California Workforce Needs in the Water/Wastewater Industry

C·O·E

CENTERS OF EXCELLENCE
FOR LABOR MARKET RESEARCH

Executive Summary

Research Questions, Findings and Recommendations

Prepared by the Centers of Excellence for Labor Market Research

California Community Colleges' Economic and Workforce Development Program

March 2023

EXECUTIVE SUMMARY

The purpose of this report is to provide a comprehensive overview of the workforce needs for mission-critical occupations in the water/wastewater industry across the State of California. Mission-critical occupations are defined as essential positions in water and wastewater operations that are difficult to fill and typically require at least a high school diploma. This report includes specific and actionable recommendations for employers and community colleges to address current and future workforce challenges for mission-critical occupations. Building on more than a decade of research on the water/wastewater industry, the Centers of Excellence for Labor Market Research (COE) previously authored regional studies on this subject, but this report marks the first time that the COE conducted such an analysis at the statewide level.

Research Questions, Findings, and Recommendations

This report is guided by three research questions that were developed through a combination of reviewing prior literature and interviews with industry representatives. Each research question contains subquestions that informed the quantitative and qualitative data collection process. After analyzing both primary and secondary data, the COE then developed key findings and recommendations. Exhibit 1 lists each respective research question and its subsequent findings and recommendations. These recommendations were developed in response to the findings for each research question and are not listed in order of importance.

Recommendation Themes

Through the analyses conducted in this report, four themes emerged from the recommendations. While some recommendations may address multiple themes, each recommendation has been categorized based on its dominant theme.

Awareness	Diversity	Partnership	Skills
This theme describes the need for increased water/wastewater industry awareness to attract more students and job candidates.	This theme relates to increasing diversity in the water/wastewater industry and how the industry and community colleges can build on existing efforts.	This theme describes how community colleges and the water/wastewater industry can improve their partnerships to make them more effective.	This theme relates to the identification of skills required for water/wastewater occupations and how community colleges can help students prepare for these occupations.

Exhibit 1. Findings and Recommendations

Research Question (RQ)	RQ Findings	Recommendations
RQ1: What is the labor market for the water/wastewater industry?		
RQ1a: What are the mission-critical occupations?	RQ1a Findings: This report identified eight-mission critical occupations, which are essential to water and wastewater operations, difficult to fill, and typically require at least a high school diploma: 1. Calibration Technologists and Technicians 2. Electrical and Electronic Engineering Technologists and Technicians 3. Electricians 4. Industrial Machinery Mechanics 5. Machinists 6. Maintenance and Repair Workers, General 7. Operating Engineers and Other Construction Equipment Operators 8. Water and Wastewater Treatment Plant and System Operators All eight mission-critical occupations have high entry-level wages and low typical entry-level education requirements and are relatively homogenous when considering workforce demographics. Throughout the state, the water/wastewater industry accounts for 13% of employment in these mission-critical occupations and these occupations account for 4% of water/wastewater employment.	The water/wastewater industry may want to conduct further research on emerging occupations developing due to technological advancements, legislation and/or regulatory requirements, or other factors to predict future mission-critical occupations in preparation for future industry needs. Though the intent of the industry survey was to identify potential emerging areas, most respondents either did not respond or said they did not know which areas were developing in the industry. It is unclear whether that is due to respondents' lack of interest in emerging occupations or lack of knowledge.

Research Question (RQ)	RQ Findings	Recommendations
RQ1: What is the labor market for the water/wastewater industry?		
RQ1b: What is the supply and demand for water and wastewater treatment plant and system operators and other mission-critical occupations?	RQ1b Findings: There is significant demand but low supply for these mission-critical occupations in California, indicating a labor supply gap of 32,049 awards. There is a projected labor market demand of 37,459 annual job openings statewide through 2026. Of those, 12% (4,442) are projected to be in the water/wastewater industry. An average of 5,410 awards (supply) have been conferred by educational institutions over the past three years. Community colleges account for 71% of the supply from educational institutions in California and provide training programs for all but one mission-critical occupation.	Continue to build and improve upon awareness of the water/wastewater industry and evaluate effectiveness of existing marketing campaigns and other efforts to attract potential employees. Increase effectiveness of water/wastewater industry and community college partnerships, which will strengthen advisory boards, create more cooperative work experiences and other work-based learning opportunities for students, as well as build new and strengthen existing pipelines of qualified job candidates. Address current equity gaps in the water/wastewater workforce through targeted marketing efforts and partnership with community colleges, where the student population is more diverse than the current water/wastewater workforce – particularly in age and gender.
RQ1c: What are the essential skills for these mission-critical occupations across all industries and within the water/wastewater industry?	RQ1c Findings: The essential skills for water/wastewater mission critical occupations are similar across all industries yet skills identified by survey respondents and listed in job postings vary greatly. This report identified the top 10 skills listed in online job postings for each mission-critical occupation. Essential skills are highly transferable across all industries. Most skills identified by survey respondents do not align with those requested in online job postings for any of the mission-critical occupations. This potential misalignment could contribute to industry's challenge of hiring qualified employees and deserves to be studied further.	The water/wastewater industry should conduct further research to determine if there is a misalignment between the skills in online job postings and those considered essential by hiring managers and, if so, the degree of misalignment. Once essential skills for each mission-critical occupation have been identified, industry and community colleges, via advisory boards, should collaborate to refine curriculum and address these skills. Leverage industry and community college partnerships to develop cooperative work experiences and other work-based learning opportunities that will help students earn as they learn skills for employment in the water/wastewater industry.

RQ2: What are the current and potential challenges facing the water/wastewater industry?

RQ2a: What methods do water and wastewater agencies typically use to recruit new hires (e.g., unions, online job postings, word of mouth)?	RQ2a Findings: Water/wastewater companies rely on online recruiting platforms and company job boards for recruitment, but report difficulty in finding qualified candidates. Nearly 60% of survey respondents indicated that these platforms ranked as their top two resources for hiring; community colleges ranked fourth. Survey respondents have the most difficulty finding job candidates with relevant prior work experience, adequate technical skills, and required licenses or certifications.	While most water/wastewater recruitment comes from online platforms, building continued awareness of the industry as a whole should attract more candidates. Utilize the opportunity of hiring new people to address current equity gaps in the water/wastewater workforce through targeted marketing efforts and partnerships with community colleges, where the student population is more diverse than the current water/wastewater workforce – particularly when considering age and gender.
RQ2b: Are existing connections between industry and supply from community colleges and other training providers in place to fill demand for these occupations?	RQ2b Findings: While some connections exist, improvement is required to address the high demand for water/wastewater workers. Community colleges have had the most success finding job opportunities for students by directly partnering with employers. Interview participants shared they would like to partner with water/wastewater companies to develop on-the-job training, internship, and/or other work-based learning (WBL) opportunities, which could help students meet job qualifications for mission-critical occupations.	Increase effectiveness of water/wastewater industry and community college partnerships, which will strengthen advisory boards, create more cooperative work experiences and other work-based learning opportunities for students, as well as build new and strengthen existing pipelines of qualified job candidates.

Research Question (RQ)	RQ Findings	Recommendations
RQ3: How are these industry challenges mitigated?		
RQ3a: How have water/wastewater agencies addressed challenges associated with a retiring workforce?	RQ3a Findings: Water/wastewater agencies have created opportunities for internal employees to be developed, promoted in-house opportunities, and have partnered with educational institutions. These agencies report that 5% of their current workforce is eligible to retire without penalty within the next five years. 37% of workers in the eight mission-critical occupations are 50 and older, which is comparatively higher than all occupations throughout the state as well as the California population.	Address current equity gaps in the water/wastewater workforce through targeted marketing efforts and partnership with community colleges, where the student population is more diverse than the current water/ wastewater workforce – particularly in age and gender. The water/wastewater industry should examine their current workforce - specifically how internal training, professional development, and job promotion opportunities are offered as well as participation rates for traditionally underrepresented groups. These factors directly impact hiring and recruitment practices and may contribute to pay gaps. Improving on them may increase opportunities for underrepresented groups.
RQ3b: How can the California Community Colleges support these efforts?	RQ3b Findings: California Community Colleges offer training programs for all but one mission-critical occupation and students in those programs are generally more diverse than the current water/wastewater mission-critical workforce	Increase effectiveness of water/wastewater industry and community college partnerships, which will strengthen advisory boards, create more cooperative work experiences and other work-based learning opportunities for students, as well as build new and strengthen existing pipelines of qualified job candidates. Due to the skills transferability for these mission-critical occupations, it would behoove community colleges to provide students with sufficient knowledge to enter employment in a variety of industries thereby increasing employment opportunities for students. Community colleges could consider adding specialized courses to address water/wastewater industry-specific needs and/or offer customized training options to water/ wastewater employers.