










# Water and Wastewater Occupations

## Labor Market Analysis: San Diego County

May 2021

### Summary

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

This brief provides labor market information about *Water and Wastewater Occupations* to assist the San Diego and Imperial Counties Community Colleges with program development and strategic planning. *Water and Wastewater Occupations* include “Meter Readers, Utilities,” “Water and Wastewater Treatment Plant and System Operators,” and “Pump Operators, Except Wellhead Pumpers.” According to available labor market information, *Water and Wastewater Occupations* in San Diego County have a labor market demand of 94 annual job openings (while average demand for a single occupation in San Diego County is 277 annual job openings), and two educational institutions in San Diego County supply 49 awards for this occupation, suggesting that there is a supply gap in the labor market. Entry-level wages and median wages for all occupations are above the living wage. This brief recommends proceeding with developing a new program or a program modification because 1) these occupations’ entry-level and median earnings are above the living wage and 2) a supply gap exists for these positions.

## Introduction

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

- **Meter Readers, Utilities** (SOC 43-5041): Read meter and record consumption of electricity, gas, water, or steam.
- **Water and Wastewater Treatment Plant and System Operators** (SOC 51-8031): Operate or control an entire process or system of machines, often through the use of control boards, to transfer or treat water or wastewater.
- **Pump Operators, Except Wellhead Pumpers** (SOC 53-7072): Tend, control, or operate power-driven, stationary, or portable pumps and manifold systems to transfer gases, oil, other liquids, slurries, or powdered materials to and from various vessels and processes.

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

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<sup>1</sup> 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, *Water and Wastewater Occupations* are projected to decrease by **four** net jobs or **zero** percent (Exhibit 1a). Employers in San Diego County will need to hire **94** workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

**Exhibit 1a: Number of Jobs for Water and Wastewater Occupations (2010-2025)<sup>2</sup>**

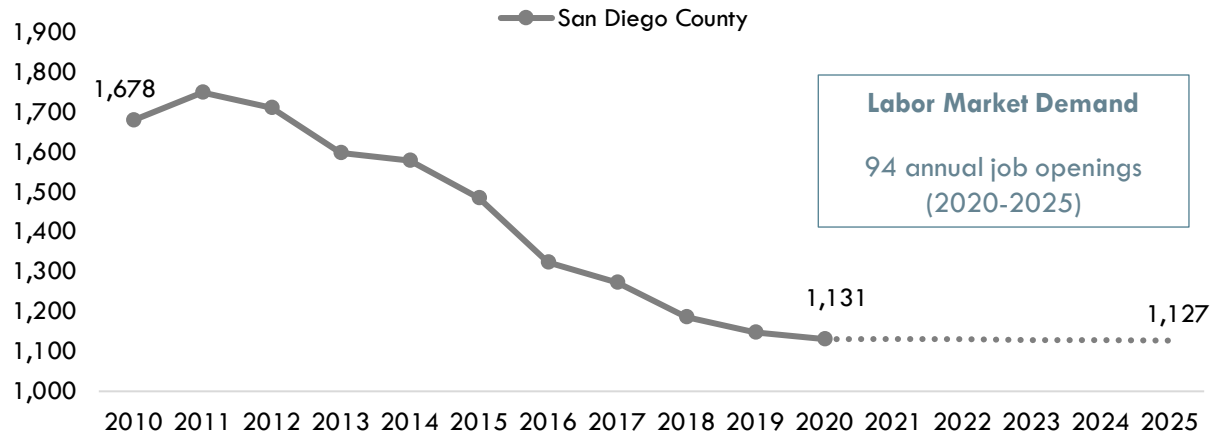


Exhibit 1b breaks down the projected number of jobs change by occupation. “Water and Wastewater Treatment Plant and System Operators” are projected to have the most labor market demand between 2020 and 2025, with **72** annual job openings.

**Exhibit 1b: Number of Jobs for Water and Wastewater Occupations in San Diego County (2020-2025)<sup>3</sup>**

Occupational Title	2020 Jobs	2025 Jobs	2020 - 2025 Net Jobs Change	2020-2025 % Net Jobs Change	Annual Job Openings (Demand)
Water and Wastewater Treatment Plant and System Operators	894	897	3	0%	72
Pump Operators, Except Wellhead Pumps	127	126	0	0%	13
Meter Readers, Utilities	110	104	-6	-5%	9
<b>Total</b>	<b>1,131</b>	<b>1,127</b>	<b>-3</b>	<b>0%</b>	<b>94</b>

<sup>2</sup> EMSI 2021.1; QCEW, Non-QCEW, Self-Employed.

<sup>3</sup> EMSI 2021.1; QCEW, Non-QCEW, Self-Employed.

## Earnings

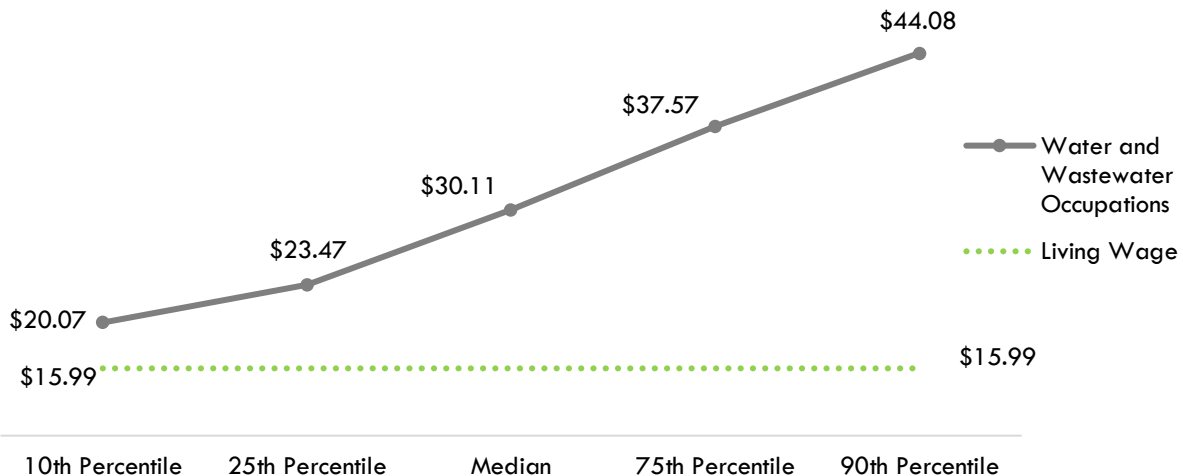
The entry-level hourly earnings for *Water and Wastewater Occupations* range from \$20.34 to \$26.50 (Exhibit 2a).

**Exhibit 2a: Hourly Earnings for *Water and Wastewater Occupations* in San Diego County<sup>4</sup>**

Occupational Title	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)
Water and Wastewater Treatment Plant and System Operators	\$26.50	\$30.76	\$38.16
Meter Readers, Utilities	\$23.56	\$32.98	\$38.44
Pump Operators, Except Wellhead Pumpers	\$20.34	\$26.58	\$36.11

On average, the entry-level hourly earnings for *Water and Wastewater Occupations* are \$23.47; this is more than the living wage for a single adult in San Diego County, which is \$15.99 per hour (Exhibit 2b).<sup>5</sup>

**Exhibit 2b: Average Hourly Earnings<sup>6</sup> for *Water and Wastewater Occupations* in San Diego County<sup>7</sup>**



<sup>4</sup> EMSI 2021.1; QCEW, Non-QCEW, Self-Employed.

<sup>5</sup> "California Family Needs Calculator (formerly the Self-Sufficiency Standard)," Insight: Center for Community Economic Development, last updated 2018. [insightccd.org/2018-self-sufficiency-standard](https://insightccd.org/2018-self-sufficiency-standard).

<sup>6</sup> 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.

<sup>7</sup> EMSI 2021.1; 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.<sup>8</sup> There is **one** TOP code and **one** CIP code related to *Water and Wastewater Occupations* (Exhibit 3).

**Exhibit 3: Related TOP and CIP Codes for *Water and Wastewater Occupations***

TOP or CIP Code	TOP or CIP Program Title
TOP 0958.00	Water and Wastewater Technology
CIP 15.0506	Water Quality and Wastewater Treatment Management and Recycling Technology/Technician

According to TOP data, **two** community colleges supply the region with awards for this occupation: **Cuyamaca College and Palomar College**. According to CIP data, **no** non-community-college institution supplies the region with awards (Exhibit 4).

**Exhibit 4: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions  
(Program Year 2014-15 through PY2018-19 Average)**

TOP6 or CIP	TOP6 or CIP 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)
0958.00	Water and Wastewater Technology	<b>49</b>	<b>0</b>	<b>49</b>
	<ul style="list-style-type: none"> <li>Cuyamaca</li> </ul>	25	0	
	<ul style="list-style-type: none"> <li>Palomar</li> </ul>	24	0	
			<b>Total</b>	<b>49</b>

<sup>8</sup> 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).

## Demand vs. Supply

Comparing labor demand (annual openings) with labor supply<sup>9</sup> suggests that there is a supply gap for this occupation in San Diego County, with 94 annual openings and 49 awards. Comparatively, there are 1,204 annual openings in California and 721 awards, suggesting that there is also a supply gap across the state<sup>10</sup> (Exhibit 5).

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

	<b>Demand</b> (Annual Openings)	<b>Supply</b> (Total Annual Average Supply)	<b>Supply Gap or Oversupply</b>
San Diego	94	49	<b>45</b>
California	1,204	721	<b>483</b>

**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.

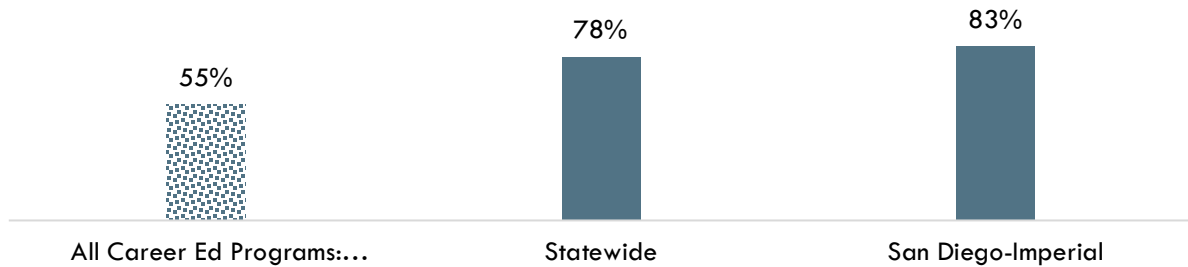
<sup>9</sup> Labor supply can be found from two different sources: EMSI or the California Community Colleges Chancellor's Office MIS Data Mart. EMSI uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.

<sup>10</sup> "Supply and Demand," Centers of Excellence Student Outcomes, [coecc.net/Supply-and-Demand.aspx](http://coecc.net/Supply-and-Demand.aspx).

## Student Outcomes and Regional Comparisons

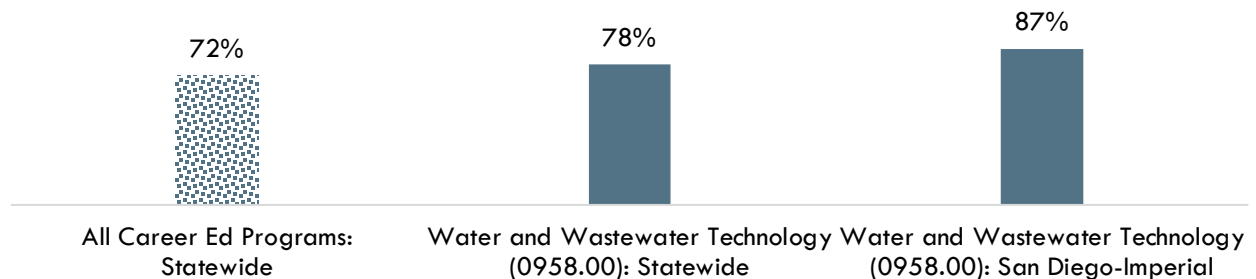
According to the California Community Colleges LaunchBoard, 83 percent of students in the San Diego-Imperial region earned a living wage after completing a Water and Wastewater Technology (TOP 0958.00) program, compared to 78 percent statewide and 55 percent of students in Career Education programs in general across the state (Exhibit 6a).<sup>11</sup>

**Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program, (Water and Wastewater Technology, PY2017-18)<sup>12</sup>**



According to the California Community Colleges LaunchBoard, 87 percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a Water and Wastewater Technology (TOP 0958.00) program, compared to 78 percent statewide and 72 percent of students in Career Education programs in general across the state (Exhibit 6b).<sup>13</sup>

**Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study by Program, (Water and Wastewater Technology, PY2016-17)<sup>14</sup>**



<sup>11</sup> "California Community Colleges Strong Workforce Program," California Community Colleges, [calpassplus.org/LaunchBoard/SWP.aspx](http://calpassplus.org/LaunchBoard/SWP.aspx).

<sup>12</sup> Among completers and skills builders who exited, the proportion of students who attained a living wage.

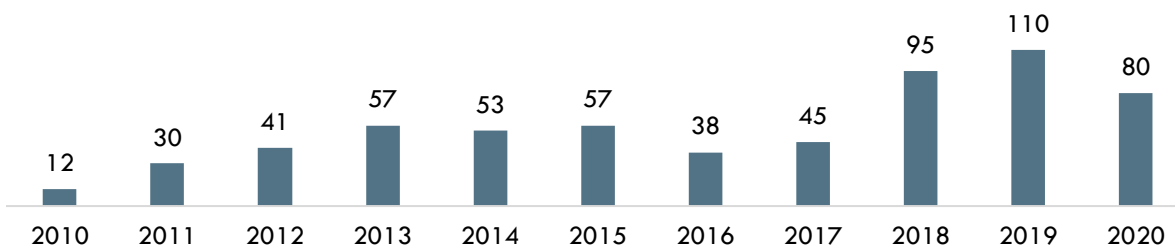
<sup>13</sup> "California Community Colleges Strong Workforce Program," California Community Colleges, [calpassplus.org/LaunchBoard/SWP.aspx](http://calpassplus.org/LaunchBoard/SWP.aspx).

<sup>14</sup> 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 56 online job postings per year for *Water and Wastewater Occupations*<sup>15</sup> 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 *Water and Wastewater Occupations* in San Diego County (2010-2020)<sup>16</sup>**



## Top Employers

Between January 1, 2018 and December 31, 2020, the top five employers in San Diego County for *Water and Wastewater Occupations* were the [City of San Diego](#), [U.S. Government](#), [VCS Billing](#), [Sunbelt Rentals](#), and [County of San Diego](#) based on online job postings (Exhibit 8).

**Exhibit 8: Top Employers in San Diego County for *Water and Wastewater Occupations*<sup>17</sup>**

Top Employers	
<ul style="list-style-type: none"><li>• City of San Diego</li><li>• U.S. Government</li><li>• VCS Billing</li><li>• Sunbelt Rentals Incorporated</li><li>• County of San Diego</li></ul>	<ul style="list-style-type: none"><li>• Sycuan Casino</li><li>• City Poway</li><li>• Cintas</li><li>• The Kleinfelder Group, Inc.</li><li>• ServiceMaster</li></ul>

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

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



## Education, Skills, and Certifications

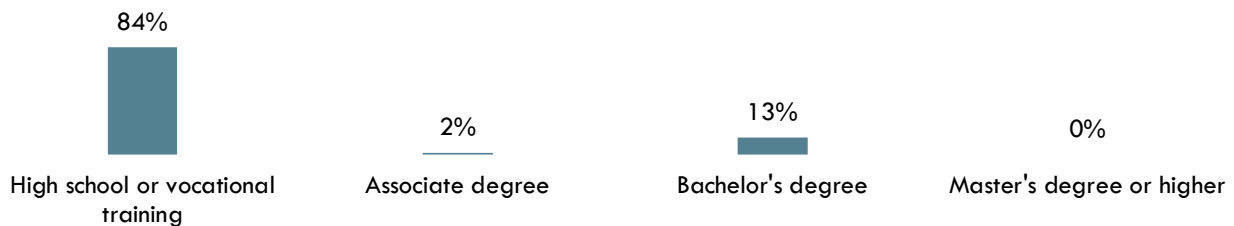
*Water and Wastewater Occupations* have a national educational attainment of a [high school diploma or equivalent](#) (Exhibit 9a).<sup>18</sup>

**Exhibit 9a: National Educational Attainment for *Water and Wastewater Occupations*<sup>19</sup>**

Occupational Title	Typical Entry-Level Education
Meter Readers, Utilities	High school diploma or equivalent
Pump Operators, Except Wellhead Pumpers	High school diploma or equivalent
Water and Wastewater Treatment Plant and System Operators	High school diploma or equivalent

Based on online job postings between January 1, 2018 and December 31, 2020 in San Diego County, the top listed educational requirement for *Water and Wastewater Occupations* is [high school or vocational training](#) (Exhibit 9b).<sup>20</sup>

**Exhibit 9b: Educational Requirements for *Water and Wastewater Occupations* in San Diego County<sup>21</sup>**



\*May not add up to 100 percent due to rounding.

<sup>18</sup> EMSI 2021.1; QCEW, Non-QCEW, Self-Employed.

<sup>19</sup> EMSI 2021.1; QCEW, Non-QCEW, Self-Employed.

<sup>20</sup> Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

<sup>21</sup> "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified September 4, 2019. [bls.gov/emp/tables/educational-attainment.htm](https://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 Water and Wastewater Occupations in San Diego County<sup>22</sup>**

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> <li>• Repair</li> <li>• Water Treatment</li> <li>• Water Meters</li> <li>• Water Distribution</li> <li>• Wastewater Treatment</li> <li>• Cleaning</li> <li>• Backflow Prevention</li> <li>• Hand Tools</li> <li>• Forklift Operation</li> <li>• Customer Billing</li> <li>• Meter Reading</li> <li>• SCADA</li> <li>• Customer Service</li> <li>• Chemistry</li> <li>• Calculation</li> </ul>	<ul style="list-style-type: none"> <li>• Physical Abilities</li> <li>• Communication Skills</li> <li>• Organizational Skills</li> <li>• English</li> <li>• Writing</li> <li>• Preventive Maintenance</li> <li>• Troubleshooting</li> <li>• Computer Literacy</li> <li>• Building Effective Relationships</li> <li>• Detail-Oriented</li> <li>• Planning</li> <li>• Teamwork / Collaboration</li> <li>• Problem Solving</li> <li>• Work Area Maintenance</li> <li>• Spanish</li> </ul>	<ul style="list-style-type: none"> <li>• Microsoft Excel</li> <li>• SCADA</li> <li>• Microsoft Word</li> <li>• Microsoft Access</li> <li>• Microsoft PowerPoint</li> <li>• ArcGIS</li> <li>• AutoCAD</li> <li>• Civil 3D</li> <li>• MicroStation</li> <li>• Word Processing</li> <li>• Graphical User Interface (GUI)</li> <li>• SQL</li> <li>• Teradata DBA</li> <li>• Computer Engineering</li> <li>• Microsoft Project</li> </ul>

<sup>22</sup> Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

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

**Exhibit 11: Top Certifications for *Water and Wastewater Occupations* in San Diego County<sup>23</sup>**

Top Certifications in Online Job Postings

1. Wastewater Treatment Plant Operator
2. CDL Class C
3. HAZWOPER
4. Wastewater Treatment Plant Operator Grade I
5. OSHA Forklift Certification
6. CDL Class B
7. EPA 608
8. Environmental Protection Agency Certification
9. Wastewater Treatment Plant Operator Grade II
10. Wastewater Treatment Certification
11. Licensed Professional Engineer
12. CDL Class A
13. Certified Water Technician
14. Certified Landscape Irrigation Auditor
15. Backflow Prevention Certification

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<sup>23</sup> 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.