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Request for Information
Entangled Debris Monitoring for Floating Offshore Wind Infrastructure
Docket # 23-ERDD-01
Due Date: September 13, 2024

The California Energy Commission (CEC) is releasing this Request for Information (RFI) to gather information on technologies that can monitor floating offshore wind (FOSW) infrastructure for entangled debris and related information and perspectives. Entanglement monitoring in conjunction with environmental and structural integrity monitoring technologies may provide an opportunity to decrease the cost and environmental impacts of FOSW infrastructure.

Entangled debris can cause both environmental and structural integrity concerns. Abandoned, lost, or discarded fishing gear that becomes caught on FOSW infrastructure (such as anchors, mooring lines, platforms, and electrical cables) can be a risk for entangling marine mammals and reptiles, among other impacts. In the context of this RFI, the term "entanglement" includes abandoned, lost, or discarded fishing gear caught on FOSW infrastructure, primary entanglement of marine animals on FOSW infrastructure, and secondary entanglement of marine animals with abandoned, lost, or discarded fishing gear that has been caught on FOSW infrastructure. Entangled debris can also alter the response of a mooring system, potentially resulting in premature component failures if the entangled load is significant. FOSW infrastructure is also susceptible to biofouling[1], which may increase the risk of abandoned, lost, or discarded fishing gear becoming entangled on FOSW infrastructure. Extensive biofouling of electrical array and export cables may also reduce the generation potential of the FOSW farms.

Information relating to technical capabilities, research needs, cost improvements, and other topics may inform a future grant funding opportunity addressing the Electric Program Investment Charge (EPIC) 2021-2025 Investment Plan Topic 1 "Floating Offshore Wind Energy Technologies."

Responders to this RFI are encouraged to respond to the specific questions they feel most suit their knowledge, background, and interest in this topic.

[1] The term "biofouling" means the undesirable accumulation of marine organisms such as algae, barnacles, plants, and small animals on FOSW infrastructure.

1. What technologies, equipment, and types of inspection could detect entanglement on FOSW infrastructure? What research is needed to advance these technologies? Please provide details on sensor accuracy, potential cost of the technology, and any additional hazards or conditions that can be detected/monitored.
2. What types of structural integrity or environmental monitoring technologies would be practical and cost effective to couple with detecting entanglement? What research is needed to advance these technologies? For example, continuous condition monitoring of electrical array cables, export cables, or mooring line integrity. Please provide as much detail as possible on the accuracy and cost of each technology and specify which parameters or conditions can be detected/monitored.
3. How does biofouling impact the accuracy and reliability of environmental and structural integrity monitoring sensors? What technologies can detect and monitor biofouling on FOSW infrastructure? What research is needed to advance these technologies? Please provide details on sensor accuracy, potential cost of the technology, and any additional hazards or conditions that can be detected/monitored.
4. What are the costs associated with deploying specialized vessels, remotely operated vehicles (ROVs), and autonomous underwater vehicles (AUVs) for inspections and maintenance of FOSW platforms, mooring lines, anchors, inter-array cables, export cables, and substations? If possible, please provide assumptions about the activity performed, equipment used, vessel type, number of personnel, etc.
5. To what extent are permanent FOSW infrastructure-mounted sensors more cost effective than deploying specialized vessels or equipment such as ROVs and AUVs? Please take into consideration the differences in sensor accuracy and the travel time of vessels from port to the FOSW farm.
6. Please describe the FOSW farm structural integrity and/or environmental inspections that must be conducted by ROVs and AUVs. Are there additional technologies that could supplement the use of ROVs and AUVs to minimize deploying specialized vehicles?
7. What are the biggest challenges in integrating permanently mounted sensors for structural integrity monitoring or environmental monitoring onto FOSW infrastructure? Please describe any current limitations with regards to sensor placement on platforms, mooring lines, electrical cables, or anchors.
8. What fishing gear, trash, or other ocean debris is most likely to become entangled in FOSW equipment installed in California wind energy areas? Please provide references or a strong justification.
9. In addition to cetaceans, pinnipeds, and marine reptiles, are there additional organisms that could be particularly at risk for entanglement from FOSW infrastructure?
10. Please provide any other questions or information the CEC should consider for research on entanglement with FOSW infrastructure that is not otherwise covered by the questions above.

How to Provide Information
Respondents to this RFI should not include any proprietary or confidential information. Comments must be submitted by 5:00 p.m. on **September 13, 2024**, using the e-commenting feature (https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=23-ERDD-01) to submit to Docket 23-ERDD-01 (https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-ERDD-01).

To use the e-commenting system, respondents will be asked for a full name, email address, comment title, and either a comment or an attached document (.doc, .docx, or .pdf format). After a challenge-response test is used by the system to ensure that responses are generated by a human user and not a computer, click on the "Agree & Submit Your Comment" button to submit the information to the CEC's Docket Unit.

Written comments, attachments, and associated contact information included within the documents and attachments will become part of the viewable public record and searchable on the internet.

Interested stakeholders are encouraged to use the electronic filing system described above to submit information. If you are unable to submit electronically, a paper copy of your information may be sent to:

California Energy Commission
Docket Unit, MS-4
Re: Docket No. 23-ERDD-01
715 P Street
Sacramento, CA 95814-5512

Alternatively, you may email responses to docket@energy.ca.gov with the subject line "23-ERDD-01: RFI Entangled Debris Monitoring for Floating Offshore Wind Infrastructure".

Technical Subject Inquiries. Email Matthew Haro at matthew.haro@energy.ca.gov or call (916) 903-4158.