

Labor Market Analysis for Program Exploration

Maritime Trades

Prepared by the North Far North Center of Excellence
Fall 2026



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CENTER OF EXCELLENCE
FOR LABOR MARKET RESEARCH
NORTH FAR NORTH

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Introduction

This report compiled by the Far North Center of Excellence (Far North COE) evaluates labor market information and explores community college program opportunities related to maritime trades. (See Appendix A for methodology and data sources.)

In conducting this analysis on occupations in the maritime trades, the Far North COE sought to determine if demand in the local labor market is unmet by the supply from existing community college programs and other postsecondary training providers, with a primary focus on training that leads to well-paid, in-demand middle-skill jobs, those typically requiring more education and training than a high school diploma but less than a bachelor's degree.¹

According to the Bureau of Labor Statistics, maritime trade occupations encompass water transportation workers, including deckhands, engineers, and captains operating vessels, as well as support roles in shipbuilding, such as welders and electricians.² These roles often require specialized certifications, with many offering on-the-job training for positions on tugboats, tankers, and cargo ships.

There are many different jobs associated with the maritime trades, and many require specialization in different areas of expertise.

Some examples of industry-specific trades and technical roles are:

- **Ship and Boat Builders:** Providing skilled services as electricians, carpenters, pipefitters, and steel fitters.
- **Deckhands and Laborers:** Performing maintenance and handling of tugs, barges, and ferries.
- **Marine Engineers and Naval Architects:** Designing and maintaining vessel systems.

Because there are a wide range of occupations associated with maritime trades, a job posting analysis was conducted using keywords to see which related occupations were most commonly in demand in California and the North Far North Region.

Using Standard Occupational Classification (SOC) codes, five occupations were selected for closer examination and are discussed later in this report:

- **Motorboat Mechanics and Service Technicians (SOC code 49-3051)**
- **Marine Engineers and Naval Architects (SOC code 17-2121)**
- **Stationary Engineers and Boiler Operators (SOC code 51-8021)**
- **Sailors and Marine Oilers (SOC code 53-5011)**
- **Bus and Truck Mechanics and Diesel Engine Specialists (SOC code 49-3031)**

¹ Pursuant to California Education Code §78015, labor market information (LMI) is required for all new career education certificate and degree program proposals, and the North Far North Regional Consortium (NFNRC) requires LMI to come from the North Far North COE (Far North and Greater Sacramento). This report should serve to satisfy those requirements.

² "NAICS 336600 - Ship and Boat Building," U.S. Bureau of Labor Statistics, May 2023, accessed August 27, 2026.

Industry Overview

For coastal communities, the maritime sector is an important job creator and employer, supporting local economies and contributing to global maritime operations. In the North Far North Region, important ports and harbors include the Port of West Sacramento, Port of Humboldt Bay, Eureka Boat Basin, Crescent City Harbor, Noyo Harbor, and Bodega Harbor.

The maritime sector spans shipbuilding and maintenance, port operations, marine research, sustainable fisheries, offshore renewable energy.³ Overlap also exists with the offshore wind industry since both industries involve vessel and marine operations as well as engineering and technical trades, such as electrical and hydraulic systems and welding.

Repair and maintenance comprise a substantial proportion of the work conducted in the maritime trades. Under the North American Industry Classification System (NAICS) sector Shipbuilding and Repairing (NAICS 336611), nearly 77% of the sector's revenue is derived from routine repairs and maintenance of maritime vessels.⁴ Additionally, the Maritime Administration estimates that private employment in shipbuilding and repair totaled 8,490 in 2019, with California employing the fourth highest concentration of such workers in the nation.⁵

In terms of major employment sectors for the maritime trades, there are two categories of conventional and sustainable marine economic activities known as the ocean economy (conventional) and blue economy (more environmentally sustainable and socially equitable):

- **Ocean economy sectors**—living resources, marine construction, offshore mineral extraction, marine transportation, ship and boat building, and tourism and recreation
- **Blue economy sectors**—blue tech, carbon capture, ecosystem conservation, marine professional services, ocean research and development, regenerative aquaculture, renewable ocean energy, and sustainable port operations⁶

A substantial workforce shortage has been documented in the maritime trades. Fortune Magazine reports that 200,000 to 250,000 maritime employees will be needed to meet demand in the next decade.⁷ The staffing firm Wide Effect attributes the ongoing shortage to several factors, noting that “aging workforces, strict regulations, rising competition, and evolving technologies are making it harder to fill critical roles.”⁸ Other factors include a declining number of younger workers entering maritime careers, increased international competition for workers, as well as increased regulatory frameworks and technology complexity that require higher levels of training and certification.⁹

An article published by The Maritime Executive identifies similar causes of the workforce shortage

³ “[Maritime](#),” Northwest Oregon Works, 2025, accessed August 27, 2026.

⁴ “[The Economic Importance of the U.S. Private Shipbuilding and Repairing Industry](#),” U.S. Maritime Administration (MARAD), March 30, 2021.

⁵ Ibid.

⁶ “[The Blue Economy in Los Angeles County: Charting a Course Forward](#),” Los Angeles Economic Development Corporation (LAEDC), February 2025.

⁷ Preston Fore, “[Jamie Dimon says six-figure shipyard jobs are the new ‘American Dream’—but candidates will need to endure hours of extreme heat, cold, and rain](#),” Fortune Magazine, July 21, 2026.

⁸ “[Why Offshore Companies Are Struggling to Find Skilled Maritime Workers](#),” Wide Effect, 2026, accessed August 27, 2026.

⁹ “[The Future of Maritime Employment amid a Growing Workforce Shortage](#),” ORCA, 2026, accessed August 27, 2026.

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and observes, “Like many basic manufacturing industries in the U.S., shipyards struggle to find and retain skilled workers, which contributes to production delays and limits the industry's ability to meet growing ship orders, especially for Navy contracts.”¹⁰

A March 2026 report released by McKinsey and Company identifies 16 maritime occupations that are projected to have substantial labor needs by 2033. The occupations with the most acute needs include welders, cutters, solderers, and brazers; miscellaneous assemblers and fabricators; fiberglass laminators and fabricators; first-line supervisors of production and operating workers; and machinists.¹¹

In response to increased attention toward the need for more maritime trades workers to meet employment demand, the U.S. Department of Labor announced in February the availability of \$145 million to support the rapid expansion of apprenticeships in several industries, including shipbuilding.¹²

Additionally, the current presidential administration has recognized this shortage and the implications for national security (namely, the ability to construct and deploy military vessels), which culminated in August 2026 with a National Security Presidential Memorandum “to fix critical long-term issues in Navy shipbuilding and ship repair programs and restore capacity and competition to the maritime industrial base.”¹³

¹⁰ G. Allen Brooks, “[America's Maritime Labor Shortage](#),” The Maritime Executive, July 13, 2025.

¹¹ “[Anchoring maritime talent](#),” McKinsey & Company, March 10, 2026.

¹² Sara Samora, “[Labor Department offers \\$145M in grants for apprenticeship incentive program](#),” Manufacturing Dive, February 18, 2026.

¹³ “[Fact Sheet: President Donald J. Trump Rebuilds the U.S. Navy and America's Shipbuilding Industrial Base](#),” The White House, August 13, 2026.

Common Job Titles

In researching the occupations that comprise maritime trades, occupations necessary for shipbuilding and ship maintenance were identified. The job titles presented in this section were collected from programs offered by postsecondary institutions and by job websites hosted by staffing companies that specialize in recruiting workers for the maritime trades.

In the Pacific Northwest where maritime operations play a critical economic role, the Seattle Jobs Initiative has identified and mapped several pathways within maritime trades that are critical to port and shipbuilding operations:

- **Maritime Deck crews from Ordinary Sailors to Captains**
- **Maritime Engine crews from Wipers to Chief Mechanical Engineers**
- **Electricians, from Electrician Helpers/Apprentices to Master Electricians**
- **Heating, Ventilation and Air Conditioning (HVAC) Mechanics and Installers and Insulation Workers¹⁴**

Due to widespread workforce shortages, workers hired by recruiting firms may travel to the location of need where they are housed while working as independent contractors or temporary employees for a period of time.

Many of the job titles that are commonly associated with maritime trades also occur within the construction industry, but maritime trades occupations may require some specialized knowledge of shipbuilding or ship maintenance for employment in the maritime sector. Depending on the occupation, a certification related to the construction and/or maintenance of marine vessels may be required.

Community colleges and maritime postsecondary institutions across the nation commonly offer coursework or apprenticeships related to Maritime Service Technicians / Maritime Engineering Technicians. (See the Postsecondary Programs section for more details.)

This entry-level position often involves working with a wide range of maritime technologies, including navigational instruments, communication systems, radar systems, sonar equipment, and other electronic and mechanical components on ships and vessels. Exhibit 1 details common job titles of workers being recruited for maritime positions based on staffing firm websites.

Workers may be tasked with inspecting, maintaining, and repairing the mechanical, electrical, and propulsion systems of maritime vessels, with attention toward the repair and maintenance of:

- **Engine systems**
- **Electrical systems**
- **Intake or plumbing systems**
- **Hydraulics and navigation systems, like propellers or rigging**
- **HVAC systems**
- **Vital onboard equipment like GPS or radar¹⁵**

The types of positions that are being recruited for on staffing firm websites were also studied.

¹⁴ Elodie Martlet and Kathleen Carson, "[Port of Seattle Career Pathways: Maritime and Green Jobs](#)," Seattle Jobs Initiative, September 30, 2022.

¹⁵ "[Marine Technician Salary, Duties and Job Outlook](#)," Universal Technical Institute, 2026, accessed August 27, 2026.

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These firms were Gillmann Services,¹⁶ LEAD,¹⁷ ORCA Crew Services,¹⁸ and Wide Effect.¹⁹

Exhibit 1. Common maritime job titles being recruited by staffing firms

- Crane Operators
- Diesel Technician
- Electricians
- Firewatch
- Joiners
- HVAC technicians
- Maintenance Engineer
- Maritime Hydraulic Technician
- Machinists
- Millwrights
- Mobile Heavy Equipment Mechanics
- Plumbers and Pipefitters
- Painters
- Refrigerated Seawater Technician
- Riggers, Burners, Blasters
- Small Motor Maintenance Technician
- Shipboard Welder/ Underwater Welder (may require Certified Commercial Diver certification)
- Sheet Metal Fabricators/ Sheet Metal Installation/ Structural Metal Fabricators
- Shipfitters
- Ship Superintendents
- Shipwrights
- Steelworkers

Within the area of construction management, several types of workers are being recruited:

- **Estimators**
- **Health, safety and environment (HSE) advisors**
- **Project managers**
- **Quality Assurance/Quality Control leads**
- **Schedulers**

Within the area of port operations and logistics, two common occupations are Laborers to move Freight, Stock and Materials; and Tank Car, Truck & Ship Loaders.²⁰

¹⁶ "[Marine](#)," Gillmann Services, Inc., 2019, accessed August 27, 2026.

¹⁷ "[Marine Staffing](#)," LEAD, accessed August 27, 2026.

¹⁸ "[The Future of Maritime Employment amid a Growing Workforce Shortage](#)," ORCA, 2026, accessed August 27, 2026.

¹⁹ "[Maritime Staffing](#)," Wide Effect, 2026, accessed August 27, 2026.

²⁰ "[Maritime](#)," Northwest Oregon Works, 2025, accessed August 27, 2026.

Industry Certifications

The following is a list of safety certifications that may be requested by employers:

- **Standards of Training, Certification and Watchkeeping for Seafarers (STCW):** STCW is an internationally recognized set of standards for seafarers. The basic STCW certification includes training in personal safety, survival techniques, first aid, and firefighting.²¹ This is the foundational course required for most maritime jobs and includes modules on personal survival techniques, fire prevention, elementary first aid, and personal safety and social responsibilities.²²
- **Advanced certifications:** Depending on a worker's role, these certifications may be required Advanced Firefighting,²³ Proficiency in Survival Craft,²⁴ and Security Awareness.²⁵

STCW is a common component of postsecondary training programs for entry-level maritime positions, such as the coursework offered by Columbia Pacific Maritime, a U.S. Coast Guard training provider for mariners in Coos Bay, Oregon.²⁶ (Please note that Able Seafarers typically must have completed a set of requirements known as STCW.²⁷) The Postsecondary Training section of this report offers more details on apprenticeships and training programs.

Examples of technical certifications:

- **Marine Electrical Certification:** For electricians, certifications from bodies like the American Boat & Yacht Council (ABYC) are essential.²⁸ Depending on the trade, unions may be involved in offering apprenticeships and training.
- **Welding Certification:** Welders may need certifications specific to marine environments, such as those offered by the American Welding Society (AWS).²⁹
- **HVAC and refrigeration certifications:** These types of certifications apply to maintaining onboard systems.³⁰ Certifications in HVAC and refrigeration are valuable for the repair and upkeep of onboard systems and can be obtained through a maritime systems certification, such as the program offered by the American Boat and Yacht Council.³¹

²¹ "[Standards of Training, Certification, and Watchkeeping \(STCW\)](#)," National Maritime Center, U.S. Coast Guard, accessed August 27, 2026.

²² "[STCW Basic Training](#)," Sea School, 2026, accessed August 27, 2026.

²³ "[STCW Advanced Firefighting](#)," U.S. Coast Guard, accessed August 27, 2027.

²⁴ "[Proficiency in Survival Craft \(PSC\)](#)," Maritime Institute, accessed August 27, 2027.

²⁵ "[STCW - Vessel Personnel with Designated Security Duties/ Security Awareness](#)," Coast Guard Credentialing Opportunities On-Line, August 3, 2026.

²⁶ "[Columbia Pacific \(ColPac\) Maritime](#)," accessed August 27, 2026.

²⁷ "[STCW Able Seafarer-Deck](#)," U.S. Coast Guard, January 17, 2025.

²⁸ "[Marine Electrical Certification](#)," The American Boat & Yacht Council, 2026, accessed August 27, 2026.

²⁹ "[Underwater Welder Career Profile](#)," American Welding Society, 2026, accessed August 27, 2026.

³⁰ "[How to Transition into the Marine Industry for Skilled Tradespeople](#)," Gillmann Services, Inc., July 15, 2024.

³¹ "[Marine Systems Certification](#)," The American Boat & Yacht Council, 2026, accessed August 27, 2026.

AI Risk by Occupational Title

Based on the impartial website AI Exposure which identifies AI replacement risk by occupation, moderate exposure is anticipated for the five occupations of focus.

These occupations are somewhat insulated from AI impacts because they require communication and critical thinking skills that cannot be replaced by AI, as well as physical requirements related to identifying repair needs and causes of malfunctioning equipment.

However, each occupation involves a substantial percentage of human-essential tasks:

- **Motorboat Mechanics and Service Technicians**—Working in confined, elevated, or hazardous spaces; Customer communication about technical issues; Diagnosing novel equipment failures through physical inspection; Hands-on fine motor work in intricate machinery.³²
- **Marine Engineers and Naval Architects**—Client communication and technical consultation; Safety-critical judgment in design review; Cross-disciplinary collaboration on complex projects; On-site problem-solving in variable physical conditions.³³
- **Stationary Engineers and Boiler Operators**—Setup and calibration of custom production runs; Coordinating workflow across diverse production teams; Quality judgment requiring tactile and visual inspection.³⁴
- **Outdoor Power Equipment and Other Small Engine Mechanics**—Diagnosing novel equipment failures through physical inspection; Working in confined, elevated, or hazardous spaces; Customer communication about technical issues.³⁵

³² “[Motorboat Mechanics and Service Technicians](#),” AI Exposure, 2026, accessed August 27, 2026.

³³ “[Marine Engineers and Naval Architects](#),” AI Exposure, 2026, accessed August 27, 2026.

³⁴ “[Stationary Engineers and Boiler Operators](#),” AI Exposure, 2026, accessed August 27, 2026.

³⁵ “[Outdoor Power Equipment and Other Small Engine Mechanics](#),” AI Exposure, 2026, accessed August 27, 2026.

Job Postings

Analysis of online job postings can offer additional insights into recent labor market changes not reflected in historical trends. However, it is important to note that job postings do not equate to actual labor market demand, which is based on projected annual job openings.

In the case of maritime trades, job postings may not accurately reflect hiring demand since employers may choose to advertise and recruit workers through word of mouth or through outside firms, unions, or training providers. Due to a low number of job postings, the analysis largely focused on California as a whole, rather than the North Far North Region.

In general, there are several additional limitations to interpreting online job postings. Employers may repost the same position multiple times to attract more applicants, or job postings may remain active even if the position is no longer being filled. Moreover, a single job posting can be used to hire for multiple openings, and not all job opportunities are advertised online.

Despite these limitations, job posting analyses can identify in-demand skills and hiring trends that can be applied to guiding community college curriculum development and highlight potential employers for targeted experiential learning opportunities or outreach.

Exhibit 2 summarizes the keyword search used as part of this analysis, which primarily focused on job titles for positions that align with the selected occupations.

Exhibit 2. Keywords used in job postings analysis

- Marine Diesel Mechanic
- Marine Diesel Technician
- Marine Engineer
- Marine Engineering Technician
- Marine Hydraulic Technician
- Marine Maintenance Technician Marine Mechanic
- Marine Service Technician
- Marine Technician
- Marine Welder
- Shipboard Welder
- Shipyard Welder
- Underwater Welder

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The North Far North COE identified 326 total online job postings for the selected occupations across California, and 10 in the North Far North region (Exhibit 3). Most of the identified job postings were posted by non-staffing companies. Job posting data comes from and represents unique advertisements posted online during the last 12 months, from July 2025 to June 2026. Please note: The analyses in the subsequent sections of this report focus on job postings by non-staffing companies.

Exhibit 3. Number of job postings in the Far North Region and California

Area	Number of Job Postings (Non-Staffing Companies Only)	Number of Job Postings (Staffing Companies Only)	Total Job Postings
California	298	28	326
North Far North	10	0	10

Top cities

Exhibit 4 shows the top cities in job postings across California. Posting locations largely reflect the locations of major ports in the state.

Exhibit 4. Top cities in job postings, California

Cities	Number of Job Postings
San Diego, CA	82
San Francisco, CA	40
Long Beach, CA	15
Richmond, CA	13
National City, CA	11
Ventura, CA	8
Imperial Beach, CA	7
Los Angeles, CA	7
Alameda, CA	6
Marina del Rey, CA	6

Top employers

Exhibit 5 shows the employers with the most job postings across California.

Exhibit 5. Employers with the most job postings, California

Employer	Number of Job Postings
Q.E.D. Systems	13
San Francisco Municipal Transportation Agency (SFMTA)	11
Sun Coast Marine Services	11
Bass Pro Shops	8
Svensden's Bay Marine	7
Serco	7
Hornblower Group	7
Makan Yacht Group	7
City & County of San Francisco	6
COWI	5

Top job titles

Exhibit 6 shows the job titles with the most job postings across California. The most common job titles are marine mechanics, marine technicians, and stationary engineers.

Exhibit 6. Job titles with the most job postings, California

Job Title	Number of Job Postings
Marine Mechanics	34
Marine Technicians	28
Stationary Engineers	15
Marine Engineers	12
Marine Service Technicians	11
Mechanics/Technicians	11
Boat Mechanics	7
Engineers	7
Marine Diesel Mechanics	7
Service Technicians	6

Top occupations

Exhibit 7 shows the top occupational titles in job postings across California. Occupational titles are based on the SOC system which organizes workers into occupational categories. See the section “Occupational Demographics” to view the demographic breakdown of the top five occupations.

Exhibit 7. Top occupational titles in job postings, California

Occupational Title	Number of Job Postings
Motorboat Mechanics and Service Technicians	114
Marine Engineers and Naval Architects	36
Stationary Engineers and Boiler Operators	17
Sailors and Marine Oilers	14
Bus and Truck Mechanics and Diesel Engine Specialists	13
Outdoor Power Equipment and Other Small Engine Mechanics	12
Precision Instrument and Equipment Repairers, All Other	9
Civil Engineers	6
Maintenance and Repair Workers, General	6
Automotive Service Technicians and Mechanics	5

Top certifications

Exhibit 8 shows the top certifications with the most job postings across California. Certifications related to the maritime trades include security clearance, Transportation Worker Identification Credential (TWIC) Card, and Standards of Training Certification and Watchkeeping (STCW).

Exhibit 8. Certifications with the most job postings, California

Certification	Number of Job Postings
Secret Clearance	46
Security Clearance	22
Transportation Worker Identification Credential (TWIC) Card	18
First Aid Certification	12
Forklift Certification	12
Cardiopulmonary Resuscitation (CPR) Certification	11
Standards Of Training Certification and Watchkeeping	9
10-Hour OSHA General Industry Card	8
EPA Section 608 Technician Certification	7

Skills and qualifications

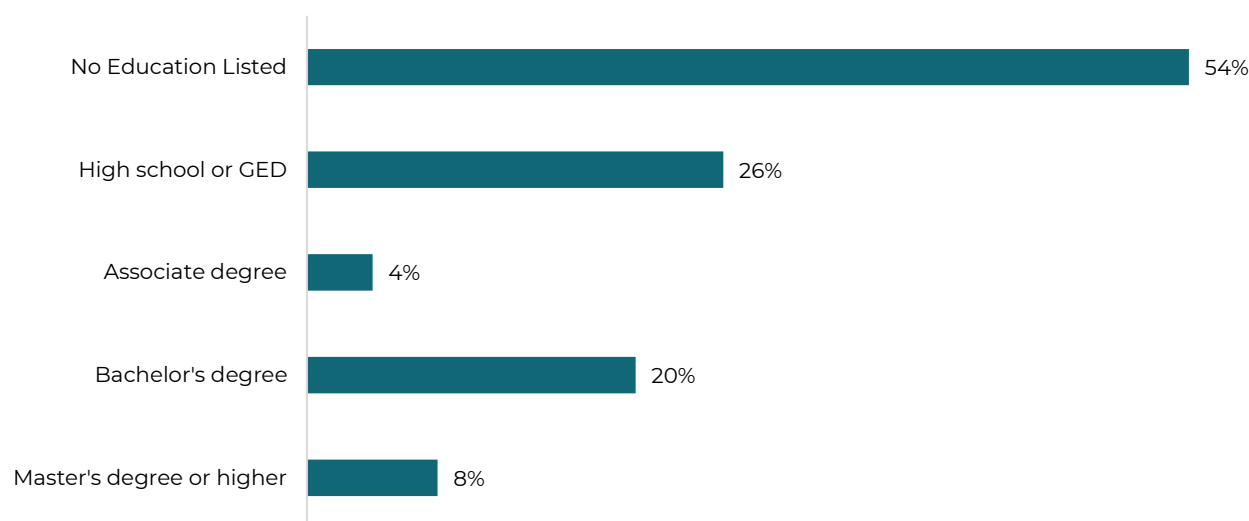
Exhibit 9 shows the most requested skills in job postings across California, presented in order of most commonly to least commonly listed in job ads.³⁶

Exhibit 9. Most requested in-demand skills in job postings, California

Specialized Skills	Common or Employability Skills	Software and Technology Skills
Lifting Ability	Communication	Microsoft Office
Diesel Engines	Troubleshooting	Inventory Control Systems
Electrical Systems	Operations	AutoCAD
Machinery	Management	Microsoft Outlook
Mechanics	Customer Service	Microsoft Excel
Power Tool Operation	Time Management	Spreadsheets
Hand Tools	Problem Solving	Autodesk Navisworks
Preventive Maintenance	Leadership	Navisworks (BIM Software)
HVAC	Detail Oriented	ShipConstructor (Software)
Hydraulics	Planning	SolidWorks (CAD)

Exhibit 10 shows the employer-preferred level of education in job postings across California. In more than 50% of job postings, no education is listed.

Exhibit 10. Employer-preferred education levels for the studied occupations, California



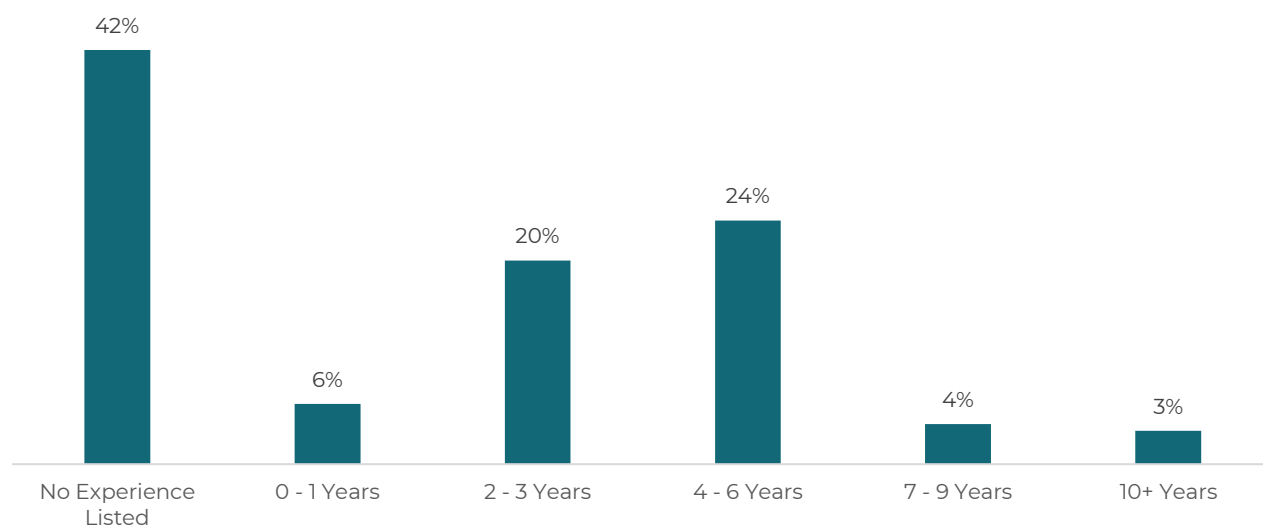
Note: Employers may include more than one level of education as a hiring requirement in a job posting. As a result, the values in the chart may sum to greater than 100%.

³⁶ Specialized skills are those primarily required to perform specific tasks in an occupation. Common skills are typically related to employability; these are skills that are prevalent across many occupations and usually include a mix of interpersonal attributes and soft skills. Software skills are specific to any software tool or programming component used to accomplish tasks in a job.

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Exhibit 11 shows the employer-preferred minimum level of experience in job postings across California.

Exhibit 11. Employer-preferred experience levels for the studied occupations, California



Top industries

Exhibit 12 shows the top industries in job postings across California.

Exhibit 12. Top industries in job postings, California

Industry	Number of Job Postings
Engineering Services	25
Ship Building and Repairing	12
Scenic and Sightseeing Transportation, Water	12
Bus and Other Motor Vehicle Transit Systems	11
Boat Dealers	10
All Other Professional, Scientific, and Technical Services	9
Sporting Goods Retailers	8
Navigational Services to Shipping	7
Colleges, Universities, and Professional Schools	7
Custom Computer Programming Services	6

Workforce Demographics

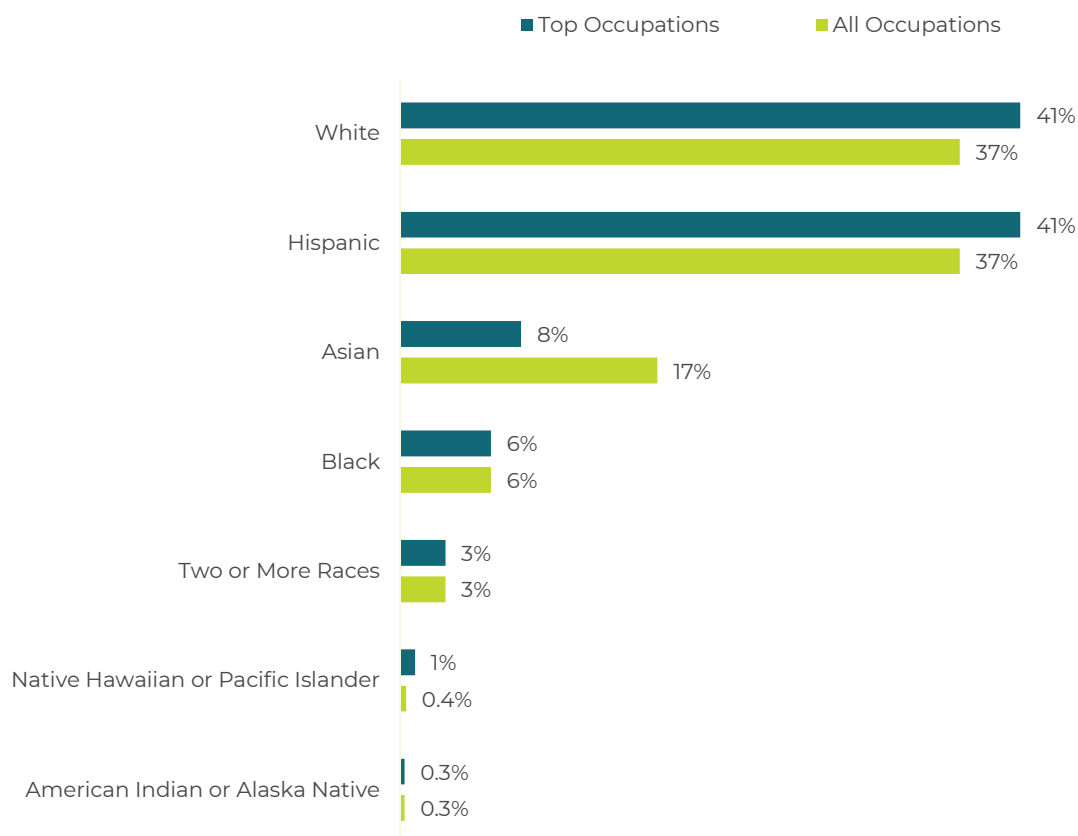
Exhibit 13 shows the top five occupations in job postings across California, which collectively make up 65% of job postings. (See Exhibit 7 for the full list of occupations.) This section focuses on demographics for these five occupations.

Exhibit 13. Five focus occupations identified through job postings, California

SOC	Occupation
49-3051	Motorboat Mechanics and Service Technicians
17-2121	Marine Engineers and Naval Architects
51-8021	Stationary Engineers and Boiler Operators
53-5011	Sailors and Marine Oilers
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists

Exhibit 14 shows the breakdown of race/ethnicity across the top five occupations in Exhibit 12, compared to all occupations in California. White and Hispanic workers account for 82% of workers in the top occupations (41% each).

Exhibit 14. Worker race and ethnicity in terms of the top five focus occupations and all maritime occupations analyzed in job postings, California



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Exhibit 15 shows the breakdown of age categories across the top five occupations, compared to all occupations in California. Results show that these occupations largely mirror age trends across the state.

Exhibit 15. Worker age in terms of the five focus occupations and all maritime occupations analyzed in job postings, California

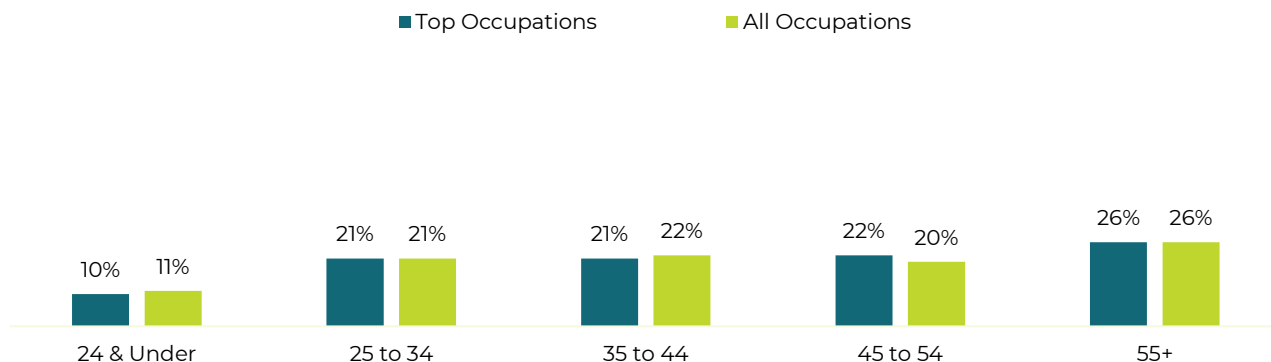
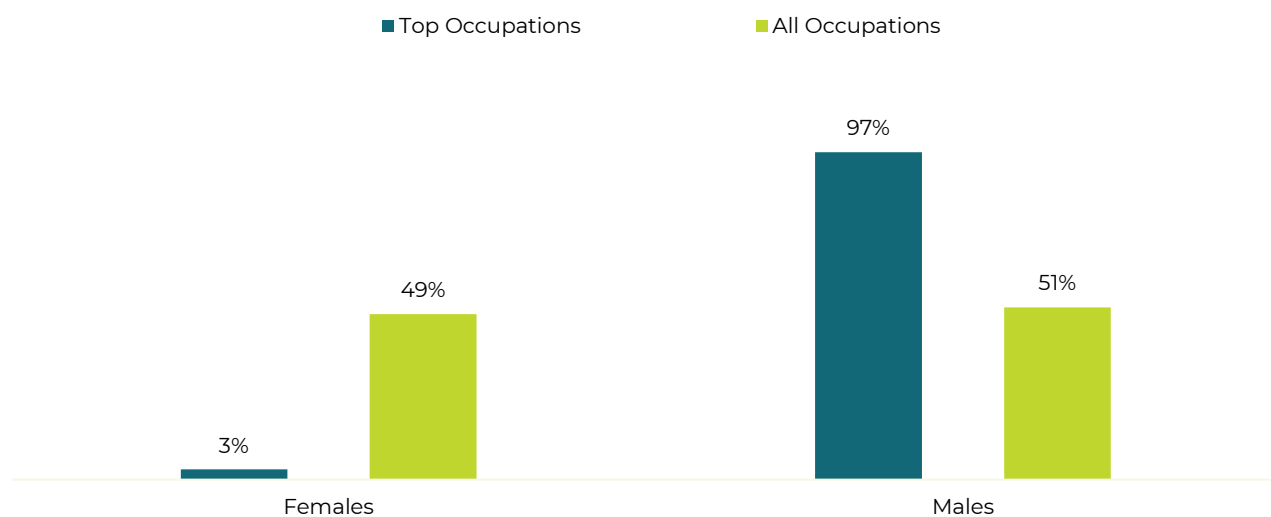


Exhibit 16 shows the breakdown of gender across the top five occupations, compared to all occupations in California. The top occupations are largely represented by males (97%), while gender is approximately equally represented in all occupations across the state.

Exhibit 16. Worker gender in terms of the five focus occupations and all maritime occupations analyzed in job postings, California



West Coast Apprenticeship Programs

Two apprenticeship programs related to Marine Service Technicians are offered on the West Coast.

California—Las Positas College offers a Marine Service Technician apprenticeship.

“This is a 15-month program with the apprentices being paid from day one of their training. Nine months are spent at the Spaulding Marine Center, in Sausalito, learning shop safety & tool skills while gaining familiarity to all parts of a boat including propulsion, marine carpentry, electrical systems and plumbing. The last six months are spent rotating through a variety of employer boatyards in the Bay Area hardening skills in the industry. College credit and a certificate is automatically earned with completion of the program. Apply through the Spaulding Center during open application periods.”³⁷

Washington—In the state of Washington, the Port of Bellingham founded the Northwest Maritime Apprenticeship program, which is focused on training Marine Service Technicians, who are skilled in the areas of building, repairing, and maintaining marine vessels.³⁸



³⁷ “[Apprenticeship](#),” Las Positas College, 2026.

³⁸ “[Education and Training](#),” Northwest Maritime Apprenticeship, accessed April 3, 2026.

Postsecondary Programs

Two Taxonomy of Programs (TOP) codes were used for a statewide analysis of programs related to maritime trades:

- 0959.00 – Marine Technology: Operation and maintenance of ships systems and marine equipment
- 0948.30 – Motorcycle, Outboard, and Small Engine Repair: Repair, overhaul, service, and maintenance of motorcycles, outboard motors, and small engines

Two community colleges in the state offer programs related to marine technology (Exhibit 17), while three colleges offer programs related to motorcycle, outboard, and small engine repair (Exhibit 18). Collectively, only 19 awards were conferred across all programs statewide in the 2025-26 academic year.

Exhibit 17. Annual awards by community college for Marine Technology (0959.00)

Community College	Award Type	2022-23	2023-24	2024-25	2025-26
Orange Coast	Associate of Science (A.S.) Degree	3	4	4	4
Orange Coast	Certificate requiring 16 to fewer than 30 semester units	7	11	12	9
Orange Coast	All Awards	10	15	16	13
Santa Barbara City	Associate of Science (A.S.) Degree	2	--	2	--
Santa Barbara City	Certificate requiring 30 to fewer than 60 semester units	2	--	13	--
Santa Barbara City	All Awards	6	--	15	--
Statewide	All Awards	16	15	31	13

Exhibit 18. Annual awards by community college for Motorcycle, Outboard, and Small Engine Repair (0948.30)

Community College	Award Type	2022-23	2023-24	2024-25	2025-26
Los Angeles Trade – Technical	Certificate requiring 16 to fewer than 30 semester units	4	10	9	6
Los Angeles Trade – Technical	All Awards	4	10	9	6
American River	Certificate requiring 8 to fewer than 16 semester units	--	1	1	--
American River	All Awards	--	1	1	--
San Francisco City	Associate of Science (A.S.) Degree	1	2	--	--
San Francisco City	Certificate requiring 16 to fewer than 30 semester units	2	5	5	--
San Francisco City	All Awards	3	7	5	--
Statewide	All Awards	7	18	15	6

Conclusion and Recommendations

This report identifies occupations associated with maritime trades and examines labor market characteristics, including trends in job postings. The Far North COE hopes that by highlighting opportunity areas and potential pathways for program development, this study can contribute toward supporting students on their journeys into rewarding careers in maritime industries through the North Far North Region and California.

Program opportunity areas:

- An analysis of job posting data shows 326 job postings were advertised during a 1-year period in California for occupations related to the maritime trades. While job postings should not be interpreted as a direct measure of hiring demand, they can indicate workforce needs and hiring preferences among employers. In-demand skills and common job titles provide insights into areas that may warrant exploration for program development.
- In the 2025-26 academic year, community colleges only conferred 19 awards total related to the marine trades statewide. Considering the number of ports and harbors in the state, this number appears to be low; however, more research may be required to determine whether there is a shortage of students being prepared to meet workforce demand.
- Common job titles in job postings are Marine Mechanics, Marine Technicians, Stationary Engineers, Marine Engineers, Marine Service Technicians. Shared skillsets among these occupations may offer a starting point for community college program development. Additionally, commonly occurring specialized skills in job postings can also provide a foundation for program development. These include diesel engines, electrical systems, machinery, and mechanics.
- Due to the importance of safety credentialing among maritime occupations, the opportunity may exist to incorporate STCW certification into a community college training program so that students can obtain employment on commercial vessels.³⁹ STCW Basic Safety Training covers personal survival, basic firefighting, first aid/CPR, and personal safety/social responsibility. STCW is a mandatory certification for all crew members on commercial vessels.⁴⁰ STCW also emerges as an in-demand certification in the job postings analyzed for this report.

³⁹ "[Standards of Training, Certification, and Watchkeeping \(STCW\)](#)," United States Coast Guard National Maritime Center, accessed March 24, 2026.

⁴⁰ "[STCW Basic Training](#)," Maritime Professional Training, accessed March 24, 2026.

Considerations

- These jobs may be well-suited for non-traditional students who are inclined toward hands-on learning and enjoy problem solving. Students who learn best through physical activity and real-world practice might excel in programs aligned with the maritime trades.
- There is a broad range of occupations that apply to the building, repair, and maintenance of seafaring vessels. Many of these occupations require advanced training and certification, in areas such as marine electrical work, plumbing, welding, diesel motors, hydraulics, and maritime technologies like radar and sonar. However, programs that prepare students to become Marine Science Technicians may offer a promising entry-point for students looking to enter maritime-related employment.
- Demographic analysis indicates that the maritime trades sector is comprised of an aging workforce, with a low percentage of younger workers entering these occupations. The gender disparity apparent in the analysis top five focus occupations indicates an opportunity for outreach and support of female workers entering these careers.
- Many aspects of the occupations associated with the maritime trades are insulated from AI risk due to the physical nature of these jobs (some of which also require fine motor skills) and because these occupations involve critical thinking, complex problem solving, and diagnostic abilities.
- Coordination with workforce stakeholders is recommended for exploring the feasibility of offering marine service technical training that leads to in-demand, well-paid jobs. Examples of stakeholders who may warrant outreach include employers listed in this report's job posting analysis; local harbormasters; Northern California member associations of the California Fishermen's Resiliency Association; the Pacific Maritime Association; and unions such as the Seafarers International Union (SIU).

Appendix A: Methodology and Data Sources

Labor market and postsecondary supply data compiled in this report derive from a variety of sources. Occupations were identified by using the Center of Excellence TOP-to-CIP-to-SOC Crosswalk: <http://coeccc.net/>. This report's findings were primarily determined with labor market and educational supply data from the Bureau of Labor Statistics (BLS), the economic modeling firm and job postings aggregator Lightcast, and the California Community Colleges Chancellor's Office.

Labor Market Information and Job Postings. Traditional labor market information and job postings data are sourced from [Lightcast](#), a labor market analytics firm. Lightcast's occupational employment data are based on final Lightcast industry data and staffing patterns. Wage estimates are based on Occupational Employment Statistics data for QCEW and non-QCEW employee classes of worker and American Community Survey data for self-employed workers and extended proprietors.

Living Wage. Living wage estimates are derived from the [Insight Center's California Family Needs Calculator](#), which estimates the income necessary for an individual or family to afford basic expenses, including housing, food, childcare, health care, transportation, and taxes. The Chancellor's Office uses wage data to calculate the percentage of students who attained a regional living wage.

Typical Education Level, On-the-Job Training, and Educational Attainment. The U.S. Bureau of Labor Statistics (BLS) provides [information about education and training requirements for hundreds of occupations](#). BLS assigns categories for typical entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which it publishes projections data.

Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences. The [O*NET database](#) provides information on the skills, abilities, knowledge areas, work activities, and interests associated with occupations.

Labor Force, Employment, and Unemployment Estimates. The California Employment Development Department's Labor Market Information Division provides labor market and workforce data, including labor force, employment, and unemployment estimates.

Educational Supply. Educational supply data are drawn from several sources. The [California Community Colleges Chancellor's Office Management Information Systems \(MIS\) Data Mart](#) provides information about students, courses, student services, outcomes, and faculty and staff. The [Chancellor's Office Curriculum Inventory \(COCI\)](#) provides information on courses and programs offered by California Community Colleges. The [National Center for Education Statistics Integrated Postsecondary Education Data System \(IPEDS\)](#) collects information from postsecondary education providers, including the number of postsecondary awards earned.

Student Metrics and Demographics. [DataVista](#), a statewide data system supported by the Chancellor's Office and hosted by Cal-PASS Plus, provides information on progress, success, employment, and earnings outcomes for California Community College students.

References

- [“Anchoring maritime talent.”](#) McKinsey & Company. March 10, 2026.
- [“Apprenticeship.”](#) Las Positas College. 2026.
- [“Apprenticeship Program Overview.”](#) Seafarers International Union.
- Brooks, G. Allen. [“America’s Maritime Labor Shortage.”](#) The Maritime Executive. July 13, 2025.
- [“Columbia Pacific \(ColPac\) Maritime.”](#) Columbia Pacific (ColPac) Maritime.
- [“Education and Training.”](#) Northwest Maritime Apprenticeship.
- [“Fact Sheet: President Donald J. Trump Rebuilds the U.S. Navy and America’s Shipbuilding Industrial Base.”](#) The White House. August 13, 2026.
- Fore, Preston. [“Jamie Dimon says six-figure shipyard jobs are the new ‘American Dream’—but candidates will need to endure hours of extreme heat, cold, and rain.”](#) Fortune Magazine. July 21, 2026.
- [“The Future of Maritime Employment amid a Growing Workforce Shortage.”](#) ORCA. 2026.
- [“How to Transition into the Marine Industry for Skilled Tradespeople.”](#) Gillmann Services, Inc. July 15, 2024.
- Los Angeles Economic Development Corporation (LAEDC). [“The Blue Economy in Los Angeles County: Charting a Course Forward.”](#) February 2025.
- [“Mariculture Summer Apprenticeships,”](#) Sea Grant Alaska, 2026.
- [“Marine.”](#) Gillmann Services, Inc. 2019.
- [“Marine Electrical Certification.”](#) The American Boat & Yacht Council. 2026.
- [“Marine Engineers and Naval Architects.”](#) AI Exposure. 2026.
- [“Marine Staffing.”](#) LEAD.
- [“Marine Systems Certification.”](#) The American Boat & Yacht Council. 2026.
- [“Marine Technician Salary, Duties and Job Outlook.”](#) Universal Technical Institute. 2026.
- [“Maritime.”](#) Northwest Oregon Works. 2025.
- Maritime Institute of Technology and Graduate Studies. [“How to Become a Deckhand.”](#) Last modified December 14, 2023.
- Maritime Professional Training. [“STCW Basic Training.”](#)
- [“Maritime Staffing.”](#) Wide Effect. 2026.

Martlet, Elodie and Kathleen Carson. "[Port of Seattle Career Pathways: Maritime and Green Jobs](#)." Seattle Jobs Initiative. September 30, 2022.

"[Motorboat Mechanics and Service Technicians](#)." AI Exposure. 2026.

"[NAICS 336600 - Ship and Boat Building](#)." U.S. Bureau of Labor Statistics. May 2023.

National Maritime Safety Association (NMSA). "[Home](#)." 2026.

"[Outdoor Power Equipment and Other Small Engine Mechanics](#)." AI Exposure. 2026.

"[Proficiency in Survival Craft \(PSC\)](#)." Maritime Institute.

Samora, Sara. "[Labor Department offers \\$145M in grants for apprenticeship incentive program](#)." Manufacturing Dive. February 18, 2026.

"[Skipper Apprentice Program expanding at the Bristol Bay Campus](#)." Sea Grant Alaska, November 21, 2024.

"[Standards of Training, Certification, and Watchkeeping \(STCW\)](#)," National Maritime Center, U.S. Coast Guard.

"[Stationary Engineers and Boiler Operators](#)." AI Exposure. 2026.

"[STCW Able Seafarer-Deck](#)." U.S. Coast Guard. January 17, 2025.

"[STCW Advanced Firefighting](#)," U.S. Coast Guard, accessed August 27, 2027.

"[STCW Basic Training](#)." Sea School. 2026.

"[STCW - Vessel Personnel with Designated Security Duties/ Security Awareness](#)." Coast Guard Credentialing Opportunities On-Line. August 3, 2026.

Transportation Security Administration. "[TWIC](#)."

"[Underwater Welder Career Profile](#)." American Welding Society. 2026.

United States Coast Guard National Maritime Center. "[Standards of Training, Certification, and Watchkeeping \(STCW\)](#)."

"[U.S.C.G. Merchant Marine Exam: Master/Chief Mate of Unlimited Tonnage, Q103 Deck Safety \(Sample Examination\)](#)." United States Coast Guard National Maritime Center, August 5, 2025.

"[Why Offshore Companies Are Struggling to Find Skilled Maritime Workers](#)." Wide Effect. 2026.

For more information, contact:

The North Far North Center of
Excellence for Labor Market Research

Anna Hoehenrieder, Research Analyst
anna.hoehenrieder@losrios.edu

Sara Phillips, Co-Director
sphillips@shastacollege.edu

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