

Program Endorsement Brief: 0953 – Drafting Technology
Engineering Design Technology: CAD Specialist (Certificate)
Engineering Design Technology: Design and Production (Certificate)
 Los Angeles/Orange County Center of Excellence, January 2022

Summary

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

- Architectural and Civil Drafters (17-3011);
- Mechanical Drafters (17-3013);
- Industrial Engineering Technologists and Technicians (17-3026); and
- Mechanical Engineering Technologists and Technicians (17-3027)

Middle-skill occupations typically require some postsecondary education, but less than a bachelor’s degree.¹ 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 the occupations of interest. In addition to all four occupations having entry-level wages that exceed the self-sufficiency standard wage in both Los Angeles and Orange counties, the Bureau of Labor Statistics lists an associate degree as the typical entry-level education. **Therefore, due to all of the criteria being met, the COE endorses this proposed program.** Detailed reasons include:

¹ 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.

Demand:

- **Supply Gap Criteria** – Over the next five years, there is projected to be **792 jobs available annually** in the region due to retirements and workers leaving the field, **which is more than the 707 awards conferred annually** by educational institutions in the region.
- **Living Wage Criteria** – In Los Angeles County, all four occupations have entry-level wages **above** the self-sufficiency standard wage (\$18.10/hour).²
- **Educational Criteria** –The Bureau of Labor Statistics (BLS) lists an **associate degree** as the **typical entry-level education** for each of the four occupations in this report.
 - National-level educational attainment data indicates that **between 51% and 57% of workers in the field have completed some college or an associate degree.**

Supply:

- Between 2017 and 2020, **21 community colleges** in the LA/OC region issued awards in programs that have historically trained for the occupations of interest, conferring an average of **695 awards**.
- Between 2016 and 2019, one non-community college institution conferred an average of **12 awards in a relevant program**.

Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California on 1/21/2022. 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 3% through 2025. However, there will be nearly 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 Counties³

Geography	2020 Jobs	2025 Jobs	2020-2025 Change	2020-2025 % Change	Annual Openings
Los Angeles	5,812	5,575	(237)	(4%)	489
Orange	3,445	3,439	(6)	0%	303
Total	9,257	9,014	(243)	(3%)	792

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 of interest 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 \$22.47 and \$26.83, while experienced workers typically earn between \$36.66 and \$42.90 per hour.

Orange County — All four occupations of interest 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 \$23.41 and \$27.73, while experienced workers typically earn between \$37.92 and \$44.49 per hour.

³ 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 3,858 online job postings related to the four occupations of interest. The highest number of job postings were for maintenance technicians, CAD drafters, architectural drafters, CAD operators, mechanical designers, and industrial maintenance technicians. The top skills were Computer Aided Drafting/Design (CAD), repair, machinery, Revit, SolidWorks, shop drawings, and 3D modeling/design. The top employers, by number of job postings, in the region were Northrop Grumman, Actalent, Peak Technical Services, and HCI Systems.

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.

Educational Attainment

The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for each occupation in this report. National-level educational attainment data indicates that between 51% and 57% of workers in the field have completed some college or an associate degree.

Educational Supply

Community College Supply — Exhibit 2 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, East LA, and Cerritos.

Exhibit 2: 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

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
		Rio Hondo	19	20	3	14
		LA Subtotal	239	279	206	241
		Fullerton	8	5	12	8
		Orange Coast	82	40	59	60
		Saddleback	12	15	8	12
		OC Subtotal	102	60	79	80
Supply Subtotal/Average			341	339	285	322
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
		Long Beach	-	-	1	0
		Mt San Antonio	34	42	23	33
		Pasadena	21	5	6	11
		Rio Hondo	93	14	12	40
		LA Subtotal	267	175	92	178
		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
OC Subtotal	54	80	52	62		
Supply Subtotal/Average			321	255	144	240
0953.10	Architectural Drafting	Citrus	-	-	2	1
		Long Beach	8	7	9	8
		Rio Hondo	-	-	8	3
		LA Subtotal	8	7	19	11
		Fullerton	4	3	1	3
		Santa Ana	3	3	1	2
OC Subtotal	7	6	2	5		
Supply Subtotal/Average			15	13	21	16

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
0953.20	Civil Drafting	Rio Hondo	2	1	3	2
		LA Subtotal	2	1	3	2
		Irvine Valley	1	1	3	2
		OC Subtotal	1	1	3	2
Supply Subtotal/Average			3	2	6	4
0953.40	Mechanical Drafting	Glendale	-	5	11	5
		LA Pierce	-	1	-	0
		LA Valley	8	5	9	7
		Long Beach	23	8	10	14
		LA Subtotal	31	19	30	27
		Irvine Valley	-	4	5	3
		OC Subtotal	-	4	5	3
Supply Subtotal/Average			31	23	35	30
0956.00	Manufacturing and Industrial Technology	Cerritos	6	2	-	3
		Compton	2	-	-	1
		El Camino	3	2	-	2
		Glendale	-	-	2	1
		LA Trade-Tech	-	5	9	5
		LA Valley	2	3	9	5
		Mt. San Antonio	9	13	14	12
		LA Subtotal	22	25	34	27
		Fullerton	11	9	38	19
		Irvine Valley	1	3	-	1
		Saddleback	9	11	7	9
		Santa Ana	1	-	3	1
		Santiago Canyon	27	41	10	26
		OC Subtotal	49	64	58	57
Supply Subtotal/Average			71	89	92	84
Supply Total/Average			782	721	583	695

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 3 shows the annual and three-year average number of awards by program and institution. 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 12 awards.

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

CIP Code	Program	Institution	2016-17 Awards	2017-18 Awards	2018-19 Awards	3-Year Average
15.1302	CAD/CADD Drafting and/or Design Technology/Technician	Los Angeles ORT College-Los Angeles Campus (CLOSED)	10	10	17	12
Supply Total/Average			10	10	17	12

Appendix A: Occupational demand and wage data by county

Exhibit 4. Los Angeles County

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Architectural and Civil Drafters (17-3011)	2,695	2,649	(46)	(2%)	233	\$25.73	\$29.88	\$36.66
Mechanical Drafters (17-3013)	1,225	1,107	(118)	(10%)	102	\$22.47	\$28.83	\$38.18
Industrial Engineering Technologists and Technicians (17-3026)	981	950	(31)	(3%)	80	\$22.54	\$30.67	\$41.68
Mechanical Engineering Technologists and Technicians (17-3027)	911	869	(42)	(5%)	74	\$26.83	\$35.34	\$42.90
Total	5,812	5,575	(237)	(4%)	489	-	-	-

Exhibit 5. Orange County

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Architectural and Civil Drafters (17-3011)	1,612	1,628	16	1%	146	\$26.74	\$30.97	\$37.92
Mechanical Drafters (17-3013)	705	669	(36)	(5%)	60	\$23.41	\$29.88	\$39.39
Industrial Engineering Technologists and Technicians (17-3026)	607	616	9	1%	53	\$24.19	\$32.82	\$44.49
Mechanical Engineering Technologists and Technicians (17-3027)	521	525	4	1%	44	\$27.73	\$36.38	\$44.07
Total	3,445	3,439	(6)	0%	303	-	-	-

Exhibit 6. Los Angeles and Orange Counties

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Architectural and Civil Drafters (17-3011)	4,307	4,277	(30)	(1%)	379	Associate degree
Mechanical Drafters (17-3013)	1,930	1,776	(154)	(8%)	162	Associate degree
Industrial Engineering Technologists and Technicians (17-3026)	1,588	1,566	(22)	(1%)	133	Associate degree
Mechanical Engineering Technologists and Technicians (17-3027)	1,432	1,394	(38)	(3%)	118	Associate degree
Total	9,257	9,014	(243)	(3%)	792	-

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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