

STUDENT REPORT

Bringing the Ship to Shore

PUBLIC FUNDING FOR HIGH-ROAD TUGBOAT JOBS
AT THE SAN PEDRO PORT COMPLEX



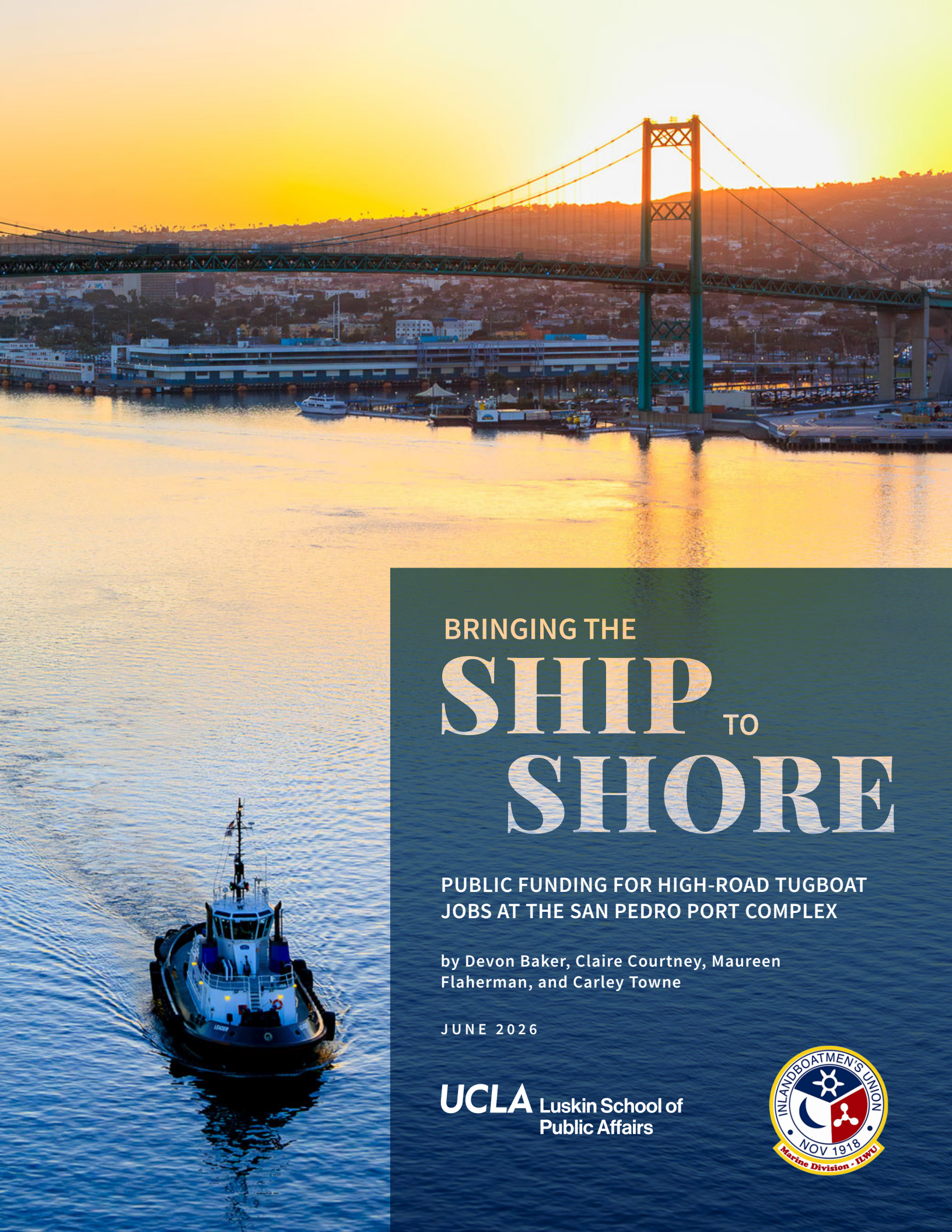
BY DEVON BAKER, CLAIRE COURTNEY,
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UCLA Luskin School of
Public Affairs



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EXECUTIVE SUMMARY

The San Pedro Port Complex sits at the center of one of the most significant intersections of climate and labor issues in California. As the state uses shipping and tugboat vessel regulations and hundreds of millions of dollars in grant funding to push aggressively toward zero-emissions shipping, union tugboat operators are at risk of being deprioritized amidst the flurry of public spending.

The Inlandboatmen's Union of the Pacific (IBU) represents about 300 workers in Southern California, including tugboat captains, deckhands, engineers, and more working across eight signatory firms at the Ports of Los Angeles and Long Beach. These are well-paying union jobs as a result of decades of collective bargaining, and they are not only a source of economic security for the workers who possess them; these jobs are critical for the economic fabric of San Pedro and Long Beach as well. However, IBU faces looming threats in the shape of non-union competitors gaining a competitive edge through public grant dollars flowing toward non-union firms, granting them a first pass at gaining experience operating emerging green vessel technology.

Our report asks: **How can IBU influence government funding decisions for tugboat electrification and hybrid retrofits, as well as training programs for port workers, to ensure these programs advance a high-road framework, including strong job quality and robust worker training and apprenticeship pathways that embed worker voice in the transition?**

To answer this question, we utilized a mixed methods approach, including:

- Legal analysis of frameworks governing labor standards in public contracting and grantmaking, including the “market participant” doctrine and federal preemption of state labor regulations
- A review of existing California Air Resources Board (CARB) grant structures, including a case study of the LA Maritime Emission Reduction (LA MER) grant application to identify accountability gaps in current grant application workforce commitments
- Comparative analysis of workforce development and credentialing programs in other industries
- Qualitative interviews with union officials, port leadership, labor researchers, and workforce development practitioners

Policy options were evaluated using four criteria—legal feasibility, effectiveness, efficiency, and political feasibility. The recommendations below were determined using these criteria.

While there is significant public money going toward tugboat electrification, our review found that the existing grant structures possess considerable blind spots:

- Workforce development commitments are generally not strongly enforceable obligations despite being a component of application scoring criteria, and applicants are able to satisfy scoring criteria through speculative descriptions that may not be feasible to follow through on.
- No formalized system exists for reporting non-compliance with workforce commitments, and shortfalls are framed as “lessons learned” without clear consequences.

This results in a structural failure to ensure that the race to transition to green technologies promotes quality jobs rather than providing competitive advantages to non-union firms.

Recommendations for Workforce Standards

To ensure public climate investments from the state support quality jobs, IBU should pursue two complementary policy tools:

- **USEP Framework for Competitive Grants and Demonstration Projects** — IBU should advocate for the adoption of a U.S. Employment Plan (USEP)-style framework in competitive grant solicitations administered by CARB and related agencies. Under this model, applicants would be required to disclose and commit to specific wages, benefits, and training investments as scored criteria. These commitments could then be written into the grant agreements themselves and given tangible consequences for non-compliance. LA Metro has utilized USEPs for years, and they can be feasibly translated to this context.
- **Responsible Employer Eligibility Standards for Voucher-Style Incentives** — For non-competitive subsidy programs, IBU should push for baseline screening requiring companies that receive public funds to not have outstanding wage violations or otherwise poor labor compliance practices.

Given limited resources, pushing for adoption of a USEP model is the option with more significant impact, as the model allows for a higher labor standards floor applied to competitive grants that allow companies to pilot new technologies earlier and develop institutional relationships with agencies like CARB.

Recommendations for Workforce Development

To ensure IBU and its signatory companies are able to be competitive under the modified grant criteria schema described above, we recommend a phased approach that emphasizes building key partnerships before initiating more resource-intensive programs:

- **Short term: CTE Partnerships** — IBU should begin building relationships with Career Technical Education programs at nearby high schools and community colleges. Multiple port-adjacent schools already offer training pathways teaching skills that can translate to tugboat work. Engaging with these programs creates visibility for the union and creates goodwill with institutional partners that can set the foundation for a larger program.
- **Long term: Intermediary-Led Apprenticeship** — Building on the relationships built with CTE programs, IBU should work toward formalized apprenticeship programs created in partnership with the Port of Los Angeles and Port of Long Beach, as well as local community colleges. Spreading the financial and operational burden across these partner institutions allows for a more sustainable infrastructure, avoiding the funding and capacity issues that limited previous apprenticeship programs.

Together, these two interconnected sets of policies aim to serve IBU's immediate membership needs while positioning the union to advocate for the promotion of high-road jobs while the state works toward slashing port emissions in the years to come. Rather than placing the needs of workers and the need for a green economy in conflict, successful development of workforce training pathways and strengthened frameworks for labor standards in grant criteria can set an example for meeting both of these crucial necessities in tandem.



1. INTRODUCTION

California is increasingly mandating more stringent climate policy regulations to reduce the negative consequences of rising greenhouse gas emissions. Alongside these new regulations, the state is also making large public investments to support the transition to new green technologies, including zero-emission and hybrid tugboats at the San Pedro Port Complex. Choices about which companies will receive public funding to subsidize capital-intensive green technologies will determine whether the transition supports union or non-union companies. Investments in new tugboat technologies will also require workers to develop new technical skills. Since these changes are subsidized by large public investments, they create both significant opportunities and serious risks for the workers who operate and maintain the vessels that keep the ports running.

1.1. The Inlandboatmen’s Union and the Evolving Landscape of Maritime Labor

The San Pedro Port Complex encompasses the Port of Los Angeles (POLA) and the Port of Long Beach (POLB). The most notable union at the complex is the International Longshore and Warehouse Union (ILWU), and The Inlandboatmen’s Union (IBU) is the Marine division of ILWU. Currently, IBU’s Southern California Region represents about 300 members working for 8 signatory businesses.¹ The majority of IBU members are tugboat captains, deckhands,

¹ A signatory business is a company with a segment of employees represented by IBU. That specific segment within a signatory business is often referred to as the “bargaining unit.”

engineers, and tankermen.² Currently, non-union companies are competing for contracts historically held by IBU signatories, risking a reduction in IBU members and an erosion of port union standards. Meanwhile, green technology regulations and advancements are reducing oil-related work and changing the skills required for barge operations as tugboats move from gas-powered to hybrid or fully electric.

IBU represents a relatively small workforce; however, the threat it faces raises fundamental, far-reaching questions regarding the pursuit of environmental goals and labor cost reductions at ports. The San Pedro Port Complex remains one of the few bastions of private sector organized labor in the United States, yet this status is threatened in part by regional and state policies—or the absence thereof. Unionized jobs provide better pay, benefits, and working conditions than similar nonunion jobs, and in a time of mounting attacks on organized labor and widening economic inequality, the case for protecting union workers is urgent.³ Policymakers must therefore prioritize policies and initiatives that ensure union jobs and standards remain a pillar of the San Pedro Port Complex’s identity.

1.2. Background on Environmental Regulations and Government Grants

Environmental regulation is dramatically changing infrastructure and jobs at the ports, with more changes coming in the near future. The ports are the largest fixed source of air pollution in Southern California, and they emit more smog and nitrogen oxides than all of the region’s cars combined.⁴

Local, state, and federal governments have responded to the high level of pollution by enacting strict regulations intended to transition the ports to using electric power. In 2023, POLB announced that their target date for having zero emissions is 2035, although in early 2026 they pushed that target back to 2050.^{5 6} POLA has not committed to a clear target date, but is also planning to make the transition to zero emissions in the coming decades. To help reach these ambitious emissions goals, large government-funded grants have been awarded to POLA, POLB, and to private companies that operate at the ports.⁷

2 Tankermen load and unload petroleum products on barges.

3 Union members earn over 11% more than non-union workers, 96% have employer-sponsored health coverage compared to 69% of their non-union counterparts, and port contracts specifically guarantee hours, wage increases, and workforce development opportunities that provide genuine economic security and mobility without requiring four-year degrees. AFL-CIO, “The Union Difference,” *PRO Act*, accessed December 11, 2025, <https://proact.aflcio.org/the-union-difference/>.

4 South Coast Air Quality Management District, “Clean Port” (South Coast Air Quality Management District) <https://www.aqmd.gov/nav/about/initiatives/clean-port>.

5 “ZEERO – Zero Emissions, Energy Resilient Operations.” Port of Long Beach. Accessed 7 December, 2025. <https://polb.com/environment/zeero/#zero-emissions-projects>.

6 Port of Long Beach, “State of the Port 2026,” January 16, 2026, <https://www.youtube.com/watch?v=AwyJjXJUwYg>.

7 For example, in 2025 the Port of LA received a \$31 million grant from the California Air Resources Board (CARB) for its Marine Emission Reduction program, and the Port of Long Beach has received substantial funding from CARB as well. “Catalina Express, Harbor Breeze Cruises and Port of Los Angeles Receive \$31 Million to Test Zero-Emission Vessels.” 2025, Port of Los Angeles, https://portoflosangeles.org/references/2025-news-releases/news_011625_harbor_craft_grant. “Record State Grant Will Go to Rail, Clean Air Projects,” 2023, Port of Long Beach, <https://polb.com/port-info/news-and-press/record-state-grant-will-go-to-rail-infrastructure-08-01-2023/>.

1.3. Legal Context

The legal framework that governs labor requirements in public contracting and public grants places considerable constraints on the tools agencies may use to support union jobs. However, public agencies retain the authority to embed labor standards into publicly funded projects when they are acting in their capacity as “market participants” rather than as regulators.⁸

1.4. Report Roadmap

1.4.1. Policy Question

Our report asks: **How can IBU influence government funding decisions for tugboat electrification and hybrid retrofits, as well as training programs for port workers, to ensure these programs advance a high-road framework, including strong job quality and robust worker training and apprenticeship pathways that embed worker voice in the transition?**

To answer this question, we will use the high-road economic development framework to foreground our policy analysis and recommendations. This framework argues that, by prioritizing strong labor standards and workforce training pathways in climate funding, the state can transition to a green economy while also building the workforce capacity required to do so.⁹

Applying the high-road framework to public funding of tugboat electrification and hybrid retrofits outlines two complementary policy goals:

1. Structure funding to support high-road employment outcomes by tying public subsidies to strong labor standards.
2. Support workforce development pathways that help workers and companies adapt to changing technologies by providing them with the necessary skills and training to ensure they can safely operate and maintain electric and hybrid tugboat equipment.

Our report is organized as follows:

Chapter 2 describes the research methods we use to evaluate policy options that link public climate funding to labor standards and workforce development.

Chapter 3 introduces IBU’s workforce and the central challenges they face by identifying gaps in workforce development pathways and enforcement of labor standards within existing climate funding programs.

Chapter 4 reviews the history of emissions regulations affecting harbor craft, the public funding programs supporting tugboat electrification and hybrid retrofits, and challenges tugboat operators and workers are facing as the industry transitions to lower-emission vessels.

⁸ See Appendix A for a discussion of the legal landscape granting governments the authority to embed labor standards into publicly funded projects.

⁹ UC Berkeley Labor Center, Putting California on the High Road: A Jobs and Climate Action Plan for 2030 (Berkeley, CA: University of California, Berkeley, 2021), <https://laborcenter.berkeley.edu/putting-california-on-the-high-road-a-jobs-and-climate-action-plan-for-2030/>

Chapter 5 analyzes the legal and policy context for incorporating labor standards and workforce development requirements into publicly funded projects and examines the labor policy tools available to do so.

Chapter 6 presents the criteria used to evaluate policy options and applies those criteria to potential strategies for strengthening labor standards and workforce development pathways.

Chapter 7 makes our final policy recommendations for IBU.

Our report concludes by summarizing the broader implications of our policy recommendations and research for IBU and policymakers involved in the transition to electric and hybrid tugboats at the San Pedro Port Complex.



2. METHODS

This report utilizes a mixed methods approach in order to assess the feasibility of our policy recommendations.

2.1. Legal and Policy Analysis

We conducted legal analysis to determine the extent to which state agencies can condition public climate funding on strong labor standards. We then analyzed potential policy tools to understand how to incorporate strong labor standards into public subsidies depending on the funding mechanism. To conduct our analysis, we reviewed legislation, program guidelines, policy reports, and other secondary documentation describing how these policy tools have been used in publicly funded programs.

2.2. Comparative Analysis

We conducted a comparative analysis of workforce development and credentialing programs in other industries to identify potential solutions for the maritime sector.

2.3. Stakeholder Interviews

We augmented our analysis by conducting stakeholder interviews with labor and workforce development policy experts and practitioners, union members and leaders with ILWU and IBU, officials at POLA and POLB, and experts in tugboat electrification.¹⁰

2.4. Electrification Technical Research

Our research also involved reading schematics and proposals for electric tugboats and researching what ports have adopted them and any challenges they faced during the adoption process.

¹⁰ Labor and workforce development policy experts interviewed included staff at the California Energy Commission, California Workforce Development Board, the California Energy Commission, and the UC Berkeley Labor Center. See Appendix G for a full list of interviewees.



3. PROBLEM IDENTIFICATION

3.1. Who Is IBU and Why Do They Matter?

Union labor has set a standard of good jobs for working-class people in the San Pedro and Long Beach areas. Some ways that unionization makes a major difference in wages within the ports' industries and in the local economy include:

- Union-represented workers in the transportation and warehousing industry nationally earn about 20% more than non-union workers.^{11 12}
- IBU members' median wage is \$47.26 per hour, compared to the median wage of \$37.01 per hour for captains, mates, and pilots of water vessels in the Los Angeles-Long Beach-Anaheim metropolitan area.^{13 14 15}
- 1 in 5 jobs in Long Beach are in some way attributable to the city's port.^{16 17}

11 U.S. Bureau of Labor Statistics, "Occupational Employment and Wage Statistics: Los Angeles-Long Beach-Anaheim, CA," 2024, <https://data.bls.gov/oesmap/>.

12 Unionized workers in the industry earned a median weekly wage of \$1,234 in 2024, compared to non-union workers earning \$1,011 per week. These disparities hold true across time. U.S. Bureau of Labor Statistics, "Occupational Employment and Wage Statistics: Los Angeles-Long Beach-Anaheim, CA," 2024, <https://data.bls.gov/oesmap/>.

13 We conducted a review of all IBU's contracts to come up with the IBU members' wage data. The full references for the contracts are in the Works Cited section.

14 U.S. Bureau of Labor Statistics, "Occupational Employment and Wage Statistics."

15 Within both the "Support Activities for Water Transportation" industry (which excludes workers in deep sea transportation, such as those on cargo ships and cruise ships) and the "Captains, Mates, and Pilots of Water Vessels" occupation in California as a whole, the median hourly wage is significantly higher: \$58.79 per hour. See U.S. Bureau of Labor Statistics, "Occupational Employment and Wage Statistics."

16 EDR Group, *Port of Long Beach: Economic Impact Study* (2019), 8.

17 7 percent are directly associated and 13 percent are indirectly associated or induced by money from the port. EDR Group, *Port of Long Beach: Economic Impact Study* (2019), 8.

If union membership at the ports were to decline due to union signatories going out of business, there would be a major economic impact not only on individual workers who lose their jobs, but also on the entire San Pedro-Long Beach area.¹⁸

3.2. Electrification and Labor Standards at the San Pedro Port Complex

These workforce realities underscore why tugboat electrification must be evaluated through two interconnected approaches that link climate policy with job quality: the just transition framework and the California high-road framework.

A just transition is a globally-recognized framework that acknowledges how climate policies meant to reduce greenhouse gas emissions are also industrial policies that will significantly impact workers.^{19 20} The high-road framework is one approach to implementing a just transition; it aligns California's climate policy with the retention and creation of high-quality jobs by embedding labor standards and workforce development requirements directly into climate funding.²¹

Electrification of the tugboat fleet is driven by CARB's Commercial Harbor Craft (CHC) regulation, which established strict emissions standards for tugboats, as well as the Clean Air Action Plan (CAAP), which is POLA and POLB's commitment to reducing port-related greenhouse gas emissions 80 percent below 1990 levels by 2050.^{22 23} While the CHC and CAAP intend to reduce the ports' air pollution, they don't specify how these changes might affect high-quality, safe jobs at the ports. Because millions of dollars in public subsidies are awarded to companies for hybrid engine retrofits and electric tugboat demonstration grants without clear or enforceable labor standards or workforce development requirements, these

18 An additional challenge facing IBU's members as they transition to electric power is that many IBU members are near the end of their careers and have spent most of their lives doing the same type of work for the same employer; based on a sample of IBU members, the median date of hire at their current employer is January 15, 2017, and 20% of members have worked at the same employer for over twenty years. Job searching, especially when transitioning to a new type of work, is known to be particularly challenging for older workers, and if IBU's signatories are pushed out of business their employees will face a daunting job market. Furthermore, many IBU signatories offer contributions to a pension, which older employees are likely depending on to fund their retirements. New, non-union companies are less likely to offer pensions, forcing IBU members to either delay retirement or struggle financially as they get older. IBU's signatories are also struggling to hire skilled new employees as their older workers retire.

19 United Nations Development Programme. "What Is a Just Transition and Why Is It Important?" *UNDP Climate Promise*. November 3, 2022. <https://climatepromise.undp.org/news-and-stories/what-just-transition-and-why-it-important>

20 See Appendix B for a detailed discussion about the history of a Just Transition framework.

21 Appel, Sam, and Jessie HF Hammerling. "California's Climate Investments and High Road Workforce Standards: Gaps and Opportunities for Advancing Workforce Equity." Berkeley: UC Berkeley Labor Center, September 20, 2023. <https://laborcenter.berkeley.edu/californias-climate-investments-and-high-road-workforce-standards/>

22 Ports of Los Angeles and Long Beach. *San Pedro Bay Ports Clean Air Action Plan*. Accessed January 15, 2026. <https://portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan>

23 California Air Resources Board. "Commercial Harbor Craft." Accessed January 15, 2026. <https://ww2.arb.ca.gov/our-work/programs/commercial-harbor-craft/about>

public subsidies could fund a race to the bottom.²⁴ However, research also documents how competitive grants funded through California’s Cap-and-Invest program’s Greenhouse Gas Reduction Fund (GGRF) are increasingly using the high-road framework.²⁵

One notable example of a GGRF grant is the PowerForward ZEV Battery Manufacturing Grant Program, a competitive zero-emission battery manufacturing initiative.²⁶ The program’s application manual outlines how applicants are evaluated on job quality, apprenticeship training commitments and targeted hiring from disadvantaged communities.²⁷ The PowerForward grant program can serve as a model for using California’s existing labor policy mechanisms to condition public climate funding on strong labor standards.²⁸

3.3. Current Workforce Development Initiatives at the San Pedro Port Complex

POLA and POLB have introduced ambitious emissions reduction goals, accompanied by commitments to extensive workforce development.²⁹ These training programs aim to prevent current port workers from losing employment during the transition to new technologies and to ensure future workers have access to necessary training, but they do not currently include training for IBU members.³⁰ This risks creating a divided labor market where some workers—and their employers—gain skills to remain competitive while others are left behind.

3.4. Negotiating Training Facilities at the Port

The resources that have been allocated to “upskilling” some workers at the San Pedro Port Complex for new low-emissions technologies have largely resulted from the strong labor-management partnerships between Pacific Maritime Association (PMA)—a nonprofit business association representing over 70 carrier and terminal operators in labor and political

24 The UC Berkeley Labor Center estimates that roughly 40% of projected climate spending in California lacks any labor or workforce development standards. Appel, Sam, and Jessie HF Hammerling. California’s Climate Investments and High Road Workforce Standards: Gaps and Opportunities for Advancing Workforce Equity. Berkeley: UC Berkeley Labor Center, September 20, 2023, 2. <https://laborcenter.berkeley.edu/wp-content/uploads/2023/09/Californias-Climate-Investments-and-High-Road-Workforce-Standards.pdf>.

25 Ibid.

26 PowerForward ZEV Battery Manufacturing Grant Program, “PowerForward Grant Program,” accessed February 25, 2026, <https://powerforwardgrant.org/>.

27 PowerForward ZEV Battery Manufacturing Grant Program, *Application Manual (R240405)* (April 5, 2024), Project Design Gate and Workforce Plan Scoring Criteria, https://powerforwardgrant.org/documents/00_PowerForward_Application_Manual_R240405.pdf.

28 See Appendix B for information about tugboat electrification’s threat to worker safety.

29 California Workforce Development Board, *The High Road to the Port of LA H RTP* (Sacramento: California Workforce Development Board, June 2019), accessed January 25, 2026, https://cwdb.ca.gov/wp-content/uploads/sites/43/2019/11/High-Road-to-the-Port-11-25-2019_ACCESSIBLE.pdf.

30 One example of the need for tugboat operators to receive training in order to remain competitive came at the recent launch of the eWolf—the nation’s first all-electric tugboat. Captain Josh Ferguson said, “You don’t realize how many audio cues that you have available [from the engines] aboard a traditional vessel. But now that you have none, and then couple that with the power of electric motors—they spool up very fast like a Tesla does—you have to change the way you operate the vessel in general.” Eric Haun, “On Board the eWolf: The First Electric Tugboat in the US,” *MarineLink*, April 4, 2024, accessed January 27, 2026, <https://www.marinelink.com/news/board-ewolf-first-electric-tugboat-us-512741>.

relations—and the International Longshore and Warehouse Union (ILWU).³¹ For an expanded exploration of current and future ILWU-focused training facilities, see Appendix B.

IBU was not involved in planning for the training facilities at the San Pedro Port Complex for several structural reasons. Firstly, ILWU’s Coastal Longshore Division has substantial bargaining power due to representing the majority of port workers.³² The Longshoremen negotiate collectively with all employers through PMA rather than with individual companies, allowing them to secure commitments across the sector without fighting for buy-in from individual companies. IBU, by contrast, represents a significantly smaller segment of the port workforce and negotiates with smaller individual companies, making it easier to overlook in large-scale training initiatives.

Second, the competitive dynamics facing IBU signatories differ from those of PMA members. PMA signatories—large international maritime companies and terminal operators—face minimal risk of being displaced by non-union competitors, enabling them to invest fully in workforce development without jeopardizing their market position.^{33 34 35} In contrast, IBU signatories must weigh workforce investments against competitive pressures from a growing number of non-union tugboat companies. Notably, programs that have received public funding for tugboat workforce development have never come to fruition or were halted soon after their launch. For example, a 2017 apprenticeship program supported by Pacific Tugboat Services (PTS), an IBU signatory, LAUSD’s Division of Adult and Career Education (DACE), Harbor Occupational Center, and later Altasea—a workforce development and conservation organization at POLA—was shut down due to facilities and equipment costs, oversight challenges, and insufficient participant enrollment.³⁶

31 Pacific Maritime Association, “About: Membership,” *PMA*, accessed January 26, 2026, <https://www.pmanet.org/about/#membership>.

32 ILWU’s Coastal Longshore Division represents thousands of employees engaged in cargo handling, terminal operations, and logistics.

33 PMA signatories are typically large international maritime companies and terminal operators. Pacific Maritime Association, “About: Membership.”

34 PMA signatories are also particularly well-positioned to access public funding.

35 State funding for the Training Campus and other High Road funding streams are a product of the strong partnership between PMA, ILWU, and the Ports of Los Angeles and Long Beach.

36 International Longshore and Warehouse Union, “IBU Breaks Ground on New Apprenticeship Training Center in San Pedro,” October 17, 2017, <https://www.ilwu.org/ibu-breaks-ground-on-new-apprenticeship-training-center-in-san-pedro/>.

3.5. Training Opportunities Through Junior and Community Colleges

Terminal operations and logistics training programs can be found both online and through community colleges. Unfortunately, the programs offered at local junior and community colleges, including Long Beach City College, focus on logistics and do not include training specific to the needs of tugboat operators. However, they all provide access to baseline credentials, like TWIC cards, which are required for “truckers, longshore labor, terminal and port workers, vendors and contractors,” including IBU members.^{37 38}

See Appendix B for information on mandatory and optional credentials for tugboat operators and engineers.

3.6. Gaps in Training Needs

Current and future IBU members near the San Pedro Port Complex have limited access to the training needed to remain competitive; maritime academy credentials require traveling significant distances, and the local apprenticeship pathway no longer exists. This gap will only widen as green technologies reshape vessel operations. While millions are being invested in training facilities for longshoremen and cargo workers, tugboat crewmembers are being left behind. Future training programs for tugboat operators must address both the lack of training and apprenticeship opportunities for future IBU members and the lack of upskilling opportunities for current members facing significant changes to their sector.

3.7. Gaps in Enforcement and Accountability in CARB Grant Design

CARB grant programs explicitly recognize workforce development as a core component to be considered in the implementation of clean energy projects. The Request for Application (RFA) for the agency’s Advanced Technology Demonstration and Pilot Projects program for FY 2021-2023 requires applicants to submit a Workforce Plan as part of the scoring criteria.^{39 40} Despite this formality, the structure of the RFA and a relevant resulting grant agreement reveal gaps in enforcement of labor-related commitments.

Although the Workforce Plan mandated by the RFA requests a detailed description of the company’s workforce development plan, these requirements do not establish enforcement mechanisms. Grantees, according to the RFA, *may* be required to develop reporting

37 U.S. Transportation Security Administration, Transportation Worker Identification Credential (TWIC), accessed January 25, 2026, <https://www.tsa.gov/twic>.

38 Currently, the only local training opportunity is at Los Angeles Trade-Technical College in downtown Los Angeles, which is about 23 miles away. Their opacity training is rarely offered and costs \$175 for a full day of training during standard business hours, meaning IBU members must take unpaid time off work to obtain the credential. California Council on Diesel Education and Technology, “Class Schedule,” accessed February 25, 2026, <https://ccdet.org/class-schedule/>.

39 California Air Resources Board, *FY 2021–22 and FY 2022–23 Grant Solicitation: Advanced Technology Demonstration and Pilot Projects*, July 2023, 22

40 This Workforce Plan, according to the RFA, must include a description of the work that will be done to “expand good quality clean transportation job opportunities with higher wages and benefits.” California Air Resources Board, *FY 2021–22 and FY 2022–23 Grant Solicitation: Advanced Technology Demonstration and Pilot Projects*, July 2023, 22.

methodologies, but there is no requirement to demonstrate the readiness of cited training programs. As a result, applicants are able to satisfy workforce development scoring criteria through narrative, speculative descriptions rather than enforceable commitments.

The Los Angeles Maritime Emission Reduction Project (LA MER), submitted by POLA in 2023 and approved for grant funding from CARB, provides an example of how this plays out in practice.⁴¹ The ports, through LA MER, aim to test hybrid vessel technology by constructing a hybrid passenger ferry and excursion boats.⁴² While the project is testing this new technology through passenger vessels, the application states that the project's findings will be relevant to tugboats and pilot boats as well.⁴³

POLA's LA MER application explicitly states that the Goods Movement Training Campus (see Appendix B) will carry out the workforce development component of the project, despite the fact that the training facility is not set to open until 2029 and LA MER is expected to have a final report written by the end of Q1 of 2027.^{44 45 46} This approval of a proposal including a facility that will not be operational until years after the project concludes reveals that CARB is not consistently enforcing their workforce standards grant provisions.

The RFA also lacks enforcement mechanisms or remedies in the event that workforce development commitments are not executed.⁴⁷ This creates a structural incentive for workforce development to be treated as an afterthought by grant applicants, with the implicit understanding that it takes a backseat to other scoring criteria. Additionally, there is no formal system for reporting noncompliance.

Together, LA MER and the Advanced Technology Demonstration and Pilot Projects grant program provide case studies for how the existing framework for CARB grants recognize workforce development rhetorically but fall short in ensuring that labor commitments are credible and equitably distributed throughout the impacted sector. As a result, significant amounts of funding are being administered in ways that may accelerate the critical work of reducing port emissions, but create unintended reverberations by subsidizing advantages for a limited group of non-union employers.

41 LA MER is funded through CARB's Advanced Technology Demonstration and Pilot Projects program.

42 Port of Los Angeles, *Los Angeles Maritime Emission Reduction (LA MER) Project Application*, submitted to the California Air Resources Board, October 2023, 5

43 Ibid.

44 Port of Los Angeles, *LA MER Project Application*, 27.

45 Ibid., 36.

46 Port of Los Angeles, "Officials Laud State Funding for Goods Movement Training Campus," March 24, 2023, Port of Los Angeles, https://portoflosangeles.org/references/2023-news-releases/news_032423_gmtc_pledge.

47 While CARB reserves the right to monitor technical progress and terminate projects that fail to meet operational milestones, the workforce development component is treated as a more of an open-ended conversation in which shortcomings are framed as "lessons learned." California Air Resources Board, *FY 2021–22 and FY 2022–23 Grant Solicitation*, 22.



4. TUGBOAT CASE STUDY

Tugboats are essential to POLA and POLB operations because they guide cargo ships as they navigate port channels and, at times, shuttle cargo directly into the port.⁴⁸ This work will remain essential as cargo vessels continue to grow in size. Tugboats also support the transportation of crude oil to and gasoline (and other products) from local oil refineries.⁴⁹

4.1. Emissions Regulations and Public Funding

CARB first began regulating commercial harbor craft, including tugboats, in 2008 with the adoption of the Airborne Toxic Control Measure for Diesel Engines on Commercial Harbor Craft.⁵⁰ In 2022, the agency amended the commercial harbor craft regulation to require all tugboats to use renewable diesel and upgrade to Tier 4 engines, the most efficient of the US EPA's engine tiers, by 2029.⁵¹ For a more comprehensive explanation of CARB and EPA's standards, see Appendix C.

In an interview with Foss Maritime Company staff, management discussed a number of challenges associated with upgrading vessels to meet the commercial harbor craft regulations. For example, in 2008, Foss received funding from the South Coast Air Quality Management District (SCAQMD) to build a new hybrid tugboat and to retrofit a diesel tugboat to be hybrid.⁵² Both boats suffered multiple engine fires before ultimately being reverted back to using diesel engines due to safety concerns.⁵³

48 Mike Bruce and Brad Carlisle, Engineers at Foss Maritime Company, Interviewed by Research Team, February 6, 2026.

49 Chevron Corporation, "El Segundo Refinery Fact Sheet," 2015, <https://elsegundo.chevron.com/-/media/elsegundo/news/documents/refinery-overview.pdf>.

50 State of California Air Resources Board, "Public Hearing to Consider the Proposed Amendments to the Commercial Harbor Craft Regulation," report, *Staff Report: Initial Statement of Reasons*, September 21, 2021, <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/chc2021/isor.pdf>, I-1.

51 "CHC Factsheet: Implementation Timeline | California Air Resources Board," December 27, 2022, <https://ww2.arb.ca.gov/resources/fact-sheets/chc-factsheet-implementation-timeline>.

52 The technical challenges were so great that the new boat required at least five retrofits before it became a functional hybrid tug.

53 Cassie Sanderson, Interviewed by Research Team.

Currently, Foss is prioritizing the construction of new tugboats and upgrading old engines to meet current (Tier 4) standards in California. They indicated that a switch to zero-emission tugboats in the near future seems unfeasible, in part due to the fact that other states where they operate have significantly looser emissions regulations.

While CARB and SCAQMD widely publicize tugboat electrification and hybrid retrofit grant requests for proposals (RFPs), tugboat operators said they have a difficult time determining which grants they are eligible for, how to navigate the application process, and that their ability to successfully apply depends to some degree on informal contacts with the agency providing assistance.⁵⁴

Our interviewees could not recall any questions in the SCAQMD RFPs that emphasized the applying firm's workforce development or labor standards. Our review of grant awards made by CARB and SCAQMD's Carl Moyer Program between 2016 and the present showed that only about 20% of funds awarded to tugboat companies in Southern California were awarded to union-represented firms.⁵⁵ Based on our analysis and interviews, it doesn't appear that companies with strong labor relations and histories of workforce investment receive any advantage in the application process for these grants.⁵⁶

4.2. Challenges for Tugboat Operators and Workers

The impending mandate to transition to electric power could put firms that operate tugboats under significant financial, technological, and logistical pressure.⁵⁷ Given the current landscape of grant applications described above, IBU members fear that public funding for new electric tugboats will allow non-union firms to outcompete union firms, which could put union members out of work.

At the same time that tugboat operators are under pressure to upgrade their equipment, there is a shortage of qualified employees to work on tugboats. IBU members have reported seeing young workers hired with minimal relevant skills.⁵⁸ Once they're hired, they struggle to advance to higher job classifications. An interviewed captain noted that he had to take time off work and pay out of pocket for courses required to attain relevant credentials.⁵⁹ ⁶⁰ While IBU has negotiated for reimbursements for professional development, not all companies reimburse workers for these professional investments, despite benefitting from them.

54 Colette Lowe, Interviewed by Research Team.

55 See Appendix C for the full list of Carl Moyer Program awards to tugboat companies during this period.

56 See Appendix C to learn more about current grant criteria.

57 The abandoned electric tugboat project in the San Pedro Bay Ports was estimated to cost at least \$37.6 million, with Crowley, the operator, expected to pay \$15 million. Victoria Robbins, Nicholas Storelli, Marc Perry, Mei Wang, Sam Cao, Vasileios Papapostolou, and Joseph Lopat, "2024 Annual Report and 2025 Priorities," San Pedro Bay Ports Technology Advancement Program, 2025, 12.

58 IBU members expressed concerns that younger workers increasingly have very little preparation to become a tugboat deckhand, captain, or engineer, citing less exposure to mechanics in high school and limited local opportunities for professional development in the sector.

59 Scott Walker, Captain at Foss Maritime Company, Interviewed by Research Team, February 6, 2026.

60 It took the Captain approximately 10 years and thousands of dollars to attain his 1,500-ton credential and his 100-ton Master of Towing credential.



5. LEGAL CONTEXT AND POLICY OPTIONS

Public funding from California’s Greenhouse Gas Reduction Fund (GGRF) is subsidizing the shift to electric and hybrid tugboats. Those funds are then administered by state agencies, including the California Air Resources Board (CARB).⁶¹

The way state agencies structure eligibility, scoring criteria, and compliance mechanisms in these programs could have major implications for which companies remain competitive at the Ports during the transition to electric tugboats. In so doing, grant funding could influence whether electrification sustains good-quality union jobs or sets off a race to the bottom.⁶²

5.1. Legal Constraints and Opportunities

The central question at hand in determining the legal boundaries at play is how proposed labor standards attached to public funds are structured and justified. Supreme Court precedent in the *Boston Harbor* case differentiates between the government acting as a regulator versus acting as a market participant. When a state regulates labor relations broadly, it runs the risk of facing federal preemption under the National Labor Relations Act. When acting as a purchaser or investor, public agencies may impose requirements that relate to labor standards in grants if they are seeking to protect the efficiency, reliability, and financial return of a public project.⁶³

In the context of tugboat electrification, California is not acting solely as a regulator imposing emissions mandates; it is also acting as an investor. Subsidies from state agencies are meant to de-risk investments in new green technology. Since the state is absorbing a substantial share

61 GGRF funding flows from California’s Cap-and-Invest program. California Air Resources Board, “California Climate Investments Funded Programs,” *California Climate Investments*, accessed March 1, 2026, <https://ww2.arb.ca.gov/our-work/programs/california-climate-investments/california-climate-investments-funded-programs>

62 Teto Huezo, California Director at Jobs to Move America, Interviewed by Carley Towne January 2026.

63 Harvard Law School Center for Labor and a Just Economy, “Building Worker Power in Cities and States: Government Procurement and Spending Authority,” *OnLabor Blog*, January 10, 2025, <https://clje.law.harvard.edu/publication/building-worker-power-in-cities-states/government-procurement-and-spending-authority/>

of project costs, it has a reasonable interest in ensuring that funded projects sustain stable employment, remain consistent in operation, and provide the specialized skills needed to operate and maintain new technologies.⁶⁴

How those labor standards are structured, however, depends on the funding model the state uses.

5.2. Labor Policy Options

To ensure that public investments in tugboat electrification and hybrid retrofits support a high-road framework, we have developed two complementary policy strategies:

1. Public climate funding that is subsidizing capital investments in emerging technologies should be conditioned on strong, enforceable labor standards.
2. Focus on strengthening local workforce development pathways, including apprenticeship programs and credentialing programs, to ensure companies have a skilled workforce to draw from.

Given these two mutually reinforcing strategies, the following sections look at policy tools designed to achieve both goals.

At present, state agencies are not directly purchasing electric or hybrid tugboats.⁶⁵ Instead, they're providing financial assistance to firms to help offset capital costs arising from compliance with the Commercial Harbor Craft (CHC) regulation and to demonstrate advanced zero-emission technologies.⁶⁶

These financial assistance programs fall into two broad categories:

1. *Competitive grant and demonstration programs*, which involve individualized applications, scoring criteria, and negotiated grant agreements.⁶⁷
2. *Voucher-style incentive programs* operate through standardized eligibility criteria and preset funding amounts tied to equipment purchases or updates.⁶⁸

64 As legal scholars note in the context of emerging clean-energy industries, when public capital plays a central role in launching or transforming a sector, governments have a stronger justification for incorporating labor stability measures as part of investment design. Juan Ramon Riojas, "Labor-Peace Agreements in Emerging Industries," *Columbia Law Review* 125, no. 2 (2025): 418–25, <https://columbialawreview.org/content/labor-peace-agreements-in-emerging-industries/>

65 In procurement contracts, the government directly buys goods and services. This gives the government leverage to outline specific labor requirements and enforce those agreements. Harvard Law School Center for Labor and a Just Economy, "Building Worker Power in Cities and States: Government Procurement and Spending Authority," *OnLabor Blog*, January 10, 2025. <https://clje.law.harvard.edu/publication/building-worker-power-in-cities-states/government-procurement-and-spending-authority/>

66 Policy advocates increasingly argue that labor standards should apply to any public funding that strengthens companies' competitiveness by subsidizing large capital investments, especially in emerging markets. Karla Walter, "Government on Workers' Side: How State and Local Policymakers and Advocates Can Raise Standards for Publicly Supported Work," Center for American Progress, January 31, 2024, accessed March 5, 2026. <https://www.americanprogress.org/article/government-on-workers-side/>. Adele C. Morris, Pietro S. Nivola, and Charles L. Schultze, "Clean Energy: Revisiting the Challenges of Industrial Policy," *Energy Economics* 34, no. 5 (2012): 1277–1284, <https://doi.org/10.1016/j.eneco.2012.08.030>

67 These include initiatives such as CARB's Advanced Technology Demonstration and Pilot Project program, the Volkswagen Environmental Mitigation Trust, and the Carl Moyer Program.

68 The Clean Off-Road Equipment Voucher Incentive Project (CORE) is one example of this kind of program.

5.2.1. Labor Policy Tools to Enhance Labor Standards

The policy tools available to condition public funding on strong workforce standards differ depending on whether funding is delivered through competitive grants and demonstration programs or voucher-style incentive programs.

5.2.1.1. Competitive Grants and Demonstration Programs

Competitive grant and demonstration programs differ from voucher-style incentive programs because they require companies applying for funding to submit detailed project proposals to the administering agency, which can set its own proposal guidelines, scoring criteria, and enforcement provisions to incorporate labor standards directly into funding decisions and grant agreements.⁶⁹

USEP-Inspired Workforce Scoring and Enforcement Framework

The U.S. Employment Plan (USEP) is a model that offers state agencies a practical guide for how they could require companies seeking competitive grant and demonstration project funding to demonstrate their commitment to strong labor standards throughout the grant evaluation and funding process.^{70,71} In this model, companies applying for funding would be encouraged to disclose worker wages, benefits, training opportunities, and local hiring targets during the application process.⁷² Agencies could then evaluate proposals using scoring criteria that reward stronger commitments to job quality and workforce development. Those labor standards could then be included in the scored evaluation criteria.⁷³

This model has already been incorporated into a number of government-funded procurement projects, including LA Metro's Manufacturing Careers Policy.⁷⁴ In addition to successful real-world examples of the USEP model at work, customizable policy language⁷⁵ and instructions⁷⁶ have also been developed to ensure the model can be replicated.

69 Carol Zabin et al., *Putting California on the High Road: A Jobs and Climate Action Plan for 2030* (UC Berkeley Labor Center and California Workforce Development Board, 2020), 79–80.

70 Teto Huezio, California Director at Jobs to Move America, Interviewed by Carley Towne January 2026.

71 Jobs to Move America, "U.S. Employment Plan", April 10, 2020, <https://jobstomoveamerica.org/resource/u-s-employment-plan-2/>

72 Jobs to Move America, *U.S. Employment Plan: Proposal Evaluation Criteria & Process*, July 24, 2016, https://jobstomoveamerica.org/wp-content/uploads/2020/02/USEP_FTAHandbook_7-24-161.pdf

73 Although the USEP model was developed for direct procurement contracts, it has been cited as an important framework for ensuring that public funding awarded through competitive solicitation processes uses strong labor standards in the scoring criteria. UC Berkeley Labor Center, *Workforce Standards for an Equitable Economy*, March 2024 <https://laborcenter.berkeley.edu/wp-content/uploads/2024/03/Workforce-Standards-for-an-Equitable-Economy.pdf>

74 In 2018, LA Metro incorporated the USEP framework into all railcar, bus, and manufactured equipment procurements above \$100 million. Jobs to Move America, "U.S. Employment Plan," <https://jobstomoveamerica.org/resource/u-s-employment-plan-2/>

75 Jobs to Move America, *Model U.S. Employment Plan with FTA-Approved Disadvantaged Worker Definitions* (Los Angeles: Jobs to Move America, January 2020), https://jobstomoveamerica.org/wp-content/uploads/2020/01/Model-USEP-with-FTA-approved-disadvantaged-defs_Full_Version_FINAL_PDF.pdf

76 Jobs to Move America, *Instructions for Model USEP Quantitative Proposal Spreadsheet*, January 2020, <https://jobstomoveamerica.org/wp-content/uploads/2020/01/Instructions-for-Model-USEP-Quantitative-Proposal-Spreadsheet-1.pdf>

For CARB grants supporting tugboat electrification or hybrid retrofits, this approach could:

- Require applicants to provide detailed workforce plans that disclose worker's wages and benefits, job retention targets, and job training programs.⁷⁷
- Award higher scores to proposals that demonstrate a commitment to stronger wages, benefits, and apprenticeship programs.^{78,79}
- Make workforce commitments contractually binding and link payments to compliance.
- Include quarterly reporting that becomes publicly available data.⁸⁰

The USEP model directly embeds workforce standards into grant criteria and funding agreements. Other policy tools, like the Community Benefits Agreement, rely on negotiating agreements between companies, unions, and community stakeholders.

Community Benefits Agreements (CBAs)

Community Benefits Agreements (CBAs) are legally-binding agreements negotiated between a company receiving public funding and a coalition of labor and community organizations that often include provisions that address local hiring requirements, workforce development investments, wage and benefit standards, and measures to ensure compliance with the agreement.^{81,82} One leading example of a strong CBA is the New Flyer Community Agreement, which was negotiated as a condition of publicly-funded zero-emission bus manufacturing in California and Atlanta.⁸³ The agreement required that 45% of workers be hired from historically disadvantaged communities and included provisions to create pre-apprenticeship and technical training programs.⁸⁴

State agencies could include the plan to enter into a CBA in the scoring criteria for firms applying for public subsidies for tugboat electrification or hybrid retrofits.^{85,86} Successful CBAs

77 Jobs to Move America, *U.S. Employment Plan: Proposal Evaluation Criteria & Process*, July 24, 2016, 3-6. https://jobstomoveamerica.org/wp-content/uploads/2020/02/USEP_FTAHandbook_7-24-161.pdf

78 Ibid., 1.

79 Ibid., 6.

80 Ibid., 7-8.

81 Julian Gross, Greg LeRoy, and Madeline Janis-Aparicio, *Community Benefits Agreements: Making Development Projects Accountable* (Washington, DC: Good Jobs First and California Partnership for Working Families, 2005), 2-5, <https://goodjobsfirst.org/wp-content/uploads/docs/pdf/cba2005final.pdf>

82 Salkin, Patricia E. and Lavine, Amy, *Understanding Community Benefits Agreements: Equitable Development, Social Justice and Other Considerations for Developers, Municipalities and Community Organizations* (September 1, 2008). <https://ssrn.com/abstract=1272795>

83 Athena Nicole Last, *A Case Study of the New Flyer of America Inc. Community Benefits Agreement: Lessons Learned in the Bus Manufacturing Industry*, 28-29 (Los Angeles: Jay Mehta Community Benefits Agreement Resource Center, Jobs to Move America, June 2025)

84 World Resources Institute, "Community Benefits Snapshot: New Flyer Community Benefits Agreement," accessed April 5, 2026, <https://www.wri.org/snapshots/community-benefits-snapshot-new-flyer-community-benefits-agreement>

85 Center for Law, Energy & the Environment (CLEE), *Community Benefits Tools and California Clean Energy Projects* (2024), 6. https://www.law.berkeley.edu/wp-content/uploads/2024/10/Community-Benefits-Tools-and-California-Clean-Energy-Projects_CLEE-Report_Oct24.pdf

86 Julian Gross, Greg LeRoy, and Madeline Janis-Aparicio, *Community Benefits Agreements: Making Development Projects Accountable* (Washington, DC: Good Jobs First and California Partnership for Working Families, 2005), <https://goodjobsfirst.org/wp-content/uploads/docs/pdf/cba2005final.pdf> (discussing CBAs as flexible, project-specific agreements negotiated to reflect the particular features of publicly supported or funded development projects).

typically include strong stakeholder participation from unions, community organizations and the company that help lead to transparent negotiations and clear accountability mechanisms.⁸⁷

By embedding these commitments in a negotiated contract between developers and community stakeholders, CBAs shift some of the decision-making responsibility from the agency administering funding to IBU and community stakeholders.

Labor Peace Agreements

Labor peace agreements (LPAs) are agreements between an employer and a union in which the employer commits to preserve workers' rights to organize a union and the union agrees not to engage in strikes, picketing, or other forms of economic disruption.⁸⁸ State agencies could include the execution of an LPA as part of their scoring criteria or final grant agreement since it is tied directly to a publicly subsidized project.⁸⁹

LPAs are a less direct way of conditioning public funding on high labor standards and workforce development pathways because they depend on the ability of IBU to organize non-union workers and negotiate strong contracts.^{90,91}

5.2.1.2. Voucher-Style Incentive Programs

Unlike competitive grants and demonstration projects, voucher-style incentive programs have standardized eligibility requirements and usually provide point-of-sale vouchers that subsidize the cost of purchasing green technology.⁹² These programs don't involve project-specific agreements, so they are more well-suited to imposing minimum labor standards companies must comply with in order to receive funding.⁹³

87 Center for Law, Energy & the Environment (CLEE), *Community Benefits Tools and California Clean Energy Projects* (2024), 26. https://www.law.berkeley.edu/wp-content/uploads/2024/10/Community-Benefits-Tools-and-California-Clean-Energy-Projects_CLEE-Report_Oct24.pdf

88 Cornell University ILR School, Labor and Employment Law Program, "Labor Peace Agreements (LPA)," accessed February 10, 2026, <https://www.ilr.cornell.edu/labor-and-employment-law-program/labor-peace-agreements-lpa>

89 Recent legal scholarship notes that LPAs have become especially relevant in emerging industries that receive significant public investments because, when governments act as a major investor, they have an interest in ensuring public projects are completed in a timely manner. Juan Ramon Riojas, "Labor-Peace Agreements in Emerging Industries," *Columbia Law Review* 125, no. 2 (2025): 418–25. <https://columbialawreview.org/content/labor-peace-agreements-in-emerging-industries/>

90 For example, if CARB funded an electric tugboat demonstration project run by a non-signatory company, then conditioning that funding on the execution of an LPA could open the space for IBU to organize workers, which could result in a collective bargaining agreement between IBU and the company.

91 Labor Peace Agreements do raise important strategic questions for IBU, including whether neutrality agreements that foreclose the option of using one of the labor movement's most powerful tools, economic disruption, are the preferred mechanism for building worker power and ensuring workplace protections at the San Pedro Port Complex.

92 One example of this kind of program is California's Clean Off-Road Equipment Voucher Incentive Project (CORE). California Air Resources Board, "Clean Off-Road Equipment Voucher Incentive Project (CORE)," accessed March 2, 2026, <https://ww2.arb.ca.gov/our-work/programs/clean-off-road-equipment-voucher-incentive-project>

93 Karla Walter, "Government on Workers' Side: How State and Local Policymakers and Advocates Can Raise Standards for Publicly Supported Work," *Center for American Progress*, January 31, 2024, accessed March 5, 2026, <https://www.americanprogress.org/article/government-on-workers-side/>

Responsible Employer Eligibility Standards

One existing policy tool state agencies can use to incorporate baseline standards into these programs is the Responsible Employer Eligibility Standards.⁹⁴

These standards may include requirements that firms:

- Don't have any outstanding wage and hour violations
- Are in compliance with labor and employment law
- Disclose prior enforcement actions or regulatory violations against them
- Demonstrate workforce training, certification, or participation in recognized apprenticeship programs

The policy approaches discussed throughout this section represent different strategies for attaching labor standards to competitive funding and incentive programs. The following section will evaluate policy tools for improving workforce development pathways to help make these strong labor standards a reality.

5.3. Investing in Their Workforce: An Opportunity for IBU Signatories

While IBU continues organizing non-union tugboat companies in California and advocating for conditioning public funding on strong labor standards, it must ensure their members have access to the training necessary to safely operate hybrid or electric tugboats.

If public climate funding is conditioned on strong labor standards, companies with existing high-road labor practices and robust workforce development infrastructure will gain a competitive advantage in grant applications. This creates an opportunity for IBU and its signatories: by investing now in robust workforce development programs, union companies will become the most compelling recipients of public funds because they demonstrably offer better wages, benefits, and training opportunities.⁹⁵

The following section explores specific pathways to ensure current and future workers in the tugboat industry have access to training necessary to safely operate existing and new technologies. Investing in workforce development has the potential to strengthen IBU while positioning union companies as the state's preferred partners in the transition to zero emissions.

94 Carol Zabin et al., *Putting California on the High Road: A Jobs and Climate Action Plan for 2030* (UC Berkeley Labor Center and California Workforce Development Board, 2020), 7–8, 34–36.

95 IBU is uniquely positioned to facilitate this investment due to their long-standing relationship with POLA, POLB, and with community colleges and workforce development leaders throughout the county.

5.3.1. Workforce Development Policy Options

5.3.1.1. Developing a Pre-Apprenticeship/Apprenticeship Program

Apprenticeship programs have historically been one of the most reliable mechanisms for building a skilled workforce. Unions like the International Brotherhood of Electrical Workers (IBEW) are sustained by apprenticeships developed to ensure their members have the skills needed to work competitively. IBEW's apprenticeship programs are the product of a strong Labor-Management partnership with the National Electrical Contractors Association.⁹⁶ Not all apprenticeship programs are a product of an agreement between a union and a business association. Apprenticeships are also offered through Los Angeles's Economic Development and Workforce Education Department (EDWE) in partnership with Los Angeles Community Colleges.

The specific focus of any apprenticeship program must be determined collaboratively by IBU and industry leaders based on their workforce assessment.⁹⁷

Currently, pre-apprenticeship programs at local community colleges and high schools have emerged as a key need. Shoreside engineers, in particular, noted that gaining basic mechanical skills would ease the transition into the industry for prospective workers. Accelerated training programs would give prospective tugboat engineers a head start when applying for entry-level engineering positions that tugboat operators struggle to fill.⁹⁸

Similarly, IBU and signatory leadership identified a need for programs helping workers attain their Able Seafarer (AB) credential to help address mid-level workforce gaps and create advancement opportunities for current deckhands.

Apprenticeships give workers access to on-the-job learning from an assigned mentor and technical instruction in a classroom setting while receiving living wages from their employer.⁹⁹ Apprentices receive an industry recognized credential upon completion of the program. There are various apprenticeship models depending on the sponsor, but in most cases employers cover the cost because of the long-term benefits of having a skilled workforce¹⁰⁰

The next section will outline different types of apprenticeship programs.

96 International Brotherhood of Electrical Workers - Michigan, "IBEW Apprenticeships," accessed February 20, 2026, <https://www.ibewmichigan.com/apprenticeships>.

97 See Appendix D for a discussion of considerations IBU should have when determining the specific focus of apprenticeship programs.

98 Chaffey College, "Entry-Level Training Programs," accessed February 18, 2026, <https://www.chaffey.edu/intech/entry-programs.php>.

99 Robert Lerman, Jessica Shakesprere, Daniel Kuehn, and Batia Katz, "What Are the Costs of Generating Apprenticeships? Findings from the American Apprenticeship Initiative Evaluation" (report prepared for the U.S. Department of Labor, Employment and Training Administration, September 2022), https://www.dol.gov/sites/dolgov/files/ETA/publications/ETAOP2022-42_AAI_Brief-Costs-Grantees_Final_508_9-2022.pdf

100 For more information about research on the costs of apprenticeship programs, please see Appendix D.

Labor-Management Apprenticeship Programs

Labor-management training programs are when employers or their associations come together to form Joint Training and Apprenticeship Committees that create programs where workers receive wages while gaining classroom instruction in their trade.

These partnerships require robust relationship-building and sustained financial contributions from both employers and unions. For IBU's needs, financial contributions would have to cover several key costs:

- Developing a Department of Apprenticeship Standards-approved curriculum
- Hiring and compensating instructors with maritime expertise
- Securing classroom space for instruction
- Acquiring specialized training equipment and training facilities¹⁰¹

The scale of investment depends on the program's scope, but this partnership model distributes costs between labor and management while ensuring both parties have input into curriculum design and program outcomes.¹⁰²

IBU does not currently have the space to offer the instructional aspects of an apprenticeship program, so they would likely need to partner with a third party like Altasea, a public-private ocean institute located at POLA.¹⁰³ Securing the financial and political backing for an IBU facility might prove difficult, given that plans to develop a Goods Movement Training Campus at the San Pedro Port Complex have recently stalled.¹⁰⁴

While labor-management apprenticeship programs are common in union-dense sectors, alternative models merit consideration.¹⁰⁵

Community College Apprenticeship Programs

Alternative models rely on intermediary organizations to convene industry and labor stakeholders to build training programs that serve the local community. Economic and workforce development agencies at the state, county, and city levels, and community colleges all possess the resources necessary to partner with IBU and its signatories. These intermediaries can access public funding streams and provide administrative capacity that individual unions or employers may lack.

101 This could include vessel simulators for workers pursuing Master of Towing credentials and facilities large enough for that equipment, depending on which positions the program targets.

102 Fortunately, IBU has a DAS-approved apprenticeship curriculum. While this curriculum will expire Summer 2026, it can be used as a starting point for future programs.

103 AltaSea at the Port of Los Angeles, "About Us," accessed April 7, 2026. <https://altasea.org/about-us/>

104 Donna Littlejohn, "Ambitious LA-LB Port Partnership for Work Training Center Loses Long Beach," *Daily Breeze*, February 16, 2026, <https://www.dailybreeze.com/2026/02/16/ambitious-la-lb-port-partnership-for-work-training-center-loses-long-beach/>.

105 A mechanism that is typically used to facilitate labor-management apprenticeship programs but is not likely feasible for IBU is the creation of a Labor Management Training Trust (LMTT). For a more comprehensive explanation of LMTTs, see Appendix D.

Potential partners for establishing a tugboat industry apprenticeship or internship program include, but are not limited to:

- California Community Colleges
- Long Beach City College
- Los Angeles City Colleges
- LA County Department of Economic Opportunity
 - LA County High Road Training Partnerships¹⁰⁶
- City of Los Angeles Department of Economic and Workforce Development

Partnerships that unite workforce development experts, labor representatives, industry stakeholders, and port leadership can create training strategies that address all parties' needs while advancing regional economic goals.

5.3.1.2. Developing Community College and High School Pre-Apprenticeship and Career Technical Education Programs

A community college program is only possible with the active participation of industry, labor, port, community college, city and state workforce development leaders, and local school districts.¹⁰⁷ Without participation from these groups, initial and sustained financial backing is untenable.

Both the City of Long Beach and City of Los Angeles have robust workforce development infrastructure for adults looking to re- or upskill in a particular industry, in addition to trade-specific courses at local public and charter schools. IBU and its signatories could build on pre-existing educational infrastructure to incorporate skills specific to the tugboat industry with current curricula to create a pathway for new maritime workers.

Existing Workforce Development Infrastructure: Career Technical Education Programs

Career Technical Education (CTE) programs offer students in grades 7-12 and community colleges technical training and academic coursework in specific career fields. These programs give students the skills to enter the workforce directly or continue to post-secondary education.¹⁰⁸ In some cases, CTE programs establish partnerships with Registered Apprenticeship Programs (RAP) to develop Registered Pre-Apprenticeship Programs at the high school level. Through these partnerships, students receive credit for their initial training, build relationships with unions and employers offering apprenticeships, and secure placements within RAP before graduation.¹⁰⁹

¹⁰⁶ Los Angeles County Department of Economic Opportunity, "LA County High Road Training Partnerships," accessed February 26, 2026, https://opportunity.lacounty.gov/http/#panel_tab_69a0b998b186b.

¹⁰⁷ This is unlike labor-management apprenticeship programs, which only require government involvement in the form of accreditation from the Division of Apprenticeship Standards within California's Department of Industrial Relations and the U.S. Coast Guard.

¹⁰⁸ Los Angeles County Office of Education, "Career Technical Education," accessed February 26, 2026, <https://www.lacoe.edu/services/accountability/cte>.

¹⁰⁹ Los Angeles County Office of Education, "Pre-Apprenticeship Handbook," Apprenticeships course, accessed February 24, 2026, <https://lacoepd.instructure.com/courses/1079/pages/pre-apprenticeship-handbook>.

CTE Programs Near the San Pedro Port Complex

The region already hosts CTE programs well-suited to tugboat workforce development:

- **Port of Los Angeles High School** offers a port transportation concentration that includes earning certificates like the U.S. Coast Guard Standards of Training, Certification, and Watchkeeping (STCW) as well as a Systems Diagnostics, Service, and Repair pathway that provides training for engineering careers.
- **Long Beach Unified School District** offers CTE programs at several schools, including a POLB-sponsored program focused on “sustainable systems, smart technologies, [and] the science of alternative fuel vehicles.”¹¹⁰

Opportunities for IBU Engagement

These CTE programs rely on industry and labor feedback to create curricula that serve both students and the sectors they aim to join.¹¹¹

IBU and its signatories have three key opportunities to engage with these existing programs:

- Work alongside signatories to develop curriculum relevant to tugboat operations.¹¹²
- Create an instructor pipeline of IBU members to become CTE instructors.¹¹³
- Establish formal pipelines from CTE programs to positions at IBU signatory companies.

Within CTE programs, IBU can achieve multiple objectives with modest resource investment:

- Publicize tugboat careers and IBU representation to students with existing ties to POLA and POLB.
- Establish credibility with education leaders and workforce development agencies by joining advisory boards and offering credentialed IBU members as instructors.
- Develop concrete data on student interest in maritime careers, providing evidence to justify investment in apprenticeship programs.¹¹⁴

110 Long Beach Polytechnic High School, “NOVA,” accessed February 24, 2026, <https://poly.lbschools.net/academics/pathways/nova>.

111 Catalina Express, a non-signatory company, already sits on the advisory board of the POLA High School’s CTE program Port of Los Angeles High School, “CTE Stakeholder Group Meeting Agenda” (meeting agenda, San Pedro, CA, October 1, 2025), <https://4.files.edl.io/410e/10/07/25/220307-d5c4c4f7-4e84-4762-a4b4-84154ad47f9b.pdf>.

112 Content could include mechanical skills, deck work, navigation basics, and kickstarting the process for obtaining a Merchant Mariner Credential and Able Seafarer credential upon graduation.

113 UCLA Extension offers a credential program for these purposes. UCLA Extension, “Career and Technical Education Credential Program,” accessed February 24, 2026, <https://www.uclaextension.edu/education/k-12-california-teacher-credentialing-authorizations/specialization/career-and-technical>.

114 In our interview with the POLB Chief Executive Officer, they expressed interest in working on career development leading to good jobs at the port with local K-12 schools.

5.3.1.3. Developing a Certificate Program with Local Community Colleges

IBU and its signatories have the opportunity to expand and create certificate programs that could focus on the safe operation of hybrid and electric tugboat technologies. A green technology certificate could be used to demonstrate a company's superior workforce training, which could give them an advantage when applying for public climate subsidies.

IBU leadership has also identified a clear path to keeping members competitive in a changing industry: enabling more members to attain their Opacity Testing Credential (OTC), which functions like a smog check requirement for vehicles. The OTC is critical to the maritime sector but is difficult to acquire due to limited training locations.¹¹⁵ Expanding the availability of the OTC would be an important opportunity for IBU to train their members to acquire this critical knowledge ahead of attaining a future green technology operations certificate.

5.4. Building Power within ILWU

The final policy consideration for investing in workforce development for current and future workers in San Pedro's tugboat industry involves building power within ILWU.

ILWU leadership has collectively bargained with the PMA to secure significant investments in workforce development as the maritime sector evolves.¹¹⁶ By advocating for inclusion in ILWU's workforce development infrastructure, IBU could ensure their members benefit from the expansion of world-class training facilities and programs already under development at the ports.¹¹⁷

5.5. Conclusion

IBU members require up-to-date training to ensure they can safely accomplish their work and remain competitive in an ever-changing sector and regulatory environment. Port, city, and state leaders are incentivized to bring industry and labor to the table to build curricula that ensure local workers have access to good jobs and that the ports don't face labor shortages, skill gaps, or safety concerns. Past workforce development programs have failed when they lacked either labor or industry expertise and buy-in; therefore, meaningful programs require industry participation from the outset. Bringing IBU signatories to the table may be difficult without a unified business association to facilitate coordination, yet this challenge pales in comparison to the operational crises these companies will face without action,

115 In line with CARB's 2022 CHC Amendments, which "require exhaust from main propulsion engines and auxiliary engines on all vessels to meet opacity limits" there must be qualified inspectors available at the port to perform these opacity tests. California Air Resources Board, "CHC Factsheet: Opacity Testing Guide," December 27, 2022, <https://ww2.arb.ca.gov/resources/fact-sheets/chc-factsheet-opacity-testing-guide>.

116 New automated cargo moving equipment threatens ILWU's membership because it could reduce the number of longshoremen needed at the port. Brian Justie et al., Automation and the Future of Dockwork at the San Pedro Port Complex (Los Angeles: UCLA Labor Center, 2023), 1, <https://labor.ucla.edu/wp-content/uploads/2023/11/Automation-and-Dockwork-Report.pdf>

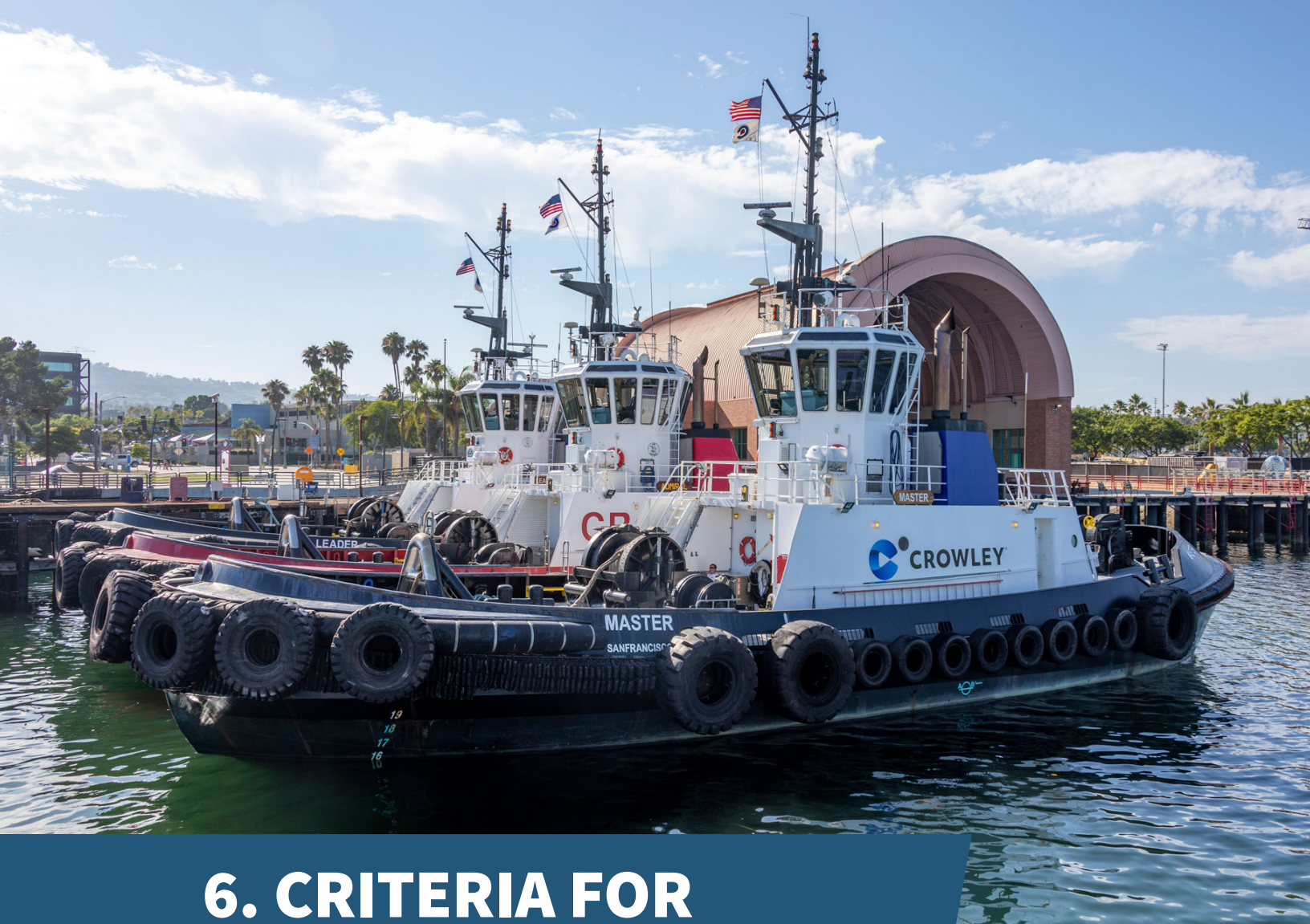
117 Bargaining with the PMA has enabled ILWU to access the funding and political support necessary to build facilities like the future Goods Movement Training Campus. "Ambitious LA-LB Port Partnership for Work Training Center Loses Long Beach." Daily Breeze, February 16, 2026. <https://www.dailybreeze.com/2026/02/16/ambitious-la-lb-port-partnership-for-work-training-center-loses-long-beach/>.

including deepening labor shortages and a workforce lacking the training necessary to safely and effectively operate vessels. These challenges will only intensify as green technologies fundamentally transform tugboat operations.

The tugboat sector is small enough that state and local agencies are unlikely to proactively convene stakeholders or compel industry participation. Therefore, the task of bringing employers to the table falls on IBU. Fortunately, IBU has been forward-thinking in contract negotiations with major employers. In their contract with one tugboat company, their agreement stipulates that “The Employer agrees to work jointly with the Union in participation of an apprenticeship program...when it becomes available.”¹¹⁸ Additionally, that same contract makes clear that training required by government regulation will be reimbursed by the employer.¹¹⁹

118 Foss Maritime Company and Inlandboatmen’s Union of the Pacific, Southern California Region, Marine Division–ILWU, *Agreement between Foss Maritime Company (Long Beach Engineers) and The Inlandboatmen’s Union of the Pacific, Southern California Region, Marine Division–ILWU*, July 1, 2025.

119 Ibid, 20.



6. CRITERIA FOR EVALUATION

This report will use four criteria to evaluate the proposed policy options, keeping in mind that our two categories of policy tools—funding conditioned on labor standards and workforce development programs—need to be used in concert to ensure the best chance of maintaining and strengthening IBU’s membership and bargaining power.

The criteria for evaluation are:

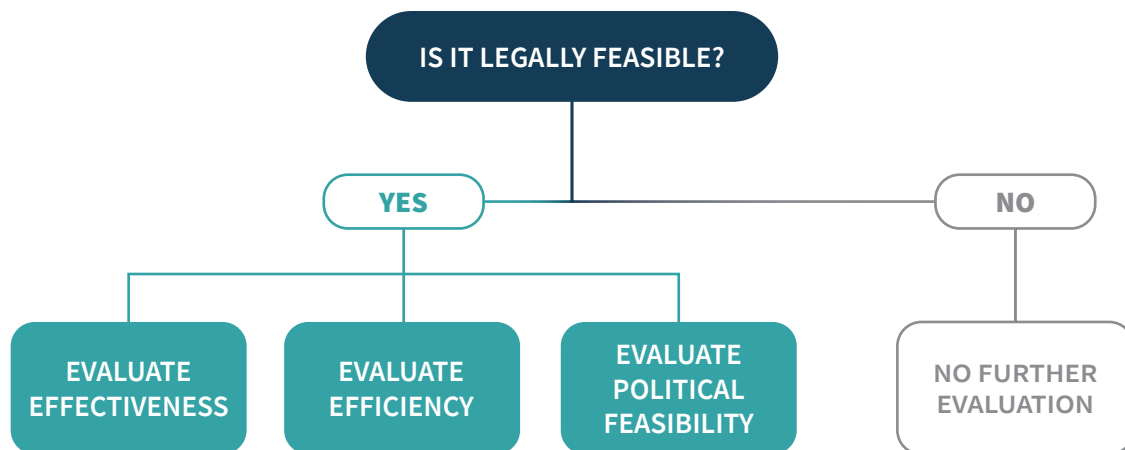
1. Legal feasibility
2. Effectiveness
3. Efficiency
4. Political feasibility

6.1. Defining the Criteria

6.1.1. Legal Feasibility

Legal feasibility is the initial threshold criterion: options that are not legally permissible or viable will not require further evaluation. For each policy option, we will first consider its legal feasibility, and if the option is legally feasible, we will evaluate it based on the other three criteria.

Figure 1. Decision tree for legal feasibility evaluation



6.1.2. Effectiveness, Efficiency, and Political Feasibility

We will use a Criteria Alternatives Matrix (CAM) to evaluate effectiveness, efficiency, and political feasibility. We will rank each policy option on a scale of 1 to 3 for each criterion and then add up the total score for each policy option.

While we have used the CAM to assign a score to each of the policy options, we want to emphasize that these options are not necessarily mutually exclusive. At a minimum, IBU should pursue at least one policy option from the “Labor Standards” category and one option from the “Workforce Development” category, since those two types of policies will work together to strengthen IBU’s power by both raising labor standards and expanding and upskilling IBU’s membership. IBU could also choose to pursue multiple options from each category.

6.1.2.1. Effectiveness

This report defines effectiveness as the extent to which a policy strengthens workforce standards and expands IBU’s long-term organizing power in the tugboat sector.

The standards for effectiveness are different for the policy options that condition funding on labor standards and the options that create workforce development programs. Given the importance of this criterion, we have further broken down those standards into two sub-criteria for each category of policy option.

Table 1. Effectiveness standards

Policy options for labor standards:	Policy options for workforce development:
How many firms adopt higher standards: 1 (Low) - This policy option will result in higher labor standards at few, if any, tugboat companies at the San Pedro Ports. 2 (Medium) - This policy option will result in higher labor standards at some, but not all, of the tugboat companies at the San Pedro Ports. 3 (High) - This policy option will result in higher labor standards at most or all of the tugboat companies at the San Pedro Ports.	IBU role in training infrastructure: 1 (Low) - This policy option will not make IBU a relevant player in training in the tugboat industry. 2 (Medium) - This policy option will make IBU an active participant in training in the tugboat industry. 3 (High) - This policy option will make IBU an integral part of training in the tugboat industry.
Strength of labor conditions in funding agreements: 1 (Low) - Labor standards only appear in application materials or scoring criteria and are not clearly included in the final grant agreement. 2 (Medium) - Labor standards are included in the grant agreement, but enforcement mechanisms are unclear or limited. 3 (High) - Labor standards are clearly written into the final grant agreement and are clearly linked to enforcement mechanisms and strong reporting requirements.	Employment placement of IBU-trained workers: 1 (Low) - This policy option will result in few IBU-affiliated workers (i.e. workers who have been trained by IBU-affiliated programs) being hired by tugboat companies at the San Pedro Ports, providing minimal organizing opportunities or membership growth. 2 (Medium) - This policy option will result in IBU-affiliated workers (i.e. workers who have been trained by IBU-affiliated-programs) being hired by some tugboat companies at the San Pedro Ports, creating moderate organizing opportunities at non-union companies and some membership growth at union signatories. 3 (High) - This policy option will result in IBU-affiliated workers (i.e. workers who have been trained by IBU-affiliated programs) being widely hired across tugboat companies at the San Pedro Ports, creating substantial organizing opportunities at non-union companies and significant membership growth at union signatories.

6.1.2.2. Efficiency

Some policy options will directly impact IBU's finances, either through costs or generating revenue through member dues. Others do not carry direct financial costs and would only indirectly influence income generated. To reflect this, we've outlined two separate definitions of efficiency: one that is a standard quantitative cost-benefit analysis of money spent versus income earned, and one that will qualitatively analyze how much effort IBU will need to invest to implement the policy compared to the expected benefit. We will evaluate the workforce development policy options quantitatively and the labor standards policy options qualitatively.

Table 2. Efficiency definitions

Quantitative analysis:	Qualitative analysis:
1 (Low) - The amount of money IBU would invest in this option is more per new member than the amount that a new member will pay in dues over their first five years of membership	1 (Low) - The amount of time, energy, and political capital IBU will spend on implementing this option is high relative to the expected increase in labor standards
2 (Medium) - The amount of money IBU would invest in this option is about the same per new member as the amount that a new member will pay in dues over their first five years of membership	2 (Medium) - The amount of time, energy, and political capital IBU will spend on implementing this option is moderate relative to the expected increase in labor standards
3 (High) - The amount of money IBU would invest in this option is less per new member than the amount that a new member will pay in dues over their first five years of membership	3 (High) - The amount of time, energy, and political capital IBU will spend on implementing this option is low relative to the expected increase in labor standards

6.1.2.3. Political Feasibility

1 (Low) - We have not identified any powerful institutions (e.g. ILWU, one of the ports, a state agency, a school district, or a community college) or more than one smaller institution that support this option and are willing to put resources towards making it happen.

2 (Medium) - There is at least one powerful institution or multiple smaller institutions that support this option and are willing to put resources towards making it happen.

3 (High) - There are multiple powerful institutions from different sectors (e.g. from both a port and a community college) that support this option and are willing to put resources towards making it happen.



7. POLICY EVALUATION

7.1. Legal Feasibility

Legal feasibility serves as the initial threshold criterion. Options that are not legally permissible under federal labor law or statewide regulations require no further evaluation. As discussed in previous sections, the central legal question for any tool conditioning public funding on labor standards is whether it can be justified under the market participant doctrine established in *Boston Harbor*. All proposed policy options clear this threshold, although some options carry slightly more risk or require particular attention paid to their structuring, as outlined below.

7.1.1. Labor Standards Options

The USEP model is the most straightforward labor standards option, legally speaking. Conditioning public funding on higher wages, apprenticeship opportunities, and related criteria has been shown to be legally permissible through agencies such as LA Metro, the Chicago Transit Authority, and Amtrak utilizing the model to incorporate these standards into procurement.¹²⁰ Given the application of similar standards to competitive grants through the Greenhouse Gas Reduction Fund, there is little reason to believe this tool cannot be translated from procurements to grantmaking.

CBAs, while legally feasible, require more careful structuring. CBA requirements are the most legally sound when tied to specific publicly subsidized projects rather than being imposed sector-wide. This keeps any labor standard requirements grounded in CARB's proprietary interest in their particular investments. Responsible Employer Eligibility Standards present the lowest litigation risk of labor standards tools evaluated in this report, because they function as a baseline screening criteria requiring compliance with existing labor and employment laws. Their sound legal footing marks a more conservative approach that is counteracted by their limited effectiveness, as we discuss later in our evaluation.

Labor peace agreements carry the most litigation risk of the labor standard policy options presented. While they are currently not expressly forbidden, the matter was dismissed by a lower court in California on the procedural grounds that the court could not decide on the

¹²⁰ Jobs to Move America, "U.S. Employment Plan," <https://jobstomoveamerica.org/resource/u-s-employment-plan-2/>.

question of federal labor law preemption to begin with.¹²¹ Meanwhile, the Oregon District Court in *Casala, LLC v. Kotek* struck down a comparable Oregon LPA requirement as federally preempted. The core question of whether LPA requirements are federally preempted is up in the air, and the California case is still in the process of being appealed.¹²² Therefore, while there has not been an authoritative ruling prohibiting LPA requirements, the matter is very much unsettled and could become legally prohibited in the future.

7.1.2. Workforce Development Options

The workforce development policy options being considered exist in a more straightforward legal landscape. These options revolve around IBU investing in training programs rather than pushing the state to make any funding or policy decisions, so the matter of federal labor law preemption is not a factor to be considered. Instead, the relevant legal framework to consider largely pertains to apprenticeship curricula being approved by the California Division of Apprenticeship Standards and the U.S. Coast Guard credentialing requirements. These are not legal feasibility considerations per se, rather they are administrative requirements that will need to be fulfilled in the design of these policy tools. The Labor-Management Training Trust is expressly authorized under the Taft-Hartley Act and further governed by ERISA.¹²³

7.2. Effectiveness

7.2.1. Effectiveness of Labor Standard Policy Options

7.2.1.1. Competitive Grant and Demonstration Programs

USEP Model (3 Effectiveness)

The USEP-style model would be highly effective (3) at conditioning public funding on strong labor standards because companies would be asked to outline their wages, benefits, and workforce training commitments as part of the grant application process. Since companies are strongly incentivized to seek public funding to offset the costs of the transition to electric and hybrid tugboats, the USEP model gives the state leverage to reward “best-in-class” employers and push others to raise their standards to remain competitive applicants. This policy option would likely result in higher labor standards at most companies receiving or applying for public climate funding.

Community Benefits Agreement (2 Effectiveness)

CBAs could condition public funding on strong labor standards, but since they’re negotiated on a project-by-project basis, they earn a medium (2) effectiveness score. While a well-negotiated CBA could include provisions for strong, enforceable labor standards, IBU’s ability to negotiate

121 A federal court issuing a judgment in favor of a cannabis company when cannabis is federally illegal was deemed to be against the “unclean hands” doctrine. *Ctrl Alt Destroy v. Elliott*, No. 3:24-cv-00753 (S.D. Cal. Mar. 2025).

122 *Casala, LLC v. Kotek*, No. 3:25-cv-244-SI (D. Or. May 20, 2025).

123 The Taft-Hartley Act and ERISA provide an established legal structure for administering training funds in collaboration with signatory companies.

a strong CBA would vary and depend heavily on the strength of the union-community coalition formed around each project. CBAs could raise standards for some companies receiving public funding, but they'd be unlikely to influence most tugboat operators.

Labor Peace Agreements (1 Effectiveness)

LPAs do not directly condition public funding on strong labor standards. Instead, they create the organizing conditions under which IBU might eventually negotiate stronger standards with nonunion companies. Employer neutrality gives IBU useful access to workers at companies that may be receiving public subsidies, but an LPA simultaneously limits IBU's organizing tactics by prohibiting disruptive tactics. The impact LPAs would have on wages, benefits, and training across the tugboat industry would be indirect and uncertain, which is why they received a low effectiveness score of (1).

7.2.1.2. Voucher-Style Incentives

Responsible Employer Eligibility Standards (2 Effectiveness)

Responsible Employer Eligibility Standards receive a medium effectiveness score (2). These standards would require companies applying for vouchers to offset the costs of electric and hybrid tugboats to demonstrate compliance with baseline labor standards. This could prevent public funds from subsidizing poor labor practices and encourage some employers to improve their standards in order to qualify for incentives, but they would likely produce overall weaker labor standards than something like a USEP-style framework, bringing their effectiveness score down to (2).

7.2.2. Effectiveness of Workforce Development Policy Options

Labor-Management Apprenticeship Program (2.5 Effectiveness)

A labor-management tugboat apprenticeship program received a high (3) and medium (2) effectiveness score. Creating an apprenticeship program focused on helping participants earn their AB credential would establish IBU as the primary pathway into the industry in Los Angeles, giving the union considerable influence over workforce standards and skill development.

However, this model doesn't greatly advance IBU's broader organizing goals, reducing its workforce placement effectiveness to medium (2). Industry norms strongly favor placement of labor-management apprenticeship graduates with program sponsors, so this type of apprenticeship would concentrate graduates at IBU's limited existing signatories rather than dispersing them across non-union companies that IBU wants to organize.

Additionally, the program's scale would likely remain limited, as demonstrated by the 2017 program's challenges. Without intermediary support to provide facilities, administrative capacity, and sustained funding, IBU and its signatories would bear full financial and operational responsibility. This constraint would limit the number of participants the program could train annually, reducing its overall impact on industry-wide workforce standards.

Community College Apprenticeship Program (2.5 Effectiveness)

A community college-led apprenticeship program also received mixed scores across the two effectiveness criteria, reflecting a strategic trade-off between direct control and broader impact.

This model scores medium (2) on training infrastructure because adding a third-party intermediary dilutes IBU's direct control compared to a labor-management program. With three or more parties at the table, both IBU and its signatories have less influence over curriculum decisions, instructor selection, and program operations. This represents the cost of accessing resources, training facilities, instructors, and educational infrastructure that the union could not build independently.

The intermediary model scores high (3) on employment placement because it maximizes both the number of trained workers and their distribution across the industry. As noted in the political feasibility analysis, partnerships with port leadership, education and workforce development experts, and industry stakeholders provide access to funding streams and facilities unavailable to union-employer partnerships alone. This resource advantage translates directly into program scale: more participants, more frequent cohorts, and greater visibility as the primary pathway into the tugboat industry.

An apprenticeship program at greater scale can both fill labor shortages at IBU signatory companies with credentialed, skilled workers who received standardized training, creating a unified workforce prepared for green technology transitions and also position program graduates to enter non-union companies, creating substantial organizing opportunities. This means that a community college apprenticeship would both position signatory companies as ideal recipients of public grants and bring awareness of union standards to nonunion firms, creating natural organizing footholds.

For more discussion of what factors would make a community college apprenticeship effective, see Appendix E.

High School/Community College CTE/Pre-Apprenticeship Program (2 Effectiveness)

Greater involvement in Career Technical Education and pre-apprenticeship programs received medium scores on both training infrastructure and worker placement, reflecting the trade-off between limited curricular control and expanded but less targeted access to prospective workers.

This model scores medium (2) on training infrastructure because IBU becomes an active participant in existing programs rather than creating new training from scratch. CTE programs have established structures, state-mandated standards, and existing partnerships that limit how much IBU can shape specific content. However, IBU can establish its presence within these programs by joining advisory boards to advocate for maritime content and tugboat career pathways, providing instructors who understand union standards and workplace culture, and offering port tours and worksite visits to give students direct exposure to tugboat operations.

The CTE model scores medium (2) on employment placement because, while it casts a wider net than apprenticeship programs, the connection between program participation and actual tugboat industry employment is less direct and predictable.¹²⁴ CTE programs are designed as general career exploration and foundational skill-building, not as direct pipelines to specific employers or industries.¹²⁵

Effectiveness scores would increase substantially if IBU establishes a formal pre-apprenticeship program within CTE curricula that feeds directly into an IBU apprenticeship. See Appendix E and the “Policy Recommendations” chapter for more information on the role of pre-apprenticeships.

Community College Certificate Program (1.5 Effectiveness)

This criteria scoring evaluates the certificate’s impact on bringing new workers into the tugboat industry rather than its value in upskilling current IBU members for hybrid and electric tugboat operations. For more information on why we chose this way of evaluating the policy options, see Appendix E.

A community college certificate program in green tugboat operations received a medium (2) score on training infrastructure and a low (1) score on worker placement.

The medium score reflects the collaborative curriculum development required among electric tugboat technology experts, IBU representatives, and industry members—complicated by the fact that hybrid and electric tugboat technology remains immature. Technological uncertainty limits IBU’s ability to define training standards, giving manufacturers and engineers a dominant role while IBU contributes on safety protocols and operational concerns. IBU is thus an important but not integral participant.

The low placement score reflects the program’s function as a supplementary certificate for current tugboat workers, similar to an Opacity Testing Credential, rather than a pathway for new entrants. It would upskill existing operators for green technology transitions and strengthen competitiveness for hybrid or electric vessel jobs and grant funding—but would not grow IBU membership.

7.3. Efficiency

7.3.1. Labor Standard Policies

Getting CARB or any other state agency to agree to labor standards will require IBU to invest a fair amount of political capital. For this reason, none of the labor standards receive a “high efficiency” rating; this does not mean that they aren’t worth pursuing, but rather that IBU should be aware that pushing for these policies will require effort.

124 CTE partnerships expose young people to tugboat work before they’ve considered maritime careers, reaching students who might otherwise focus exclusively on ILWU longshoreman positions due to their dominant presence in the region. This lack of youth interest in the tugboat industry was raised in interviews with IBU members and tugboat company leadership.

125 Students who complete port transportation or mechanical training programs may pursue various maritime or technical careers, not necessarily tugboat work.

7.3.1.1. Competitive Grants and Demonstration Programs

USEP Model (2 Efficiency)

Pursuing USEP-style grant requirements is a high-investment, high-impact strategy for IBU. As the “Political Feasibility” section of this chapter discusses, there would likely be some resistance to implementing a USEP-style framework from tugboat companies, as well as some institutional inertia from CARB that would make the implementation challenging. IBU also might need to play an informal role in enforcing USEP-style standards by asking their members to report whether they receive the wages, benefits, and training opportunities mandated by the grants their employers receive; IBU would then need to ensure that CARB addresses any reported instances of non-compliance.

As was discussed in the “Effectiveness” section of this chapter, the USEP model would create major changes in the power structures of the tugboat industry by conditioning grant funding on labor standards. IBU would hold a much more powerful position within the industry if grants required tugboat workers to go through training programs, many of which IBU would facilitate, and IBU members’ wages, benefits, and training opportunities would increase accordingly. Additionally, prioritizing “best-in-class” employers that demonstrate strong workforce training commitments could create opportunities for IBU to develop strong training programs in partnership with employers, which would greatly expand IBU’s organizing reach, potentially growing its membership substantially.

The significant amount of work, time, and money that IBU would need to put into getting a USEP-style model implemented mirrors the substantial growth in power and membership that the union could experience as a result. This balanced amount of resources invested and resources gained means that the USEP model has an efficiency score of (2).

Community Benefits Agreement (1 Efficiency)

The Community Benefits Agreement strategy is both less effective than the USEP model and even more expensive in terms of time, money, and energy that would need to be expended. Because CBAs would need to be negotiated with each of more than a dozen tugboat companies and community support would be required, IBU would need to hire at least one full-time organizer, which would be an infeasible expense for a union with only about 300 members. Even if IBU were able to get the funding to hire a full-time organizer, the plethora of diverse stakeholders that would need to work together in order to get CBAs with a majority of nonunion tugboat operators makes it very unlikely that getting a critical mass of tugboat operators to sign CBAs would happen before the port’s transition to electric power is complete.

As discussed in the “Effectiveness” section of this chapter, even if IBU successfully negotiates CBAs, they may not be as effective at conditioning grant funding on labor standards as the USEP model because the language and enforcement mechanisms might vary. The prohibitively high cost of pursuing CBAs and the inconsistency of their effectiveness mean that the CBA policy option has an efficiency score of (1).

Labor Peace Agreement (1 Efficiency)

Getting CARB to condition grant funding on Labor Peace Agreements would involve only a moderate amount of effort for IBU, but it would have a very small payoff in terms of improved labor standards. Obtaining CARB's agreement to conditioning grant funding on having an LPA would likely not be very difficult, given that there is precedent for conditioning state funding and support on the existence of LPAs.¹²⁶ These precedents, along with the fact that refusing to enforce employer neutrality in worker organizing is a politically unpopular position, would likely encourage CARB to require LPAs.

Unfortunately, even the relatively low amount of effort needed to require LPAs is not worth the effort given the small effect that LPAs have on labor standards. Fundamentally, LPAs do not have a direct effect on labor standards; they simply open the door for building enough power to negotiate labor standards. Even the relatively small amount of resources needed on IBU's part to implement LPAs are still not worthwhile, which is why LPAs receive an efficiency score of (1).

7.3.1.2. Voucher-Style Incentives

Responsible Employer Eligibility Standards (1 Efficiency)

Similar to Labor Peace Agreements, Responsible Employer Eligibility Standards are already used by several state agencies, and refusing to implement them would be politically detrimental to CARB. Unlike LPAs, Responsible Employer Eligibility Standards do require employers receiving grant funding to meet certain minimum standards, although those standards are not as strong as they could be. Because this policy option would require limited resources from IBU and have some effect on labor standards, it receives a medium efficiency score of (2).

7.3.2. Workforce Development Policies

We used a standard cost-benefit analysis to evaluate the efficiency of different workforce development policies and programs. In this analysis, the expected cost of each program is subtracted from the expected financial benefit of increased money in member dues to determine whether the costs outweigh the benefits, the benefits outweigh the costs, or the benefits and costs are even. The full calculations of costs and benefits are included in Appendix F.

Labor-Management Apprenticeship (1 Efficiency)

In a labor-management apprenticeship, almost all costs would be split equally between IBU and the participating employers. Labor-management apprenticeships are eligible for some state funding, but the vast majority of costs, including those for training facilities, instructors'

¹²⁶ For example, as was mentioned earlier in this report, commercial cannabis licensees in California are often required to enter into LPAs, and California's High Road Training Partnerships grants require some kind of management-labor agreement, of which an LPA is one option. "Labor Peace Agreements for Cannabis Businesses - Department of Cannabis Control," Accessed March 13, 2026, <https://www.cannabis.ca.gov/labor-peace-agreements-for-cannabis-businesses/>. Employment Development Department, "High Road Training Partnerships 2025 Grant Program – Request for Applications," April 22, 2025, https://edd.ca.gov/en/jobs_and_training/Information_Notices/wsin24-38/.

wages, and other overhead, are shouldered by the union and the employers. In our budget calculations, the cost of a classroom space for the apprenticeship program was by far the largest cost, since IBU currently doesn't have access to any space large enough. For this reason, a labor-management apprenticeship would be an extremely expensive option for IBU and receives a low (1) efficiency rating.

Community College Apprenticeship (3 Efficiency)

A community college apprenticeship could be set up at a very low or even no cost to IBU due to the availability of state funding for these programs. Since community colleges already have educational facilities, the main cost of these apprenticeships would be the salaries of instructors, and community college apprenticeships are eligible for funding from the California Apprenticeship Initiative and California's Apprenticeship Funding, which together with the resources of the affiliated community college could bring the cost of the apprenticeship for IBU close to zero.¹²⁷ This is why the Community College apprenticeship policy option receives a high efficiency rating of (3).

Community College Certificate (3 Efficiency)

A community college certificate program is a low-cost option for all stakeholders, not just IBU. Like the community college apprenticeship, the main expense would be paying instructors, and certificate programs often require only a small number of hours; for example, the opacity testing certificate, which IBU may use as a model for their own certificate program, only requires nine hours of instruction to become certified.¹²⁸ Although there may not be as much public funding available for certificate programs as there is for apprenticeships, pre-apprenticeships, and career technical education programs, the low cost of the program means that the community college certificate program receives a high (3) efficiency rating.

High School or Community College CTE or Pre-Apprenticeship (3 Efficiency)

Like community college apprenticeships, community college pre-apprenticeships and career technical education only require substantial funding to pay instructors and are eligible for that funding from the state of California. For example, the California Opportunity Youth Apprenticeship grant would fully fund a pre-apprenticeship program, and funding from California Community Colleges' Career Technical Education State Plan and Strong Workforce Program could fund community college CTE.^{129 130}

127 Chancellor's Office, Equitable Student Learning, Experience and Impact Office and Anthony Cordova, "Amended Notice of Intent to Award - California Apprenticeship Initiative New and Innovative Grant Program (Fiscal Year 2023-24)," May 9, 2024, <https://www.cccco.edu/-/media/CCCCO-Website/docs/memo/eslei-24-28-amended-notice-of-intent-to-award-cai-new-and-innovative-grant-program-fy-2023-24-a11y.pdf?la=en&hash=2017CEDFB4696114A6364F9E398C2041181C5A3A&hash=2017CEDFB4696114A6364F9E398C2041181C5A3A>.

128 "Class Schedule | California Council on Diesel Education and Technology (CCDET)," Accessed March 13, 2026, <https://ccdet.org/class-schedule/>.

129 "Career Technical Education (CTE) State Plan | California Community Colleges Chancellor's Office," Accessed March 13, 2026, <https://www.cccco.edu/About-Us/Chancellors-Office/Divisions/Workforce-and-Economic-Development/cte-state-plan>.

130 "Strong Workforce Program (SWP) | California Community Colleges Chancellor's Office," Accessed March 13, 2026, <https://www.cccco.edu/About-Us/Chancellors-Office/Divisions/Workforce-and-Economic-Development/Strong-Workforce-Program>.

There is also state funding available for pre-apprenticeships and CTE programs in high schools. Paying an instructor would still be the main cost, but that cost could be slightly higher because they might have to be hired as a full-time teacher rather than as a community college instructor teaching a single course. The California Opportunity Youth Apprenticeship grant would cover most of the cost of a high school pre-apprenticeship program, and high schools can get funding for CTE from the California Department of Education's Career Technical Education Incentive Grant.¹³¹

The low cost of these programs to IBU means that the high school and community college CTE and pre-apprenticeship programs receive a high efficiency rating of (3).

7.4. Political Feasibility

To assess the political feasibility of each policy option, we must first identify the institutions that can facilitate or obstruct IBU's goals. A list of institutions with the power to influence, to varying degrees, the feasibility and success of policies impacting IBU can be found in Appendix E.

7.4.1. Political Feasibility of Labor Standard Policy Options

The following section evaluates the political feasibility of each labor standard policy option based on the extent of institutional support it is likely to receive. One major concern driving evaluation of political feasibility is CARB's administrative capacity for administering more detailed funding guidelines, and our expert interviews indicated that implementing more robust labor standards may require additional institutional capacity and expertise within agencies such as CARB.

7.4.1.1. Competitive Grant and Demonstration Programs

Competitive grant and demonstration programs give state agencies discretion to incorporate labor standards into funding criteria, since proposals are evaluated during the course of a competitive application process.

USEP-style Model (2 Political Feasibility):

The USEP-style model receives a score of (2) for political feasibility because competitive grant and demonstration programs already involve discretionary decision-making by state agencies, including CARB. It's certainly possible for agencies to incorporate labor standards into application requirements and scoring criteria. The fact that the USEP-style model has strong precedent in procurement contracts and clear, specific guidelines for how to incorporate strong labor standards throughout the grant process may make it easier for CARB to adapt elements of the framework when designing grant criteria.

However, implementing a USEP-style framework would likely require additional staff expertise and capacity. Conversations with workforce development staff at the California Energy Commission revealed that constraints in capacity and expertise may limit CARB's ability

131 "Career Technical Education Incentive Grant (CTEIG) - Career Technical Education (CA Dept of Education)," Accessed March 13, 2026, <https://www.cde.ca.gov/ci/ct/ig/>.

or willingness to implement more complex workforce standard frameworks.¹³² Companies applying for public funding might also oppose stronger workforce requirements if they perceive them as increasing project costs or, importantly, limiting their eligibility for receiving funding. However, companies applying for funding that already have strong labor standards, including strong wages, benefits, and training programs, would likely support a USEP-style model since it would give them a leg up in the grant application process. The USEP model would also be popular among labor unions, including IBU, and other labor organizations, as well as policymakers who support California’s High Road workforce goals.

Community Benefits Agreements (1 Political Feasibility)

Community Benefits Agreements receive a political feasibility score of (1) because implementing a CBA could potentially require collaboration between unions, environmental groups, and community organizations that do not always share the same political priorities. While CBAs have the potential to help ensure strong labor standards on publicly-funded projects, the strength of a CBA depends heavily on the ability of groups that don’t traditionally work together to build a strong coalition that is able to hold companies accountable.^{133 134}

In the context of tugboat electrification and hybrid retrofits, building a coalition that would be capable of agreeing on the terms of a CBA would similarly require significant time and resources. This is only compounded by the fact that CBAs are negotiated with companies on a project-by-project basis.

Labor Peace Agreements (3 Political Feasibility)

Labor Peace Agreements (LPAs) receive a political feasibility score of (3) because they are, by their very nature, a political compromise that is meant to appeal to employers and unions alike. LPAs require employers to allow unions access to their workers while unions agree to refrain from engaging in disruptive tactics.

As discussed above, LPAs are designed to prevent disruptive labor disputes. As a result, public agencies and companies sometimes support LPAs because they are intended to promote stability when public funds are invested in emerging industries or infrastructure projects.¹³⁵ According to interviews with experts familiar with labor policy at POLA and POLB, LPAs could be politically feasible policy tools to pursue, particularly when framed as a tool to maintain labor stability.¹³⁶

132 Ibid.

133 Partnership for Working Families, *Common Challenges, Shared Solutions: Effective Community Benefits Agreements* (Oakland, CA: Partnership for Working Families, 2016), 6, <https://www.datocms-assets.com/64990/1657040054-effective-cbas.pdf>

134 Historically, coalition building between labor and environmental organizations at the San Pedro Port Complex has been challenging. Building the “blue-green” alliance that was able to win the landmark Clean Trucks Program at POLA required years of organizing and relationship-building between unions and environmental organizations. Mike Muñoz, Research Director, Los Angeles Alliance for a New Economy (LAANE), interview by Carley Towne, February 20, 2026.

135 Juan Ramon Riojas, “Labor-Peace Agreements in Emerging Industries,” *Columbia Law Review* 125, no. 2 (2025). <https://columbialawreview.org/content/labor-peace-agreements-in-emerging-industries/>

136 Mike Muñoz, Research Director, Los Angeles Alliance for a New Economy (LAANE), interview by author, February 20, 2026.

7.4.1.2. Voucher-Style Incentive Programs

Responsible Employer Eligibility Standards (3 Political Feasibility)

Responsible employer eligibility standards receive a political feasibility score of (3) for several reasons.

First, responsible employer eligibility standards can be incorporated into incentive programs by updating existing eligibility criteria. Adding responsible employer eligibility standards would simply modify an existing framework that agencies like CARB already develop for these programs.

Second, incorporating responsible employer eligibility standards has institutional support from the California Workforce Development Board, the UC Berkeley Labor Center, and labor-friendly state legislators. A report prepared by the UC Berkeley Labor Center for the California Workforce Development Board, commissioned by the State Legislature, recommends incorporating responsible employer standards into incentive programs to ensure that public climate investments support responsible employers and quality jobs.¹³⁷

Third, unions would likely support this approach because it ensures that companies receiving public funding meet minimum labor and employment standards.¹³⁸ Policymakers and workforce advocates may also view responsible employer standards as a way to ensure that public investments in climate programs don't support a race to the bottom.

While some companies seeking public funding for tugboat electrification or hybrid retrofits may oppose additional eligibility requirements if they perceive them as limiting access to crucial funding, companies that already meet these standards would not face any additional burden and likely would not oppose these minimum standards.

7.4.2. Political Feasibility of Workforce Development Policy Options

Labor-Management Apprenticeship Program (1 Political Feasibility)

A labor-management apprenticeship program received a low score (1) for political feasibility. The primary institutions involved—IBU, IBU signatories, and the Division of Apprenticeship Standards—create a structure where political feasibility depends heavily on IBU's ability to bring signatories together to contribute financial and non-financial resources—something difficult to do without a tugboat association present. Additionally, it relies on their ability to

¹³⁷ *Putting California on the High Road: A Jobs and Climate Action Plan for 2030* (Berkeley: UC Berkeley Labor Center and California Workforce Development Board, 2019), 75-76. <https://laborcenter.berkeley.edu/wp-content/uploads/2020/09/Putting-California-on-the-High-Road.pdf>

¹³⁸ However, unions may have some reservations about the standards if they are too minimal or simply formalize existing practices among low-road employers. For this reason, unions would likely push for eligibility requirements that meaningfully distinguish responsible employers rather than symbolic standards with little practical impact.

secure sustainable public funding for a program. This reliance on employer participation and unguaranteed yearly public funding makes the model inherently volatile.^{139 140}

Community College-Led Apprenticeship Program (3 Political Feasibility)

An IBU apprenticeship program established in partnership with a third-party intermediary, like a community college, received a high score (3). Unlike the labor-management model, which depends on employer commitments subject to regulatory shifts, financial pressures, and labor market fluctuations—paired with significant union resources for the implementation and oversight of the program—an intermediary-led partnership creates a more stable foundation that can weather these changes, maintain employer participation over time, and remove some of the programmatic burden from union staff.

Interviews with port leadership revealed strong commitment to workforce development partnerships. Both POLB's CEO and POLA's Senior Director of Workforce and Government Affairs emphasized their political and financial investment in partnering with community colleges and unions—particularly those without ILWU's extensive resources—to prepare workers for electrification.¹⁴¹

POLA's 2025 MOU with California Community Colleges explicitly addresses zero-emission operations, decarbonization, and changing technologies, and interviews with LA County workforce development leaders confirmed significant financial and political support for High Road workforce initiatives. This multilayered institutional backing—spanning port, city, and county—creates an unusually favorable climate for launching a tugboat apprenticeship program.

High School/Community College CTE/Pre-Apprenticeship Program (3 Political Feasibility)

Building partnerships with pre-existing high school or community college Career Technical Education (CTE) and pre-apprenticeship programs received a high score (3). Because these programs already exist in schools surrounding the port, their presence demonstrates significant backing by key institutional stakeholders.

For a pre-apprenticeship program to be established within a CTE program at a high school or community college, an accredited apprenticeship program with available placements must already exist. This sequencing matters: it is most politically feasible to first establish relationships with CTE administrators, create a pipeline for graduates into the industry, and

139 Currently, many collective bargaining agreements include provisions related to signatories' responsibility to support apprenticeship programs and other training opportunities for IBU-represented employees. However, these contract provisions make clear that signatories are not financially obligated to IBU-established apprenticeship programs unless specifically negotiated.

140 IBU's 2017 apprenticeship program received political and financial support from a signatory, startup funds from the state, and used a third-party facility at the Harbor Occupational Center and later Altasea. However, without sufficient participants and long-term funding commitments from employers or the state, monthly facility payments became unsustainable, and the program was shut down. A partnership model dependent primarily on individual employer contributions and individual public funding remains vulnerable to the same instabilities that caused the 2017 program's collapse.

141 The future Goods Movement Training Campus, though publicly framed as an ILWU facility, is explicitly designed for multi-union use, with renderings including dedicated space for non-ILWU equipment and instruction, which signals openness to IBU participation. Avin Sharma (Senior Director, Workforce and Government Affairs Port of Los Angeles), interview by Maureen Flaherman & Claire Courtney, Zoom, March 5, 2026.

build a critical mass of support for an apprenticeship program. Once an apprenticeship program is established, IBU can then work with partners to develop a formal pre-apprenticeship program within high schools and community colleges.

If resources are limited and more formal policy recommendations prove unfeasible, the high political feasibility of CTE engagement presents a lower-stakes approach: establishing relationships with local CTE programs so IBU and its signatories can recruit students and market open positions without adding tugboat-specific curriculum or creating a formal pre-apprenticeship program.¹⁴²

Community College Certificate Program (2 Political Feasibility)

Creating a community college certification program received a medium (2) feasibility score. As established, there is clear institutional interest in electrification-related workforce development at the San Pedro Port Complex, driven by High Road principles, worker safety concerns, and zero-emissions goals. Policies related to worker and community safety nearly always receive strong institutional support, particularly from public sector entities. However, the political feasibility of this option is reduced by technological uncertainty in the sector, which removes the urgency for creating a certification.

7.5. Criteria Alternatives Matrix

Table 3. Criteria Alternatives Matrix

Category	Policy Option	Effectiveness	Efficiency	Political Feasibility	Total
Labor Standards					
Competitive Grants	USEP Model	3	2	2	7
	Community Benefits Agreement	2	1	1	4
	Labor Peace Agreement	1	1	3	5
Voucher-Style Incentives	Responsible Employer Eligibility Standards	2	2	3	7
Workforce Development					
Labor-Management Apprenticeship		2.5	1	1	4.5
Community College Apprenticeship		2.5	3	3	8.5
Community College Certificate		1.5	3	2	6.5
High School/Community College CTE or Pre-Apprenticeship		2	3	3	8

¹⁴² This initial outreach would help IBU address one of its most pressing challenges—the shortage of qualified engineers.



8. POLICY RECOMMENDATIONS

The transition to electric and hybrid tugboats at the San Pedro Port Complex presents an opportunity to strengthen labor standards while ensuring workers have the requisite training and skills to be prepared for a change in tugboat technologies. Based on the evaluation of policy options discussed above, this report recommends a set of complementary strategies aimed at strengthening labor standards on the one hand and expanding workforce development pathways in the tugboat sector as it transitions to hybrid and electric vessels on the other.

Our recommendations are organized into two categories:

1. Policies that condition public climate funding on responsible labor standards.
2. Workforce development strategies that expand training pathways for tugboat operators and crews.

8.1. Policy Recommendations for Strong Labor Standards

To ensure that public investments in the electrification and hybrid retrofits of tugboats at the San Pedro Port Complex support high-quality jobs, IBU should pursue policies that incorporate labor standards into both competitive grant programs and incentive programs.

First, IBU should advocate for the adoption of a USEP-style framework for workforce-related eligibility criteria and evaluation metrics in competitive grant and demonstration programs that fund tugboat electrification or hybrid retrofits. This was one of the highest-scoring labor standards policy options, with a score of 7, because this framework provides a clear opportunity for agencies like CARB to prioritize applicants that demonstrate strong labor standards and workforce training commitments in their grant applications. By relying on a proven, existing framework, agencies can help ensure that public funding supports high-road employers during a transition to hybrid and electric tugboat vessels. Because many of the companies that have collective bargaining agreements with IBU demonstrate several of the high-road employer characteristics that would strengthen their applications for funding, this approach could benefit IBU signatory companies without requiring agencies to mandate union participation in the grant process.

Second, responsible employer eligibility standards should be incorporated into incentive programs at agencies like CARB. This option also received a score of 7 because these baseline standards would help ensure that public funding doesn't subsidize companies with poor labor standards.

Taken together, these two policy approaches would help ensure that strong labor standards are incorporated across different kinds of climate public funding mechanisms offered by state agencies. This complementary approach would allow IBU to promote stronger labor standards across firms seeking public funding for tugboat electrification or hybrid retrofits while also being attentive to how different funding programs are structured.

However, IBU should weigh if they have the capacity and political capital to take on advocating for both the USEP-style framework and the responsible employer eligibility standards. If not, then we believe that IBU should prioritize advocating for a USEP-style framework. While responsible employer eligibility standards would help establish a baseline that prevents low-road firms from receiving public subsidies, a USEP-style framework would go further by actively prioritizing firms with stronger labor standards who apply for competitive grant and demonstration funding.¹⁴³

8.2. Policy Recommendations for Strong Workforce Development

To win grants in an increasingly competitive environment, union employers must demonstrate superior workforce development infrastructure that positions them as the state's natural partners in achieving zero-emissions goals while ensuring a just transition for workers. IBU signatories already hold advantages under reformed grant criteria through collective bargaining agreements guaranteeing livable wages, training, and professional development—but without local infrastructure, these benefits remain inaccessible. IBU must build local training capacity to make these commitments actionable and position union companies as ideal grant recipients.

8.2.1. Strategic Approach: Phased Implementation

We recommend a phased approach that builds sustainable capacity over time. The subsequent policy recommendations were our two top scoring policy options—8 and 8.5, respectively—and the effectiveness and efficiency of our phase one recommendation grows significantly when paired with phase two's recommendation.¹⁴⁴

143 These competitive grants and demonstration projects have the potential to give those companies a larger competitive advantage than incentive programs in the transition to electric and hybrid tugboats because they can provide larger funding awards and allow companies to pilot new technologies earlier, which would position them as industry leaders during the transition.

144 Drawing on the 2017 apprenticeship program's shortcomings—over-reliance on employer participation, one-time grant funding, and high costs with limited outcomes—this strategy prioritizes building durable institutional partnerships before launching resource-intensive programs. The Port of Long Beach's shift from a 2035 to 2050 zero-emissions target provides space for this approach, rather than demanding immediate investment in training for technology not yet at operational scale.

8.2.2. Short-Term Recommendation: Build Foundation Through CTE Partnerships

IBU, in partnership with signatories, should immediately establish relationships with local high schools and community colleges offering Career Technical Education programs. Several schools near the ports already operate CTE programs with transportation or mechanical concentrations that align with skill gaps identified by IBU engineers and vessel operators. These programs provide an immediate, low-barrier entry point for union engagement in workforce development.

Critically, CTE partnerships create immediate value even if they never scale to full apprenticeships. Students who complete port-focused CTE programs and enter the tugboat industry—whether at union or non-union companies—will have been exposed to IBU and understand the union’s role in the industry. Those hired by signatories increase membership directly; those hired by non-union operators become organizing targets who already recognize union standards, creating footholds for future campaigns.

8.2.3. Long-Term Recommendation: Community College-Led Apprenticeship Program

Upon establishing strong partnerships with CTE programs and demonstrating student interest in tugboat careers, IBU should leverage these relationships to build an intermediary-led apprenticeship program in partnership with either POLA, POLB, or both, as well as local community colleges.

A community college-led model addresses the sustainability challenges that undermined the 2017 program. The distribution of financial burden beyond IBU signatories ensures program continuity even if individual employers—or the union itself—face economic pressures or regulatory uncertainty that might cause them to withdraw support.

Partnering specifically with organizations or agencies that have sustainable funding streams outside California’s General Budget is essential. Community colleges receiving public workforce development funds from the state, county, or city will expect apprenticeship programs to serve substantial numbers of students and contribute measurably to regional workforce goals, which is why the short-term CTE strategy is essential: by building a base of student interest and demonstrating demand before launching an apprenticeship, IBU ensures the program can meet partners’ participation expectations and justify their resource commitments.

Ultimately, once both CTE partnerships and an intermediary-led apprenticeship are established, IBU can work to formalize connections between them by creating a registered pre-apprenticeship program within CTE curricula. This transforms separate initiatives into an integrated workforce pipeline rooted in giving San Pedro residents access to good jobs in their own community.



9. CONCLUSION

As the Ports of Los Angeles and Long Beach transition to electric power, the Inlandboatmen's Union faces major changes altering their work, which could significantly erode membership and ultimately threaten the tugboat industry as a source of good union jobs. To prevent the erosion of good jobs on tugboats, state agencies such as the California Air Resources Board should use a USEP-style framework and responsible employer eligibility standards to direct public funding for tugboat upgrades to firms that have high-road employment standards. At the same time, IBU should ensure their members remain competitive and prepared for the upcoming technological changes by partnering with high school and community college Career Technical Education programs and developing an apprenticeship program in partnership with a local community college. If implemented, these new labor standards and workforce development policies for tugboat operators could serve as a model for protecting other types of good-paying working-class jobs during the green energy transition.

APPENDIX A. INTRODUCTION

A.1. Legal Context

Longstanding Supreme Court precedent says that state governments cannot require contractors or recipients of grants to be unionized or to recognize a union as a condition of receiving public funds. This is established through two core doctrines within labor law. *Garmon* preemption, established in *San Diego Building Trades v. Garmon* in 1959, prevents state or local governments from regulating conduct that is “arguably protected or prohibited” by the National Labor Relations Act, including matters of union recognition.¹⁴⁵ *Machinists* preemption, established in *Machinists v. Wisconsin Employment Relations Commission* in 1976, prevents state or local governments from regulating conduct that is intentionally unregulated by the NLRA in order to be “controlled by the free play of economic forces.”¹⁴⁶

These doctrines broadly limit governments in their ability to legislate in a manner that intentionally tips the scales of bargaining—both for and against unions. In 2008, *Chamber of Commerce of the United States v. Brown* drew an explicit throughline from *Machinists* to state grantmaking.¹⁴⁷ The court ruled in this case that a section of a California law prohibiting employers receiving grants or state program funding from using the funds to “assist, promote, or deter union organizing,” was preempted under *Machinists* for interfering with the free play of economic forces.¹⁴⁸

However, public agencies retain the authority to embed labor standards into publicly funded projects when they are acting in their capacity as “market participants” rather than as regulators. This distinction comes from *Building & Construction Trades Council v. Associated Builders & Contractors of Massachusetts/Rhode Island, Inc.*, which held in 1993 that state agencies may impose labor conditions when operating as a proprietary owner of a project with vested interest in its success.¹⁴⁹

145 *San Diego Building Trades Council v. Garmon*, 359 U.S. 236 (1959)

146 *Lodge 76, International Association of Machinists & Aerospace Workers, AFL-CIO v. Wisconsin Employment Relations Commission*, 427 U.S. 132 (1976)

147 *Chamber of Commerce of the United States v. Brown*, 554 U.S. 60 (2008)

148 *Ibid.*

149 *Building & Construction Trades Council v. Associated Builders & Contractors of Massachusetts/Rhode Island, Inc.*, 507 U.S. 218 (1993)

APPENDIX B.

PROBLEM IDENTIFICATION

B.1. A Just Transition Framework

A just transition framework provides the guiding principles for addressing gaps between climate investments and labor outcomes. The concept of a *just transition* has been formally recognized within international climate policy over the past decade— the preamble to the 2015 Paris Agreement acknowledges “the imperatives of a just transition of the workforce and the creation of decent work and quality jobs.”¹⁵⁰ Since the Paris Agreement, just transition principles have been reaffirmed through international climate negotiations, including through the establishment of a dedicated work program on just transition at COP28 in 2023.¹⁵¹ These developments reflect a growing international consensus that climate policy and worker protections should be integrated into a single policy approach.

The global labor movement has also played a central role in outlining how a just transition should center workers. Through the International Labour Organization, governments, employers, and trade unions jointly developed the *Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All*, which argues that workers should have a real voice in shaping the transition to a decarbonized economy.¹⁵² The International Trade Union Confederation, which represents workers from more than 160 countries, has similarly defined a just transition as climate policies that simultaneously seek to reduce greenhouse gas emissions while also working to improve impacted workers’ job quality and safety.¹⁵³

In the United States, the concept of a just transition has deep roots in the labor movement. In the early 1990s, Oil, Chemical, and Atomic Workers (OCAW) union leader Tony Mazzochi proposed a federally funded “Superfund for workers,” arguing that workers affected by changes in environmental policy should receive training and financial support to find a new

150 United Nations Framework Convention on Climate Change. *Paris Agreement*. Adopted December 12, 2015. https://unfccc.int/sites/default/files/english_paris_agreement.pdf

151 United Nations Framework Convention on Climate Change. “Submission by the Trade Union NGOs (TUNGO) on the Just Transition Work Programme.” Submitted to COP28, 2023. https://unfccc.int/sites/default/files/resource/TUNGO_Submission.pdf

152 International Labour Organization. *Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All*. Geneva: International Labour Office, 2015. Reaffirmed by the International Labour Conference, June 2023. <https://www.ilo.org/publications/guidelines-just-transition-towards-environmentally-sustainable-economies>

153 International Labour Organization. *Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All*. Geneva: International Labour Office, 2015. Reaffirmed by the International Labour Conference, June 2023. <https://www.ilo.org/publications/guidelines-just-transition-towards-environmentally-sustainable-economies>

job.¹⁵⁴ The AFL-CIO has also defined a just transition as an approach to climate and energy policy that prioritizes the creation and retention of good union jobs.¹⁵⁵ More recently, these principles have entered mainstream political discourse through proposals such as the Green New Deal, which links climate action with job creation and labor rights.¹⁵⁶

B.2. Technological Innovation and Worker Safety

Ensuring that publicly-funded projects incorporate strong labor standards and worker voice is not just an issue of fairness, it's also an essential tool for protecting worker safety. Hybrid and electric tugboats and their charging infrastructure are increasingly relying on the use of lithium-ion batteries, which can expose workers to serious fire and explosion hazards.¹⁵⁷ For example, a battery-related fire aboard Foss Maritime's hybrid tugboat, *Campbell Foss*, prompted the tugboat's batteries to be removed.¹⁵⁸ For safety reasons, the vessel transitioned back to its conventional diesel engine and only restored its hybrid engine after a comprehensive risk assessment led to significant redesigns, including enhanced worker safety protocols.¹⁵⁹ International maritime safety research similarly raises concerns about the rapid adoption of battery-electric technologies that are outpacing existing safety standards and protocols.¹⁶⁰ These risks highlight the importance of ensuring that technological advancements in hybrid and electric tugboats incorporate meaningful worker training requirements from the outset, so that crews can safely operate and maintain new vessels. This will be essential not only for protecting workers' safety, but also, as the Campbell Foss incident illustrates, for ensuring that the technology can be reliably used in practice.

B.3. ILWU-Focused Training Facilities

Through collective bargaining agreements, ILWU negotiates strong language regarding workforce development and upskilling. Additionally, port-specific training goals and timelines, developed in conjunction with the California Workforce Development Board, have further expanded equitable workforce development opportunities.¹⁶¹

154 Taiwo, Olufemi, and Dylan Plummer. "Just Transition: Learning From the Tactics of Past Labor Movements." *The Trouble*, October 12, 2020. <https://www.the-trouble.com/content/2020/10/12/just-transition-learning-from-the-tactics-of-past-labor-movements>

155 AFL-CIO. Creating and Retaining Sustainable Good Green Jobs. Resolution 10. AFL-CIO Convention, 2009. https://aflcio.org/sites/default/files/migrate/2009res_10.pdf

156 Sierra Club. "What Is the Green New Deal?" n.d. <https://www.sierraclub.org/trade/what-green-new-deal>

157 Joshua Pennington, *Lithium Battery Fire Hazards in the Maritime Environment* (New London, CT: U.S. Coast Guard Research and Development Center, April 2025), 6–13.

158 "Hybrid Design Reworked After Tug Fire," *The Maritime Executive*, July 5, 2016, <https://maritime-executive.com/article/hybrid-design-reworked-after-tug-fire>

159 U.S. Maritime Administration, risk assessment conducted by Elliott Bay Design Group, summarized in "Hybrid Design Reworked After Tug Fire," *The Maritime Executive*, July 5, 2016, <https://maritime-executive.com/article/hybrid-design-reworked-after-tug-fire>

160 International Maritime Rescue Federation, "Addressing the Challenges of Lithium-Ion Battery Fires on Board Ships: A Collaborative Approach," International Maritime Rescue Federation, n.d., <https://www.international-maritime-rescue.org/news/addressing-the-challenges-of-lithium-ion-battery-fires-on-board-ships-a-collaborative-approach>

161 California Workforce Development Board, *The High Road to the Port of LA H RTP*.

In 2024, a joint ILWU-PMA Maintenance and Repair Up-Skill/Re-Skill Training Center opened at POLA. This 4-acre, \$16.4 million facility was built specifically to train ILWU mechanics to operate and maintain new machinery at the port. Importantly, this facility targets a unit of workers—those working with ship-to-shore cranes and zero-emission cargo handling equipment—not including IBU members.

Similarly, the Goods Movement Training Campus—a planned training facility with expansive goals to keep ILWU members and their employers competitive as new, zero-emissions cargo handling technologies emerge—has secured over \$110 million in funding to date.¹⁶²

In March 2023, state leaders presented POLA and POLB with a ceremonial check for \$110 million to construct the 20-acre training facility. An estimated \$150 million is needed to construct the campus.¹⁶³ Originally, the two ports planned to split the \$110 million over a three-year period; however, in early 2026, the Port of Long Beach announced it is no longer participating in the Campus project.¹⁶⁴ The project aims to be completed in 2029.¹⁶⁵ Historically, CAWDB does not cover construction costs but contributes to total training costs, which may “include worker pay during training, costs for curriculum development, and instructor pay.”¹⁶⁶

B.4. Credentials Mandated at the Port for Tugboat Operations

Nearly all staff working at U.S. ports must attain a Transportation Worker Identification Credential (TWIC). The TWIC card grants personnel “access to secure areas of the nation’s maritime facilities and vessels” at any of the nation’s ports.¹⁶⁷

Looking specifically at the unit of workers currently working on tugboats, there are additional credentials mandated by the United States Coast Guard. From being an Ordinary Seaman/Wiper (OS) to a Mate, Deckhand, or Captain, the credentials required vary; however, there is a baseline credential that all workers involved in the operation of tugboats must have: the Merchant Mariner Credential (MMC). The baseline MMC has stipulations regarding “age, experience, character, physical health, citizenship, approved training, professional competence, and a test for dangerous drugs” and requires applicants to already have TWIC.¹⁶⁸

162 International Longshore and Warehouse Union, “ILWU, Port Community, Gather to Celebrate \$110 Million Funding for Future SoCal Training Center,” *ILWU*, accessed January 26, 2026, <https://www.ilwu.org/ilwu-port-community-gather-to-celebrate-110-million-funding-for-future-socal-training-center/>

163 California Legislative Analyst’s Office, *The 2022-23 Budget: Supply Chain and Port Infrastructure Proposals*, Report No. 4540 (Sacramento: California Legislative Analyst’s Office, February 15, 2022), accessed January 27, 2026, <https://lao.ca.gov/Publications/Report/4540>.

164 Donna Littlejohn, “Ambitious LA-LB Port Partnership for Work Training Center Loses Long Beach,” *Daily Breeze*, February 16, 2026, <https://www.dailybreeze.com/2026/02/16/ambitious-la-lb-port-partnership-for-work-training-center-loses-long-beach/>.

165 ILWU, “ILWU, Port Community, Gather to Celebrate.”

166 CA Legislative Analyst’s Office, *The 2022-23 Budget*.

167 U.S. Transportation Security Administration, Transportation Worker Identification Credential (TWIC), accessed January 25, 2026, <https://www.tsa.gov/twic>.

168 46 C.F.R. Part 11 — Requirements for Officer Endorsements, in Code of Federal Regulations, Title 46, Shipping (U.S. Government Publishing Office, revised as of October 1, 2024), accessed January 28, 2026, <https://www.ecfr.gov/current/title-46/chapter-I/subchapter-B/part-11>.

While all crew members on a tugboat must hold an MMC, those who aspire to reach the rank of Captain face additional credentialing requirements along the way. Interviews with current IBU members revealed that most harbor tugboat captains do not come up through maritime academies, a path more common among those pursuing offshore or deep-sea careers. Instead, they start at the bottom of the ranks and accumulate credentials over time through on-the-job experience and targeted training. In non-union positions, this investment is often entirely out of pocket; one captain interviewed noted he personally covered the cost of his training before gaining union representation.

The first major step beyond the MMC is typically the Able Seafarer (AB) credential, which certifies that a mariner has the skills necessary to perform vessel and deck operations, maintenance, and safety functions.¹⁶⁹

For those who hope to become captains, a Master of Towing License, which requires “proof of 540 days of work as a mate of towing. At least 90 of these days must be on a single route” and “up-to-date documents showing a valid Merchant Marine License Documentation (MMLD). That MMLD must also have a “Y” designation, meaning the candidate has recently passed a Safety and Security Evaluation Branch (SSEB).”¹⁷⁰ In addition to these basic Master of Towing License requirements, “captaining certain tugboat voyages requires additional training, achieved through a Standards of Training, Certification and Watchkeeping for Seafarers (STCW) certificate.”¹⁷¹

To be a Mate (steerman) or a Captain (Master) of a tugboat, a designated examiner must approve your Towing Officer Assessment Record (TOAR). Some employers have in-house designated examiners; however, if an employer is unable to provide that service, the closest training and assessment facilities are in San Diego (Maritime Institute), Vallejo (Cal Maritime Academy), or Seattle (Maritime Institute of Technology and Graduate Studies). In order to reach these professional milestones, workers can follow one of two paths: being an apprentice or attending a maritime academy. The apprentice path to upward mobility is often referred to as the “hawsepipe route.”¹⁷²

169 Maritime Institute of Technology and Graduate Studies, “How to Get Certified As an Able Seaman,” MITAGS, last modified March 22, 2023, <https://www.mitags.org/able-seaman/>.

170 Maritime Institute of Technology and Graduate Studies, “How to Get Your Captain’s License,” MITAGS, accessed January 27, 2026, <https://www.mitags.org/captains-license/>.

171 Ibid.

172 Crawford Nautical Training, “Maritime Hawsepipe Programs,” *Crawford Nautical*, accessed January 28, 2026, <https://crawfordnautical.org/hawsepipe>.

APPENDIX C.

TUGBOAT CASE STUDY

C.1. Legal Landscape for Labor Standards in Public Contracts and Grants

Longstanding Supreme Court precedent says that state governments cannot require contractors or recipients of grants to be unionized or to recognize a union as a condition of receiving public funds. This is established through two core doctrines within labor law. *Garmon* preemption, established in *San Diego Building Trades v. Garmon* in 1959, prevents state or local governments from regulating conduct that is “arguably protected or prohibited” by the National Labor Relations Act, including matters of union recognition.¹⁷³ *Machinists* preemption, established in *Machinists v. Wisconsin Employment Relations Commission* in 1976, prevents state or local governments from regulating conduct that is intentionally unregulated by the NLRA in order to be “controlled by the free play of economic forces.”¹⁷⁴

These doctrines broadly limit governments in their ability to legislate in a manner that intentionally tips the scales of bargaining—both for and against unions. In 2008, *Chamber of Commerce of the United States v. Brown* drew an explicit throughline from *Machinists* to state grantmaking.¹⁷⁵ The court ruled in this case that a section of a California law prohibiting employers receiving grants or state program funding from using the funds to “assist, promote, or deter union organizing,” was preempted under *Machinists* for interfering with the free play of economic forces.¹⁷⁶

However, public agencies retain the authority to embed labor standards into publicly funded projects when they are acting in their capacity as “market participants” rather than as regulators. This distinction comes from *Building & Construction Trades Council v. Associated Builders & Contractors of Massachusetts/Rhode Island, Inc.*, which held in 1993 that state agencies may impose labor conditions when operating as a proprietary owner of a project with vested interest in its success.¹⁷⁷

¹⁷³ *San Diego Building Trades Council v. Garmon*, 359 U.S. 236 (1959)

¹⁷⁴ *Lodge 76, International Association of Machinists & Aerospace Workers, AFL-CIO v. Wisconsin Employment Relations Commission*, 427 U.S. 132 (1976)

¹⁷⁵ *Chamber of Commerce of the United States v. Brown*, 554 U.S. 60 (2008)

¹⁷⁶ *Ibid.*

¹⁷⁷ *Building & Construction Trades Council v. Associated Builders & Contractors of Massachusetts/Rhode Island, Inc.*, 507 U.S. 218 (1993)

C.2. History of CARB Regulations

CARB's standards were adopted with the goal of reducing emissions of diesel particulate matter (DPM), oxides of nitrogen (NOx), and reactive organic gases (ROG) at the ports.¹⁷⁸ The original 2008 regulation, as well as an amended version implemented in 2010, required commercial harbor craft to use engines meeting the US EPA's Tier 2 or Tier 3 standards.¹⁷⁹ Tier 2 engines must be built in 2004 or later, depending on the engine's specific characteristics, and Tier 3 engines must be built in 2009 or later, so the regulations required vessel operators to update many vessels with older engines.¹⁸⁰ While the operators were given several years to make the updates, in 2022 CARB amended the commercial harbor craft regulations to require all tugboats to use renewable diesel and to upgrade to Tier 4 engines by 2029.¹⁸¹

C.3. Details of Grant Criteria

Instead of considering grantees' labor standards, grant proposals prioritize the extent to which new tugboats built using grant money can reduce emissions. Ironically, this criteria places companies that have already retired or reduced the use of high-emissions boats at a disadvantage. If a company continues operating high-emissions boats at a higher rate—maintaining rather than reducing its footprint at the port—it is more likely to receive state funding to acquire greener technologies. In effect, tugboat companies are incentivized to continue using older, high-emissions engines in order to qualify for funds. Grant award details from 2016-present are presented in Table C.1 (next page).

C.4. Challenges for Tugboat Operators and Workers

Retrofitting tugboats also introduces a risk to reliable employment in the sector. While a boat is out of commission, there is a reduced need for the workers that operate those boats. While some companies may have the resources to keep staff on despite a reduced need for their labor, others might not.

Meanwhile, tugboat operators must contract out much of the maintenance work on newer tugboats because they either do not retain shoreside engineers, are short-staffed, or their in-house engineers and operators lack the skills needed to repair specific engine malfunctions.¹⁸² It is reasonable to assume that if new hybrid and electric engines are introduced to the market without taking these training realities into account, companies will need to outsource their work to the manufacturers of those engines, reducing the need for local labor in San Pedro.

178 State of California Air Resources Board, "Public Hearing to Consider Proposed Amendments," I-1.

179 Ibid., I-25

180 Environmental Protection Agency Office of Transportation and Air Quality, "Federal Marine Compression-Ignition (CI) Engines: Exhaust Emission Standards," July 2020, 1-2, <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100ZP4H.pdf>.

181 "CHC Factsheet: Implementation Timeline | California Air Resources Board," December 27, 2022, <https://ww2.arb.ca.gov/resources/fact-sheets/chc-factsheet-implementation-timeline>.

182 Mike Bruce and Brad Carlisle, Interviewed by Research Team.

Table C.1. Grant Awards 2016-Present

Company	IBU represented in SoCal?	Award Type	Award Category	Amount	Year
American Marine Corporation	No	CAPP Incentive Awards in AB 617 Communities	Marine	\$1,477,600 ¹⁸³	2019
American Marine Corporation	No	CAPP Incentive Awards in AB 617 Communities	Marine	\$852,800 ¹⁸⁴	2021
American Marine Corporation	No	Carl Moyer Program Awards	Marine	\$30,215 ¹⁸⁵	2022
American Marine Corporation	No	CAPP Incentive Awards in AB 617 Communities	Marine	\$262,310 ¹⁸⁶	2024
AmNav Maritime, LLC	No	Carl Moyer Program Awards	Marine	\$2,952,994 ¹⁸⁷	2024
Baydelta Maritime LLC	No	Carl Moyer Program Awards	Marine	\$2,545,863 ¹⁸⁸	2024
Baydelta Maritime LLC	No	CAPP Incentive Awards in AB 617 Communities	Marine	\$336,050 ¹⁸⁹	2024
Crowley Marine Services, Inc.	No	Backup	Marine	\$21,029,000 ¹⁹⁰	2022
Crowley Marine Services, Inc.	No	Backup infrastructure	Marine	\$4,192,500 ¹⁹¹	2022
Crowley Marine Services, Inc.	No	CAPP Incentive Awards in AB 617 Communities	Zero-Emission Infrastructure	\$6,000,000 ¹⁹²	2024
Curtin Maritime	No	CAPP Incentive Awards in AB 617 Communities	Marine	\$2,581,146 ¹⁹³	2019

183 Wayne Nastri, “Resolution, Contracts, Awards, and Funds Transfer for Carl Moyer and Other Programs,” 2019, 15, https://www.aqmd.gov/docs/default-source/agendas/governing-board/2019/2019-dec6-006.pdf?sfvrsn=d15dc461_4.

184 Wayne Nastri, “Implement Year 22 Carl Moyer, SOON, Rule 2202 AQIP, FARMER and Community Air Protection Programs by Recognizing Funds From CARB, Executing and Amending Contracts, and Reimbursing Administrative Costs,” 2021, 6, https://www.aqmd.gov/docs/default-source/agendas/governing-board/2021/2021-jan8-004.pdf?sfvrsn=2fc2d661_6.

185 Wayne Nastri, “Board Meeting Date: January 7, 2022 Agenda No. 2 Proposal: Implement Carl Moyer, SOON, State Reserve, FARMER and Community Air Protection Programs by Recognizing Funds From CARB, Executing and Amending Contracts, and Reimbursing Administrative Costs,” January 7, 2022, 5, https://www.aqmd.gov/docs/default-source/agendas/governing-board/2022/2022-jan7-002.pdf?sfvrsn=3fd7a961_4.

186 Wayne Nastri, “Execute Contracts, Adopt Resolutions to Recognize Funds and Reimburse General Fund to Implement Year 25 & 26 Carl Moyer, SOON, FARMER and Community Air Protection Programs, and Appropriate Funds for Development of Carl Moyer Program Grant Management System,” 2024, 7, https://www.aqmd.gov/docs/default-source/agendas/governing-board/2024/2024-feb2-006.pdf?sfvrsn=20a8f61_2.

187 Ibid., 2.

188 Ibid., 2.

189 Ibid., 7.

190 Wayne Nastri, “Board Meeting Date: January 7, 2022 Agenda No. 2 Proposal,” 11.

191 Ibid., 12.

192 Wayne Nastri, “Execute Contracts, Adopt Resolutions to Recognize Funds and Reimburse General Fund,” 8.

193 Wayne Nastri, “Resolution, Contracts, Awards, and Funds Transfer for Carl Moyer and Other Programs,” 15.

Company	IBU represented in SoCal?	Award Type	Award Category	Amount	Year
Curtin Maritime Corp.	No	CAPP Incentive Awards in AB 617 Communities	Marine	\$992,801 ¹⁹⁴	2024
Foss Maritime Company, LLC	Yes	Carl Moyer Program Awards	Marine	\$1,735,658 ¹⁹⁵	2024
Foss Maritime Company, LLC	Yes	CAPP Incentive Awards in AB 617 Communities	Marine	\$5,261,686 ¹⁹⁶	2024
Harley Marine Services, Inc. (Now Centerline Logistics)	No	AB 923 Funds	Marine	\$1,734,228 ¹⁹⁷	2017
Pacific Maritime Freight, Inc. dba Pacific Tugboat Services	Yes	CAPP Incentive Awards in AB 617 Communities	Marine	\$3,848,452 ¹⁹⁸	2019
Pacific Maritime Group, Inc. dba Pacific Tugboat Services	Yes	CAPP Incentive Awards in AB 617 Communities	Marine	\$358,760 ¹⁹⁹	2021
Pacific Tugboat Services, Inc.	Yes	SB 1107 Multidistrict Awards (Fund 32)	Not listed	\$957,976 ²⁰⁰	2016
So. Cal. Ship Services	No	CAPP Incentive Awards in AB 617 Communities	Marine	\$364,593 ²⁰¹	2021
Southwest Marine Resources, LLC	No	SB 1107 Awards (Fund 32)	Not listed	\$85,392 ²⁰²	2016
Southwest Marine Resources, LLC	No	Rule 2202 AQIP Awards	Marine	\$349,477 ²⁰³	2021
The Jankovich Company	No	CAPP Incentive Awards in AB 617 Communities	Marine	\$1,176,000 ²⁰⁴	2019
Total funding for upgrades 2016-2026	Funding for union operators	Funding for non-union operators	Percent of funding going to union operators	Percent of funding going to non-union operators	
\$59,125,501	\$12,162,532	\$46,962,969	20.6	79.4	

194 Wayne Nastri, “Execute Contracts, Adopt Resolutions to Recognize Funds and Reimburse General Fund,” 8.

195 Ibid., 3.

196 Ibid., 8.

197 Wayne Nastri, “Execute Contracts for FY 2016-17 ‘Year 19’ Carl Moyer Program, SOON Provision and AB 134 Carl Moyer Funding, and Transfer Funds for Carl Moyer Program and Voucher Incentive Program,” report, 2017, Table 2, https://www.aqmd.gov/docs/default-source/agendas/governing-board/2017/2017-nov3-007.pdf?sfvrsn=53a7d561_5.

198 Wayne Nastri, “Resolution, Contracts, Awards, and Funds Transfer for Carl Moyer and Other Programs,” 16.

199 Wayne Nastri, “Implement Year 22 Carl Moyer, SOON, Rule 2202 AQIP, FARMER and Community Air Protection Programs,” 6.

200 Wayne Nastri, “Execute Contracts for FY 2016-17 ‘Year 19’ Carl Moyer Program, SOON Provision and AB 134 Carl Moyer Funding, and Transfer Funds for Carl Moyer Program and Voucher Incentive Program,” report, 2017, 15, https://www.aqmd.gov/docs/default-source/agendas/governing-board/2017/2017-nov3-007.pdf?sfvrsn=53a7d561_5.

201 Wayne Nastri, “Implement Year 22 Carl Moyer, SOON, Rule 2202 AQIP, FARMER and Community Air Protection Programs,” 6.

202 Wayne Nastri, “Execute Contracts for FY 2016-17 ‘Year 19’ Carl Moyer Program, SOON Provision and AB 134 Carl Moyer Funding,” 14.

203 Wayne Nastri, “Implement Year 22 Carl Moyer, SOON, Rule 2202 AQIP, FARMER and Community Air Protection Programs,” 4.

204 Wayne Nastri, “Resolution, Contracts, Awards, and Funds Transfer for Carl Moyer and Other Programs,” 16.

APPENDIX D. LEGAL CONTEXT AND POLICY OPTIONS

D.1. Apprenticeship program structures: Identifying different needs

- If the priority is attracting newcomers to the industry:
 - An Able Seafarer apprenticeship program that creates a large pipeline of workers interested in vessel operations makes the most sense. A simultaneous investment in a CTE pre-apprenticeship program would create a pipeline into this apprenticeship, creating a constant flow of workers into different stages of training and mastery.²⁰⁵
- If the priority is developing tugboat captains:
 - The apprenticeship should focus on upskilling current members who already have sea time and foundational credentials.
- If the priority is addressing the engineering shortage:
 - A two-stage pathway works best—partnering with community colleges and/or pre-apprenticeship or Career Technical Education programs to build basic mechanical skills, followed by an apprenticeship program at the port for specialized tugboat engineering training.

Each pathway serves different strategic goals and requires different partnerships and resources. Starting with a pilot program targeting the most urgent shortage would allow IBU and its signatories to build institutional capacity, demonstrate success to potential funders and partners, and refine their approach before expanding to address additional workforce needs as new technologies arise.

D.2. Research on the cost of Apprenticeship Programs

In 2022 the U.S. Department of Labor released a study that tracked the progress of various apprenticeship programs that received a federal grant for their operations. These publicly funded apprenticeships began in 2015 and the conclusion of the program was in 2021. This report found that the median cost of an apprentice varied depending on the size of the grantee, referring to the number of apprentices a grantee could put through the program. Small grantees ranged in size from 300 to 600 apprentices. Large grantees had a goal of a minimum of 1,000 apprentices. Grantees covered all possible sponsor options. Ultimately, larger grantees had spent about \$3,876 per apprentice versus \$8,802 per apprentice by smaller grantees.²⁰⁶

²⁰⁵ One particular strategic benefit of this option is If reformed grant criteria require all employees working with new technology to hold an AB credential (which includes safety training), IBU signatories with a fully credentialed workforce gain a decisive advantage, considering an AB is not currently mandatory on most tugboats.

²⁰⁶ Wayne Nastri, “Resolution, Contracts, Awards, and Funds Transfer for Carl Moyer and Other Programs,”

Interviews with current IBU leadership revealed that there was an IBU-sponsored apprenticeship program at POLA. This 2017 program was supported by Pacific Tugboat Services (PTS), an IBU signatory, LAUSD's Division of Adult and Career Education (DACE), Harbor Occupational Center, and later Altasea—a workforce development and conservation organization at POLA.²⁰⁷ For various reasons—facilities and equipment costs, oversight, and lack of sufficient participants—the program was shut down.

D.3. Labor Management Training Trusts

Unlike an apprenticeship program originating from a community college or the port itself, an LMTT is a jointly administered fund established through collective bargaining between the union and signatory employers. These trusts provide a durable and legally recognized structure for financing training, upskilling, and apprenticeship programs—and for receiving and administering public grant funding.

LMTTs are authorized under Section 302(c)(5) under the Taft-Hartley Act of 1947 (and are hence commonly referred to as “Taft-Hartley Funds”).²⁰⁸ Under Taft-Hartley, federal law generally prohibits direct payments to unions by employers; however, Section 302(c)(5) grants exemptions for contributions made to a separate trust fund governed by a board of equal parts labor and management trustees. In most private-sector contexts, LMTTs are additionally governed by the Employee Retirement Security Act of 1974 (ERISA), which in part imposes fiduciary responsibilities on trustees to act solely in the interest of participants and beneficiaries.²⁰⁹ This framework provides strong accountability measures, ensuring that funds are used solely for training purposes in a manner benefiting union workers as well as signatory companies.

LMTTs are generally funded through negotiated contributions of either a certain dollar amount per employee hour worked or a percentage of gross wages paid to all employees. Over time, these contributions create a stable funding stream to support curriculum development, instructor salaries, certification fees, equipment acquisition, and even dedicated training facilities. LMTTs can also be funded in part through grant funding. SEIU Local 1199NW, for example, has a training trust that has received millions of dollars from federal, state, and private grants since its founding.²¹⁰

For IBU, an LMTT could serve as the structural basis that a Labor-Management Apprenticeship Program is founded upon. Rather than treating workforce development as a simple cost to be reimbursed, an LMTT could transform it into a jointly governed strategic investment to proactively prepare for the future of the industry. Just as critical, the fund would also position IBU signatories as more competitive candidates for public grant dollars. A trust's built-in accountability measures and indication of formalized worker-employer collaboration provide legitimacy that would appeal to a state agency such as CARB when determining grant recipients.

207 International Longshore and Warehouse Union, “IBU Breaks Ground on New Apprenticeship Training Center in San Pedro,” October 17, 2017, <https://www.ilwu.org/ibu-breaks-ground-on-new-apprenticeship-training-center-in-san-pedro/>.

208 Labor Management Relations Act of 1947, Pub. L. No. 80-101, § 302(c)(5), 61 Stat. 136 (1947), codified at 29 U.S.C. § 186(c)(5)

209 Employee Retirement Income Security Act of 1974, Pub. L. No. 93-406, 88 Stat. 829 (1974), codified at 29 U.S.C. §§ 1001–1461

210 SEIU Healthcare 1199NW Multi-Employer Training and Education Fund, “Grant-Funded Initiatives,” accessed February 26, 2026, <https://healthcareerfund.org/>.

APPENDIX E. POLICY EVALUATION

E.1. Key Stakeholders

A list of institutions with the power to influence, in varying degrees, the feasibility and success of policies impacting IBU:

Port Institutions: Altasea, Harbor Occupational Center, Inlandboatmen’s Union of the Pacific (IBU), IBU signatories, International Longshore and Warehouse Union (ILWU), Long Beach Polytechnic High School, non-union tugboat employers, Pacific Maritime Association (PMA), Port of Los Angeles, Port of Los Angeles High School, Port of Long Beach

Regional Institutions: City of Long Beach, City of Los Angeles, City of LA Economic and Workforce Development Department, Division of Adult and Career Education of LAUSD, LA County Department of Economic Opportunity, LA/Orange Counties Regional Consortium, Long Beach City College, Long Beach Unified School District, Los Angeles City Colleges, Los Angeles Trade-Technical College, Los Angeles Unified School District, UCLA Extension CTE Credential Program, Workforce Development Board of Los Angeles County

State Institutions: California Air Resources Board (CARB), California Community Colleges, California Department of Education, California Department of Industrial Relations, California Division of Apprenticeship Standards, California Environmental Protection Agency (CalEPA), California Workforce Development Board, Governor’s Council for Career Education, Jobs to Move America, UC Labor Centers (Los Angeles/Berkeley)

E.2. Effectiveness

E.2.1. Community College Apprenticeship

The high score on placement depends on IBU ensuring that the program serves both signatory and non-union employment markets. The union must secure commitments from signatories to hire a portion of graduates annually, establishing the pipeline to union jobs. Simultaneously, the program must be open to placement across the industry, allowing graduates to enter non-union companies where they become organizing targets and demonstrate the value of IBU training standards.

However, this score assumes IBU and ILWU commit substantial resources to active organizing. Without dedicated organizing efforts, the program risks becoming an industry-wide workforce service—training workers who strengthen non-union competitors without growing union membership. The program’s organizing potential is not automatic; it requires strategically

deploying organizers wherever IBU-trained graduates are placed. Without that commitment, the program effectively subsidizes competitors with union-developed training infrastructure.

E.2.2. High School/Community College CTE/Pre-Apprenticeship Program (2 Effectiveness)

In this scenario, CTE programs would serve as a recruitment and foundational training stage, with committed students advancing to a structured apprenticeship that guarantees industry placement. This sequencing would transform CTE involvement from an awareness-building strategy into a comprehensive workforce pipeline: the wide net of CTE programs would identify and prepare interested students, while the apprenticeship would provide specialized training and ensure employment placement across the tugboat sector.

E.2.3. Important Context on Scoring

The choice to evaluate the certification option's effectiveness in terms of bringing in new members rather than upskilling existing ones reflects two realities: first, tugboat electrification regulations are unlikely to be implemented in the immediate future due to technology gaps.²¹¹ Second, zero-emissions timelines have already been delayed, with the Port of Long Beach extending its goal from 2035 to 2050. Given this extended timeline, the certificate's effectiveness is evaluated primarily on its ability to expand IBU influence and create organizing opportunities through new worker recruitment, not on its utility for preparing the existing workforce for technologies that remain years away from deployment.

211 No electric tugboats currently meet the 100-ton bollard pull requirements for effective operations at the San Pedro Port Complex.

APPENDIX F. COST AND BENEFIT CALCULATIONS

Tables F.1–F.15 present the details of the cost and benefit calculations.

Table F.1. Cost of Labor-Management Apprenticeship

Cost of trust fund	Cost of instructor	Cost of space	Cost of negotiating with employer	Total
Hourly Wage	50.00 ²¹²			
Hourly Benefits	8.49 ²¹³			
Hourly Total cost	58.49		51.87 ²¹⁴	
Hours worked	144.00 ²¹⁵		200.00	
Annual cost		121,110.00 ²¹⁶	10,373.17	
Total annual cost	8,422.56	121,110.00	10,373.00	139,905.56
IBU's total annual cost	4,211.28	60,555.00	10,373.00	69,952.78
Total five-year cost	45,805.33	605,550.00	56,412.63	707,767.96
IBU's total five-year cost	22,902.67	302,775.00	56,412.63	353,883.98

²¹² This is an estimate based on a review of IBU's contracts.

²¹³ Max Freedman, "Employer Health Insurance: Average Employee Health Insurance Cost in 2026," business.com, January 6, 2026, <https://www.business.com/articles/health-insurance-costs-this-year/>.

²¹⁴ U.S. Department of Labor, "FORM LM-2 LABOR ORGANIZATION ANNUAL REPORT," U.S. Department of Labor Office of Labor-Management Standards, August 31, 2026, <https://olmsapps.dol.gov/query/orgReport.do?rptId=915019&rptForm=LM2Form>.

²¹⁵ This is the typical number of hours apprentices spend on classroom learning per year. See California Apprenticeship Coordinators' Association, "Frequently Asked Questions," Accessed March 13, 2026, <http://www.calapprenticeship.org/faqs.php>.

²¹⁶ "314 N Wilmington Blvd & 915 W C St," LoopNet, accessed March 13, 2026, <https://www.loopnet.com/Listing/314-N-Wilmington-Blvd-915-W-C-St-Wilmington-CA/39608853/>.

Table F.2. Government Funding for Labor-Management Apprenticeship

Available funding	Apprenticeship Innovation Funding	Apprenticeship Innovation Funding	Total
Per apprentice annually	3,500 ²¹⁷	1,000.00 ²¹⁸	
# of apprentices	10	10.00	
Total annual funding	35,000	10,000	
Total five-year funding	175,000	10,000.00	185,000.00

Table F.3. Cost of Labor-Management Apprenticeship to IBU After Accounting for Available Funding

Cost to IBU	Available Funding	Cost to IBU Accounting for Available Funding
353,883.98	185,000.00	168,883.98

Table F.4. Cost of Community College Apprenticeship

Type of cost	Instructor cost	Instructor credentialing	Cost of negotiating with employer	Total
Hourly Wage	89.72 ²¹⁹			
Hourly Benefits	9.68			
Total Hourly Cost	99.40		51.87	
# of hours per year	144 ²²⁰		10.00	
Total annual cost	14,313.8304	4,680 ²²¹	518.66	
Total five-year cost	77,844.48	4,680	2,820.68	85,345.16

217 Division of Apprenticeship Standards and State Of California, “Apprenticeship Innovation Funding,” Accessed March 13, 2026, <https://www.dir.ca.gov/DAS/Grants/Apprenticeship-Innovation-Funding.html>.

218 Ibid.

219 “Abbreviated Faculty Salary Elements for 2025-26,” July 30, 2025.

220 This is the typical number of hours apprentices spend on classroom learning per year. See California Apprenticeship Coordinators’ Association, “Frequently Asked Questions,” Accessed March 13, 2026.

221 “Career and Technical Education Credential Program,” Accessed March 13, 2026, <https://www.uclaextension.edu/education/k-12-california-teacher-credentialing-authorizations/specialization/career-and-technical>.

Table F.5. Government Funding for Community College Apprenticeship

Available funding	California Apprenticeship Initiative	Apprenticeship Innovation Funding	Apprenticeship Innovation Funding	Total
Per apprentice annually	10,000 ²²²	3,500 ²²³	1,000.00 ²²⁴	
Per hour of training				
# of apprentices	10	10	10.00	
# of hours worked				
# classroom hours				
Total annual funding	100,000	3,5000		
Total five-year funding	100,000	175,000	10,000.00	285,000

Table F.6. Cost of Community College Apprenticeship to IBU After Accounting for Available Funding

Cost to IBU	Available Funding	Cost to IBU Accounting for Available Funding
85,345.16	285,000	0 (assuming that IBU won't have access to the additional available funding beyond the cost to them)

Table F.7. Cost of Community College Credential

Category	Instructor Cost	Instructor credentialing	Total
Hourly Wage	89.72		
Hourly Benefits	9.68		
Hourly Total cost	99.40		
Hours	9 ²²⁵		
Total annual cost	894.6144	4,680	
Total 5-year cost	4,865.28	4,680	9,545.28

222 Chancellor's Office, Equitable Student Learning, Experience and Impact Office and Anthony Cordova, "Amended Notice of Intent to Award - California Apprenticeship Initiative New and Innovative Grant Program (Fiscal Year 2023-24)," May 9, 2024, <https://www.cccco.edu/-/media/CCCCO-Website/docs/memo/eslei-24-28-amended-notice-of-intent-to-award-cai-new-and-innovative-grant-program-fy-2023-24-a11y.pdf?la=en&hash=2017CEDFB4696114A6364F9E398C2041181C5A3A&hash=2017CEDFB4696114A6364F9E398C2041181C5A3A>.

223 Standards and California, "Apprenticeship Innovation Funding."

224 Ibid.

225 This is the typical number of hours it takes to get an opacity testing certification. See California Council on Diesel Education and Technology, "Class Schedule | California Council on Diesel Education and Technology (CCDET)," Accessed April 3, 2026, <https://ccdet.org/class-schedule/>.

Table F.8. Cost of Community College Career Technical Education/Pre-Apprenticeship

Type of Cost	Cost of time of trainers	Instructor credentialing	Total cost
Hourly Wage	89.72		
Hourly Benefits	9.68		
Hourly Total cost	99.40		
Hours	50		
# of workers per year	50		
Total annual cost	4,970.08	4,680	
Total 5-year cost	27,029.33	4,680	31,709.33

Table F.9. Government Funding for Community College Career Technical Education/Pre-Apprenticeship

Available funding from California Opportunity Youth Apprenticeship	Amount
Amount per pre-apprentice per year	3,000 ²²⁶
Total amount per pre-apprentice	6,000
# of pre-apprentices per year	20
# of years	2
Total amount	120,000

Table F.10. Cost of Community College Career Technical Education/Pre-Apprenticeship to IBU After Accounting for Available Funding

Cost to IBU	Available Funding	Cost to IBU Accounting for Available Funding
31,709.33	120,000	0 (assuming that IBU won't have access to the additional available funding beyond the cost to them)

²²⁶ Division of Apprenticeship Standards and State Of California, "California Opportunity Youth Apprenticeship (COYA) Grant," Accessed March 13, 2026, <https://www.dir.ca.gov/das/Grants/California-Youth-Apprenticeship-Grant.html>.

Table F.11. Cost of High School Career Technical Education/Pre-Apprenticeship

Type of Cost	Amount	Instructor credentialing	Total cost
Teacher salary (per teacher)	77,372 ²²⁷		
Teacher pension (per teacher)	14,778 ²²⁸		
Teacher healthcare	8,951 ²²⁹		
Annual total teacher cost	25,275	4,680	
Five-year cost	137,457.24	4,680	142,137.24

Table F.12. Government Funding for High School Career Technical Education/Pre-Apprenticeship

Available funding	California Opportunity Youth Apprenticeship	California Career Technical Education Incentive Grant	Total funding available
Amount per pre-apprentice per year	3,000 ²³⁰	\$2,616.99 ²³¹	
Total amount per pre-apprentice	6,000		
# of pre-apprentices per year	20	20	
# of years	2	5	
Total amount	120,000	13,084.95	133,085

Table F.13. Cost of High School Career Technical Education/Pre-Apprenticeship to IBU After Accounting for Available Funding

Cost to IBU	Available Funding	Cost to IBU Accounting for Available Funding
142,137.24	133,085	9,052.24

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Table F.14. Benefit in Terms of Revenue from Five years of Dues, Assuming Ten New Members a Year

Year 1						
Job	New hire wages	New hire dues per month	Annual dues per person	Average annual dues per person	Annual dues for 10 new members	Average
Deckhand	28.84 ²³²	88.50	1,062.00	1,163.43	10,620.00	11,634.25
Engineer	37.38 ²³³	105.40	1,264.85		12,648.50	
Year 2						
Job	New hire wages	New hire dues per month	Annual dues per person	Average annual dues per person	Annual dues for 10 new members	Average
Deckhand	29.71 ²³⁴	88.50	1,062.00	1,182.40	10,620.00	11,823.98
Engineer	38.50	108.57	1,302.80		13,027.96	
Year 3						
Job	New hire wages	New hire dues per month	Annual dues per person	Average annual dues per person	Annual dues for 10 new members	Average
Deckhand	30.60	88.50	1,062.00	1,201.94	10,620.00	12,019.40
Engineer	39.66	111.82	1,341.88		13,418.80	
Year 4						
Job	New hire wages	New hire dues per month	Annual dues per person	Average annual dues per person	Annual dues for 10 new members	Average
Deckhand	31.51	88.87	1,066.40	1,224.27	10,664.04	12,242.70
Engineer	40.84	115.18	1,382.14		13,821.36	
Year 5						
Job	New hire wages	New hire dues per month	Annual dues per person	Average annual dues per person	Annual dues for 10 new members	Average
Deckhand	32.46	91.53	1,098.40	1,261.00	10,983.96	12,609.98
Engineer	42.07	118.63	1,423.60		14,236.00	
Total dues revenue over 5 years						60,330.32

232 Pacific Tugboat Service and The Inlandboatmen's Union of the Pacific, Southern California Region, Marine Division of the ILWU. *Collective Bargaining Agreement*. February 3, 2025.

233 Ibid.

234 IBU's contracts all expire in less than five years, so we estimated a 3% annual wage increase.

Table F.15. Cost-Benefit Calculations

Program	Cost	Benefit	Benefit-cost	Efficiency Rating
Labor-Management Apprenticeship	168,883.98	60,330.32	-108,553.66	Low
Community College Apprenticeship	0	60,330.32	60,330.32	High
Community College Certificate	9,545.28	60,330.32	50,785.04	High
Community College CTE/Pre-Apprenticeship	0	60,330.32	60,330.32	High
High School CTE/Pre-Apprenticeship	9,052.29	60,330.32	51,278.02	High

APPENDIX G. EXPERT AND STAKEHOLDER INTERVIEWEES

Table G.1. Expert and Stakeholder Interviewees

Name	Organization
Mike Bruce	Inlandboatmen’s Union of the Pacific; Foss Maritime Company
Brad Carlisle	Inlandboatmen’s Union of the Pacific; Foss Maritime Company
Hope Cupples	California Air Resources Board, Climate Investments Policy Section, Sustainable Transportation and Communities Division
Pam Egan	UC Berkeley Labor Center, Labor-Management Partnerships Program
Jesse Flores	California Workforce Development Board
Noel Hacegaba	Port of Long Beach
Teto Huezo	California Director, Jobs to Move America
Carolyn Hull	AltaSea; previously City of Los Angeles Economic and Workforce Development Department
Laura Hunter	Port of Los Angeles
Colette Lowe	Foss Maritime Company
Sara Miles	California Energy Commission
Mike Munoz	Los Angeles Alliance for a New Economy
Larry Rillera	California Air Resources Board, Community Equity and Engagement
Eric Rose	Crowley Engineering Services
Cassie Sanderson	Foss Maritime Company
Avin Sharma	Port of Los Angeles
Bree Swenson	UC Berkeley Labor Center, Green Economy Program
Scott Walker	Foss Maritime Company

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