Wave Energy Converters (WECs)

Renewable Energy Wave Pump

The Renewable Energy Wave Pump uses a differential in float capacity to capture wave energy. As waves pass through the device it causes the center float block to move up and down relative to the exterior. This motion moves a piston which drives a small diameter reciprocating pump. Anchored to the sea floor and kept vertical by submerged pump floats, the Wave Energy Pump requires a minimum of 14 meters of water depth to operate. The Renewable Wave Energy Pump is being developed for both seawater desalination systems and hydroelectric energy generation.

Resolute

Resolute is a point absorber wave energy capture device and is still in the developmental stage. The final design of the device has yet to be determined. The depth at which it will operate and the means by which it will be mounted to the sea floor are also still unknown.

SyncWave Systems, Inc. – SyncWave Power Resonator™

The SyncWave Power Resonator device creates power by capturing the motion differential [phase lag] between two dissimilar float structures. Power is captured by a hydraulic power take-off, driving a permanent magnet DC generator. DC power from several SyncWave units in a wave farm will be collected and converted to AC power in a seabed mounted collector hub.

Wave Dragon Ltd. – Wave Dragon

The Wave Dragon is an overtopping device, that combines a double-curved overtopping ramp and two reflector wings, which focus energy towards the ramp. The waves surge up the ramp, as if it were a beach, and behind the ramp a reservoir collects the overtopping water. Multiple variable-speed propeller turbines are used to convert this low-pressure head into electricity using standard type AC generators. The device is slack-moored and is able to swivel in order to always face the wave direction.

*Responded to PG&E’s Wave Energy Converter System Request for Information (RFI) for consideration for the Humboldt WaveConnect Pilot Project

PG&E has not selected any of these devices for the proposed WaveConnect projects.