County of Humboldt

Redwood Coast Region Offshore Wind Supply Chain and Workforce Assessment

Strategic Recommendations

ASSIGNMENT B400092-S00
DOCUMENT B-400092-S00-R-REPT-004

XODUS

Boston

50 Milk St
11th floor . Boston
MA 02109 . USA

T +1 (0)8572 631772
E info@xodusgroup.com

www.xodusgroup.com

COMPLIANCE AND FUNDING DISCLOSURE

This work was undertaken in compliance with the applicable requirements of the Federal Funding Accountability and Transparency Act, 2 C.F.R. Part 200, 2 C.F.R. Part 2900, and all relevant implementing regulations, policies, procedures, and standards in effect at the time of performance, as amended.

The deliverables and activities described in this report were supported by the Workforce Innovation and Opportunity Act (WIOA), with zero (0) percent financed from non-federal sources. All work was carried out in compliance with the applicable provisions of the Workforce Innovation and Opportunity Act Subgrant Agreement (Subgrant No. AA211007), as amended, between the County and the California Employment Development Department.

CONTENTS

EXECUTIVE SUMMARY 4

1 INTRODUCTION 12
1.1 Background 12
1.2 Objectives 13
1.3 Scope of Study 13
1.4 Definitions 13
1.4.1 Glossary of Terms 13
1.4.2 List of Acronyms 14

2 OPPORTUNITY ANALYSIS 15
2.1 Supply Chain SWOT 15
2.1.1 Strengths and Opportunities 15
2.1.2 Weaknesses and Threats 18
2.2 Workforce SWOT 20
2.2.1 Strengths and Opportunities 20
2.2.2 Weaknesses and Threats 21
2.3 Policy, Leadership & Communication SWOT 23
2.3.1 Strengths and Opportunities 23
2.3.2 Weaknesses and Threats 24

3 RECOMMENDED ACTIONS 25
3.1 Supply Chain Establishment 27
3.2 Workforce Development 30
3.3 Leadership and Community 33
3.4 Policy/Other 37

EXECUTIVE SUMMARY

INTRODUCTION

The Redwood Coast Region has a unique opportunity to participate in California's offshore wind future. The development of a Heavy Lift Marine Terminal in Humboldt Bay is central to realizing regional economic benefits, enabling the area to serve as a staging and integration hub. While Humboldt has core strengths in environmental services, permitting, and maritime activity, meaningful participation in the offshore wind industry will require targeted investments in infrastructure, workforce, and supply chain capacity.

The Redwood Coast Region Offshore Wind Supply Chain and Workforce Assessment outlines a set of actionable strategies to support the region in addressing current limitations and building the capabilities needed to participate in this emerging industry. The assessment is the culmination of a comprehensive scope of work assessing the region's existing and potential supply chain and workforce assets across Del Norte, Humboldt, Lake, and Mendocino counties.

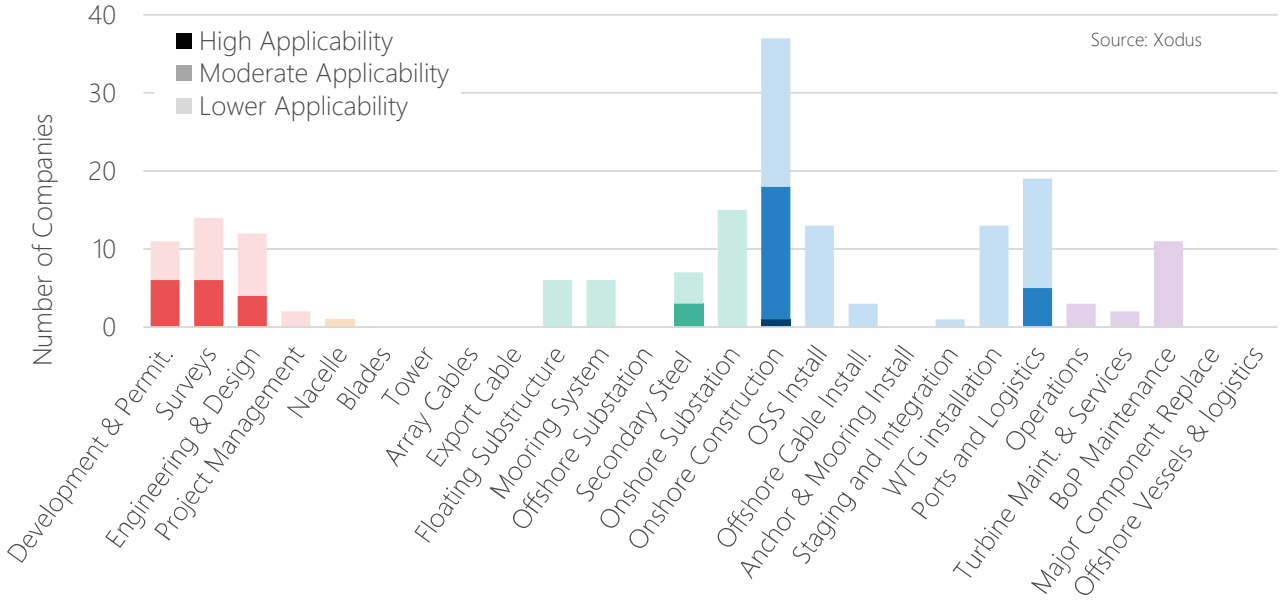
This assessment is grounded in deep community engagement and ecosystem mapping, which helped identify both the region's potential and the conditions required to activate it. It reflects input from local stakeholders and recognizes the importance of cultural considerations and community values as the region navigates the complexities of marine-based industrial development.

The planned Heavy Lift Marine Terminal in Humboldt Bay is essential to enabling offshore wind deployment on the North Coast. Its development opens the door to near-term economic opportunity through staging and integration, and longer-term potential through operations and maintenance. Realizing these benefits will require targeted investment and coordination to address infrastructure limitations, workforce shortages, and gaps in regional supply chain capacity.

Despite these challenges, the region has notable advantages that can support offshore wind development, including its permitting and environmental expertise, a history of maritime activity, and a working waterfront. With intentional investment, offshore wind could catalyze economic resurgence in the Redwood Coast Region, delivering value to local communities and reinforcing the region's role in California's clean energy transition.

REDWOOD COAST OFFSHORE WIND SUPPLY CHAIN

The supply chain assessment considered two aspects of supply chain development: the opportunity for new Tier 1 manufacturing business attraction to the region, and the ability for existing local companies to participate in the floating offshore wind supply chain. While no companies in the Redwood Coast Region yet have direct experience in the offshore wind industry, some local capability may exist to do so in support of project development, secondary steel fabrication, onshore construction, or ports and logistics services. Of the supply elements where potential capability was observed, over 35 companies were identified providing Onshore Construction services, over 15 providing Ports and Logistics services, and over 10 providing Survey services.



Redwood Coast Region supply chain capability assessment results by supply chain element.

The assessment enabled a range of observations to be made about the opportunities and challenges associated with developing local supply capability. This included finding several diverse-owned construction companies that could carry out onshore site preparation work such as for a cable landing, onshore substation, or an operations base; relatively limited local manufacturing experience, particularly delivering components at the scale required for an offshore wind project; and a lack of offshore infrastructure supply capabilities. Most companies assessed were located near Humboldt Bay, however about half of the onshore construction companies assessed were in the broader Redwood Coast Region.

As port development continues, the region should focus on enabling local capabilities that support staging, integration, and long-term operations such as fuel supply, logistics services, quayside infrastructure, cranes, and vessel support. There may also be potential to develop new local supply capabilities like anchor production, substructure assembly, or a center of excellence for dynamic cables. To realize these opportunities, local businesses will need support to understand industry needs and navigate partnership building, scaling, retooling, and certification.

This assessment included a strengths, weaknesses, opportunities, and threats (SWOT) analysis based on industry input, regional capabilities, and market trends analysis to highlight the Redwood Coast Region's current supply chain position and potential in supporting offshore wind development.

A key strength is the region's early-mover advantage on the West Coast, supported by planned port upgrades and existing local capabilities aligned with O&M and project development. A major weakness is the limited scale and capacity of local companies, many of which may struggle to secure larger contracts without targeted support. Among the opportunities, global supply chain pressures and California's push for local content present a strong case for investing in localized capabilities. Significant threats include uncertainty around project timelines and federal infrastructure policy, as well as strong competition from more established offshore wind markets.

SUPPLY CHAIN

STRENGTHS

- Planned port upgrades and operations make the Redwood Region a strategic investment target.
- State and local support for OSW, including subsidies.
- First mover advantage on the West Coast.
- Onshore construction, metal fabrication, electrical, and project development works represent areas of existing strength.
- Existing activities in the Region are well-aligned with O&M tasks and represent a natural area of expansion.
- Existing capabilities have potential to support fabrication of secondary steel and/or minor components, locally.
- Strong ecosystem of local organizations supporting supply chain and infrastructure development.

WEAKNESSES

- Limited relevant existing capabilities locally in key project lifecycle areas; significant investment and upskilling required to compete.
- Access challenges in transporting raw materials and subcomponents to the region could hinder local manufacturing/assembly.
- Existing companies in the region are small and unlikely to secure Tier 2 or 3 contracts due to output limitations. Local bottleneck on Anchor Handling Tugs (AHT) to support installation activities locally.
- Little to no access to East Coast offshore wind market.

OPPORTUNITIES

- Pressures from global supply chain make a case to localize production of floating-specific components.
- Partnership opportunities for experienced regional firms to pair with specialized local companies, or for local companies to combine offerings for a stronger market approach.
- Local O&M capabilities developed through early projects could support later projects developed in Oregon.
- Relatively low investment required to capitalize on opportunities in O&M and project development services.
- Current development timelines may serve to insulate the Redwood Region from impacts from federal governments pause in offshore wind development.
- Opportunity for S&I activities locally subject to further port upgrades.
- Likely inclusion of local content targets in California's offtake solicitation process.

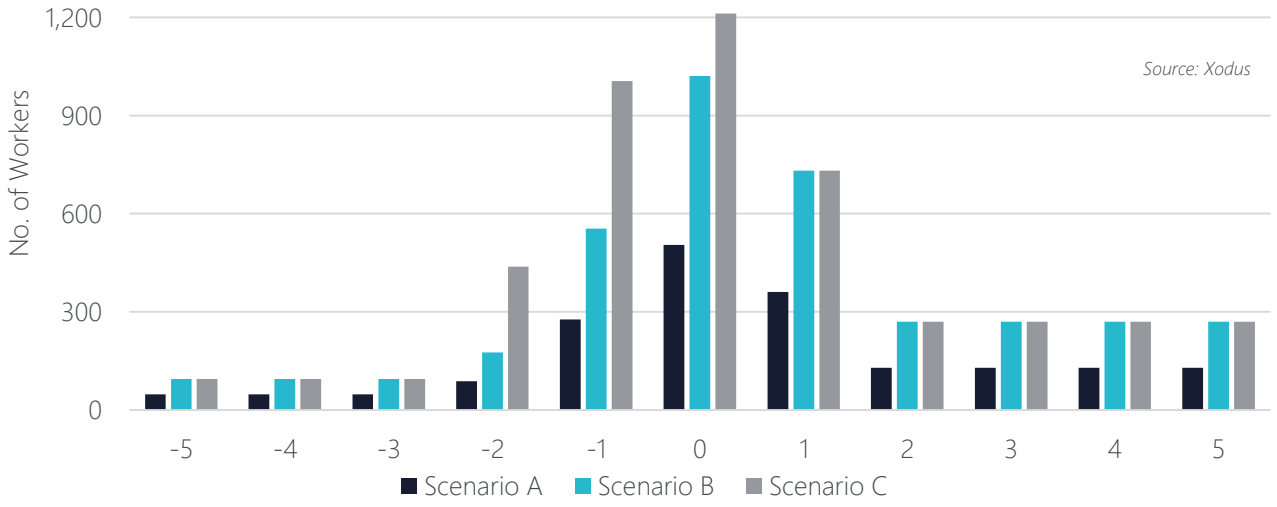
THREATS

- Offshore wind developments in California not likely to begin until the early to mid-2030s.
- Lack of significant project pipeline to justify localization of major manufacturing across multiple component types.
- Delays in development of Port of Humboldt Bay would have major impact on local supply chain development.
- Oregon and Washington likely to pose competitive investment case given adjacent industries.
- Uncertainties around the future of the IRA and around major infrastructure buildout (such as for transmission).
- Federal government policies have resulted in uncertainty in industry development activities and timelines.
  Global bottleneck of heavy-lift cranes and wind turbine integration vessels.
- Local skepticism around the purported benefits of the industry developing in the region.
- Direct shipping access to established and lower cost component production facilities in Asia-Pacific.

Redwood Coast Region Supply Chain SWOT Assessment

OFFSHORE WIND WORKFORCE ASSESSMENT

The assessment analyzed three development scenarios of varying levels of workforce demand. Scenario A described the workforce requirement from a single 1-gigawatt (GW) project using the Port of Humboldt Bay as a Staging and Integration (S&I) site, with a peak annual workforce demand of approximately 500 workers. Scenario B described the workforce requirement from the development of two simultaneous 1 GW projects, doubling the peak annual demand to around 1,000 workers and including workforce supporting two operational bases. Scenario C expanded on Scenario B to additionally include the workforce impact associated with cable manufacturing and foundation assembly occurring in the region, resulting in an increased workforce demand in the years preceding commercial operations date, and peak annual demand of approximately 1,200 workers.



Workforce demand relative to commercial operations date for workers from the Redwood Coast Region in Scenarios A, B, and C, as assessed in the Workforce Assessment report

Offshore wind development could present a significant opportunity for job creation in the Redwood Coast Region, particularly in the construction, maritime, and engineering sectors. However, only about 12% of the region's current workforce is employed in occupations directly transferable to offshore wind, highlighting a potential need for workforce training and upskilling.

To support local participation, targeted investment in near-term training and long-term workforce development will be essential. Cal Poly Humboldt, the College of the Redwoods, and regional union partnerships offer a strong foundation, but expanded apprenticeship programs in trades like welding, crane operation, and electrical work are critical. Proactive planning is also needed to address community infrastructure such as housing, childcare, and transportation, to reduce reliance on a transient workforce and support long-term economic benefits. The workforce SWOT analysis outlines current strengths, gaps, and strategic priorities for workforce readiness in the region.

A core strength is the presence of local educational institutions like Cal Poly Humboldt and the College of the Redwoods, which provide a foundation for workforce training and upskilling. A key weakness, however, is the very low number of workers with skills aligned to offshore wind, and a limited number of union training programs locally. Among the opportunities, there is potential to expand training pathways tailored to offshore wind, particularly in construction, maritime trades, and STEM. One significant threat is the possibility that a large transient workforce or competition from other regions may limit local employment gains if proactive workforce strategies are not implemented.

WORKFORCE

STRENGTHS

- Six training and educational programs located in the region, including Cal Poly Humboldt and the College of the Redwoods.
- Local commitment to workforce development through the work of GoHumCo.
- Clear recognition from local governments of offshore wind's potential economic benefit.
- High employment in construction and professional/ technical services, with moderate transferability.

WEAKNESSES

- Very low number of workers with roles found within offshore wind development, implying a need for significant upskilling.
- Limited number of union training programs located in the region.
- Distance from major population centers is challenging.
- Aging workforce.
- Economic trauma from boom-and-bust industries.
- Limited unionized workforce.

OPPORTUNITIES

- Potential to develop new or expanded training programs tailored specifically for offshore wind.
- Unions are open to developing a regional training facility or program given sufficient demand.
- Upskill and expand the union workforce for planned port and transmission infrastructure upgrades.
- Offshore wind could create roughly 1200 jobs in construction, maritime trades, and STEM fields.
- Can leverage the transient workforce influx into long-term community development.

THREATS

- Other California and West Coast ports compete for offshore wind industry resources and funding.
- Unions can fulfill PLA requirements with workers from outside the region.
- A large transient workforce may overwhelm existing wraparound services.
- Potential policy shifts or delays in project permitting may affect workforce training and retention strategies.
- Fewer workforce opportunities for the wider Redwood Region due to distance from the S&I site.

Redwood Coast Region Workforce SWOT Assessment

COMMUNITY ENGAGEMENT

Community engagement for this study included conversations and survey responses from fifty organizations across a variety of sectors in the region, including academia, supply chain companies, community groups, and developers. Feedback gained through these engagement efforts provided the basis for recommendations.

There was general support, excitement, and optimism about what offshore wind development may mean for the Redwood Coast Region. The new industry was perceived by some as a much-needed opportunity to revitalize the local economy, and while enthusiasm was certainly tempered, skepticism appeared to be healthy and focused on finding solutions to outstanding problems.

There was a desire to understand the reality of what the local workforce requirements will be for the delivery of offshore wind projects. The local community wanted to understand what a realistic scenario might look like so that they can work to be best prepared to localize jobs that are practical to do so. There appeared to be a solid understanding that not every available job will be filled by a local person, but that there may be several areas in which the local workforce can support these projects, both in the construction phase and beyond. There were also several questions as to how an influx in external workers may impact wraparound services, including housing, healthcare, and childcare.

Throughout the engagement process, several participants raised concerns over capacity for themselves and others to engage in ongoing conversations around offshore wind development as the frequency and intensity of new information was perceived to be quite high. It was widely acknowledged that the development of this new industry in the region presents a significant amount of information to stay up to date with, much of it highly technical. For participants to feel well-informed, they expressed a need to spend much more time keeping up with the news in this space. Capacity concerns for the Tribes in the region were raised consistently, with several organizations suggesting the formation of a capacity draw-down fund to support meaningful and consistent engagement.

The developers appeared to be well connected and engaged with many organizations in the local community, not only through the social network analysis presented in the Community Engagement Report, but also as detailed throughout conversations during the engagement process. Several participants mentioned one-on-one meetings with developers as key sources of information, as well as some of the ongoing community events they have hosted.

There appeared to be a need for a trusted and centralized source for information sharing in the region that could help mitigate described concerns about capacity, misinformation, and development needs. An initiative like WindLink could potentially serve this purpose. There was a strong desire in the region to get WindLink up and running to serve as a consensus building initiative, providing more information to the relevant communities, and crystallizing some of the individual participants' efforts. Overall, WindLink was looked upon very favorably and people are eager to keep moving forward with the initiative.

With market and policy uncertainty heightened for US offshore wind development, the industry will be looking to state and local governments for market signals as they determine where to continue investment. If the Redwood Coast Region can continue investing in market preparedness through initiatives such as market readiness studies, supply chain enablement, and workforce development programs, that can signal to developers and large supply chain companies that the Redwood Coast Region is open for business with offshore wind.

Through the community engagement scope of work, recurring themes and feedback were received in the region regarding policy, leadership, and communication. A SWOT assessment was conducted based on input gathered from stakeholders that did not fall directly within the workforce or supply chain assessments.

A key strength is the existing network of community and academic organizations actively sharing offshore wind information and supporting early engagement. However, a critical weakness is the lack of a clear, centralized source of truth on offshore wind progress and updates, which has created confusion, particularly around roles and responsibilities within local government. One opportunity lies in leveraging the redevelopment of the Port of Humboldt Bay as a platform for continued engagement and regional coordination. At the same time, persistent threats such as misinformation, limited community capacity for sustained engagement, and uncertainty in the federal policy landscape could hinder progress if not addressed through transparent, consistent communication and leadership.

POLICY, LEADERSHIP, COMMUNICATION

STRENGTHS

- Existing network of organizations already involved in collating and disseminating information and updates regarding offshore wind development in the region, largely led by community organizations and academic institutions.
- Developers have been highly engaged with communities from an early point in the planning and development process.
- Strong market signals from state, federal, and local government to date through AB525 and port funding.

WEAKNESSES

- Reported lack of singular 'source of truth' on current state of offshore wind development in the Region, including for progress and updates.
- Low degree of connectivity or involvement with Tribal governments and representatives in the engagement process.
- Roles and responsibilities, key point of contact, for offshore wind unclear for Humboldt County government.

OPPORTUNITIES

- Development of the Port of Humboldt Bay has been driving significant engagement in the region and serves as a source of information regarding works pertinent to Humboldt County as port redevelopment is tied to broader offshore wind development for the region.
- Potential opportunities for regional collaboration and strategic supply chain build out as Oregon and Washington assess offshore wind opportunities over the coming years.

THREATS

- Misinformation was identified as a consistent concern during the engagement outreach, particularly for marine mammals, human health, and technical feasibility.
- Community members may not have the capacity to adequately and consistently engage in conversations around offshore wind development; this is especially pertinent to conversations with Tribes in the Region.
- Uncertainty in the federal policy environment.
- Lack of onshore transmission pathways and offtake security.

Redwood Coast Region Policy, Leadership and Communication SWOT Assessment

STRATEGIC RECOMMENDATIONS FOR OFFSHORE WIND READINESS

SUPPLY CHAIN ESTABLISHMENT
• Develop a 10-year Bay Wide Economic Development Plan
• Create a Local Business Directory and Host Supplier Engagement Events
• Secure Funding to Support Vital Initiatives
• Provide Business Technical Assistance for Offshore Wind Readiness
• Explore Business Case for Local Anchor Manufacturing
• Secure O&M Site in Humboldt or Redwood Region
WORKFORCE DEVELOPMENT
• Coordinate Infrastructure Timelines with Training Pipeline
• Expand Offshore Wind-focused Educational Partnerships and Programs
• Develop Local-First Hiring Program with Developer MOUs
• Explore Additional Needed Training Facilities in the Region
• Establish a Local Workforce Hiring Ordinance for Publicly Funded or Major Regional Construction Projects
LEADERSHIP & COMMUNITY
• Appoint a County Offshore Wind Liaison
• Launch Public Information Campaigns
• Create an Offshore Wind Task Force
• Collaborate with Harbor District on Community Engagement
• Establish Capacity Fund to Support Tribal and Community Engagement
• Create a Central Online Hub for Offshore Wind Information
• Create a Plan to Assess and Deliver Community Benefit Agreements (CBAs)
• Continue Community Engagement Mapping Efforts
POLICY / OTHER
• Create an Actionable Community Plan
• Coordinate Tri-State Collaboration with Washington and Oregon
• Conduct 5-Year Market and Infrastructure Readiness Study

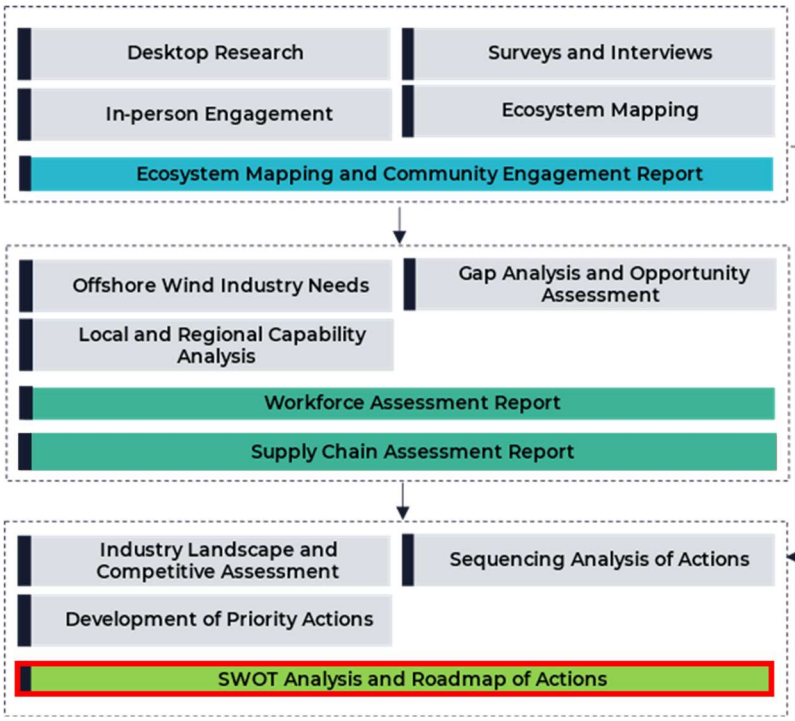
Recommendations for Redwood Coast offshore wind development by focus area

1 INTRODUCTION

1.1 Background

Xodus Group (Xodus), as directed by the County of Humboldt, has produced this report to address opportunities available to the Redwood Coast Region (Del Norte County, Humboldt County, Lake County and Mendocino County) in supporting the offshore wind industry. Through analysis of the industry landscape, supply chain capabilities, workforce capabilities, and the community ecosystem, Xodus makes recommendations for how the County can realize opportunities to support further development of the offshore wind sector and localize benefits from those projects where possible. This analysis was conducted using Xodus' frameworks for supply chain and workforce assessments, combining offshore wind industry expertise with the analysis of publicly available data. The study was further supported through insights gained from community engagement across relevant sectors in the state and region.

This report is the final deliverable in a multi-phase work scope, whereby Xodus carried out a supply chain assessment, a workforce assessment, and engaged in substantial community engagement and ecosystem mapping. The full scope of work is detailed in Figure , demonstrating the flow of community engagement work into the supply chain and workforce assessments. Three reports were generated based on the work carried out under these scopes, culminating in this Strategic Recommendations document.



In this report, an assessment of Humboldt and the broader Redwood Coast Region's strengths, weaknesses, opportunities and threats (SWOT) is carried out, identifying and drawing insights from all previous work. A workshop was held between Xodus and the County of Humboldt to discuss and prioritize potential actions to drive sustainable offshore wind development. This resulted in a list of 22 recommended actions that are presented in this report that will maximize economic development and job creation opportunities for the residents of the Redwood Coast.

Figure 1-1 - Full Scope of Work Tasks and Deliverables

1.2 Objectives

The purpose of this document is to provide community members, including policymakers, industry participants, and others, with context, data, and strategic recommendations regarding offshore wind opportunities for Humboldt County. Specifically, key objectives for this study were to:

- Present important industry context regarding the Redwood Coast Region to inform the SWOT assessment.
- Undertake a SWOT assessment and present findings that support targeted recommendations for actionable next steps in the Redwood Coast Region.
- Propose recommendations relating to phasing and timelines for appropriate development and community engagement efforts from the County.
- Identify the most strategic opportunities in the short, medium, and long term on which Humboldt County and the wider Redwood Coast Region are best poised to capitalize.

1.3 Scope of Study

This assessment considers three primary aspects of offshore wind industry development—supply chain, workforce and community engagement—with context and data relevant to each used to define the Redwood Coast Region's offshore wind opportunity. The document culminates in a set of recommendations supported by the insights generated from previous studies. The document is structured as follows:

Section 2 – *Regional Opportunity Analysis* presents the findings of the SWOT assessment broken out across the primary study categories – Supply Chain, Workforce, and Policy, Leadership & Communications.

Section 3 – *Recommend Actions* provides action items, alongside suggested responsible parties, timelines, and next steps to carry forward those items.

1.4 Definitions

1.4.1 Glossary of Terms

Developer—An offshore wind developer is the owner and operator of an offshore wind farm. Generally, they are large multi-national energy producers responsible for delivering the project in alignment with the terms agreed with local and/or national regulatory agencies and any agreed power purchase agreement.

Operations and maintenance – Operations and maintenance (O&M) is a collective term for activities that take place during the lifetime of an offshore wind project to ensure safe and effective power generation and physical asset integrity.

Original Equipment Manufacturer – An original equipment manufacturer (OEM) is the manufacturer of a product that the company fully develops. OEMs may still purchase parts from other manufacturers and use them to assemble their finished products.

Staging and integration – Staging and integration (S&I) is a collective term for activities taking place at a port where components are delivered, stored, and assembled into complete floating wind turbine systems that can be towed to the offshore project site.

Tier 1 – Tier 1 companies are suppliers of equipment, products, or services to the project that generally contract directly with the developer. Contracts are typically worth tens or hundreds of millions for the top-level (Tier 1) packages, such as supply or installation of wind turbine generators or the remaining balance of plant.

Tier 2/3 – Tier 2 contractors supply products and services directly to the Tier 1 contractors. Tier 1 suppliers will have a small selection of Tier 2 companies from which they exclusively source certain material, equipment, or services (to guarantee quality, price and/or schedule certainty) with other Tier 2 supply opportunities being subject to a competitive tender process to encourage competition in the supply chain. Tier 3 companies supply directly to Tier 2 suppliers.

1.4.2 List of Acronyms

ACRONYM/ ABBREVIATION	DEFINITION
CBA	Community Benefit Agreement
GW	Gigawatt
GWO	Global Wind Organization
MOU	Memorandum of Understanding
O&M	Operations and maintenance
OEM	Original equipment manufacturer
PLA	Project labor agreement
POWC	Pacific Offshore Wind Consortium
S&I	Staging and Integration
SWOT	Strength, Weakness, Opportunity, Threat
US	United States

2 OPPORTUNITY ANALYSIS

Following the completion of the Supply Chain Assessment, Workforce Assessment, and Community Engagement Report, a SWOT assessment was undertaken for the Redwood Coast Region, with a focus on Humboldt County, regarding potential offshore wind development. This assessment considered factors across the industry, including political, environmental, social, technical, economic, and legal aspects that may influence the region's future opportunities. The following sections present the findings of the SWOT for each of the three study areas: (1) Supply Chain, (2) Workforce, and (3) Policy, Leadership & Communication, identifying key themes from each. The themes and findings support the recommended actions for next steps, presented in Section 3.

2.1 Supply Chain SWOT

The following SWOT assessment evaluates the Redwood Coast Region's current and potential role in the offshore wind supply chain. It highlights strengths to build on, gaps that must be addressed, and external factors that may influence future development. The insights presented are informed by community engagement and analysis of regional capabilities.

2.1.1 Strengths and Opportunities

STRENGTHS

- Planned port upgrades and operations make the Redwood Region a strategic investment target.
- State and local support for OSW, including subsidies.
- First mover advantage on the West Coast.
- Onshore construction, metal fabrication, electrical, and project development works represent areas of existing strength.
- Existing activities in the Region are well-aligned with O&M tasks and represent a natural area of expansion.
- Existing capabilities have potential to support fabrication of secondary steel and/or minor components, locally.
- Strong ecosystem of local organizations supporting supply chain and infrastructure development.

OPPORTUNITIES

- Pressures from global supply chain make a case to localize production of floating-specific components.
- Partnership opportunities for experienced regional firms to pair with specialized local companies, or for local companies to combine offerings for a stronger market approach.
- Local O&M capabilities developed through early projects could support later projects developed in Oregon.
- Relatively low investment required to capitalize on opportunities in O&M and project development services.
- Current development timelines may serve to insulate the Redwood Region from impacts from federal governments pause in offshore wind development.
- Opportunity for S&I activities locally subject to further port upgrades.
- Likely inclusion of local content targets in California's offtake solicitation process.

Geography

Humboldt County and the wider Redwood Coast Region are strategically located to provide supply chain support for offshore wind projects in the lease areas off Northern California, especially given the planned redevelopment of the Port of Humboldt Bay. Due to the size of major components and the logistics associated with their transportation, certain activities such as S&I will need to be conducted close to project sites, making the Port of Humboldt Bay a prime location. Additionally, the relatively low cost of doing business in the region (compared with elsewhere in California)

may lead developers and major suppliers to establish project offices in the Redwood Coast Region to support their local projects. Beyond the two proposed projects off the coast of Humboldt County, potential leases and development planned for Oregon, and eventually in Washington, could also be supported by O&M capabilities out of the Redwood Coast Region, given their proximity to Humboldt Bay and Crescent City as potential O&M hubs, and the first mover advantage that the region could see.

Policy

Stipulations regarding non-price factors from the federal leasing auction included commitments relating to growing local supply chain content. Such requirements could be further required through California's offtake solicitation process, further incentivizing in-state supply chain development. Both state and local government have supported offshore wind development in the region to date, with the State sending strong market signals to support the industry by passing Assembly Bill 525 'Offshore Wind Generation' ('AB525'). As the only West Coast state to have seen a nearby leasing round for offshore wind, California likely has some first-mover advantage over Washington and Oregon. Additionally, the State has a codified target to reach 25 GW of offshore wind capacity by 2045, generated through floating offshore wind projects. With the Port of Humboldt Bay on track to be the first S&I port in the area, the Redwood Coast Region may serve as an epicenter for floating offshore wind deployment.

While the current federal administration has placed an effective hold on granting further offshore wind project construction approvals, California's industry development timeline may prove favorable. It is not expected that any installation activities will take place before the early 2030s, with the first power anticipated around 2035. If the next administration has a more supportive outlook on offshore wind development, and current port and infrastructure development activities continue on their current track, then it is likely that the industry will not experience significant delays, as is the case in the US Northeast.

Ecosystem

The Redwood Coast Region has a strong ecosystem of local organizations focused on supply chain and infrastructure development, including Schatz Energy Research Center, the Pacific Offshore Wind Consortium (POWC), and the WindLINK initiative with Humboldt County. Offshore wind and floating foundation technology developers have also established a presence in the region. For the offshore wind developers, this has been formalized through a MOU between Humboldt County, RWE, and Vineyard Offshore. The MOU formalizes pursuing a framework for mutual support, collaboration, and coordination of development efforts.

Challenges supplying projects, including a lack of well-established floating offshore wind component suppliers and anticipated bottlenecks where supply is unable to keep pace with potential offshore wind demand, present potential opportunities for supply chain development in the Redwood Coast Region. This includes a currently limited global supply and potential future high demand for dynamic subsea cables. Coupled with the anticipated logistical benefits of domestic, West Coast production, this represents a potential investment case for the Redwood Coast Region. California's water depths represent a new technical challenge for floating offshore wind, given that current global benchmarks sit around a maximum depth of 100-200 m. A local center of excellence for production, maintenance and research could thus be developed to focus on addressing this challenge.

For a range of products and services, local companies could consider partnerships with more experienced regional firms, combining established track records with local insights and expertise to increase the likelihood of localizing contracts and production efforts. As economies of scale and technical certainty for new designs are achieved, pricing should become more predictable, and overall costs should be reduced.

Supply Chain Capabilities

Several existing and adjacent supply chain areas present as strengths for the Redwood Coast Region, especially given the area's familiarity with industrial port activities and the region's shipping, fishing, and logging industries. Project development activities, including planning, engineering, design, and environmental services, align well with existing businesses in the Redwood Coast Region. Local companies could be well placed to support contracts in this space by providing local support and specialist knowledge to permitting, environmental assessment, and surveying activities. This also represents an opportunity for developers to thoughtfully grow local content.

Onshore construction also represents a potential area of strength for the region, with capabilities well distributed across the counties. There may be opportunities for local companies to collaborate when bidding for construction work to offer a more comprehensive package for larger contracts. Particularly, the region hosts strengths in the electrical contracting sector, with existing commercial and industrial experience and the potential to upskill to participate in offshore commissioning work if targeted training is developed.

The region also hosts companies capable of fabricating secondary steel and renting/operating heavy machinery. The region's welding and metal work skills could potentially support anchor manufacturing, substructure assembly, or similar scopes, but would require upskilling personnel and building basic experience in this space. Similarly, if production of secondary steel, minor components, or assembly work is localized, fabrication shops and welding product providers could benefit. Port development plans may be sufficient to attract some manufacturing investment and assembly works for floating substructures onsite. Anchors will likely be required in high volumes should California meet its offshore wind capacity targe. Where the barrier to localize manufacturing of anchors is likely lower than for other large offshore wind component, this may present an opportunity for manufacturing in the Redwood Coast Region.

A most significant opportunity for long-term contracts in the region may be in support of project O&M, with at least one O&M port likely to be located in the region. While investment and upskilling will be required to increase the level of participation of local companies, many O&M quayside tasks are well-aligned with existing port activities. Investment required to develop capability in operations services is relatively low, and companies considering such investment could take confidence from the long-term opportunity and potential pipeline of projects further up the coast.

2.1.2 Weaknesses and Threats

WEAKNESSES

- Limited relevant existing capabilities locally in key project lifecycle areas; significant investment and upskilling required to compete.
- Access challenges in transporting raw materials and subcomponents to the region could hinder local manufacturing/assembly.
- Existing companies in the region are small and unlikely to secure Tier 2 or 3 contracts due to output limitations. Local bottleneck on Anchor Handling Tugs (AHT) to support installation activities locally.
- Little to no access to East Coast offshore wind market.

THREATS

- Offshore wind developments in California not likely to begin until the early to mid-2030s.
- Lack of significant project pipeline to justify localization of major manufacturing across multiple component types.
- Delays in development of Port of Humboldt Bay would have major impact on local supply chain development.
- Oregon and Washington likely to pose competitive investment case given adjacent industries.
- Uncertainties around the future of the IRA and around major infrastructure buildout (such as for transmission).
- Federal government policies have resulted in uncertainty in industry development activities and timelines.
  Global bottleneck of heavy-lift cranes and wind turbine integration vessels.
- Local skepticism around the purported benefits of the industry developing in the region.
- Direct shipping access to established and lower cost component production facilities in Asia-Pacific.

Competitive Landscape

There are a number of challenges related to the competitive landscape for suppliers that may adversely influence the attractiveness of the Redwood Coast Region as an investment case for manufacturing. Due to logistical constraints, it is unlikely that any major components manufactured on the US West Coast would be transported to projects on the US East Coast, meaning that the market for such components is likely constrained by the scale of industry development on the US West Coast. The US West Coast is also accessible to suppliers from Asia, where competing manufacturing capabilities would likely present lower cost options and higher expected production capacity, reducing the likelihood of companies localizing substructure manufacturing to the Redwood Coast Region.

There is also likely to be competition from both Washington and Oregon, which offer more substantial workforce numbers and greater industrial adjacency, presenting a stronger investment case to Tier 1 suppliers. Similarly, other regions in California may also look to outcompete the Redwood Coast Region in specific market sectors, with the Bay Area presenting significant capability in the technical and advanced manufacturing space, and Southern California presenting experience in defense contracting and shipbuilding. The latter could be leveraged to encourage local fabrication and/or assembly for floating foundations, if the cost of doing business is not prohibitive.

Wider Market Forces and Uncertainty

Overall, offshore wind market uncertainty remains high, with multiple moving pieces both in the US and globally. In the US and California this currently includes the future of IRA funding, and the security of the West Coast project pipeline given recent federal permitting and development policy changes. Without these pieces in place, it will likely be difficult to secure investment from developers, Tier 1 companies, and the industry more broadly that would enable wider supply chain development.

More broadly and globally, the timeline for commercial viability of floating offshore wind technologies at scale remains uncertain. In addition, the industry is dealing with a global bottleneck on the supply of suitable high capacity cranes required for the integration of large turbines to floating foundations or alternatively the availability of wind turbine installation vessels. Paired with Jones Act requirements, this raises questions as to how the US industry will be able to undertake wind turbine integration. Additionally, the US currently has a limited supply of anchor handling tugs and a significant gap in dynamic cable supply, with high certainty of demand likely required to justify investment in further manufacturing capability.

Confirmation of future operations at the Port of Humboldt Bay will also be a factor in the market forces impacting local supply chain development. The port could see competition from others in California, Oregon and Washington to fill the role of supporting offshore wind manufacturing, S&I, and O&M. Port upgrades and offshore wind projects are intertwined in their realization and mutually dependent on progressing – with one being the enabling factor and the other setting the required demand.

Community Ecosystem

In the Redwood Coast Region, skepticism surrounds the potential benefits and long-term impacts of new industries establishing in the area. There have been a number of previous boom-and-bust industrialization cycles, such as the logging industry, that have been perceived to have done more harm than good. Additionally, the cost of electricity for the region is anticipated to increase due to the nascent offshore wind industry and the associated need for investment in infrastructure and the supply chain. Clarity on future offshore wind project developments with realistic timeframes and regular progress communications can help as a mitigation effort.

Supply Chain Capabilities

Localizing major component manufacturing to the Redwood Coast Region presents significant challenges. Currently, the existing capabilities within the Region are minimal when considering wind turbine supply and O&M works. Companies looking to get involved in wind turbine supply would face expensive certification and upskilling to meet requirements. Anything manufactured in the region would need to have raw materials and subcomponents shipped to the region where limited road and rail access could complicate delivery over land. Blade manufacturing would require significant laydown space and the import of specialized materials, and the region has no experience to support this work. Cables manufacturing would also require significant infrastructure upgrades, including new roads, advanced quayside facilities, and additional waste treatment facilities. Without a clearer project pipeline with planned leasing, offtake and commissioning timeframes the demand certainty to justify necessary investments will continue to pose a risk and barrier.

Existing companies in the region are small and, therefore, not currently likely to secure Tier 2 or 3 contracts due to limitations on their output capacity, making it even more difficult to present tangible local benefits from this new industry. Manufacturing for these has little precedent in the region and would require specialized workforce training, which is discussed in further detail in the Workforce section.

2.2 Workforce SWOT

This section presents a SWOT assessment of the Redwood Coast Region's workforce readiness to support offshore wind development. It draws on community input and regional data to identify strengths to leverage, areas for improvement, and key opportunities to build a skilled, locally rooted offshore wind workforce that can drive economic benefits to the region.

2.2.1 Strengths and Opportunities

STRENGTHS

- Six training and educational programs located in the region, including Cal Poly Humboldt and the College of the Redwoods.
- Local commitment to workforce development through the work of GoHumCo.
- Clear recognition from local governments of offshore wind's potential economic benefit.
- High employment in construction and professional/ technical services, with moderate transferability.

OPPORTUNITIES

- Potential to develop new or expanded training programs tailored specifically for offshore wind.
- Unions are open to developing a regional training facility or program given sufficient demand.
- Upskill and expand the union workforce for planned port and transmission infrastructure upgrades.
- Offshore wind could create roughly 1200 jobs in construction, maritime trades, and STEM fields.
- Can leverage the transient workforce influx into long-term community development.

Job Creation

The offshore wind industry has the potential to generate substantial employment across the Redwood Coast Region. Initial projections estimate hundreds of new jobs in construction, maritime trades (e.g., vessel operations, logistics), and STEM fields (e.g., engineering, environmental monitoring, and data analysis). These roles span the full lifecycle of an offshore wind project, from development to operations.

While the existing local workforce will be critical to meeting these demands, it is unlikely to fully supply the volume and specialization required, particularly during peak construction periods. This gap presents an opportunity to attract a transient workforce from outside the region, which, if effectively integrated, could also support long-term community development goals.

Workforce transferability in the Redwood Coast Region offers a solid foundation for transferring workers from existing industries to offshore wind development. Industries such as construction, maritime services, and professional, scientific or technical services have a moderate degree of skill overlap and exist within offshore wind.

Training Opportunities

There is a strong local commitment to workforce development in the Redwood Coast Region, with local governments recognizing offshore wind's potential economic benefits. Six training and educational programs exist in the region, including those at Cal Poly Humboldt and the College of the Redwoods, which offer baseline curricula in technical trades and environmental science.

Union representatives are willing to develop dedicated offshore wind training programs or facilities, particularly if workforce demand is confirmed through near-term port and grid upgrade projects. These infrastructure projects will likely require an expanded union workforce, providing a timely opportunity to introduce offshore wind-specific modules alongside general upskilling efforts. There is also an opportunity to incorporate Global Wind Organization (GWO) standards within training programs, as offshore wind developers will likely require recognized GWO certifications for workers performing offshore installation and maintenance.

If the region expanded its offshore wind supply chain capabilities, particularly in steel fabrication and component manufacturing, more advanced and specialized training would be needed in welding, heavy industrial assembly, and fabrication-related trades. Proactively preparing for these potential needs will position the region competitively for long-term industry growth.

Community Ecosystem

The region benefits from several partnerships that can serve as a foundation for offshore workforce development. Organizations like Schatz Energy Research Center and the Pacific Offshore Wind Consortium have committed to regional capacity-building and research partnerships. These relationships offer a strong foundation for further collaboration with unions, developers, and government agencies to establish a sustainable workforce pipeline.

2.2.2 Weaknesses and Threats

WEAKNESSES

- Very low number of workers with roles found within offshore wind development, implying a need for significant upskilling.
- Limited number of union training programs located in the region.
- Distance from major population centers is challenging.
- Aging workforce.
- Economic trauma from boom-and-bust industries.
- Limited unionized workforce.

THREATS

- Other California and West Coast ports compete for offshore wind industry resources and funding.
- Unions can fulfill PLA requirements with workers from outside the region.
- A large transient workforce may overwhelm existing wraparound services.
- Potential policy shifts or delays in project permitting may affect workforce training and retention strategies.
- Fewer workforce opportunities for the wider Redwood Region due to distance from the S&I site.

Demographic and Logistical Challenges

The Redwood Coast Region faces several logistical barriers to localizing offshore wind workforce benefits. Its geographic isolation (often described as being "behind the Redwood Curtain") creates significant distance from major population centers, and the lack of robust transportation infrastructure may limit workforce mobility. From the Port of Humboldt Bay, where much of the region's offshore wind activity is expected to occur, no neighboring county in the region is less than an hour's commute away, creating additional accessibility challenges for workers outside Humboldt County.

Characteristics of the Region's workforce include an aging population, a shrinking younger workforce, and lower-than-average levels of educational attainment. These dynamics may contribute to difficulty filling any higher volume of jobs

across skilled trades and professional roles. Additionally, the Region has dealt with numerous boom-and-bust industrialization cycles in the past, causing the local communities to be hesitant regarding proposed industrial development and projected benefits, especially when considering long-term impacts.

Additionally, the region's limited capacity for wraparound services (such as housing, utilities, childcare, and healthcare) may be strained if there is a large influx of workers. These systems could become bottlenecks in large-scale offshore wind buildout, especially if reliance on transient workers is high.

Employment Opportunities

There are some limitations on the type and scale of employment opportunities that may be available to workers in the Redwood Coast Region. Much of the region's local job potential would be linked to the Port of Humboldt Bay serving as a S&I site; without these S&I operations, the scale of local workforce opportunities would be significantly reduced. Additionally, project labor agreements (PLAs) could restrict regional workforce participation in offshore wind due to the limited number of existing apprenticeship programs and the low unionization rate.

Workforce Transferability

The workforce assessment identified very low levels of workers with occupations currently found within the offshore wind sector in the Redwood Coast Region's largest employment categories, including administrative services, food services, and healthcare. For example, only a few workers are employed in construction trades such as welding, heavy equipment operation, or offshore logistics, which are critical to turbine assembly, port operations, and vessel support.

Without a dedicated pipeline of training and certification (e.g., GWO safety training or American Welding Society certifications), regional workforce participation will likely remain limited across all buildout scenarios.

Training Challenges

PLAs are projected to be required for significant infrastructure projects in the region, beyond that of the port. This may have a range of impacts on the local workforce, but it is unlikely that there is enough union labor in the region to satisfy workforce demand, so unions will likely look to fulfill PLA requirements with journeymen from outside the region. Additionally, there are a limited number of union training programs capable of upskilling additional union workers, increasing the likelihood that workers for infrastructure projects before offshore wind development are training outside the region.

Additionally, potential policy shifts or delays in project permitting may impact offshore wind development timelines, affecting workforce training schedules and retention rates. Regional competition is also at play, with other ports on the West Coast competing for offshore wind industry resources and funding.

2.3 Policy, Leadership & Communication SWOT

This section presents a SWOT assessment of policy, leadership, and communication related to offshore wind development in the Redwood Coast Region. Based on community engagement findings, it highlights the current strengths in regional connectivity and public-sector support, as well as opportunities to improve coordination, address information gaps, and foster cross-regional collaboration.

2.3.1 Strengths and Opportunities

STRENGTHS

- Existing network of organizations already involved in collating and disseminating information and updates regarding offshore wind development in the region, largely led by community organizations and academic institutions.
- Developers have been highly engaged with communities from an early point in the planning and development process.
- Strong market signals from state, federal, and local government to date through AB525 and port funding.

OPPORTUNITIES

- Development of the Port of Humboldt Bay has been driving significant engagement in the region and serves as a source of information regarding works pertinent to Humboldt County as port redevelopment is tied to broader offshore wind development for the region.
- Potential opportunities for regional collaboration and strategic supply chain build out as Oregon and Washington assess offshore wind opportunities over the coming years.

Community Connectivity

Within the Redwood Coast Region, an existing network of organizations is already collating and disseminating information and updates regarding regional offshore wind development. These efforts are primarily led by community organizations and academic institutions, which tend to have greater expertise and resources to dedicate to such efforts in the public interest. The development of the Port of Humboldt Bay has also been driving significant engagement in the region, with the Harbor District team serving as a key source of information regarding works pertinent to Humboldt County. With port redevelopment being a critical part of the offshore wind project timeline for Humboldt County, it makes sense for initial updates and project work to flow through these contacts. Both RWE and Vineyard Offshore have also engaged with local communities early in the planning and development process, providing updates as available and forming strategic partnerships to support future project works.

Government Support and Regional Ecosystem

Through 2024, the federal, state, and local governments have provided strong support, with many funding opportunities and subsidies. While the federal environment is shifting, strong levels of state and local support remain, such as the passing of California's AB525 regarding offshore renewable energy development. Strong market signals on the policy side tend to enable additional private investment from companies considering the development and localization of their products and services. As adjacent markets such as Oregon, Washington, and British Columbia consider offshore wind opportunities in the coming years, there is strong potential for regional collaboration initiatives to support win-win opportunities for the Redwood Coast Region. Such initiatives could include building a regional supply chain supporting larger project pipelines, sharing skilled workers and training institutions, and collaborating on major infrastructure such as ports and transmission.

2.3.2 Weaknesses and Threats

WEAKNESSES

- Reported lack of singular 'source of truth' on current state of offshore wind development in the Region, including for progress and updates.
- Low degree of connectivity or involvement with Tribal governments and representatives in the engagement process.
- Roles and responsibilities, key point of contact, for offshore wind unclear for Humboldt County government.

THREATS

- Misinformation was identified as a consistent concern during the engagement outreach, particularly for marine mammals, human health, and technical feasibility.
- Community members may not have the capacity to adequately and consistently engage in conversations around offshore wind development; this is especially pertinent to conversations with Tribes in the Region.
- Uncertainty in the federal policy environment.
- Lack of onshore transmission pathways and offtake security.

Community Connectivity

Engagement in support of these studies uncovered several concerns within the broader community. While useful resources and initiatives were identified, there is no single source of truth on the current state of offshore wind development in the region. This has contributed to the spread of misinformation—both informal and coordinated—particularly around marine mammals, human health, and technical feasibility.

Concerns were also raised about whether community members can engage consistently enough to stay informed and share accurate information within their networks. This is especially critical in conversations involving Tribes in the Redwood Coast Region. Overall, the study revealed a relatively low degree of connectivity and involvement with regional governments and institutions, likely due in part to limited community capacity.

Government Support

There exists uncertainty regarding offshore wind in the federal policy environment. This leads to uncertainty and unwillingness from developers and others to commit to significant investments needed to develop the industry, especially as timelines for permitting and major infrastructure development also remain unclear. Closer to home, there is a perception that roles and responsibilities for the County-level government remain unclear, leaving a leadership gap in the offshore wind development space.

Infrastructure

As project risks remain high, broader infrastructure development also threatens the local offshore wind industry. The lack of existing onshore transmission pathways represents a large unknown in terms of both the funding to build grid infrastructure and the schedule of potential work. While onshore construction relating to offshore wind development, including transmission build-out, may present opportunities for local suppliers and workforce, there could also be additional disruptions and impacts relating to grid improvement work. As progress is made in securing the required onshore grid infrastructure, project risks will be decreased, providing greater security to investors and community members alike.

3 RECOMMENDED ACTIONS

Humboldt County has been an active participant in laying the groundwork for development of a regional supply chain and workforce for local offshore wind projects. This study expands upon the County's efforts to date and leverages the local offshore wind ecosystem to define actionable steps that can be taken to support responsible and equitable offshore wind development in the region. The relationships established through engagement efforts to support this work present an opportunity to continue developing strong regional strategies to collaborate across research, supply chain, workforce, leadership, community, and policy subjects.

This study proposes 22 recommendations to enable the Northern California ecosystem to target key opportunities for growth both in Humboldt County and across the Redwood Coast Region. These actions are categorized by theme and suggested time frame in which to occur according to present day best estimations of future external industry developments. Engagement with various stakeholders in industry, government, academia, community, and policy has informed these recommendations and shaped the pathways suggested to achieve desired growth. The results of this study show that the Redwood Coast Region is well-positioned to lead on local conversations and initiatives related to knowledge sharing, such as in the permitting and survey space, and around training and development needs for the offshore wind workforce. The recommendations made herein were designed to:

1. Support Humboldt County as it navigates future offshore wind opportunities and associated economic benefits in the region. Efforts should be supported by effective communication and knowledge sharing so that state entities and local communities can make informed decisions about building out supply chain and workforce capabilities.
2. Identify and pursue areas in which the Redwood Coast Region is well-positioned to lead on supply chain development for offshore wind, building and collaborating in areas of strength while also recognizing gaps in local regional capabilities and supporting regional partners to fill those gaps.
3. Establish forums to discuss larger issues pertaining to community concerns about offshore wind development, including environmental impacts, misinformation, industrialization, and transmission development.

While many of the recommended actions can be undertaken by Humboldt County government, leveraging its local leadership role, it will be crucial that the following actions are addressed holistically and that messaging on offshore wind development from the State of California and developers is clear and consistent.

The Redwood Coast Region's presence in offshore wind conversations to date has primarily centered around the lease areas themselves and the major development efforts being undertaken at the port of Humboldt Bay, and led by the Humboldt Bay Harbor Recreation and Conservation District (Harbor District). With the port redevelopment allowing for such crucial project infrastructure, it is natural that the community more broadly should be carefully assessing how they can capitalize on additional industry benefits. While a select subset of companies is ready and eager to support the offshore wind industry, to broaden this opportunity to other companies and sectors within the region, several initiatives could be undertaken to lay the groundwork for productive knowledge sharing and appropriate retooling and upskilling. Figure 3-1 summarizes the 22 recommendations stemming from this analysis, with additional information on each provided in the sections below.

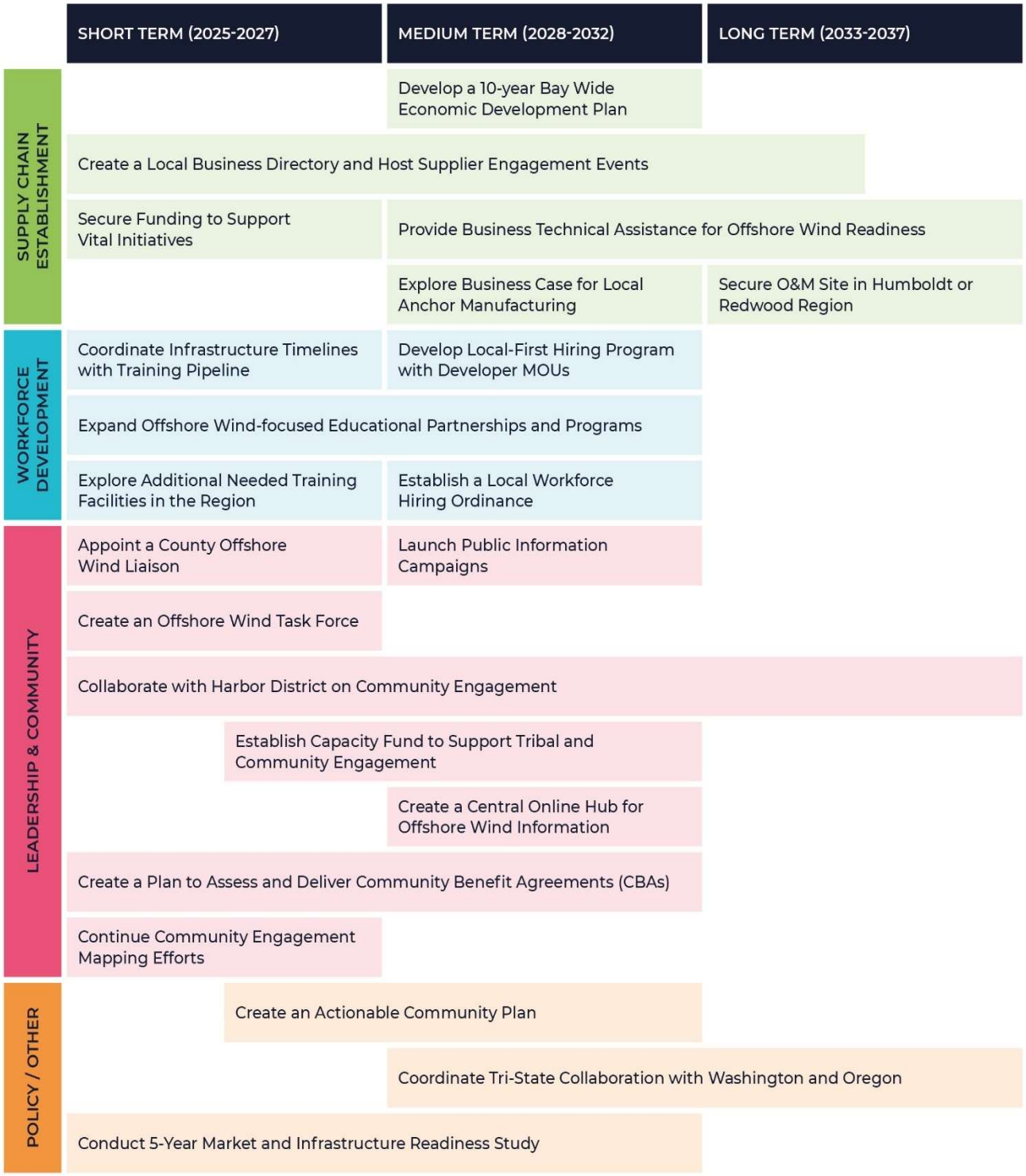


Figure 3-1 Timeline for strategic recommendations for the Redwood Coast Region

3.1 Supply Chain Establishment

1. Develop a 10-year Bay Wide Economic Development Plan

In coordination with Humboldt Bay Harbor District, and using the results of this study, develop a 10-year local content plan and roadmap. This will look at all opportunities for economic development in the Redwood Coast Region, in coordination with the existing regional Comprehensive Economic Development document (CEDS), including but not limited to offshore wind. Plans related to offshore wind will be dependent on the port development timelines and plans. This will consider the results of the business case assessment for local manufacturing, and may include similar exercises for other activities that could be located in the region.

Timeframe: Medium Term (2028–2032)
Purpose: Provide a long-term economic development plan using future market projections, to assist proponents in planning their own operations and investments, providing visibility into the future to limit risk.
Steps to Take Right Now:

- Seek collaboration opportunities with developers and other offshore wind industry proponents to get insights into their plans in the region.
- Identify other types of economic activity that could be undertaken in the bay area and determine which activities have the highest success potential in the region, as was done with respect to offshore wind in this scope. The results of this study may provide useful resources for this by identifying strengths and gaps.

What Next:

- Identify risks associated with various investment and economic development scenarios through market research.
- Build out a 10-year timeline of anticipated offshore wind development activity with confidence levels for each activity/milestone.
- Perform a cost-benefit analysis on various potential investments to determine which will create the greatest economic return to the region.
- Operationalize the Plan by assigning resources to actions and developing metrics to track progress.
- Continually revise and update Plan.

Actioned Party: County of Humboldt, Harbor District, Special Districts, Government of California

2. Create a Local Business Directory and Host Supplier Engagement Events

Facilitate Business-to-Business (B2B) networking by developing and maintaining a vetted directory of local companies with relevant capabilities, and organizing regular supplier engagement events focused on offshore wind. Examples of useful events include Meet the Buyer sessions, where companies are invited based on their existing capabilities and given the opportunity to meet directly with a developer, or Tier 1 or 2 supplier to present their products/services, and Supplier-Connector events that introduce potential supply chain entrants to each other with the goal of partnership formation to access broader scopes of work. As a lack of awareness of opportunities was cited an impediment to local content creation, these activities can also serve to inform the local community.

Timeframe: Short Term (2025–2027) → Long Term (2033-2037)
Purpose: Facilitate local content creation by streamlining B2B engagement.
Steps to Take Right Now:

- Use the supply chain database and mapping from this study to engage with companies that ranked in applicability categories to understand their capacity and appetite to participate in the offshore wind sector.
- Coordinate with the developer and Tier 1 or 2 suppliers to understand their contracting needs and the associated timelines.

What Next:

- Post a searchable directory of companies online.
- Continually add to and update the directory.
- Plan and host supplier events focused on industry needs.
- Use engagement feedback to identify top local businesses for targeted support.
- Work with developers to get them to commit to a "Local First" contracting philosophy and facilitate this process using the tools developed above.

Actioned Party: WindLINK and Developers

3. Provide Business Technical Assistance for Offshore Wind Readiness

Identify firms with the most significant potential to contribute to a local offshore wind supply chain and assist them in scaling and certification activities. This requires identifying available funding, understanding technical requirements, and providing access to structured offshore wind education to provide specialized support to local companies for meeting offshore wind contract requirements.

Timeframe: Medium Term (2028–2032) → Long Term (2033-2037)
Purpose: Assist local companies in meeting industry requirements to facilitate local supply chain building.
Steps to Take Right Now:

- Identify potential funding opportunities to support this initiative.
- Coordinate with industry players (developers, WindLink, etc.) to develop a business Technical Assistance pilot program and determine requirements for companies to receive technical assistance.

What Next:

- Utilize the supply chain database from Recommendation 1 to target businesses to participate in pilot Technical Assistance program.
- Track Technical Assistance program progress and expand if successful.
- Prioritize investment/upgrades for local content around things that can be provided locally most readily and with lowest market entry costs, such as: project development (e.g., environmental monitoring, engineering & design), final assembly and finishing work, mooring line/anchor installation, and O&M.

Actioned Party: Industry Experts (i.e. consultants, industry organizations, etc.), WindLINK

4. Secure Funding to Support Vital Initiatives

Funding will be required to support a number of these initiatives, with the 10-year Bay Wide Economic Development Plan, launching business Technical Assistance programs, and establishment of a County Offshore Wind Liaison (Recommendation 12) all requiring operating funds. Additional recommendations that are detailed further on will more immediately require funds, including the development of a Community Plan (Recommendation 20), and direction to undertake a 5-year Market Readiness Study (Recommendation 22).

Timeframe: Short Term (2025-2027)
Purpose: Drive progress through identified actions presented in this study.
Steps to Take Right Now:

- Assess various funding sources for applicability to these sectors.
- Make the case to legislature for additional funding to support these crucial development efforts.

What Next:

- Ensure additional funding for future years of operation and additional iniitatives as needed.

Actioned Party: Chambers of Commerce, County of Humboldt, WindLink, Cal Poly Humboldt Sponsored Programs Foundation (SPF)., Lead agencies and organizations identified in Community Engagement and mapping report.

5. Explore Business Case for Local Anchor Manufacturing for Floating Offshore Wind Projects

Through this study anchor manufacturing has been identified as a high potential activity to increase economic benefits to the Redwood Coast Region given its demand in the West Coast-specific floating offshore wind industry, and its alignment with existing regional competencies. This is particularly the case when combined with other secondary and wider steel fabrication capabilities. However, it is necessary to determine that there is sufficient market opportunity and that the costs of developing regional anchor manufacturing can be recovered in a sufficient timeframe before efforts to establish operations takes place.

Timeframe: Medium Term (2028–2032)
Purpose: Cost-benefit analysis to determine if there is sufficient opportunity for return on investment for anchor manufacturing to justify investment attraction efforts.
Steps to Take Right Now:

- Perform market research to quantify the scale of the anchor market, establish a timeline for demand, and compare costs across existing suppliers.
- Identify market entry risks and mitigating measures to determine if there are any considerations that would impact the business case.

What Next:

- If a successful business case is determined to exist, next steps will involve formalizing a plan around investment attraction.
- Local Tier 2 and Tier 3 companies that could support anchor manufacturing should be identified and educated on this opportunity.

Actioned Party: County of Humboldt, WindLink, Anchor OEMs, Local Tier 2 and 3 companies in steel fabrication

6. Secure O&M Site in Redwood Coast Region

While Phase 1 of the Harbor District's project focuses on developing a marine terminal with heavy lift capabilities, it is not clear that an O&M base will be co-located. Given the preference to have O&M capabilities close to the project site, and the long-term nature of contracts in the O&M project phase, it is desirable that plans to establish an O&M base in the region be firmed up.

Timeframe: Long Term (2033–2037)
Purpose: Secure commitment that an O&M base will be located in the Redwood Coast Region.
Steps to Take Right Now:

- Identify most suitable options for ports with potential as O&M bases in the region along with their current and potential specifications.
- Approach RWE and Vineyard Offshore to determine their needs, timelines, and willingness to commit to a local O&M base.

What Next:

- If there is developer interest, begin the process of seeking federal or state funding, and/or developer funding, to create O&M base.
- Promote opportunity to support O&M activities in the Redwood Coast Region to local businesses to create a supporting ecosystem to maximize local content.

Actioned Party: Humboldt Bay Harbor District, County of Humboldt

3.2 Workforce Development

7. Coordinate Infrastructure Timelines with Training Pipeline

Develop a timeline for planned regional major infrastructure projects (port upgrades, grid upgrades, etc.). Work with local union representatives and training programs and education institutions to ensure a skilled local workforce exists before terminal development, transmission upgrades, and offshore wind activities commence.

Timeframe: Short Term (2025-2027)
Purpose: To maximize workforce development synergies between infrastructure projects and offshore wind development

Steps to Take Right Now:

- Gather detailed information from Humboldt Bay Harbor District, PG&E, CAISO, Water Districts and project developers to map infrastructure development timelines by the end of fiscal year 2025/2026.
- Schedule meetings and agenda items incorporated into existing workforce board meeting and roundtables for 2026 with local union representatives and training organizations to align project timelines with training curricula and apprenticeship program expansion.

What Next:

- Reassess the offshore wind project development timeline and connect with infrastructure projects progress
- Conduct a workforce supply and demand study for infrastructure projects leading to offshore wind activities by 2028.

- Publish a regularly updated public timeline and workforce planning dashboard to support coordination and transparency.

Actioned Party: Humboldt County Workforce Development Board, in coordination with County of Humboldt Economic Development, Unions, Developers, Harbor District, and local training programs and education institutions.

8. Establish a Local Workforce Hiring Ordinance for Publicly Funded or Major Regional Construction Projects

Establish a local workforce hiring ordinance for publicly funded or supported construction projects in the region, setting minimum local hire targets to retain economic benefits and incentivize workforce development.

Timeframe: Medium Term (2028-2032)
Purpose: A local workforce hiring ordinance aims to ensure that the economic benefits of related infrastructure projects are retained within the Redwood Coast Region, helping provide a skilled workforce for offshore wind development.
Steps to Take Right Now:

- Convene a working group of County of Humboldt officials, local municipalities, the Workforce Development Board, and labor representatives to explore ordinance feasibility and define local hire goals (e.g., 30–50%), ensuring inclusion and fairness.
- Review legal frameworks from other jurisdictions and assess compatibility with state and federal labor laws.
- Work with relevant actors to analyze potential information sharing throughout the region
- Engage developers and contractors early to gather input and reduce potential pushback.

What Next:

- Draft and adopt the ordinance through the relevant governing bodies.
- Develop compliance, tracking, and enforcement mechanisms and attract funding to do so.
- Coordinate closely with local training providers, unions, and apprenticeship programs to ensure a pipeline of qualified local workers is in place to meet hiring targets.
- Align ordinance implementation with broader regional infrastructure and workforce development planning to avoid workforce shortages.

Actioned Party: County of Humboldt and Local Governments, Union Representatives, Merit Shop Representatives

9. Explore Additional Needed Training Facilities in the Region

Explore the need for additional multi-purpose training facilities to serve offshore wind and related industries, ensuring alignment with broader economic development goals and regional job growth priorities.

Timeframe: Short Term (2025–2027)
Purpose: Develop a deeper understanding of whether a new training facility is needed within the region.
Steps to Take Right Now:

- Conduct a comprehensive regional assessment of existing training facilities, their capacities, and relevance to offshore wind and other anticipated growth industries by the end of 2026.
- Engage with unions, employers, developers, Cal Poly Humboldt, College of the Redwoods, and other regional economic development agencies to identify skill needs and workforce gaps by 2026.

- Assess outcomes of Recommendation 8
- Ensure the assessment is aligned with the region's broader economic development and goals, identifying which training facilities (if any) would deliver long-term, cross-sector value.

What Next:

- If training facilities are identified, develop an action plan outlining funding requirements, potential sites, key partners, and implementation timelines by 2027.
- Conduct stakeholder consultations to assess alignment with long-term regional economic development strategies.
- Pursue partnerships and funding opportunities (state, federal, private sector) to advance prioritized facilities.

Actioned Party: County of Humboldt – Economic Development Division and Workforce Development Board, in collaboration with local unions, educational institution, and Tribes

10. Develop Local-First Hiring Program with Developer MOUs

Work with developers to create a "local first" hiring program or MOU that encourages hiring local workers wherever possible.

Timeframe: Medium Term (2028–2032)
Purpose: Local first hiring programs can help incentivize developers to hire locally when possible.
Steps to Take Right Now:

- Engage developers to discuss and define local-first hiring goals in 2026.
- Analyze outcomes of Recommendation 9, discussing lessons learned of hiring targets.
- Draft a preliminary "local first" hiring MOU in 2027 that outlines hiring targets, reporting requirements, and accountability measures.

What Next:

- Formalize commitment agreements by 2028.
- Develop monitoring and reporting systems to track local hiring outcomes by 2030.
- Monitor and report local hire percentages annually through 2037.

Actioned Party: Humboldt County Workforce Development Board, in collaboration with GoHumCo and offshore wind developers

11. Expand Offshore Wind-focused Educational Partnerships and Programs

Formalize and expand partnerships between local educational institutions (Cal Poly Humboldt, College of the Redwoods, etc.) and offshore wind developers to create specialized curricula for technical and 4- year degree programs, including building trades, manufacturing, offshore wind-specific classes, certifications (GWO), and internship programs.

Timeframe: Short Term (2025–2027) → Long Term (2033–2037)
Purpose: Educational partnerships are valuable for sharing resources and developing wider-ranging programs.
Steps to Take Right Now:

- Arrange a working group of local institutions, offshore wind developers, and other key industry players to identify and map the curriculum and certification needs in 2025-2026
- Identify and apply for state and federal funding to expand or create programs by 2027
- Identify any overlaps in MOUs analyzed or created in Recommendation 7

What Next:

- Develop and integrate specialized offshore wind curricula, certification, and internship opportunities into existing technical and degree programs by 2027-2028
- Launch pilot offshore wind courses and internships by 2027.
- Expand GWO and technician certification tracks by 2029.
- Graduate the first cohort aligned with a targeted hiring ramp-up by 2032.

Actioned Party: Humboldt County Workforce Development Board, Cal Poly Humboldt, College of the Redwoods, HCOE, Tribes

3.3 Leadership and Community

12. Appoint a County Offshore Wind Liaison

Appoint a County offshore wind liaison for all offshore wind related topics flowing through Humboldt County. This includes, but may not be limited to, permitting, community engagement, and coordination with developers and state/federal entities. This ensures that there is a central point of contact for opportunities or concerns around local offshore wind development, and provides a starting point for community members and others looking to be involved in the conversation around offshore wind development.

Timeframe: Short Term (2025–2027)
Purpose: Centralize coordination across permitting, community engagement, and state/federal partners.
Steps to Take Right Now:

- Draft job description and determine funding path by Q3 2025.
- Appoint interim point of contact while recruiting permanent staff.

What Next:

- Establish recurring updates between the coordinator and stakeholders starting 2026.
- Evaluate and scale position into Office of Renewable Energy by 2028.

Actioned Party: County of Humboldt

13. Create an Offshore Wind Task Force

Establish an offshore wind Task Force composed of county staff, local governments, developers, tribes, labor, education, and community organizations to meet regularly and guide long-term planning for the region. The Task Force should include representatives from groups already convening to discuss offshore wind development to ensure that progress can be made with a targeted cohort of members. Updates can be disseminated more broadly through these external boards and organizations. The Task Force will meet regularly to discuss progress and roadblocks, with separate convening entities (under the banner of the Task Force) driving progress in each of the supply chain, workforce, and community engagement areas of interest.

Timeframe: Short Term (2025–2027)
Purpose: Foster inclusive regional planning and ensure community voices guide development.
Steps to Take Right Now:

- Invite cross-sector representatives (tribes, developers, labor, NGOs) by Q4 2025.
- Establish charter, scope, and deliverables by Q1 2026.

What Next:

- Deliver annual reports starting in 2026.
- Expand scope to cover port/community interface issues by 2029.

Actioned Party: County of Humboldt (Lead), Developers, Tribes, and others

14. Collaborate with Harbor District on Community Engagement

Continue to work closely with the Humboldt Harbor District and identify ways to leverage their community engagement efforts to support the County's engagement and information sharing. This can include reciprocal hosting of links to new studies and updates, as well as co-chaired community engagement events. It is recommended that the County Offshore Wind Liaison manage this relationship and associated offshore wind-related activities and initiatives.

Timeframe: Short Term (2025–2027) → Long Term (2033–2037)
Purpose: Maximize outreach capacity and public trust through unified messaging.
Steps to Take Right Now:

- Initiate standing monthly coordination by late 2025.
- Create and maintain joint engagement progress tracker.
- Share draft community communication material and co-brand events in 2026.

What Next:

- Align public events schedule across County and Harbor District.

Actioned Party: Humboldt County, Harbor District

15. Establish a Capacity Fund to Support Tribal and Community Engagement

Support the formation of capacity draw-down funds to allow for meaningful and consistent engagement, especially for Tribes in the region. Where possible, identify and earmark public funds (through federal, state, or local grants, for example) to feed into this pot of funding, in addition to any private funding contributed by developers.

Timeframe: Short Term (2026) → Medium Term (2028–2032)
Purpose: Ensure equitable participation in planning and review processes.
Steps to Take Right Now:

- Identify initiatives which are already being developed to accomplish this and support them if practical.
- Draft capacity fund model and guidelines in 2025.
- Seek seed funding from public and private partners by 2026.

What Next:

- Launch disbursement pilot to key community/tribal groups in 2027.
- Evaluate and expand fund scale and eligibility by 2029.

Actioned Party: County of Humboldt, Developers

16. Create a Central Online Hub for Offshore Wind Information

Establish a 'single source of truth' to collate accurate and up to date information regarding offshore wind development in the region. This could be accomplished by building out the County's Offshore Wind web page to include additional resources, such as the 'North Coast Offshore Wind FAQ' or the Redwood Coast Region RISE (Resilient Inclusive Sustainable Economy) 'Regional Plan.' Alternatively, the County could support the efforts of other organizations in collating these resources, such as the Redwood Coast Region Climate and Community Resilience (CORE) Hub's Technical Resources Library. Outputs and updates from the Task Force and related initiatives described herein should also be published through this information hub.

Timeframe: Short Term (2025–2027)
Purpose: Provide accessible, up-to-date, accurate offshore wind information and project updates.
Steps to Take Right Now:

- Expand County offshore wind webpage with FAQs, meeting information, and developer links by 2026.
- Coordinate with Redwood Coast Region RISE and CORE Hub to cross-post technical documents.

What Next:

- Integrate interactive tools (maps, timeline slider) in 2027.
- Launch multilingual chatbot or inquiry feature by 2028.

Actioned Party: Humboldt County

17. Launch Public Information Campaigns

Take an evidence-based approach when educating local community on the benefits of the offshore wind industry. Launch public information campaigns aimed at informing people of development plans and the resulting benefits. Direct interested parties to accurate and useful resources on offshore wind and associated benefits and impacts, as many great resources already exist and could be utilized more effectively.

Timeframe: Medium Term (2028–2032)
Purpose: Inform public of tangible benefits and counter misinformation.
Steps to Take Right Now:

- Conduct public perception baseline survey by end of 2026.
- Design campaign strategy and identify spokespeople by 2027.

What Next:

- Roll out first info campaign tied to local training/hiring milestones in 2028.
- Refresh campaign every 2 years leading into 2037.

Actioned Party: County of Humboldt

18. Continue Community Engagement Mapping Efforts

Continue building on the community mapping efforts established through this round of studies. Over the months of study, it has been highlighted that engagement efforts are very much live, and consistent, continued engagement is the most effective tool in major infrastructure and development planning for local communities. It is recommended that County of Humboldt continue building out the engagement mapping efforts included in this study, through whichever form they find most effective.

Timeframe: Short Term (2025-2027)
Purpose: Remain up-to-date on active parties in the region and ensure that the community ecosystem is kept informed on offshore wind development efforts.
Steps to Take Right Now:

- Assign responsibility for upkeep of the engagement database (suggested this falls to the County Offshore Wind Liaison).
- Plan the upcoming engagement schedule.

What Next:

- Ensure that the engagement database is refreshed regularly.

Actioned Party: County of Humboldt

19. Create a Plan to Assess and Deliver Community Benefit Agreements

Community Benefit Agreements (CBAs) have been shown to be an effective tool in large infrastructure development, securing public buy-in for new projects while also localizing fair benefits back to the community in which those projects are being developed. For offshore wind, CBAs are largely focused on those communities in which export cables are landing to bring the power to shore. In such instances where CBAs have been procured, they have included benefits such as road repaving, tax funds contributing to coastal restoration, community education initiatives, and more. It is suggested that the County Offshore Wind Liaison undertake a review of offshore wind-related CBAs in the US, and CBAs from other infrastructure projects in California, to develop an understanding of what topics may be relevant to include for a Humboldt County-specific offshore wind CBA when the time is right.

Timeframe: Short Term (2025–2027) → Long Term (2033–2037)
Purpose: Understand the potential range of benefits to be included in a local CBA and establish partnerships with relevant community organizations to assess CBA proposals.
Steps to Take Right Now:

- Undertake a review of publicly available CBA documents.
- Develop local partnerships, such as with CORE Hub.

What Next:

- Create and maintain a library of potential inclusions for a Humboldt County-specific CBA to be used in negotiations as and when required.

Actioned Party: County of Humboldt, Community Organizations (such as CORE Hub)

3.4 Policy/Other

20. Create an Actionable Community Plan

This document should follow the established format for Community Plans in California and should focus on incorporating priority actions from this study that can be achieved through collaboration with the broader Redwood community ecosystem. Through clear communication of next steps and overall vision, it is anticipated that development processes and conversations can be undertaken more efficiently. It is recommended that relevant members of the Task Force take the lead in creating the draft Community Plan, with the intention for it to be reviewed more broadly by the Task Force and other relevant entities in the ecosystem. As additional project and infrastructure decisions are made, and engineering plans become more defined, this Community Plan can form the backbone of a Specific Plan for the region, incorporating zoning information and logistics related to onshore construction plans.

Timeframe: Short Term (2025–2027)
Purpose: Coordinate efforts across multiple agencies and sectors while keeping interested or impacted parties informed.

Steps to Take Right Now:

- Draft preliminary collaboration framework based on this assessment in 2025.
- Facilitate workshop with key parties to co-develop final plan by mid-2026.

What Next:

- Publish plan in 2026 and assign roles.
- Use plan to track implementation and guide regional check-ins annually.

Actioned Party: County of Humboldt

21. Coordinate Tri-State Collaboration with Washington and Oregon

Establish a tri-state offshore wind collaboration group between California, Oregon, and Washington to coordinate port investments, supply chain development, and workforce initiatives. Leverage POWC as a venue to support this discussion and associated relationship building. Where possible, link in with established entities and initiatives to provide support and capitalize on momentum for development in the region.

Timeframe: Short Term (2025–2027) → Long Term (2033–2037)
Purpose: Create efficiencies and avoid competition with neighboring states with respect to floating offshore wind supply chain development.
Steps to Take Right Now:

- Propose tri-state offshore wind working group under POWC in 2025.
- Schedule initial convening and identify shared goals by early 2026.
- Assess supply chain strengths and gaps in Oregon and Washington to identify complementarities.

What Next:

- Develop a joint asset map and demonstrate shared regional strengths as a join marketing brochure.
- Launch marketing campaign highlighting the complementary strengths of these states and the Redwood Coast Region.
- Co-author shared strategy brief by 2027.
- Jointly pursue federal grants, approach investors, and share progress reports annually.

Actioned Party: County of Humboldt, State and Local Governments, Industry Organizations (such as POWC, Oceantic Network, etc.)

22. Conduct 5-Year Market and Infrastructure Readiness Study

Commission a market and infrastructure readiness study to assess the market impacts to the local community, including for wraparound services such as housing, healthcare, and education. This study should consider the level of development in offshore wind likely to occur over the next 5 years in the Redwood Coast Region as influenced by the relevant regulatory environment, market appetite, and readiness of floating offshore wind technologies.

Timeframe: Short Term (2025–2027) → Medium Term (2028)
Purpose: Prepare local systems (housing, healthcare, education) for workforce influx.
Steps to Take Right Now:

- Scope study goals and data requirements by Q3 2025.
- Secure study funding and hire consultants by early 2026.

What Next:

- Use findings to prioritize housing and service investments starting 2028.
- Refresh study in 2032 based on project evolution.

Actioned Party: County of Humboldt