

California Coastal Commission

February 9, 2022

State Lands Commission

California Energy Commission

Sent electronically

RE Creating a template and managing Entity to address unwanted, adverse impacts on California's fisheries from Offshore Wind Development

Dear Commissioners,

We the undersigned commercial fishing organizations (CFO's) support the concepts found in the attached Fishing Community Benefit Agreement (FCBA) template. While we do not claim to represent the interests of *every* commercial fishing (CF) man and woman in the state, we do feel that our collective view represents the great majority of the State's CFO's which will be impacted by offshore wind (OSW) development. The term "fisherman" is used herein to be inclusive of our fishing men and women.

Fishermen have (and will continue to) press BOEM to effectively AVOID, MINIMIZE, and MITIGATE the impacts of offshore wind (OSW) development to commercial fisheries and seafood supply from the size and location of Wind Energy Areas (WEA's). These efforts have been frustrating and largely unproductive. The two California WEA's portend BOEM lease awards, soon, with the high likelihood that more California Call Areas will be identified in the months to years to come.

This letter and attached draft template discuss compensation-mitigation for the effects of losing fishing grounds. Please know that we would rather be allowed to continue to have access to our traditional fishing grounds than to have monetary compensation. This effort could be likened to taking out an insurance policy: no one wants losses from OSW, but if/when there is a loss, there should be a mechanism to make a claim.

Efforts have already begun to form the "Entities", legally organized under California and federal law, referenced in the template, to help manage impacts to

fisheries from OSW development. These new Entities will be founded on principles of inclusion and represented democracy for our fishing interests aimed at creating fleet and community resilience. The Entity will be the CF negotiator with OSW companies for financial compensation, as well as other types of mitigation and communications, and will distribute both initial one-time funding that may be provided as well as funding that continues through the term of the lease. The main purpose of the Entity and funding is to preserve and enhance fleet resilience in the face of lost fishing opportunity. We seek to keep people fishing and keep seafood products being delivered to our communities and the state, despite obstacles.

There may be more than one Entity in California to address regional needs and differences. However, it is envisioned that the purpose and governance structure of each of these will be similar. Varying levels of benefits will be available to those who fish in the region. It is also hoped that this template may also be useful for future offshore aquaculture projects that, if permitted for development, disrupt and displace fisheries.

Included in the FCBA template is a list of impacts to commercial fishermen and our communities from OSW development. This list represents known impacts, but there may be other impacts that become known when the OSW developers submit Construction and Operations Plans, as well as once operations begin; therefore, any FCBA's that are negotiated in advance must have the ability to be amended.

We ask that the California Coastal Commission, the State Lands Commission, and the California Energy Commission, use all available authorities to support the state's commercial fishing men and women by requiring OSW developers to negotiate FCBA's in good faith with the Entities. The principles set forth in the FCBA template should guide the negotiation. Such state authorities could include those found under the Coastal Zone Management Act's consistency determinations and certifications, as well as direct project permit conditions, and/or State Lands leases. We believe such support is consistent with the language of California's Coastal Act.

We hope that it is helpful to the Coastal, State Lands, and Energy Commissions to hear the consensus voice of California's commercial fishing men and women on

how compensation and other mitigation should occur if OSW takes over large sections of our traditional fishing grounds: Please note that the State's Association of Harbormasters is also supporting our effort, benefits to our small craft harbors being clear.

On behalf of:

Supporting organizations

Alliance of Communities for Sustainable Fisheries

Alan Alward, Co-Chair

Crescent City Commercial Fishermen's Association

Rick Shepard, 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

Lorne Edwards, President

San Francisco Crab Boat Owners Association

John Barnett, President

Santa Cruz Commercial Fishermen's Marketing Association

Mike Hubbell, 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

Christopher Voss, President

San Diego Fishermen's Working Group

Pete Halmay, President

California Association of Harbormasters and Port Captains

Andrea Lueker, President

CC

BOEM

CA Department of Fish and Wildlife

The Need for Fisheries Community Benefit Agreements with OSW

What is a Fisheries Community Benefit Agreement (FCBA)?

A FCBA is a legally binding agreement made between an OSW company which is bidding on a BOEM-advertised lease (or which has been awarded a lease) for the opportunity to build a wind farm, and one or more commercial fishing organizations (CFO's) whose members regularly fish the waters of the project area, including electrical cable routes to shore and any security/safety zones which may surround these projects. These CFO's may form a legal *entity* that will be inclusive of the many different fisheries and represent one or more CFO's. If the OSW company is not awarded a lease, the FCBA with that company is void. The term of the FCBA shall be equal to the term of the OSW lease and any extensions or transference thereto, and include site assessment impacts and decommissioning.

FCBA and the resulting management "Entity" are proposed to be structured similar to the best features of other successful industry-to-industry models such as the Central Coast and South Bay Joint Cable/Fisheries Liaison Committees and the Joint Oil/Fisheries Committee of Southern/Central California. The Entity must have legal stature as a 501-c-3, c-6, or similar organization.

When is a FCBA Needed?

The principals of impact AVOIDANCE, MINIMIZATION, and NON-MONETARY MITIGATIONS should be considered for all aspects of an OSW project prior to COMPENSATION-MITIGATION discussions. Make no mistake: fishermen would rather have their areas of opportunity preserved than have financial compensation for the loss. However, with the siting, size, and scope of proposed OSW developments there will be unavoidable impacts to the commercial fishing industry. Thus, since BOEM has no legal ability to require any compensation agreement, a FCBA must be required as part of a Coastal Zone Management Act consistency determination/certification and/or state or federal development permits, or state leases. FCBA discussions are most fully informed when an OSW project's Construction and Operating Plan is known. This said, many impacts will be known prior to that phase, allowing for the basic outline of an agreement to be set earlier, subject to amendment as more is known. A FCBA should ideally be in place prior to a lease being executed as impacts to commercial fishing will occur immediately during the Site Assessment. Fish Surveys required by the FCBA should begin before and during the Site Assessment.

A comprehensive list of impacts is attached as an appendix.

Addressing these impacts will involve a complex negotiation and will likely be more an art-form than science in achieving a fair deal for both industries.

Purpose of a Fisheries Community Benefit Agreement

Potential purposes of a FCBA are many, and likely to be more fully informed when potential impacts are better understood. At minimum, the FCBA would have the ability to be amended upon the receipt of new information.

The FCBA would:

- 1) Provide a mechanism for claims to be evaluated and paid for fishing gear damaged or lost due to OSW structures or activities;
- 2) Provide *one-time* compensatory-mitigation to all regional fishermen as well as additional compensation for all fishermen directly impacted by the Wind Energy Area and cable route(s);
- 3) Provide an *annually funded* fishing community fund, based on a percentage of the OSW lease sales (or another formula to be determined) that will enable local-level projects and programs which provide economic resilience and sustainability to the region's fisheries and related businesses. Annual funding would begin at the site-assessment phase and continue for the life of the lease; and,
- 4) The fishing community fund may also support larger state-wide industry-led organizations which work to benefit and sustain in-state wild-capture fishing communities and seafood. This work is essential to the State's food security, thereby benefitting all California fishermen and related businesses.
- 5) Establish the basis for a long-term constructive relationship between OSW companies, fishermen, and impacted communities.

Funding to be adjusted for inflation annually.

Examples of uses of annual funding to enhance the economic resilience of fisheries may include: lower costs of mooring, fuel, and ice for active fishermen; assist local cities or port/harbor districts in acquiring and maintaining fisheries-related infrastructure (eg, ice machines, cold storage, hoists, dock repairs, etc); provide training programs to develop new entrants to the fisheries; local promotion of seafood via seafood markets and festivals; provide vessel safety equipment; support for participation in fisheries management; retain consultants and legal services as needed; create strong communication tools among the fishing community for information-sharing; enhance direct marketing; provide community outreach on the sustainability of California fisheries; commission science products, economic impact reports, public opinion polls; and, support development of innovative gears and/or experimental fishing permits.

The FCBA should also define key relationships between the developer and fishermen. This can include: Industry to industry communication protocols; a consultation requirement; agreed upon traffic corridors; first right of refusal for certain job opportunities; coordinated safety/emergency response; job training; 24-hour problem/emergency hotline; gear replacement if conflicts with OSW hardware or operations occur; collaborative fish stock surveys; biological assessments; and a bond held for unforeseen impacts.

All of these programs are meant to enhance **resilience** in the fleet by lowering fishing costs, increasing profitability, and in other ways to keep people fishing despite a loss of fishing opportunity caused by OSW development. The MB and Humboldt Wind Energy Areas (WEA's), nearly 600 square miles of productive ocean, will be removed from seafood supply. We are aware of other areas of interest to BOEM and the California Energy Commission are being considered. Should these areas result in OSW leases, California will suffer a further loss of fishing opportunity.

When FCBA yearly fund contributions sustain seafood production, other elements of the seafood supply chain (deckhands, processors, retailers, restaurants, etc) will benefit. These programs will help keep up seafood deliveries to the communities; however, make no mistake, removing nearly 600 square miles from production will lessen seafood production.

Hypothetical FCBA Implementation-Governance Structure of Administering Entity

California's commercial fishing industry can look to existing successful FCBA-like agreements to inform the governance structure of an entity (Entity) formed to administer the terms of a FCBA.

These industry-to-industry agreements should be negotiated between the local port fishing associations as represented by the Entity, and the OSW company, not by any State Agency; however, both BOEM and State agencies can be helpful by requiring that OSW lessees enter into FCBA's following the principles listed above.

Such an Entity could have the following features:

The Entity is guided by a Board of Directors (Board). The composition of the Board and its responsibilities are to be determined. For discussion purposes, the board of directors would be founded on democratic representation of fishing interests formed to negotiate with OSW the terms of a FCBA. This Entity will also be the managing body to receive and distribute both one-time impact and annual funds. The Entity may include CFO's outside the immediate project area but which have members who have a history of fishing in the OSW project area; however, the CFO's closest to the OSW development shall form the majority of voting directors of the board. The OSW company(s) funding the FCBA could have one or more non-voting representatives on the board, as well as one non-voting representative of each harbor/port administration(s).

The FCBA would provide for funding in phases as negotiated between the parties, for the duration of the lease. As described, above, there shall be an initial one-time mitigation-compensation fund, as well as an annual fund. Impacts are expected to be felt by fishermen beginning with the initiation of the Site Assessment and Surveys. Initial mitigation-compensation will be for anticipated future losses due to OSW displacement for active fishermen.

The Entity to hire a manager or executive director to manage its day-to-day affairs, under the direction of the Board.

The Entity will be the communication liaison between the OSW and commercial fishing industries. Good relations are desired.

The Entity and OSW lessee shall provide for well-defined employment or contracting opportunities for fishermen to use their mariner skills and vessels in support of OSW construction, research, and operations.

The FCBA shall describe a process to provide for initial, one-time direct payments to fishery participants via the local port CFO's operating through the Entity's Board of Directors. Any such payments will be negotiated between the Entity Board and OSW company representatives. Fishermen who do not home-port in the directly affected ports shall be able to make claims provided they show income losses to the Board due to displacement by the OSW development. The past window of time to show fishing activity inside the WEA and cable route(s) shall begin ten (10) years prior to the signing of the FCBA, and take into account interference in fishing activity due to the pandemic.

A percentage, to be determined, of an annual FCBA fund may be directed in support of local, State, regional, and/or national commercial fishing and/or seafood promotion, conducted by

recognized non-profit industry organizations, supplied on a grant-request basis. Priority shall be given to local/State organizations.

The Board shall manage the fund by creating programs such as described above, and through considering grant requests initiated by fishery participants and/or community requests for additional, worthy programs or projects that have a supportable connection to commercial fishing.

Since FCBA's may be negotiated prior to the completion of a construction and operations plan (COP), the FCBA should provide a mechanism for amendment when new information and/or impacts to commercial fishing is made available which have impacts to commercial fishermen that need to be accounted for.

In-the-event-that there is more than one OSW lease and FCBA in the region, the Entity can either administer all FCBA's concurrently, or by separate processes.

The Entity shall provide an annual informational report on its programs and expenditures to OSW company(s) funding the FCBA(s) and to the California Coastal Commission.

Impacts from OSW to Fisheries and their Communities

These are impacts that fishermen have identified will be experienced with OSW development. Most are attributable to the first five leases, others from the full effects of the state's goal of establishing 25 GW of OSW power by 2045. While cumulative impacts from developments outside California are not included, acknowledging those will occur is important. Some impacts are known, others are uncertain, or create uncertainty, in the seafood supply chain, dependent fishing community¹, and in the environment/marine ecosystem. 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 and vessels; 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 health and 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 will experience more impacts from OSW development when BOEM fails to seriously consider fishery and fishing community needs during the site identification process leading to the nomination of Call Areas².

Impacts to Fisheries:

Loss of Access to fishing grounds. The degree to which floating OSW arrays will act as closures to most fisheries remains unclear. Current configurations of floating OSW arrays show inter-array cables suspended in the water column. This would functionally bar most, if not all, gear types. This would disproportionately impact Highly Migratory Species and groundfish fisheries and fishing communities dependent on those fisheries. In addition to loss of fishing grounds from turbines and substations, there will be a loss of fishable area resulting from the siting of submarine cable routes to shore. Cable routes have the potential impact ALL federal and state-managed fisheries. Impacted gear-types include bottom trawls, purse seine, traps and pots. 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, where the energy will be landed; and even larger questions about whether each development require their own cable routes.

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 in the seafood sector. Small family-owned commercial fishing and commercial passenger-carrying fishing vessel businesses

¹ 16 USC 1802(17) defines "Fishing Community" as "a community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community. Impacts to fisheries, here, necessarily includes potential impacts to members of the fishing community.

² Fishery information provided by the Oregon Department of Fish and Wildlife and National Marine Fisheries Service AFTER identification of Call Areas off the Oregon coast showed the importance of using this information in the site identification stage.

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 20 million pounds of seafood in the Eureka Port Complex alone, with an ex-vessel value of \$38.7 Million³. Ex-vessel revenues represent dollars paid to the harvesters and fails to capture the true economic benefit provided by the fishing industry. Assuming a conservative downstream multiplier of five times, that is roughly \$200 million in economic activity generated by the products provided by harvesters, per year, in the area(s) surrounding the Eureka Port Complex. The lease term for the five California leases are 33 years once operations commence. This represents an opportunity cost of roughly \$6.5 billion (in today's dollars) to the North Coast area alone over the lease term. It is acknowledged that the lease sites 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.

Seafood processors/buyers, 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 landings could lead to the closure of processing plants. The loss of processing plants will take away a necessary component to the seafood supply chain – the processors/buyers. Without processors/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/buyers for ice; a plant closure will have dire effects – both direct and secondary.

There will be indirect job losses to vessel crewmembers, fishing gear manufacturers and/or repair workers, etc. This makes up a significant portion of the fishing community and seafood economy. 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.

There is potential for impacts to Tribal fishing rights outside of California. 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 upwelling, larval transport, or other functions dependent upon oceanographic conditions offshore California will be negatively affected by windfarms, for such processes as upwelling and/or larval transport. Diminished oceanographic conditions could negatively impact sable fish, whiting, sardine, and other fisheries important to Tribes with rights to harvest those species. This would result in significant cultural and economic losses outside of the State of California.

Increased time at sea to avoid wind farms will affect catch quality. Changing fishing behavior to operate in new grounds, or to have to transit around a wind farm, will result in added time to a fishing trip. For some fisheries, this may mean hours; but for others it could mean additional days at sea. Even with the best methods of icing or refrigeration, each day spent at sea diminishes product quality and therefore ex-vessel value. In addition to impacts product, this additional time at sea comes with additional fuel costs. Fishermen have proposed traffic lanes through wind farms in the two California lease areas; However, we have no information as to whether BOEM or the developers will make this accommodation.

³ Table 15 - Poundage and Value of Landings of Commercial Fish into California by Area – 2019 - [Table 15 2020 CFLs \(ca.gov\)](#). Last accessed December 27, 2022

Lost tax and fees revenue to the state. In addition to lost income taxes, sales and use taxes, property, and other state and federal tax revenue from fishing activities, the California Department of Fish and Wildlife (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 result in a further inability to satisfy domestic seafood demand from domestic sources. This will cause an increased reliance on imported seafood with a higher climate cost (carbon footprint per pound of protein produced) and less concerns for impacts to protected species and other marine biodiversity. Aquaculture may help alleviate some of those concerns; but the carbon footprint of aquaculture exceeds that of wild capture fisheries.

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. Bluefin tuna is an example of a species whose range is expanding as the stock continues to rebuild. Fishermen are reporting harvestable quantities north of Point Conception, particularly off Northern California. Lost opportunity to develop new fisheries in, or around, the lease areas and/or future areas identified for OSW development will be another future impact.

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 and compacted. Fisheries will have to adapt to changing ocean conditions resulting from climate change. A recent study predicts three high-value west coast groundfish species will migrate toward deeper offshore waters⁴. If these deeper waters overlap with depths of planned OSW developments, adaptation would be difficult. Infrastructure serving the commercial fishing industry will require updating. Equipment used to offload seafood differs depending on the species targeted. The lack of available space in local ports and harbors would hinder adaptation.

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 search and 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. Additionally, west coast lease areas and/or future areas identified for OSW development will force fishing effort into other areas. Fishermen often plan on ending a trip in an area where the ride back to port is safer (depending on prevailing wind conditions and sea state). If those normal transit routes are not navigable because of the presence of OSW developments, returning to port is made much more difficult and less safe. This will be a significant concern if areas between the Brookings Draft Wind Energy Area and Cape Mendocino are proposed for development.

⁴ Liu et al, *Species redistribution creates unequal outcomes for multispecies fisheries under projected climate change*. Aug 18, 2023. See - [Species redistribution creates unequal outcomes for multispecies fisheries under projected climate change | Science Advances](#)

Lost or damaged fishing gear. There is the potential for interactions with fishing gear and/or loss of gear both in the areas identified for current and future OSW development and service vessels during survey work and during the construction and operation phases. In addition to lost/damaged gear, the value of any catch likely to be in the gear should be compensable.

Whale and other protected species. Interactions with, or the risk of interactions with, protected species will affect commercial fishing operations. The Marine Mammal Protection Act and Endangered Species Act govern take of protected species. Given the significant increase in vessel traffic likely to accompany OSW developments, assurances must be given that any interactions between the OSW industry and protected species are identified and reported. West coast dungeness crab fisheries are managed to minimize the risk of entanglements. Under California's regulatory Risk Assessment and Mitigation Program (RAMP), the Director of CDFW is empowered to delay the opening, or close early, the commercial fishery if the risk of entanglement is too high. Presence of whales in or near the crab grounds is one data point the Director is required to consider. If OSW developments change the migratory patterns of protected species, such that they avoid those areas, there is a very real possibility the commercial crab (and other fixed gear) fishery will be impacted by continued delays or earlier closures.

Electrical Cables to shore becoming un-buried. This has already been an issue on the east coast and in Europe. Exposed high voltage cables lead to shutdown of the OSW farm and 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 substations. The Construction and Operations Plan submitted in support of the Sunrise OSW facility off the east coast includes offshore converters. This activity requires large amounts of cooling water⁵ which will create risks of entrainment of larvae and juvenile sea life. It will also discharge large amounts of hot water, affecting the environment.

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

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 conflicts with OSW arrays.

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.

⁵ The Draft EIS for the Sunrise OSW project estimated maximum inflow and outflow volumes are 8.1 million gallons. It projected the maximum daily average discharge temperature to be 90 degrees F.

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, a 500-yard security zone around each turbine was implemented during construction activities.

Site survey and assessment activities. Whale and other protected marine species injury, mortality, and behavior changes will affect commercial fishing operations and regulation. Fishermen are rightly concerned about the effects of OSW site surveys, construction, and operation as those activities affect them. Fishermen (and shippers) tend to be blamed for harm done to protected species. Fisheries managers take fishing/whale interactions into account as rules are set, which make fishermen question why the OSW industry should be exempt from scrutiny and regulation? Will OSW survey and construction activities be exempt from the protocols established to deploy crab gear? If so, under what rationale? On the east coast, there is a clear correlation between OSW site survey work and whale/dolphin mortality. While the NMFS has not established that the survey work *directly* causes these mortalities, fishermen believe that they are related, as these mammals become disoriented from the blasts of sound and are more vulnerable to ship strikes, etc. There also exists the observations of fishermen that even low-level sonar and other noise-producing survey equipment affect fish and invertebrate behavior, putting fish "off the bite" for months following the survey work. Further, at minimum, survey work will displace fishing activities.

OSW impacts will be felt by California's fishermen/fishing community, as well as by fishermen from ports/fishing communities outside California who fish in the lease areas and/or future areas identified for OSW development. Even if smaller vessels, such as near-shore fishermen, do not fish in the lease areas and/or future areas identified for OSW development, they will certainly be impacted by OSW development. Disruption from OSW port activities, cable routes running to shore, fishing being put "off the bite" and other behavioral and potential injuries to fish from all stages of OSW development (site assessment/characterization/construction/operations/decommissioning), loss of markets and necessary infrastructure should buyers leave, increased sea time to avoid wind farms...all are impacts that will affect all fishermen in nearby ports. As noted above, Tribal fisheries based in Washington have concerns about the potential impacts of OSW development on larval stages of fish stocks important to Tribal fisheries. Analysis of potential impacts/effects have to take a regional focus.

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.

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.⁶ This will be a large economic impact for fishermen, as to a great degree, the value of their businesses, and therefore their retirement assets, are largely tied to the value of the permits they hold (along with the value of boats and gear).

Community-wide impacts

Community impacts. Above we discussed the need to understand (and quantify) economic consequences of OSW development on California's fishing communities. 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 and additional time at sea, along with the depressing perception that the state and federal governments seem unwilling to value the food-producing role fishermen serve, will all contribute to harmful community impacts.

There will be impacts to coastal tourism and community identification. The close connection between locally harvested seafood being landed, the visibility of working commercial fishing vessels, and tourism, is a dynamic that the state must appreciate. Taking fishing out of this partnership will have negative economic impacts on tourism.⁷

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 we harvest 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.

Impacts from Port Development:

Increased competition for limited harbor/port space could price fishing vessels out of dock space. Dockage and land space in ports and harbors are limited. Fishing is a water dependent use and sufficient land space on or adjacent to the waterfront is necessary to support our operations. With lessees already needing dock space in Morro Bay, Humboldt and the Port of Long Beach, assurances must be provided to the fishing industry that they will not be forced out or relocated to areas with less utility to its operations. In addition to fishing vessels homeported in those areas, how will transient 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, etc. Not only is the albacore fishery critical

⁶ Most fisheries which operate off the California coast are restricted to participants with a permit to prosecute that fishery.

⁷ 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>.

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. Most, if not all, of 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 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 acknowledges the importance of the commercial fishing industry to the State of California⁸ and is protective of facilities serving the commercial fishing and existing commercial fishing harbor space.⁹ In the case of Humboldt Bay, major deepening of the channel will certainly increase the scour throughout the estuary, creating a likely loss of eelgrass—a flora specifically protested in state law.

OSW operations will interfere with normal port traffic. In the case 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 and utilization of fishing grounds, delivering product to market, and/or tending to their gear. Most fixed gear fisheries have a gear-tending requirement. If a fisherman is unable to leave port to service his/her gear under state mandated timelines, he/she may be subject to violation(s) of the law. It may also impact the ability for a vessel in distress to seek safe refuge or obtain necessary repairs, or the ability of that vessel to seek medical care for a sick or injured crewmember.

Environmental Impacts or Concerns:

Impacts to special management areas such as habitat closures, spawning closures, and other restricted areas (EFH, HAPCs, MPAs, NMS, etc), should wind farms or cable routes be placed in these areas.

Adverse impacts to Essential Fish Habitat (EFH) and upwelling. Adverse impacts to fish stocks, fish stock migratory patterns, and fish distribution, including concerns around any diminishment of ocean upwelling due to reduced ambient wind speeds caused by wind farms, and from impacts from the potential for noise pollution. This does not account for 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*

⁸ Calif Pub Resources Code §30703

⁹ Calif Pub Resources Code §30234

*deoxygenation in the North Sea*¹⁰ which could 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, but it is not yet clear how significant they will affect fisheries and socioeconomics. More research is needed in this area. Should these effects be significant, fishing will be impacted.

There is uncertainty about the level of impacts that will occur from OSW mooring gear's bottom contact. Fishing could be impacted should the anchor line scrape the bottom, creating noise, sediment plumes, and/or denuding the bottom.

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 assess impacts, but not necessarily clear jeopardy, to these animals. Should whales divert closer to shore to avoid the wind farms, this will increase their conflict and jeopardy with commercial crab gear. The "West Coast Crabber-Towboat Agreement" (Pomeroy et al, 2015) will 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 less-productive areas. There is a strong likelihood that this will cause localized depletion, with negative environmental consequences.

There is uncertainty about electromagnetic field disturbance to sea life. We understand that each turbine will be connected to another via a electrical cable suspended in the water column; but not buried. Additionally, electricity will be consolidated into large cables routed to shore (we assume these will be buried in this case to an unknown depth.). This will represent hundreds of cables in each WEA.

It is well understood that many species of sea life either use electrical or magnetic fields for hunting or navigation, while others have behavior 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.¹¹ 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 that OSW turbines and blades will produce during site assessment, construction, and operation. This is a question very much germane to the assessment of cumulative effects, as, with the Morro Bay lease site as one example, there will be approximately 250-300 turbines within a roughly 376 square mile area, all producing some degree of sound. In the North Coast, the

¹⁰ 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>

¹¹ See - Mesmerized brown crabs 'attracted to' undersea cables | Marine life | The Guardian

Humboldt WEA and the potential for many hundreds more of wind turbines (including off Southern Oregon) could produce a vast sound field. Understanding that sound travels exceptionally well underwater, will the subsurface sound produced be sufficient to cause fish, crustaceans, and marine mammals to avoid a large section of the ocean? Should commercially-harvested species avoid a large area in and around the wind farms, the 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.

General:

Concerns about engineering integrity. Fishermen, who have much at-sea experience, have concerns about whether-or-not 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 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. If they do not topple, there is also a real risk of the turbines/floaters dragging their mooring gear into other turbines.

Fishermen have experienced such extremes of weather many times.

Wind farms as terrorism targets. 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.

Impacts to fishermen from-time consuming public and private processes required to avoid, minimize and mitigate harmful OSW developments which cause a loss of fishing time and production. In many of these meetings, fishermen find themselves repeating their concerns over and over again.

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 policies 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 additional fishery closures, further squeezing fishing opportunity and crowding the remaining open areas. Aquaculture Opportunity Areas have been identified in Southern California. These policy actions, while seemingly geographically contained, will have regional impacts.

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. States 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 very deep-water floating turbines. Fishermen implore the state to use all authority and status to force BOEM to halt new leases for a minimum of three years after the current leases have been in operation to allow environmental and socioeconomic information from the first five leases to be acquired. The first five California leases should serve as a *demonstration project*. 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, very deep-water wind farms.

This summary of impacts should be viewed as a "living" document and should be amended as more impacts become known, or if scientific research removes other environmental concerns.

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