

BOOK OF GREEN JOBS

A GUIDE TO MIDDLE-SKILL CLIMATE-READY JOBS IN LOS ANGELES COUNTY



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A Selection of Climate-Ready Jobs

In the evolving green economy of Los Angeles County, identifying middle-skill occupations with strong growth potential is key to addressing workforce demands and aligning educational programs with future needs. This section highlights occupations within the green sector that are closely tied to community college programs and projected to see an increase in job openings over the next five years. Employment trends and industries driving hiring are explored, along with how emerging technologies are shaping the required skills for each role.

The full report further examines the role of community colleges in preparing students for these occupations, including program completion rates and the challenges faced in meeting workforce demands, such as funding limitations and employer perceptions of program quality.

This analysis aims to provide a clear understanding of how Los Angeles County can position its workforce for new opportunities in sustainability-driven industries. By focusing on employment projections, technological integration, and education pathways, we highlight both opportunities and challenges in building a workforce prepared for the region's green economy.

The full report also includes a detailed supply-side analysis of the community college system, comparing industry growth forecasts with the availability of middle-skill labor, including graduates and program participants. We project the supply-demand balance using crosswalks between occupations and educational programs, with findings that will help guide curriculum development and resource allocation. For a detailed list of all green occupations discussed, refer to **Exhibit A-1** in the Appendix of the complete report.



Steppingstone Occupations

The Steppingstone Occupations section of the report delves into specific green jobs within Los Angeles County that typically require a high school diploma or equivalent education level but are frequently filled by community college graduates. This section provides an in-depth analysis of various occupations that are essential to the county's transition to a green economy. It details the roles, skills, and qualifications necessary for these jobs, offering valuable insights into labor market trends, job openings, and earning potential. By focusing on steppingstone occupations, this section emphasizes the critical role that community colleges play in preparing individuals to excel in these positions. It highlights the pathways available for students and graduates to enter or advance within the green workforce, underlining the importance of these roles in achieving sustainability goals and fostering economic growth in the region.

Exhibit 2: Target Steppingstone Occupations

Typical Entry Level Education: High School Diploma or Equivalent

SOC Code	Description	2022 Jobs	2022 Median Hourly Earnings	2028 Jobs	2022-2028 Forecasted Growth	2022-2028 Change in Jobs	2022-2028 Replacement Jobs	2022-2028 Job Openings	2022-2028 Percent Net Change in Jobs	Percent of 2022 Jobs in Green Sectors
47-2111	Electricians	15,185	\$33.03	15,820	4.2%	630	7,990	8,620	56.8%	60.1%
47-2152	Plumbers, Pipefitters, and Steamfitters	10,368	\$27.42	11,320	9.1%	950	5,590	6,540	63.1%	10.5%
51-4121	Welders, Cutters, Solderers, and Brazers	6,921	\$23.27	6,470	-6.6%	-450	3,820	3,370	48.7%	8.6%
47-4011	Construction and Building Inspectors	3,216	\$39.49	3,390	5.3%	170	2,250	2,420	75.2%	6.0%
47-4041	Hazardous Materials Removal Workers	1,671	\$23.90	1,930	15.2%	250	1,170	1,420	85.0%	77.1%
51-8031	Water and Wastewater Treatment Plant and System Operators	1,652	\$38.55	1,560	-5.6%	-90	870	780	47.2%	10.8%

Note: The '2022-2028 Percent Net Change in Jobs' is calculated as the total job openings from 2022 to 2028 expressed as a percentage of the total jobs in 2022. Total job openings include the '2022-2028 Change in Jobs' (growth or decline in total employment) and the '2022-2028 Replacement Jobs' (positions needing to be filled due to retirements or worker turnover). The formula is: $[(2022-2028 \text{ Change in Jobs} + 2022-2028 \text{ Replacement Jobs}) \div 2022 \text{ Jobs}] \times 100$.

Electricians

(SOC 47-2111)

Electricians are considered a green occupation due to their role in installing and maintaining systems that enhance energy efficiency and support renewable energy, such as solar panels and smart grids. To further integrate into the green sector, electricians can specialize in emerging technologies like energy storage, EV charging infrastructure, and advanced energy-efficient systems. Community colleges in Los Angeles County offer relevant certifications and degrees, such as the **Solar PV Installation and Maintenance Certificate, Energy Efficiency Technician Degree, and Advanced Transportation Technology**. Additionally, the **Electric Vehicle Infrastructure Training Program (EVITP)** provides training and certification for electricians installing electrical vehicle supply equipment. These programs help electricians stay at the forefront of green technology advancements.

Community College Talent Supply

Electrical

- ▶ **TOP code:** 0952.20
- ▶ **Description:** Installation, operation, maintenance and repair of electrical systems in buildings, including residential, commercial, and industrial electric power wiring and motors, controls, and electrical-distribution panels.

Strong Workforce Program (SWP) Statistics:	
Students with a Job Closely Related to Their Field of Study, 2019-20	63%
Median Annual Earnings for Exiting Students, 2020-21	\$49,684
Median Change in Earnings for Exiting Students, 2020-21	20%
SWP Exiting Students Who Attained the Living Wage, 2020-21	66%

Occupational Overview

Employment in Industry 2022: 15,185 workers
Percent of Jobs Identified as Middle-Skill: 46.0%
Median Hourly Wages \$33.03 per hour
Typical Entry-Level Education HS diploma or equiv.
Work Experience Required None
Typical On-the-Job Training Apprenticeship

Occupational Projections 2022 to 2028

Newly Created Jobs 630 new jobs (4.2%)
Replacement Jobs 7,990 openings
Net Job Openings 8,620 jobs
2022-2028 Percent Net Change 56.8%

Exhibit 3: Electrical Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Cerritos College		●	
L.A. Trade Technical College		●	●

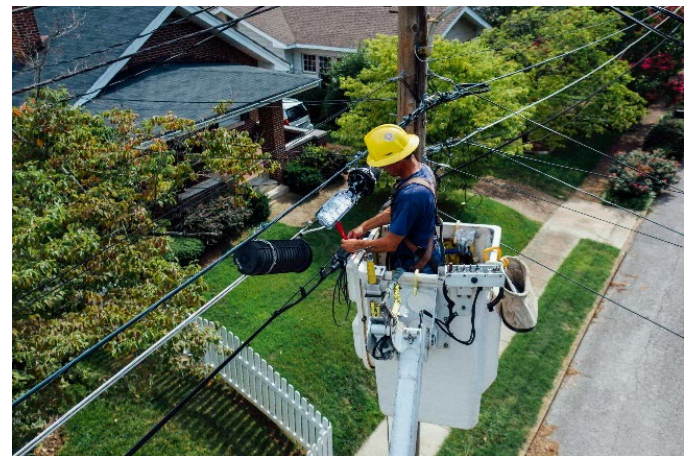


Exhibit 4: Gender, 2022-23



Exhibit 5: Race and Ethnicity, 2022-23

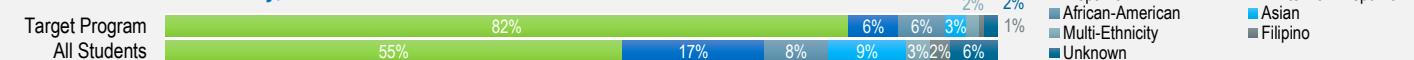
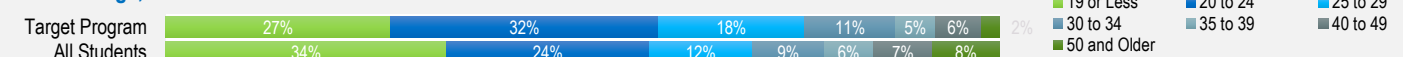


Exhibit 6: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Plumbers, Pipefitters, and Steamfitters

(SOC 47-2152)

Plumbers, pipefitters, and steamfitters are considered a green occupation because they install and maintain systems that conserve water and improve energy efficiency, such as high-efficiency boilers and solar water heaters. To further integrate into the green sector, these professionals can focus on advanced water conservation systems, like greywater recycling and rainwater harvesting, as well as eco-friendly heating solutions like geothermal systems. Community colleges in Los Angeles County offer relevant certifications that are considered green by California Employment Development Department, such as the **Plumbing Certificate** and **Heat and Frost Insulators Certificate**, which equip these tradespeople with the skills needed to support sustainable practices and technologies.

Community College Talent Supply

Plumbing, Pipefitting, and Steamfitting

- ▶ **TOP code:** 0952.30
- ▶ **Description:** Theories, principles, methods, technical skills and use of equipment in plumbing, pipefitting, and steamfitting.

Strong Workforce Program (SWP) Statistics:	
Students with a Job Closely Related to Their Field of Study, 2019-20	92%
Median Annual Earnings for Exiting Students, 2020-21	\$49,276
Median Change in Earnings for Exiting Students, 2020-21	3%
SWP Exiting Students Who Attained the Living Wage, 2020-21	68%

Occupational Overview

Employment in Industry 2022: 10,368 workers

Percent of Jobs Identified as Middle-Skill: 33.6%

Median Hourly Wages \$27.42 per hour

Typical Entry-Level Education HS diploma or equiv.

Work Experience Required None

Typical On-the-Job Training Apprenticeship

Occupational Projections 2022 to 2028

Newly Created Jobs 950 new jobs (9.1%)

Replacement Jobs 5,590 openings

Net Job Openings 6,540 jobs

2022-2028 Percent Net Change 63.1%

Exhibit 10: Plumbing, Pipefitting, and Steamfitting Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
L.A. Trade Technical College		●	●
Rio Hondo College		●	●



Exhibit 11: Gender, 2022-23



Exhibit 12: Race and Ethnicity, 2022-23

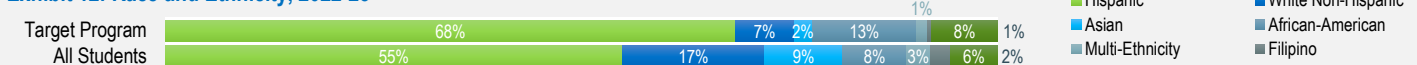
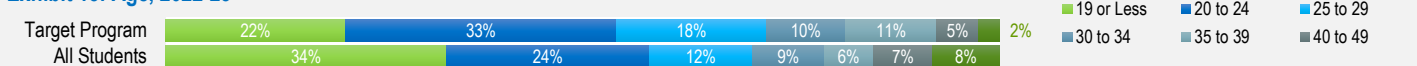


Exhibit 13: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Welders, Cutters, Solderers, and Brazers

(SOC 51-4121)

Welders, cutters, solderers, and brazers are considered a green occupation because they contribute to building sustainable infrastructure, such as wind turbines and solar panel frames. To further integrate into the green sector, they can adopt eco-friendly materials, reduce waste with precision techniques, and focus on producing components for green technologies. Community colleges in Los Angeles County offer relevant programs, like the **Advanced Manufacturing Technology Certificate**, which equip welders with skills to support environmentally sustainable practices.

Community College Talent Supply

Welding Technology

- ▶ **TOP code:** 0956.50
- ▶ **Description:** Welding techniques, processes, and equipment applied in accordance with diagrams, blueprints, or other specifications.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	70%
Median Annual Earnings for Exiting Students, 2020-21	\$45,740
Median Change in Earnings for Exiting Students, 2020-21	39%
SWP Exiting Students Who Attained the Living Wage, 2020-21	59%

Occupational Overview

Employment in Industry 2022:..... 6,921 workers
 Percent of Jobs Identified as Middle-Skill:..... 31.1%
 Median Hourly Wages..... \$23.27 per hour
 Typical Entry-Level Education..... HS diploma or equiv.
 Work Experience Required None
 Typical On-the-Job Training Moderate-term

Occupational Projections 2022 to 2028

Newly Created Jobs..... -450 new jobs (-6.6%)
 Replacement Jobs 3,820 openings
 Net Job Openings 3,370 jobs
 2022-2028 Percent Net Change..... 48.7%

Exhibit 17: Welding Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Cerritos College	●	●	●
Compton College			●
El Camino College		●	●
Glendale Community College		●	●
L.A. Pierce College		●	●
L.A. Trade Technical College		●	●
Long Beach City College	●	●	●
Mt. San Antonio College	●	●	●
Pasadena City College		●	●
Rio Hondo College		●	●



Exhibit 18: Gender, 2022-23

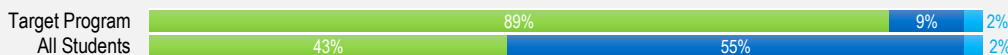


Exhibit 19: Race and Ethnicity, 2022-23

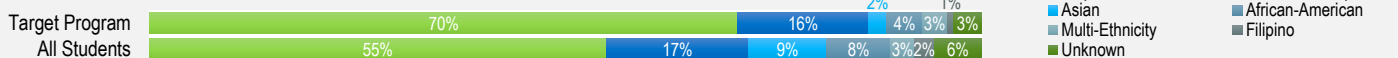
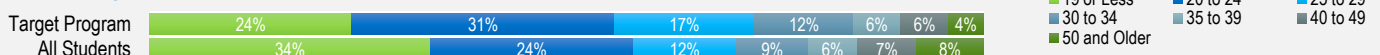


Exhibit 20: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Construction and Building Inspectors

(SOC 47-4011)

Construction and building inspectors are considered a green occupation because they ensure compliance with environmental regulations and sustainability standards in building projects. To further integrate into the green sector, inspectors can obtain certifications like the **Sustainable Building Construction Certificate**, **Sustainable Construction Management Program**, and the **Leadership in Energy and Environmental Design (LEED)** course offered by community colleges in Los Angeles County. These programs equip inspectors with the knowledge to enforce green building practices, energy efficiency, and the use of sustainable materials.

Community College Talent Supply

Construction Inspection

- ▶ **TOP code:** 0957.20
- ▶ **Description:** Inspection of new or remodeled structures to determine their soundness and compliance to specifications, building codes and other regulations.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	80%
Median Annual Earnings for Exiting Students, 2020-21	\$61,624
Median Change in Earnings for Exiting Students, 2020-21	26%
SWP Exiting Students Who Attained the Living Wage, 2020-21	60%

Occupational Overview

Employment in Industry 2022:..... 3,216 workers
Percent of Jobs Identified as Middle-Skill:..... 40.7%
Median Hourly Wages..... \$39.49 per hour
Typical Entry-Level Education..... HS diploma or equiv.
Work Experience Required 5 years or more
Typical On-the-Job Training Moderate-term

Occupational Projections 2022 to 2028

Newly Created Jobs..... 170 new jobs (5.3%)
Replacement Jobs 2,250 openings
Net Job Openings 2,420 jobs
2022-2028 Percent Net Change..... 75.2%

Exhibit 24: Construction Inspection Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Pasadena City College		●	●

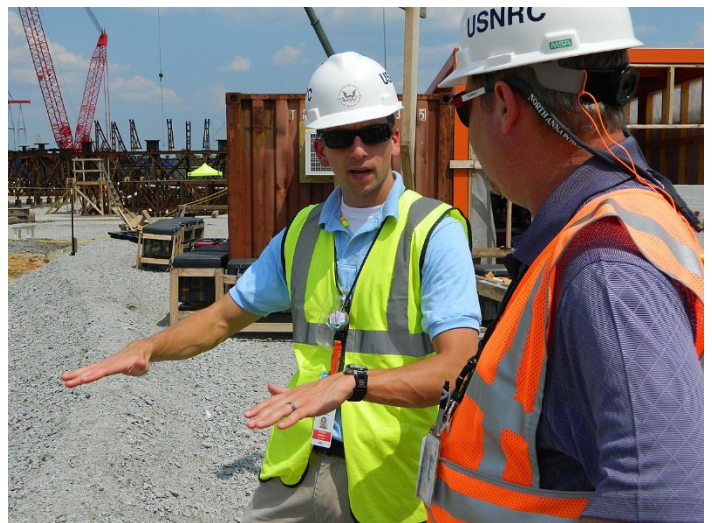


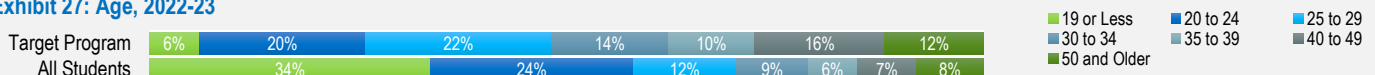
Exhibit 25: Gender, 2022-23



Exhibit 26: Race and Ethnicity, 2022-23



Exhibit 27: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Hazardous Materials Removal Workers

(SOC 47-4041)

Hazardous materials removal workers are considered a green occupation because they safely remove and dispose of hazardous materials, preventing environmental harm. To further integrate into the green sector, workers can specialize in eco-friendly disposal methods and advanced recycling techniques. Community colleges in Los Angeles County offer relevant programs like the **Hazardous Waste Management Certificate** and **Environmental Technology Certificate**, which equip workers with sustainable practices to minimize environmental impact.

Community College Talent Supply

Environmental Technology

- ▶ **TOP code:** 0303.00
- ▶ **Description:** Environmental management, monitoring, assessment, and restoration, including environmental pollution control systems and the management of hazardous materials and hazardous waste, and related government regulations.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	88%
Median Annual Earnings for Exiting Students, 2020-21	\$45,376
Median Change in Earnings for Exiting Students, 2020-21	17%
SWP Exiting Students Who Attained the Living Wage, 2020-21	58%

Occupational Overview

Employment in Industry 2022:..... 1,671 workers
 Percent of Jobs Identified as Middle-Skill:..... 34.0%
 Median Hourly Wages..... \$23.90 per hour
 Typical Entry-Level Education..... HS diploma or equiv.
 Work Experience Required None
 Typical On-the-Job Training Moderate-term

Occupational Projections 2022 to 2028

Newly Created Jobs..... 250 new jobs (15.2%)
 Replacement Jobs 1,170 openings
 Net Job Openings 1,420 jobs
 2022-2028 Percent Net Change..... 85.0%

Exhibit 31: Environmental Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Mt. San Antonio College		●	
Rio Hondo College		●	●
Santa Monica College	●	●	●



Exhibit 32: Gender, 2022-23



Exhibit 33: Race and Ethnicity, 2022-23

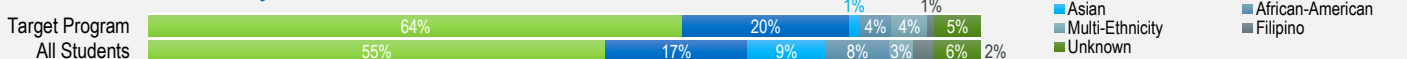
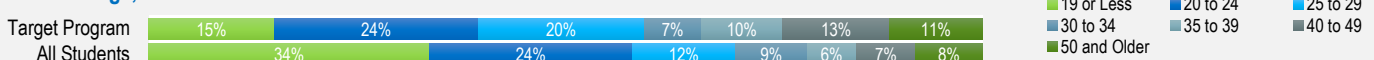


Exhibit 34: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Water and Wastewater Treatment Plant and System Operators

(SOC 51-8031)

Water and wastewater treatment plant and system operators are considered a green occupation because they manage water quality and treatment processes, crucial for preventing pollution and ensuring sustainable water use. To further integrate into the green sector, operators can adopt energy-efficient technologies, enhance water recycling methods, and reduce chemical usage. Community colleges in Los Angeles County offer relevant programs like the **Environmental Technology Certificate**, and **Water Efficiency Management Certificate** which equip operators with the skills to optimize sustainability in water management.

Community College Talent Supply

Water and Wastewater Technology

- ▶ **TOP code:** 0958.00
- ▶ **Description:** Principles, technical skills and equipment used to process, purify, store and distribute potable water, and dispose of wastewater. Design, construction, operation, and maintenance of equipment for water or wastewater treatment systems.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	80%
Median Annual Earnings for Exiting Students, 2020-21	\$55,362
Median Change in Earnings for Exiting Students, 2020-21	17%
SWP Exiting Students Who Attained the Living Wage, 2020-21	70%

Occupational Overview

Employment in Industry 2022:..... 1,652 workers
Percent of Jobs Identified as Middle-Skill:..... 45.7%
Median Hourly Wages..... \$38.55 per hour
Typical Entry-Level Education..... HS diploma or equiv.
Work Experience Required None
Typical On-the-Job Training Long-term

Occupational Projections 2022 to 2028

Newly Created Jobs..... -90 new jobs (-5.6%)
Replacement Jobs 870 openings
Net Job Openings 780 jobs
2022-2028 Percent Net Change..... 47.2%

Exhibit 38: Water and Wastewater Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Citrus College		●	●
L.A. Trade Technical College		●	●



Exhibit 39: Gender, 2022-23



Exhibit 40: Race and Ethnicity, 2022-23



Exhibit 41: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Middle-Skill Occupations

The Middle-Skill Occupations section of this report provides a comprehensive examination of various green jobs in Los Angeles County that require education beyond a high school diploma but less than a four-year degree. This section focuses on middle-skill occupations crucial for advancing the region's green economy. It offers detailed profiles of these jobs, including descriptions, necessary skills, educational requirements, and career prospects. By spotlighting these occupations, the section aims to inform job seekers, educators, and policymakers about the specific roles that support environmental sustainability and economic resilience. It also highlights the pathways available for community college graduates and others seeking to enter or advance in these vital sectors.

Exhibit 45: Target Middle-Skill Occupations

Typical Entry Level Education: Associate degree / Postsecondary Nondegree Award / Some college, no degree

SOC Code	Description	2022 Jobs	2022 Median Hourly Earnings	2028 Jobs	2022-2028 Forecasted Growth	2022-2028 Change in Jobs	2022-2028 Replacement Jobs	2022-2028 Job Openings	2022-2028 Percent Net Change in Jobs	Percent of 2022 Jobs in Green Sectors
49-3023	Automotive Service Technicians and Mechanics	17,020	\$25.61	16,680	-2.0%	-350	8,390	8,040	47.2%	28.9%
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	7,449	\$27.32	7,310	-1.9%	-140	3,560	3,420	45.9%	3.1%
17-3023	Electrical and Electronic Engineering Technologists and Technicians	2,895	\$32.74	2,720	-6.2%	-180	1,600	1,420	49.0%	6.7%
17-3011	Architectural and Civil Drafters	2,972	\$29.27	3,160	6.2%	180	1,720	1,900	63.9%	7.3%
19-4042	Environmental Science and Protection Technicians, Including Health	1,246	\$25.45	1,300	4.0%	50	760	810	65.0%	4.9%
17-3022	Civil Engineering Technologists and Technicians	1,209	\$37.90	1,250	2.8%	30	660	690	57.1%	3.7%
17-3027	Mechanical Engineering Technologists and Technicians	928	\$33.72	900	-3.1%	-30	490	460	49.6%	2.3%
17-3026	Industrial Engineering Technologists and Technicians	743	\$36.19	890	18.8%	140	460	600	80.7%	2.4%

Note: The '2022-2028 Percent Net Change in Jobs' is calculated as the total job openings from 2022 to 2028 expressed as a percentage of the total jobs in 2022. Total job openings include the '2022-2028 Change in Jobs' (growth or decline in total employment) and the '2022-2028 Replacement Jobs' (positions needing to be filled due to retirements or worker turnover). The formula is: $[(2022-2028 \text{ Change in Jobs} + 2022-2028 \text{ Replacement Jobs}) \div 2022 \text{ Jobs}] \times 100$.

Automotive Service Technicians and Mechanics

(SOC 49-3023)

Automotive service technicians and mechanics are considered a green occupation because they work on energy-efficient vehicles, including hybrids and EVs, supporting the shift to cleaner transportation. To further integrate into the green sector, technicians can specialize in electric vehicle technology and alternative fuel systems. Community colleges in Los Angeles County offer programs like the **Alternative Fuels and Advanced Transportation Technology Certificate** and **Clean Energy and Vehicle Electrification Technology Certificate**, equipping technicians with the skills to excel in green automotive technologies.

Community College Talent Supply

Automotive Technology

- ▶ **TOP code:** 0948.00
- ▶ **Description:** The servicing, maintenance, and diagnosis of malfunctions, and repair and overhaul of components.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	60%
Median Annual Earnings for Exiting Students, 2020-21	\$34,940
Median Change in Earnings for Exiting Students, 2020-21	49%
SWP Exiting Students Who Attained the Living Wage, 2020-21	42%

Occupational Overview

Employment in Industry 2022:..... 17,020 workers
Percent of Jobs Identified as Middle-Skill:..... 35.3%
Median Hourly Wages..... \$25.61 per hour
Typical Entry-Level Education..... Postsecondary nondegree award
Work Experience Required None
Typical On-the-Job Training Short-term

Occupational Projections 2022 to 2028

Newly Created Jobs..... -350 new jobs (-2.0%)
Replacement Jobs 8,390 openings
Net Job Openings 8,040 jobs
2022-2028 Percent Net Change..... 47.2%

Exhibit 46: Automotive Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Cerritos College		●	●
Citrus College	●	●	●
Compton College		●	●
East LA College	●	●	●
El Camino College		●	●
L.A. Pierce College		●	●
L.A. Trade Technical College	●	●	●
Long Beach City College	●	●	●
Pasadena City College		●	●
Rio Hondo College*		●	●

*Note: Rio Hondo also offers a Bachelor's Degree program.



Exhibit 47: Gender, 2022-23



Exhibit 48: Race and Ethnicity, 2022-23

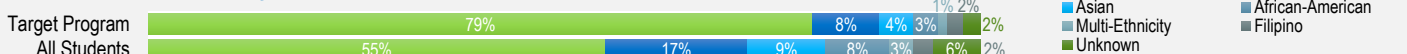


Exhibit 49: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Heating, Air Conditioning, and Refrigeration Mechanics and Installers

(SOC 49-9021)

Heating, air conditioning, and refrigeration mechanics and installers are considered a green occupation because they install and maintain energy-efficient HVAC systems that reduce energy use and emissions. To further integrate into the green sector, technicians can specialize in advanced systems with low-impact refrigerants and smart technologies. Community colleges in Los Angeles County offer programs like the **Energy Efficiency Technician Certificate**, equipping technicians with skills to enhance sustainability in their work.

Community College Talent Supply

Environmental Control Technology

- ▶ **TOP code:** 0946.00
- ▶ **Description:** Assembly, installation, operation, maintenance, and repair of air conditioning, heating, and refrigeration systems.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	64%
Median Annual Earnings for Exiting Students, 2020-21	\$43,576
Median Change in Earnings for Exiting Students, 2020-21	19%
SWP Exiting Students Who Attained the Living Wage, 2020-21	59%

Occupational Overview

Employment in Industry 2022:..... 7,449 workers
 Percent of Jobs Identified as Middle-Skill:..... 44.6%
 Median Hourly Wages..... \$27.32 per hour
 Typical Entry-Level Education..... Postsecondary nondegree award
 Work Experience Required None
 Typical On-the-Job Training Long-term

Occupational Projections 2022 to 2028

Newly Created Jobs..... -140 new jobs (-1.9%)
 Replacement Jobs 3,560 openings
 Net Job Openings 3,420 jobs
 2022-2028 Percent Net Change..... 45.9%

Exhibit 53: Environmental Control Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Citrus College	●		
Compton College		●	●
El Camino College		●	●
L.A. Trade Technical College		●	●
Mt. San Antonio College		●	●



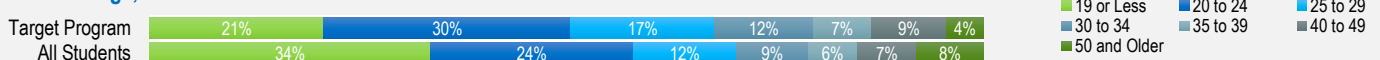
Exhibit 54: Gender, 2022-23



Exhibit 55: Race and Ethnicity, 2022-23



Exhibit 56: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Electrical and Electronic Engineering Technologists and Technicians

(SOC 17-3023)

Electrical and electronic engineering technologists and technicians are considered a green occupation because they develop and maintain systems crucial for renewable energy and energy efficiency, such as components for solar panels and smart grids. To further integrate into the green sector, they can specialize in renewable energy technologies and energy-efficient electronics. Community colleges in Los Angeles County offer programs like the **Renewable Energy Technician Certificate** and **Energy Efficiency Technician Certificate**, which equip them with the skills to advance sustainability in their field.

Community College Talent Supply

Electronics and Electric Technology

- ▶ **TOP code:** 0934.00
- ▶ **Description:** Theory and application of electric and electronic systems and components, including circuits, electro-magnetic fields, energy sources, communications devices, radio, and television circuits, computers, and other electric and electronic components and devices.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	54%
Median Annual Earnings for Exiting Students, 2020-21	\$44,246
Median Change in Earnings for Exiting Students, 2020-21	22%
SWP Exiting Students Who Attained the Living Wage, 2020-21	58%

Occupational Overview

Employment in Industry 2022:..... 2,895 workers
Percent of Jobs Identified as Middle-Skill:..... 60.5%
Median Hourly Wages:..... \$32.74 per hour
Typical Entry-Level Education:..... Associate degree
Work Experience Required None
Typical On-the-Job Training None

Occupational Projections 2022 to 2028

Newly Created Jobs..... -180 new jobs (-6.2%)
Replacement Jobs 1,600 openings
Net Job Openings 1,420 jobs
2022-2028 Percent Net Change..... 49.0%

Exhibit 60: Electronics and Electrical Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
East LA College	●		
El Camino College		●	●
Glendale Community College		●	●
L.A. Pierce College		●	●
L.A. Southwest College			●
L.A. Trade Technical College		●	
L.A. Valley College	●	●	●
Long Beach City College	●	●	●
Mt. San Antonio College	●	●	●
Pasadena City College		●	●
Rio Hondo College		●	●



Exhibit 61: Gender, 2022-23

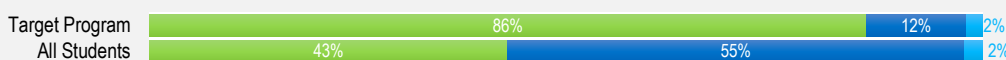


Exhibit 62: Race and Ethnicity, 2022-23



Exhibit 63: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Architectural and Civil Drafters

(SOC 17-3011)

Architectural and civil drafters are considered a green occupation because they design plans for sustainable buildings and infrastructure. To further integrate into the green sector, drafters can specialize in green building practices, such as LEED standards, and advanced technologies like Building Information Modeling (BIM). Community colleges in Los Angeles County offer programs like the **Architectural Technology and Environmental Design Certificate**, and the **Sustainable Building Program**, and the **Leadership in Energy and Environmental Design (LEED)** course equipping drafters to contribute to environmentally responsible construction.

Community College Talent Supply

Architecture and Architectural Technology

- ▶ **TOP code:** 0201.00
- ▶ **Description:** Planning, organization, and enclosure of space for functional and esthetic purposes, including the design of structures, testing of materials, estimating, environmental impact studies, and dealing with contracts and specifications.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	76%
Median Annual Earnings for Exiting Students, 2020-21	\$36,692
Median Change in Earnings for Exiting Students, 2020-21	26%
SWP Exiting Students Who Attained the Living Wage, 2020-21	48%



Occupational Overview

Employment in Industry 2022:..... 2,972 workers
Percent of Jobs Identified as Middle-Skill:..... 58.3%
Median Hourly Wages:..... \$29.27 per hour
Typical Entry-Level Education:..... Associate degree
Work Experience Required None
Typical On-the-Job Training None

Occupational Projections 2022 to 2028

Newly Created Jobs..... 180 new jobs (6.2%)
Replacement Jobs 1,720 openings
Net Job Openings 1,900 jobs
2022-2028 Percent Net Change..... 63.9%

Exhibit 67: Architecture and Architectural Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Cerritos College		●	●
Citrus College			●
East LA College		●	●
El Camino College		●	●
Glendale Community College	●	●	●
L.A. Harbor College		●	●
L.A. Pierce College		●	●
L.A. Trade Technical College		●	●
L.A. Valley College		●	
Long Beach City College	●	●	●
Mt. San Antonio College	●	●	●
Pasadena City College			●
Rio Hondo College		●	●
Santa Monica College		●	●
West Los Angeles College		●	

Exhibit 68: Gender, 2022-23



Exhibit 69: Race and Ethnicity, 2022-23



Exhibit 70: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Alternate Community College Program

Drafting Technology

- ▶ **TOP code:** 0953.00
- ▶ **Description:** Planning, preparation, and interpretation of various engineering sketches for design and drafting duties, for circuits, machines, structures, weldments, or architectural plans. Includes the application of advanced computer software and hardware (Computer Assisted Drafting and Computer Assisted Design) to the creation of graphic representations and simulations in support of engineering projects.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	68%
Median Annual Earnings for Exiting Students, 2020-21	\$45,474
Median Change in Earnings for Exiting Students, 2020-21	20%
SWP Exiting Students Who Attained the Living Wage, 2020-21	48%

Exhibit 71: Drafting Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Cerritos College		●	●
Citrus College		●	●
East LA College		●	●
El Camino College		●	●
Glendale Community College	●		
L.A. Mission College		●	
L.A. Pierce College		●	●
L.A. Valley College		●	
Long Beach City College	●		●
Mt. San Antonio College		●	●
Pasadena City College		●	●
Rio Hondo College		●	

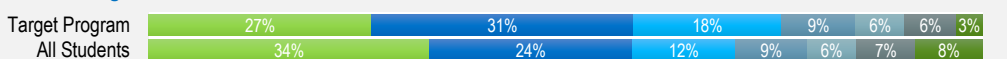
Exhibit 72: Gender, 2022-23



Exhibit 73: Race and Ethnicity, 2022-23



Exhibit 74: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Environmental Science and Protection Technicians, Including Health

(SOC 19-4042)

Environmental science and protection technicians, including health, are considered a green occupation because they monitor environmental conditions to protect public health and ecosystems. To further integrate into the green sector, technicians can specialize in areas like climate change adaptation and advanced pollution control. Community colleges in Los Angeles County offer programs like the **Sustainability Services Technician Certificate**, equipping them with the skills to enhance their role in environmental protection.

Community College Talent Supply

Environmental Technology

- ▶ **TOP code:** 0303.00
- ▶ **Description:** Environmental management, monitoring, assessment, and restoration, including environmental pollution control systems and the management of hazardous materials and hazardous waste, and related government regulations.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	88%
Median Annual Earnings for Exiting Students, 2020-21	\$45,376
Median Change in Earnings for Exiting Students, 2020-21	17%
SWP Exiting Students Who Attained the Living Wage, 2020-21	58%

Occupational Overview

Employment in Industry 2022:..... 1,246 workers
Percent of Jobs Identified as Middle-Skill:..... 34.2%
Median Hourly Wages:..... \$25.45 per hour
Typical Entry-Level Education:..... Associate degree
Work Experience Required:..... None
Typical On-the-Job Training:..... None

Occupational Projections 2022 to 2028

Newly Created Jobs:..... 50 new jobs (4.0%)
Replacement Jobs:..... 760 openings
Net Job Openings:..... 810 jobs
2022-2028 Percent Net Change:..... 65.0%

Exhibit 77: Environmental Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Mt. San Antonio College		●	
Rio Hondo College		●	●
Santa Monica College	●	●	●



Exhibit 78: Gender, 2022-23



Exhibit 79: Race and Ethnicity, 2022-23

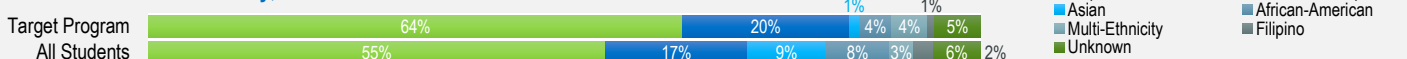
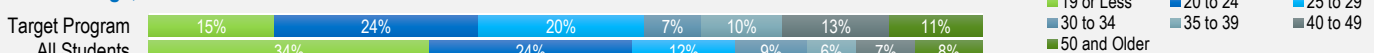


Exhibit 80: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Civil Engineering Technologists and Technicians

(SOC 17-3022)

Civil engineering technologists and technicians are considered a green occupation because they support the development of sustainable infrastructure, including energy-efficient buildings and eco-friendly transportation systems. To further integrate into the green sector, they can specialize in integrating renewable energy and sustainable materials into projects. Community colleges in Los Angeles County offer programs like the **Sustainable Construction Management Certificate** and the **Leadership in Energy and Environmental Design (LEED)** course, equipping them to contribute to environmentally responsible infrastructure development.

Occupational Overview

Employment in Industry 2022:..... 1,209 workers
Percent of Jobs Identified as Middle-Skill:..... 50.1%
Median Hourly Wages:..... \$37.90 per hour
Typical Entry-Level Education:..... Associate degree
Work Experience Required None
Typical On-the-Job Training None

Occupational Projections 2022 to 2028

Newly Created Jobs..... 30 new jobs (2.8%)
Replacement Jobs 660 openings
Net Job Openings 690 jobs
2022-2028 Percent Net Change..... 57.1%

Community College Talent Supply

Engineering Technology, General

- ▶ **TOP code:** 0924.00
- ▶ **Description:** Technical support of engineering, including the use of civil and mechanical engineering principles, physical sciences, basic physics, mathematics, surveying, materials testing, hydraulics and pneumatics, and the preparation of plans, specifications, and engineering reports.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	75%
Median Annual Earnings for Exiting Students, 2020-21	\$39,724
Median Change in Earnings for Exiting Students, 2020-21	44%
SWP Exiting Students Who Attained the Living Wage, 2020-21	54%

Exhibit 84: Engineering Technology, General Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Cerritos College		●	●
Compton College		●	
East LA College		●	●
El Camino College		●	●
Long Beach City College		●	●
Mt. San Antonio College		●	●
Pasadena City College		●	●



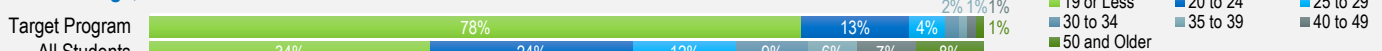
Exhibit 85: Gender, 2022-23



Exhibit 86: Race and Ethnicity, 2022-23



Exhibit 87: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Mechanical Engineering Technologists and Technicians

(SOC 17-3027)

Mechanical engineering technologists and technicians are considered a green occupation because they develop energy-efficient systems and machinery that reduce environmental impact. To further integrate into the green sector, they can specialize in renewable energy systems and sustainable manufacturing. Community colleges in Los Angeles County offer programs like the **Energy Efficiency Technician Certificate** and the **Leadership in Energy and Environmental Design (LEED)** course, equipping them with skills to advance green engineering practices.

Community College Talent Supply

Manufacturing and Industrial Technology

- ▶ **TOP code:** 0956.00
- ▶ **Description:** Engineering principles and technical skills for the manufacture of products and related industrial processes. Includes shaping and forming operations, materials handling, instrumentation and controls, and quality control. Includes Computer Aided Manufacturing and robotics. Also includes optimization theory, industrial and manufacturing planning, and related management skills.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	67%
Median Annual Earnings for Exiting Students, 2020-21	\$67,762
Median Change in Earnings for Exiting Students, 2020-21	74%
SWP Exiting Students Who Attained the Living Wage, 2020-21	74%

Occupational Overview

Employment in Industry 2022:..... 928 workers
Percent of Jobs Identified as Middle-Skill:..... 50.1%
Median Hourly Wages:..... \$33.72 per hour
Typical Entry-Level Education:..... Associate degree
Work Experience Required None
Typical On-the-Job Training None

Occupational Projections 2022 to 2028

Newly Created Jobs..... -30 new jobs (-3.1%)
Replacement Jobs 490 openings
Net Job Openings 460 jobs
2022-2028 Percent Net Change..... 49.6%

Exhibit 91: Manufacturing and Industrial Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Cerritos College		●	●
El Camino College		●	●
Glendale Community College		●	
L.A. Trade Technical College		●	●
L.A. Valley College		●	●
Long Beach City College		●	●
Mt. San Antonio College	●	●	●
West Los Angeles College		●	



Exhibit 92: Gender, 2022-23



Exhibit 93: Race and Ethnicity, 2022-23

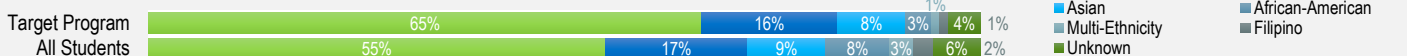
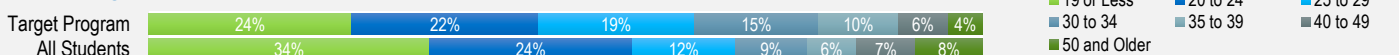


Exhibit 94: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Industrial Engineering Technologists and Technicians

(SOC 17-3026)

Industrial engineering technologists and technicians are considered a green occupation because they optimize industrial processes to improve efficiency and reduce waste, supporting sustainable manufacturing. To further integrate into the green sector, they can focus on sustainable practices and energy-efficient systems. Community colleges in Los Angeles County offer programs like the **Sustainable Technology Certificate** and **Energy Efficiency Certificate**, equipping them with skills to enhance sustainability in industrial processes.

Community College Talent Supply

Industrial Systems Technology and Maintenance

- ▶ **TOP code:** 0945.00
- ▶ **Description:** Design, construction, maintenance, and operation of mechanical, hydraulic, pneumatic, and electrical equipment and related systems, such as production machinery. Includes building and plant maintenance.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	56%
Median Annual Earnings for Exiting Students, 2020-21	\$48,826
Median Change in Earnings for Exiting Students, 2020-21	3%
SWP Exiting Students Who Attained the Living Wage, 2020-21	73%

Occupational Overview

Employment in Industry 2022:..... 743 workers
Percent of Jobs Identified as Middle-Skill:..... 50.1%
Median Hourly Wages:..... \$36.19 per hour
Typical Entry-Level Education:..... Associate degree
Work Experience Required:..... None
Typical On-the-Job Training:..... None

Occupational Projections 2022 to 2028

Newly Created Jobs:..... 140 new jobs (18.8%)
Replacement Jobs:..... 460 openings
Net Job Openings:..... 600 jobs
2022-2028 Percent Net Change:..... 80.7%

Exhibit 98: Industrial Systems Technology and Maintenance Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
L.A. Southwest College	●		
L.A. Trade Technical College		●	●
West Los Angeles College	●		

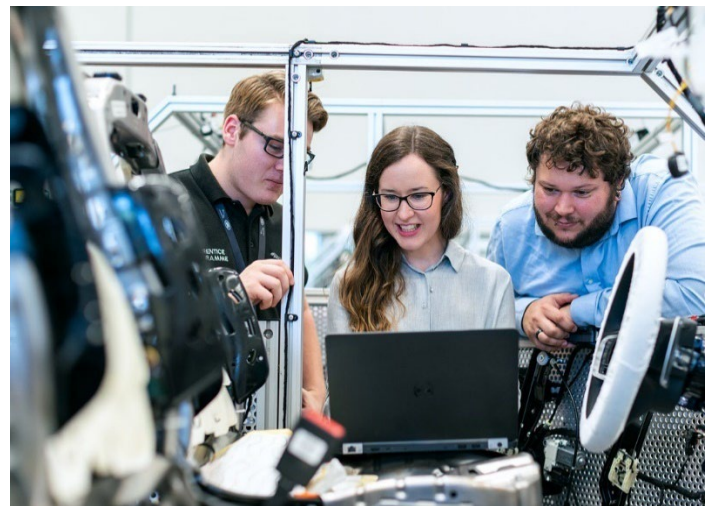


Exhibit 99: Gender, 2022-23



Exhibit 100: Race and Ethnicity, 2022-23

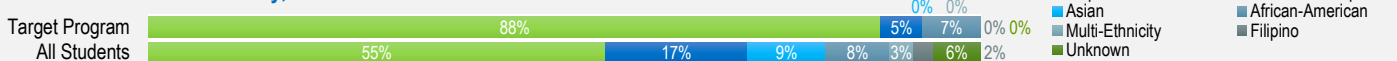
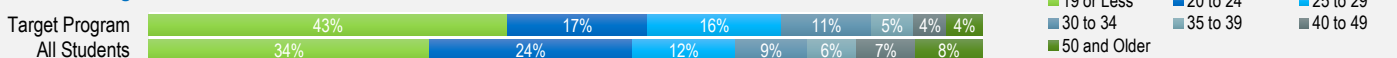


Exhibit 101: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Elevated Occupations

The Elevated Occupations section of this report examines green jobs in Los Angeles County that typically require a bachelor's degree or greater but are still accessible to community college graduates. This section provides an in-depth analysis of these advanced roles, which are critical to driving innovation and leadership in the county's green economy. It covers the specific responsibilities, skills, and educational qualifications needed for these positions, as well as labor market trends, job openings, and salary expectations. By focusing on elevated occupations, this section highlights the opportunities for individuals seeking to leverage their higher education to make significant contributions to environmental sustainability and economic growth. These roles are pivotal in shaping the future of green industries and ensuring the successful implementation of sustainability initiatives.

Exhibit 105: Target Climate-Ready Elevated Occupations

Typical Entry Level Education: Bachelor's Degree

SOC Code	Description	2022 Jobs	2022 Median Hourly Earnings	2028 Jobs	2022-2028 Forecasted Growth	2022-2028 Change in Jobs	2022-2028 Replacement Jobs	2022-2028 Job Openings	2022-2028 Percent Net Change in Jobs	Percent of 2022 Jobs in Green Sectors
11-9021	Construction Managers	14,980	\$41.54	16,230	8.3%	1,250	6,570	7,820	52.2%	28.1%
13-1041	Compliance Officers	12,765	\$38.03	13,750	7.7%	980	6,100	7,080	55.5%	3.8%
13-1081	Logisticians	6,954	\$38.30	8,410	20.9%	1,450	3,720	5,170	74.3%	4.3%
19-4021	Biological Technicians	1,184	\$28.55	1,430	20.8%	250	990	1,240	104.8%	0.8%

Note: The '2022-2028 Percent Net Change in Jobs' is calculated as the total job openings from 2022 to 2028 expressed as a percentage of the total jobs in 2022. Total job openings include the '2022-2028 Change in Jobs' (growth or decline in total employment) and the '2022-2028 Replacement Jobs' (positions needing to be filled due to retirements or worker turnover). The formula is: $[(2022-2028 \text{ Change in Jobs} + 2022-2028 \text{ Replacement Jobs}) \div 2022 \text{ Jobs}] \times 100$.

Construction Managers

(SOC 17-3026)

Construction managers are considered a green occupation because they oversee projects that use sustainable building practices and materials. To further integrate into the green sector, they can specialize in green construction techniques and renewable energy integration. Community colleges in Los Angeles County offer programs like the **Sustainable Construction Management Certificate** and the **Leadership in Energy and Environmental Design (LEED)** course equipping them to lead environmentally responsible projects.

Occupational Overview

Employment in Industry 2022:..... 14,980 workers
Percent of Jobs Identified as Middle-Skill:..... 31.2%
Median Hourly Wages..... \$41.54 per hour
Typical Entry-Level Education..... Bachelor's degree
Work Experience Required None
Typical On-the-Job Training Moderate-term

Occupational Projections 2022 to 2028

Newly Created Jobs..... 1,250 new jobs (8.3%)
Replacement Jobs 6,570 openings
Net Job Openings 7,820 jobs
2022-2028 Percent Net Change..... 52.2%

Community College Talent Supply

Civil and Construction Management Technology

- ▶ **TOP code:** 0957.00
- ▶ **Description:** Application of procedures and techniques related to civil and construction management, including estimating and bidding, scheduling and control, inspection, building systems, construction practices, quality control, labor and safety practices. Includes public works management.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	63%
Median Annual Earnings for Exiting Students, 2020-21	\$84,080
Median Change in Earnings for Exiting Students, 2020-21	11%
SWP Exiting Students Who Attained the Living Wage, 2020-21	84%

Exhibit 106: Civil and Construction Management Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Citrus College		●	●
East LA College	●		
L.A. Valley College		●	●
Long Beach City College	●		
Mt. San Antonio College		●	●
Pasadena City College		●	●
Rio Hondo College			●
West Los Angeles College	●		



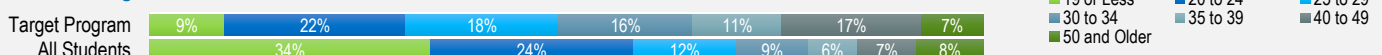
Exhibit 107: Gender, 2022-23



Exhibit 108: Race and Ethnicity, 2022-23



Exhibit 109: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Compliance Officers

(SOC 13-1041)

Compliance officers are considered a green occupation because they ensure organizations comply with environmental regulations and sustainability standards. To further integrate into the green sector, they can specialize in environmental laws and sustainability reporting. Community colleges in Los Angeles County offer programs like the **Sustainability Services Technician Certificate** and **Energy and Sustainable Technologies Degree**, equipping them to enforce and promote environmentally responsible practices.

Occupational Overview

Employment in Industry 2022:..... 1,765 workers
Percent of Jobs Identified as Middle-Skill:..... 25.7%
Median Hourly Wages:..... \$38.03 per hour
Typical Entry-Level Education:..... Bachelor's degree
Work Experience Required None
Typical On-the-Job Training Moderate-term

Occupational Projections 2022 to 2028

Newly Created Jobs..... 980 new jobs (7.7%)
Replacement Jobs 6,100 openings
Net Job Openings 7,080 jobs
2022-2028 Percent Net Change..... 55.5%

Community College Talent Supply

Environmental Technology

- ▶ **TOP code:** 0303.00
- ▶ **Description:** Environmental management, monitoring, assessment, and restoration, including environmental pollution control systems and the management of hazardous materials and hazardous waste, and related government regulations.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	88%
Median Annual Earnings for Exiting Students, 2020-21	\$45,376
Median Change in Earnings for Exiting Students, 2020-21	17%
SWP Exiting Students Who Attained the Living Wage, 2020-21	58%

Exhibit 113: Environmental Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Mt. San Antonio College		●	
Rio Hondo College		●	●
Santa Monica College	●	●	●

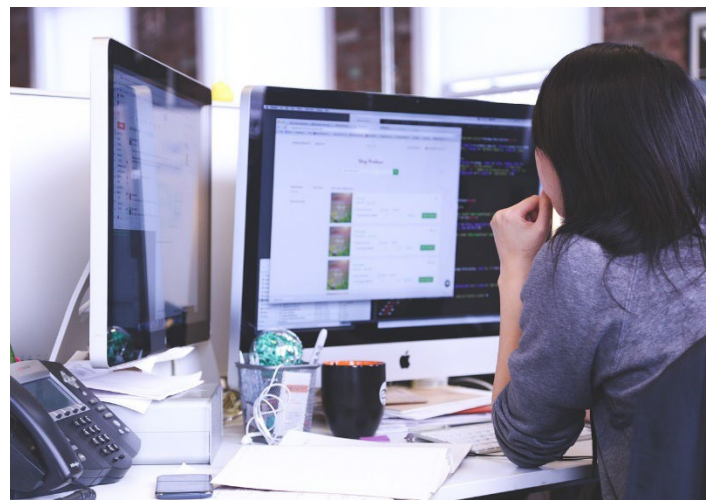


Exhibit 114: Gender, 2022-23

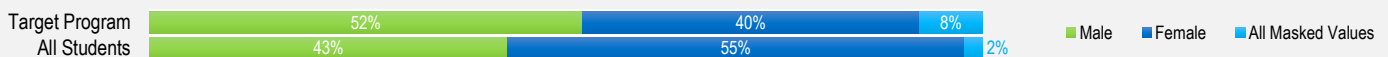
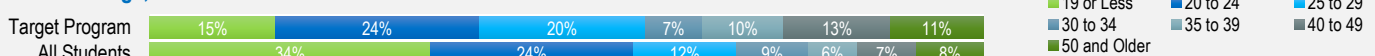


Exhibit 115: Race and Ethnicity, 2022-23



Exhibit 116: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Logisticians

(SOC 13-1081)

Logisticians are considered a green occupation because they optimize supply chains to reduce waste, lower emissions, and increase energy efficiency. To further integrate into the green sector, they can focus on integrating renewable energy, enhancing recycling logistics, and adopting digital technologies to minimize environmental impact. Community colleges in Los Angeles County offer programs like the **Supply Chain Management Certificate** and **Technology and Logistics Certificate**, equipping them to promote sustainability in supply chain management.

Occupational Overview

Employment in Industry 2022:..... 6,954 workers
Percent of Jobs Identified as Middle-Skill:..... 35.2%
Median Hourly Wages:..... \$38.30 per hour
Typical Entry-Level Education:..... Bachelor's degree
Work Experience Required None
Typical On-the-Job Training None

Occupational Projections 2022 to 2028

Newly Created Jobs..... 1,450 new jobs (20.9%)
Replacement Jobs 3,720 openings
Net Job Openings 5,170 jobs
2022-2028 Percent Net Change..... 74.3%

Community College Talent Supply

Logistics and Materials Transportation

- ▶ **TOP code:** 0510.00
- ▶ **Description:** Theory, principles, functions, and procedures for the orderly and economic receiving, manufacturing, shipping, and servicing of products or services.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	77%
Median Annual Earnings for Exiting Students, 2020-21	\$46,784
Median Change in Earnings for Exiting Students, 2020-21	19%
SWP Exiting Students Who Attained the Living Wage, 2020-21	62%

Exhibit 120: Logistics and Materials Transportation Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
East LA College		●	●
L.A. City College	●		
L.A. Harbor College	●		
Mt. San Antonio College	●	●	
Pasadena City College		●	
Rio Hondo College		●	●
Santa Monica College		●	●

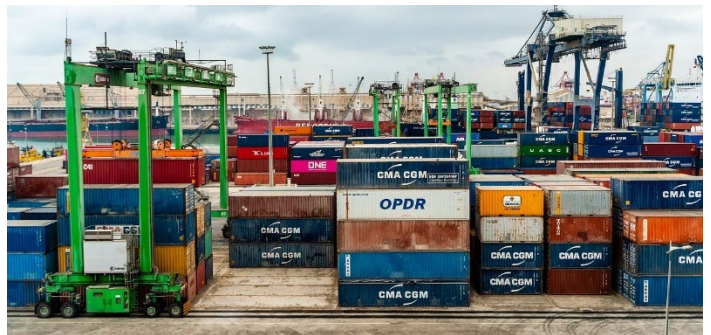


Exhibit 121: Gender, 2022-23



Exhibit 122: Race and Ethnicity, 2022-23

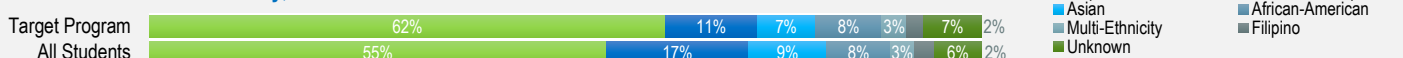


Exhibit 123: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Biological Technicians

(SOC 19-4021)

Biological technicians are considered a green occupation because they support research in environmental conservation and sustainable practices. To further integrate into the green sector, they can focus on environmental monitoring, renewable resources, and sustainable agriculture. Community colleges in Los Angeles County offer programs like the **Environmental Technology and Sciences Certificates** and **Environmental Horticulture Certificate**, equipping them to advance sustainability in their research and practices.

Community College Talent Supply

Biotechnology and Biomedical Technology

- ▶ **TOP code:** 0430.00
- ▶ **Description:** Theories, operations, and technical skills used to assist researchers and engineers engaged in developing or manufacturing biological, biotechnical, or medical systems or products.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	60%
Median Annual Earnings for Exiting Students, 2020-21	\$30,206
Median Change in Earnings for Exiting Students, 2020-21	-13%
SWP Exiting Students Who Attained the Living Wage, 2020-21	40%



Occupational Overview

Employment in Industry 2022:..... 1,184 workers
Percent of Jobs Identified as Middle-Skill:..... 25.7%
Median Hourly Wages:..... \$28.55 per hour
Typical Entry-Level Education:..... Bachelor's degree
Work Experience Required None
Typical On-the-Job Training None

Occupational Projections 2022 to 2028

Newly Created Jobs..... 250 new jobs (20.8%)
Replacement Jobs 990 openings
Net Job Openings 1,240 jobs
2022-2028 Percent Net Change..... 104.8%

Exhibit 127: Biotechnology and Biomedical Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Cerritos College		●	●
Citrus College		●	●
Compton College		●	●
East LA College		●	
Glendale Community College		●	●
L.A. Harbor College		●	●
L.A. Mission College*		●	●
L.A. Pierce College	●	●	●
L.A. Trade Technical College		●	●
Pasadena City College		●	●
Rio Hondo College		●	
Santa Monica College		●	
West Los Angeles College		●	

*Note: LA Mission College also offers a Bachelor's Degree program.

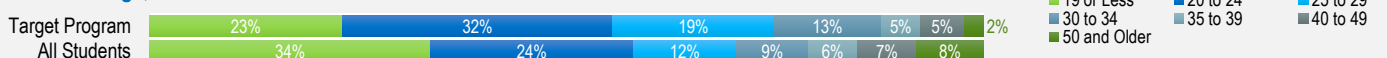
Exhibit 128: Gender, 2022-23



Exhibit 129: Race and Ethnicity, 2022-23



Exhibit 130: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Emerging Occupations

The Emerging Occupations section of this report focuses on middle-skill green jobs in Los Angeles County that require more than a high school diploma but less than a bachelor's degree. These occupations are characterized by their potential for growth as the green economy expands. This section provides detailed insights into these emerging roles, including job descriptions, required skills, educational pathways, and future career prospects. By highlighting these positions, the section underscores the opportunities for individuals to enter or transition into the green workforce, emphasizing the importance of these emerging occupations in supporting sustainable practices and innovation. These roles are not only essential for meeting current environmental goals but also for driving the future development of green industries in the region.

Exhibit 134: Target Climate-Ready Emerging Occupations

Typical Entry Level Education: Associate degree / Postsecondary Nondegree Award / Some college, no degree

SOC Code	Description	2022 Jobs	2022 Median Hourly Earnings	2028 Jobs	2022-2028 Forecasted Growth	2022-2028 Change in Jobs	2022-2028 Replacement Jobs	2022-2028 Job Openings	2022-2028 Percent Net Change in Jobs	Percent of 2022 Jobs in Green Sectors
19-4031	Chemical Technicians	1,688	\$23.31	1,640	-3.2%	-50	1,140	1,090	64.6%	6.7%
17-3025	Environmental Engineering Technologists and Technicians	239	\$36.36	170	-31.0%	-70	90	20	8.4%	14.1%
49-9081	Wind Turbine Service Technicians	207	\$29.83	210	-1.2%	0	110	110	53.3%	24.5%

Note: The '2022-2028 Percent Net Change in Jobs' is calculated as the total job openings from 2022 to 2028 expressed as a percentage of the total jobs in 2022. Total job openings include the '2022-2028 Change in Jobs' (growth or decline in total employment) and the '2022-2028 Replacement Jobs' (positions needing to be filled due to retirements or worker turnover). The formula is: $[(2022-2028 \text{ Change in Jobs} + 2022-2028 \text{ Replacement Jobs}) \div 2022 \text{ Jobs}] \times 100$.

Chemical Technicians

(SOC 19-4031)

Chemical technicians are considered a green occupation because they develop and test chemical processes that reduce environmental impact and support clean energy. To further integrate into the green sector, they can focus on green chemistry, renewable resources, and efficient environmental monitoring. Community colleges in Los Angeles County offer programs like the **Environmental Technology and Sciences Certificates**, equipping them to advance sustainability in the chemical industry.

Occupational Overview

Employment in Industry 2022:..... 1,688 workers
Percent of Jobs Identified as Middle-Skill:..... 35.9%
Median Hourly Wages:..... \$23.31 per hour
Typical Entry-Level Education:..... Associate degree
Work Experience Required:..... None
Typical On-the-Job Training:..... Moderate-term

Occupational Projections 2022 to 2028

Newly Created Jobs:..... -50 new jobs (-3.2%)
Replacement Jobs:..... 1,140 openings
Net Job Openings:..... 1,090 jobs
2022-2028 Percent Net Change:..... 64.6%

Community College Talent Supply

Chemical Technology

- ▶ **TOP code:** 0954.00
- ▶ **Description:** Chemical processes, including heat transfer, treatment of liquid and gases, and physical-chemical operations used in industrial processes and the chemical industry.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	100%
Median Annual Earnings for Exiting Students, 2020-21	\$23,822
Median Change in Earnings for Exiting Students, 2020-21	-9%
SWP Exiting Students Who Attained the Living Wage, 2020-21	59%

Exhibit 135: Chemical Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Cerritos College		●	
East LA College		●	●
L.A. Trade Technical College		●	●



Exhibit 136: Gender, 2022-23



Exhibit 137: Race and Ethnicity, 2022-23



Exhibit 138: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Environmental Engineering Technologists and Technicians

(SOC 17-3025)

Environmental engineering technologists and technicians are considered a green occupation because they support systems that reduce pollution and promote sustainability. To further integrate into the green sector, they can specialize in renewable energy, sustainable waste management, and advanced environmental monitoring. Community colleges in Los Angeles County offer programs like the **Environmental Technology and Sciences Certificates** and **Environmental Horticulture Certificate**, equipping them to enhance their role in environmental protection.

Community College Talent Supply

Environmental Technology

- ▶ **TOP code:** 0303.00
- ▶ **Description:** Environmental management, monitoring, assessment, and restoration, including environmental pollution control systems and the management of hazardous materials and hazardous waste, and related government regulations.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	88%
Median Annual Earnings for Exiting Students, 2020-21	\$45,376
Median Change in Earnings for Exiting Students, 2020-21	17%
SWP Exiting Students Who Attained the Living Wage, 2020-21	58%

Occupational Overview

Employment in Industry 2022:..... 239 workers
Percent of Jobs Identified as Middle-Skill:..... 50.1%
Median Hourly Wages:..... \$36.36 per hour
Typical Entry-Level Education:..... Associate degree
Work Experience Required None
Typical On-the-Job Training None

Occupational Projections 2022 to 2028

Newly Created Jobs..... -70 new jobs (-31.0%)
Replacement Jobs 90 openings
Net Job Openings 20 jobs
2022-2028 Percent Net Change..... 8.4%

Exhibit 142: Environmental Technology Programs in Los Angeles County

Community College	Nondegree Award	Certificate	Associate Degree
Mt. San Antonio College		●	
Rio Hondo College		●	●
Santa Monica College	●	●	●



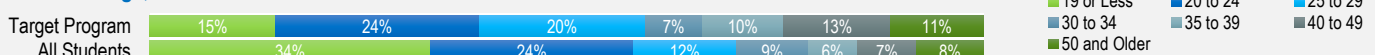
Exhibit 143: Gender, 2022-23



Exhibit 144: Race and Ethnicity, 2022-23



Exhibit 145: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Wind Turbine Service Technicians

(SOC 49-9081)

Wind turbine service technicians are considered a green occupation because they maintain and repair wind turbines, crucial for generating clean, renewable energy. To further integrate into the green sector, they can specialize in advanced turbine technologies and sustainable maintenance practices. Community colleges in Los Angeles County offer programs like the **Alternative Energy Certificate** and **Renewable Energy Certificate**, equipping them to enhance their role in the renewable energy sector.

Occupational Overview

Employment in Industry 2022:..... 207 workers
Percent of Jobs Identified as Middle-Skill:..... 36.8%
Median Hourly Wages:..... \$29.83 per hour
Typical Entry-Level Education:..... Postsecondary nondegree award
Work Experience Required None
Typical On-the-Job Training Long-term

Occupational Projections 2022 to 2028

Newly Created Jobs..... 0 new jobs (-1.2%)
Replacement Jobs 110 openings
Net Job Openings 110 jobs
2022-2028 Percent Net Change..... 53.3%

Community College Talent Supply

Energy Systems Technology

- ▶ **TOP code:** 0946.10
- ▶ **Description:** Theory and methods of energy conservation applied to heating, cooling, and related systems, including the measurement and assessment of energy consumption, diagnosis and prescription. Includes alternative energy systems.

Strong Workforce Program (SWP) Statistics:

Students with a Job Closely Related to Their Field of Study, 2019-20	35%
Median Annual Earnings for Exiting Students, 2020-21	\$38,244
Median Change in Earnings for Exiting Students, 2020-21	43%
SWP Exiting Students Who Attained the Living Wage, 2020-21	51%

Exhibit 149: Energy Systems Technology Programs in LA County

Community College	Nondegree Award	Certificate	Associate Degree
Cerritos College	●		
L.A. Southwest College	●		
L.A. Trade Technical College		●	●
Mt. San Antonio College	●	●	●
Pasadena City College		●	●
Rio Hondo College		●	●
Santa Monica College			●



Exhibit 150: Gender, 2022-23



Exhibit 151: Race and Ethnicity, 2022-23

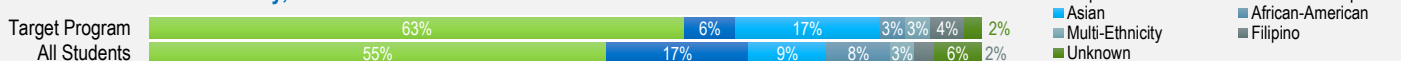


Exhibit 152: Age, 2022-23



Source: California Community Colleges LaunchBoard. *Not pictured: Pacific Islander and American Indian/Alaska Native, all less than 1%

Key Findings and Recommendations

The analysis of Los Angeles County's green economy reveals critical insights and actionable strategies for fostering a robust and skilled green workforce. The following key findings and recommendations are derived from an in-depth examination of industry trends, workforce needs, and educational pathways.

Key Findings

- ❖ **Significant Growth in Green Industries:** Sectors such as renewable energy, clean transportation, green construction, and waste management are experiencing rapid growth. This expansion is driven by both public policy initiatives and market demand for sustainable practices.
- ❖ **Demand for Middle-Skill Occupations:** There is a high demand for middle-skill occupations—those requiring more than a high school diploma but less than a four-year degree. These roles are essential for implementing green technologies and practices across industries.
- ❖ **Technological Advancements:** Innovations in renewable energy, electric vehicles, energy-efficient construction, and water management are transforming the economic landscape. Workers skilled in these technologies are crucial for maintaining industry competitiveness and meeting sustainability goals.
- ❖ **Educational Gaps and Workforce Development Challenges:** While community colleges and vocational training programs offer relevant courses, there is a need for more targeted and up-to-date curricula that align with industry needs. Additionally, funding constraints and limited awareness of green career opportunities pose challenges to workforce development.
- ❖ **Collaboration Between Stakeholders:** Effective collaboration between educational institutions, industry stakeholders, and government agencies is necessary to address workforce gaps and ensure that training programs meet the evolving demands of the green economy.

Recommendations

- ❖ **Enhance Educational Programs and Curriculum Development:** Community colleges and vocational institutions should update and expand their curricula to include the latest green technologies and practices. Programs should focus on skills such as renewable energy installation, energy efficiency, sustainable construction, and environmental management.
- ❖ **Increase Funding and Support for Green Workforce Development:** Local and state governments should allocate additional funding to support green job training programs, including scholarships, apprenticeships, and internships. This investment will help bridge the gap between educational offerings and industry needs.
- ❖ **Promote Awareness of Green Career Pathways:** There is a need for greater outreach and education about green career opportunities. Initiatives should target students, job seekers, and transitioning workers, highlighting the benefits and opportunities within the green economy.
- ❖ **Strengthen Industry-Education Partnerships:** Building stronger partnerships between educational institutions and industry can enhance curriculum relevance and provide students with real-world experience. This collaboration can include guest lectures, site visits, internships, and joint research initiatives.
- ❖ **Support Equity and Inclusion in the Green Workforce:** Efforts should be made to ensure that green job opportunities are accessible to all communities, including underserved and minority populations. Programs should focus on removing barriers to entry, such as financial constraints, and provide support services like career counseling and mentorship.
- ❖ **Develop a Regional Green Workforce Strategy:** A comprehensive regional strategy should be developed to coordinate efforts across different sectors and stakeholders. This strategy should outline specific goals, actions, and metrics for building a skilled green workforce in Los Angeles County.

By implementing these recommendations, Los Angeles County can position itself as a leader in the green economy, driving sustainable economic growth, enhancing environmental quality, and improving the quality of life for its residents. The coordinated efforts of educational institutions, industry leaders, and government agencies will be crucial in achieving these objectives and building a resilient, future-ready workforce.



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