










Drafting and Design Occupations

Labor Market Analysis: San Diego County

August 2021

Summary

NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED EDUCATION FOR MAJORITY OF OCCUPATIONS ANALYZED
 <p>Proceed with New Program</p>	 	 	<input checked="" type="checkbox"/> Bachelor's Degree+ <input type="checkbox"/> Associate Degree <input type="checkbox"/> Some College or Certificate <input type="checkbox"/> HS Diploma or Equivalent <input type="checkbox"/> Less than a HS Diploma <input type="checkbox"/> Apprenticeship
SUPPORT FOR PROGRAM MODIFICATION?	NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING	NUMBER OF ANNUAL JOB OPENINGS	
 	<p>MEDIUM</p> 	<p>MEDIUM</p> 	

This brief provides labor market information about *Drafting and Design Occupations* to assist the San Diego and Imperial Counties Community Colleges with program development and strategic planning. *Drafting and Design Occupations* include “Commercial and Industrial Designers,” “Drafters, All Other,” “Electrical and Electronic Drafters,” and “Mechanical Drafters.” According to available labor market information, *Drafting and Design Occupations* in San Diego County have a labor market demand of 132 annual job openings (while average demand for a single occupation in San Diego County is 242 annual job openings), and six institutions supply 69 awards for these occupations, suggesting that there is a supply gap in the labor market. Entry-level wages are above the living wage for most occupations, except for “Drafters, All Other.” This brief recommends proceeding with a new program and supports a program modification because 1) a supply gap exists in the region; and 2) entry-level and median earnings for most occupations are above the living wage. Colleges should note that **employers typically require a bachelor’s degree as the minimum educational requirement for most of these occupations.**

Introduction

This report provides labor market information in San Diego County for the following occupational codes in the Standard Occupational Classification (SOC)¹ system:

- **Commercial and Industrial Designers** (SOC 27-1021): Design and develop manufactured products, such as cars, home appliances, and childrens toys. Combine artistic talent with research on product use, marketing, and materials to create the most functional and appealing product design.
- **Drafters, All Other** (SOC 17-3019): All drafters not listed separately.
- **Electrical and Electronic Drafters** (SOC 17-3012): Prepare wiring diagrams, circuit board assembly diagrams, and layout drawings used for the manufacture, installation, or repair of electrical equipment.
- **Mechanical Drafters** (SOC 17-3013): Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.

For the purpose of this report, these occupations are referred to as *Drafting and Design Occupations*.

¹ The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc).

Projected Occupational Demand

Between 2020 and 2025, *Drafting and Design Occupations* are projected to increase by 10 net jobs or one percent (Exhibit 1 a). Employers in San Diego County will need to hire 132 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

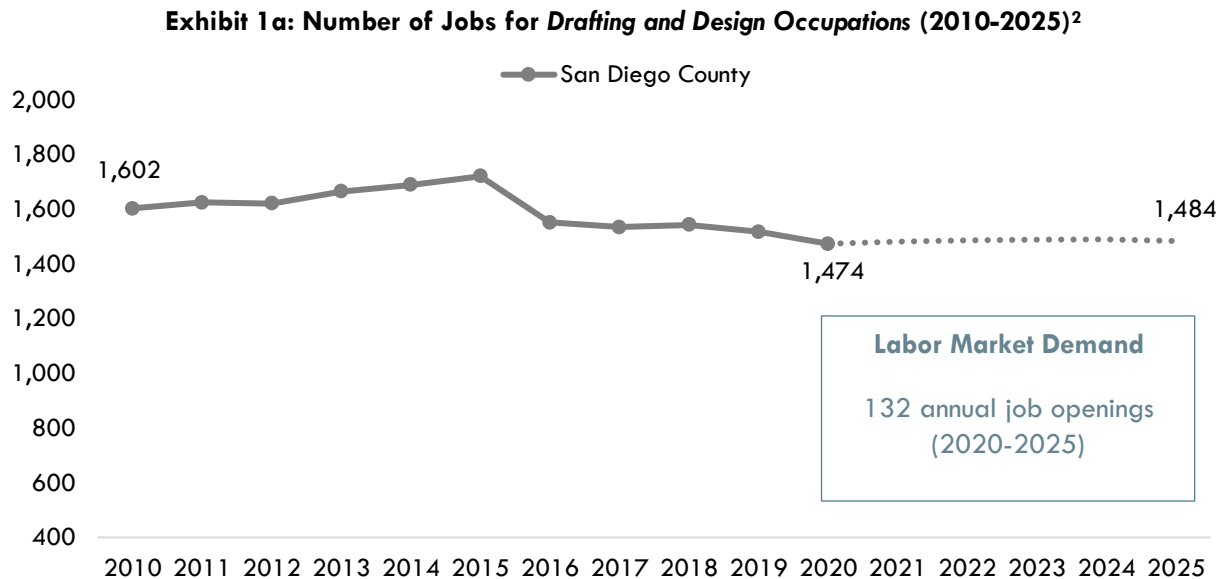


Exhibit 1b disaggregates the projected number of jobs change by occupation. “Mechanical Drafters” are projected to have the most labor market demand between 2020 and 2025, with 48 annual job openings.

Exhibit 1b: Number of Jobs for Drafting and Design Occupations in San Diego County (2020-2025)³

Occupational Title	2020 Jobs	2025 Jobs	2020 - 2025 Net Jobs Change	2020-2025 % Net Jobs Change	Annual Job Openings (Demand)
Mechanical Drafters	542	544	2	0%	48
Electrical and Electronics Drafters	380	392	12	3%	36
Commercial and Industrial Designers	396	389	-7	-2%	34
Drafters, All Other	156	159	3	2%	14
Total	1,474	1,484	10	1%	132

² EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.

³ EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.

Earnings

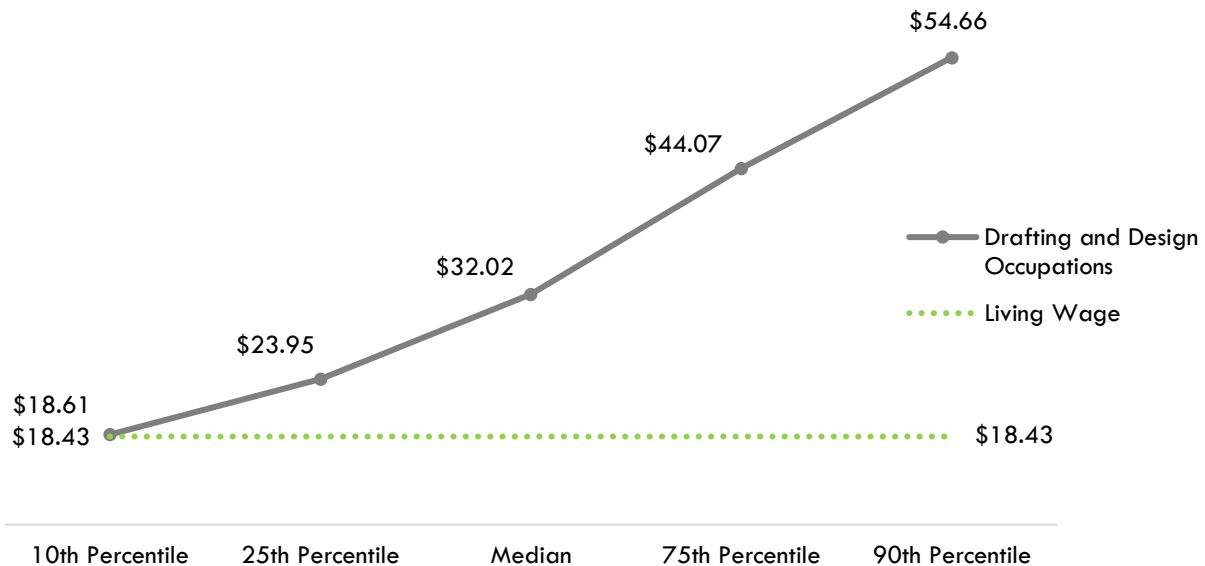
Exhibit 2a disaggregates hourly earnings by occupation. The entry-level hourly earnings for *Drafting and Design Occupations* range from \$17.64 to \$27.80.

Exhibit 2a: Hourly Earnings for Drafting and Design Occupations in San Diego County⁴

Occupational Title	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Mechanical Drafters	\$27.80	\$37.23	\$47.25
Commercial and Industrial Designers	\$25.86	\$36.58	\$54.76
Electrical and Electronics Drafters	\$24.50	\$29.09	\$35.71
Drafters, All Other	\$17.64	\$25.19	\$38.54

On average, the entry-level hourly earnings for *Drafting and Design Occupations* are \$23.95; this is more than the living wage for a single adult in San Diego County, which is \$18.43 per hour (Exhibit 2b).⁵

Exhibit 2b: Average Hourly Earnings⁶ for Drafting and Design Occupations in San Diego County⁷



⁴ EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.

⁵ "Family Needs Calculator (formerly the California Family Needs Calculator)," Insight: Center for Community Economic Development, last updated 2021. insightcced.org/family-needs-calculator/.

⁶ 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.

⁷ EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.

Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.⁸ There are five TOP codes and seven CIP codes related to *Drafting and Design Occupations* (Exhibit 3).

Exhibit 3: Related TOP and CIP Codes for *Drafting and Design Occupations*⁹

TOP or CIP Code	TOP or CIP Program Title
TOP 0953.00	Drafting Technology
TOP 0953.20	Civil Drafting
TOP 0953.30	Electrical, Electronic, and Electro-Mechanical Drafting
TOP 0953.40	Mechanical Drafting
TOP 0953.60	Technical Illustration
CIP 15.1301	Drafting and Design Technology/Technician, General
CIP 15.1302	CAD/CADD Drafting and/or Design Technology/Technician
CIP 15.1304	Civil Drafting and Civil Engineering CAD/CADD
CIP 15.1305	Electrical/Electronics Drafting and Electrical/Electronics CAD/CADD
CIP 15.1306	Mechanical Drafting and Mechanical Drafting CAD/CADD
CIP 50.0404	Industrial and Product Design
CIP 50.0410	Illustration

⁸ TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data).

⁹ This brief uses a conservative estimate of program supply and only calculates awards from the TOP codes in Exhibit 3.

According to TOP data, five community colleges supply the region with awards for these occupations: Cuyamaca College, MiraCosta College, Palomar College, San Diego City College, and Southwestern College. According to CIP data, one non-community-college institution supplies the region with awards: Newschool of Architecture and Design (Exhibit 4).

**Exhibit 4: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions
(Program Year 2016-17 through PY2019-20 Average)**

TOP or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY17-18 to PY19-20)	Other Educational Institutions 3-Yr Annual Average Awards (PY16-17 to PY18-19)	3-Yr Total Average Supply (PY16-17 to PY19-20)
0953.00	Drafting Technology	45	0	45
	• MiraCosta	17	0	
	• Palomar	23	0	
	• San Diego City	1	0	
	• Southwestern	4	0	
0953.30	Electrical, Electronic, and Electro-Mechanical Drafting	6	0	6
	• Palomar	6	0	
0953.40	Mechanical Drafting	14	0	14
	• Cuyamaca	6	0	
	• MiraCosta	8	0	
	• San Diego City	0	0	
0953.60	Technical Illustration	1	0	1
	• San Diego City	1	0	
50.0404	Industrial and Product Design	0	3	3
	• Newschool of Architecture and Design	0	3	
Total				69

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply¹⁰ suggests that there is a **supply gap** for these occupations in San Diego County, with **132** annual openings and **69** awards. Comparatively, there are **1,386** annual openings in California and **1,604** awards, suggesting that there is an oversupply across the state¹¹ (Exhibit 5).

Exhibit 5: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

	Demand (Annual Openings)	Supply (Total Annual Average Supply)	Supply Gap or Oversupply
San Diego	132	69	63
California	1,386	1,604	218

Please note: This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.

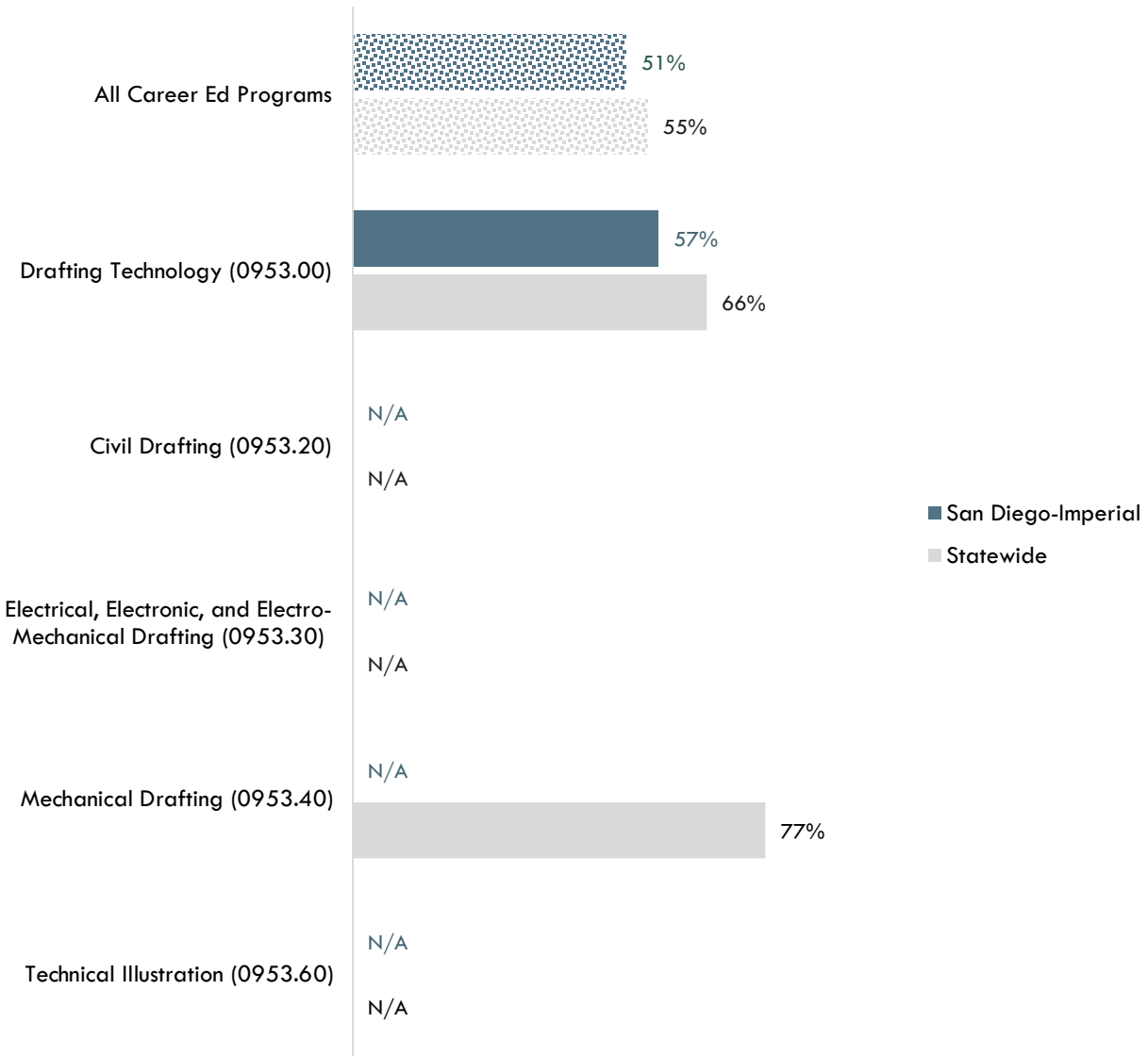
¹⁰ Labor supply can be found from two different sources: EMSI or the California Community Colleges Chancellor's Office MIS Data Mart. EMSI uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.

¹¹ "Supply and Demand," Centers of Excellence Student Outcomes, coecc.net/Supply-and-Demand.aspx.

Student Outcomes and Regional Comparisons

According to the California Community Colleges LaunchBoard, 57 percent of students in the San Diego-Imperial region earned a living wage after completing a program related to *Drafting and Design Occupations*, compared to 66 to 77 percent statewide and 55 percent of students in Career Education programs in general across the state (Exhibit 6a).¹²

Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program, PY2017-18¹³



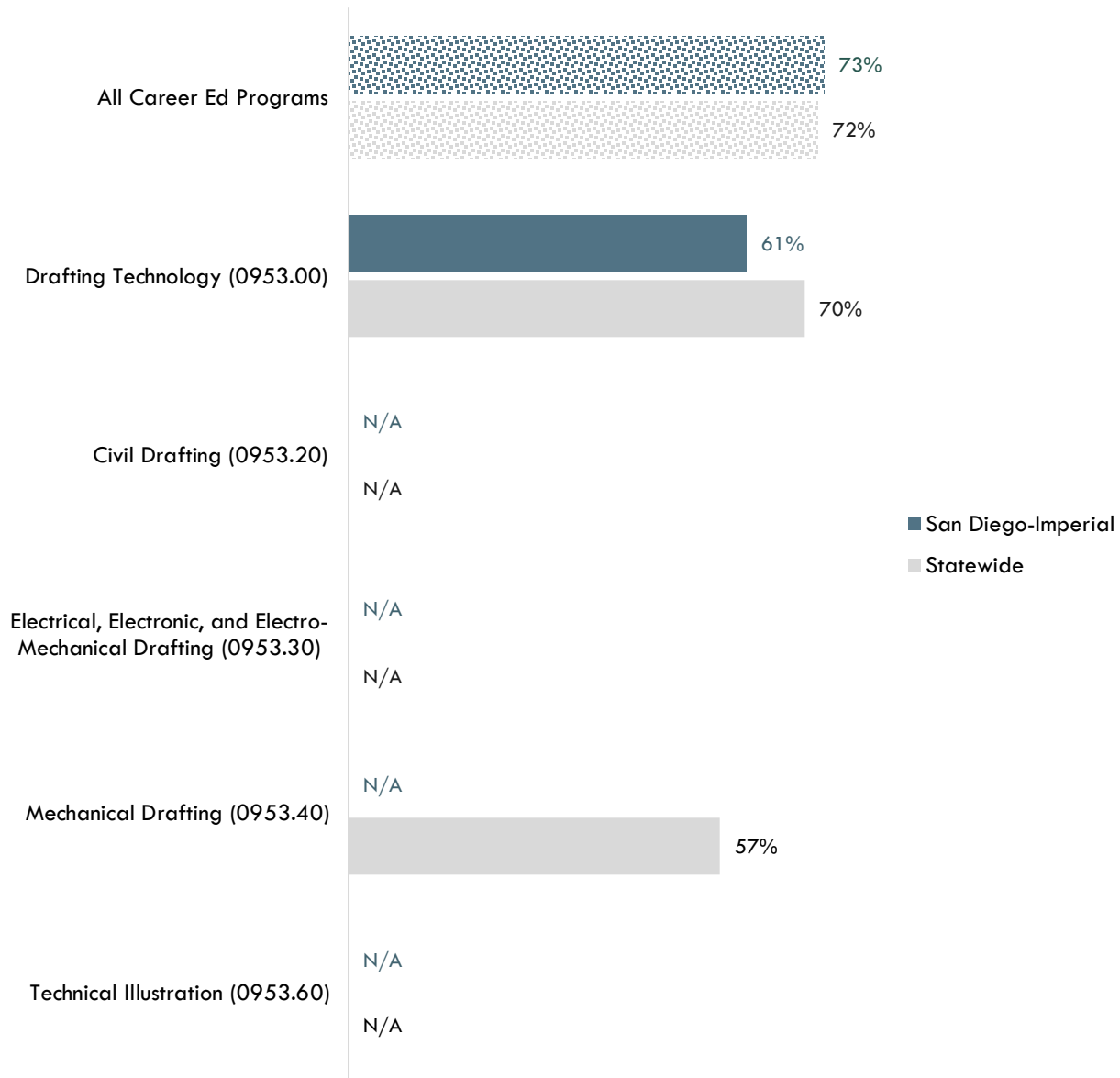
"N/A" indicates insufficient data

¹² "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.

¹³ Among completers and skills builders who exited, the proportion of students who attained a living wage.

According to the California Community Colleges LaunchBoard, 61 percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a program related to *Drafting and Design Occupations*, compared to 57 to 70 percent statewide and 72 percent of students in Career Education programs in general across the state (Exhibit 6b).¹⁴

Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study by Program, PY2016-17¹⁵



"N/A" indicates insufficient data

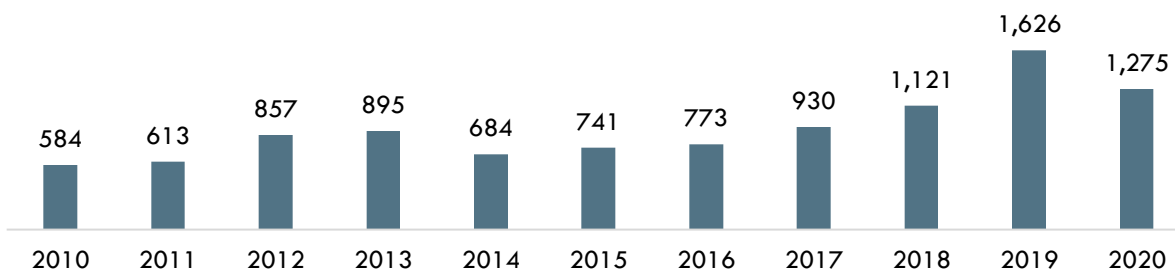
¹⁴ "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.

¹⁵ Most recent year with available data is Program Year 2016-17. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. Between 2010 and 2020, there was an average of 918 online job postings per year for *Drafting and Design Occupations* in San Diego County (Exhibit 7). Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (see Exhibit 1b). Employers may post a position multiple times for various reasons, such as increasing the pool of applicants, for example.

Exhibit 7: Number of Online Job Postings for *Drafting and Design Occupations* in San Diego County (2010-2020)¹⁶



Top Employers

Between January 1, 2018 and December 31, 2020, the top five employers in San Diego County for *Drafting and Design Occupations* were [Qualcomm](#), [General Atomics](#), [Apple](#), [Intuit](#), and [NV5](#) based on online job postings (Exhibit 8).

Exhibit 8: Top Employers for *Drafting and Design Occupations* in San Diego County¹⁷

Top Employers	
<ul style="list-style-type: none">• Qualcomm• General Atomics• Apple, Inc.• Intuit• NV5	<ul style="list-style-type: none">• Viasat, Inc.• Illumina, Inc.• Visa• POWER Engineers, Inc.• Cubic Corporation

¹⁶ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2010-2020.

¹⁷ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

Education, Skills, and Certifications

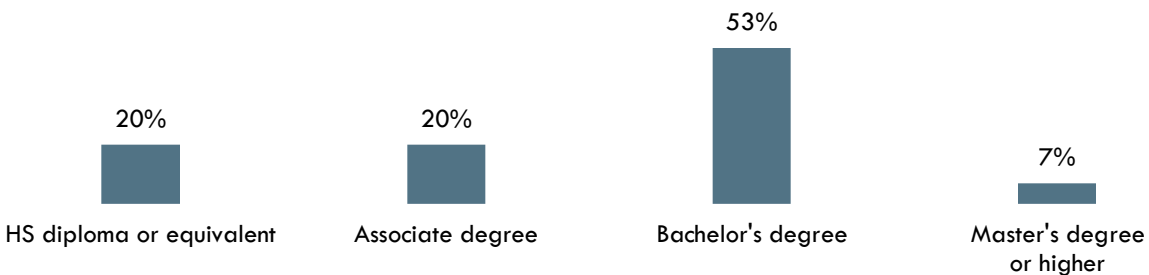
Drafting and Design Occupations have a national educational attainment ranging from an [associate degree](#) to a [bachelor's degree](#) (Exhibit 9a).

Exhibit 9a: National Educational Attainment for *Drafting and Design Occupations*¹⁸

Occupational Title	Typical Entry-Level Education
Commercial and Industrial Designers	Bachelor's degree
Drafters, All Other	Associate degree
Electrical and Electronics Drafters	Associate degree
Mechanical Drafters	Associate degree

Based on online job postings between January 1, 2018 and December 31, 2020 in San Diego County, employers posted a [bachelor's degree](#) as the educational requirement for *Drafting and Design Occupations* (Exhibit 9b).¹⁹

Exhibit 9b: Educational Requirements for *Drafting and Design Occupations* in San Diego County²⁰



¹⁸ EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.

¹⁹ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

²⁰ "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified April 9, 2021. bls.gov/emp/tables/educational-attainment.htm.

Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2018 and December 31, 2020.

Exhibit 10: Top Skills for *Drafting and Design Occupations* in San Diego County²¹

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • Computer Aided Drafting/Design • Product Development • SolidWorks • Project Management • Product Design • Scheduling • Calculation • Engineering Design and Installation • Mechanical Design • Engineering Design • Mechanical Engineering • Budgeting • 3D Modeling / Design • Schematic Diagrams • Prototyping 	<ul style="list-style-type: none"> • Communication Skills • Teamwork / Collaboration • Detail-Oriented • Research • Problem Solving • Organizational Skills • Creativity • Planning • Writing • Computer Literacy • Written Communication • Troubleshooting • Verbal / Oral Communication • Presentation Skills • Physical Abilities 	<ul style="list-style-type: none"> • AutoCAD • Microsoft Excel • SolidWorks • Revit • Microsoft Word • Adobe Photoshop • Microsoft PowerPoint • Adobe Acrobat • Autodesk • Microstation • Adobe InDesign • Python • Adobe Illustrator • Adobe Creative Suite • C++

²¹ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

Exhibit 11 lists the top certification that appeared in online job postings between January 1, 2018 and December 31, 2020.

Exhibit 11: Top Certification for *Drafting and Design Occupations* in San Diego County²²

Top Certification in Online Job Postings

1. Security Clearance
 2. AutoCAD Certification
 3. Computer Aided Design (CAD) Certification
 4. Licensed Professional Engineer
 5. Project Management Certification
 6. Engineer in Training Certification
 7. Licensed Professional Surveyor
 8. Drafting Certification
 9. American Society For Quality (ASQ) Certification
 10. Certified Quality Auditor (CQA)
 11. Certified Solid Works
 12. CompTIA Security+
 13. LEED AP
 14. North American Board of Energy Practitioners (NABCEP)
 15. Project Management Professional (PMP)
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²² Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

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Important Disclaimers

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

This workforce demand report uses state and federal job projection data that was developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.