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Researchers deploy test buoys in quest for renewable electricity

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PORTLAND -- Advocates of wave energy plan to float two buoys off the Oregon coast near Newport in coming days as part of a wider effort to find renewable sources of electricity.

The Canadian firm, Finavera, was preparing to launch its experimental Aquabuoy 2 over the Labor Day weekend, said company CEO Jason Bak.

"We see this as the first step in establishing wave energy as a commercial technology in the United States and Canada," said Bak, who estimates that devices similar to Aquabuoy could produce between 5 and 10 percent of the electricity used in North America.

Later in September, researchers from Oregon State University were planning to deploy a test buoy of their own off of Newport, OSU spokesman David Strauth said.

A third company, Oceanlinx Limited of Australia, has applied to the Federal Energy Regulatory Commission to deploy 10 buoys, each weighing 330 tons and rising 23 feet above the water, off Florence. That project has met resistance from local fishermen and sportsmen.

Because of its steady winds, the Oregon coast is one of the best spots in the world to harness wave energy, according to Roger Bedard, of the Electric Power Research Institute in Palo Alto, Calif., principal author of a comprehensive study of topic.

But, Bedard cautions, wave energy projects in the United States are still years from providing commercial power, in part because of a complex licensing process, involving FERC and other federal and state agencies.

Bak and others would like to accelerate licensing.

"We hope that the device will be tweaked in 2008, and installed in 2009," he said of Aquabuoy 2. "The first commercial arrays, or at least the first phase of projects, would be deployed in 2011 or 2012" in the Makah Bay in Washington, where Finavera already has conducted tests on the environmental impact of such devices.

The Finavera buoys, which are 70 feet tall and weigh 70,000 pounds apiece, use the vertical power of rising and falling waves to drive sea water through an onboard turbine, which generates electricity. Clusters of the buoys would be linked to electrical cables on the sea floor, which in turn would plug into the onshore power grid.

The sheer size of the Aquabuoys prevents them from impeding such marine creatures as gray whales, said Bak.

"We have done a number of environmental studies specifically on that," he said. "We have found that these populations will migrate around them." As a precaution, he said, "we need to site the arrays so that we are not interfering" with fishermen.

The buoys to be tested by OSU scientists use quite a different technology, called a permanent magnet linear generator, explained Annette von Jouanne, the team leader. The prototype is smaller, about 12 feet tall and weighing 3,000 pounds. It uses a piston that as the waves rise and falls moves a magnetic shaft across a wire coil, a process that Von Jouanne says is more efficient in generating power than other technologies.

The OSU team, linked with the startup firm Columbia Power Technologies, has deployed anchors for its test buoy off Newport, has completed the permit process and plans to begin offshore tests sometime in late September, researchers said.

The Oregon State researchers have been working closely with fishermen and the local recreation industry to minimize the impact of their buoys, said Flaxen Conway, with the university's Oregon Sea Grant program.

In addition to steady winds, Oregon has attracted research into wave energy through policies designed to attract developers.

Oregon has set some of the most aggressive greenhouse gas reduction goals in the country under a bill passed by the state legislature and signed by Gov. Ted Kulongoski. The measure aims to cut the state's emissions 75 percent below 1990 levels by 2050 as part of an effort to curb global warming.

The legislature also passed a law requiring Oregon's largest electric utilities to draw 25 percent of their power from renewable sources by 2025.

"The biggest support that we are getting is from the Oregon government," said Bak. "That is why we located there."

On the Net:

Oregon State University and Columbia Power Technologies project:

<http://eecs.oregonstate.edu/research/members/vonjouanne> and <http://www.columbiapwr.com>

Finavera:

<http://www.finavera.com>

Electrical Power Research Institute:

<http://my.epri.com/portal/server.pt?>

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