

<b>DOCKETED</b>	
<b>Docket Number:</b>	17-MISC-01
<b>Project Title:</b>	California Offshore Renewable Energy
<b>TN #:</b>	248917
<b>Document Title:</b>	Catherine Buchanan Comments - ELECTROMAGNETIC FIELD EFFECTS ON AQUATIC LIFE AND MIGRATORY BIRDS IMPACTING THE SOCIOECONOMIC HEALTH OF COASTAL COMMUNITIES
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	Catherine Buchanan
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	2/22/2023 4:24:58 PM
<b>Docketed Date:</b>	2/22/2023

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*Submitted On: 2/22/2023*  
*Docket Number: 17-MISC-01*

## **ELECTROMAGNETIC FIELD EFFECTS ON AQUATIC LIFE AND MIGRATORY BIRDS IMPACTING THE SOCIOECONOMIC HEALTH OF COASTAL COMMUNITIES**

Under the NEPA process, the requirement is that ALL impacts are supposed to be addressed, and mitigation plans in place, and alternative designs evaluated BEFORE a drop of water is disturbed or a grain of soil is moved. To date, there has been no mention of the electromagnetic field that will be generated when the high voltage lines are suspended in salt water nor any mention of the high voltage line that will be pulled over the extremely dry mountains in which how many towns have already burned to the ground.

The misuse of the NEPA process and picking out a sentence that states "impacts to the human environment" is quite deceitful because of the direct LITERAL use of the phrase "human environment." Using the basis that no humans live in the water where the actual footprint of the windfarms will be installed is extremely deceitful. NEPA requires that project not negatively impact the socioeconomic conditions of the people that within the proximity of the project. Twenty miles offshore is within the proximity of all of the coastal communities because of the millions of dollars that are generated through the ecotourism of the whale watching, the migratory birds, sport fishing, recreational boating, scuba diving, commercial fishing, and etc.

I would like to know why there is no mention of the EMF field that will be generated when high voltage lines are suspended in salt water, and why there is no mention of the wind turbines being in the Pacific Flyway that will decimate the migratory bird populations, and why there is no mention of the platforms being able to withstand a Tsunami? These concerns are reasonable consequences that will occur. There is no "if" these consequences will occur. These "will" occur due to much of the aquatic life having electrosensory receptors, such as sharks that have extremely sensitive ampullae of Lorenzini receptors, bat rays, many species of sturgeon, lampreys, etc., and dolphins and whales use the earth's magnetic field to navigate the ocean. Migratory birds also use the Earth's magnetic field to navigate the angle of inclination.

In 2014, in the Nature Journal, "Anthropogenic electromagnetic noise disrupts magnetic compass orientation in a migratory bird," Vol 509, pg. 353, proved that migratory birds are unable to use their magnetic compass in the presence of urban electromagnetic noise. The massive wind turbines that are being proposed for the west coast are nothing but gigantic emitters of electromagnetic noise.

I have been to the consultations in Bear River and the webinar for Southern Oregon. In both meetings, there was absolutely no mention of the EMF effect on wildlife nor any

mention of the turbines being in directly in the path of the migratory birds. One lady, I can't remember her name, stated that there was a humpback whale swimming back and forth in the field, I can't remember where she said it was, and she stated that the whale was "playing." Was she positive that the whale was playing or was it trapped in the field because of the effect on its electro-sensory capability?

Even though the NEPA process is being conducted by the BOEM, that does not mean non-federal agencies cannot intensely question the Lead agency's NEPA process. NEPA was written so that anyone who has a concern regarding a proposed project that uses federal resources can intensely scrutinize any federally supported project. I have seen project impacts consistently be ignored by a Lead agency because they have written into their NEPA process to ignore those impacts, such as the oil drilling and cattle ranching that takes place on BLM lands. Under Gale Norton and Dirk Kempthorne, the BLM NEPA Handbook had been rewritten to be extremely vague in order for the oil drillers and cattle ranchers to get around the NEPA process. I am seeing the same behavior with the BOEM. The BOEM is treating the NEPA process as if each step is an isolated Categorical Exclusion, and the steps are not. The BOEM is supposed to be designing mitigation measures of known reasonable consequences at the start of the design process. An EMF is an extremely well known reasonable consequence. The height of the turbines in the Pacific Flyway decimating the migratory bird populations is an extremely well known reasonable consequence.

There also is no evaluation if the floating windfarm will survive a Tsunami, which is another extremely well known reasonable consequence for us here on the North Coast.

FYI: Effects of an EMF on wildlife are well known. If this small EMF band is strong enough to deter sharks, what in the world is going to happen to our aquatic life when the massive voltage lines are suspended in the salt water?  
<https://www.sharkbanz.com/pages/how-it-works>

My concern comes from an environmental resources engineering design project that I had conducted as a sophomore at Humboldt State University. The project was to design an electromagnetic field (EMF) using a 9 Volt battery to deter bat rays from entering the oyster beds of Coast Seafoods. If a group of sophomore students can design an EMF with a 9 Volt battery, then the designers of the wind farms can calculate the extent of the EMF that is generated by the high voltage lines that are going to be suspended in salt water, which only enhances the EMF, within the planning and design process. I would like to see the calculations of having at least twelve high voltage lines being suspended in the salt water that would generate the EMF, and expand those calculations to 100 units because the expansion has been mentioned to an untold number of units. The design engineers can suspend an electrical line in a salt water aquarium that has no aquatic life, and scale up the numbers to the real size of the project.

I would like to know what steps are being taken to ensure the NEPA process is being carried out to the fullest extent in which the law was written: conduct full environmental

assessments that include mitigation measures, and socioeconomic conditions of the entire coastline.

A key need of information is the extent of the EMF. I am confounded that the impacts of an EMF in salt water is being given hardly any consideration at all by the designers and developers. Once it's built, that will be too late.

The BOEM FONSI's do not include the impact to the migratory bird populations nor the impacts caused from EMFs. Their NEPA is fast tracked, so they are treating the NEPA process as one large Categorical Exclusion and picking out key sentences to support their fast tracking methods, which is not the intent of NEPA. The only birds they have mentioned are the regular water fowl that inhabit the areas. Therefore, they have specifically ignored conducting any socioeconomic impacts that will reverberate up and down the entire west coast shores. The birds and the aquatic life do not pay attention to site specific impacts, which is why comprehensive analyses must cover the entire coastline from Alaska down to Baja because that is the migratory path of the aquatic life and the migratory birds.

Please ensure that proper NEPA processes will be conducted for the entire coastline because what affects the people in Oregon, will affect us here in Crescent City. What affects the people in Humboldt Bay will also affect us here in Crescent City. And so on.

Millions of people on the coast RELY on the migratory bird populations, and the whale migrations for the tourist dollars. These windfarms will directly impact the socioeconomic health of the entire west coast. To limit the study sites to strictly the actual footprint of the windfarm area is absolutely ludicrous, which is nothing but an effort to take attention away from the pathway that the migrating animals consistently follow year after year. Deliberately excluding the migratory pathways of the migrating species is extremely irresponsible and disrespectful to the communities that rely on those migrations for their communities' economic health. Evaluating impacts to the socioeconomic health of communities is a requirement by NEPA.

FYI: A baby grey whale was just born in San Diego and it was a rare event that was witnessed by a whale watching tour group. What effect will the electromagnetic field have on the newborn's electrosensory system???

Even on the East Coast, dead whales are increasingly found on the beaches and there is not one single mention of the electromagnetic field.