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### Scientist hopes Oregon will catch the wave

By **CASSANDRA PROFITA**

The Daily Astorian

The Pacific Ocean has long delivered wild winter storms to the Oregon Coast that strip electrical power from people's homes.

But there's a trade-off in the works, and within 10 years the sea could be delivering electricity along with the surf.

At the Columbia Forum in Astoria Thursday, Oregon State University Professor Annette Von Jouanne told a crowd of 60 at the Duncan Law Seafood Consumer Center she believes Oregon could lead the world in developing renewable wave power.

Thanks to the coast's thunderous waves, OSU's advanced resources and support from state leaders, Oregon is quickly becoming a "sweet spot" for harnessing wave energy, she said.

Von Jouanne is leading the effort to install the first homegrown test device in Oregon waters this summer. She has set her sights on using OSU's cutting-edge technology to pioneer the first commercial wave park in the U.S. The unprecedented project would give a substantial boost to the country's renewable energy portfolio and create new jobs and industries in Oregon, she said.

An OSU professor since 1995, von Jouanne has spent nine years developing wave energy

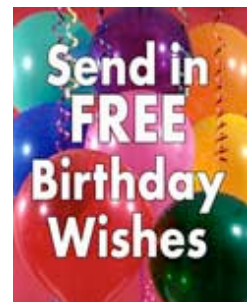


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Annette von Jouanne highlighted the power of wave energy at the Columbia Forum in Astoria Thursday night. A surfer and former competitive swimmer, the Oregon State University professor described advances in renewable energy development and what lies ahead as the nation looks for alternative ways to create electricity to power homes and businesses.



Annette Von Jouanne, pictured left speaking to the Columbia Forum in Astoria Thursday night,

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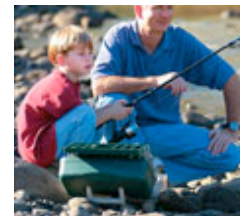
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technology that surpasses other systems in efficiency, ocean survivability and maintainability. She recently testified to Congress on the progress being made in perfecting the new energy form.

believes that if just 0.2 percent of the ocean's untapped energy could be harnessed, it would be enough to supply the entire world with power.  
**ALEX PAJUNAS — The Daily Astorian**



With world energy consumption three times what it was in 1970, new forms of energy are clearly needed, said von Jouanne, and there is "tremendous untapped potential in the ocean."

"If we can capture 0.2 percent of ocean energy that is enough to supply the entire world's energy needs," she said.

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### The power of waves

Wave power has a lot of selling points - even compared with modern wind power.

Because of their density, waves can deliver 832 times more power than wind, von Jouanne explained.

They're more reliable and more predictable than wind, too, rolling in 80-90 percent of the time compared with wind, which only gusts 30-40 percent of the time and can "disappear without notice," she said.

The buildup of waves from the west to the east, traveling "all the way across the Pacific," gives scientists the ability to predict the amount of power coming to shore from one day to the next.

"We can look all the way out and use wave-monitoring ability to predict the potential energy in waves two to three miles off the coast," she said. "We'll know what a wave park would be putting onto the grid."

Most of the wind power is on the East Coast, and it's expensive to transmit that power across the country.

With 50 percent of the U.S. population living within 50 miles of a coast, "there are load centers near generation sites," she said. "Ideally, we'd like to generate power where we're using it," she said.

Down the line, there will be "a whole lot of opportunities and niches as we start to optimize this technology," said von Jouanne, including desalinization of saltwater, self-powered buoys, and even anchoring systems that power electronics on fishermen's boats.

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### Oregon leads the way

The state of Oregon has stepped up to support OSU's wave energy development projects.

At the forum, state Rep. Debbie Boone announced the Legislature has approved \$7.7 million in funding for a sea floor mapping program that will help von Jouanne and OSU researchers to select appropriate sites for generation devices. Legislators also approved a bill to ensure experimental buoy placement offshore this summer.

"We're doing everything we can to help because we're so excited," said Boone.

The Oregon Innovation Council has folded \$5.2 million for wave energy development into a proposed \$38 million development package that will be considered by the

for the



Legislature this year.

Test buoys off the coast, including one outside Astoria, are already measuring how much energy is passing through incoming waves.

Based on new data, several companies have already pitched proposals to the Federal Energy Regulatory Commission to develop seven wave energy projects off Oregon's coast. There are 12 preliminary proposals on the entire West Coast.

The seven sites in Oregon could produce 100 megawatts of power, which could eventually take the state halfway toward meeting its goal of using 25 percent renewable energy by 2025, said von Jouanne.

The Oregon Department of Energy estimates there could be three wave parks permitted within seven to 10 years.

### Hurdles remain

OSU is working with regulatory agencies, coastal communities and commercial fishermen to tackle environmental impacts of wave energy and possible conflicts with existing industries.

The electromagnetic generation devices have the potential to attract seabirds, impact migration patterns of marine mammals, and change fish use and reproduction, so environmental assessments will be needed before the technology takes off.

As the OSU technology prepares to "take that step out into the ocean" this summer at a site north of Newport, just west of Yaquina Head Lighthouse, von Jouanne said her team will be looking for ways to get "the most energy production for the least amount of ocean real estate."

Right now, wave energy technology is "still in its infancy," she said, with the cost of one kilowatt hour still pretty pricey at 20 to 30 cents.

By comparison, a kilowatt hour of wind energy costs 4 to 6 cents, but "20 years ago, that's where we were with wind," von Jouanne said.

"Why are we so late to the party on this?" Astoria resident Roger Rocka asked von Jouanne.

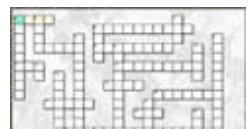
Von Jouanne said the "harsh ocean environment" has discouraged investment in wave energy development, but advanced technology and materials are making it look more promising.

The U.S. is still behind other countries in providing research and development funding for the technology, she said. Europe and Australia both have fully-funded programs already; the U.S. has yet to launch one.

Wind energy is a \$60 billion industry, said von Jouanne, and "Denmark has more than one-third of it because 20 years ago they invested in it."

"We're trying to tell the federal government to invest in wave energy ... so we're not doing the same thing down the line, buying our energy devices overseas like what happened with wind," she said.




The U.S. is "heavily invested" in oil, coal and nuclear energy forms, but "wave energy offers an opportunity to impact the national energy portfolio in a positive, efficient,



renewable way," said von Jouanne. "What we're saying is let's not miss this opportunity."

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## Reader Comments

Posted: Sunday, May 27, 2007

Article comment by: [Andrew H Mackay](#)

Nice idea - but it will not work all of the time. What is needed is a non-intermittent renewable energy system that can deliver electricity 24/7.

A little known Scottish Invention called Gentec venturi will deliver base load electricity from a combination of tidal stream and wave power.

The by-product from the process is desalinated water. This may of interest to your southern neighbours!

Posted: Saturday, May 26, 2007

Article comment by: [kent beuchert](#)

Saying that wave power is better than wind isn't saying very much. Many wave power machines are basically as unreliable as wind, but there are exceptions - the Seadog and Aquamarine machines both pump seawater. They are ultra simple, reliable and cheap and can produce hydroelectric power 24/7, thus producing reliable , controllable power.

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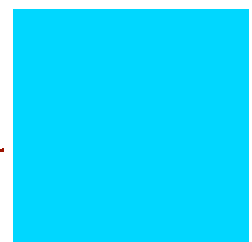
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