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, it may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Therefore, the projections included in this report do not take the impacts of COVID-19 into account.*

**Exhibit 1: Occupational demand in Los Angeles and Orange Counties<sup>3</sup>**

<b>Geography</b>	<b>2020 Jobs</b>	<b>2025 Jobs</b>	<b>2020-2025 Change</b>	<b>2020-2025 % Change</b>	<b>Annual Openings</b>
Los Angeles	18,242	19,318	1,076	6%	2,079
Orange	9,785	10,791	1,006	10%	1,222

<sup>2</sup> Living wage data was pulled from California Family Needs Calculator on 8/20/2021. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

<sup>3</sup> Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Geography	2020 Jobs	2025 Jobs	2020-2025 Change	2020-2025 % Change	Annual Openings
<b>Total</b>	<b>28,027</b>	<b>30,109</b>	<b>2,082</b>	<b>7%</b>	<b>3,301</b>

### Wages

The labor market endorsement in this report considers the entry-level hourly wages for these electrical occupations in Orange County as they relate to the county's living wage. Los Angeles County wages are included below in order to provide a complete analysis of the LA/OC region. Detailed wage information, by county, is included in Appendix A.

**Orange County:** The majority (95%) of annual openings for these electrical occupations have entry-level wages above the living wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages are in a range between \$19.54 and \$25.09. Experienced workers can expect to earn wages between \$27.92 and \$47.92, which are higher than the living wage estimate. Orange County's average wages are above the average statewide wage of \$43.25 for these occupations.

**Los Angeles County:** All annual openings for these electrical occupations have entry-level wages above the living wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$18.27 and \$23.33. Experienced workers can expect to earn wages between \$26.44 and \$46.03, which are higher than the living wage estimate. Los Angeles County's average wages are above the average statewide wage of \$43.25 for these occupations.

### Job Postings

There were 2,360 online job postings related to these electrical occupations listed in the past 12 months. The highest number of job postings were for Electrician, Journeyman Electrician, and Solar Installer. The top skills were: Electrical Work, Repair, and Electrical Systems. The top three employers, by number of job postings, in the region were: Sunrun, Northrop Grumman, and Tesla.

*It is important to note that the job postings data included in this section reflects online job postings listed in the past 12 months and does not yet demonstrate the impact of COVID-19. While employers have generally posted fewer online job postings since the beginning of the pandemic, the long-term effects are currently unknown.*

### Educational Attainment

The Bureau of Labor Statistics (BLS) lists a high school diploma or equivalent as the typical entry-level education for these electrical occupations. However, the national-level educational attainment data indicates between 45.8% and 51.6% of workers in the field have completed some college or an associate degree as their highest level of education. Of the 22% of job postings listing a minimum education requirement in Los Angeles/Orange County, 97% (506) requested high school or vocational training and 18% (92) requested an associate degree.

## Educational Supply

**Community College Supply**—Exhibit 2 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Electronics and Electrical Technology (0934.00), Energy Systems Technology (0946.10), and Electrical (0952.20). The colleges with the most completions in the region are: Coastline and LA Trade.. Over the past 12 months, there were five other related program recommendation requests from regional community colleges.

**Exhibit 2: Regional community college awards (certificates and degrees), 2017-2020**

TOP Code	Program	College	2017-2018 Awards	2018-2019 Awards	2019-2020 Awards	3-Year Award Average
0934.00	Electronics and Electrical Technology	East LA	15	4	1	7
		El Camino	11	9	8	9
		Glendale	4	1	5	3
		LA City	0	0	4	1
		LA Pierce	14	11	4	10
		LA SWest	2	0	9	4
		LA Valley	15	25	14	18
		Long Beach	46	55	50	50
		Mt San Antonio	88	42	48	59
		Pasadena	31	27	24	27
		Rio Hondo	9	3	0	4
		<b>LA Subtotal</b>	<b>235</b>	<b>177</b>	<b>167</b>	<b>193</b>
		Coastline	95	88	58	80
		Irvine	20	17	37	25
		Orange Coast	11	4	12	9
		Saddleback	8	13	14	12
		Santa Ana	3	5	8	5
		<b>OC Subtotal</b>	<b>137</b>	<b>127</b>	<b>129</b>	<b>131</b>
		<b>Supply Subtotal/Average</b>			<b>372</b>	<b>304</b>
0946.10	Energy Systems Technology	LA Trade	30	11	18	20
		LA Valley	1	0	0	0
		Mt San Antonio	7	4	8	6
		Pasadena	4	3	5	4
		Rio Hondo	7	4	7	6
		Santa Monica	4	10	2	5
		<b>LA Subtotal</b>	<b>53</b>	<b>32</b>	<b>40</b>	<b>42</b>
		Golden West	6	1	0	2
		<b>OC Subtotal</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>2</b>
<b>Supply Subtotal/Average</b>			<b>59</b>	<b>33</b>	<b>40</b>	<b>44</b>

TOP Code	Program	College	2017-2018 Awards	2018-2019 Awards	2019-2020 Awards	3-Year Award Average
0952.20	Electrical	LA Trade	163	132	149	148
		<b>LA Subtotal</b>	<b>163</b>	<b>132</b>	<b>149</b>	<b>148</b>
		Irvine	7	15	8	10
		North Orange Adult	22	30	2	18
		Orange Coast	6	4	0	3
		Santiago Canyon	1	51	31	28
		<b>OC Subtotal</b>	<b>36</b>	<b>100</b>	<b>41</b>	<b>59</b>
<b>Supply Subtotal/Average</b>			<b>199</b>	<b>232</b>	<b>190</b>	<b>207</b>
<b>Supply Total/Average</b>			<b>630</b>	<b>569</b>	<b>526</b>	<b>575</b>

**Non-Community College Supply**—For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs for these electrical occupations. Exhibit 3 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Code: 46.0302 (Electrician). Due to different data collection periods, the most recent three-year period of available data is from 2016 to 2019. Between 2016 and 2019, non-community college institutions in the region conferred an average of 405 awards annually in related training programs.

**Exhibit 3: Regional non-community college awards, 2016-2019**

CIP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
46.0302	Electrician	Baldwin Park Adult & Community Education	76	62	93	77
		InterCoast Colleges – Santa Ana	31	25	49	35
		InterCoast Colleges – West Covina	47	54	63	55
		Southern California Institute of Technology	243	231	242	239
<b>Supply Total/Average</b>			<b>397</b>	<b>372</b>	<b>447</b>	<b>405</b>

**Appendix A: Occupational demand and wage data by county**

**Exhibit 4. Orange County**

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)
Electricians (47-2111)	9,336	10,211	875	9%	1,139	\$25.09	\$35.51	\$47.92
Solar Photovoltaic Installers (47-2231)	449	580	131	29%	83	\$19.54	\$23.69	\$27.92
<b>Total</b>	<b>9,785</b>	<b>10,791</b>	<b>1,006</b>	<b>10%</b>	<b>1,222</b>			

**Exhibit 5. Los Angeles County**

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)
Electricians (47-2111)	17,532	18,463	931	5%	1,963	\$23.33	\$33.60	\$46.03
Solar Photovoltaic Installers (47-2231)	710	855	145	20%	116	\$18.27	\$22.34	\$26.44
<b>Total</b>	<b>18,242</b>	<b>19,318</b>	<b>1,076</b>	<b>6%</b>	<b>2,079</b>			

**Exhibit 6. Los Angeles and Orange Counties**

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings
Electricians (47-2111)	26,868	28,673	1,805	7%	3,102
Solar Photovoltaic Installers (47-2231)	1,159	1,435	276	24%	199
<b>Total</b>	<b>28,027</b>	<b>30,109</b>	<b>2,082</b>	<b>7%</b>	<b>3,301</b>

## Appendix B: Sources

- O\*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor's Office Curriculum Inventory (COCI 2.0)

For more information, please contact:

Jacob Poore, Interim Director  
Center of Excellence, Orange County  
[poore.jacob@rsccd.edu](mailto:poore.jacob@rsccd.edu)

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