

West Coast Hydrokinetic Energy Projects

	Latest news	Next steps	Technology description	Footprint description
California				
<p>Del Mar Landing Project (Sonoma County Water Agency)</p> <p>Study location is 14.3 sq nautical miles. Three miles off the coast of Sonoma County, in state waters. Water depths of 20-50 meters.</p> <p>P-13376 Updated: 3/15/2010 Preliminary permit issued 7/9/2009</p>	<p>Pilot project application targeted for July 2011. Submitted 6-month progress report in January 2010. Work continues.</p>	<p>Schedule of proposed activities due within 45 days of permit issuance.</p>	<p>Pilot project (5 mW or less). Looking at oscillating water column & buoy-type devices, including Pelamis.</p>	<p>In state waters. 14.3 square nm.</p>
<p>Fort Ross Project North (Sonoma County Water Agency)</p> <p>Study area is 10.4 square nm.</p> <p>P-13378 Updated: 3/15/2010 Preliminary permit issued 7/9/2009</p>	<p>Pilot project application targeted for July 2011. Submitted 6-month progress report in January 2010. Work continues.</p>			<p>10.4 square nm, in state waters.</p>
<p>Fort Ross South Project South (Sonoma County Water Agency)</p> <p>Study area is 15.3 square nm. In state waters off Sonoma County, near Fort Ross, 20-50 m deep.</p> <p>P-13377 Updated: 3/15/2010 Preliminary permit issued 7/9/2009</p>	<p>Pilot project application targeted for July 2011. Submitted 6-month progress report in January 2010. Work continues.</p>		<p>Pilot project (2-5 MW)</p>	<p>Initially 2-5 MW; eventually 40-200 MW.</p>
<p>Green Wave Mendocino Wave Park</p> <p>Mendocino</p> <p>P-13053 Updated: 3/15/2010 Preliminary permit issued 5/1/09</p>	<p>FERC requested overdue progress report. GreenWave submitted progress report 2/4/2010. Plan to hold meetings in March 2010. Being assisted by Ocean Power Technology (OPT). FISH (Fishermen Interested in Safe Hydrokinetics) filed lawsuit against FERC for issuing preliminary permit for this project.</p>		<p>10-100 Pelamis or OPT devices, total capacity of 100 MW</p>	<p>2.5 x 6.9 miles (study area), up to 2.6 miles offshore, 120-390 feet deep.</p>

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<p>Green Wave San Luis Obispo Wave Park</p> <p>Morro Bay</p> <p>P-13052 Updated: 3/15/2010</p> <p>Preliminary permit issued 5/7/09</p>	<p>FERC requested overdue progress report. GreenWave submitted progress report 2/4/2010. Plan to hold meetings in March 2010. Being assisted by Ocean Power Technology (OPT).</p>		<p>10-100 Pelamis or OPT devices with a total capacity of 100 MW.</p>	<p>3.1 x 7.1 miles. 1-3.5 miles from shore, 90-360 feet deep.</p>
<p>Humboldt WaveConnect Project (PGE)</p> <p>Eureka/Samoa</p> <p>P-12779 Updated: 3/15/2010</p> <p>Preliminary permit issued 3/13/2008</p>	<p>PGE submitted draft license application 2/26/2010. Submitted NOI to file pilot project licence application, same date. FERC granted permission to initiate Section 106 consultation (National Historic Preservation Act). Yurok tribe and other tribes invited to participate in licensing process.</p>		<p>10-20 buoys or other technology, 5 mW</p>	<p>10-20 buoys. 60-600 feet in depth. 2-3 miles from shore.</p>
<p>San Francisco Bay Tidal Energy Project (Golden Gate Energy)</p> <p>San Francisco Bay</p> <p>P-12585 Updated: 3/15/2010</p> <p>Preliminary permit issued 2/4/2010</p>	<p>The City of San Francisco compiled a notice of intervention and protest, citing environmental and process reasons. FERC granted preliminary permit. (Applicant previously had prelim permit for same site.)</p>		<p>60 turbines/square mile, 1000 mW</p>	<p>60 turbines per square mile, located on sea floor. Footprint not specified.</p>
<p>Swave Catalina Green Wave Power Project (SARA, Inc.)*</p> <p>3/4 mile off west coast of Santa Catalina Island, Los Angeles County, between China Point and Ben Westin Point.</p> <p>P-13498 Updated: 3/15/2010</p> <p>Preliminary permit issued 9/15/2009</p>	<p>No action on FERC website since 9/15/2009</p>		<p>10-40 SWAVE buoys mounted in a staggered array.</p>	<p>Buoys in water 225-300 feet deep. .875 nautical mile footprint. Undersea power cable to the city of Avalon. Located in essential fish habitat for groundfish, highly migratory species, and coastal pelagic species.</p>

Oregon

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<p>Coos Bay OPT Wave Park</p> <p>Coos Bay, OR</p> <p>P-12749 Updated: 3/15/2010</p> <p>Preliminary permit issued 3/9/2007</p> <p>PAD submitted</p>	<p>Submitted PAD 3/7/08. Filed progress report 9/03/09. Participated in various meetings; information-gathering. Applied for (subsequent) prelim permit 3/1/2010. (Old permit expiring).</p>		<p>200-400 buoys, 100 mW</p>	<p>200-400 buoys in 3-6 rows parallel to the beach, 25-40 fm deep. Currently, 1 mile wide by 5 miles long; eventually smaller. 2.5 miles from shore.</p>
<p>Douglas County Project (Douglas County)</p> <p>Winchester Bay</p> <p>P-12743 Updated: 3/15/2010</p> <p>Preliminary permit issued 4/6/2007</p> <p>PAD submitted</p>	<p>Submitted six-month report 10/19/2009. Conducting wave tank modeling of different sites. Plan to file preliminary permit application (for second permit; first one expires after three years) in April 2010.</p>		<p>One jetty-based structure</p>	<p>Varies from other proposed projects in that it is powered by wave-driven air currents created by infrastructure built into existing jetty; installed capacity of 3MW. Applying for 50-year license.</p>
<p>Oregon Coastal Wave Energy Project (Green Wave, TIDE)</p> <p>Nehalem, Rockaway, Garibaldi, Netarts, Nestucca, and Neskowin.</p> <p>P-13047 Updated: 3/15/2010</p> <p>Preliminary permit issued 5/23/2008</p>	<p>Filed six-month progress report Nov. 2, 2009. TIDE's partner, Columbia Energy Partners, had to withdraw. Seeking new ocean power developers.</p>	<p>TIDE must issue a new RFP. Not clear whether TIDE is going forward with this.</p>	<p>Buoys, 20-180 mW (total)</p>	<p>N/A</p>
<p>Principle Power Offshore Wind Project*</p> <p>Off Oceanside & Netarts, OR</p> <p>MMS project Updated: 3/23/2010</p>	<p>In 2008, Tillamook Intergovernmental Development Agency and Principle Power signed MOU for phased development off offshore wind plant. 11/24/08 - signed MOU with Tillamook PUD. Principle Power acquired WindFloat technology, "a novel floating support structure for large offshore wind turbines." Conducted hazard identification study.</p>	<p>Need MMS lease/license. Plan to begin Phase II expansion by 2012.</p>	<p>30 wind turbines, 5 MW each</p>	<p>Project will begin with a single WindFloat floating turbine (243 feet); eventually plan to expand to "an entire offshore wind farm, covering 12 to 15 square miles and capable of generating 150 to 200 megawatts."</p>

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<p>Reedsport OPT Wave Park</p> <p>Reedsport</p> <p>P-12713 Updated: 3/15/2010</p> <p>Preliminary permit issued</p> <p>PAD submitted <i>Scoping deadline is May 10, 2010</i></p>	<p>Began discussions with property owner re leasing transmission cable route. Submitted license application 1/29/2010. Scoping process has begun. Conducting scoping meetings in April in Reedsport and Salem. Deadline for filing scoping comments is May 10, 2010.</p>		<p>10 OPT PowerBuoys, in 3-4 rows.</p>	<p>2.5 miles off the coast near Reedsport, OR. Depth: 204-225'. Footprint: 0.25 sq. miles, sandy bottom. Project would also occupy 5 acres of Federal lands in or near the Oregon Dunes Recreation Area. Each PowerBuoy would have a diameter of 36 square feet and extend about 30 feet above the water.</p>
Washington				
<p>Admiralty Inlet (Snohomish PUD)</p> <p>Admiralty Inlet, Puget Sound</p> <p>P-12690 Updated: 3/15/2010</p> <p>Preliminary permit issued 3/9/2007</p> <p>PAD submitted</p>	<p>Submitted PAD 1/31/08. Filed progress report in January 2010. In 12-09, submitted a NOI to file a Pilot License Application, draft pilot license application, and related documents.</p>	<p>Holding a technical meeting April 12, 2010 in Everett, WA.</p>	<p>Two 10-meter, 500 kW open-center turbines (OpenHydro Group), mounted on submerged foundations (underwater)</p>	<p>Bay/estuary habitat; 60-100 m deep; bottom is scoured pebbles and sand; much shipping & commercial traffic.</p>
<p>Deception Pass (Snohomish PUD)</p> <p>Deception Pass, Puget Sound</p> <p>P-12687 Updated: 3/15/2010</p> <p>Preliminary permit issued 3/1/2007</p> <p>PAD submitted</p>	<p>Submitted PAD 1/31/08. Conducting meetings and consultations with various communities, tribes, and agencies (including NMFS). Submitted preliminary permit application (for new permit; old permit expired) on March 2, 2010. Plans to move forward with Admiralty Inlet project first. Filed progress report in January 2010.</p>	<p>Snohomish PUD intends to pursue a pilot license to test the feasibility and impacts of a tidal energy deployment in Admiralty Inlet first, and then apply that learning to a tidal energy deployment in Deception Pass.</p>	<p>Turbines (type, number unknown), 3 mW</p>	<p>Bay/estuary habitat; 30 m deep; rocky seafloor; mainly recreational use.</p>

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<p>Grays Harbor Ocean Energy and Coastal Protection (Washington Wave Co.)</p> <p>Grays Harbor</p> <p>P-13058 Updated: 3/15/2010</p> <p>Preliminary permit issued 7/31/08</p>	<p>Submitted six-month progress report in January.</p>	<p>Applicant plans to prepare NOI and PAD in spring/summer 2010.</p>	<p>12 oscillating water column units, 6MW (Eventually, wind turbines & buoys, 168-418 mW)</p>	<p>Up to 28 square miles. 1-3 miles offshore, 10-70 feet in depth. West of Ocean Shores and Westport.</p>
<p>Green Hydropower Grand Coulee Project (inland waters)*</p> <p>One quarter mile below Grand Coulee dam.</p> <p>P-13522 Updated: 3/15/2010</p>	<p>Applied for preliminary permit 6/19/09. FERC asked Bureau of Reclamation whether they believe a non-federal project is authorized at the site. BOR said they do not, and strongly oppose the project. No action since 9/09.</p>		<p>One Sea Anchor Tidal Power device</p>	<p>An in-stream power device pilot project; device could potentially be used in saltwater applications as well.</p>
<p>Guemes Channel (Snohomish PUD)</p> <p>Guemes Channel, Puget Sound</p> <p>P-12698 Updated: 3/15/2010</p> <p>Preliminary permit issued 2/22/2007</p> <p>PAD submitted</p>	<p>Submitted PAD 1/31/08. Filed progress report in January 2010. Conducting meetings and consultations with various communities, tribes, and agencies (including NMFS).</p>		<p>Turbines (type, number unknown), 3.5 mW</p>	<p>Bay/estuary habitat; 15 m. deep; gravel seafloor; commercial shipping traffic.</p>
<p>Spieden Channel (Snohomish PUD)</p> <p>Spieden Channel, Puget Sound</p> <p>P-12689 Updated: 3/15/2010</p> <p>Preliminary permit issued 2/22/2007</p> <p>PAD submitted</p>	<p>Submitted PAD 1/31/08. Filed progress report in January 2010. Conducting meetings and consultations with various communities, tribes, and agencies (including NMFS).</p>		<p>Turbines (type, number unknown), 8.3 mW</p>	<p>Bay/estuary habitat; 80 m. deep; gravel seafloor; commercial fishing use (salmon)</p>

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DEFUNCT PROJECTS					
California					
Centerville OPT Wave Energy Park					
Eureka			Permit surrendered 5/29/09 "to focus on Coos Bay & Reedsport projects."	40-80 buoys, 20 mW	7.025 square miles, 2.5 miles offshore.
P-13075	Updated: 8/13/2009				
Defunct	6/27/2008				
Fairhaven OPT Wave Power Project					
Eureka			Competing application in same location chosen over this one.	40-80 buoys, 20+ mW	.5 mile wide by 4 miles long (n/s), 22-26 fm
P-12780	Updated: 3/27/2008				
Defunct					
Humboldt County Wave Project (PGE)					
Trinidad			Preliminary permit surrendered.	Unspecified; 100 mW	Research area: 8 square miles; final size between 2-3 square miles. 20-40 fm (120-240 feet). 2-4 miles off shore
P-12753	Updated: 3/19/2009				
Defunct					
Mendocino Wave Energy Project (Chevron)					
Fort Bragg			Application withdrawn 8/31/07. Apparently the "lengthy approval process" in California led Chevron to pursue an opportunity in Alaska instead.	Pelamis machines, 2-60 mW	Unknown
P-12806	Updated: 1/15/2008				
Defunct					
Mendocino WaveConnect Project (PGE)					
Fort Bragg			According to NMFS, PG&E plans to cancel this project because the harbor was determined to be unsuitable (too dangerous) to barge big machinery back and forth.	Buoys or other technology, 40 mW	Research area: 68 square miles. 60-600 feet in depth. 0.5 to 6 miles from shore.
P-12781	Updated: 5/21/2009				
Defunct	3/13/2008				

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<p>San Francisco Ocean Energy Project (Grays Harbor Ocean Energy)</p> <p>20-30 miles off the coast, west of San Francisco, on the Outer Continental Shelf, within the boundaries of the Gulf of the Farallones NMS. Not visible from shore.</p> <p>P-13308 Updated: 8/13/2009 <i>Defunct</i></p>	<p>Permit dismissed by FERC 4/17/09 because this is on the outer continental shelf and now under the jurisdiction of MMS.</p>	<p>Would continue under the jurisdiction of MMS, but MMS cannot issue leases in marine sanctuaries. "There will be no project unless the Sanctuary managers decide to allow it and develop their own regulatory system, which seems unlikely."</p>	<p>100 WECs; may also use wind turbines on the WECs. May use oscillating water column technology.</p>	<p>Seafloor is sand, gravel, and mud. Considering using structures as artificial reefs.</p>
<p>Sonoma Coast Hydrokinetic Energy (Sonoma Co.)</p> <p>Sonoma Co.</p> <p>P-13076 Updated: <i>Defunct</i></p>	<p>Rejected - area too large, technology not specified.</p>		<p>?</p>	<p>N/A</p>
Oregon				
<p>Columbia River project (Oregon Tidal Energy Co.)</p> <p>Lower Columbia River</p> <p>P-12672 Updated: 3/27/2008 <i>Defunct</i></p>	<p>Preliminary permit surrendered - "insufficient development potential exists for either a full development or tidal project."</p>		<p>TISECs</p>	<p>River bottom.</p>
<p>Coos County Wave Project (Finavera)</p> <p>Bandon</p> <p>P-12752 Updated: 6/2/2008 <i>Defunct</i> 4/26/2007</p>	<p>Permit cancelled 6/26/08 because no progress report or PAD was filed.</p>		<p>Buoys, 100-300 mW</p>	<p>5.5 square mile water footprint, 1.6 miles e/w by 3.4 miles n/s.</p>
<p>Florence Wave Park Project (Energetech)</p> <p>Florence</p> <p>P-12793 Updated: 3/27/2008 <i>Defunct</i></p>	<p>Proposal withdrawn - no reason given.</p>		<p>Oscillating water column technology, 10 mW</p>	<p>Each structure's footprint is 35x15 meters, not counting cables. Structures extend 7 meters above water and 15 below.</p>

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Lincoln County Wave Energy Research & Demonstration Center (Lincoln Co.) Lincoln County P-12727 Updated: 5/5/2008 <i>Defunct</i>	Dismissed by FERC		Various.	Unknown
Newport OPT Wave Park Newport/ Waldport P-12750 Updated: 5/21/2009 <i>Defunct</i>	Preliminary permit surrendered 4/15/2009 in order to focus on Coos Bay and Reedsport projects.		200-400 buoys, 100+ mW	200-400 buoys in 3-6 rows parallel to the beach. 3.5 miles wide (e/w) by 5 miles long (n/s); eventually as little as 0.4 miles by 3.1 miles, 20-35 fm, 3-6 miles off coast of Lincoln County
Washington				
Agate Passage (Snohomish PUD) Agate Passage, Puget Sound P-12691 Updated: 5/21/2009 <i>Defunct</i> PAD submitted	Surrendered preliminary permit 10/07/08	Defunct	Turbines (type, number unknown), 0.4 mW	Bay/estuary habitat; 10 m. deep; sand/gravel floor; used by pleasure craft
Green Hydropower Chief Joseph Project (inland waters) Just below Chief Joseph dam near Highway 17 bridge (salmon habitat) P-13525 Updated: 10/5/2009 <i>Defunct</i>	Applied for preliminary permit 6/19/09. Application withdrawn January 2010.		One Sea Anchor Tidal Power device	An in-stream power device pilot project; device could potentially be used in saltwater applications as well. In salmon habitat.
Green Hydropower Rocky Reach Project (inland waters) On the Columbia River just below the Rocky Reach dam. (Salmon habitat) P-13534 Updated: 10/5/2009 <i>Defunct</i>	Application for preliminary permit submitted 7/07/09. Revised application submitted 8/17/09. Motion to intervene by WDFW. Application withdrawn Jan 2010.		One Sea Anchor Tidal Power device	An in-stream power device pilot project; device could potentially be used in saltwater applications as well. In salmon habitat.

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<p>Makah Bay Offshore Wave Energy Pilot Project (Finavera) Makah Bay (Neah Bay) DI02-3 Updated: 2/11/2009 <i>Defunct</i></p>	<p>Five-year license issued December 21, 2007. Finavera withdrew project in order to focus on wind energy.</p>		<p>1 buoy, 1 mW</p>	<p>60x240 feet at ocean surface; 625x450 feet at ocean floor. Sandy bottom with rocky outcroppings.</p>
<p>Rich Passage (Snohomish PUD) Rich Passage, Puget Sound P-12688 Updated: 5/21/2009 <i>Defunct</i> PAD submitted</p>	<p>Surrendered preliminary permit 10/7/08.</p>	<p>Defunct.</p>	<p>Turbines (type, number unknown), 1.4 mW</p>	<p>Bay/estuary habitat; 15-22 m deep; gravel seafloor; commercial & naval traffic.</p>
<p>San Juan Channel (Snohomish PUD) San Juan Channel, Puget Sound P-12692 Updated: 10/5/2009 <i>Defunct</i> 2/22/2007 PAD submitted</p>	<p>Surrendered permit for this site - not feasible.</p>	<p>Plan to submit draft license application in January 2010.</p>	<p>Turbines (type, number unknown), 6.8 mW</p>	<p>Bay/estuary habitat; 135+ m. deep; gravel seafloor; commercial fishing use (salmon)</p>
<p>Tacoma Narrows (Tacoma Power) Tacoma Narrows, Puget Sound P-12612 Updated: 2/18/2009 <i>Defunct</i></p>	<p>Doing feasibility studies. Issued progress report 7/30/08. Found that tidal power in Tacoma Narrows may not be economically or technically feasible at this time. Independent analysis underway, but permit will probably expire with no further action.</p>	<p>Prelim permit issued 2/22/06; expressed intent to use pilot process; but now looks unfeasible.</p>	<p>Up to 64 turbines, 1-20 mW</p>	<p>In estuary (HAPC). Footprint unknown.</p>
<p>Willapa Bay Tidal Energy Plant Water Power Project (Natural Currents) Willapa Bay P-12729 Updated: 8/13/2009 <i>Defunct</i></p>	<p>Permit canceled because applicant did not file NOI and draft permit application.</p>		<p>1-3 turbines (Red Hawk-2), 1-2 mW</p>	<p>825 meters SSW of State Road 105, 365 m offshore. Footprint unknown. Estuarine habitat. Aiming for installation in 2010.</p>

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DEFUNCT PROJECTS				
California				
<p>San Francisco Oceanside Wave Energy Project (City and County of S.F.)</p> <p>Eight miles west of San Francisco in the "exclusion zone" of the Monterey Bay National Marine Sanctuary (the area excluded from the sanctuary), near the outfall of a waste water treatment plant (therefore minimizing project impacts).</p> <p>P-13779 Updated: 10/5/2009</p> <p><i>On hold (MMS project)</i></p>	<p><No change since August report.> FERC dismissed application 4/30/09 because it is on the outer continental shelf and MMS now has jurisdiction.</p>	<p>Applicant must get a lease from MMS first, and then apply for a FERC license.</p>	<p>Not yet determined. Looking at several fully submerged devices.</p>	
<p>Ventura Ocean Energy Project (Grays Harbor Ocean Energy)</p> <p>20-25 miles off the coast, on the Outer Continental Shelf (but elsewhere in the application it says 5-10 miles offshore). Not visible from shore.</p> <p>P-13309 Updated: 10/5/2009</p> <p><i>On hold (MMS project)</i></p>	<p><No changes since August report.> Permit dismissed by FERC 4/17/09 because this is on the outer continental shelf and now under the jurisdiction of MMS.</p>	<p>Project currently on hold or defunct because of change to FERC rules. No indication on their website of pursuing project under MMS. Would have to get MMS lease and then re-apply to FERC.</p>	<p>100 WECs; may also use wind turbines on the WECs. May use oscillating water column technology.</p>	<p>Seafloor is sand, gravel, and mud. Considering using structures as artificial reefs.</p>

DEFUNCT PROJECTS