

## Efforts to Harvest Ocean's Energy Open New Debate Front

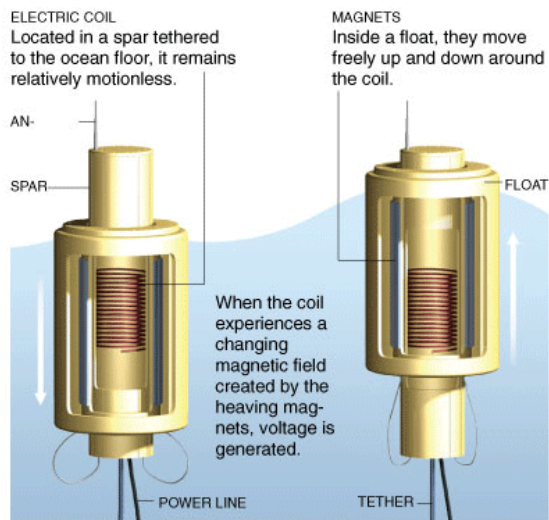


Researchers from Oregon State University began testing a high-tech buoy to capture wave energy in the Pacific Ocean this fall.

NEWPORT, Ore. — Chris Martinson and his fellow fishermen catch crab and shrimp in the same big swell that one day could generate an important part of the Northwest's energy supply. Wave farms, harvested with high-tech buoys that are being tested here on the Oregon coast, would strain clean, renewable power from the surging sea.

### Power From the Sea

This fall, Oregon State University tested a prototype wave energy buoy. Designed to be anchored 2.5 miles off the Oregon coast in 130 feet of water, it uses the rise and fall of ocean waves to generate electricity.



Source: Oregon State University

FRANK O'CONNELL/THE NEW YORK TIMES

They might make a mess of navigational charts, too.

“I don’t want it in my fishing grounds,” said Mr. Martinson, 40, who docks his 74-foot boat, *Libra*, here at Yaquina Bay, about 90 miles southwest of Portland. “I don’t want to be worried about driving around someone else’s million-dollar buoy.”

The coastal Northwest is one of the few parts of the West where water is abundant, but people are still fighting over it. Amid concerns about [climate change](#) and the pollution caused by generating electricity with coal and natural gas, Oregon is looking to draw power from the waves that pound its coast with forbidding efficiency.

It might seem a perfect solution in a region that has long been ahead of the national curve on alternative energy. Yet the debate over the potential damage — whether to the environment, the fishing industry or the stunning views of the Pacific — has become intense before the first megawatt has been transmitted to shore.

“Everyone wants that silver bullet,” said Fran Recht of the Pacific States Marine Fisheries Commission. “The question is, Is this as benign as everyone wants to say it is?”

The first federal permit to conduct testing for a wave energy farm off the coast of the United States was awarded in February to a company that wants to study the ocean area near Reedsport, Ore., 60 miles south of here. Three more permits have since been approved by the [Federal Energy Regulatory Commission](#).

Major technical and financial obstacles remain, and energy generated from waves is not expected to start contributing to the electrical grid in the United States for several years. Yet like wind energy in its early stages in the 1980s, wave energy is considered promising, perhaps inevitable, with the potential to one day provide 5 percent to 10 percent of the nation’s energy supply, according to some projections.

Oregon, Washington and Northern California, where the Pacific Ocean first meets land in the contiguous United States after gathering momentum for thousands of miles beneath westerly winds, have the potential to generate four times as much energy from waves as states on the East Coast, according to studies by the Electric Power Research Institute.

All of the permits approved have been in Oregon, where transmission lines run close to the coast, making them easier to tap into, and where state government encourages businesses to explore new forms of energy.

With state support, [Oregon State University](#) is testing a wave energy buoy it plans to deploy off the coast here next spring.

Finavera Renewables, a Canadian company with an office in Portland, has conducted tests near the Yaquina Head lighthouse here, and has a permit to do more testing near Coos Bay. Ocean Power Technologies, the company planning the project near Reedsport, has received a preliminary permit to test the potential for a wave farm it says could generate up to 50 megawatts of electricity. A typical coal-burning plant produces about 600 megawatts.

Several kinds of technology are being tested. Some would use buoys that hold turbines turned by waves. One type being tested at Oregon State would create energy from the relative movement between a fixed spar and a buoy that rises and falls with waves.

The Reedsport project could transmit energy to shore through an outflow pipe once used by a now-defunct timber mill. That convergence of old economy and new reflects what supporters of wave energy say is fitting symmetry for a region that has evolved from an extraction-based economy built on logging to one striving to use natural resources in ways that are environmentally sound.

But some environmentalists and fishermen worry that the recent rush for renewable energy is more about politics, big business and the next big thing than it is about clean energy. They warn that too little is known about what effect wave farms might have on migrating fish and whales.

“The tendency with new technology is always to minimize the downside,” said Ms. Recht, of the fisheries commission, which works with conservation agencies and the fishing industry to protect fish populations. “I’m not prepared to take new risks unless we’re conserving and respecting the energy we already have.”

Nancy Fitzpatrick, the administrator of the Oregon Salmon Commission, which is financed by the fishing industry, said: “Is it going to impact us? Going way back to the

dams, we find out later that of course, yes, it affected salmon and migration. So we don't want to be stuck in a situation like that with wave energy."

For now, wave parks are expected to be built two or three miles offshore and cover as much as several square miles. Supporters say they will barely be visible, if at all.

Philip D. Moeller, a member of the Federal Energy Regulatory Commission and a supporter of wave and tidal energy projects, said the government was "not allowing these to go into sensitive areas." Mr. Moeller added, "We haven't defined sensitive area, but the point is we'll be cognizant of that."

He said the commission was encouraging wave energy companies to seek a new five-year "pilot license" the commission has created specifically for wave and tidal energy projects. The license, which could be gained in six months, would let companies set up a short-term wave farm to test technology and demonstrate success to wary investors. If environmental damage became evident, he said, the equipment could be removed from the ocean fairly quickly, something that is far more complicated with dams.

"Let's get this stuff in the water and find out what it has to offer," Mr. Moeller said. "Consumers want green power, and this is an option."

*Erik Olsen contributed reporting to this article.*