

Submission form for Ocean-Shot Concepts-Round 2

Response ID:1 Data

1. (untitled)

1. Ocean-Shot Contact Information: *Note - This information will be shared with the National Committee for the Ocean Decade in order to receive feedback. It will also be made publicly available if the Ocean-Shot concept is accepted into the Ocean-Shot Directory.

Primary Contact Name (First & Last) : Marcus Lehmann

Organization : CalWave Power Technologies Inc.

Email address : marcus@calwave.org

2. Ocean-Shot Title

CalWave's mission is to unlock the vast and steady carbon-free power from ocean waves.

Author(s): *Please list contributors to the submitted Ocean-Shot concept with first and last names in the order you wish them to be referenced for *potential* use in the Ocean-Shot Directory. Examples can be found [here](#):

Ocean-Shot Directory Summary (Please provide a short introduction/description of the Ocean-Shot concept for *potential* use in the Ocean-Shot Directory, 100 word limit. Examples can be found [here](#).):

3. Abstract (describe hypothesis, scientific and/or technological objective, 200 word limit):

CalWave's mission is to unlock the vast and steady carbon-free power from ocean waves. CalWave is bringing superior power and monitoring technology to market with a global reach. Our proprietary wave energy converter technology achieves high performance while surviving storms and extreme conditions.

The xNode is a versatile platform for converting and storing the power of ocean waves, serving as a facilitator in the Ocean Internet of Things. An adaptable payload compartment means a standard xNode can provide reliable power at sea for a range of remote offshore consumers. For example, xNode can easily maintain an AUV docking station to increase remote inspection frequency while reducing vessel costs. In the open ocean, the xNode can accommodate any third-party scientific payload, for instance to complement the ARGO fleet of oceanographic profilers, acoustically monitor fish stocks and marine mammals, or measure CO2 above and below the sea surface.

4. [OLD VERSION] Relevant Ocean Decade Challenge(s) ([see below](#)):

Challenge 2

Challenge 7

Please select the challenges (no more than 3) that are most relevant to your concept (Expanded reference [below](#)):

Describe how your Ocean-Shot addresses the selected challenges (150 word limit).

5. Vision and potential transformative impact (200 word limit):

CalWave's mission is to unlock the vast energy of ocean waves with superior, scalable power-generating technology. Through rigorous research, innovation, and testing we are creating next-generation solutions that will protect our planet and uplift the potential of all global citizens.

About 40% of the world's population lives within 100km from the coast. Island communities account for 11% of the world's total population (730 million people).

Oceans absorb about 30% of the carbon dioxide produced by humans, buffering the impacts of climate change. However, this process which results in ocean acidification (~26% increase since the industrial revolution), is destroying marine and coastal ecosystems. About 40% of the world's population lives within 100km from the coast. Island communities account for 11% of the world's total population (730 million people).

6. Realizable, with connections to existing U.S. scientific infrastructure, technology development, and public-private partnerships (150 word limit):

CalWave has an ongoing working relationship with the UC San Diego, Scripps Institution of Oceanography and with support of the US DOE is in process of installing a demonstration unit off the SIO research pier in Q1-2021.

- In 2016, CalWave spun out from UC Berkeley (Mechanical Engineering and CITRIS Foundry), graduated from Cyclotron Road and was a winner of the Department of Energy's (DOE) US Wave Energy Prize.
 - In 2017, CalWave was awarded a multi-million open ocean demonstration contract by the US DOE and received support from Breakout Labs, Autodesk Technology Impact Program and the Sustainable Ocean Alliance.
- In 2019, CalWave received two additional multi-million dollar awards by DOE to 1) build a commercial scale drive train in parallel to our open water demo and 2) design the next generation of our submerged pressure differential WEC and investments from High Tide Foundation and others.

7. Scientific/technological sectors engaged outside of traditional ocean sciences (100 word limit):

CalWave's xNode utilizes CalWave's multi-kW PTO platform and is customized towards the needs of end-users in maritime markets, specifically AUV charging with anchored or free-floating mooring options.

The xNode is specifically designed for simple transportation and deployment, being more compact, lightweight, and robust than conventional buoys and unmanned surface vehicles.

<http://calwave.energy/solutions/>

8. Opportunities for international participation and collaboration (100 word limit):

CalWave is actively engaging with the international research community through memberships in OPIN

<https://www.nweurope.eu/projects/project-search/opin-ocean-power-innovation-network/#tab-7> and

OEE:

<https://www.oceanenergy-europe.eu/about-oeo/#our-members>

9. Develops global capacity and encourages the development of the next generation of ocean scientists (100 word limit):

Next to SIO, CalWave has ongoing working relationships with a range of leading research institutions including UC Berkeley, NREL and Sandia:

<http://calwave.energy/partners/>

2. Thank You!

Thank You Email

Jan 19, 2021 16:27:31 Success: Email Sent to: marcus@calwave.org
