

HR-42

Submitted on: 3/19/2018 8:48:44 AM

Testimony for EEP on 3/20/2018 9:00:00 AM

Submitted By	Organization	Testifier Position	Present at Hearing
Melodie Aduja	OCC Legislative Priorities Committee, Democratic Party of Hawai'i	Support	No

Comments:

HR-42

Submitted on: 3/19/2018 2:23:54 PM

Testimony for EEP on 3/20/2018 9:00:00 AM

Submitted By	Organization	Testifier Position	Present at Hearing
Javier Mendez-Alvarez	Individual	Support	No

Comments:

Kindly request that you amend HR 42 to include in the study the effects that wave energy would have on the environment and more specifically on marine life. This is critically important given that we are an island community and the ocean serves us in many ways.

Here is an article published by the University of Oregon that makes my point:

<http://nnmrec.oregonstate.edu/education/effects-environment>

Effects on the Environment

Effects on the Environment



Wave energy devices may exert a range of effects on the environment, not all of which will necessarily lead to relevant or negative changes in the marine environment. The deployment of wave energy devices can effect the environment in which they are sited primarily in two ways:

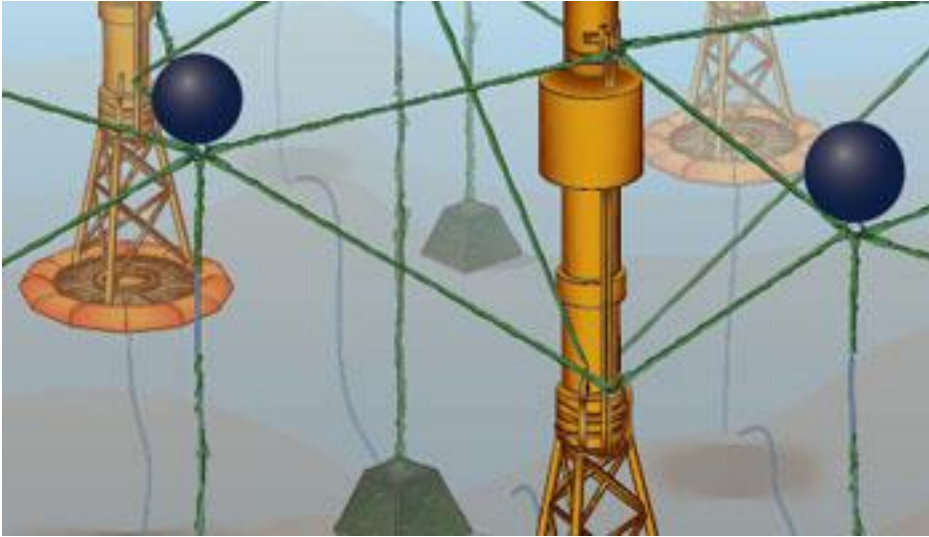
- Wave energy devices will remove energy from the ocean, making less available for natural processes at the site.
- Wave energy arrays will introduce many large, hard structures, creating new and different habitat types.

Extracting Ocean Energy

Reductions in near shore ocean energy may change current patterns and water mixing, potentially affecting organisms by altering food delivery patterns or rates, the mixing of eggs and sperm, the dispersal of spores and/or larvae, and how temperature varies throughout the water column. Changes in water movement also can affect how sand is moved along the coast. Because sediment grain size often determines which animals can live in the sand, changes to sand movement may affect the distribution of organisms. These wave, current and sediment transport effects will be technology- and location-specific. Modeling of the Oregon coast by potential device developers concluded that their project would have an undetectable effect on erosion/accretion at the shoreline. The Strategic Environmental Analysis by the Scottish Executive concluded there would be only minor effects of a wave energy array but recommended appropriate local analysis.

Introducing New Habitat

The second effects to consider are those that arise simply from having a device in the water. Because these devices are large and likely to be deployed in large groups, their presence may alter current flows, having effects similar to those described above. The effects of structures can further be divided into localized effects and those on migratory species:

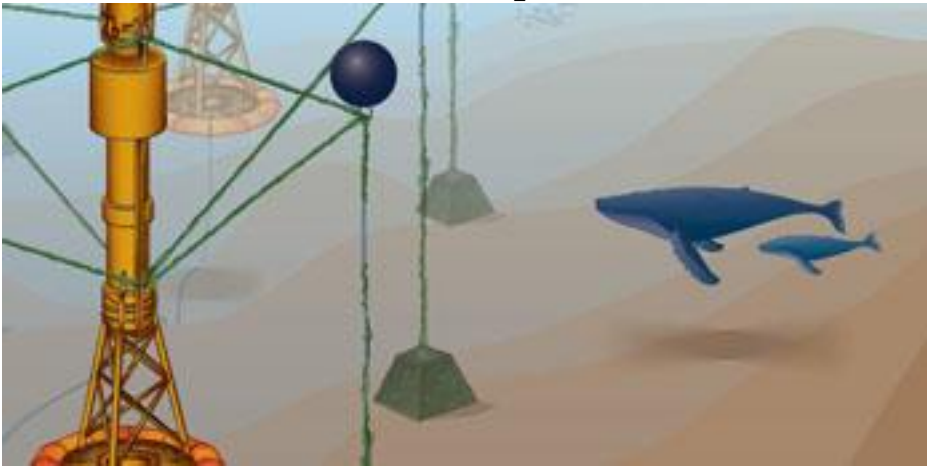


A. Local effects due to the introduction of artificial hard substrate on fish and benthos:

Typically, these devices will be located in sandy bottom habitats with little vertical structure. The devices will introduce a large amount of hard material (buoys and anchors) and cables, which may be colonized by a variety of organisms, including non-native species. Further, structures with vertical relief may attract a variety of fish species typically associated with reefs. The fishes, invertebrates, and seaweeds that colonize hard structures will be different than those typically found in sandy habitats; thus, a new biological community will be present in the area. This may result in novel food or novel predators for the resident, soft-bottom organisms. Minor changes in species associated with softer sediments could occur due to scouring around the anchors.

Opinions differ as to whether these effects (e.g., bringing in species using hard substrates in areas of mainly soft substrate seabed) will be positive or negative. The described re-population of hard substrates may be considered to be a positive effect (performing like an artificial reef). Conversely,

the intrusion of hard substrate in soft bottom areas may be considered a negative effect that may lead to “alienation” of species. Introduction of new species can be regarded as positive if increasing local biodiversity or biomass production is a goal. In conservation areas, habitat changes leading to “alienation of species composition” is considered undesirable and as species could displace the original species. Finally, if fishing is prohibited in the arrays, they may serve as de facto marine protected areas, possibly having positive effects on overall stocks of harvested species.



B. Effects on migratory species and marine mammals:

Larger and migratory species may be at risk for entanglement in cables associated with the structures. Avoidance of these areas could result in longer migration times for certain species. Noise from the devices may affect navigation and communication of marine mammals and may cause other organisms to avoid or be attracted to the area; however, it is not yet known if noise from the devices will be significantly louder or more frequent than that from vessel traffic. Studies are currently underway to assess ambient noise on the Oregon shelf and that associated with wave energy devices.

Magnetic and induced electric fields may affect navigation of salmon, crabs, some fishes and elasmobranches (sharks and rays).

Lighting of the surface elements of the devices may affect sea birds in that they may be attracted to the area, avoid the area, or be confused about their location relative to shore.

Avoidance of the area may result in longer migration or forage times. However, the lighting may help prevent any potential sea bird collisions with the devices. Research is underway investigating the different effects of white versus red and flashing versus constant lights on offshore wind turbines. The findings of those studies may be helpful in informing designs for lighting wave energy devices.