C·O·E CENTERS OF EXCELLENCE FOR LABOR MARKET RESEARCH

Program Endorsement Brief: 0958.00/Water and Wastewater Technology

Water and Wastewater Technology

Orange County Center of Excellence, July 2022

Summary Analysis

Program Endorsement:	**Endorsed: All Criteria Met** ☐	**Endorsed: Some Criteria Met** ☒	**Not Endorsed** ☐

Program Endorsement Criteria		
Supply Gap:	Yes ☐	No ☑ (***See comments below***)
Living Wage: **(Entry-Level, 25th)**	Yes ☑	No ☐
Education:	Yes ☑	No ☐
Emerging Occupation(s)		
Yes ☐		*No* ☑

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 systems operators* (51-8031). 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 does not appear to be a supply gap for these Water and Wastewater Technology 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. Though the majority (70%) of annual openings for the occupations in this report typically require a high school diploma or equivalent, more than one-third of workers in the field have completed some college or an associate degree as their highest level of education. Furthermore, entry-level wages exceed the living wage in both Los Angeles and Orange counties. **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 **291 jobs available annually** in the region due to retirements and workers leaving the field, ***which is less than the 491 awards conferred annually*** by educational institutions in the region.

[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.

    - 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 annual job openings** for these Water and Wastewater Technology occupations **have entry-level wages above the county's living wage ($20.63/hour).**[2]
- ***Educational Criteria –***Within the LA/OC region, ***70% of the annual job openings*** for occupations related to Water and Wastewater Technology ***typically require a high school diploma or equivalent.***
    - However, the national-level educational attainment data indicates **between 44.4% and 50.8% of workers in the field have completed some college or an associate degree** as their highest level of education.

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 **seven community colleges** in the LA/OC region that issue awards related to Water and Wastewater 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
    - Between 2016 and 2019, there was an average of **14 awards conferred annually** in related training programs by non-community college institutions, all of which were generated by **a single adult education institution**.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for these Water and Wastewater Technology occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to decrease by 1% through 2025. However, there will be nearly 300 job openings per year through 2025 due to retirements and workers leaving the field.

[2] Living wage data was pulled from California Family Needs Calculator on 6/10/2022. For more information, visit the California Family Needs Calculator website: https://insightcced.org/family-needs-calculator/.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties[3]

Geography	2020 Jobs	2025 Jobs	2020-2025 Change	2020-2025 % Change	Annual Openings
Los Angeles	2,453	2,428	(25)	(1%)	223
Orange	732	723	(9)	(1%)	67
Total	**3,185**	**3,151**	**(34)**	**(1%)**	**291**

Wages

The labor market endorsement in this report considers the entry-level hourly wages for these Water and Wastewater Technology 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 annual openings for these Water and Wastewater Technology occupations have entry-level wages above the living wage for one adult ($20.63 in Orange County). Typical entry-level hourly wages are in a range between $24.99 and $28.58. Experienced workers can expect to earn wages between $38.76 and $43.86, which are higher than the living wage estimate. Orange County's average wages are below the average statewide wage of $35.42 for these occupations.

Los Angeles County: All annual openings for Water and Wastewater Technology occupations have entry-level wages above the living wage for one adult ($18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between $25.27 and $31.10. Experienced workers can expect to earn wages between $39.27 and $47.70, which are higher than the living wage estimate. Los Angeles County's average wages are above the average statewide wage of $35.42 for these occupations.

Job Postings

There were 270 online job postings related to Water and Wastewater Technology listed in the past 12 months. The highest number of job postings were for lead water technicians, water technicians, wastewater operators, water treatment specialists, and water treatment specialists. The top skills were water treatment, repair, wastewater treatment, occupational health and safety, and water distribution. The top three employers, by number of job postings, in the region were Jackson Restoration, Service Master, and Golden State Water Company.

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 or equivalent as the typical entry-level education for *water and wastewater treatment plant and systems operators*. In the LA/OC region, the majority of annual job openings (70%) typically require a high school diploma or equivalent. However, the national-level educational attainment data indicates that between 44.4% and 50.8% of workers in the field have completed some

[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.

college or an associate degree as their highest level of education. Of the 70% of Water and Wastewater Technology job postings listing a minimum education requirement in Los Angeles/Orange County, 69.1% (130) requested a high school diploma or equivalent, 4.8% (9) requested an associate degree, and 26.1% (49) requested a bachelor's degree or higher.

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 and Citrus. Over the past 12 months, there were three 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
		LA Subtotal	**29**	**46**	**46**	**40**
		Irvine	1	-	4	2
		Saddleback	-	1	-	0
		Santiago Canyon	1	5	3	3
		OC Subtotal	**2**	**6**	**7**	**5**
Supply Subtotal/Average			**31**	**52**	**53**	**45**
0958.00	Water and Wastewater Technology	Citrus	23	37	32	31
		LA Trade	23	12	27	21
		LA Subtotal	**46**	**49**	**59**	**51**
		Santiago Canyon	158	889	94	380
		OC Subtotal	**158**	**889**	**94**	**380**
Supply Subtotal/Average			**204**	**938**	**153**	**432**
Supply Total/Average			**235**	**990**	**206**	**477**

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 Water and Wastewater Technology. Exhibit 3 shows the annual and three-year average number of awards conferred by this institution 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, one non-community college institution 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
		Supply Total/Average	**19**	**11**	**13**	**14**

Appendix A: Occupational demand and wage data by county

Exhibit 4. Orange County

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Environmental Engineering Technologists and Technicians (17-3025)	316	322	7	2%	31	$24.99	$29.12	$38.76
Water and Wastewater Treatment Plant and Systems Operators (51-8031)	416	400	(16)	(4%)	37	$28.58	$35.13	$43.84
Total	**732**	**723**	**(9)**	**(1%)**	**67**			

Exhibit 5. Los Angeles County

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Environmental Engineering Technologists and Technicians (17-3025)	600	610	10	2%	58	$25.27	$29.48	$39.27
Water and Wastewater Treatment Plant and Systems Operators (51-8031)	1,853	1,818	(35)	(2%)	166	$31.10	$38.22	$47.70
Total	**2,453**	**2,428**	**(25)**	**(1%)**	**223**			

Exhibit 6. Los Angeles and Orange Counties

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings
Environmental Engineering Technologists and Technicians (17-3025)	916	932	17	2%	89
Water and Wastewater Treatment Plant and Systems Operators (51-8031)	2,269	2,219	(50)	(2%)	202
Total	**3,185**	**3,151**	**(34)**	**(1%)**	**291**

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)

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