

**Labor Market Assessment: 0953.40 – Mechanical Drafting**  
**Engineering Design Technology: Standards for Design**  
 Los Angeles/Orange County Center of Excellence, February 2022

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**Summary**

<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 type="checkbox"/>	No <input checked="" type="checkbox"/> (see comments below)	
<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 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 occupations:

- *Architectural and civil drafters (17-3011);*
- *Electrical and electronics drafters (17-3012);*
- *Surveying and mapping technicians (17-3031); and*
- *Commercial and industrial designers (27-1021)*

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 does not appear to be a supply gap for the occupations of interest. However, the oversupply is within the COE’s acceptable margin (25% over or under the number of annual openings) and is therefore considered “supply met” rather than a “supply gap.” While this program does not meet the traditional supply/demand endorsement criteria, there may be demand for these workers from local employers that is not reflected in traditional labor market data. For this reason, real-time labor market data is included in this report as well – to provide a more nuanced view of the regional job market for the four occupations of interest.

In addition to the four occupations having entry-level wages that exceed the self-sufficiency standard wage in both Los Angeles and Orange counties, the majority of annual openings for

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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.

these occupations typically require an associate degree. **Due to some 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 **851 jobs available annually** in the region due to retirements and workers leaving the field, **which is less than the 1,013 awards conferred annually** by educational institutions in the region.
  - Although there are more awards conferred than job openings, the data suggests that the ***demand has been met for these occupations within the LA/OC region*** since the three-year average number of awards (supply) is within the COE's 25% margin of annual job openings (demand).
  - Over the past 12 months, there were **3,044 online job postings related to the four occupations of interest.**
- **Living Wage Criteria** – In Los Angeles County, all four occupations have entry-level wages **above** the self-sufficiency standard wage (\$18.10/hour).<sup>2</sup>
- **Educational Criteria** – Within the LA/OC region, 59% of the annual job openings for the occupations of interest typically require an associate degree.
  - National-level educational attainment data indicates that only 20% of *commercial and industrial designers* have completed some college or an associate degree as their highest level of education. Between 53% and 57% of *architectural and civil drafters; electrical and electronics drafters; and surveying and mapping technicians* in the field have completed some college or an associate degree.

**Supply:**

- Between 2017 and 2020, **22 community colleges** in the LA/OC region issued awards in programs that have historically trained for the occupations of interest, conferring an average of **733 awards.**
- Between 2016 and 2019, non-community college institutions in the region conferred an average of **280 awards in relevant programs.**

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<sup>2</sup> Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California. For more information, visit: <http://selfsufficiencystandard.org/california>.

## Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for the four occupations of interest. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to decrease by 2% through 2025. However, there will be more than 800 job openings per year through 2025 due to retirements 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 full impact of COVID-19 on projections of industry and occupational employment. Therefore, the projections included in this report do not take the full impacts of COVID-19 into account.*

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

Geography	2020 Jobs	2025 Jobs	2020-2025 Change	2020-2025 % Change	Annual Openings
Los Angeles	5,588	5,411	(177)	(3%)	544
Orange	3,067	3,078	11	0%	305
<b>Total</b>	<b>8,655</b>	<b>8,489</b>	<b>(166)</b>	<b>(2%)</b>	<b>851</b>

## Wages

The labor market endorsement in this report considers the hourly wages for the four occupations of interest in Los Angeles County, as they relate to the county's self-sufficiency standard 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** – All four occupations have entry-level wages **above** the self-sufficiency standard wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$23.61 and \$29.27. Experienced workers can expect to earn wages between \$36.66 and \$50.10.

**Orange County** – All four occupations have entry-level wages **above** the self-sufficiency standard wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages are in a range between \$25.02 and \$29.99. Experienced workers can expect to earn wages between \$37.93 and \$50.86.

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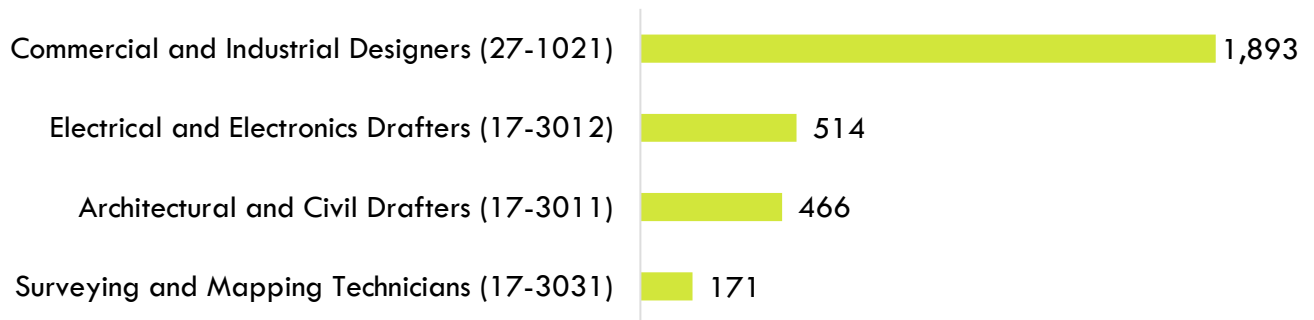
<sup>3</sup> Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

## Job Postings

Over the past 12 months, there have been 3,044 online job postings related to the four occupations of interest. Exhibit 2 displays the number of job postings by occupation. The majority of job postings (62%) were for *commercial and industrial designers*. The highest number of job postings were for product designers, senior product designers, lead product designers, product engineers, and CAD drafters. The top skills were product design, AutoCAD, prototyping, product development, and Adobe Photoshop. The top employers, by number of job postings, in the region were Rivian, Apple, PayPal, Boeing, and Raytheon.

*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 full 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.*

**Exhibit 2: Job postings by occupation (last 12 months)**



## Educational Attainment

The Bureau of Labor Statistics (BLS) lists the following typical entry-level education levels for the occupations in this report:

- **Bachelor's degree:** *Commercial and industrial designers*
- **Associate degree:** *Architectural and civil drafters; electrical and electronics drafters*
- **High school diploma or equivalent:** *Surveying and mapping technicians*

In the LA/OC region, the majority of annual openings (59%) typically require an associate degree. National-level educational attainment data indicates that only 20% of *commercial and industrial designers* have completed some college or an associate degree as their highest level of education. Between 53% and 57% of *architectural and civil drafters; electrical and electronics drafters; and surveying and mapping technicians* in the field have completed some college or an associate degree.

## Educational Supply

**Community College Supply** – Exhibit 3 shows the annual and three-year average number of awards conferred by community colleges in programs that have historically trained for the occupations of interest. The colleges with the most completions in the region are Mt. San Antonio, Rio Hondo, East LA, Orange Coast, and Cerritos.

**Exhibit 3: Regional community college awards (certificates and degrees), 2017-2020**

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
0201.00	Architecture and Architectural Technology	Cerritos	17	24	44	28
		Citrus	2	3	6	4
		Compton	-	2	-	1
		East LA	34	57	25	39
		El Camino	35	14	21	23
		Glendale	4	6	6	5
		LA Harbor	5	5	4	5
		LA Pierce	8	9	4	7
		LA Trade-Tech	8	11	8	9
		LA Valley	4	1	3	3
		Long Beach	10	14	13	12
		Mt San Antonio	82	97	51	77
		Pasadena	11	16	18	15
		Rio Hondo	19	20	3	14
		<b>LA Subtotal</b>	<b>239</b>	<b>279</b>	<b>206</b>	<b>241</b>
		Fullerton	8	5	12	8
		Orange Coast	82	40	59	60
		Saddleback	12	15	8	12
		<b>OC Subtotal</b>	<b>102</b>	<b>60</b>	<b>79</b>	<b>80</b>
<b>Supply Subtotal/Average</b>			<b>341</b>	<b>339</b>	<b>285</b>	<b>322</b>
0953.00	Drafting Technology	Cerritos	48	35	14	32
		Citrus	6	13	15	11
		East LA	38	36	7	27
		El Camino	15	21	9	15
		LA Harbor	1	3	-	1
		LA Pierce	7	5	2	5
		LA Valley	4	1	3	3

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
		Long Beach	-	-	1	0
		Mt San Antonio	34	42	23	33
		Pasadena	21	5	6	11
		Rio Hondo	93	14	12	40
		<b>LA Subtotal</b>	<b>267</b>	<b>175</b>	<b>92</b>	<b>178</b>
		Fullerton	11	5	4	7
		Golden West	18	57	9	28
		Irvine Valley	-	2	10	4
		Saddleback	2	1	2	2
		Santa Ana	23	15	27	22
		<b>OC Subtotal</b>	<b>54</b>	<b>80</b>	<b>52</b>	<b>62</b>
<b>Supply Subtotal/Average</b>			<b>321</b>	<b>255</b>	<b>144</b>	<b>240</b>
0953.10	Architectural Drafting	Citrus	-	-	2	1
		Long Beach	8	7	9	8
		Rio Hondo	-	-	8	3
		<b>LA Subtotal</b>	<b>8</b>	<b>7</b>	<b>19</b>	<b>11</b>
		Fullerton	4	3	1	3
		Santa Ana	3	3	1	2
		<b>OC Subtotal</b>	<b>7</b>	<b>6</b>	<b>2</b>	<b>5</b>
<b>Supply Subtotal/Average</b>			<b>15</b>	<b>13</b>	<b>21</b>	<b>16</b>
0953.20	Civil Drafting	Rio Hondo	2	1	3	2
		<b>LA Subtotal</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>2</b>
		Irvine Valley	1	1	3	2
		<b>OC Subtotal</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>
<b>Supply Subtotal/Average</b>			<b>3</b>	<b>2</b>	<b>6</b>	<b>4</b>
0953.30	Electrical, Electronic, and Electro-Mechanical Drafting	Glendale	6	2	2	3
		<b>LA Subtotal</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>3</b>
<b>Supply Subtotal/Average</b>			<b>6</b>	<b>2</b>	<b>2</b>	<b>3</b>
0957.30	Surveying	East LA	4	-	-	1
		<b>LA Subtotal</b>	<b>4</b>	<b>-</b>	<b>-</b>	<b>1</b>

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
		Santiago Canyon	46	64	44	51
		<b>OC Subtotal</b>	<b>46</b>	<b>64</b>	<b>44</b>	<b>51</b>
		<b>Supply Subtotal/Average</b>	<b>50</b>	<b>64</b>	<b>44</b>	<b>53</b>
1013.00	Commercial Art	LA Trade-Tech	42	44	23	36
		LA Valley	8	4	7	6
		Pasadena	4	6	-	3
		Rio Hondo	1	4	-	2
		<b>LA Subtotal</b>	<b>55</b>	<b>58</b>	<b>30</b>	<b>48</b>
		Cypress	2	2	1	2
		Fullerton	6	7	2	5
		Orange Coast	3	6	5	5
		Santa Ana	2	4	1	2
		<b>OC Subtotal</b>	<b>13</b>	<b>19</b>	<b>9</b>	<b>14</b>
		<b>Supply Subtotal/Average</b>	<b>68</b>	<b>77</b>	<b>39</b>	<b>61</b>
2206.10	Geographic Information Systems	LA Pierce	-	7	2	3
		Rio Hondo	36	19	15	23
		<b>LA Subtotal</b>	<b>36</b>	<b>26</b>	<b>17</b>	<b>26</b>
		Cypress	12	8	4	8
		<b>OC Subtotal</b>	<b>12</b>	<b>8</b>	<b>4</b>	<b>8</b>
		<b>Supply Subtotal/Average</b>	<b>48</b>	<b>34</b>	<b>21</b>	<b>34</b>
		<b>Supply Total/Average</b>	<b>852</b>	<b>786</b>	<b>562</b>	<b>733</b>

**Non-Community College Supply** – For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that may provide training programs for the occupations of interest. Exhibit 4 shows the annual and three-year average number of awards conferred by these institutions in relevant programs. 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 280 awards.

**Exhibit 4: Regional non-community college awards, 2016-2019**

<b>CIP Code</b>	<b>Program</b>	<b>Institution</b>	<b>2016-17 Awards</b>	<b>2017-18 Awards</b>	<b>2018-19 Awards</b>	<b>3-Year Average</b>
15.1302	CAD/CADD Drafting and/or Design Technology/ Technician	Los Angeles ORT College (CLOSED)	10	10	17	12
50.0401	Design and Visual Communications, General	Bethesda University	3	-	-	1
		Biola University	3	2	5	3
		Fashion Institute of Design & Merchandising-LA	181	155	142	159
		Gnomon	28	37	48	38
		Otis College of Art and Design	37	43	34	38
		Platt College-LA	-	5	-	2
		University of La Verne	1	-	-	0
50.0402	Commercial and Advertising Art	Art Center College of Design	13	15	10	13
		Woodbury University	14	13	13	13
<b>Supply Total/Average</b>			<b>290</b>	<b>280</b>	<b>269</b>	<b>280</b>



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

**Exhibit 5. Los Angeles County**

<b>Occupation (SOC)</b>	<b>2020 Jobs</b>	<b>2025 Jobs</b>	<b>5-Yr Change</b>	<b>5-Yr % Change</b>	<b>Annual Openings</b>	<b>Entry-Level Hourly Earnings (25<sup>th</sup> Percentile)</b>	<b>Median Hourly Earnings</b>	<b>Experienced Hourly Earnings (75<sup>th</sup> Percentile)</b>
Architectural and Civil Drafters (17-3011)	2,696	2,632	(64)	(2%)	251	\$25.73	\$29.88	\$36.66
Electrical and Electronics Drafters (17-3012)	630	594	(36)	(6%)	58	\$23.61	\$28.79	\$38.21
Surveying and Mapping Technicians (17-3031)	860	888	28	3%	114	\$29.27	\$40.50	\$48.69
Commercial and Industrial Designers (27-1021)	1,402	1,296	(106)	(8%)	121	\$27.70	\$36.62	\$50.10
<b>Total</b>	<b>5,588</b>	<b>5,411</b>	<b>(177)</b>	<b>(3%)</b>	<b>544</b>	<b>-</b>	<b>-</b>	<b>-</b>

**Exhibit 6. Orange County**

<b>Occupation (SOC)</b>	<b>2020 Jobs</b>	<b>2025 Jobs</b>	<b>5-Yr Change</b>	<b>5-Yr % Change</b>	<b>Annual Openings</b>	<b>Entry-Level Hourly Earnings (25<sup>th</sup> Percentile)</b>	<b>Median Hourly Earnings</b>	<b>Experienced Hourly Earnings (75<sup>th</sup> Percentile)</b>
Architectural and Civil Drafters (17-3011)	1,612	1,613	1	0%	154	\$26.74	\$30.97	\$37.93
Electrical and Electronics Drafters (17-3012)	389	385	(4)	(1%)	36	\$25.02	\$30.32	\$40.01
Surveying and Mapping Technicians (17-3031)	431	448	17	4%	58	\$29.99	\$41.26	\$49.34
Commercial and Industrial Designers (27-1021)	635	632	(3)	0%	57	\$28.42	\$37.43	\$50.86
<b>Total</b>	<b>3,067</b>	<b>3,078</b>	<b>11</b>	<b>0%</b>	<b>305</b>	<b>-</b>	<b>-</b>	<b>-</b>

**Exhibit 7. Los Angeles and Orange Counties**

<b>Occupation (SOC)</b>	<b>2020 Jobs</b>	<b>2025 Jobs</b>	<b>5-Yr Change</b>	<b>5-Yr % Change</b>	<b>Annual Openings</b>	<b>Typical Entry-Level Education</b>
Architectural and Civil Drafters (17-3011)	4,307	4,245	(62)	(1%)	406	Associate degree
Electrical and Electronics Drafters (17-3012)	1,019	979	(40)	(4%)	94	Associate degree
Surveying and Mapping Technicians (17-3031)	1,291	1,337	46	4%	172	HS diploma or equivalent
Commercial and Industrial Designers (27-1021)	2,037	1,928	(109)	(5%)	179	Bachelor's degree
<b>Total</b>	<b>8,655</b>	<b>8,489</b>	<b>(166)</b>	<b>(2%)</b>	<b>851</b>	<b>-</b>

## Appendix B: Sources

- O\*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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