

**Program Endorsement Brief: 0924.00/Engineering Technology, General  
General Engineering Technician**

Los Angeles/Orange County Center of Excellence, January 2021

**Summary Analysis**

<b>Program Endorsement:</b>	<b>Endorsed: All Criteria Met</b> <input type="checkbox"/>	<b>Endorsed: Some Criteria Met</b> <input checked="" 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 type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Education:</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Emerging Occupation(s)</b>			
	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

The Los Angeles/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 four middle-skill occupations: *industrial engineering technologists and technicians (17-3026)*; *mechanical engineering technologists and technicians (17-3027)*; *calibration technologists and technicians and engineering technologists and technicians, except drafters, all other (17-3098)*; and *electrical, electronic, and electromechanical assemblers, except coil winders, tapers, and finishers (51-2028)*. 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 middle-skill general engineering occupations in the region. **Therefore, the COE endorses this proposed program.** Detailed reasons include:

**Demand:**

- **Supply Gap Criteria** – Over the next five years, there is projected to be **2,243 jobs available annually** in the region due to replacements and workers leaving the field, **which is more than the 192 awards conferred annually** by educational institutions in the region.

<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.

- **Living Wage Criteria** – Within Los Angeles County, 32% of the annual job openings for these middle-skill general engineering occupations have entry-level wages above the county’s living wage (\$15.04/hour).<sup>2</sup>
- **Educational Criteria** – Within the LA/OC region, 72% of the annual job openings for middle-skill occupations related to general engineering *typically require a high school diploma or equivalent*.
  - However, the national-level educational attainment data indicates **between 30.3% and 53.5% of workers in the field have completed some college or an associate degree**.

**Supply:**

- There are **5 community colleges** in the LA/OC region that issue awards related to general engineering, conferring an average of **192 awards annually** between 2016 and 2019.

**Occupational Demand**

Exhibit 1 shows the five-year occupational demand projections for middle-skill general engineering occupations. In Los Angeles/Orange County, the number of new jobs related to these occupations is projected to decrease by 3% through 2024. Despite this, there will be more than 2,200 job openings per year through 2024 due to replacements and workers leaving the field.

*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>**

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	12,032	11,439	(593)	(5%)	1,291
Orange	8,585	8,585	1	0%	952
<b>Total</b>	<b>20,616</b>	<b>20,024</b>	<b>(592)</b>	<b>(3%)</b>	<b>2,243</b>

<sup>2</sup> Living wage data was pulled from California Family Needs Calculator on 12/14/2020. 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.

## Wages

The labor market endorsement in this report considers the entry-level hourly wages for these middle-skill general engineering occupations in Los Angeles County, as they relate to the county's living wage. Orange 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.

**Los Angeles County**— Only 32% of the annual openings for middle-skill general engineering occupations have entry-level wages above the living wage for one adult (\$15.04 in Los Angeles County).<sup>4</sup> Typical entry-level hourly wages are in a range between \$13.20 and \$25.37. Experienced workers can expect to earn wages between \$19.26 and \$40.84, which are higher than the living wage estimate.

**Orange County**— Only 24% of the annual openings for middle-skill general engineering occupations have entry-level wages above the living wage for one adult (\$17.36 in Orange County).<sup>5</sup> Typical entry-level hourly wages are in a range between \$13.39 and \$25.94. Experienced workers can expect to earn wages between \$19.76 and \$43.12, which are higher than the living wage estimate.

## Job Postings

There were 5,095 online job postings related to middle-skill general engineering occupations listed in the past 12 months. The highest number of job postings were for maintenance technician, production technician, maintenance worker, mechanical assembler, and engineering technician. The top skills were: repair, predictive/preventative maintenance, hand tools, machinery, and schematic diagrams. The top employers, by the number of job postings, in the region were: Northrop Grumman, Cushman and Wakefield, The Boeing Company, SpaceX, and FedEx.

*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 the following typical entry-level education requirements for the general engineering occupations studied in this report:

- **Associate degree:** *industrial engineering technologists and technicians (17-3026), mechanical engineering technologists and technicians (17-3027), and calibration technologists and technicians and engineering technologists and technicians, except drafters, all other (17-3098)*
- **High school diploma or equivalent:** *electrical, electronic, and electromechanical assemblers, except coil winders, tapers, and finishers (51-2028)*

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<sup>4</sup> Living wage data was pulled from California Family Needs Calculator on 12/14/2020. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

<sup>5</sup> Ibid.

In the LA/OC region, 72% of the annual job openings for the general engineering occupations typically require a high school diploma or equivalent. However, national-level educational attainment data indicates that between 30.3% and 53.5% of workers in the field have completed some college or an associate degree as their highest level of education. Of the 59% of general engineering job postings listing a minimum education requirement in Los Angeles/Orange County, 70% (2,120) requested a high school diploma, 8% (228) requested an associate degree, and 22% (663) requested a bachelor's degree.

## Educational Supply

**Community College Supply** — Exhibit 2 shows the annual and three-year average number of awards conferred by Engineering Technology, General (0924.00) programs. The college with the most completions in the region is Pasadena. During 2020, there were four other related program recommendation requests from regional community colleges.

**Exhibit 2: Regional community college awards (certificates and degrees), 2016-2019**

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
0924.00	Engineering Technology, General	Cerritos	6	23	26	18
		East LA	1	-	-	0
		Glendale	12	17	14	14
		Pasadena	122	173	176	157
		<b>LA Subtotal</b>	<b>141</b>	<b>213</b>	<b>216</b>	<b>190</b>
		Santa Ana	5	1	1	2
		<b>OC Subtotal</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b>Supply Total/Average</b>			<b>146</b>	<b>214</b>	<b>217</b>	<b>192</b>

Appendix A: Occupational demand and wage data by county

Exhibit 3. Los Angeles County

Occupation (SOC)	2019 Jobs	2024 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)
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers (51-2028)	7,938	7,372	(566)	(7%)	884	\$13.20	\$15.88	\$19.26
Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other (17-3098)	2,120	2,131	12	1%	214	\$22.93	\$29.53	\$39.59
Mechanical Engineering Technologists and Technicians (17-3027)	1,040	1,016	(24)	(2%)	101	\$25.37	\$33.52	\$40.59
Industrial Engineering Technologists and Technicians (17-3026)	934	920	(14)	(2%)	92	\$22.45	\$29.82	\$40.84
<b>Total</b>	<b>12,032</b>	<b>11,439</b>	<b>(593)</b>	<b>(5%)</b>	<b>1,291</b>			

**Exhibit 4. Orange County**

<b>Occupation (SOC)</b>	<b>2019 Jobs</b>	<b>2024 Jobs</b>	<b>5-Yr Change</b>	<b>5-Yr % Change</b>	<b>Annual Openings</b>	<b>Entry- Level Hourly Earnings (25th Percentile)</b>	<b>Median Hourly Earnings</b>	<b>Experienced Hourly Earnings (75th Percentile)</b>
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers (51- 2028)	6,326	6,270	(56)	(1%)	720	\$13.39	\$16.21	\$19.76
Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other (17-3098)	1,089	1,124	34	3%	113	\$23.49	\$29.95	\$39.94
Mechanical Engineering Technologists and Technicians (17-3027)	594	602	8	1%	59	\$25.94	\$34.14	\$41.24
Industrial Engineering Technologists and Technicians (17-3026)	575	590	15	3%	59	\$23.84	\$31.57	\$43.12
<b>Total</b>	<b>8,585</b>	<b>8,585</b>	<b>1</b>	<b>0%</b>	<b>952</b>			

### Exhibit 5. Los Angeles and Orange Counties

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers (51-2028)	14,264	13,641	(623)	(4%)	1,604	HS diploma or equivalent
Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other (17-3098)	3,209	3,255	46	1%	327	Associate degree
Mechanical Engineering Technologists and Technicians (17-3027)	1,634	1,618	(16)	(1%)	161	Associate degree
Industrial Engineering Technologists and Technicians (17-3026)	1,509	1,509	1	0%	151	Associate degree
<b>Total</b>	<b>20,616</b>	<b>20,024</b>	<b>(592)</b>	<b>(3%)</b>	<b>2,243</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:

Luke Meyer, Director  
 Los Angeles/Orange County Center of Excellence  
[lmeyer7@mtsac.edu](mailto:lmeyer7@mtsac.edu)

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