



CENTERS OF EXCELLENCE
FOR LABOR MARKET RESEARCH

CLEAN ECONOMY SECTOR



[bw] RESEARCH
PARTNERSHIP

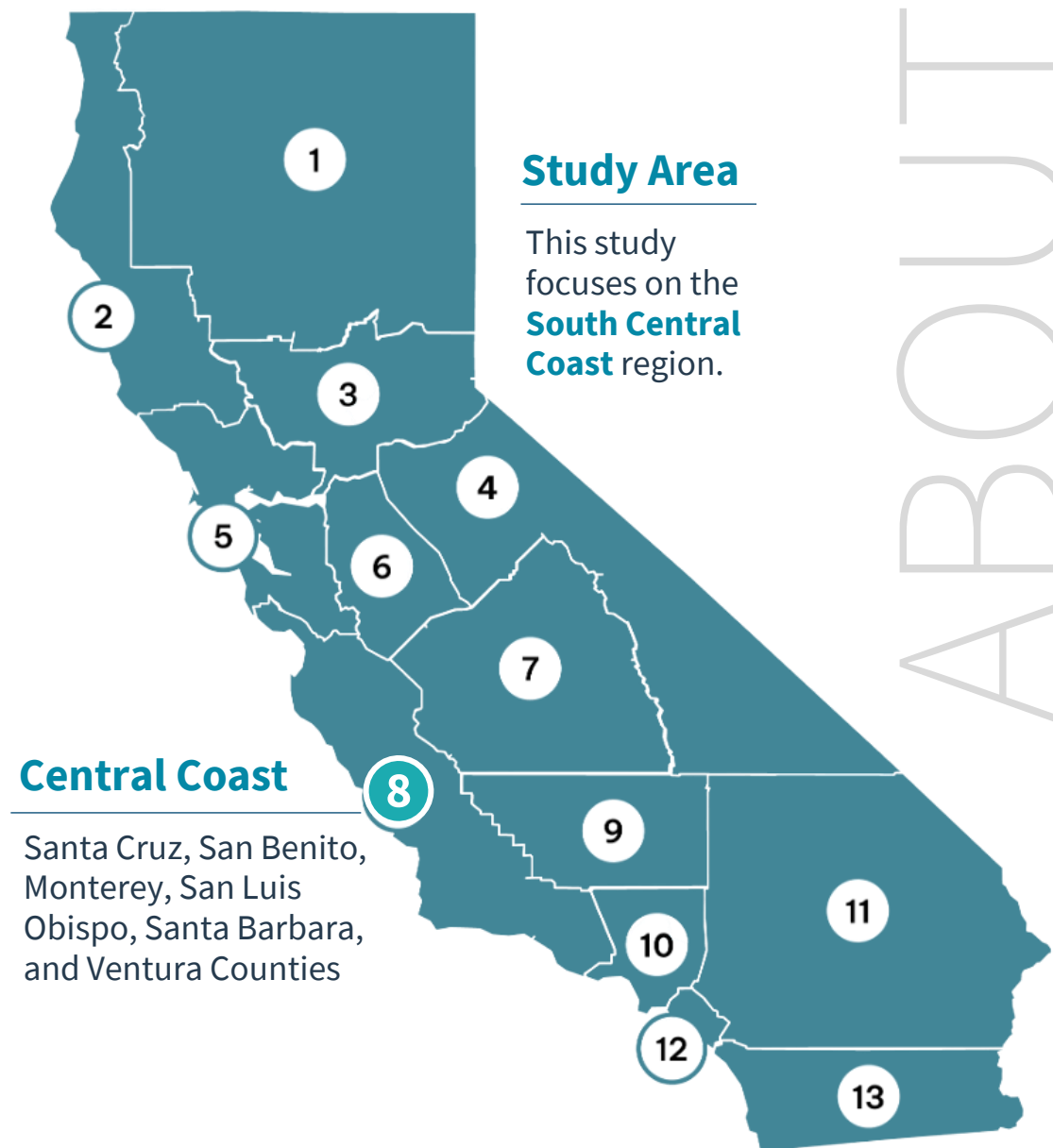
The Clean Economy is a priority for the South Central Coast.

The State of California defines 13 **Jobs First** regions based on shared economic ties and local connections.

The **South Central Coast region** includes San Luis Obispo, Santa Barbara, Ventura, and Northern Los Angeles Counties.

Under Jobs First, **Clean Economy** is both a “Bet” and “Accelerate” sector due to its projected growth and strategic importance to the region’s innovation ecosystem.

This designation signals **state-level commitment** to expanding Clean Economy industries and workforce pipelines.



However, the Clean Economy sector faces structural and classification challenges.

- North American Industry Classification System (NAICS) codes lack granularity and may not accurately reflect **emerging industries** in renewable energy, energy efficiency, and transmission, distribution, and storage.
- Clean energy technologies face **permitting and regulatory hurdles** that influence funding, policy support, deployment, and public perception.
- Large-scale clean energy deployment requires investment in **grid infrastructure** and **storage**, which shape market readiness.
- While the clean energy transition is a clear priority, the timing and scale of growth will depend on **system-level factors** that create uncertainty in workforce demand.



The Clean Economy sector spans multiple industry elements.

- **Clean Fuels** research and development.
- **Clean Technology Manufacturing**, including electric components supporting electrification and battery manufacturing.
- **Electricity Transmission, Distribution, and Storage**, including grid infrastructure and smart grids.
- **Energy Efficiency and Construction**, including design, production, and installation of energy-efficient building materials and appliances.
- **Environmental Services and Circular Economy**, including remediation and waste services.
- **Professional Services** supporting decarbonization and electrification.
- **Renewable Electricity Generation**, including solar, wind, nuclear, geothermal, hydroelectric, and biomass.

The Clean Economy sector offers above-average* wage opportunities across the region.

\$6.7B

Clean Economy Sector Contribution
to South Central Coast Gross
Regional Product, 2025

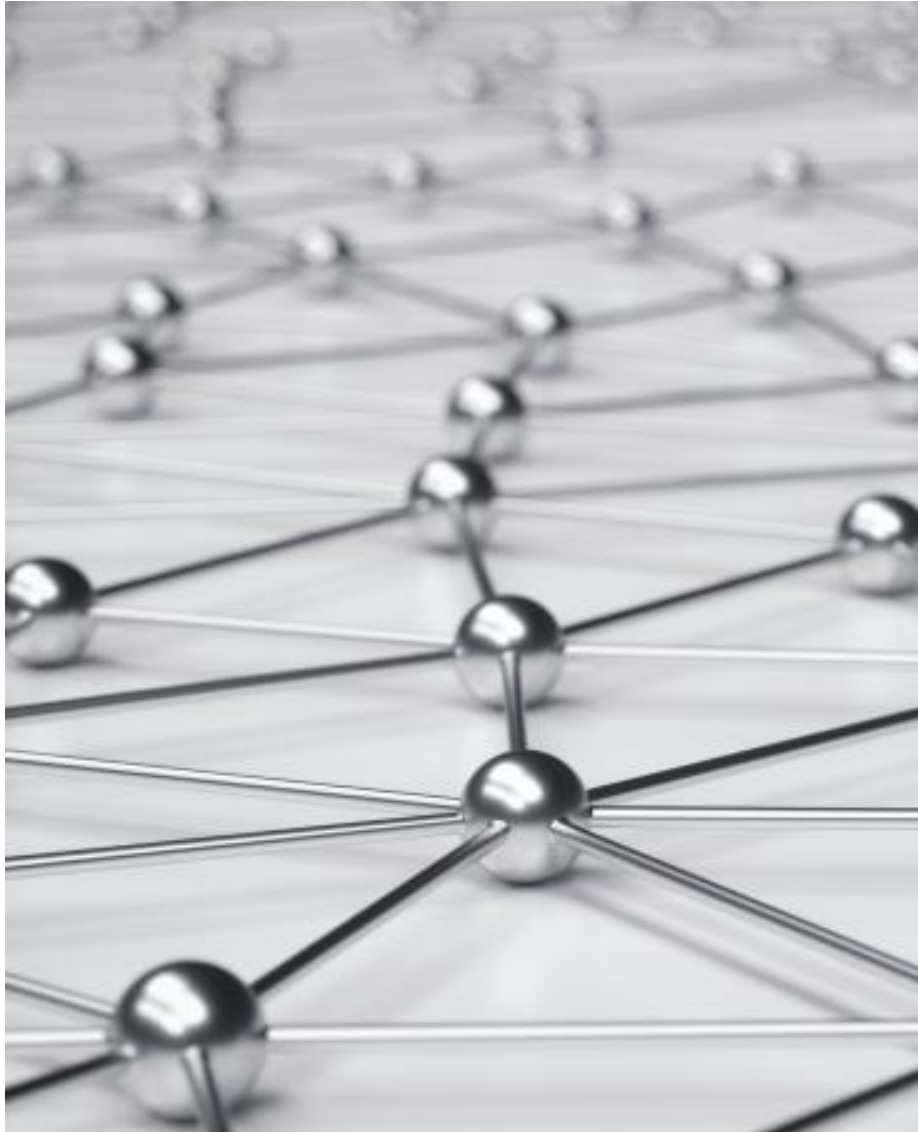
22,485

Clean Economy Jobs in
the South Central Coast,
2025

\$92K

Average Annual Wages of Clean
Economy Jobs in the South
Central Coast, 2025

- Long-term growth sector with significant **local assets** (Diablo Canyon nuclear power plant, offshore wind, offshore oil and gas decommissioning).
- Approximately 18% of Clean Economy jobs are highly likely to be **impacted by automation**, versus a regional average of 20% across all industries.



The South Central Coast region has an established Clean Economy employer ecosystem.

Renewable Electricity
Generation



Energy Efficiency
and Construction



Environmental Services
and Circular Economy



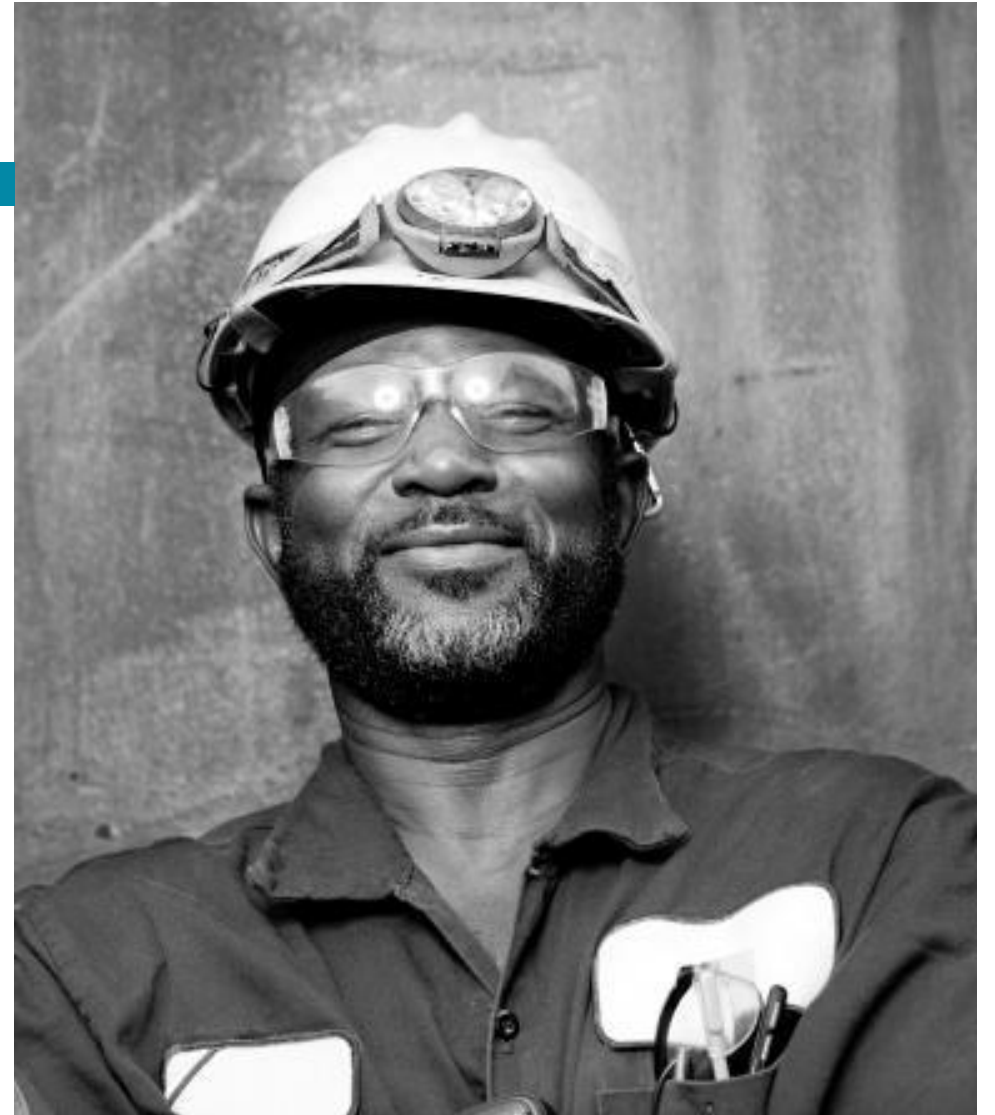
Electricity Transmission,
Distribution, and Storage



* Employers listed are illustrative of major regional activity and list is not intended to be exhaustive.

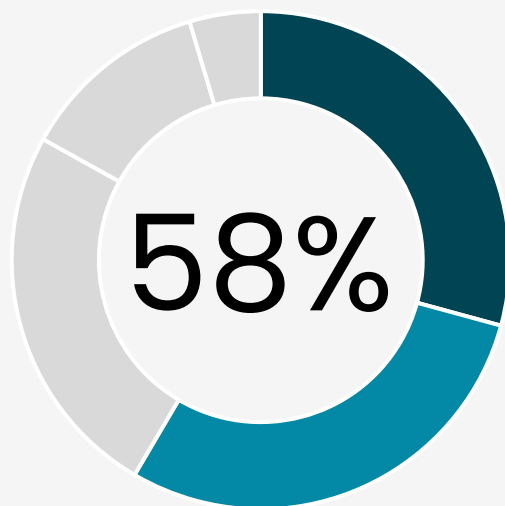
The Clean Economy sector is reshaping workforce demand.

- Morro Bay offshore wind activity fuels demand for **turbine maintenance** and **transmission** jobs.
- Distributed energy resources and virtual power plants fuel demand for **electrical technicians**.
- Aging of early solar installations fuels demand for **panel maintenance** and **recycling technicians**.
- **Petroleum well remediation** is an opportunity to transition workers exiting the fossil fuel industry.
- Nuclear fusion is a potential longer-term opportunity that may initially fuel demand for **construction** and **trades workers**, followed by demand for engineers, manufacturing technicians, and plant operators.



Clean Economy employers expect to add jobs over the next 12-36 months.

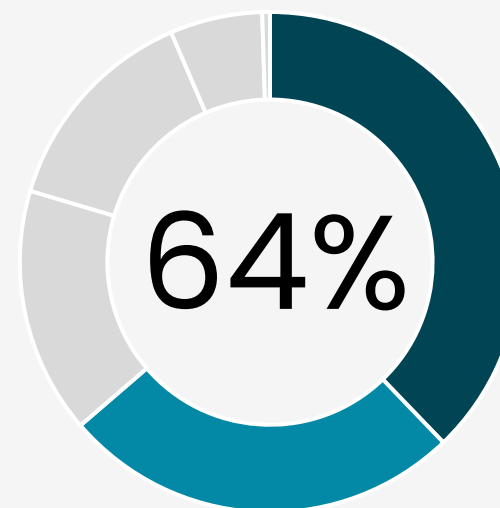
12-MONTH GROWTH EXPECTATIONS



Large Increase (10% and up) Predicted in 12-Month Headcount, 29%

Small Increase (<10%) Predicted in 12-Month Headcount, 29%

3-YEAR GROWTH EXPECTATIONS



Large Increase (10% and up) Predicted in 3-Year Headcount, 38%

Small Increase (<10%) Predicted in 3-Year Headcount, 26%

However, employers report emerging technical skills gaps for current and potential workers.



Building electrification skills
(including heat pump installation
expertise)



Solar panel maintenance and
recycling



Home energy advising (knowledge
of energy-efficient technologies,
rebates, and incentives)



Hands-on electrical
troubleshooting skills

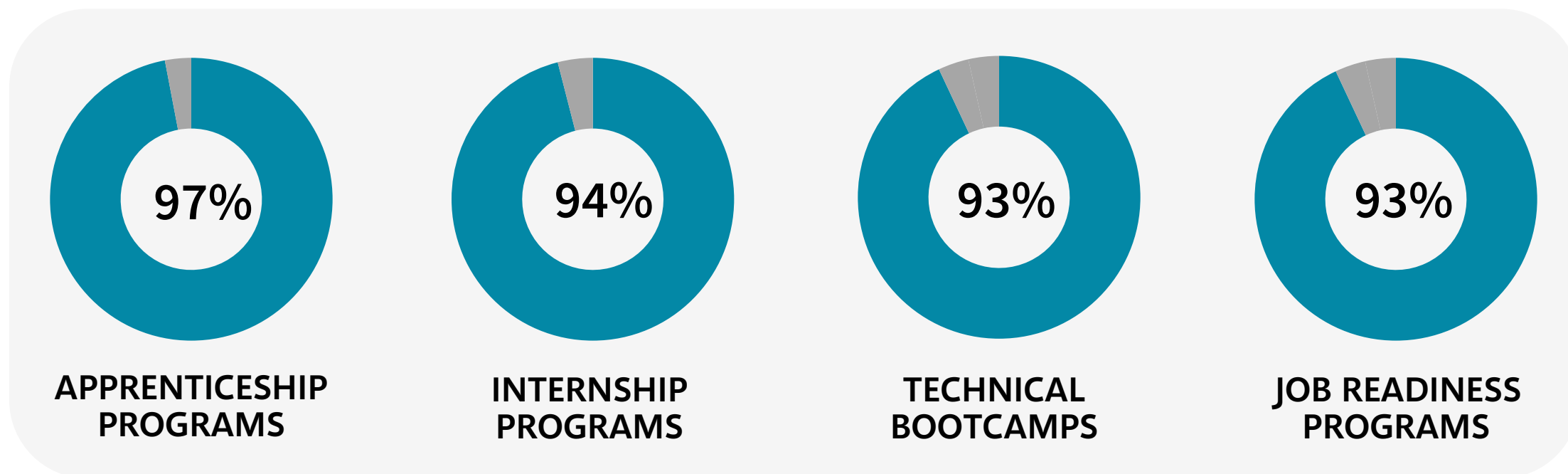


Fleet electrification expertise
(data analytics, basic proficiency
in physics)



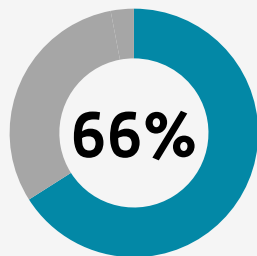
Climate-smart agriculture planning

Employers express high levels of interest in apprenticeship, internship, technical bootcamp, and job readiness programs.

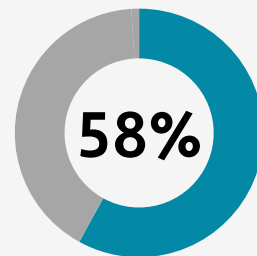


Share Of Surveyed Clean Economy Employers Expressing Interest In Partnerships

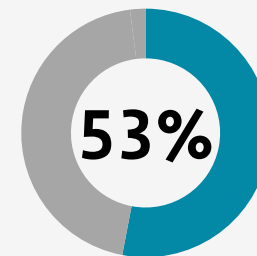
Only half (53%) of employers surveyed work with community colleges to recruit, hire, or train.



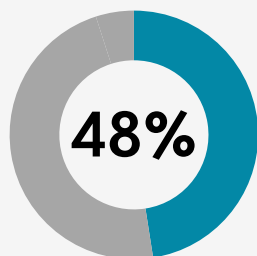
**FOUR-YEAR
COLLEGES OR
UNIVERSITIES**



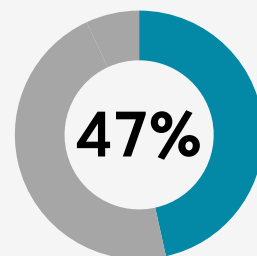
**HIGH SCHOOL,
TECHNICAL, OR
VOCATIONAL SCHOOLS**



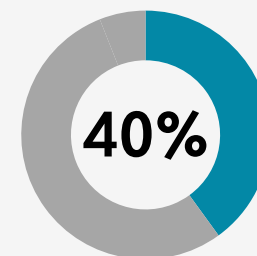
**COMMUNITY
COLLEGES**



**UNIONS OR JOINT
APPRENTICESHIP AND
TRAINING CENTERS**



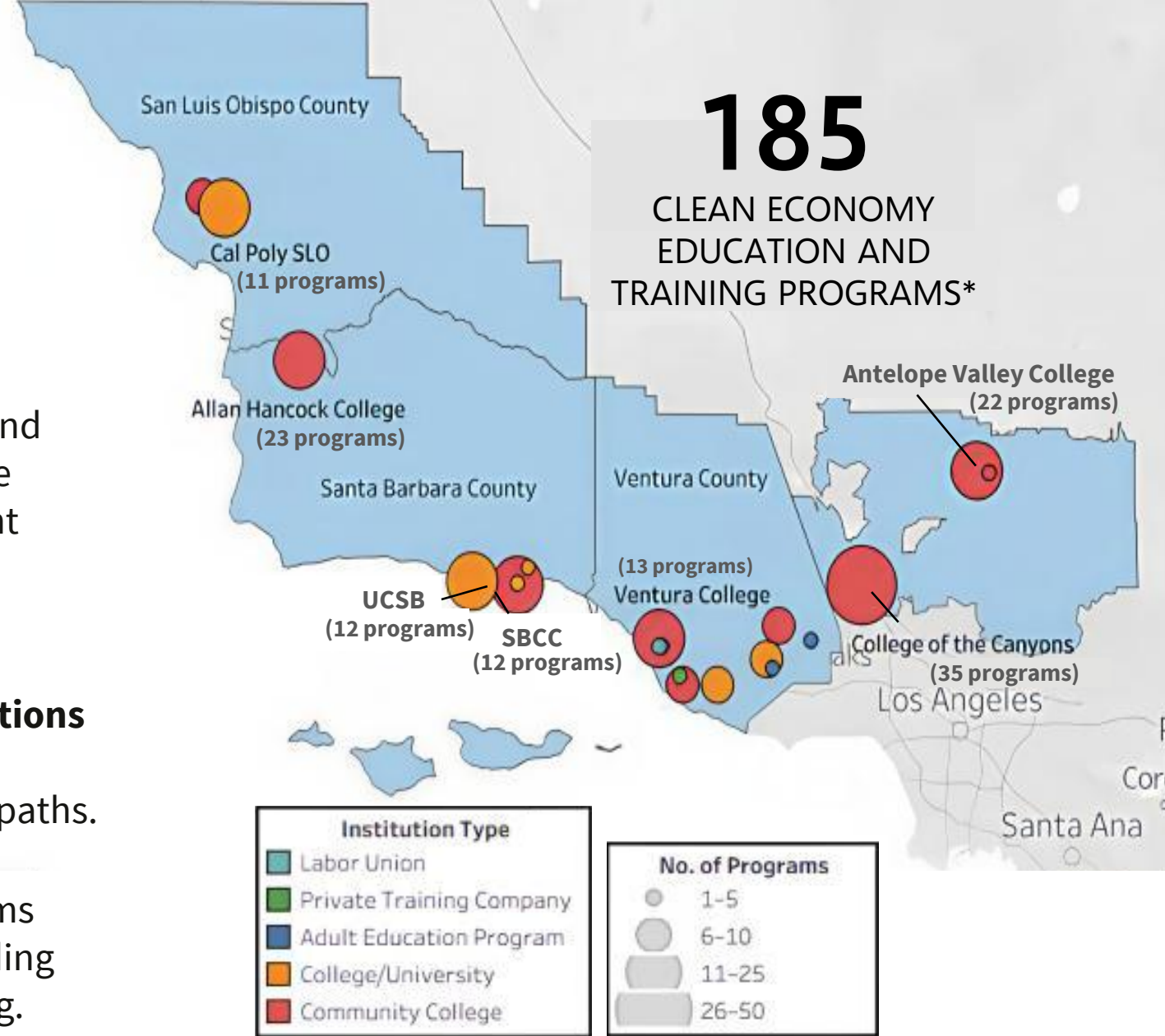
**WORKFORCE
DEVELOPMENT
BOARDS**



**NONPROFITS OR
COMMUNITY
ORGANIZATIONS**

Clean Economy education programs already align with key occupations.

- **Pre-engineering pathways** (electrical, mechanical, civil) build the math, physics, and problem-solving foundations needed for the region's most employed and most important Clean Economy occupations.
- Community colleges contribute to the engineering pipeline through **STEM foundations** and **engineering fundamentals**, which are essential to preparing students for transfer paths.
- Welding, HVAC, and CNC machining programs support **technician-level roles** across building electrification and clean tech manufacturing.



* Training inventory reflects major public institutions and a sample of private and union programs and does not constitute a comprehensive list of all providers in the region.

Community colleges deliver 7 in 10 regional Clean Economy training programs and have strong capacity in core high-skill occupations.

Occupation	Purpose	CC Programs	Advancement Potential*	Automation Potential**	Skills Change***
Welders, Cutters, Solderers, and Brazers	Support clean energy infrastructure and grid modernization	21	Moderate	High	Low
Architectural and Civil Drafters	Support building decarbonization and energy efficiency	15	High	High	High
Mechanical Engineers	Support building decarbonization, renewable generation, and clean fuels R&D	15	*	Moderate	High
HVACR Mechanics and Installers	Support building decarbonization and energy efficiency	13	High	Moderate	High
CNC Tool Operators and Programmers	Support clean tech manufacturing	6	*	High	High

Notes:

* BW's Job Advancement Index measures workers' potential to advance to higher-paying job opportunities. Advancement potential is not applicable for occupations already paying high wages.

**BW's Job Automation Index measures the proportion of skills and tasks that can be automated within a particular occupation. The most automatable occupations are characterized by high automation potential, while the least automatable occupations are characterized by low automation potential.

*** Skills change level based on % of surveyed employers indicating that an occupation exhibited "considerable" skills change over the last 12 months. However, since survey responses were limited, these findings should be interpreted directionally rather than as strict quantitative findings.

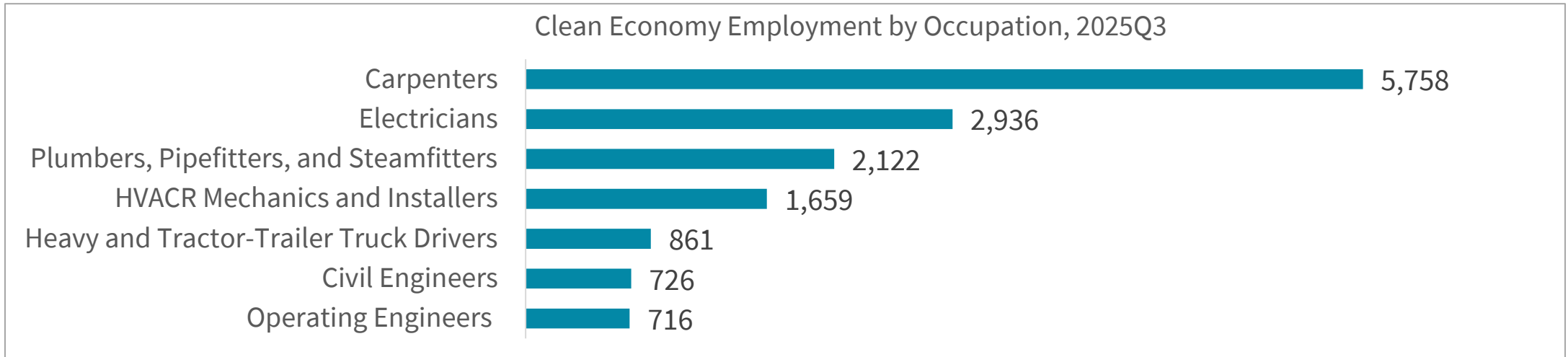
Several core Clean Economy occupations with strong advancement potential or high wages have little to no regional training supply.

Occupation	Purpose	CC Programs	Advancement Potential*	Automation Potential	Skills Change**
Chemical Equipment Operators and Tenders	Support clean fuels production	0	Moderate	High	High
Civil Engineering Technicians	Support clean energy infrastructure	0	High	Moderate	High
Hazardous Materials Removers (Remediation)	Support remediation and decommissioning	0	Moderate	Moderate	High
Line Installers and Repairers (Electric Power Lineworkers)	Support grid resilience	0	*	Moderate	Low
Operating Engineers	Support renewable electric power generation	0	Moderate	High	High
Plumbers, Pipefitters, and Steamfitters	Support decarbonization	0	High	Moderate	High
Solar Installers*	Support renewable electric power generation	2	High	Moderate	High

* BW's Job Advancement Index measures workers' potential to advance to higher-paying job opportunities. Advancement potential is not applicable for occupations already paying high wages.

** Skills change level based on % of surveyed employers indicating that an occupation exhibited "considerable" skills change over the last 12 months. However, since survey responses were limited, these findings should be interpreted directionally rather than as strict quantitative findings.

High-employment (500+) Clean Economy occupations and emerging needs define regional priorities.



Stakeholder-reported emerging occupations include:

- Electrical Technicians (driven by grid modernization needs)
- Energy Auditors (tied to energy efficiency and decarbonization)
- Solar Panel Maintenance and Recycling Technicians (tied to aging solar panel installations)
- Environmental Remediation Technicians (tied to petroleum well decommissioning)
- Wind Turbine Technicians (potential long-term opportunity tied to offshore wind)
- Nuclear Technicians (potential long-term opportunity tied to nuclear fusion)

Community colleges can accelerate Clean Economy workforce growth in key middle-skill occupations.

High-Priority Community College Occupations

- Carpenters
- Electricians
- HVAC Technicians
- Plumbers, Pipefitters, and Steamfitters

These occupations have **high demand** (1,500+ workers), **high advancement potential**, require less than a four-year degree at entry, and are central to the Clean Economy.

Medium-Priority Community College Occupations

- Heavy and Tractor-Trailer Truck Drivers
- Operating Engineers

These occupations have **moderate to high demand** (700+ workers), **moderate advancement potential**, require less than a four-year degree at entry, and are central to the Clean Economy.

Emerging Community College Occupations

- Electrical Technicians
- Energy Auditors
- Environmental Remediation Technicians
- Solar Panel Maintenance and Recycling Technicians

These occupations were cited as **emerging short- to medium-term hiring needs** according to stakeholder interviews and typically require less than a four-year degree at entry.

Clean Economy workforce development is shaped by specific structural constraints.

- Clean Economy projects face **permitting hurdles** and **regulatory uncertainty** that impact project timelines and funding, affecting employer hiring and training needs.
- Emerging technologies such as offshore wind and nuclear face **uncertain development paths**, creating risks and posing challenges for curriculum development.
- Aging infrastructure and decommissioning work require specialized skills but regional training pathways for remediation are limited.
- **Insufficient awareness of Clean Economy career pathways** limits effectiveness of program uptake.
- **Rapid skills change** in building electrification, grid modernization, and emerging technologies requires strong employer-educator feedback loops to maintain curriculum relevance.

The Clean Economy offers opportunities for the region.

- **Major regional assets** such as Diablo Canyon, Morro Bay offshore wind activity, and decommissioning create demand for core Clean Energy occupations.
- **Aging solar installations** are generating demand for panel maintenance and recycling technicians.
- **Grid modernization** and **distributed energy resources** are increasing demand for electrical technicians.
- Remediation and decommissioning offer **transition pathways** for fossil fuel workers.
- **Cross-cutting foundational skills** allow community college programs to serve multiple Clean Economy industries simultaneously.



Regional collaboration can support workforce development.

- **Coordinate Clean Economy advisory structures** to share insights, reduce duplication of effort, and align training with sector-specific needs.
- **Align curriculum development timelines for emerging technologies** (e.g., offshore wind, nuclear) to prepare for evolving skills needs.
- **Develop shared employer engagement strategies** for utilities and other Clean Economy employers to streamline outreach and expand work-based learning.
- **Expand access for nontraditional learners** through wraparound supports and targeted outreach to strengthen participation in Clean Economy career pathways.



Community colleges can strengthen their role in Clean Economy workforce development.

- **Scale high-value programs.** Expand HVAC, welding, pre-engineering, and advanced manufacturing programs aligned with in-demand Clean Economy occupations.
- **Close skills gaps through work-based learning.** Expand internships, short-term credentials, pre-apprenticeships, and job readiness programs to close cross-cutting foundational skills gaps across Clean Economy industries.
- **Deepen regional alignment.** Strengthen and scale advisory and employer engagement efforts to maintain long-term alignment with Clean Economy needs.



SUMMARY

The Clean Economy sector offers strong opportunities to support regional and statewide goals surrounding **decarbonization**, **electrification**, **sustainability**, and **grid and climate resilience** while advancing the core mission of California's community colleges: to advance **economic growth** through **accessible workforce training** and **career education**.



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THANK YOU.





Appendix: Methodology

Occupational Prioritization Criteria

Advancement Potential

- **High** – Occupations **most likely** to provide higher-paying job opportunities
- **Moderate** – Occupations that are **somewhat likely** to provide higher-paying job opportunities
- **Low** – Occupations **least likely** to provide higher-paying job opportunities

BW's Job Advancement Index measures **workers' potential to advance to higher-paying job opportunities** using longitudinal worker advancement data from [the U.S. Census Bureau's Current Population Survey \(CPS\) \(2000-2025\)](#).

Advancement potential is not applicable for occupations already paying high wages.

Automation Potential

- **High** – Most automatable occupations with the **highest proportion** of skills and tasks that can be automated
- **Moderate** – Somewhat automatable occupations with **some proportion** of skills and tasks that can be automated
- **Low** – Least automatable occupations with the **lowest proportion** of skills and tasks that can be automated

BW's Job Automation Index measures **the proportion of skills and tasks that can be automated within a particular occupation** using detailed knowledge, skills, and abilities (KSA) and work activity data from [O*NET OnLine, 30.0 Database \(2025\)](#).

Skills Change

- Skills change levels derived from employer survey responses indicating whether occupations had experienced “considerable,” “some,” or “little to no” skills change over the last 12 months.
- Occupations were grouped into high, medium, and low tertiles based on **relative reported levels of skills change**.

Skills change level is based on the percentage of surveyed employers indicating that an occupation exhibited **“considerable” skills change** over the last 12 months.

However, since survey responses were limited, these findings should be interpreted **directionally** rather than as strict quantitative findings.

Clean Economy Employer Survey

Method	Online Survey (Email and Panel Respondents)
Universe	30,644 establishments in Santa Barbara, San Luis Obispo, Ventura, and Los Angeles Counties
Number of Respondents	126 total completes by Clean Economy firms in Santa Barbara, San Luis Obispo, Ventura, and Los Angeles Counties
Average Length	Online Survey – 17 minutes
Field Dates	April 15, 2026 through May 11, 2026