Changing Tack: Equity, Maritime Labor, and Offshore Wind in the Pacific Northwest

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Abstract

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The Biden Administration has championed ambitious policies to accelerate offshore wind energy development in the United States. With a focus on combating climate change, advancing clean energy, and creating jobs, the Administration aims to deploy 30 gigawatts of offshore wind capacity by 2030. The Administration has also adopted a “whole of government” approach to advancing equity for historically marginalized and underserved groups. With reference to a chain of equity-based policies at the federal, state, and local level this thesis argues that offshore wind and blue economy development must be viewed through an equity lens, including the impacts on workers. A significant demographic of the offshore wind workforce will be maritime workers. Tasked with executing these ambitious projects, workers on the docks and at sea will face changes to their work environment due to offshore wind.

This project builds upon the growing body of work surrounding offshore wind development by using criteria from the literature of equity, precarious labor, decent work, and just transition in direct dialogue with maritime workers’ perspectives. Through a “just transition methodology,”

this project centers the perspective and experiences of maritime workers to evaluate the prospects and practices of labor equity within offshore wind development. Utilizing in-depth interviews, these discussions add nuance to our understanding of existing challenges facing maritime labor while attempting to address emerging issues due to new maritime development projects associated with a potential clean energy transition. Workers discuss existing inequities, job security, opportunities for advancement, and their broader visions of the blue economy and just transition. By interviewing workers engaged in ports and staging, maritime construction, and the operation and maintenance of wind projects, this project contributes to the growing discussion around offshore wind, equity, and public policy that strives toward a just transition while also suggesting policy changes that can help create a more equitable work environment for maritime workers under the policy directives of the Biden Administration.

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Introduction:

On the day of President Biden's inauguration, Executive Order 13985, "On Advancing Racial Equity and Support for Underserved Communities Through the Federal Government," was signed. This directive established an equity agenda:

> It is therefore the policy of my Administration that the Federal Government should pursue a comprehensive approach to advancing equity for all including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality (Exec. Order No. 13985, 2021).

In his remarks about the order, the President later said, "We need to make equity and justice part of what we do every day — today, tomorrow, and every day" (Biden, 2021). While the focus of the speech is centered on racial equity, the President's remarks expand the equity framework to include "the full range of communities who have been long underserved and overlooked." With this directive in place, and with the Administration's "whole of government approach," all other policies of the Biden Administration should be filtered through these commitments and be approached with an equity lens.

The Executive Order defines equity and underserved communities as:

> For purposes of this order: (a) The term "equity" means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality. (b) The term "underserved communities" refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, as exemplified by the list in the preceding definition of "equity" (White House, 2021).

On March 29, 2021, the White House issued an official fact sheet on wind energy "that calls on our nation to build a new American infrastructure and clean energy economy that will create millions of new jobs" (White House, 2021). To achieve this goal, the administration again established a "whole-of-government approach" that envisions offshore wind (OSW) opportunities across Federal waters along the Atlantic and Pacific Coasts as well as the Gulf of

Mexico. While one of the primary goals of this directive is to address climate change by providing clean energy, a significant portion of the policy is aimed at job creation and supply chain revitalization by supporting U.S.-based suppliers. In December of 2021, the Biden Administration signed Executive Order 14057, “On Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,” which “supports a just transition” to “advance environmental justice.” The Order also calls to “promote a secure, just, and equitable future” (Exec. Order No. 14057, 2021). Despite these commitments, questions remain. How will quality jobs be measured? Will equity be considered? What existing inequities can be mitigated? How can our imagination of equity and just transition be expanded through this framing?

While the process of getting turbines in the water is a complex interaction of various federal, state, tribal, and local governments, the Biden Administration has decided on the large-scale policy decisions to push offshore wind forward, but what is the relationship between bold directives, executive orders, and the nuts-and-bolts logistics of getting turbines in the water? How this policy will be implemented and what types of projects will be chosen remains to be answered in the context of massive federal, state, and widespread public interest in offshore wind development. This thesis asks how and whether the goals – offshore wind, labor, and equity can be meaningfully integrated.

Federal Policy and “30 by 30”:

The key statement in the OSW policy directive is a target of 30 gigawatts (GW) of OWS by 2030 (White House, 2021). In reality, what does that mean? Numbers for operational wind capacity are somewhat hard to come by as most reports state the capacity “in the pipeline,” meaning that wind energy is in some phase of development. Specifically, the Order states three primary goals. 1) Advance ambitious wind energy projects to create good-paying, union jobs. 2)

Invest in American infrastructure to strengthen the domestic supply chain and deploy offshore wind energy. 3) Support critical research, development, and data sharing (White House, 2021). Under each of these categories, the Biden Administration outlines how the Federal Government will support these goals.

Within the 30 by 30 framework, workforce development is a significant talking point. The policy fact sheet states that by 2030, there will be “more than 44,000 workers employed in offshore wind by 2030 and nearly 33,000 additional jobs in communities supported by offshore wind activity” (White House, 2021). Additionally, the projections of the plan state that by 2050, offshore wind will employ 77,000 workers with 57,000 additional jobs. The plan does not state where exactly these workers will be employed. It also does not address if these are new jobs or if they are the result of job displacement. The policy claims that more jobs will be created by facilitating more offshore leases with faster approval time, and jobs will be supported by prioritizing U.S.-based suppliers of parts and materials. The policy also aims to “trigger more than $12 billion in capital investment" to meet these targets (White House, 2021). Specifically, the plan calls for port upgrades, new factories, and the increased demand for U.S. steel. While the plan does not outline where workers in this system will be working, it does illustrate that energy projects such as OSW rely on a complex and interconnected supply chain and infrastructure and a diversity of workers related to these specialized tasks. An analysis of the offshore wind supply chain will demonstrate that the offshore and dockside workforce is a relatively small but critical component of the industry; however, the complex supply chains also demonstrate why the Biden Administration looks at this policy from a “whole-of-government” approach. With this in mind, it is worth considering the relationship between scales of OSW energy policy and how state, federal, and regional policy might work in tandem to influence OSW development—especially with respect to quality livelihoods, jobs, and equity.

In the job creation category, the Administration points to permitting as an area that needs to be bolstered, as there will be few jobs without a place to build wind turbines. To meet their goals, permitting will have to be enhanced through the Bureau of Ocean Energy Management (BOEM). BOEM is an agency of the Department of the Interior with a mandate to "manage the development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way" (BOEM, 2023). To further wind development, BOEM is creating new Wind Energy Areas. Wind Energy Areas are zones that "appear most suitable for commercial wind energy activities while presenting the fewest apparent environmental and user conflicts" (BOEM, n.d.). In early 2022, eight states on the U.S. East Coast and California have active leases, with a total of 20 states with Offshore Wind Task Forces. Washington, Alaska, and Georgia are the only ocean coastal states currently without offshore wind development task forces (BOEM, n.d.). To further offshore wind development, the Biden Administration directed BOEM to set a new priority for Wind Energy Areas, increasing the development speed and driving states to respond to Federal policy choices.

The 30 by 30 goal and the definition of "in the pipeline" lack some transparency. The reason for this may arise from the fact that in the spring of 2022, the United States had only two offshore wind projects operating with a total output of 42 megawatts (MW) of production, with 932 MW in construction and nearly 19,000 MW in the permitting phase (U.S. Department of Energy, 2022). With that gap and considering that the permitting phase can take several years, there is a long way to go to reach the 30 by 30 goal. With current technology, the average offshore wind turbine produces ~8 MW. Put another way, there is a goal of 30,000 MW by 2030, and we currently have 42 MW of production, or .0014% of the targeted capacity. As of this writing in 2023, there are seven years to meet this goal. If the administration seeks to achieve this level of production, ~3750 turbines will need to be installed in seven years, or roughly ten a

week from now until 2030. Based on a combination of issues, the U.S. offshore energy industry is not currently prepared for that level of mobilization (Calkins, Goedhard, & Lennon, 2023). While this assessment is based on a complex series of intertwined factors, including permitting, stakeholder input, maritime vessel capacity, current deepwater technology, and developer interest, the role of workers is central to this discussion.

Washington State and Offshore Wind Policy:

Washington State is just beginning to establish its OSW policy, but the state has set aggressive climate goals. In 2021, the Washington State government passed S.B. 5126, or the Climate Commitment Act (CCA), which attempts to cap and reduce greenhouse gas emissions in the state. The legislation's stated goal is to reduce greenhouse gas emissions by 95% by 2050 (Department of Ecology, n.d.). The law calls for a cap and investment strategy that attempts a market-based solution to emissions. The law sets an emissions cap and then slowly lowers the allowable emissions over time. Businesses or industries that exceed emission caps can pay for allowances that get invested back into the community (Department of Ecology, n.d.). The CCA attempts to focus on environmental justice and social equity, “making sure communities that bear the greatest burdens from air pollution today see cleaner, healthier air as the state cuts greenhouse gases” (Department of Ecology, n.d.). The investments collected by this policy are designed to support cleaner transportation, community health, and climate resiliency efforts. To help ensure equitable disbursement of these funds, the state’s Environmental Justice Council is to review the funding. The council is comprised of tribal leadership, community members, labor representatives, academic researchers, and liaisons to other departments and organizations (WA Portal, n.d.). While this is a state-wide program and not specific to offshore wind development, the aggressive goal of a 95% reduction will require

new sources of energy that eliminate greenhouse gas emissions. The inclusion of the Environmental Justice Council provides a space for stakeholder decisions in the cap and investment strategy. How offshore wind will fit into this model remains to be seen.

The maritime economy is an important policy issue within Washington State, contributing a total yearly revenue of $45.9 billion from direct and indirect sources while directly employing 61,900 people and generating $7 billion in labor income (Washington Maritime Federation, 2023). Despite these economic impacts, there are often conflicting and competing stakeholders. One attempt to address maritime policy in the state was the creation of the Maritime Blue initiative. The project was developed out of the Maritime Innovation Advisory Council with the goal that "Washington State will be home to a world-class, thriving, and sustainable maritime industry by 2050" (Maritime Blue, 2019).

The Maritime Blue mission states:

> The Washington Maritime Blue Strategy will accelerate the Blue Economy as a leader in maritime cleantech innovation and best management practices that will support a growing maritime economy in all sectors with increased living-wage jobs, a healthy environment, and resilient communities. This will be accomplished through partnerships with all stakeholders, including public entities, maritime business, academic and research institutions, ports, labor groups, and community organizations. (Maritime Blue, 2019)

Importantly, The Washington Maritime Blue Executive Summary attempts to define sustainability under three principles: economic growth, ecological health, and resilient communities as such, it opens the question to equity. While the definition leaves the mission open to interpretation, by including a social justice lens, it reflects the definitions of the 'blue economy' that promote a high degree of environmental sustainability and social equity (Bennett et al., 2019). As Maritime Blue has been one of the primary hubs of Washington and the Pacific Northwest's conversation on offshore wind development, as the organizing force behind OSW in the state, there is an opportunity for discussions around community and worker inclusion that

may not be as available or as developed as in other offshore wind projects (Maritime Blue, 2023).

The existence of the Environmental Justice Council, along with the stated goals of the Climate Commitment Act and the mission statement of Maritime Blue, provides opportunities and spaces for intervention in offshore wind development projects in Washington State. In general, Washington State's position on OSW, so far, has allowed the state to take a slower approach to wind development. By focusing on the supply chain, Washington, as both a producer and supply chain hub, seems to be leaning towards supporting existing workers and infrastructure while more carefully considering implementing offshore projects. With that outlook, the focus for workers is more based on the language of "just transitions" rather than simply new job opportunities.

Washington State's OSW policy developments expanded in the Fall of 2023 with Governor Inslee's announcement of the Blue Wind Supply Chain Collaborative. This effort is focused on the manufacturing of OSW turbines and other components. Port of Seattle Commissioner Ryan Calkins says this focus on the supply chain will "create stable, living wage careers," while International Longshore and Warehouse Union (ILWU) Local 19 President Herald Ugles said, "The potential of the jobs that this industry can create is mind-boggling" (Quoted in Inslee, 2023). While the outcome of this announcement remains to be seen, it is clear that the discussion around OSW is moving forward. Washington State, therefore, is a uniquely valuable place to consider the potential role of equity and labor justice in OSW.

Federal, state, and local governments and elected officials have established policy directives concerning OSW that seek to engage in development and include an equity framework. This sets a clear policy position through the chain of government that OSW

development must be viewed through an equity lens. Development projects will include many stakeholders, but if turbines are to be built, installed, and maintained, workers will be involved.

Jobs and the OSW Supply Chain in the PNW:

Location impacts design in offshore wind projects. The deep waters off of the U.S. West Coast require new approaches to offshore wind construction. In previous projects, such as the East Coast of the U.S., offshore wind farms have been constructed in relatively shallow waters, typically 30 to 60 meters in depth. This allows the turbines to be affixed to the seabed, more technically known as a monopile design, which is basically like having the turbine on a pole. The waters of the Pacific Ocean will pose different engineering challenges. Wind turbines will need to float in the West Coast's projected wind energy areas due to depths greater than 60 meters. These designs utilize and adapt existing offshore oil and gas technologies, such as semi-submersible, tension-leg platforms, or spar designs (Kent, K&L Gates LLP, and Mainstream Renewable Power, 2022). As development projects have yet to agree on a final design, the key element of floating platforms is that a portion of the structure is submerged but not permanently affixed to the sea floor. Rather, they are anchored by a system of chains, wires, and subsea anchors. This is projected to significantly change the installation process from current shallow water projects in terms of the supply chain, scale, and impact. The Biden Administration added to their offshore wind commitments in September 2022, calling for “15 GW of floating offshore wind capacity by 2035,” providing a catalyst to deep water floating wind projects (White House, 2022).

West Coast OSW will be the first floating projects at scale, leaving many questions about their design, resilience, and impact unanswered (Kent, K&L Gates LLP, and Mainstream Renewable Power, 2022). While that does increase uncertainty and risk in development, there

is an opportunity to consider offshore wind projects more carefully. On the other hand, there is also a desire to act quickly to address climate goals. While the cost of floating offshore wind is significant, there is an often-unspoken factor about their development. Since these structures are anchored, like a very complex ship, they can be moved. Unlike a wind turbine mounted to the sea floor, a dam in a river or a power plant should, after installation, floating turbines have negative impacts, or the installation is no longer needed; it can simply be unmoored and towed away. While there is a considerable economic cost, the long-term risks are reduced.

Compared to the East Coast, the West Coast is limited in the number of ports that are compatible with deepwater offshore wind projects. With floating turbines, the majority of the construction of the towers is done on land at dock facilities and then towed into location by tugboats and feeder barges. The blades are then raised up the tower once in position using heavy lift specialty crane vessels. The towers' size, ~250 meters, and the submersible sections of each assembly mean that any port with a bridge between the dock facilities and open water rules out those ports as a site of primary construction (Kent, K&L Gates LLP, and Mainstream Renewable Power, 2022).

The National Renewable Energy Laboratory (NREL) assessed West Coast ports in its 2022 study of supply chains for offshore wind. The report used six factors for assessment, with each location being given a green, yellow, or red level ranking, with green being the best and red being the worst. The categories included laydown area (amount of land for storage and assembly), quayside length (length of dock space available), berth depth (water depth at the dock), channel depth (water depth in navigable waters from the dock to open water), bearing capacity (maximum load-bearing capacity of dock space), and air draft limit (maximum height from the water’s surface to the highest point of a vessel) (Shields et al., 2022). In the Pacific Northwest, the ports of Seattle, WA; Astoria, OR and Coos Bay, OR, were identified as the most

likely candidates for shore-based support and construction. What can be determined from the report is that compatible ports in the Pacific Northwest are limited, and existing facilities will need to be modified for use in offshore wind construction. Shoreside facilities will also determine the primary locations of dockside labor and the likely home ports for offshore vessels.

OSW will require workers; however, it is very difficult to predict how many workers will be needed and what exactly they will do without more information from developers. Since no large deepwater turbine fields currently exist to use as a model or for analysis, and the designs of deepwater OSW turbines have yet to be decided, it is difficult to map the supply chain for OSW. Many questions remain. What percentage of the material utilized for OSW will be produced domestically? Where will offshore wind leases be located? What ports will be used for staging, construction, and support? What is the projected timeline for each project, and will they happen concurrently or one after the other? These types of questions will have impacts on the number of workers needed, what roles they will fill, and the longevity of the job opportunities.

Despite these open questions, some assumptions about the OSW workforce can be made. The National Renewable Energy Laboratory (NREL) conducted an assessment of the potential workforce needed in national OSW development (NREL 2022). The study focused on two models of workforce numbers based on what percentage of the material used was domestically made and provides a corrective to the Biden administration's jobs numbers. With 100% domestic content, OSW would support ~60,000 jobs across job categories by 2030. At 25% domestic content, the number of jobs fell to ~12,000. The majority of jobs in both models are in manufacturing and the supply chain. This sector and the associated jobs remain uncertain without supply chain commitments. Other sectors, such as ports and staging, maritime construction, and operations and maintenance, have less variance between models.

Based on the NREL study, the estimated nationwide workforce is as follows:

Table 1: Average Number of Jobs between 2024 and 2030

Sector:	**# of Jobs (With a 25% Domestic Supply Chain)**	**# of Jobs (With a 100% Domestic Supply Chain)**
Ports and Staging	400	1,600
Maritime Construction	500	2,100

The Operations and Maintenance category is less dependent on the supply chain and is significantly influenced by how many projects have reached the operational stage. The NREL study projects that between 100 and 500 workers will be needed in 2024, and by 2030, OSW operations and maintenance will require between 600 and 2,300 workers nationwide. Currently, these job projections do not designate employment by state or region. For the purposes of this discussion, the term “maritime workers” includes the three categories of ports and staging, maritime construction, and operations and maintenance.

Conceptual Frameworks:

In the discussion around equity, the blue economy, and maritime labor, it is critical to establish which definitions and prior work are used for analysis. To establish how this work engages with the literature, first, a general definition of equity will be established. Then, the blue economy will be defined from the existing literature with an overview of how equity has been discussed under the blue economy. The concepts of decent work and precarious work will be examined to situate these definitions better within the maritime workplace. Finally, the framework of just transition will be utilized to engage with possible future directions for equity in the blue economy.

Existing Conditions of Maritime Labor:

Conditions have historically been difficult for workers who go to sea or work the docks across the world's waters (Magden, 1991; Fink, 2011; Campling & Colás, 2021). While these conditions have improved over time, these job categories remain places where workers often face risks and conditions that can contribute to inequities. In the past, there have been significant periods where workers have engaged in unionization, strikes, and other forms of collective power to address these inequities. At the same time, government regulation has been utilized to secure better conditions in the seagoing sector at the international and federal levels, such as the implementation of international standards like Safety of Life at Sea (SOLAS), the Maritime Convention on Labor, and Standards of Training, Certification, and Watchkeeping (STCW). Federally, most U.S. labor protections apply to the maritime sector as well as special

provisions for seagoing mariners, such as the Merchant Marine Act of 1920, commonly referred to as the Jones Act[1].

Despite the efforts of unions, workers, and policymakers, inequities continue to exist within the sector. Working on or around the water is a challenging work environment, as summarized by Captain Panos Stavrakakis, Ph.D., who is a former naval officer and current head of the Centre for Organizational Health & Wellbeing at the Health and Safety Executive Science and Research Center:

> It's clear the seafarer workplace is unique. Workers are isolated, they stay onboard for months, and may suffer from disrupted sleep and lack of exercise. They work long hours in difficult and sometimes potentially unsafe conditions and face job insecurity. They're living alongside crew who may have very different values, languages, and cultures, so they don't have their usual support network if they are struggling. In many ways, they experience a constant form of lockdown while at sea – and after last year, we all understand how that can impact mental health and wellbeing. (IMarEST 2021).

While existing International and Federal maritime regulatory policies seek to improve maritime safety, they do not specifically address diversity, equity, and inclusion issues. According to U.S. Coast Guard statistics, there are 200,000 active credentialed U.S. mariners. Of those mariners, 92.3% are male and 7.7% are female. Further demographic data such as age, race/ethnicity, or industry is not available (Baker, 2021). The lack of available data presents challenges when accessing the maritime sector for inequities, which has led to relying more heavily on antidotal and company self-reporting for evidence.

[1] The Jones Act is a multi-faceted law that includes two provisions that are relevant to this research. First, "One of the most important provisions of the Jones Act is to maintain the rights of seamen on duty and to protect them in the case of injury while working. The Act mandates that seamen be provided with adequate and reasonable food, shelter, and medical care while working aboard a maritime vessel" (*The Jones Act,* 2023). The Second element is "The most far-reaching of the coastwise trade statutes, is the Jones Act (46 U.S.C. § 55102), a section of the 1920 Merchant Marine Act that strictly speaking, only applies to merchandise being transported by water between U.S. points. The law requires that this cargo is to be shipped solely aboard vessels that are U.S.-built, U.S.-citizen owned, and registered in the U.S., which means crewed by Americans" (U.S. Department of Transportation Maritime Administration, n.d.)

At a recent panel discussion, the Maritime Administration reported that racial diversity is going down within officer positions despite higher levels of diversity at lower-ranked positions (Konrad, 2023). Racism within the contemporary U.S. maritime industry is understudied; however, it has been noted that “racism in the Maritime Industry is one of those topics that the proverbial principle of see no evil, speak no evil, hear no evil is applied” (McKenna, 2020). Tokenism is not uncommon, resulting in “companies that hire one or two women or minorities and then take a victory lap, which exacerbates the problem” (Lewis, 2021).

The U.S. Merchant Marine Academy, state maritime academies, and the U.S. Coast Guard have also recently been involved in sexual harassment scandals. According to CNN, “Between July of 2019 and December 2022, 26 students alleged they had been sexually assaulted on or near campus or at sea” at the U.S. Merchant Marine Academy (Hicken 2022, 2023). Federal investigations led to the passage of the Safer Seas Act in December 2022, an act intended to fight sexual assault and sexual harassment at sea (Lewis & Kuebe, 2023). While it remains unclear if the legislation will reduce harassment and assault within the industry, the scope of the investigation that led to the act demonstrates that these are not isolated incidents. Issues of harassment and discrimination within the maritime industry are not limited to seagoing workers. In 2018, four female dockworkers sued the International Longshore and Warehouse Union (ILWU) for discrimination over loss of pay and seniority due to pregnancy (Levin, 2018).

In an example with ties to the OSW industry, a now former Vice President of Wind Services at Crowley Maritime was filed with a sexual harassment complaint (Martin, 2023). The incident occurred while the employee was working in Eureka, CA, developing a windport terminal. According to an editorial by Tribal Chairman Joe James, “While the troubling history of Crowley’s workplace culture has been known for some time, the publicly available evidence suggests that high-level executives within Crowley were aware and complacent in allowing

misconduct to thrive" (James, 2023). James goes on to say the community should renegotiate their agreements with Crowley and suggests an "evaluation of the human rights record of each applicant" be applied to future partnerships.

Further challenges exist in the maritime sector when one of the primary agencies responsible for enforcement, the U.S. Coast Guard, has had significant issues around racism, hazing, and sexual misconduct. In 2015, the agency conducted a study called "Culture of Respect." This report documents how Coast Guard members complained of a culture that "ostracized and retaliated against reporting abuse and that those who did come forward often had their complaints dismissed by supervisors" (Ellis, 2023). The results of this study were concealed, held in a locked safe, and referred to as a "need to know" document. It goes on to illustrate how the perpetrators of those actions faced little to no punishment while the victims were blocked from advancement or could face an involuntary discharge. Even under current U.S. Coast Guard leadership, the report would not have been made public without whistleblowers and congressional pressure (Ellis, 2023). It seems unlikely that an agency with such internal behavior would take allegations from the broader maritime sector seriously.

Mental health within the maritime industry has become a more prominent issue of awareness and study in recent years. During the COVID-19 pandemic, U.S. mariners were surveyed through the University of Washington. The study found that "20.7% of respondents had scores indicating major depressive disorder is likely" and that "mental health outcomes were not evenly distributed" (Baker 2021, p. 5). Gender, age, job category, and job location were all found to influence outcomes, with women and younger workers reporting higher rates of adverse mental health (Baker 2021, p. 5).

While some barriers to entry and historic inequities have been reduced or eliminated within the maritime sector, the work environment still contains factors that result in unequal

distribution. With existing inequities in the maritime work sector, it is difficult to claim that the current state of the maritime workplace is an equitable work environment. As OSW has been established under an equity framework, maritime workers and policymakers have an opportunity to intervene directly to correct inequities.

Equity and The Blue Economy:

There is a robust body of literature surrounding equity when it comes to equity in economic development, labor, and the environment, often focused on issues such as community health and education. While working definitions of equity include similar themes, there are often differences in context and application, leading equity "to carry multiple contrasting meanings" (Minow, 2021, p. 172). For this paper, it is vital to establish a baseline definition of equity as compared to other related concepts, such as equality and justice.

Within the discourse of public policy, Martha Minow discusses the shift in discussion from equality to equity as "the turn to 'equity' marks a search for different results" (Minow, 2021, p. 171). She points out that both equality and equity have been "ambiguous and malleable" and that by examining the antonyms of inequality and inequity, more precise definitions might be found (Minow, 2021, p. 173). To that point, equity can be used to address existing issues of inequity or put into common language by DeRay McKesson, "The difference between equity and equality is that equality is everyone gets the same thing and equity is everyone gets the things they deserve" (Shieber 2017, as cited in Minow 2021, p. 174). For policy consideration, "maintaining discussion at an abstract level, though, will not advance an understanding of the choices and priorities lying ahead," but "concrete policy issues expose genuine choices and conflicts" (Minow, 2021, p. 190). This contradiction shows that equity is an ongoing process that requires "persistent checking on what actually works" (Minow, 2021, pp. 178-79).

Some suggest that to achieve equity, “true equal opportunity requires changes in structures, investment, and reallocation of resources” (Barry, 2005, as cited in Minow, 2021, p. 178). This equity framing envisions a much bolder application of an equity framework that would push against less ambitious use of the term rather than suggesting that if equity is going to be used as a policy framing, why not go all the way? Structural and economic changes to address inequities open the door to fundamental policy changes that could begin to address systemic issues such as white supremacy and settler colonialism that result in current inequities.

For this discussion, the following chart helps in distinguishing between equality and equity and provides valuable criteria for analysis.

Figure 1: Equality vs. Equity: (Minow, 2021, p. 180).

Equality	Treat everyone the same; resist group classifications	Focus on opportunity going forward	Ensure fairness, neutrality, impartiality	Evenhanded treatment and provision, whether leveling up or leveling down
Equity	Treat each individual differently based on needs and backgrounds OR identify and address different needs associated with different groups	Focus on past and present uneven playing fields and distribution of advantages and disadvantages	Reallocate resources and rules to overcome existing barriers and differences in outcomes and representation of particular groups	Substantive (minimal?) guarantees OR Reduce range of variance in access to resources at the top as well as at the bottom

Concepts such as equity and justice have also circulated in the discourse of sustainable development. The World Bank defines the blue economy as the "sustainable use of ocean

resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystems" (*What Is the Blue Economy?*, 2017). Equity is noticeably absent from this definition. As the term was initially defined by the Small Island Developing States (SIDS), the blue economy is not just economic benefit but also social equity and sustainable development practices (Bennett et al., 2019, p. 991). A substantial body of literature has developed that argues for the inclusion of equity in the blue economy (Cisneros-Montemayor, 2019; Cisneros-Montemayor et al. 2019, 2020, 2021, 2022, Singh et al. 2021; Crosman et al., 2021). Core to this argument is that "the blue economy must feature environmental sustainability and social equity as core tenets," existing as a construct only with conditions that include a high degree of environmental sustainability and social equity (Bennett et al., 2019, p. 991).

The existing literature often focuses on ocean governance and frameworks and identifies high-level conditions for equity under the blue economy. Utilizing these frameworks, questions to guide discussion have been suggested that break down into asking: What benefits occur? When do benefits occur? Who receives benefits? (Cisneros-Montemayor et al. 2021, p. 3). The transparency of this process is part of procedural justice or a fair process (Crossman et al., 2022, pp. 3-5). Ocean energy projects, including OSW, have risks that affect ocean stakeholders, including maritime workers (Cisneros-Montemayor et al., 2019, p. 4). Under these definitions, OSW projects can only be considered blue economy projects if they are equitable. Current literature does not address the core questions of an equitable blue economy for U.S.-based maritime workers.

Decent Work and the Just Transition:

Equity and the blue economy can be helpful for generally identifying issues for maritime workers; however, more specific criteria are necessary to identify existing inequities and discuss

policy recommendations. The concepts of “decent work” and “precarious labor” provide criteria for accessing maritime jobs. Given the historical and current trends for exploitation within the sector, these markers can help avoid repeating historic injustices during a transition.

“Decent work” is a concept developed by The International Labor Organization (ILO) and provides a mechanism to measure job quality. At the same time, there is debate on the usefulness of a global measure due to a lack of comparable data and the term's vagueness (Burchell et al., 2013, p. 451). Decent work has been used to address labor conditions in the maritime sector through the Maritime Labor Convention of 2006. Notably, the U.S. has not ratified this agreement (International Labor Organization, 2023). Literature on fishing labor has connected equity and decent work, noting that decent work is a “good starting point for examining labor issues in the sector and identifying avenues for going beyond minimum requirements” (Garcia Lozano, A. J. et al., 2022, p. 4). While the ILO has passed the Maritime Labor Convention, the more generalized categories of decent work are more useful when assessing workers who are both considered mariners and those who have other job categories in OSW labor.

The decent work agenda includes ten elements:

1. Employment opportunities
2. Adequate earnings and productive work
3. Decent working time
4. Combining work, family, and personal life
5. Work that should be abolished
6. Stability and security of work
7. Equal opportunity and treatment in employment
8. Safe work environment
9. Social Security
10. Social dialogue, employers’, and workers’ representation

Source: ILO 2012

Precarious work provides another useful framing and tool for identifying inequities in maritime work. Precarious work is “employment that is uncertain, unpredictable, and risky from

the point of view of the worker" (Kallenberg, 2009, p. 2). Five criteria can be used for assessing whether a job is precarious or not, including 1) "Work that is insecure, unstable, and uncertain." 2) "Work that provides limited economic and social benefits." 3) "Work that has limited statutory entitlements provided by labor laws." 4) "Jobs that have little potential for advancement to better jobs." 5) "Jobs that expose the worker to dangerous and hazardous conditions and do not provide much protection against accidents and illness at work." (Kallenberg, 2014, p. 2). While not all maritime labor fits these criteria, the interview results in this research exhibit these elements. Precarious labor has significant impacts on workers that have consequences not just in the workplace but also on workers at home, in their communities, and in their personal lives (Kallenberg, 2009, p. 2). These working conditions can lead to "greater economic inequality, insecurity, and instability" (Kallenberg, 2009, p. 8). Precarious working conditions have been shown to impact workers' health, community participation, and educational opportunities (Kallenberg, 2009, pp. 9-10). Precariousness is not distributed equally, with minorities being more likely to be displaced from their employment (Kallenberg, 2009, p. 10). The criteria of precarious labor can be used as an indicator of inequitable conditions in the workplace.

Just transition is a framework that includes equity and justice to address the "interconnected web of inequities" found in the movements for economic, environmental, and climate justice (Nguyen, 2022). This approach attempts to address the demands of historically marginalized communities and displaced workers, including those pursuing decent work beyond precarity, while addressing the need for tackling sustainability and climate change. The concept is a principle behind well-known policies such as the Green New Deal (Tienhaara & Robinson, 2022). These ideas originate from the labor movement, specifically the International Oil, Chemical, and Atomic Workers Union, in the late 1980s as a response to potential job loss or transfers around superfund sites (Mazzochi, 1993). The idea demands that workers should not

have to shoulder the costs of transitioning to clean air and water (McCauley & Heffron, 2017). OSW projects are, in part, a response to the need for energy that reduces societies' need for fossil fuels. The oil and gas industry employs many people, including maritime workers, for whom reductions in fossil fuel use will likely result in displacement. Acknowledging these impacts is part of a just transition strategy that seeks to mitigate previous harms and move toward future projects that are more equitable and just. It should also be viewed holistically as “a principle, a process, and a practice” (*Just Transition Principles*, 2022). A just transition framing moves the conversation from addressing existing inequities and creating a more equitable maritime labor force, but rather, it seeks to reimagine a world and workplace that includes both workers and community in transition decision-making.

According to the International Labor Organization:

> A Just Transition means greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities, and leaving no one behind. A Just Transition involves maximizing the social and economic opportunities of climate action while minimizing and carefully managing any challenges – including through effective social dialogue among all groups impacted, and respect for fundamental labor principles and rights. (International Labor Organization, 2021).

A just transition framing that is useful for this analysis has been proposed that merges different definitions of a just transition into an acronym JUST: Justice, Universal, Space, and Time (Heffron & McCauley, 2017, p. 77). Justice includes but is not limited to distributional justice, procedural justice, and restorative justice. Universal includes recognition and cosmopolitanism, while space includes the location of where things are happening. Time includes the speed of transition (Heffron & McCauley, 2017, p. 77). Identifying areas for improvement in these categories helps establish potential gaps in the current discussion around worker transitions and equity in OSW.

“Offshore: Oil and gas worker’s views on industry conditions and the energy transition” was a research project conducted by several NGOs with current oil and gas workers from the United Kingdom (U.K.) in the North Sea. The report uses a just transition lens and argues, "The rhetoric of a just transition means nothing if impacted workers are not at the heart of shaping policies that affect their livelihoods and communities” (Platform, Friends of the Earth, and Greenpeace, 2020, p. 6). This report is from the context of the U.K.; however, several findings are relevant to the discussion of equity and transition in the U.S., including concerns over redundancy, health and safety concerns, job security, moving due to work, and retraining. The report ends with a call to action, “There is no just transition if it is not worker-led” (Platform, Friends of the Earth, and Greenpeace, 2020, p. 28). In the spirit of that call to action, this analysis uses the voices of maritime workers to help identify existing issues that may impact worker equity in OSW projects.

Methods, or a "Just Transition Methodology":

Informed by the direction of a just transition framework, this thesis introduces and attempts to follow a "just transition methodology" which centers the impacted community–in this case, the maritime worker–at all levels of the research process, engaging with the core of just transition principles through the direct inclusion of impacted groups. In this methodological approach, I propose that the researcher is strongly associated with, or a member of the impacted group. In this thesis, I, as a mariner, have formulated the core research question based on my experience, perspective, and ongoing dialogue with my colleagues in the industry. I used participant observation with the lens of lived experience to establish the background and enhance the scope and depth of the problem framing. I then conducted interviews with other maritime workers to incorporate a broader range of perspectives, deepening the analysis and community involvement. In the case of this work, I propose policy recommendations. In the full vision of this methodology, these proposals would be presented back to the impacted community for evaluation, feedback, and potential decision-making. In this framing, the research incorporates the impacted community at all levels of the process, from the researcher to the subjects to providing peer review, empowering the impacted community as the experts in their own experiences as well as those best situated to provide meaningful results.

In the spirit of this vision, I establish my own connection to the research. My relationship with this work did not originally start with me but with my grandfather, who spent his working life as a shipyard welder. My earliest experiences with ships and the maritime world are with him as we drove around on his time off or after he retired. As we walked the docks and inspected the yard, he would say hello to the workers he knew, and we would find out the latest news around the waterfront. We would stop and look at the work, and he would tell me what passed inspection and what needed improvement. He was proud of the work he had done, and he

passed along that there is dignity in this labor. Despite the fact that he never said anything negative about it to me, even then, I knew it was not easy work. Crawling down into the hull of a ship and welding in the bitter cold of a Great Lakes winter or in the blistering heat as the sun beats down on the steel hull is challenging. In my youth, there were three active shipyards in my hometown. Today, one remains. Through the loss of those jobs, the city changed. People were displaced or forced to find other employment. I never worked in the yards, but I could not stay away from the ships.

My 15+ year career at sea started shortly after college when I volunteered for a research vessel. I got paid in old, donated food, but I had an adventure and got hooked on a career at sea. I have worked on research vessels, passenger vessels, historic rigged sailing ships, ATB tug and barges, construction barges, and offshore oil and gas supply vessels primarily in the waters of the U.S. East Coast, Gulf of Mexico, and the Great Lakes. Throughout those experiences, I have had wonderful days at sea, and I have had miserable days at sea. At various times, I have held positions as an ordinary deckhand, an able seafarer, a wiper, an unlicensed engineer, a cook, a mate, and a captain, gaining experience in a wide variety of ranks. I earned my license with the U.S. Coast Guard by climbing the hawsepipe. A hawsepiper is a mariner who starts at an entry level and works their way up through sea time and training as opposed to a licensed officer who attends a maritime academy. In the industry, it is referred to as “the longest climb,” a reference to the challenges of that career path.

As an undergraduate, I studied sociology, and often I viewed the relationships aboard a ship through that lens. Once, while reflecting on my time at sea, I said I have learned more about race and class on the deck of a ship than I have in any classroom. That remains true. Throughout those days at sea, I had hundreds of conversations with my many coworkers about our shared work experience. My coworkers came from diverse backgrounds, each having their

own unique relationship to the work. Late at night, on the bridge of a ship, there is little to do but talk and look out the window. In the eight years prior to this research, I worked in the offshore construction and supply sector in the Gulf of Mexico, supporting the oil and gas industry. As I saw new technologies coming online and shifts in the offshore energy sector taking place, I wondered how they would impact mariners. It was with that framing that I came to this research, and everything I have done in this research and analysis comes from that background.

After establishing the initial framework of the research, I used participant observation to further my understanding of the wind sector and prior conversations around work in OSW projects (Bernard, 2017). From the Fall of 2021 through the Fall of 2023, I attended and observed discussions around OSW in the context of policy meetings, public information sessions, and professional conferences held by academics, policymakers, and advocacy groups. At these events, I took notes, collected printed materials, and, when appropriate, recorded presentations. This data contributed to the interview process by providing richer and more in-depth questions, resulting in deeper conversations during the interview process. My participation and analysis of those events were filtered through my work experience, which led to a deeper understanding of the presented material while highlighting potential problems that emerged from my point of view as a maritime worker.

Based on my previous conversations with maritime workers, I knew interviews would produce rich results. I conducted semi-structured interviews with five participants between August 2022 and March 2023. The participants were selected from the ports and staging, maritime construction, and operations and maintenance sectors, which were identified by the National Renewable Energy Laboratory assessment as sectors most likely to be impacted by offshore wind (OSW) development in the Pacific Northwest (PNW). Using my existing network of contacts, I reached out for recommendations for individuals who might be interested in

participating in this research. In qualitative research, we refer to this methodology as the snowball method (Given, 2008, p. 745). All initial outreach was conducted over email, including a brief introduction to myself and a brief explanation of the research's focus. Some attempts to contact workers went unanswered; others felt they did not know enough about OSW to provide a full interview.

To meet the needs and schedules of the participants, interviews were conducted either in person or through video conferencing via Zoom. Each interview was recorded either by utilizing Zoom's built-in recording function or through an iOS-based voice recorder application after interviewees provided their consent. Additional notes about body language and tone were recorded in a notebook. Interviews had a duration of one to two hours. Participants were asked to allocate at least one hour for our conversation and be available for at least one set of follow-up questions over email. In each case, interviewees were happy to talk well past our allocated time. To help facilitate a comfortable environment for each interview, I recommended that the participants select a spot where they could talk for the duration of each discussion. This resulted in remote interviews taking place on the deck of a sailboat and from their home living rooms. In-person interviews mirrored some stereotypes about maritime workers and were conducted in waterfront bars in the Puget Sound area.

In-person interviews on the job site would have been the preferred method of conducting qualitative research; however, the nature of maritime work posed barriers. The transient nature of the work, port security concerns, and prolonged work schedules made scheduling a more significant challenge than might be found in other sectors. The issue of access to communication is reflected in the interview results and provides a barrier to research within the maritime workforce.

All interviews conducted were semi-structured. I prepared a guiding document of basic questions and themes that I wanted to cover, but for the most part, the interviews were allowed to ebb and flow naturally from topic to topic. I relied heavily on my background to allow the conversations to flow as naturally as possible. As is common in the maritime sector, in my experience, there were many asides for “sea” stories that illustrated a broader point. I relied on my background to interpret meanings from indirect responses, silences, and topics that might otherwise be missed without prior experience. Not all participants agreed to share their names for the project; for the sake of clarity, all names have been removed and replaced with a descriptive moniker representing their work. Interview data has been analyzed using an inductive approach and grouped into themes to illustrate commonalities between interviewees.

Finally, the well-known phrase “to swear like a sailor” holds some real-life truth. In my personal experience, this is often true when speaking with maritime workers and other working-class people. Through the interview process, most of the participants swore rather frequently and talked bluntly. I have chosen to include that language to represent both the participants' direct words and illustrate a mode of discussion that is common in the sector. This norm within the maritime industry can be viewed as a habitus or an “internalized as second nature” way of behavior that reflects how maritime workers see, move, and talk in the world (Bourdieu,1990, p.56).

Interview Participants:

All of the resulting participants worked in the maritime or energy sector at the time of their interviews and represent a sample of maritime job categories that I identified as being included in a potential PNW OSW project. Before examining the results of the interviews, I will first provide a list and a short description of each interview participant.

The Deep Sea Sailor: This mariner holds a second mate's license with the U.S. Coast Guard. She is in her late twenties and is a member of the International Organization of Masters, Mates, and Pilots. At the time of our interview, she worked primarily on container ships as a deck officer with seven and a half years of seagoing experience. She grew up in the Puget Sound region and remains open to the idea of working in OSW at some point in the future. We met through a mutual acquaintance. She has received some online exposure for sharing her perspective on the maritime industry through social media. As a licensed deck officer, she represents a category of workers who would operate vessels in OSW projects.

The Marine Construction Worker: This worker has held a number of various positions in marine construction projects. He has moved around due to his work and is open to projects nationwide. He primarily works as an unlicensed engineer but has also worked as a barge supervisor and crane operator. He has been working around the water since his late teens and is currently in his mid-thirties, recently married, and expecting his first child. As a construction worker, he represents both a transient worker and the type of worker who could be doing any number of projects on land or at sea around OSW development.

The Blade Technician: A self-described "wind cowboy," this worker is 22 years old and has four years of experience as a blade turbine technician. The only worker interviewed who has experience in OSW, this wind cowboy calculates that he has accumulated enough time on OSW turbine blades to be one of the most experienced technicians in

his field located in the U.S. While he does not live in the PNW, he travels across the country when he is dispatched to different projects. This worker provides insight into the technician role in OSW projects and is the only worker interviewed with existing experience in OSW.

The Longshoremen: Representing a critical land-based part of the OSW maritime workforce, this member of the International Longshore and Warehouse Union (ILWU) has 15 years of experience on the docks of the PNW. Primarily working out of the Seattle Hall, he spent 11 years as a casual worker and the last four as a member holding a B-card. He works in various roles around the port, depending on the needs of the dispatcher. In addition to his role around the dock, he is a father and artist. This worker represents the dockside labor that would be involved in the OSW supply chain, shoreside construction, and heavy lift operations.

The Naval Architect: This worker holds a unique position. He started his sailing career as a teenager working in commercial fishing but advanced through training and certifications to hold a 1600-ton Ocean Captain's license with a towing endorsement. Recently, he pursued a lifelong goal and completed a degree in Naval Architecture. He now uses his onboard experience to inform his design decisions, which overlap with the demands of the OSW industry. He is 36 years old and lives in the Seattle area. With experience as both a tugboat crew member and architect, this worker bridges the gap between design and implementation in OSW projects.

Results:

Interview responses were grouped into themes using an inductive process. Four main themes emerged, including motivations and benefits of maritime work, challenges for maritime workers, barriers to entry and advancement, and building equity and just transition in the blue economy. First, interviewees expressed why they worked in the maritime sector, explaining why they enjoyed the work and continued to participate despite sometimes challenging conditions. Next, the challenges of the industry are explored, including impacts on health and wellbeing, the impact of boom-and-bust cycles, and the social dynamics of the workplace. Third, the barriers to getting a job and the challenges of training and advancement are discussed. Finally, workers discussed the opportunities of OSW and blue economy projects and engaged in ideas of worker-led transition.

Noticeable differences were found in seagoing job categories compared to dockside labor. One contributing factor that stood out was the longshore worker was in a union. Both the Deep-sea Sailor and the Longshoremen were members of a union. They expressed greater access to educational opportunities and less instability in their positions when compared to the non-union workers interviewed.

Motivations and Benefits of Maritime Work:

Before exploring challenges and barriers in the maritime workplace and opportunities in OSW jobs, it is essential to acknowledge that all participants interviewed enjoyed significant aspects of their jobs. For the interview participants, maritime work provided many benefits, which stood in contrast to areas they felt needed improvement, suggesting a strong desire to see a more positive workplace overall. This perspective also suggests that maritime work can be viewed as decent and desirable work with the right conditions.

As an opening question, each participant was asked what drew them to the work and why they continued to participate in it. All of the participants included a statement about enjoying being near the water and the opportunities for travel. “I liked the adventure. I liked the boats. I liked the possibility of making money,” (The Naval Architect) or “I’ve done a lot of great work with great guys from all over the world. I meet cool people. I’ve been to a lot of cool places” (The Blade Technician). Other workers expressed a deeper connection to the water or their labor. The Marine Construction worker said, “I love working on the water. I fell in love with that kind of work. Working on land bores me. Being out there [on the water] just makes me light up a little bit.”

The Longshoreman drew connections across place, history, and workplace organizing:

> This is the best job I could ever ask for. I like being close to the water. I like working with heavy equipment. I like the history behind it. The history of dockworkers, that connection to heritage. Being on top of a ship at night. You get to see the city from six stories up. Who else gets to experience that? The ILWU is a huge factor. Everyone I work with is like family. It’s part of why I work there and why I put effort into it every day. I never take for granted all the work and hardships that people have put into it. I remember that when I interact with my fellow workers and the employer. It’s us against them. We need to stand together. We know how to do this. Get out of our way. (The Longshoremen)

Another significant factor for all of the workers interviewed was the time off and somewhat flexible schedules. “That amount of time off was like holy fuck! What do I do with myself? Like this is so much time” (The Deep Sea Sailor). “The flexibility. It can be unpredictable, but I can also take a month off if I want” (The Longshoreman). In addition to the schedules, all interviewees said that they were generally happy with their wages and benefits; however, several workers provided caveats. All of the workers other than the Longshoreman said that they probably did not make enough money if they had children to take care of and knew fellow workers with families who struggled with the wages.

A significant area of pride for all of the workers involved was the feeling of being a part of something important.

> It makes me feel productive to be constantly on the move. Moving cargo from point A to point B. It's just a very fulfilling job, not just being on the ocean and feeling free, but I just feel like you have a part in the global scheme of things. It is really powerful. (The Deep-sea Sailor)

As workers in the global supply chain or the energy sector, they expressed positive feelings about how their work felt important. However, that work also posed challenges and barriers.

Challenges for Maritime Workers:

Despite the enthusiasm for their work, not all elements of maritime labor are positive. The rates of worker recruitment and retention and the realities of the job reflect a challenging work environment. Challenges include health and well-being, boom and bust cycles, and the dynamics between co-workers. Within the responses, the interviewees report experiences that can define their jobs as precarious and working conditions that conflict with decent work criteria, resulting in a workplace that can foster inequities.

Health and Well-being

There are hazards to the job. Put starkly, "You're risking your damn life. You are. It's a dangerous fucking job, no doubt about it. Sometimes you have to do some against-the-rules shit. There are people who die out there" (The Marine Construction Worker). Under the definition of precarious work, "employment that is uncertain, unpredictable, and risky from the point of view of the worker," elements of maritime work in the U.S. can be viewed as precarious (Kallenberg, 2009, p. 2). In fact, all of the workers interviewed casually mentioned the dangers of the job in some fashion but did not elaborate unless pushed, a trend observed in many previous dockside and shipboard conversations. The truth about one of the hazards of being a blade technician was not revealed until he was asked about long-term career goals.

> I don't know if I see it as a lifelong job. Strictly speaking, because there is a chemical component to it. In any blue-collar job, when you are handling chemicals[2], you will have a certain lifespan of when you can work with it. I know people who have been working for only five years who are already seeing damage (The Blade Technician).

Sleep was another factor related to the decent work concept of adequate working time and a safe working environment. While officially regulated by law, the Marine Construction Worker admitted that while working on a vessel, he "worked a 36-hour straight shift once. I lacked a lot of sleep. I would work noon to midnight, switch to midnight to noon, and often have to stay up 24 hours working straight through" (The Marine Construction Worker). While the interview participants often glossed over the physical dangers, they did talk openly about the impacts the job can have on their mental health and home life.

All three of the interviewees who worked or had worked on vessels expressed some concerns over mental health, a concern that reflects many aspects of decent work and will vary by the individual. Most of their statements were in terms of their relationships with family and friends while at work and their ability to communicate with them. This was also reflected in comments about disruptions to the work schedule and how critical it was for them to go home on time. "When you are done with your hitch, it is important to go home. Each hour of that off time is precious. It's so precious and important to be home" (The Marine Construction Worker). The lack of communication was also a problem on tugboats. "You're away from home, friends, and family. No internet. Hard, arduous conditions. Stuck out in the Bering Sea going backward. I remember thinking. This sucks!" (The Naval Architect). This reality of the job can result in feelings of loneliness while aboard but also while at home:

> It's very lonely. And I mean, it depends on the person really. It's lonely, but I never feel lonely. It's like half of your life that you're on the ship. You're not fucking around, whereas when you're on shore, you have nights or weekends, and it breaks up the work life. When you're off the boat, everyone else is working, and you're just kind of like shit, I'm alone again (The Deep-sea Sailor).

[2] The chemicals being referred to in this comment are part of working with composites such as epoxy.

The instability and inability to communicate contribute to a challenging environment for maintaining a healthy mental state. The Deep-sea Sailor has even posted YouTube videos[3] about her experience being stuck on a ship during COVID-19. (Wolczko, M, n.d.). She explains that the level of support from maritime industries is minimal. “It’s just very generic suicide prevention. Which is cool for that situation. But when it comes to other support, it is just not provided by anyone I know” (The Deep-sea Sailor). She suggests that companies should provide services that support a wider variety of issues, such as general depression, not being happy with your job, issues with family at home, and better ways to communicate.

How a worker is able to balance these issues is important in their overall success in these industries.

> I’ll be candid [about the home life]; that part is hard. Some people handle it really well. I feel like it is one or the other. They either handle it really well or terribly. There are arguments. [With people back home.] I have been that guy. Really, what it is is that you are both frustrated with the situation. I really, really respected the people who made it work. I could have been a better person with that. All of that stuff is hard to deal with when you are away. (The Marine Construction Worker)

Challenges over basic issues of safety and wellbeing can increase inequities. Additionally, the nature of the industry can also cause instability.

Boom-and-Bust:

Many maritime and energy sector workers have experienced boom-and-bust cycles, which are events that increase uncertainty, create instability, and can become a barrier to opportunities for employment and advancement. The concern over these cycles was raised during our interviews both as an existing issue within the sector and as a potential issue for OSW. Referring to the oil and gas sector, the Marine Construction Worker said:

[3] Despite other participants asking for anonymity, the Deep-sea Sailor agreed to be identified based on her already existing social media presence.

> It is sweet to be in when the stakes are high, and the money is flowing. The money wasn't great when I was there recently, but it was better than what I had been making at my last job. When you are involved in the boom-and-bust, you feel more engaged with politics because the swings impact your pocketbook. At a certain point in life, it probably isn't a good idea to be living like that. During those bust times, all it takes is one mistake to lose it all. After that, what do you have? (The Marine Construction Worker)

The only worker with actual experience in the OSW industry explained the ebb and flow of workers in the OSW sector. His experience was with the Block Island Wind Farm.

> At first, we had 20 people out there every day for the first year just to do the install and tweak them. They are fine-tuned machines that you want to tweak to get the most power out of them. Once it is broken in, there's less maintenance. Now it's probably down to six people just keeping things smooth. This is basically a prototype project. The manning is going to be higher than normal. (The Blade Technician)

The Naval Architect also explained this process: "They [the workers] are going to build, say, 100 units, and then it's more or less done." This boom-and-bust led both the Deep-sea Sailor and Longshoremen to be pretty skeptical of job opportunities. The Longshoremen said, "The question is, is it for the short term or the long term? If it's work that is only going to be there for a couple of years, I wouldn't be interested in it." In sectors that historically have boom-and-bust cycles it will be challenging for OSW to establish working conditions that break from those trends.

Crew and Coworker Dynamics:

"The darkest thing is being on a boat with a shitty crew" (The Offshore Construction Worker). This crew experience can be a challenge and a barrier that stretches across current and future workers in the industry, potentially causing significant issues for diversity, equity, and inclusion by creating an unsafe and unequal workplace in treatment and opportunity.

Working with difficult people is a challenge in any work environment, and each of the interviewees had multiple stories of working with difficult co-workers or management. Some put it bluntly, like the Blade Technician, "I think the energy sector is full of really terrible people that

don't understand blue-collar workers at all." However, later in the interview, he said that the situation improved as more workers developed on-the-job experience and received promotions into management positions. The Longshoremen also listed "difficult" co-workers as one of the main challenges in his job and wished there were better tools to handle those people at work. With both of these positions, the ability to leave the job site at the end of the day is critically different than for seagoing maritime workers.

In seagoing positions with work periods that can last months and where a worker lives with their co-workers 24/7, crew dynamics were a bigger problem. When I asked the Naval Architect about some of the biggest reasons new people in the industry left, his response revealed:

> It's the old salty guys. The old dudes who are just dicks. I guess I tolerated it. I guess it was how I presented myself to them to get by.[4] There's been young guys, and I know that they just shouldn't talk to them. I think that it is up to the company. What does that company want to be? Do they just want to get the job done for a short-term result, or do they want to be better? Maybe that means letting some old crew members who aren't that great go. Or, despite being dicks or harassing people, they might actually be good at their job. In this world, I think there is a lot of looking the other way situations (The Naval Architect).

"I've had some really shitty senior officers in the past, but that hasn't been the majority. So, I think just getting lucky with the crew that you have and being able to work really well with people is also a huge part." (The Deep-sea Sailor). In terms of some of the "shitty senior officers," she said, "I try not to be ageist, but I have this thing against older people who just refuse to get with the times." While the interview responses did not explicitly say "difficult crew dynamics" include dealing with co-workers who were discriminatory, or participated in harassment, based on my personal experience this is what they to what they are referring. These dynamics can further issues of inequity and establish further barriers for workers to advance or stay in their workplace.

[4] It is worth noting here that the Naval Architect identified as a white male from the PNW.

Barriers to entry and advancement:

As new opportunities in maritime work become available, it is essential to consider the existing barriers to entry in maritime labor. While some job categories are likely to change in OSW development, many of the core job positions for waterfront and offshore workers will remain more or less the same. Opportunities for jobs and access to training and education are directly linked to equity and decent work. Equal opportunities in employment and training that are required for advancement are critical to an equitable workforce. To meet the policy directive of equity in OSW, understanding the existing conditions is necessary to meet the unique needs and backgrounds of maritime workers.

To better understand the process of joining the maritime sector, each interview participant discussed how they entered the maritime workforce and discussed issues of ongoing training and certification. For many of these workers, maintaining a work/life balance during training periods and the initial phases of job placement within their industries was difficult. In this category, there were clear distinctions between union and non-union workers. Union workers had considerably fewer barriers to training and advancement opportunities through their unions compared to non-union workers. There was a slightly different path for the Blade Technician, who was directly recruited from school and given aggressive company-sponsored training in Europe.

Getting a Job:

For many maritime workers, securing their first job can be difficult. “One of the things that is hard about getting a job on a boat is that you have to have worked on a boat to get a job on a boat” (The Offshore Construction Worker). Other workers had more connections to the

sector. The Longshoremen and the Naval Architect interviewed had family connections to maritime labor that helped them secure their first jobs. Both the Blade Technician and the Deep-sea Sailor attended a training school or maritime academy that assisted with job placement. Even with these connections, there were challenges. The Longshoremen spent 11 years as a "casual" worker before securing a more permanent job with the union. During this period, he would show up to the hiring hall each day and wait to see if his work was needed. He had an alternative income source to support himself as an artist, but he noted that "some people live in their car or truck while they are waiting for work."

As an early career union mariner, the Deep-sea Sailor needed to travel to various hiring halls to find work on a ship. She also mentioned that

> One of the things I did run into when trying to get a job in the Gulf [of Mexico] upon graduation was the company for the vessels that I wanted to work for. They didn't want a not totally certified DPO Officer[5] on the bridge, even just as a training officer. They were just like you have to be a DPO already. And I'm like, well, how the fuck do you get that cert if you can't give me any time to get that cert? (The Deep-sea Sailor)

The tendency for maritime work to require a contact within the maritime community is a significant challenge to workforce development and increasing diversity. While outreach is important, it will be equally important to provide transparency in the sectors processes including hiring practices for industry, union membership, and U.S. Coast Guard Certification.

[5] A DPO is a Dynamic Positioning Officer. A DPO holds a special certification that qualifies them to operate a computer-aided ship positioning system that is utilized in offshore construction. It allows a vessel to hold a more precise position using GPS signals. OSW construction vessels will require DPOs. To qualify for a DPO Unlimited certification a mariner must take an initial training course, complete sea time, and then take an advanced course. This process requires access to DP vessels to acquire the required sea time component. The oil and gas sector is the primary application of DP technology and most offshore companies that have DP vessels are based out of the Gulf of Mexico. Typically, these are non-union companies. Mariners based in the PNW may find it difficult to acquire the certifications to operate DP vessels without access to that specific vessel technology.

Training:

In the maritime sector, training can be both required to enter the field and a requirement for advancement, intersecting equity and decent work through the ideas of opportunity and accommodating different needs and backgrounds. Comments on the topic of training show an uneven playing field for some workers depending on the position they currently hold, the company that they work for, and their personal situation. For seafarers and other offshore workers, this includes courses required by the U.S. Coast Guard to meet safety standards. Despite the Offshore Construction Worker's enthusiasm for working on the water and the opportunity to advance his career, he mentioned barriers that can be hard to overcome. He explained how he acquired time working on small vessels but did not have all of the certifications for working in the oil and gas sector. "I spent 3 to 4 months in classes. I enjoyed those." He needed additional classes to advance in the industry, but

> It's a time suck. Not that it isn't useful knowledge, but you have to spend the time doing it. These courses can be expensive as well. The financial part of it has stunted people from doing it: the time and money. You can do it on your own, but it is not easy. There's not just one thing you have to get. It usually includes five other things. I do like the companies that offer the training in the company. I think there's enough money flowing through those companies to pay for the courses. I wish there were more opportunities for companies to pay you while you take the class and pay for the class. It is hard to line up these classes with your working schedule. I think companies could do a lot more to help you line up the classes with your off time and your rotation. (The Maritime Construction Worker)

To advance his career, the Naval Architect was balancing working on tugboats, taking certification classes, and attending community college. "There were times when it was tight. I'd register for a class at the community college and the certification classes at the same time, knowing there would be overlap. I definitely missed classes and had to take exams early to make it all work." He also mentioned that it was easier since he worked seasonally at the time and did not have a family. Near the end of his training for his Captain's license, the company started to pay for the courses and pay him for his time. "That helped a lot."

For union workers, job training was significantly easier to obtain. Both the Deep-sea Sailor and the Longshoremen received training through their respective unions. For both of these workers, training was provided based on a combination of need and seniority. Time was allocated for training as a part of their schedule, and they were occasionally compensated for their training time. The Deep-sea Sailor said her training opportunities were “awesome” because she was in the union. She talked about a recent course she was taking for free. “There was one guy in our class who was not in the union. He was paying for everything out of pocket, and it probably cost him $10,000 for everything.” Combining these training opportunities with her pay and benefits, she said, “I think about all these things. Like, holy shit, it’s amazing, and I try not to take it for granted because I feel very lucky to be able to use all of these things.”

Building Equity and Just Transition in the Blue Economy:

Workers were asked about the blue economy, OSW, and visions for the future. In this phase of the interview, workers were asked to engage with the concepts of just transition and the potential impacts of OSW, as well as ideas around engaging with new workers in the sector. Here, workers were asked about ideas and areas for intervention in existing inequities and suggested ways to re-envision their work.

Each interviewee was asked about the blue economy. None of the maritime workers I interviewed were familiar with the term. However, when I described it as a maritime expression of the green economy, it had an immediate connection with all interviewees. Most of the participants began offering examples of blue economy projects without further explanation, and each had something under the broad category of “blue economy” that they were interested in, including projects such as kelp farming, OSW, and clean marine fuels. Washington-based workers were also asked if they had any knowledge of Maritime Blue. None of the workers

interviewed had any knowledge of Maritime Blue, but they did have knowledge of projects like the Maritime High School in the Highline School District, which has a close connection with Maritime Blue (Maritime High School, n.d.). The high school was considered extremely important to all workers familiar with the program, with several responses similar to, “I wish that program had existed when I was in high school” (The Naval Architect). The project was viewed as a positive way to increase access and opportunities to maritime work, easing some of the barriers to entry that other workers had experienced.

While there was interest in specific projects as a general idea or project, the blue economy was met with skepticism. “It’s just so big. That sounds cool. But what does that entail? Like what’s the plan? You’re just saying a lot of words. They’re great, its positive words, but it really doesn’t mean anything to me” (Deep Sea Sailor). Despite the small sample size, these responses suggest that the terminology has not reached workers in the field.

While the participants in this interview process cannot be seen as representative of the industry as a whole, they all could see how their jobs fit into a sustainable future. The prevailing response was some degree of interest and engagement. In line with the idea of just transitions, the response to being included in decision-making and design was enthusiastic which is perhaps unsurprising when considering that all of the workers interviewed frequently engage in “in the field” problem solving as a part of their jobs. While sometimes practical in nature, many solutions were directly linked to ideas of sustainability. “I do believe in saving our environment and protecting our limited natural resources. I don’t want to be burning through all that stuff, but we need to bring everything up to speed. It does take time to ramp up and get there” (Wind Turbine Technician).

When asked about OSW and other blue economy opportunities, the Marine Construction worker may have summed up the general sentiment best.

> Hell yeah, oh hell yeah. There's opportunity there. I don't think any of those guys care what they do as long as they sail and make money. The conversations I have had haven't been negative. These guys are down. If you were to switch today, there would be an uproar, but if there were a transition, it would work if they were taken care of. The most professional guys are there to make money. If they can make money, hell yeah (The Marine Construction Worker).

Others saw the blue economy as a design challenge. "I really like that kind of stuff. Incorporating those new ideas will be a part of my job. The fundamentals will remain the same. How power will be provided [on vessels] is going to change" (Naval Architect). The design challenge was not limited to individual vision but also in an attempt to capture the workers' experience of actually using the equipment.

> When the crew gets ahold of you, they are going to tell you what you did wrong. We need to hear that. As a former mariner, I push for aspects of design, but I get pushback. Then, we go for a tour of a vessel and hear it from the crew. Then people will say, "The crew member says that," we need to do this or that. I'm thinking, that's what I told you a year ago. (The Naval Architect)

Framing the conversation around the blue economy in a way that elevates workers' voices also results in enthusiasm for blue economy-based projects.

> I think about electricity. You think about that Woody Guthrie song, one day the world will run on electricity. There's always been that, though, we can just make everything electric. And then you have your combustible engines. When you talk about the Gulf [of Mexico], you're talking about oil. You're talking about plastics. We have to get rid of that. You still have this mixed bag of options (The Offshore Construction Worker).

"I do think that wind energy plays a key part in the future of American energy independence. I think it's something that helps make America a fucking awesome country" (The Blade Technician). Furthermore, workers expressed an interest in not just supporting blue economy projects but leading them.

> It would be great if they had a bunch of electric trucks as long as people are driving them, but when they say electric trucks, I think they are thinking about getting rid of the worker and bringing in automation. Not thinking about the human element in restoration. It sucks that they do that because I think green energy is really important and taking care of the sound, but it's more complicated when you have people involved. We need to take care of people as well.
>
> It would be awesome if they came to us as a union to design a green port. If you really want to have an impact on the environment and climate change, you have to make things equitable for everyone because everyone wants to live in a clean environment. You have to start with the people because they are the ones who are going to be making the decisions every day. (The Longshoreman)

Potential solutions were not limited to energy and sustainability but social solutions as well. For example, potential improvements exist from a design perspective to address social concerns. Personal space and the ability to communicate with home are important at sea. When asked about how you might design a vessel to accommodate more current expectations of living standards, the Naval Architect said, “In a nutshell, the boat has to get a little bit bigger.” This additional space would allow for single-person staterooms and more private marine heads. “That and add internet. I feel that hurts the company's retention. It helps you stay connected” (The Naval Architect). Allowing workers to have more personal space, privacy, and access to communications could alleviate some mental health issues.

Local Workers vs. “Outside” Workers:

One of the promises of OSW work development is that the sector will create jobs for people in the PNW. Workers were asked if they felt there would be opportunities for local workers or if workers from outside the region would fill those jobs. The Blade Technician said that workers he knew entered the wind sector from various jobs but primarily from offshore oil and gas in the Gulf of Mexico, rope access jobs in California, and high-rise window washers from Texas. He mentioned that in his specialty, there is “very little difference” in job skills between land-based turbine technician jobs and offshore employment.

As a local Block Island Wind Project resident, he had special insight into local job opportunities: “There are local opportunities to work, but if you don’t have the skills for the job, they aren’t going to hire you. They will hire anyone from anywhere in the world to perform the job that needs to be done.” The Naval Architect with tugboat experience anticipated that “the learning curve would be steep. In all honesty, it [hiring mostly local workers] would probably lead

to an unsuccessful project. We've got to get the people who know what they are doing." Later, he added, "They can definitely try to hire local, but will they make it through the process?"

The Deep-sea Sailor pointed out that the mariners with dynamic positioning (DP) skills are primarily based in the Gulf of Mexico and the oil and gas industry. "Those mariners are the ones with the skills to do the job. Those crews are the prime candidates because they already have this experience" (The Naval Architect).

Additional consideration was given to the overall project and how the local conditions of the ocean will play a role in the working environment.

> The PNW is very challenging. If we are talking about off the coast, we have deep water and large waves. In the winter, it gets nasty out there. These are very challenging conditions. With work expectations, I would try to set the bar. It's not going to be what they expect it to be. Workers are going to be limited in their experience with these projects. I'd try to convey that everyone needs to step out of their comfort zone with the ultimate goal of trying to do this thing for the betterment of everyone. (The Naval Architect)

Interestingly, two participants suggested agreements that would guarantee local employment or a certain percentage of local employment as a condition of the permitting process. Both of these workers cited the Washington State Ferry System[6] as an example, and one was aware of an agreement on the East Coast for local jobs. The Offshore Construction Worker, who has been the "outsider" in his work experience, said, "I think you would get a mix. I'm ok with that. I think it's a good thing to have outside workers. The culture will develop. But if you snub the locals…you don't ever want to snub the locals. Sometimes it's frustrating." The question of opportunities for workers in the PNW will remain open without industry commitments, but it seems likely that the workforce will be a mix of regional workers and

[6] Washington State has historically included a requirement that ferries be built within the state. Recently this requirement has caused issues in building new ferries and upgrading existing vessels (Korman, 2023).

specialists from other regions. There will be some opportunities for new workers to enter the field.

New Worker Opportunities:

A focus of worker development plans includes the recruitment of new or younger workers into the field, a critical consideration for equitable access and opportunity. Currently, there is a shortage of mariners and maritime workers, and companies and workforce development organizations are attempting to recruit younger workers. The youngest interviewee was 22 years old, and the oldest person interviewed was in their mid-forties. All expressed a desire to make the workplace more welcoming to a new generation of workers but also expressed concerns that new workers be provided an honest assessment of maritime labor.

Both the Blade Technician and Naval Architect had taken opportunities to speak with high school students and visit career fairs.

> I've done this with maritime high school students. I tell them that if they feel like working in an office every day is not their jam, if they like working with their hands, if they like adventure, if they like going to different places, then this might be for them. You can make pretty good money. (The Naval Architect)

"The adventure. I think that really goes a long way," the Blade Technician said about his conversations with younger potential workers. However, not all conversations have gone well. "I think I've had this with multiple younger people, and it has deterred them from entering the industry, unfortunately. When I say that it's very lonely" (The Deep-sea Sailor).

The Longshoremen had a slightly more optimistic take. "I would tell them to pursue the ILWU but get certifications that make you eligible for other jobs so you can work as a mechanic. Learn to weld or fix diesels to give you a future in the industry." Despite the Offshore Construction Worker's mixed feelings about the job and the uncertainty over how or if he will

participate in offshore construction in the future, he felt optimistic about recommending maritime work to new workers. “I would encourage any young person to try it,” he said. “Give it a shot. Make some money and leave. People do this work for all kinds of reasons.”

A phrase that did not resonate with some of the existing workers in the sector was the search for “new talent.” “New talent just makes me feel like they are trying to replace me” (The Longshoremen). He was not alone.

> I feel like talent is a weird word. That makes it sound like it’s not an acquired skill set that you have obtained through years and years of certification and training. All of this shit that you have to go through in order to have the license that you have. Talent is just like you have this incredible ability that you’re just given at birth. (The Deep-sea Sailor)

Efforts to bring new workers into the maritime sector will have to be mindful of the language used in their recruitment. While the industry must diversify it must also be respectful of the existing workforce’s experience.

Diversity, Equity, and Inclusion:

When asked about diversity in the workforce, all workers admitted that maritime labor is very male-heavy, with the Longshoremen estimating that about 3% of the workforce identified as women or non-binary. A percentage that generally reflects the sector overall. In regard to other types of diversity, most respondents deferred to bringing in younger workers to solve that issue. They also referred back to the problematic, generally older workers who engaged in harassment that did not create a welcoming space. This is one of the things Maritime Blue and the Youth Maritime Collaborative attempt to address through their programs, which “is committed to guiding today’s youth toward maritime-related careers. With a focus on reaching underrepresented communities through experiential events and high school internships, the Collaborative works to connect companies with the next generation of workers” (Maritime Blue,

n.d.). The program includes ports, maritime organizations, and local government as well as industry to “to create career pathways for youth pursuing careers in the maritime industry” (Maritime Blue, n.d.).

When asked to respond to Maritime Blue’s DEI statement, “We are committed to a diverse, inclusive, and representative maritime industry with abundant living-wage jobs” the Longshoremen said, “They are just saying every word you can say in an equity training. What does that really look like? It’s just a big blanket statement that doesn’t really mean anything.” This response was not unique; however, no interviewee was opposed to the idea but rather sought more concrete examples or policies.

Online outreach and connection to diverse communities were essential to the Deep-sea Sailor, “I think I see a lot of it because I am a minority, and I specifically follow pages that are trying to amplify minority voices. So, I expose myself to that in order to be a part of it. I really don’t know how far it reaches.” While this connection was important, she was also skeptical of plans to reach out to minority groups specifically.

> I’ve had white dudes come to me with the interest of trying to be the person to create videos to get people of color and more women involved. That has been very difficult for me. Their ideas are very well-meaning, but you can’t do any of that shit. Like, I’m sorry you’re a white man, but you have no fucking idea at all about any of this. Women Offshore and Seasisters do a great job, but even with the focus of getting more women in the industry, I’m not sure the percentage is going up. (The Deep-sea Sailor)

The Longshoremen was confident in his answer to greater diversity. He pointed out his union has been working on racial justice since its inception.

> I’m a union man, so I believe in unions. We already have a structure to create equitable jobs. Go through us. We need improvement, but we have been working at this shit for 100 years. We have been trying to make things equitable for that long. If anybody has this down, it’s us. (The Longshoremen)

For most workers interviewed in this research, OSW remains an elusive potential future project. Workers assumed that wind would be coming to the deepwater of the West Coast and felt it was only a matter of time before the projects started.

> I really hope that they always treat those guys with respect. They are sacrificing a lot. They're away from home, working a dangerous job, and there's a good fucking reason for it. It makes the world go around. There are a lot of jobs that spin off from this work. There are all these branches of more and more jobs. I hope they take care of the people doing it. I hope they take care of the locals, too. People should be compensated well for doing this work. (The Marine Construction Worker)

Based on these responses it is worth considering the language used during this transition. Opposition to institutional language should not be viewed as opposition to a more diverse workforce. Workers have their own ways of conducting outreach and should be included in efforts to further the discussion of equity, diversity, and inclusion.

Discussion:

Following a just transition framework, the voices of maritime workers directly linked to jobs impacted by OSW projects provided rich results that speak to their current experiences and envision future work conditions. Based on the precarious work literature, it is up to the worker themselves to establish whether their work is precarious or not. In the words of the workers interviewed, maritime labor can be considered precarious. Workers also reported conditions such as health, boom-and-bust cycles, educational challenges, and barriers to access that conflicted with the criteria for decent work. These conditions create a workplace in which inequities exist and can be enhanced based on the individual's experience or background. Despite these findings, maritime work can still be viewed as decent and desirable under the right conditions.

Due to the policy directives at the state, federal, and local levels, OSW, and blue economy projects must be viewed through an equity lens. While maritime workers in this research did not connect with existing broad policy statements about equity, DEI, blue economy, or Maritime Blue Initiatives, they do provide visions of a transition in this sector that includes ideas of equity and justice. Those terminologies may not have reached workers in the field, but the intent behind them can be found in the workers' words. Interview participants offered solutions to their conditions that were both creative and straightforward. Importantly, they expressed a desire to be a part of the solution.

There were noticeable differences between the union workers in these interviews that spoke to a greater sense of stability, access to education, and a sense of empowerment than non-union workers—perhaps grounded in the history of unionized labor in providing education, organization, and agitation, as needed. Seagoing mariners expressed considerably more factors that can contribute to inequities than their land-based counterparts. Isolation, communication, a

hierarchical work environment, and mental health considerations were significant contributing factors.

If people who engage with policies or theories around just transition truly mean what they say, then workers' voices must be at the center of policy debates. Within the context of OSW in the PNW, a just transition and an equity framework require shifting away from top-down decision-making about infrastructure projects and instead demand meaningful engagements with communities and workers. Importantly, under the equity policy mandate, it is critical to not only work toward equitable solutions but also remove existing inequities. Policy directives should include the voices of workers in decision-making, not just at the level of union leadership participation, but by engaging with the rank-and-file, young workers, and people who have yet to enter the workforce but have dreams of future jobs. An inclusive workforce that contributes not only to the physical labor but also to the design and development of projects may yield a world that strives further toward equity. Importantly, without substantive guarantees, new policies will be meaningless.

To advance the cause of maritime workers, I propose the following recommendations broken down into two categories. These policy recommendations strive toward more equitable outcomes, embracing the vision of the blue economy and OSW as projects that must be developed under equitable frameworks. The first category calls for eliminating or reducing workplace conditions that contribute to inequities and expanding programs that increase diversity within the maritime sector. The second list of policy recommendations seeks to expand the vision of worker inclusion from a just transition vision. In the spirit of just transition, these policies expand beyond the participation of the workforce to embrace co-leadership with the broader community.

These policy suggestions include interventions at various levels, including federal policies and state policies, while several recommendations step into policy commitments that may be best enacted at the corporate or contract level. Several of the policy proposals specifically apply to seagoing mariners. These policy recommendations have been designated with “sea” in parentheses.

Policy Recommendations - Addressing Existing Conditions:

1. Increase inspection and enforcement of existing regulations.
2. Expand regulatory enforcement to include punitive action against management in shoreside positions that oversee crew management and industry self-regulation. (Sea)
3. Establish mandatory overtime pay when a mariner is required to work past their established work rotation. (Sea)
4. Mandate maritime companies to provide internet communications and equal access for all crew, including privacy during use. (Sea)
5. Require employers to provide comprehensive mental health assistance.
6. Expand programs to support workers throughout the early stages of their careers while increasing support for “on-the-job” training.
7. Establish programs to build careers at all levels, including management, design, etc., instead of just entry-level employment for historically underrepresented communities.
8. Create programs that integrate maritime schedules with shore-based training that better addresses the working rotations of seagoing workers. (Sea)
9. Increase outreach to underrepresented communities and provide accurate information about opportunities and careers in the maritime industry.
10. Create quicker pathways for immigrant communities to transfer licensing from their countries of origin to the U.S. licensing system. (Sea)

11. Establish regional hiring requirements that ensure a percentage of OSW jobs benefit the local communities.
12. Encourage unionization within the sector as union workers displayed more opportunities for stability, education, and direct participation in working conditions. Demand developers bargain in good faith as a condition of equity agreements.

Policy Recommendations - Expanding the Vision:

1. Find ways to make OSW jobs stable and career-spanning, decreasing the impacts of boom-and-bust cycles.
2. Redesign the OSW permit application process to front-load community engagement.
3. Establish working groups with tribes, community members, workers, and other stakeholders to directly engage in OSW policy and design questions upfront. Provide support so people can participate through payment and support services.
4. Shift from a grasstops model of organizing to a grassroots model. For example, engage with rank-and-file workers, not simply union leadership.
5. Focus on youth and early-stage workers, bypassing late-career workers, as younger workers will be engaging with these new modes of work for the length of their careers.
6. Create an assessment tool that screens companies for current and previous abuses of human rights, workers' rights, or environmental harm. Include provisions to renegotiate contracts when those rights are breached. (James, 2023)

In a just transition inspired methodology, these policy recommendations would be reviewed by the impacted community for review, revision, and prioritization. Through this iterative process, policy recommendations that better fit the needs of the community can be established, likely resulting in more equitable impacts. Based on that guidance and considering

the origins of the suggestion by Joe James, the creation of an assessment tool for OSW-related companies should be considered a priority.

Research Gaps:

During the course of this research, a number of gaps in the existing literature emerged. The study of deepwater floating offshore wind is nascent, and further research is necessary across a broad spectrum of topics, including design, environmental impact, and workforce development. Particular attention should be given to the lessons learned from previous shallow water projects both from within the U.S. and globally; however, close attention should be paid to the differences in deepwater projects. Further and deeper analysis of the OSW supply chain and required workforce would help to understand which workers will be impacted by OSW development. This is a critical understanding in identifying communities and workforces that OSW may impact on the regional level.

The U.S. maritime sector, especially the workboat and offshore construction sector, is mostly absent from the academic literature. Considering the critical role that maritime workers play in the global supply chain, a supply chain that includes ocean-based energy projects, the sector is vastly understudied from the perspective of social science research. Current studies of U.S. mariners have been primarily limited to occupational health and safety. The last in-depth look at the maritime industry from an anthropological, sociological, or ethnological perspective was conducted in the 1980's (Forsyth, 1989). Significant factors of work have changed in this sector since those studies occurred that would likely influence issues of equity and transition.

Without this critical analysis, engaging in a meaningful conversation about equity in the maritime sector remains challenging without improved demographic data on the existing status of maritime labor. Further qualitative research will be required to understand the existing

inequities for workers. The results of this study suggest gaps exist between how workers and institutions view this situation. Research directly involving and led by maritime workers is recommended.

Conclusion:

In the closing weeks of research for this paper, offshore wind in the U.S. remains uncertain. Ørsted, a major Danish developer, recently pulled out of two projects on the East Coast. They credit supply chain problems and rising costs as the major factors for this withdrawal, a decision that will cost them $400 million. At the same time, the 2030 target implemented by the Biden Administration has been called “widely and regretfully acknowledged to be unrealistic” by Josh Irwin, an executive at Vestas, the world’s largest offshore wind manufacturer (Chu, 2023). Irwin claims, “the US industry is in the middle of a fundamental reset to restore economic viability,” with over half of U.S. offshore wind projects being canceled as of November 2023 (Chu, 2023).

This “reset” should be viewed as an opportunity to engage more fully in the concepts of equity, a framing wind policy claims to embrace. If OSW developers want their projects to be viewed as a just transition or blue economy project, equity is not an option, but a necessity. Under current federal policy, ignoring equity is also not an option. The fact that corporations involved in OSW development have taken a pause should be viewed as an opportunity to increase stakeholder engagement, fill data gaps, and work to minimize or eliminate existing inequities in wind projects. If OSW is to be viewed as a part of a just transition, then it must be inclusive of the workers impacted by wind development. Maritime workers, at sea or on the docks, are a critical part of infrastructure projects. They have meaningful input and creative ideas based on their experience, and in any just transition framing, must be included as a key part of the process. OSW job opportunities must be inclusive, equitable, and just while bringing new workers from traditionally underrepresented groups into the maritime workforce. Furthermore, OSW projects that truly embrace the equity and just transition frameworks should

be community and worker-driven, resulting in structural changes and resource allocation that strives toward an equitable future.

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