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California Fishermens Resiliency Association Comments

Additional submitted attachment is included below.

Sent electronically to: California Energy Commission (efiling.energy.ca.gov)
Docket # 25-AB-03 August 18, 2025

RE: Comments on AB3 Report Requirement on Offshore Wind Port Requirements; General Comments and Specific Comments on Port Development

Humans and every other living thing on this planet rely on the ocean - the entire planet-wide complicated system for: modulation of the world's climates, the recycling of carbon, almost all of the oxygen we breathe and a major food source for humans and animals. The fishing industry, fishermen and fishermen's families are increasingly alarmed by the lack of measured, logical study of the tremendous possible negative effects posed by the California Energy Commission's plans for OSW ocean industrialization and the disregard for the precautionary principle of "first do no harm".

The California Energy Commission is advocating for the development of offshore wind power, submarine cables and other forms of non-petroleum based energy production on California's coastal fishing grounds. California has the most regulated ocean and fishing industry worldwide. Nearly every square inch of California's coastal ocean is covered by fishing closures, marine protected areas, national marine sanctuaries, naval training areas, munitions dumping grounds, submarine cable lanes, vessel traffic separation schemes, national parks, gear, depth and fish species restrictions and fossil fuel development. For California fishermen, the coastal ocean is 100% utilized— there is no "unused" space. This complete utilization manifests itself by fishermen employing various types of fishing gear targeting a wide range of species of fish as seasons change throughout the year. The displacement of fishermen by offshore development from one coastal ocean area of fishing grounds doesn't only affect those individuals and boats, but instead exerts a negative impact on all fishermen as fishing businesses try to relocate onto already occupied fishing grounds

Who we are.

In January 2022, California Port Commercial Fishermen's Associations formed the California Fishermen's Resiliency Association (CFRA), a California Nonprofit Mutual Benefit Corporation. CFRA membership extends from Crescent City to San Diego California and includes seventeen separate fishermen's organizations (July 2025). The CFRA represents its members interests and provides support at the local, state and federal levels, concerning spatial challenges to fishing grounds access, non-fishing ocean industrialization, ecological and environmental concerns, zoning and port infrastructure and impact mitigation. The CFRA represents all fisheries and gear types through its member associations.

The California Fishermen's Resiliency Association serves as a "point of contact" and negotiator for fishermen with developers of offshore wind power, telecommunication and energy transmission subsea cables, and offshore mineral extraction projects. The CFRA receives funding from the California Ocean Protection Council.

The term FISHERMEN is used inclusive of both our fishing men and women.

There is no support from the California fishing industry for the conversion of California's limited and highly valued fishing grounds to wind or wave energy extraction, especially energy aimed at insatiable A.I and Cryptocurrency demands.

Upwelling

Fishermen and some scientists continue to express concerns for the decrease in wind driven coastal upwelling within the California current system by the extraction of energy from the winds responsible for the upwelling process which results in high oceanic productivity. Any decrease in the wind energy available to drive surface water south and west away from the California Coast will undoubtedly result in decreased primary (phytoplankton) and secondary (zooplankton) trophic levels ,yet another human driven stressor to the entire marine habitat. The CEC report cites a study that mistakenly credits wind energy extraction for creating "increased" upwelling offshore by decreasing inshore wind velocities within wind turbine arrays. Extracted wind energy and decreased wind velocities can only result in an overall decrease in upwelling, not the "slight of hand" increased upwelling offshore as we destroy upwelling in inshore areas

Loss of Fishing Area

The CEC greatly understates the major generational impact of the conversion of the state's very limited fishing grounds to wind power production and power export from OSW sites. The CEC, in its own Sea Space Workshops, expressed the need for 4000 square miles of sea space, all on

fishing grounds, and most located north of Point Arena to Crescent City. Additionally, the CEC is advocating for inshore areas to be converted to wave energy developments. Not included in the CEC Sea Space area was the additional "take" of at least 1000 square miles of fishing grounds for export cable routes. If implemented, the removal of more than 5000 square miles of fishing ground access will result in the significant long term reduction of the supply of sustainably managed seafood resources, a concentration of fishing efforts into smaller and smaller areas, loss of fishing industry jobs, the disappearance of coastal fishing culture and the loss and replacement of shoreside commercial fishing working waterfronts with just more condos, restaurants and t-shirt shops.

Oil spills

According to information supplied by Vineyard Offshore, a California lease holder, the average turbine unit contains in excess of 2200 gallons of lubricating and cooling oils not including diesel for emergency power generation on individual floating turbine units. Upon the event of a catastrophic explosive deconstruction of a turbine unit at sea, there will be no effective clean-up response. There are no known methods for oil removal in typical windy ocean environments, only dilution by the use of dispersant agents, most of which are toxic to marine life. What gets cleaned up is the oil spill insurance money.

Impact of catastrophic loss of power generation units due to environmental conditions

The potential for catastrophic loss of offshore power generation units is huge. The ocean off Humboldt County has recorded some of the largest waves on the west coast during winter weather events. These recorded weather events (storms) typically include wind velocities of 30-60 knots and wave heights in excess of 30 feet with wave periods of less than 20 seconds. Fishermen fully expect wind power or wave energy units to be drug off station, parted from their electrical transmission cables and carried completely away by winter storms (see USCG super buoy, Cape Mendocino). Breakaway units driven by wind and currents will collect hundreds of Dungeness crab traps on their way to grounding on our beaches during the December to June season. Hagfish, sable fish and longline gear are also at risk of loss. Ultimately, wind power units carried away by ocean currents during winter weather events will end up on west coast beaches. Salvage of these units may be problematic or impossible depending on the coastline structure where these units might go aground. Abandonment of cable, damaged equipment and anchoring systems will occur during winter storms potentially scattering debris outside of lease sites onto fishing grounds with no way to track or retrieve this junk.

Catastrophic Loss of Power Generation Units due to Mechanical Failure

All human built infrastructure is subject to catastrophic failure. High failure rates of infrastructure in hostile environments is well documented. One can go online and type in “wind turbine failures” and immediately numerous videos pop up with footage of catastrophic failure of land based wind turbines. These failures include electrical fires in generator components, individual turbine blade failure and “over speed” turbine events resulting in explosive deconstruction of the turbine components and collapse of the tower (mast) supporting the turbine. These failures have two things in common; they result in an extensive debris field and are land based. One could conclude that the salvage and clean-up of a land based failure while challenging is also possible. These catastrophic failures resulting from fires and over speed events will also occur at ocean based wind turbine units. Ocean conditions such as “current set” and “wind drift” will propel the rapid expansion of the resulting ocean debris field.This wind power debris will then quickly move outside of the lease area. Some components will eventually sink to the seabed, thereby fouling community fishing grounds. Floating components will present serious hazards to navigation. The attempt to clean up the debris field may be impossible for weeks or longer, severely hampered by inclement ocean conditions. Decoupling and removing what remains of damaged floating turbine units from the lease area will also prove to be seriously challenged by weather and in some cases present extreme danger to salvage crews and salvage vessels attempting to remove these structures. Who will do this work? Perhaps no one.

Transfer of title and subsequent abandonment of energy infrastructure Energy, mining and other extractive industries work via a worldwide model which allows developers to maximize profits and minimize or totally defer maintenance costs. Initially a well funded, and often well known major development corporation will begin exploration, development and extraction of a resource. In this century, oil extraction is the prominent example. Once the infrastructure is built and operating, maintenance is kept to a minimum and costly major overhauls of said infrastructure are avoided. When the profitability of any particular extractive process decreases to a certain point, the initial developer transfers title (sells) the infrastructure and equipment to less well funded, marginal operators. Often as not, the purchasers of these assets acquire and operate the facility via layers of multiple “shell” corporations to avoid legal liability connected with their operation and eventual abandonment of these marginal extractive facilities and equipment. The Gulf of Mexico and adjacent U.S. States contain thousands of abandoned oil wells, and thousands of miles of oil and gas pipelines. In California, the State is still trying to clean up oil wells in the nearshore Santa Barbara ocean waters which were drilled in the early 1900’s. Texaco famously abandoned an early oil platform at Ellwood Beach in Santa Barbara. Offshore telecommunications companies landing fiber optic cables in California waters continually advocate for abandonment of fiber optic cables at the end of these cables’ profitable lifespan. No one should expect that international wind power developers will step

away from this model of maximizing profit, then selling outdated or marginal equipment to other operators to avoid the responsibility of maintenance, and removal of low profit wind power components from California's Community Fishing Grounds.

Port Development Concerns

It will be impossible to create fifteen large port sites and ten additional smaller port sites for OSW development unless the permanent destruction of the character of California's coastal ports is also a priority goal for the Energy Commission. There is one site and one site only capable of accommodating OSW construction due to harbor constraints and workforce personnel - Los Angeles Harbor. Advocacy for the re-industrialization of Humboldt Bay comes with huge unmitigatable environmental and social justice costs.

Humboldt Bay

The conversion of Humboldt Bay to an OSW assembly and storage port will be the second largest impact to the Humboldt Bay Estuary since it was first "discovered" by white Europeans. The first was the eradication of the indigenous population by white male Europeans for the purpose of industrialization of the bay to expedite the extraction of the local natural resource — forests, all done at a breakneck pace. Not too long ago, Humboldt Bay was the second most polluted county in California, thanks to the air and water discharge of "black liquors", chlorine, and other toxic compounds from two paper pulp mills which are now falling apart and abandoned. To date, all local extractive industrial activities have been operated on the "boom and bust" method of corporate business. There is little evidence to suggest that this will not be the case with OSW industrial development in Humboldt Bay.

Initially, the first OSW project for Humboldt County was for seven floating turbine units, then it was eleven, then seventeen. Now, it is two hundred turbines with an assembly and "wet" storage area for all the proposed experimental turbines in California and Southern Oregon! We were told that the largest turbine unit had a waterline beam of 300' and maxed out at 850' of height. Now the latest statistic is for a turbine with a 400' beam and 1100' of height. Honestly - who thinks of this stuff? Where are the brakes, the rational thinking, logically taking small incremental steps, instead of jumping into the boiling cauldron feet first and hoping that things will be okay?

Listed below is a sample of the environmental impacts and social justice challenges posed by the potential re-industrialization of the Humboldt Bay Estuary. The reader should exactly understand that many of these impacts will occur in other ports and bays that are the recipients of OSW developments.

The Impacts of the Proposed Samoa Heavy Lift Terminal

There are three major pieces of the proposed offshore wind initiative in Humboldt County: the offshore windmills themselves, the transmission infrastructure that would be required to push the power beyond our region, and the proposed development of a heavy lift terminal in Humboldt Bay. Make no mistake: these projects represent substantial industrialization of both Humboldt Bay and our oceans. Of the three, the heavy lift terminal promises to be the most impactful, in ways that are both good and bad.

We are being told that we should accept these environmentally harmful developments as the consequences of climate change are far more harmful — but is that true? We don't think so, as the facts we present will show.

The Samoa Heavy Lift Terminal project will have far reaching and long-term consequences for the state and health of the Humboldt Bay Estuary, the West Coast fishing fleet, the culture of Humboldt County, and the health and productivity of our ocean. The CFRA, and the public, should require a serious, clear-eyed critique of the Harbor District's Environmental Impact Report. Long-term, cumulative impacts must be addressed. The Harbor District, State and the Humboldt community get one chance to get this right. We should move with the utmost caution.

Background

Generically, a heavy lift terminal is a facility that handles, stores and/or assembles oversized cargo and heavy equipment. This means large cranes, big buildouts of port infrastructure into the water, and other construction—and impacts—on quite a massive scale. As one example, the Samoa proposal includes acres of construction over and in Humboldt Bay.

The Humboldt Bay Estuary, second largest in California, has twenty-five square miles of saltwater surface area at high tide and only eight square miles of saltwater surface area at low tide. Due to historical environmental destruction by European immigrant populations, Humboldt Bay now contains less than four thousand acres of eelgrass beds. Eelgrass is protected under state law; any loss of eelgrass habitat must be fully mitigated. There are only 900 acres of remaining salt marsh, reduced from 10,000 acres before the diking, draining, and filling of the original salt marsh habitat.

Tuluwat Island, adjacent to the proposed offshore wind site on the Samoa peninsula, is the largest remaining salt marsh tract in the estuary and is directly in the shadow of this proposed project. Over 21,000 Black Brant use Humboldt Bay for overwintering along with Canadian and Aleutian Geese, ducks, and shorebirds from fall until spring. Humboldt Bay is second only to San

Francisco Bay in numbers and diversity of migrating water-associated birds overwintering in this coastal segment of the Pacific Flyway.

Humboldt Bay is home to 110 species of marine and anadromous fish and provides spawning and rearing habitat for commercially important fish, crustaceans, and mollusks. The bay is essential fish habitat (EFH) for many of these species. Additionally, the northern portion of the Humboldt Bay Estuary is the largest California site for shellfish mariculture with over 300 acres involved in shellfish production and five shellfish nurseries for oyster spat and clam seed production. All of these seed facilities are located on the northern portion of the bay's west side directly in the tidal current of the proposed facility.

On a larger scale, the Humboldt Bay ecosystem remains an important part of the California Current large marine ecosystem, despite the past environmental damage. Future major reindustrialization within the Humboldt Bay Estuary can only compromise the estuary's contributions to the health of the greater ecosystem.

The Environmental Implications of "Wet Storage" of Assembled Turbine Units and Other Floating Structures and Equipment.

The Harbor District drawings depict OSW wet storage facilities at Redwood Terminal 1 and 2 areas outside of the federal navigation channel and "turning basin" on the Samoa Channel containing five to six assembled turbine units for "wet" (in the water) storage. Each unit, at 850' tall, has a floating triangular waterline beam of 300'x300'x300' (think football field). In discussions with OSW developers, they expect up to 25 turbine units to be held in wet storage, bay wide, for deployment during the construction phase of the project.

The District proposes two assembly sites at Redwood Terminal 1, stating that a turbine unit could be assembled in about a week. Roughly 26-27 turbine units could be assembled during five winter months while awaiting flat ocean conditions to allow for offshore deployment. For the sake of discussion, we assume that construction is progressing with all the required floating equipment in place and 20 turbine units in wet storage in the areas delineated in the engineer's charts.

For several reasons, all of this equipment will require ablative antifouling biocide paint coating. Submerged surfaces lacking antifouling paint protection become habitat substrate for various marine plant and animal colonization. Marine fouling organisms can reduce towing and vessel transit speeds up to two knots per hour and contribute to significant current drag on anchored equipment.

How much painted surface area and how much applied paint are we talking about?

While the California Energy Commission recently released information on the proposed “next generation” of floating turbines with a waterline beam of 400 feet and a vertical height above water at 1100 feet, the calculations presented here are for existing technologies — floating turbine units with 300-foot beams and heights of 850 feet above the sea surface.

Surface Area of triangular floating turbines:

Dimensions:
3 cylindrical floats: 40’ diameter x 20’ draft (depth) submerged surface area in unballasted condition = 11,703 square feet
Pontoon ballast structure= 780’ x 10’ x 2’ total submerged surface area = 15,600 square feet
Total submerged surface area of one turbine = 27,303 square feet
Total submerged surface area of 20 turbines = 546,060 square feet or 12.5 square acres underwater

The District plan includes two floating/submersible construction platforms
Dimensions: 400’L x 400’W x 10’ draft(depth)
Total submerged surface area = 1,600,000 square feet or 36 square acres of surface area underwater

The parts and components for the assembly of these floating turbine units will most likely be transported and held in Humboldt Bay on barges and for this discussion assume two barges will be on station at any time during construction.
Material Barges (2)
Dimensions: 400’L x 100’W(Beam)
Light Draft (depth) - 5’
Loaded Draft - 14’
Average draft for Calculations (estimation) = 7’
Waterline length = 350’
Painted submerged surface area for two barges = 490,000 square feet or 5.6 square acres of area under water.

Total submerged painted surface area for 20 turbine units, tow assembly floats and two material barges = 59 acres of area coated with ablative antifouling biocide paint.

What other surfaces coated with ablative antifouling biocide paints have we left out?
4 harbor tugs

2 ocean service tow vessels - 150’ LOA
2 site survey ships 350 x LOA x 60”
1 cable vessel 300 LOA x 60 beam
1 material transport ship - 650’ x 80 beam

Using the application guidelines developed by the paint manufacturing industry and assuming all the turbines, platforms and barges receive two coats as per the application guidelines, how much ablative antifouling paint is required to kill marine fouling organisms from settling and living on this equipment?

- Antifoulant topcoat coverage - 300 square feet per gallon when applied by spray for each coat
- One acre is 43,560 square feet. 43,560/300 square feet = 145 gallons of paint to cover an acre
- Total submersed painted surface area = 59.7 acres
- Total amount of ablative antifouling biocide paint required for 2 coats = 17, 313 Gallons

What is in this paint? A good place to find the answer to this question is in the “Environmental Impact of Antifouling Technologies - State of the Art and Perspectives. Journal of Aquatic Conservation”. Below is a short list of some of the chemical biocides found in ablative antifouling paints:
Zinc Pyrithione
Lead
Arsenic
Cybutryne Dcoit
Tralopyric
Tributyltin
Cuprous Oxide

Ablative antifouling biocide paints are designed to “wear away” over time, exposing fresh toxins (biocides) to kill marine fouling plants and animals as they attempt to settle on the painted surface. The biocides eroded (sloughed off) from the paint surface end up in the water. Once in the water column, these toxins are available for ingestion/absorption from a wide variety of marine phytoplankton, zooplankton, larval and adult mollusks, crustaceans, fish and finally at the top of the bioaccumulation pyramid, marine mammals, seabirds, and humans. The biocides listed above have been proven to cause deformities in oysters, sex changes in welks and have been traced entering the marine food chain through bioaccumulation.

The following mariculture companies operate oyster and shellfish facilities adjacent (up and down current) to the proposed OSW project, which will likely be highly concerned about diminished water quality:

Hog Island Oyster Co.
Taylor Mariculture
Coast Seafoods
Humboldt Bay Oyster Co.
Aqua Rodeo Farms

Concurrently, the proposed Nordic Aquafarms project is located less than one mile from the Redwood Terminal/OSW site. The Nordic facility plans on pumping 10 million gallons of bay water daily into their facility which will be producing farmed fish for human consumption.

With this in mind, we asked the Harbor District to explain in detail how the EIR will address the introduction of toxins derived from 57 acres of ablative antifouling paints into the Humboldt Bay Estuary, its plant and animal populations, and the marine aquaculture and commercial fishing businesses that will be negatively impacted from these biocides.

Dredging in the Humboldt Bay Estuary

The Harbor District's Notice of Preparation) discusses dredging, spoils material composition, (fines, sand, and light gravel), and dredged material disposal. These materials will be required to be removed for the proposed project depths. The present water depths, calculated at MLLW, is 24-28', with project depths proposed at 40'+, also at MLLW. The Moffatt and Nicol maps of Humboldt Bay show seven wet storage areas for turbines from the Samoa Bridge Redwood Terminal 1 to Fairhaven, and areas east and south of the Humboldt Bay Harbor entrance. Most or all will require dredging to accommodate unballasted turbine units, remembering that there could be 15- 25, 850' tall, turbine units anchored in the bay, awaiting calm weather conditions for towing to various lease sites.

How much dredging?

Looking at just the area in the Harbor District NOP maps, the amount of material to be removed looks like this:

1. Three wharf areas as delineated in the District map — 5200' x 600' x 20' divided by 27 = 2,333,111 cubic yards
2. Two "sinking basins" — 450' x 600' x 20' divided by 27 = 200,000 cubic yards
3. Wet storage area southeast of "turning basin" — 3200' x 600' x 20' divided by 27 = 1,422,222 cubic yards

Total dredge spoils for the Samoa project is equal to 5,733,333 cubic yards (the Harbor District's calculation of dredge spoils is 6,000,000 cubic yards) How much is 6 million cubic yards of dredge spoils? It is over 1100 football fields each covered with 3 feet of mud.

The entire job of maintenance dredging for the Eureka Small Boat Basin was only 100,000 cubic yards. It took about a month to remove those spoils.

Remember, right now we are just talking about the dredge spoils from the Samoa Heavy Lift Dock project. We have not included dredging the many acres of additional wet storage sites, and the additional deepening and widening of the federal navigation channels in the Humboldt Bay Estuary and the increased yearly maintenance dredging for all areas during the next thirty years.

To address these concerns, our public comment to the Harbor District requested that:

1. The environmental impact report (EIR) needs to explain exactly how many months or years it will take to remove 5.75 million cubic yards of spoils from the Samoa site.
2. Answer what the air quality impact will be of the initial Samoa site dredging, the dredging of the multiple wet storage sites from Samoa to the east and south side of the Harbor entrance, as most or all of the equipment will be diesel powered. Similarly, what will be the air quality impact of an additional 30 years' worth of maintenance dredging which will be required at all locations?
3. Answer who will actually do this dredging. None of the existing dredges that are privately owned and operated can operate in California because these dredges are not Air Resources Board compliant.
4. Where is the EIR planning on dumping 5.75 million cubic yards of dredge spoils? The Samoa Lagoon" is so small as to be impractical and the expanded H.O.O.D.s site lifespan timetable is based on only 1 million cubic yards per year from all total dredging in Humboldt Bay.

Dredge Material Challenges

Nearly all of the sediment scheduled for removal by dredging is anoxic. (Anoxia is the absence of oxygen, so an anoxic environment is one that has no oxygen available. When we talk about anoxic environments, we are often referring to an aquatic environment with no dissolved oxygen.) Oxygen penetration into fine sand and silt bottom sediments stops within a few inches of the substrate surface, the remainder of the sediment column is anoxic. Additionally, these same sediments have collected tons of carbon-based organic debris. These organic materials are slowly broken down by anoxic bacteria which produce methane gas as a byproduct of digestion. Methane gas is a potent greenhouse gas. Methane is released from the bottom sediments into

the atmosphere by disturbance of the sediment by human actions such as dredging or by physical changes in the environment. One can easily observe methane releases along the Eureka Inner Reach and Freshwater Slough entrance on minus tides when the easing of hydraulic pressure allows this gas to escape the sediment column. The project's plan to remove 5.75 million cubic yards of sediment from the project site will contribute significantly to the project's negative climate footprint.
Further, it is well-understood, with commensurate permitting limitations, that pollutants bind to fines materials far more so than sand and gravels. Often permitting agencies EPA, USACOE, CCC) will require the use of an upland disposal site.
We asked the Harbor District to address these points:

1. The EIR should, by scientific methods, publish the volume or weight in tons of the methane release as a result of dredging these sediments and should reveal the total cumulative methane release for the entire bay dredging.
2. Dredge spoils removed from some areas of Humboldt Bay are compromised due to dioxins, PCBs, and other dangerous chemicals. Please describe the EIR's plan for pre-dredging chemical surveys of areas impacted by dredging.
3. Please describe in detail the EIR plans for chemical monitoring of dredge spoils as they are being removed, especially in areas of the Samoa Peninsula which have been industrial sites for many decades and have never undergone dredging.
4. Please explain the EIR plan to properly dispose of fine materials which may well contain dioxins, PCBs, and other toxic chemicals in dredge spoils removed from the Samoa Heavy Lift Terminal site and all other wet storage areas bay wide.

Impacts of Anoxic Turbidity Events Caused by Dredging.
Along most of the Humboldt Bay shoreline, tidal and subtidal substrates contain high amounts of fine silts and clays, enough so that the California Coastal Commission no longer allows "beach disposal" of these "fines" material when dredged from Humboldt Bay. All types of dredging equipment stir up and cause to be suspended in the water column the fine particle sized clays and silts. The turbidity events caused by bay dredging create vast volumes of anoxic mud filled clouds in the water column. These sediment clouds are lethal to schooling clupeoid fish such as anchovies, herring, and sardines as well as both osmerid and atherinid smelts, perch, flatfish, and Gobies — all of which occupy the Humboldt Bay Estuary. Fishermen have many years of direct observation of forage fish schools avoiding areas being dredged and have seen areas recently dredged and the turbidity events emanating and spreading bay wide.

On some occasions, turbidity events resulting from dredging have prevented forage fish schools from occupying the Eureka Inner Reach and main channel/entrance areas for an entire summer

season. (T. Klassen, K. Bates, Personal Communication, 2020). The reduction or lack thereof of forage fish schools in the Humboldt Bay Estuary deprive marine mammals such as harbor seals and harbor porpoise, topline predators such as salmon, California halibut, leopard sharks, and nesting seabirds like Caspian terns, cormorants, gulls, osprey, and pelicans of their summer food source. Additionally, phytoplankton, marine algae, and eelgrass are all negatively impacted by sunlight attenuation caused by turbidity events.

The questions we posed to the Harbor District include:

1. What plans will the EIR have in place to prevent these human-caused turbidity events during the attempt to initially remove 13 million cubic yards of dredge spoils from initial construction of the Samoa Heavy Lift Terminal?
2. What plans will the EIR have in place to prevent these man-made turbidity events during the next thirty years of maintenance dredging that will be required at the .Samoa Heavy Lift Terminal site, the four other "wet storage" sites and the widening and deepening for federal channel areas associated with the cumulative impacts caused by the district's Samoa Heavy Lift terminal Project?

Other Impacts from Man-Made Turbidity Events

The majority of the proposed sites requiring dredging for wet storage of turbine units and the District's Samoa Heavy Lift Terminal are on the west side of Humboldt Bay which is the home of mariculture nursery facilities and shellfish beds belonging to:
Chris Seabird Mariculture
Hog Island Oyster Company
Taylor Mariculture
Coast Seafoods
Humboldt Bay Oyster company
Aqua Rodeo Farms

Additionally, the hagfish company and the planned Nordic Aquafarms project will also occupy these same areas. The Nordic project expects to pump 10 million gallons of bay water into the proposed fish farm on a daily basis. None of these water dependent animals in these businesses can tolerate low oxygen sediment-filled bay water created by dredging.

The EIR must explain in detail the provisions for monetary damage claims' compensation to the mariculture and baitfish fishery businesses in the Humboldt Bay Estuary caused by human-caused dredging turbidity events from the District's Samoa Heavy Lift Terminal project.

Additional Dredging

In 1999, a Humboldt Bay Harbor deepening project, costing 15 million dollars, increased federal channel depths to 38 feet. This federal deepening project resulted in a 300% increase in maintenance dredging of recently deepened federal channels in Humboldt Bay. The conversion of Humboldt Bay to a wind power assembly and maintenance port will require additional dredging on a yearly basis throughout the assembly site, federal channels and harbor entrance for at least the 30 year lifespan proposed for these projects.

Harbor Entrance Safety, Changes in the Tidal Prism

The Humboldt Bay Harbor entrance bar is considered to be one of the most dangerous on the West Coast. Vessel loss and deaths have been all too common.. The worst (most dangerous) time to attempt entering Humboldt Bay is during an ebbing current and continuing until low water slack. Any increase in ebb current velocities aggravates the dangerous transit conditions. The 1999 Humboldt Bay deepening project resulted in an increase of ebb current velocities, owing to the enlargement of the channel profile. We expect similar increases in ebb current velocities if all of the proposed bay dredging takes place.

How will the EIR evaluate this increased danger and propose protections for mariners from delays and losses resulting from increased ebb current velocities on the Humboldt Bay Entrance as a result of the removal of 6 million cubic yards of dredge spoils from the Samoa Heavy lift terminal and the additional cumulative effects to ebb current velocities caused by all the additional dredging triggered by the Samoa project?

As an unintended consequence, this dredging project will also increase current velocities in North Humboldt Bay. Humboldt Baykeeper reports that “removal of so much material may be causing increased erosion” [in Humboldt Bay]. We don’t think this is a “may” but rather a “will”…increase bank erosion. Extensive bank erosion was observed by fishermen and oyster growers on both the west and east tidal flats of Tuluwat Island, channel banks in the Arcata, Pantherotti and Mad River channels (T. Kuiper, K. Bates, J. Smith, Personal Communication, 2000 -2001). Channel bank sloughing, undercutting and collapse in these areas caused the deposit of sediment back into areas recently dredged to the “new” increased federal depth. Additionally, channel bank undercutting and collapse in North Humboldt Bay exposed extensive areas of eelgrass rhizomes, and resulted in eelgrass loss (T.Kuiper, Personal communication, 2001)

The Samoa Heavy Lift Terminal project will require removal of 6 million cubic yards of dredge spoils. This project will trigger the dredging of five additional “wet storage” turbine sites, widening of the federal channel at buoy 9 and the Elk River/Chevron terminal and cause increased maintenance dredging at all sites. What plans does the EIR have to monitor and

reduce “ebb current” velocities within the Humboldt Bay Estuary caused by this project and its cumulative impacts on the Humboldt Bay tidal prism?

The EIR must identify and evaluate protections for, and prevent any additional loss of eelgrass habitat in the Humboldt Bay Estuary, remembering that any reduction in eelgrass must be fully mitigated.

Demolition on the Samoa Site

Pilings

The “Marine Development Sub-Area” demolition will require the removal of thousands of creosote/wood pilings. Removal of these pilings will expose and release fresh creosote trapped in the mud substrate. Thus, pilling removal will cause worsening water quality, and must be avoided or mitigated, and evaluated in the EIR.

Creosote pilings are classified as contaminated hazardous waste and cannot be stored on site but instead must be transferred to a legal certified dump site which charges fees for accepting hazardous waste.

We posed these questions:
How many pilings will be removed?
How will these pilings be removed?
Where will pilings be transported for legal disposal?
How many round-trip truckloads are expected?
What is the fuel expenditure to remove and transport pilings?
What are the air quality effects of diesel truck transportation of old pilings?
What is the total cost to remove, transport and dispose of these pilings?

Dock Materials

Redwood Terminal 1 dock structure contains old growth redwood, untreated Douglas Fir, creosote treated Doulas fir, and pressure treated Douglas and White Fir timbers and decking.

The EIR must evaluate these questions:
How much of the old dock structure will be sorted for resale/recycling?
Of the remaining unsalvageable dock materials, what is the volume or weight of unusable wooden structure?
Where will these materials be transported to for legal introduction into the waste stream?

Upland Demolition of Structures

The clearance of the upland portion of the site requires the demolition of all onsite structures. The EIR must evaluate these questions:

Will the project make any attempt to demolish these structures in a way where a majority of the wood components are available for reuse/recycle?

What is the cost of demolition, sorting, transportation, and landfill fees for this project?

What is the portion (in tons) of hazardous materials (creosote lumber, pressure treated lumber, insulation, and asphalt roofing) generated by demolition on the upland portion of the Samoa site?

Blockage and Shadowing of Sunlight by Fixed and Floating Equipment

Marine plants beginning with diatoms, phytoplankton, red, green, and brown marine algae, and marine flowering plants such as eelgrass, all require sufficient exposure to sunlight to photosynthesize and produce dissolved oxygen into the water column as a byproduct of photosynthesis.

Fixed and floating equipment in the water blocks sunlight penetration into the water column. In California, permitting agencies – California Coastal Commission and California Fish and Wildlife – regard sunlight blockage as a serious negative impact caused by piers, wharfs, floating docks, barges, ships, and other equipment. A local example of a permitting agency's concerns over shading occurred when Englund Marine, then located at the foot of Commercial Street in Eureka, applied for a permit to tie a "courtesy float" for small boats to access the fuel pier. This float was 6' wide and 20' long. The total area was 120 square feet. It took months for the agency staff to deliberate and provide conditional permitting of this tiny float. The District's Samoa Heavy Lift Terminal includes approximately 552,000 square feet (12.5 acres) of "above water" dock and wharf area shading bay waters at the Samoa Heavy Lift Terminal site. Additionally, the District's drawing #3.2 shows fourteen floating turbine units moored at the site. Just the cylindrical floats create 52,750 square feet of shading of bay waters.

The Samoa HL Terminal plans also contain provisions for two "sinking basins" dredged to a controlling depth of 60 feet to accommodate two submersible floating assembly platforms. The planned footprint of these assembly platforms is 400' x 400'. The total shadow created by these two platforms is 320,000 square feet or 7.3 acres. Total shadow footprint for the Samoa Heavy Lift Terminal project (not including vessels, material barges and tugs) is 924,750 square feet or 21.2 acres of shadow. Again - for a comparison of permitting, the Englund Marine float was 7706 times smaller than this project.

How will the EIR plan to mitigate sunlight shadowing 21 acres of bay water whose ecosystem relies on the primary production of plant photosynthesis for the foundation of the marine food chain?

Humboldt Bay Air Quality Impacts

Low-income social justice communities surrounding Humboldt Bay have been and will continue to be the recipients of air pollution caused by in-bay vessel traffic, heavy truck use, and industry. The Harbor District's recent permitting of the installation/landing of the "Echo" fiber optic communications cable resulted in two ships, the 200 foot long "Cindy Brown Tide" and the 400-foot-long fiber optic cable repair ship, the "Segro", tied to wharfs in mid Humboldt Bay for thirty days. During this time, all on-board diesel power generation systems were running 24 hours per day. Additionally, the main propulsion engines were intermittently run. The result of the operation of just these two vessels was a heavy pall of diesel exhaust and combustion particulate hanging in the air over the Harbor and Pine Hill areas of Eureka at daylight each morning. At no time did the District or the Air Resources Board comment or cause to be remedied, the air pollution caused by these in-port vessels. The Samoa Heavy Lift Terminal, if constructed in the next fifteen years, will rely on diesel fuel to power excavators, graders, trucks, and other equipment on the upland portion of the site. All dredging, pile driving, bay infilling, the towing of floating equipment, and thousands of trips by tugs hauling dredge spoils to the H.O.O.D.s site will also be diesel powered. Additionally, BOEM expects 300 "vessel trips" from Humboldt Bay for site survey of the two lease areas, again all powered by fossil fuels.

The EIR must calculate the amount of petrochemical fuels in tons to be burned in the Humboldt Bay air basin for the construction of the Samoa Heavy Lift Terminal.
The EIR must calculate the amount of petrochemical fuels, in tons, to be burned in the Humboldt Bay air basin as a secondary impact of the operation of the Samoa Heavy Lift Terminal over the future thirty-year period.

Dust Control

The Samoa HL Terminal project advocates for modification [removal] of existing limitations on industrial performance standards including dust control. Hazardous, toxic, and non-toxic dust in the forms of paint and chemical overspray, welding slags, grinding dust from metals, painted surfaces, plastics, sand blasting and equipment and vehicle caused erosion of surfaces will be generated throughout the upland and marine site. Pier and dock decks, floating construction platforms and areas subject to outside construction activities all will be recipients of the above dust compounds.

How will the EIR propose to contain, stabilize, and remove these compounds from introduction into the air and bay waters during the following:

1. Wind events (prevalent all year long)
2. Rain events producing stormwater runoff
3. Equipment caused dust events

What state agency or state funded contractor will be responsible for monitoring environmental compliance of dust, noise, and lighting regulations throughout the lifetime of this project?

Mining of Fill and Gravels

The Samoa Heavy Lift Terminal plan calls for the mining of fill materials (soils) and gravel to raise the height above sea level for many acres of the Samoa site.

The EIR must address the following questions:

Where will fill materials (soils) suitable for deposit and proper compaction be mined from?
How many dump truck loads in cubic yards will be transported to the site?
How may round trip miles from the mining area to the Samoa site?
What is the total amount in gallons of the petrochemical fuels burned to accomplish mining, transportation, and compaction of fills at the Samoa site?
Where will gravels be mined from?
How may dump truck loads in cubic yards will be transported to the Samoa site?
What is the total amount of petrochemical fuels burned to accomplish mining, crushing, transportation and compaction of gravels at the Samoa site?

Water Pollution from Assembly Platforms and Piers

The District is advocating for two bay “sinking basins” to accommodate floating/submersible assembly platforms measuring 400’ x 400’ (7.3 acres total area). These platforms are the “workstations” for final assembly of turbine components. Assembly activities include welding, metal grinding, sand blasting of metal and painted surfaces, paint application by spray, and the pressure testing of tanks and ballast pontoons prior to launch and other procedures. These activities will generate considerable fine particle size construction debris - much of it toxic in nature, across the seven plus acres of platform surface.

How will the EIR address and prevent stormwater runoff into the bay from these platform surfaces?

How will the EIR address and prevent grinding, welding, and paint particles from entering Humboldt Bay during the submergence of these platforms?

Will the EIR present a plan to collect and process all stormwater runoff from piers, gangways, and assembly areas both over the water and inland?

Long Term Maintenance Costs of Samoa Heavy Lift Terminal
Soaring costs for planned offshore wind energy projects in Northern Europe and the U.S. East Coast coupled with the disappearance of many millions of U.S. dollars due to economic changes are causing the cancellation/delay of many wind projects worldwide. Floating offshore wind projects yet to be built are being similarly affected.

If the District is successful in permitting and building the Samoa Heavy Lift Terminal facility, and then finds itself without long term offshore wind tenants, how will the District finance the required yearly maintenance on this facility without those tenants?
What will be the status of maintenance funds for other District holdings such as Woodley Island Marina, and the Field's Landing haul-out facility, if the Samoa Heavy Lift Terminal is without tenants?

Cumulative Impacts of Transportation of OSW Components to the Heavy Lift Site The conversion of approximately 4,000 square miles of California's ocean fishing grounds to wind energy generation will require the importation of massive amounts of huge manufactured wind power components—all of which will require a constant transportation stream to the Samoa Heavy Lift Terminal site for generations to come.

Virtually all of the wind power components - buoyancy hulls, masts, blades, nacelles, anchor systems, interconnection and energy export cables, and floating substations will be manufactured elsewhere - probably overseas. All of these parts will arrive on specialized ships and barges - trip, after trip, after trip.

Additionally, wind power developers will advocate for **priority use** of the harbor entrance and federal channels during deployment and retrieval for maintenance and repair of floating offshore turbine units. Simultaneously, near-continuous dredging operations will be occurring in the harbor and at the harbor entrance."

The EIR must address the cumulative impacts on stakeholders related to vessel traffic congestion and safety, harbor closures, and significantly increased air pollution resulting from the cumulative activities of wind power component imports, ongoing harbor maintenance dredging, and the deployment and retrieval of turbine units for maintenance and repair.

Notice of Preparation (NOP) / Humboldt Bay Area Plan Amendments

The Harbor District advocates for amending portions of the Humboldt Bay Area Plan (Local Coastal Program) to accommodate the Samoa Heavy Lift Terminal project and the combined and cumulative negative effects on the Humboldt Bay Estuary. The District has identified "the project as a Priority 1 Site for Coastal Dependent Industrial use". The District would "resolve" conflicting language in relation to other Coastal Act policies including policies regarding natural resources, viewsheds, and recreation.

Additionally, the District would "modify" limitations of industrial performance standards, including noise, lighting, vibrations, dust control and enclosed manufacturing to meet the needs of this project and surrounding land uses.

The EIR needs to exactly define the terms "resolve" and "modify", as those terms are applied to amending portions of the Humboldt Bay Area Plan, portions of which provide protective language and conditions which relate to the local natural environment, public communities, and the greater good. If the Harbor District's proposed modifications to the Humboldt Bay Area Plan result in the relaxation or downgrading of protective language and conditions, the EIR needs to exactly explain in detail the proposed changes and impacts that the relaxation or downgrading may produce.

Additional Changes that Must Be Addressed in the EIR

Restricted Recreational Use

The Samoa Heavy Lift Terminal industrial site will be "off limits" to recreational boating, recreational halibut fishing, kayaking and sailing due to the nature of the industrial activities, the large size of the tugs, barges, assembly platforms and ships, their "restrictions in ability to maneuver" and the possible danger to recreational users in the Samoa Heavy Lift Terminal channel.

Will the District explain to the public via the EIR process to what degree the Samoa Channel waters will be closed to recreational use from the south side of the Samoa Bridge to the south end of the second proposed wet storage area?

Coastal Viewshed

The Coastal Act goes to great lengths to preserve and protect Coastal Zone viewsheds. Often, permitting any building construction in the Coastal Zone requires the permittee to erect full size, full height, on-site mock-ups of building silhouettes to allow the public to evaluate viewshed blockage. The District's Samoa Heavy Lift Terminal project will cause the installation of

multiple shoreside heavy lift cranes whose height will exceed 650’ and up to twenty assembled turbine units of 1,100’ in height.

How will the District present to the residents of Humboldt County the true impact to the Coastal Zone viewshed?
When will the District make a truthful presentation depicting the viewshed impact of their project, and the secondary and cumulative impacts to the viewshed when turbines are held in wet storage from the assembly site to the Harbor entrance.

Lighting
The District advocates for the “modifications of industrial performance standards including lighting.” Humboldt Bay, from the Bayshore Mall in the south portion of the Outer Reach Channel to the northeast end of Tuluwat Island and the entire Eureka Inner Reach are compromised by human generated nighttime light sources. Unshielded LED flood lights at Pacific Sea Foods, Caito Fisheries, and other sources illuminate the east areas of Tuluwat Island. Removal of native vegetation in the Woodley Island Wildlife area by the Harbor District opened the south end of the wildlife area to additional nighttime light pollution. Elevated lighting at the North Coast Exporters chip dock can be seen from eight miles at sea and the “glow” from Eureka is viable 15 miles offshore on clear nights. High mast lighting advocated for by the District at up to 150’ tall will be visible 19 miles offshore. This lighting generally employs high pressure sodium, halogen, and recently large array LED floodlighting. Large array LED lighting is extremely bright.

Adding to light pollution in the Humboldt Bay basin for the purpose of maritime and aviation safety is the requirement that every turbine unit held in wet storage in Humboldt Bay will have to “show” perimeter lighting all around the floating portion of the turbine base and red flashing lights on the turbine mast. Typically, the U.S. Coast Guard required vessel navigational lights to be visible at distances up to 6 nautical miles.

Human caused light pollution is negatively affecting fish and avian populations in Humboldt Bay. Tuluwat Island, the largest remaining scrap of saltwater marsh in the Humboldt Bay estuary, is populated by both migrating and resident waterfowl. These birds move into the island marsh in darkness to feed and roost. One can observe their arrival right at dark. They typically depart this marsh area before sunrise. High mast lighting, low elevation lighting, lighting on tugs, floating equipment and turbines in wet storage will negatively illuminate this critical marsh area/habitat at night.

Various fish species, including schools of anchovies, sardines, and Pacific Herring exhibit both positive and negative phototaxis when exposed to nighttime illumination of bay waters. In the case of herring, which enter Humboldt Bay in December, January and February to spawn, a single dark shadow across an illuminated channel is enough to stop a school from traveling into North Bay to spawn at night. For the past 47 years, Herring fishermen have observed nighttime shadowing events caused by the Samoa Bridge lighting which caused 40 - 100-ton herring schools to pile up against the bridge shadow and not proceed through the bridge shadow to North Bay. The project's advocacy for lighting at the Samoa Heavy Lift Terminal site and the additional light pollution generated by floating equipment is highly problematic. No high mast or low elevation lighting should be allowed on the project site.

What plans will the EIR have to present alternative, less damaging illumination on the Samoa site?
Will the EIR consider airport runway ground level mounted lighting?
Will the EIR consider the alternative of only allowing construction/operational activities between sunrise and sunset thereby removing the negative nighttime lighting impacts?

Bird Strikes by Wind Turbine Blades

The Humboldt Bay Estuary is a critical habitat for migrating and seasonal bird activities. Aleutian and Canadian geese and many types of ducks over winter in Humboldt Bay and make multiple daily transits from South Bay to the Arcata Bottoms to feed. Seabirds such as Caspian Terns, Brown Pelicans, gulls, cormorants, and other shore birds are present in significant numbers throughout the year. Black Brant are present from fall to early March, feeding in both south and north Humboldt Bay. Significant flock movements take place at night at altitudes from 50 to 200 feet. All of these birds share something in common when in flight over Humboldt Bay — they prefer to fly over the water, not over land.

The CFRA has been told that assembled wind turbines in wet storage must rotate their blades to prevent bearing damage. Tip speed on the blades runs between 150 - 250 mph. Blades rotating on wet storage turbine units will strike birds flying over Humboldt Bay.

The EIR must address these points:

Describe the monitoring plan to document bird strikes by wet storage turbines in the Humboldt Bay Estuary.
Many potential bird strikes will occur at night. Who will monitor and collect dead birds "taken out" by wet storage turbines in Humboldt Bay?

How many bird strikes (turbine caused bird mortality events) will be required to cause the closure of Humboldt Bay to wet turbine storage?
Will bird strikes of certain species count more than other more common bird species?

Fishing Industry Impacts
The Samoa Heavy Lift Terminal project will have direct negative impacts on commercial fishing fleet activities during the dredging and construction phases. Dredging, both at the Samoa site and subsequent channel widening dredging will cause a significant increase in vessel traffic in the Bay and Harbor entrances by “tug and tow” operations removing and relocating over 13 million cubic yards of spoils.

What plans does the Harbor District have to coordinate and or reduce hazardous “tug and tow” traffic during peak fishing activity periods?

The Samoa Heavy Lift project will have extensive secondary impacts caused by the dredging of “wet storage” areas south of the project site and hazards to navigation caused by turbine piling or mooring structures throughout the Bay.

What plans does the Harbor District have to reduce the hazards to navigation risk generated by “wet storage” infrastructure bay wide. Please bear in mind that the increase in vessel traffic caused by the Samoa Heavy Lift Terminal project will be an addition to the survey ship traffic estimated at 200-300 vessel trips by BOEM.

Project Alternative
The Port of Long Beach is planning large-scale facilities for the assembly and staging of OSW turbines. Long Beach is already a heavily industrialized area, with lots of room. Towing assembled turbines to the Eureka, or even Crescent City, locations is perfectly feasible. The EIR must consider this reasonable alternative, with emphasis on avoiding the many environmental, social and economic issues that will be identified.

Conclusion
A heavy lift facility in Humboldt Bay will have massive impacts economically, environmentally, visually, recreationally, and on the livelihoods of the people who provide wild caught seafood to coastal California communities. The massive conversion of California's valuable coastal community fishing grounds to experimental mechanical extraction of wind and wave energy for electrical energy production, once done, will be permanent. The resulting damage to the California Coast and ocean will never be undone. Is this the end result the California voting public is advocating for?

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