

**Program Endorsement Brief: 0958.00/Water and Wastewater Technology  
Water System Automation**

Orange County Center of Excellence, May 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 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 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 two middle-skill occupations: *environmental engineering technologists and technicians* (17-3025), and *water and wastewater treatment plant and system operators* (51-8031). 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 these middle-skill water systems occupations in the region. However, due to inconsistencies in reporting automatically-awarded, local low-unit certificates at Santiago Canyon College, supply may be overstated and the COE is unable to determine the gap between supply and demand. However, entry-level wages exceed the living wage in both Los Angeles and Orange counties, and nearly half of current workers in these occupations have completed some college or an associate degree. **Therefore, 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 **348 jobs available annually** in the region due to new job growth and replacements, **which is less than the 491 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.

- However, due to inconsistencies in reporting automatically-awarded, local low-unit certificates, **the number of awards conferred may be overstated**. Detailed information on this possible over-supply is included in the supply section.
- **Living Wage Criteria** – Within Orange County, **all of the annual job openings** for these middle-skill water systems occupations have **entry-level wages above the county’s living wage** (\$17.36/hour).<sup>2</sup>
- **Educational Criteria** – Within the LA/OC region, **62% of the annual job openings** for occupations related to middle-skill water systems **typically require a high school diploma**.
  - However, the national-level educational attainment data indicates **between 41.5% and 50.8% of workers in the field have completed some college or an associate degree**.

**Supply:**

- Due to inconsistencies in reporting automatically-awarded, local low-unit certificates, the number of awards conferred may be overstated. Additionally, it is unclear whether or not these low-unit certificates adequately train for the occupations in this report when compared to higher-unit programs. Therefore, **the three-year average number of awards is overstated**.
  - There are **7 community colleges** in the LA/OC region that issue awards related to water and/or environmental technology, conferring an average of **477 awards annually** between 2017 and 2020.
    - However, this supply data includes **819 local low-unit certificates that were automatically conferred (also known as auto-awarded) by Santiago Canyon College during the 2018-19 academic year**. Awards were automatically conferred to both current and past students who had completed the unit requirements within the past few years; however, this low-unit program may not have necessarily prepared students for the occupations within this report, as compared to higher-unit programs at Santiago Canyon College and throughout the region. Therefore, **the three year-average number of awards is overstated**.
- Between 2016 and 2019, there was an average of **14 awards conferred annually** in related training programs by non-community college institutions throughout the region.

**Occupational Demand**

Exhibit 1 shows the five-year occupational demand projections for these middle-skill water systems occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 1% through 2024. There will be nearly 350 job openings per year through 2024 due to job growth and replacements.

*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*

---

<sup>2</sup> Living wage data was pulled from California Family Needs Calculator on 4/28/2021. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

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	3,116	3,154	38	1%	261
Orange	1,010	1,028	18	2%	87
<b>Total</b>	<b>4,126</b>	<b>4,181</b>	<b>55</b>	<b>1%</b>	<b>348</b>

### Wages

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

**Orange County**— All of the annual openings for these middle-skill water systems occupations have entry-level wages above the living wage for one adult (\$17.36 in Orange County). Typical entry-level hourly wages are in a range between \$19.22 and \$29.10. Experienced workers can expect to earn wages between \$29.65 and \$43.85, which are higher than the living wage estimate. Orange County’s average wages are below the average statewide wage of \$34.14 for these occupations.

**Los Angeles County**— All of the annual openings for these middle-skill water systems occupations have entry-level wages above the living wage for one adult (\$15.04 in Los Angeles County). Typical entry-level hourly wages are in a range between \$19.75 and \$31.98. Experienced workers can expect to earn wages between \$30.49 and \$48.18, which are higher than the living wage estimate. Los Angeles County’s average wages are above the average statewide wage of \$34.14 for these occupations.

### Job Postings

There were 167 online middle-skill job postings related to water systems occupations listed in the past 12 months. The highest number of job postings were for wastewater operators, water supply operators, water treatment plant operators, lead water technicians, and water systems operators. The top skills were: water treatment, wastewater treatment, repair, occupational health and safety, and system operator. The top employers, by number of job postings, in the region were: GHD Incorporated, Davis Wire Corporation, ServiceMaster, and The Heico Construction Group.

<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.

*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 an associate degree as the typical entry-level education for *environmental engineering technologists and technicians* and a high school diploma for *water and wastewater treatment plant and system operators*. In the LA/OC region, the majority of annual job openings (62%) typically require a high school diploma. However, the national-level educational attainment data indicates between 41.5% and 50.8% of workers in the field have completed some college or an associate degree. Of the 70% of middle-skill water systems job postings listing a minimum education requirement in Los Angeles/Orange County, 82% (96) requested a high school diploma, 16% (19) requested a bachelor’s degree and 2% (2) requested an associate degree.

### **Educational Supply**

**Community College Supply**—Exhibit 2 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Environmental Technology (0303.00) and Water and Wastewater Technology (0958.00). The colleges with the most completions in the region are: Santiago Canyon, Citrus, and Santa Monica. Over the past 12 months, there were no other related program recommendation requests from regional community colleges.

It is worth noting that this supply data includes 819 local low-unit certificates automatically conferred by Santiago Canyon during the 2018-2019 academic year alone. Local awards were automatically conferred to both current and past students who had completed the unit requirements within the past 3-5 years. It is unclear if this number double-counts students who previously exited the program and are already working in the field, or if these students are necessarily prepared to work in these occupations related to water systems, as compared to students who completed higher-unit awards. Since this data point is included within the regional average supply data, the three year-average number of awards (477) is likely overstated.

**Exhibit 2: Regional community college awards (certificates and degrees), 2017-2020**

TOP Code	Program	College	2017-2018 Awards	2018-2019 Awards	2019-2020 Awards	3-Year Award Average
0303.00	Environmental Technology	Rio Hondo	22	20	9	17
		Santa Monica	7	26	37	23
		<b>LA Subtotal</b>	<b>29</b>	<b>46</b>	<b>46</b>	<b>40</b>
		Irvine	1	-	4	2
		Saddleback	-	1	-	0
		Santiago Canyon	1	5	3	3
		<b>OC Subtotal</b>	<b>2</b>	<b>6</b>	<b>7</b>	<b>5</b>
<b>Supply Subtotal/Average</b>			<b>31</b>	<b>52</b>	<b>53</b>	<b>45</b>
0958.00		Citrus	23	37	32	31

TOP Code	Program	College	2017-2018 Awards	2018-2019 Awards	2019-2020 Awards	3-Year Award Average
	Water and Wastewater Technology	LA Trade	23	12	27	21
		<b>LA Subtotal</b>	<b>46</b>	<b>49</b>	<b>59</b>	<b>51</b>
		Santiago Canyon <sup>4</sup>	158	889	94	380
		<b>OC Subtotal</b>	<b>158</b>	<b>889</b>	<b>94</b>	<b>380</b>
<b>Supply Subtotal/Average</b>			<b>204</b>	<b>938</b>	<b>153</b>	<b>432</b>
<b>Supply Total/Average</b>			<b>235</b>	<b>990</b>	<b>206</b>	<b>477</b>

**Non-Community College Supply**—For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs for middle-skill water systems occupations. Exhibit 3 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Code: Water Quality and Wastewater Treatment Management and Recycling Technology/Technician (15.0506). Due to different data collection periods, the most recent three-year period of available data is from 2016 to 2019. Between 2016 and 2019, four-year colleges in the region conferred an average of 14 awards annually in related training programs.

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

CIP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
15.0506	Water Quality and Wastewater Treatment Management and Recycling Technology/Technician	Hacienda La Puente Adult Education	19	11	13	14
<b>Supply Total/Average</b>			<b>19</b>	<b>11</b>	<b>13</b>	<b>14</b>

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

**Exhibit 4. Orange 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)
Environmental Engineering Technologists and Technicians (17-3025)	510	528	19	4%	47	\$19.22	\$25.14	\$29.65

<sup>4</sup> Santiago Canyon College automatically conferred 819 local low-unit certificates during the 2018-19 academic year.

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)
Water and Wastewater Treatment Plant and System Operators (51-8031)	500	499	(1)	(0%)	40	\$29.10	\$35.45	\$43.85
<b>Total</b>	<b>1,010</b>	<b>1,028</b>	<b>18</b>	<b>2%</b>	<b>87</b>			

**Exhibit 5. 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)
Environmental Engineering Technologists and Technicians (17-3025)	971	984	12	1%	85	\$19.75	\$25.85	\$30.49
Water and Wastewater Treatment Plant and System Operators (51-8031)	2,145	2,170	25	1%	176	\$31.98	\$38.95	\$48.18
<b>Total</b>	<b>3,116</b>	<b>3,154</b>	<b>38</b>	<b>1%</b>	<b>261</b>			

**Exhibit 6. Los Angeles and Orange Counties**

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings
Environmental Engineering Technologists and Technicians (17-3025)	1,481	1,512	31	2%	131
Water and Wastewater Treatment Plant and System Operators (51-8031)	2,645	2,669	24	1%	216

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings
<b>Total</b>	<b>4,126</b>	<b>4,181</b>	<b>55</b>	<b>1%</b>	<b>348</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:

Jesse Crete, Ed. D., Director  
 Center of Excellence, Orange County  
[crete\\_jesse@rscdd.edu](mailto:crete_jesse@rscdd.edu)

May 2021

