



## Labor Market Analysis: 0115.00 – Natural Resources

### Nature Based Climate Solutions – Certificate of Achievement (for-credit)

Los Angeles Center of Excellence, November 2024

<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 checked="" type="checkbox"/>		No <input type="checkbox"/>
<b>Living Wage: (Entry-Level, 25<sup>th</sup>)</b>	Yes <input type="checkbox"/>		No <input checked="" 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"/>

## SUMMARY

This report analyzes whether local labor market demand is being met by community college programs aligned with the identified middle-skill occupations<sup>1</sup> or whether a shortage of workers exists. Labor market demand is measured by annual job openings while education supply is measured by the number of awards (degrees and certificates) conferred on average each year.

Based on the available data, there appears to be a supply gap for the three identified middle-skill occupations in the region. While the majority of annual openings in Los Angeles County have entry-level wages that are lower than the self-sufficiency standard wage, the Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education level for all three occupations.

**Recommendation:** Due to two of three program endorsement criteria being met, the Los Angeles Center of Excellence for Labor Market Research (LA COE) endorses this proposed program.

## Key Findings

### Supply Gap

- 305 annual job openings are projected in the region through 2028. This number is greater than the three-year average of 125 awards conferred by educational institutions in the region.

<sup>1</sup> Middle-skill occupations typically require some postsecondary education, but less than a bachelor’s degree. 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.

### **Living Wage**

- 63% of annual job openings for these target occupations have entry-level wages **below** Los Angeles County’s self-sufficiency standard hourly wage (\$24.03/hour).<sup>2</sup>

### **Educational Attainment**

- An associate degree is the typical entry-level education for the target occupations in this report, according to the Bureau of Labor Statistics (BLS).
- 34%-50% of workers in the field have completed some college or an associate degree, according to national educational attainment data.

### **Community college supply**

- Seven community colleges issued awards related to natural resources and/or environmental technology in the greater LA/OC region.
- 125 awards (degrees and certificates) were conferred on average each year between 2021 and 2023.

### **Other postsecondary supply**

- No educational institutions in the LA/OC region have conferred sub-baccalaureate awards in programs related to environmental technology over the past three years.

## **TARGET OCCUPATIONS**

LA COE prepared this report to provide regional labor market and postsecondary supply data related to middle-skill environmental technology occupations. [For full occupation descriptions, please see Appendix.](#)

- **Environmental Engineering Technologists and Technicians (17-3025)**<sup>3</sup>
- **Environmental Science and Protection Technicians, Including Health (19-4042)**<sup>4</sup>
- **Forest and Conservation Technicians (19-4071)**<sup>5</sup>

## **OCCUPATIONAL DEMAND**

Exhibit 1 shows the five-year occupational demand projections for these middle-skill environmental technology occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to increase by 5% through 2028. There will be more than 300 job openings per year through 2028 due to job growth and replacements. The majority of jobs in 2023 for these middle-skill environmental technology occupations (72%) were located in Los Angeles County.

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<sup>2</sup> Center for Women’s Welfare, University of Washington. (2024). *The self-sufficiency standard for California 2024*. <http://selfsufficiencystandard.org/California>.

<sup>3</sup> [Environmental Engineering Technologists and Technicians \(bls.gov\)](#)

<sup>4</sup> [Environmental Science and Protection Technicians \(bls.gov\)](#)

<sup>5</sup> [Forest and Conservation Technicians \(bls.gov\)](#)

**Exhibit 1: Current employment and occupational demand, Los Angeles and Orange counties<sup>6</sup>**

Geography	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	Annual Openings
Los Angeles	1,882	1,973	91	5%	221
Orange	718	756	37	5%	83
<b>Total</b>	<b>2,600</b>	<b>2,729</b>	<b>129</b>	<b>5%</b>	<b>305</b>

**Detailed Occupation Data**

Exhibit 2 displays the current employment and projected occupational demand for each of the target occupations in Los Angeles County. Positive scores for automation resilience<sup>7</sup> reflect a lower-than-average threat of the occupation(s) being replaced by automation, while negative scores reflect a greater-than-average risk of automation. The average percentage of workers aged 55+ across all occupations in the Los Angeles/Orange County region is 26%; occupations with a larger share of workers aged 55 and older typically have greater replacement needs to offset the amount of impending retirements.

**Exhibit 2: Detailed employment and occupational demand, Los Angeles County<sup>8</sup>**

Occupation	2023 Jobs	2028 Jobs	5-Yr % Change	Annual Openings	Automation Resilience	% Aged 55 and older
Environmental Engineering Technologists and Technicians	156	165	6%	16	7.6	26%
Environmental Science and Protection Technicians, Including Health	1,233	1,289	5%	139	11.5	19%
Forest and Conservation Technicians	494	519	5%	66	24.5	16%
<b>Total</b>	<b>1,882</b>	<b>1,973</b>	<b>5%</b>	<b>221</b>	<b>-</b>	<b>-</b>

<sup>6</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.

<sup>7</sup> Automation risk is calculated based on the percentage of time spent on high-risk compared to low-risk work, the number of high-risk jobs in compatible occupations, and the overall industry automation risk.

<sup>8</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.

## WAGES

The labor market endorsement in this report considers the entry-level hourly wages for these middle-skill environmental technology occupations in Los Angeles County as they relate to the county’s self-sufficiency standard wage. Orange County wages are included below to provide a complete analysis of the greater Los Angeles/Orange County region.

### Los Angeles County

The majority, 63%, of annual openings for these middle-skill environmental technology occupations have entry-level wages below the self-sufficiency standard wage for one adult (\$24.03 in Los Angeles County). Typical entry-level hourly wages are in a range between \$23.01 and \$28.41. (Exhibit 3).

Two occupations have entry-level wages above the self-sufficiency standard wage:

- *Forest and conservation technicians*, \$28.41
- *Environmental engineering technologists and technicians*, \$26.54

Experienced workers can expect to earn wages between \$39.40 and \$44.23, which are higher than the self-sufficiency standard.

#### Exhibit 3: Earnings for occupations in Los Angeles County

Occupation	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)	Median Annual Earnings*
Environmental Engineering Technologists and Technicians	\$26.54	\$34.47	\$44.23	\$71,700
Environmental Science and Protection Technicians, Including Health	\$23.01	\$29.05	\$39.40	\$60,400
Forest and Conservation Technicians	\$28.41	\$31.84	\$40.55	\$66,200

\*Rounded to the nearest \$100

### Orange County

All three occupations have entry-level wages below the self-sufficiency standard wage for one adult (\$27.13 in Orange County). Typical entry-level hourly wages range between \$22.28 and \$26.55 (Exhibit 4). Experienced workers can expect to earn wages between \$37.95 and \$43.86, which are higher than the self-sufficiency standard.

#### Exhibit 4: Earnings for occupations in Orange County

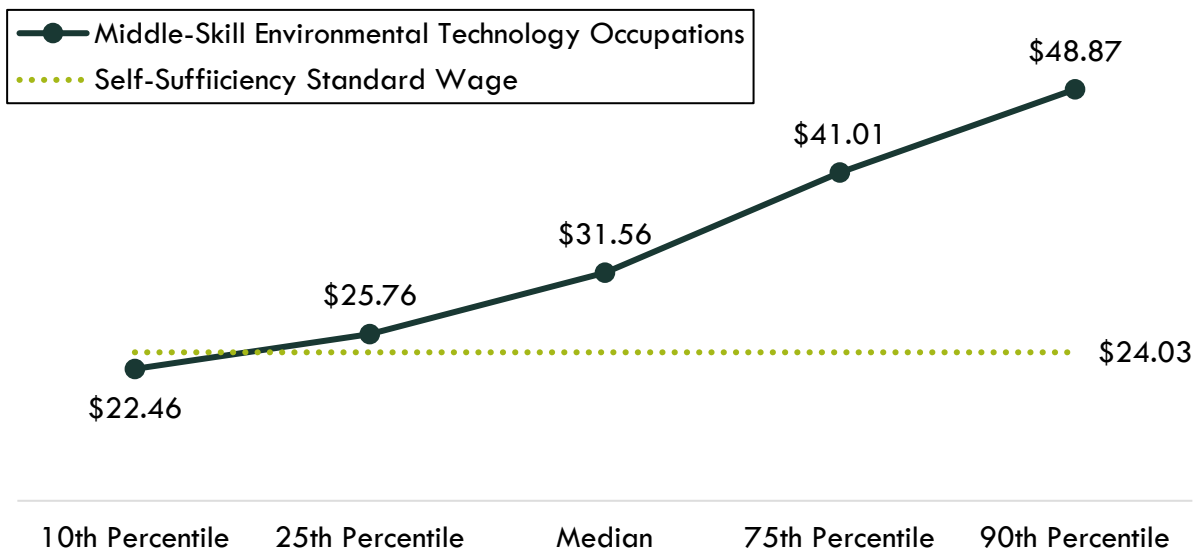
Occupation	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)	Median Annual Earnings*
Environmental Engineering Technologists and Technicians	\$26.47	\$34.28	\$43.86	\$71,300

Occupation	Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 <sup>th</sup> Percentile)	Median Annual Earnings*
Environmental Science and Protection Technicians, Including Health	\$22.28	\$28.12	\$38.11	\$58,500
Forest and Conservation Technicians	\$26.55	\$29.78	\$37.95	\$61,900

\*Rounded to the nearest \$100

Across the greater Los Angeles and Orange County region, the average entry-level hourly earnings for the occupations in this report are \$25.76; this is above the self-sufficiency standard wage for one single adult in Los Angeles County (\$24.03). Exhibit 5 shows the average hourly wage for the occupations in this report for entry-level to experienced workers.

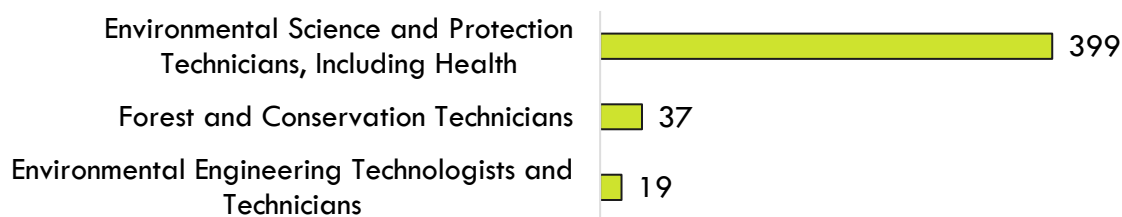
**Exhibit 5: Average hourly earnings for middle-skill environmental technology occupations, Los Angeles and Orange counties**



## JOB POSTINGS

There were 455 online job postings related to the target environmental technology occupations listed in the past 12 months in Los Angeles and Orange counties. Exhibit 6 displays the number of job postings by occupation. The majority of job postings (88%) were for *environmental science and protection technicians, including health*, followed by *forest and conservation technicians* (8%) and *environmental engineering technologists and technicians* (4%).

### Exhibit 6: Job postings by occupation (last 12 months), Los Angeles and Orange counties



Job postings were analyzed for the most common job titles, skills, and employers associated with the target occupations in this report (Exhibit 7).

### Exhibit 7: Most commonly requested job titles, skills and employers in job postings, Los Angeles and Orange counties

Top Job Titles	Top Skills	Top Employers
<ul style="list-style-type: none"> <li>Environmental technicians</li> <li>Environmental field technicians</li> <li>Environmental test technicians</li> <li>Environmental science interns</li> <li>Environmental laboratory technicians</li> <li>Environmental monitoring technicians</li> </ul>	<ul style="list-style-type: none"> <li>Occupational Safety and Health Administration (OSHA)</li> <li>Forklift truck</li> <li>Project management</li> <li>Environmental science</li> <li>Biology/chemistry</li> <li>Environmental monitoring</li> <li>Environmental tests</li> <li>Emergency response</li> </ul>	<ul style="list-style-type: none"> <li>Aerotek*</li> <li>Clean Earth</li> <li>Eurofins</li> <li>Harsco Corporation</li> <li>Clean Harbors</li> <li>Montrose Environmental Group</li> <li>Global Treks and Adventure</li> <li>Actalent</li> </ul>

\*Staffing company

In the greater Los Angeles/Orange County region, 54% of the middle-skill environmental technology job postings listed a minimum educational requirement. Exhibit 8 details the number and percentage of job postings by educational level.

### Exhibit 8: Education levels requested in job postings for middle-skill environmental technology occupations, Los Angeles and Orange counties

Education Level	Job Postings	% of Job Postings
Bachelor's degree	59	24%
Associate degree	36	15%
High school diploma or vocational training	150	61%

## EDUCATIONAL ATTAINMENT

The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for the occupations in this report (Exhibit 9). Furthermore, the national-level data indicates between 34% and 50% of workers in the field have completed some college or an associate degree as their highest level of educational attainment. The Bureau of Labor Statistics (BLS) lists the following typical entry-level education levels for the occupations in this report:

**Exhibit 9: Entry-level education preferred by employers nationally, Bureau of Labor Statistics**

Occupation	Education Level
Environmental Engineering Technologists and Technicians	Associate degree
Environmental Science and Protection Technicians, Including Health	Associate degree
Forest and Conservation Technicians	Associate degree

## EDUCATIONAL SUPPLY

### Community College Supply

Exhibit 10 shows the annual and three-year average number of awards conferred by community colleges in programs that have historically trained for the occupations of interest. The colleges with the most completions in the region are Santa Monica, Citrus, and Rio Hondo. Currently, there are no other postsecondary institutions in the greater LA/OC region that have conferred sub-baccalaureate awards for environmental technology-related name in the past three years.

**Exhibit 10: Regional community college awards (certificates and degrees), 2021-2023**

TOP Code	Program	College	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Average
0114.00	Forestry	Citrus	48	45	38	44
		<b>LA Subtotal</b>	<b>48</b>	<b>45</b>	<b>38</b>	<b>44</b>
		<b>Supply Subtotal/Average</b>	<b>48</b>	<b>45</b>	<b>38</b>	<b>44</b>
0115.00	Natural Resources	West LA	-	12	1	4
		<b>LA Subtotal</b>	<b>-</b>	<b>12</b>	<b>1</b>	<b>4</b>
		Saddleback	6	7	6	6
		<b>OC Subtotal</b>	<b>6</b>	<b>7</b>	<b>6</b>	<b>6</b>
		<b>Supply Subtotal/Average</b>	<b>48</b>	<b>45</b>	<b>38</b>	<b>44</b>
0303.00	Environmental Technology	Rio Hondo	4	14	11	10
		Santa Monica	74	57	30	54
		<b>LA Subtotal</b>	<b>78</b>	<b>71</b>	<b>41</b>	<b>63</b>
		Irvine	9	8	1	6
		Saddleback	-	1	-	0
		Santiago Canyon	-	2	2	1

TOP Code	Program	College	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Average
		<b>OC Subtotal</b>	<b>9</b>	<b>11</b>	<b>3</b>	<b>8</b>
		<b>Supply Subtotal/Average</b>	<b>87</b>	<b>82</b>	<b>44</b>	<b>71</b>
		<b>Supply Total/Average</b>	<b>141</b>	<b>146</b>	<b>89</b>	<b>125</b>

## Other Postsecondary Supply

For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that provide training programs for middle-skill environmental technology occupations. In the past three years, there have been no sub-baccalaureate awards conferred in the related TOP Codes:

- Agroecology and Sustainable Architecture (0103.08)
- Natural Resources/Conservation, General (0301.01)
- Forestry, General (0305.01)
- Forest Technology/Technician (0305.11)
- Forestry, Other (0305.99)
- Environmental Engineering Technology/Environmental Technology (1505.07)

University of California-Irvine offers a Master of Science degree in Conservation and Restoration Science. However, students graduating from this program would be overqualified for the middle-skill target occupations in this report.

## APPENDIX: OCCUPATION DESCRIPTIONS

LA COE prepared this report to provide regional labor market supply and demand data related to these target occupations:

- **Environmental Engineering Technologists and Technicians (17-3025)** Apply theory and principles of environmental engineering to modify, test, and operate equipment and devices used in the prevention, control, and remediation of environmental problems, including waste treatment and site remediation, under the direction of engineering staff or scientists. May assist in the development of environmental remediation devices.<sup>9</sup>
- **Environmental Science and Protection Technicians, Including Health (19-4042)** Perform laboratory and field tests to monitor the environment and investigate sources of pollution, including those that affect health, under the direction of an environmental scientist, engineer, or other specialist. May collect samples of gases, soil, water, and other materials for testing.<sup>10</sup>
- **Forest and Conservation Technicians (19-4071)** Provide technical assistance regarding the conservation of soil, water, forests, or related natural resources. May compile data pertaining to size, content, condition, and other characteristics of forest tracts under the

<sup>9</sup> [Environmental Engineering Technologists and Technicians \(bls.gov\)](https://www.bls.gov)

<sup>10</sup> [Environmental Science and Protection Technicians \(bls.gov\)](https://www.bls.gov)



direction of foresters, or train and lead forest workers in forest propagation and fire prevention and suppression. May assist conservation scientists in managing, improving, and protecting rangelands and wildlife habitats.<sup>11</sup>

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**DATA SOURCES**



POWERED BY



- O\*NET Online
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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<sup>11</sup> [Forest and Conservation Technicians \(bls.gov\)](https://www.bls.gov)