

Chair David Hochschild
California Energy Commission
Sent electronically

June 16, 2023

Dear Chair Hochschild and Commissioners,

Assembly Bill 525 (AB 525) charges the California Energy Commission (CEC) with development of “a strategic plan for offshore wind energy developments installed off the California coast in federal waters.¹” The strategic plan, shall include a minimum of five chapters², including one chapter addressing potential impacts to “coastal resources, fisheries, Native American and Indigenous peoples, and national defense, and strategies for addressing those potential impacts”, and environmental impacts that may affect fisheries. Mitigation concepts for fisheries impacts will also be discussed.

Considering the extent of support from California’s fishermen, as indicated by this letter’s nineteen signatories, we request that the impacts and mitigation strategies found below be given prominence in the still-under-development chapter on fisheries impacts and mitigation strategies, as required by AB525.

We incorporate by reference the recently released State of the Science report, commissioned and prepared by BOEM, the National Marine Fisheries Service (NMFS), and the Responsible Offshore Development Alliance (RODA).³ Section 2, “Socioeconomics”, is particularly relevant for the Energy Commission and staff. While the report is primarily focused on fixed OSW facilities, much of its conclusions and recommendations are equally applicable OSW development in California. A good summary of this report can be found in a *New Bedford Light* article.⁴

Also incorporated by reference, and attached, is the Industry letter and “Fishing Community Benefit Agreement” template, provided to state agencies on February 9, 2022, and signed by 16 port-based commercial fishing organizations.

The term “fishermen” is used herein in reference to California’s fishing women and men.

¹ See Public Resources Code §25991(a)(1). All further statutory references are to the Public Resources Code unless otherwise indicated

² §25991(c)

³ See - <https://repository.library.noaa.gov/view/noaa/49151>

⁴ See - <https://newbedfordlight.org/massive-study-examines-offshore-winds-impact-on-fishing-fisheries/>

Fishermen request the CEC to take the following information into account as it refines its “aspirational” goal of producing 25GW of OSW power by 2045. There are many reasons, described below, to proceed carefully when weighing the numerous known and likely impacts to the state’s ocean environment, food supply, and the effects of the massive industrialization of the ocean represented by OSW development. Producing 25GW of OSW power could well do great harm and outweigh whatever benefits to climate change are desired.

Impacts from OSW to Fisheries, their Communities, and to the Ocean Environment

These are impacts that fishermen have identified will be experienced with OSW development, most from the first five leases, others from the full effects of the state’s goal of establishing 25 GW of OSW power by 2045 in addition to likely OSW projects off Oregon and Washington. Some impacts are known, others are uncertain, or create uncertainty, in the seafood supply chain and in the environment. Some impacts can readily have their economic impacts assessed, such as documenting historic catch values in the lease areas and/or future areas identified for OSW development. Other impacts will be more difficult to assess, such as long-term erosion of the value of limited entry permits; still others, such as social impacts, can only be described. There are a number of environmental concerns that could have significant impact on fisheries and the function of the California Current Large Marine Ecosystem (CCLME). All of these impacts are real and will affect fishermen and the communities dependent upon the products they provide. Fisheries have more impacts from OSW development when BOEM selects Call Areas with minimal regard for productive fishing areas.

Impacts to Fisheries:

There will be direct job losses. The state’s OSW ambitions will result in a massive loss of historically important fishing grounds, which will result in job losses. Small family-owned commercial fishing and commercial passenger-carrying fishing vessel businesses will be challenged to weather this storm – and some will not. Some may have to relocate their operations elsewhere in California, assuming they can, or more likely out of state. In 2019 alone (the last year for which data is publicly available on the California Department of Fish and Wildlife’s (CDFW) website) - California's seafood producers landed 110 million pounds of seafood in the State, with an ex-vessel value of \$148.1 Million⁵. Ex-vessel values represent dollars paid to the harvesters and does not capture the downstream economic impacts of that seafood.

Seafood processors, whose workforce is comprised to a large degree of people of color, are also going to scale back their businesses as a result of reduced seafood products being landed, which will lead to layoffs of workers. In some areas, the reduction in

⁵ Table 15 - Poundage and Value of Landings of Commercial Fish into California by Area – 2019 - [Table 15 2020 CFLs \(ca.gov\)](#). Last accessed June 3, 2023

landings could lead to the closure of processing plants. The loss of processing plants will take away a key component to the seafood supply chain – the buyers. Without buyers, many fishermen will not have markets for their products. In addition to the loss of markets, fishermen in many areas rely on the processors for ice; a plant closure will have dire secondary effects.

There will be indirect job losses to support vessel crewmembers, fishing gear manufacturers and/or repair workers, etc. This makes up a significant portion of the seafood economy. Support vessel crew, fuel pier operators, engine and refrigeration repair businesses, boat repair yards, ship's stores, and fishing gear manufacturers, are among the businesses that rely, at least in part, on commercial fishing activity.

The commercial fishing industry generated ex-vessel revenues of \$38.7M in the Eureka Port Complex in 2019. Assuming a multiplier of between two to four times, that is between \$80 and \$150 million in economic activity per year in the area(s) surrounding the Eureka Port Complex. The lease term for the five California sites auctioned in December are 33 years once operations commence. This represents an opportunity cost of roughly \$6 billion (in today's dollars) to the North Coast area alone over the lease term. It is acknowledged that the two lease sites off Humboldt will not displace or eliminate all fishery income, but a certain level of landings is needed to support fishing support businesses; without that volume, a cascade of unwanted effects will unfold.

There is potential for Tribal fishing rights to be impacted. In California, Tribal fishing rights are limited to in-river fishing. In Oregon and Washington, several Treaty Tribes have undisputed offshore fishing rights. There is concern among the Northwest Tribes that oceanographic conditions offshore California will be negatively affected by windfarms, for such processes as upwelling and/or larval transport. Since the whiting and sardine fisheries, both important to the Tribes, can be affected by diminished oceanographic conditions, there is deep concern that significant economic losses will occur.

Increased time at sea to avoid wind farms will affect catch quality. Even with the best methods of icing or refrigeration, each day spent at sea diminishes product quality and therefore ex-vessel value.

Lost tax and fees revenue to the state. In addition to lost income taxes, sales and use taxes, property, and other tax revenue from fishing activities, the CDFW will be directly impacted by the loss of landing tax revenues.

The nation's food security will be impacted and reduced. The loss of fresh local products will cause increased reliance on imported or farmed seafood. It is established that local, wild-capture seafood produces the lowest carbon footprint compared with other domestic and foreign sourced forms of protein. Increasing our reliance on imported seafood will result in exporting our fishing effort to nations with much less concern for the environmental impacts of their fisheries. A case study in a recent study estimated that "partial closures of the West Coast drift gillnet swordfish fishery led to a

bycatch of 1,457 endangered leatherback sea turtles worldwide from 2001-2012, compared to 45 turtles if the U.S. fishing grounds had remained open.”⁶

Future fishermen and fisheries will be impacted. The loss of large areas from fishing opportunity will discourage future generations of fishermen, stressing the long-term sustainability of the industry. Further, with climate change, new species not currently found in abundance in the lease areas and/or future areas identified for OSW development could appear in large numbers. Bluefin tuna is an example of a species that is beginning to be seen in harvestable quantities north of Point Conception. Lost opportunity to fish in the lease areas and/or future areas identified for OSW development will be another future impact.

Loss of fishing resiliency due to lost opportunity for fishermen to be able to supplement their incomes with Open Access ground fish landings in the Lease Areas. In 2007 many fishermen in the Morro Bay area entered the sablefish open access fishery when quota were raised and prices were strong. This type of lateral movement in effort is important during times when fisher’s primary fisheries are curtailed, like we are seeing this year with the severe curtailment or possibly complete closure of the California salmon troll fishery.

OSW development will make it harder for fishermen to adapt to climate change. With the loss of large areas for fishing, fishermen will have fewer options for adaptation, as the areas which they can fish will be greatly constrained.

Increased risk to safety at sea. In late 2022, the National Academy of Science and Medicine published a report that found OSW turbines create distorted radar contacts. This increases the risk of collision, allision and will likely impact the ability of the USCG to perform rescue operations on injured or sick crewmembers as aircraft may not be able to operate near turbines. Perhaps most importantly, avoiding the offshore wind facilities will increase time at sea, which always increases risk. Vessels drifting at night for sleep periods with only a captain aboard will have to be very, very far away from wind farms to not drift into them, or drift through the large vessel shipping lanes which will have necessarily moved outside the wind farms. Additionally, west coast lease areas and/or future areas identified for OSW development located upwind of ports will force much of the fishing effort downwind or in locations which puts a vessel in the trough for extended periods of time, which will make returning to port more difficult and less safe when facing prevailing headwinds or returning at an angle that puts the loaded vessel in the trough for much of the trip back to the dock.

⁶ Mark Helvey, Caroline Pomeroy, Naresh C. Pradhan, Dale Squires, Stephen Stohs, Can the United States have its fish and eat it too?, Marine Policy, Volume 75, 2017, Pages 62-67, ISSN 0308-597X, <https://doi.org/10.1016/j.marpol.2016.10.013>.

Lost or damaged fishing gear. Potential for interactions with fishing gear and/or loss/destruction of gear in the lease areas and/or future areas identified for OSW development and service vessel traffic lanes during survey work and both construction and operational phases.

Electrical Cables to shore becoming un-buried. This has already been an issue on the east coast and in Europe. Exposed high voltage cables can increase EMF issues and create snags for fishing gear.

Impacts from electrical floating substations. It is possible that power generated from the turbines will be consolidated and possibly converted DC/AC at offshore converter stations. This activity will require large amounts of cooling water which will create entrainment of larvae and juvenile sea life. It will also discharge large amounts of water in temperatures that exceed the ambient sea temperature in the area, affecting the environment.

Impacts to long-running scientific datasets which inform stock assessments or other aspects of the fisheries management process(es) will create scientific uncertainty about the status of stocks will lead fisheries-managers to reduced harvest quotas under the precautionary management we apply to our domestic fisheries. Reduced quotas will cause reduced profits, as well as devaluing fishermen's limited entry permits.

Impacts due to increased navigation time to avoid wind farms. Additional time at sea and fuel costs will result from windfarm avoidance. Fishermen have proposed traffic lanes through wind farms in the two California lease sites; However, we have no information as to whether BOEM or the developers will make this accommodation. It should be noted that the traffic lanes would only very marginally solve this problem.

Loss of fishable area to certain gears due to submarine cable routes to shore. Impacted gears include bottom trawls, seines, traps and pots, used for groundfish, squid, and crabs. There will be impacts and disruptions to fishing from the process of burying cables. There is a current lack of information as to how many submarine cables will exist and how far the subsea cables will run, and even larger questions about whether they will each require their own cable routes.

Uncertainty exists around insurance coverage for commercial fishing vessels which transit or attempt to fish inside a wind farm. Experience on the east coast indicates that insurers are reassessing premiums and even basic coverage, based on perceived increase risk of losses due to safety concerns, conflicts and impacts to radar system with OSW turbines.

Impacts and a loss of fishable area due to shipping and barge traffic patterns changing in response to wind farms. Tug and barged coastal traffic are a good example: it is likely that these operations will move closer to shore to avoid the wind farms, placing their traffic into Dungeness crab and other fixed gear fishing grounds.

Loss of fishable area which may incur due to safety/security zones being imposed around wind farms by the USCG. Fishermen have repeatedly requested that BOEM accommodate security/safety zones interior to the lease areas and/or future areas identified for OSW development boundaries; however, BOEM has shown no indication that it will do so. Therefore, any such zones will be placed exterior to the WEA boundary, creating additional area lost to fishermen. On the east coast, temporary 500-yard security zones are being proposed around each turbine during construction activities.⁷ It is not unreasonable to assume that similar safety zones may be contemplated once a facility is operational.

Concerns about engineering integrity. Fishermen, who have much at-sea experience, have concerns about whether the nearly 1,000 feet tall turbines will stay upright during extreme weather events, or when experiencing not-that-rare rogue wave events. Should one or more turbines topple, it will have a cascading effect on other turbines that are connected to it/them as well as the power supply and the potential for electrical current in the water. As can be easily documented by the National Weather Service, wind speeds in excess of 75 knots and seas in excess of 30 feet are common each winter. This said, it is more likely that these floaters will drag their mooring gear (if friction anchors are used), thereby creating the potential to collide with other floaters.

Wind farms as domestic security threats and terrorism targets. This spring, the Pentagon sounded alarms over plans to advance offshore wind projects along the central Atlantic US coast, warning that almost all of the new terrain eyed for development conflicts with military operations.⁸ Not wanting to suffer any failure of imagination, as occurred pre-911, fishermen hope that the government is analyzing the security threat/target that exists with the installation of these large offshore structures. Such an attack would have large secondary effects on fisheries.

There will be distinct impacts from site surveys on fishing activity. Survey work will utilize sonar and other technologies to survey the characteristics of the seafloor. This activity will displace fishermen for periods of time, as well as drive fish “off the bite”. Fishermen know this from past experiences with similar site characterization work done by the oil/gas and telecommunications industry. Sonar levels necessary to characterize the bottom below the seabed necessary for anchor locations and trenching routes may kill a variety of fish and crustacean larvae resulting in delayed downturn in fish landings. There remain unanswered questions regarding whether or not this site survey work is causing whale mortalities on the east coast. So much so that a number of politicians are asking for a moratorium on OSW related activities pending getting those answers.⁹

OSW impacts will be felt by the regional fleet, as well as by fishermen from ports outside the region who fish in the lease areas and/or future areas identified for OSW development. Some west coast fisheries are highly mobile. The North Pacific albacore

⁷ 88 Fed Reg. 27839 (May 3, 2023).

⁸ See - <https://news.yahoo.com/pentagon-sounds-alarm-over-biden-113008189.html>

⁹ See - See <https://www.msn.com/en-us/news/us/50-blue-state-mayors-call-for-offshore-wind-moratorium-amid-whale-dolphin-deaths/ar-AA1bDk>

fishery, and other highly migratory species fisheries, operates across all three west coast states. Fishermen from San Diego venture as far as waters off northern Washington and fishermen from Seattle/Anacortes Wa., often fish in waters off California. There will also be impacts to smaller vessels, such as to near-shore fishermen, who are more limited in their ability to travel great distances. Smaller vessels who do not usually fish in the lease areas and/or future areas identified for OSW development, will certainly be impacted by OSW development. Disruption from OSW port activities and potential displacement from their local port/harbor due to increased competition for limited space, lost opportunity for open access fishing in the call area, cable routes running to shore, loss of markets should buyers leave, increased sea time to avoid wind farms...all are impacts that will affect all fishermen in nearby ports.

OSW ambitions for coastal waters creates enormous uncertainty within fisheries, creating difficulty in business planning and in attracting future generations of fishermen. While this impact can't be overstated, the economic loss will be hard to quantify. This uncertainty is already devaluing fishermen's limited entry permits.

Stranded Capital. Commercial fishing vessels are typically designed and outfitted to operate in specific fisheries. For example, a vessel permitted to utilize purse seine gear is much different from a vessel permitted to participate in the salmon troll fisheries. Vessels displaced as a result of OSW will have limited markets and the value of that asset will be reduced significantly. Similarly, reduced harvest quotas combined with less area for fishing opportunity will negatively impact the value of limited entry permits.¹⁰ This will be a large economic impact for fishermen, including the lost value of their businesses, and therefore their retirement assets.

Community-wide impacts

Above we discussed the need to identify, understand (and quantify) known and foreseeable consequences of OSW development on California's fishing communities. There are likely a number of unforeseeable impacts that will befall those communities as well. OSW development will not completely eliminate the fishing industry's contributions to the California economy or employment, but there will be negative impacts to each of those. Impacts such as community identity, dilution of the fishing/tourism industry symbiotic relationship, increased personal and family stress due to increased economic stress, along with the depressing perception that the state and federal governments seem unwilling to value the food-producing role of fishermen, will all contribute to harmful community impacts.

There will be impacts to coastal tourism and community identification. The close connection between fresh fish being landed, the visibility of working commercial fishing

¹⁰ Most fisheries which operate off the California coast are restricted to participants with a permit to prosecute that fishery.

vessels, and tourism, is a dynamic that the state must appreciate. Taking fishing out of this partnership will have negative economic impacts on tourism.¹¹

Loss of seafood for the public and connections to the sea. For the vast majority of Californians, the only real access they have to the living marine resources off the California coast is via the seafood harvested by the commercial fishing industry for their benefit. Reducing or eliminating our ability to serve our fellow citizens, many of whom choose locally harvested seafood because they can be confident that it is sustainably sourced, will bear an immeasurable cost and raises social and environmental justice concerns.

Impacts from Port Development:

Increased competition for limited harbor/port space could price fishing vessels out of dock space. With increased demand for that limited space, how will transient fishing vessels will be treated? In 2019, 546 U.S. based commercial fishing vessels participated in the west coast fishery for North Pacific albacore. This seasonal fishery normally operates between July and October and draws harvesters from San Diego, to Bellingham, Washington. Schools of albacore can be found anywhere from California up into Canada; and the fishery typically occurs near offshore banks, seamounts, or submarine canyons; however, the fishery also sometimes peaks where sea surface temperature gradients and surface chlorophyll coincide, independent of bottom topography. Vessels homeported a great distance from the fishing grounds, will seek temporary accommodations near the grounds where they can offload product, purchase fuel, bait, and other supplies. Not only is the albacore fishery critical to those businesses, it benefits the ports and harbors who collect fees for transient berthing. Increased vessel traffic causing congestion in ports and gear loss outside ports is of concern. Loss of working waterfront for commercial fishing operations as OSW port activities displace fishermen will exacerbate what is already a recognized problem nationwide.

Upgrading California's ports and harbors to support the nascent OSW industry will result in impacts to commercial fishing. California's ports and harbors are not currently capable of serving the OSW industry. Significant upgrades will be necessary. These upgrades will impact the fishing industry in varying degrees and forms depending on the scale. There will be interruptions to our operations during construction and/or renovation activities associated with upgrades. These may be minor or major depending on the scale of the upgrades and planning activities undertaken by the local port and harbor. Once those upgrades are completed, there is a possibility of displacement of fishing vessels, shoreside infrastructure, and businesses that support our operations. Proper planning to avoid these negative impacts to the fishing industry is necessary. We take comfort in the language of California's Coastal Act which

¹¹ See - **California Tourism and Fishing Heritage Assessment Part I: Survey of Businesses, Community Leaders, and Tourism Professionals (2008)** available at - <https://static1.squarespace.com/static/5c2a9c42ee175916889d18c4/t/5c2eab58f950b7e3f696a55e/1546562392506/6reports-casus-report-final-2008-professionals.pdf>.

acknowledges the importance of the commercial fishing industry to the State of California¹² and is protective of facilities serving the commercial fishing and existing commercial fishing harbor space.¹³

OSW operations will interfere with normal port traffic. In the case of planned activities in support of OSW development in Humboldt Bay, fishermen have already been advised that towing assembled turbines (including the base which may be 300 feet in length) out of the harbor, will likely close the harbor entrance to all other vessel traffic for days and perhaps weeks. There will also be safety zones established in areas within the port where the assembled turbines will be staged awaiting towing and deployment. It is further likely that OSW deployments will require appropriate tide and/or weather windows. This will affect fishermen's transit to and from the harbor and thus utilization of fishing grounds, delivering product to market, and/or tending to their gear. It may also impact the ability for vessels in distress to seek safe refuge or obtain necessary repairs, or the ability of that vessel to seek medical care for sick or injured crewmembers.

Environmental Impacts or Concerns:

Impacts to special management areas such as habitat closures, spawning closures, and other restricted areas will arise if wind farms or cable routes be placed in or near these areas.

Adverse impacts to Essential Fish Habitat (EFH) and upwelling. OSW development will have adverse impacts to fish stocks, fish stock migratory patterns, and fish distribution, including potential for diminishment of ocean upwelling due to reduced wind speeds downwind caused by wind farms, and from impacts from the potential for noise pollution. These potential affects include the very real possibility of dramatic impacts to the marine ecosystem as shown in a recent study entitled *Offshore wind farms are projected to impact primary production and bottom water deoxygenation in the North Sea*¹⁴. These effects could significantly alter the productivity of the CCLME and destroy the State's seafood economy, amongst other things.

Large scale wind projects may affect atmospheric flow and ocean mixing. Initial research indicates changes will occur to stratification within the ocean and potential impacts to climate patterns on land, but the effects on fisheries and socioeconomics is uncertain. More research is needed in this area.

There is uncertainty about the level of impacts that will occur from OSW mooring gear's bottom contact. Fisheries and marine habitats could be impacted should the

¹² §30703

¹³ §30234

¹⁴ Daewel, U., Akhtar, N., Christiansen, N. et al. Offshore wind farms are projected to impact primary production and bottom water deoxygenation in the North Sea. *Commun Earth Environ* 3, 292 (2022). <https://doi.org/10.1038/s43247-022-00625-0>

anchor line scrape the bottom, creating noise, sediment plumes, and/or denuding the bottom. Similarly, the effects of this infrastructure on the bottom and its potential for scouring could lead to bottom alteration regardless of their permanence.

Known adverse impacts to migratory patterns and critical habitat of Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) protected species that interact with fisheries. Comments from the National Marine Fisheries Service provide a high-level assessment of impacts, but not necessarily clear jeopardy, to these animals. Should whales divert closer to shore to avoid the wind farms, this will increase their proximity to and potential for conflict with commercial crab gear. The State's commercial dungeness crab fishery, often the State's most valuable commercial fishery, is managed based on the risk of interactions with humpback and blue whales and leatherback sea turtles. Changes in migratory patterns of those species could have profound and significant impacts on this, and other west coast, fixed gear fisheries. The "West Coast Crabber-Towboat Agreement" (Pomeroy et al, 2015) will likely need to be revisited.

Negative economic, social, and environmental impacts from fishery displacement and compaction. When all sea space is available, fishermen will utilize the best habitats, tempered by other factors such as distance from port. Displacement from those areas from OSW development will cause them to seek secondary areas, with corresponding competition and concentration of effort into those areas. This creates the potential for localized depletion, with negative environmental consequences.

The potential for electromagnetic field (EMF) disturbance to sea life. We understand that each turbine will be connected to another via a submerged—but not buried—electrical cable. Additionally, electricity will be consolidated into large cables routed to shore (buried in this case to an unknown depth.). This will represent hundreds of cables in each lease site.

It is well understood that many species of sea life either use electrical or magnetic fields for hunting or navigation, while others will exhibit behavioral changes to avoid such fields. Some science has been developed documenting EMF effects on certain species, while other species appear to be unaffected. A recent study showed impacts to brown crabs from EMF. The study found animals freeze near the electromagnetic field with implications for metabolism and migration.¹⁵ More research needs to be done on this question.

There is also uncertainty as to whether the noise produced by the spinning turbines will also create ungrounded stray current in the water column.

There is uncertainty about the amount of surface and subsurface noise generated by activities supporting OSW development. This is a question very much germane to the assessment of cumulative effects. Using the Morro Bay lease site as an example, there will be approximately 250-300 turbines within a roughly 376 square mile area, all producing some degree of sound/noise. Understanding that sound travels exceptionally well under water, will the subsurface sound produced be sufficient to cause some fish,

¹⁵ See - [Mesmered brown crabs 'attracted to' undersea cables | Marine life | The Guardian](#)

crustaceans, and marine mammals to avoid a large section of the ocean? Should some commercially-harvested species avoid a large area in and around the wind farms, the stock impacts and potential economic impacts to fishermen will be enormous.

The fish aggregating feature of the turbines will attract birds. The certainty that the turbine floaters will develop marine growth on their sides and bottoms will be attractive to small fishes, which in turn will attract sea birds. This can increase bird mortality from the turbine blades. To the extent floating turbines act as Fish Aggregating Devices, they could keep commercially important fish stocks unavailable to the fleets.

General:

Impacts to fishermen from-time consuming and often repetitive public and private processes required to avoid, minimize and mitigate harmful OSW developments which cause a loss of fishing time and production. Each day spent participating in the many meetings/webinars/workshops related to OSW, is the loss of an income producing activity. In many of these meetings, fishermen find it necessary to repeat their concerns over and over again, perhaps having been poorly captured before or ignored altogether.

Costs incurred from the necessity of hiring legal counsel and consultants to help represent and articulate fishermen's interests.

Cumulative impacts of individual impacts will likely exceed the simple sum of the parts. This is especially so when considering that many fisheries are coast-wide. Thus, closing other areas of the west coast for large wind farms can affect other regions through fishery displacement, and/or depression of the industry as a whole.

The cumulative impacts that fishermen face also must necessarily include the other existing and likely future habitat protections put into place by federal and state agencies. For example, both the President and Governor have declared initiatives to "conserve" 30% of state and federal waters. There remains great uncertainty as to whether this will translate into addition fishery closures, further squeezing fishing opportunity and crowding remaining open areas.

Fishermen feel impacted by the unjust, unequal, distribution of government efforts to mitigate climate change. The greatest burden from the takeover of productive fishing grounds by OSW development is borne by fishermen and their communities. The state should recognize that the seafood supply chain is heavily represented in people of color. Further, there is not an equal playing field: the power of the federal and state governments, and the economic and political clout of OSW developers, all lean towards the removal of fishing grounds for OSW purposes. California's goals to increase environmental and economic justice are undermined by the injustice being done to the fishing community.

Unforeseen impacts due to the experimental nature of deep-water floating turbines. Fishermen implore the state to use all authority and status to force BOEM to

halt new leases until the existing lease site have been operational for a minimum of three years. This would allow acquisition of important environmental and socioeconomic information. Baseline information, identified and collected **before** site survey works begins, will be imperative. The first five California leases should serve as a *demonstration project*, allowing sufficient time to study the performance and environmental and socioeconomic effects of these wind farms. It is only in this manner that adaptive management can be actually practiced and future problems avoided. The State of the Science report, referenced above, demonstrates so clearly that there are significant knowledge gaps in the government's plans for the industrialization of the ocean. This knowledge gap is far greater on the West Coast, with so many additional unknowns about floating, deep-water wind farms.

We also recommend the Commission read the article by United Kingdom author Dr. Capell Aris who has spent his career in the energy generating sector:

<https://www.yahoo.com/news/britain-green-energy-disaster-awful-050000590.html>

This article gives a much-needed critical look at consequences being experienced in Great Britain as a result of too much OSW development.

This summary of impacts should be viewed as a "living" document and should be amended as more impacts become known, the degree of identified impacts become more well-defined, and/or if scientific research removes other environmental concerns.

Potential Mitigations Including Compensation Mitigation

Fishermen want all agencies to take seriously the hierarchy of approaches laid out by applicable environmental laws: **AVOID, MINIMIZE, MITIGATE, COMPENSATE**, in that order. We note that many of the impacts and concerns listed above could be AVOIDED or at least MINIMIZED if BOEM would make the effort to actually follow this hierarchy of approaches, and in particular, seek to avoid impacts to fisheries, including habitat concerns, at the pre-Call Area stage.

Other impacts, such as those in ports and harbors, as well as certain offshore impacts, can be avoided or minimized with good communication between the OSW industry and the fishing community. This said, even with good communication, impacts will occur, such as when there is ample notice that an area will be closed for weeks to months, to fishing, due to activities in support of OSW.

For gear losses due to interactions with OSW developer's site assessment, construction, and operational activities, mitigation can take the form of a dedicated fund funded by the OSW companies, and a mutually acceptable claims process. These types of funds are common for oil and gas, and communications cable, developments. The state and/or BOEM can look to those examples for successful models.

For impacts to fishermen, deck hands, supporting businesses, and their communities, at least two and possibly three strategies will be needed:

A robust, annually funded resiliency fund must be established. The fund could be a scheduled amount, possibly based on a percentage of annual power sales (with a guaranteed minimum amount), or on an amount per turbine, or per acre, for each OSW lease, adjusted annually by the CPI, and last for the duration of the lease. The purpose of such a fund will be to enable increased economic and infrastructure resilience for those fishermen and others within the seafood supply chain to compensate for the impacts, including increased costs, from OSW development. The objective will be to keep seafood products being landed despite lost fishing opportunity. Current and future fishermen will benefit from this approach, as will deck hands, processors and allied fishing businesses, and the visitor-serving economies of fishing communities. The fund should be established by industry to industry negotiation, regionally-based in the area most affected by OSW farms and cable routes, but also be able to provide benefits to out-of-area fishermen who are also displaced by wind farms. Examples of the uses for this fund may include providing low-cost quality ice, refrigerated storage buildings, low-cost fuel, assistance with federal observer requirements and deckhand insurance costs, support for fishermen's costs in participating in fisheries management, etc.

Initial, one-time direct payments to fishermen affected by OSW leases, with larger payments going to any fisherman who can verify fishing activity in the WEA and cable route(s) to shore, within a set number of years (TBD) of federal and state approvals of the OSW developer's Construction and Operations Plan. This strategy recognizes the shock of losing large areas of fishing opportunity, the difficulties inherent in switching areas or even to different gear types (which may involve acquiring expensive limited-entry permits and retrofitting a vessel to utilize new or additional gear types), and other economic and social adjustments. The recent Gulf of Mexico OSW Preliminary Sale Notice announced by BOEM contains useful information about procedures for lost income claims.

Seafood buyers and processors may have special considerations. An intended outcome of the annual resiliency funding is to keep seafood products being landed in the OSW region; impacts to processors could also be addressed in the "Initial, one-time payments" process outlined above. This said, it is unknown if or to what extent seafood buyers/processors will suffer losses. A significant concern among all fishermen is the loss of local buyers/processors—who buy their products and in many cases also provide ice and other services to fishermen. Note that, in the case of the Humboldt area leases, BOEM placed the Wind Energy Area right over an important, high-volume groundfish trawl area. The loss of this area will certainly be a blow to the local processor's operations. It may be that there will need to be a separate benefit agreement negotiated between processors and OSW developers to address special impacts and considerations.

These strategies should be memorialized in a **Fishing Community Benefit Agreement (FCBA)** struck between the fishing and OSW industries. Any such FCBA must be inclusive of all major fisheries prosecuted in the region in and around the lease site. It is of note that in the region of the Morro Bay WEA and the three OSW leases awarded in that area, fishermen from Morro Bay and Port San Luis worked with one developer, Castle Wind, over a six-year period, to come to agreement on a FCBA. Although Castle wind did not win a lease, the agreement structure is in place for other developers to utilize. This structure embraces the strategies listed above.

Similarly, in Northern California, many fishery-leaders have organized the “California Fishermen’s Resiliency Association” (CFRA) as a legal entity capable of negotiating and implementing a FCBA. The CFRA also incorporates the strategies found above. CFRA efforts are being supported by funding from the Ocean Protection Council.

Fishermen understand and accept that others will perceive that they will be impacted by OSW development, and will request some sort of community benefit agreement (CBA) to address those concerns. BOEM attempted to address this point in lease documents by creating two types of CBA’s—one which is clearly aimed at offshore impacts and the other to impacts in the broader community. The second type of CBA is not well-defined. Fishermen have no issue with those claims, as long as the full breadth of impacts to fisheries and fishing communities are fully addressed, and not reduced by any other impact claims. Others who make claims should be prepared to demonstrate how OSW development has impacted them and/or created losses.

It is expected that when the Coastal Commission’s “Condition 7c”, requiring a new working group comprised of representatives from state agencies, fishermen, OSW developers, and BOEM, meets, it will discuss and make recommendations addressing the impacts and consider potential mitigations, as found above.

Thank you for considering comments from California’s commercial fishermen.

Organizations having reviewed and/or contributed to this letter and in support:

Alliance of Communities for Sustainable Fisheries
Alan Alward, Co-Chair

Crescent City Commercial Fishermen’s Association
RB Pincombe, President

Trinidad Bay Fishermen’s Association
John Provolt, President

Humboldt Fishermen’s Marketing Association
Harrison Ibach, President

Shelter Cove Fishing Preservation Association, Inc
Jake Mitchell, President

Salmon Trollers Marketing Association of Noyo
Tony Cannia, President

Bodega Bay Fishermen's Marketing Association
Richard Ogg, Director

San Francisco Crab Boat Owners Association
John Barnett, President

Santa Cruz Fishermen's Marketing Association
Mike Hubbell, Vice President

Moss Landing Commercial Fishermen's Association
Tom Hart, President

Monterey Commercial Fishermen's Association
Mike Ricketts, President

Morro Bay Commercial Fishermen's Organization
Tom Hafer, President

Port San Luis Commercial Fishermen's Association
Chris Pavone, President

Commercial Fishermen of Santa Barbara
Chris Voss, President

San Diego Fishermen's Working Group
Pete Halmay, President

California Fishermen's Resiliency Association
Jake Mitchell, President

Western Fishboat Owners Association
Clayton Wraith, Executive Director

California Wetfish Producers Association
Mark Fina, Executive Director

California Association of Harbormasters and Port Captains
Andrea Lueker, President

