

Power potential off Maine's coast whips up interest

Wind energy developers see assets that could help launch an industry

By TUX TURKEL, Staff Writer

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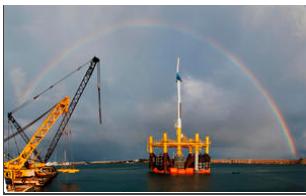
Courtesy Principle Power Inc.

A deep-water wind farm like the one illustrated here might be built off the coast if Maine attracts a successful demonstration project.

International energy companies are looking at Maine to test new designs for massive wind turbines and support structures that would float in deep water, out of sight of the coast and in line with the strongest breezes.

Two of the businesses have been attending monthly meetings of Maine's Ocean Energy Task Force, which must identify up to five offshore demonstration sites before year's end.

The task force is considering a large amount of information, everything from water depths and wind speed to whale and bird migration routes. The goal is to locate areas that have robust wind but where turbines wouldn't bother fishermen, boaters, coastal residents and wildlife.



Courtesy Blue H USA

A prototype platform that supports a wind turbine floats in the harbor of Brindisi, Italy. Blue H USA tested the platform in the Adriatic Sea and is now building the first unit for a planned floating wind farm to supply the power needs of 75,000 Italian homes.

Successful test sites could make Maine a global contender for billions of dollars in energy investment over the next decade or so. They also would be a proving ground for the vision that offshore wind can someday heat Maine homes and power automobiles, freeing the state from dependence on petroleum.

Wind farms in Europe's shallow coastal waters have become common and are expanding. The United States is way behind in rolling out this technology, but shallow-water wind farms are pending along the East Coast in Massachusetts, Rhode Island, New Jersey and Delaware.

Meanwhile, engineers have grander visions. They have begun testing platforms that weigh hundreds of tons, float in more than 100 feet of water and support towers that stand nearly the length of a football field.

On a commercial scale, a floating, deep-water wind farm could have more than 100 turbines and generate the electricity equivalent of a large gas or nuclear power plant.

Prototypes have been placed off Norway and Italy, and are planned for Portugal and the United Kingdom. In the United States, demonstrations are proposed in Massachusetts and Oregon.

Maine has so far been left on the sidelines, although winds in the Gulf of Maine average more than 35 miles an hour in winter, when energy demand in New England is high. But meetings this year of the Maine task force and its broad collection of experts and stakeholders have drawn the attention of offshore wind companies.

"This is very encouraging for a company like Blue H," said Ray Dackerman, general manager of Blue H USA, subsidiary of a Dutch company. "It's really important to launch this industry in the United States, and we can do that in Maine and Massachusetts, once we have sites."

Blue H completed tests last year with a floating prototype in 370 feet of water in the Adriatic Sea, 13 miles off Italy. Now it's building the first unit for a planned 90-megawatt floating wind farm to supply the power needs of 75,000 Italian homes.

In Massachusetts, Blue H has federal applications out for a demonstration project 23 miles from Martha's Vineyard. It hopes to moor the platform off the coast by 2011. The long-term goal is to have 120 turbines floating in 167 feet of water, generating 420 megawatts.

As was the case in Italy, the unit would be built onshore and towed to the test site. Blue H will seek bids from companies in New England that can fabricate the patented structure.

MAINE COMPANIES MAY BENEFIT

That could mean new work for Maine contractors with marine construction experience, such as Bath Iron Works and Cianbro Corp. Both are involved with the task force and want to expand into offshore wind energy.

"The Maine companies will be in play," Dackerman said.

Bath Iron Works and Cianbro are "powerful assets" for wind developers that need to assemble units onshore, according to Des FitzGerald, vice president of development for Seattle-based Principle Power Inc.

Principle is seeking investors to finance a prototype of its patented WindFloat floating support structure. It is

designed to handle a 400-ton tower and a 5-megawatt turbine, with a rotor up to 500 feet in diameter. At commercial scale, Principle anticipates a 30-turbine wind farm that can generate 150 megawatts.

Maine is one of five sites worldwide – along with Portugal, the United Kingdom, Hawaii and Oregon – being scrutinized by Principle. Maine is appealing, FitzGerald said, because of its wind resources, nearness to population centers, active wind energy research at the University of Maine and desire to cut oil use.

Maine isn't at the top of the list, however. The company has signed agreements with a Portuguese utility for a phased WindFloat development. It also has begun meetings around Tillamook, Ore., for a demonstration project 10 miles offshore.

"As a company," he said, "we can't do much without test sites."

Maine's test sites may also attract a company with big ambitions for offshore wind, StatoilHydro, a Norwegian oil and gas firm that's expanding into worldwide energy ventures. Next month, the company plans to install a \$62 million structure off Stavanger, Norway, for what it says is the world's first full-scale floating wind turbine. Called Hywind, the unit will have a two-year test period.

StatoilHydro didn't respond to an e-mail last week. But the company is monitoring the work of Maine's task force and plans to begin video conferences this summer with representatives from the University of Maine, Cianbro and BIW, according to George Hart, chief technology officer at the Ocean Energy Institute. The research group, founded by energy investment banker and Rockport summer resident Matthew Simmons, is working to encourage large-scale offshore wind development in Maine.

Hart has been to Norway and is in contact with Statoil officials. They have expressed interest in testing Hywind off Maine, he said, once sites are designated. Hywind is designed to extend more than 300 feet below the ocean, so it will be far enough from land to avoid most conflicts with people.

"You're not going to run into another Cape Wind," Hart said.

Cape Wind is the controversial, 130-turbine project proposed nearly eight years ago in the shallow waters of Nantucket Sound, five miles from the Massachusetts coast. The plan has endured costly opposition from some politicians, boaters and residents. But it seems to be inching closer to approval now, supported by a state and federal government friendly to renewable energy.

Cape Wind has become a cautionary tale for Maine's task force, though. Earlier this month, representatives from lobstering, groundfishing and aquaculture joined conservationists and recreational boaters to suggest how Maine can avoid the pitfalls of Cape Wind. Their overall message: Work closely from the start with coastal communities and interest groups to win support for Maine's test sites.

Deepwater wind can create fewer human conflicts, the task force was told, because the bulk of lobster fishing and boating takes place within three miles of the coast. Floating wind sites are likely to be at least 12 miles offshore. Researchers at the University of Maine are compiling databases that include whale sightings, bird migration and ship routes to identify the best sites.

LAW WOULD HELP

These efforts will complement a bill making its way through the Legislature. The proposed law would set up legal definitions for the test sites and a university research center, and limit the ability of towns to block projects that meet the standards.

Passage of the law, along with a bond package that contains money for offshore research through the university, should help position Maine to take advantage of deep-water wind, according to former Gov. Angus King, a task force member.

King is working to develop small wind projects in western Maine, but he's a vocal proponent of offshore wind power. He envisions the time when large-scale offshore wind farms will generate enough electricity to replace much of the oil used in Maine for heating and transportation, as efficient electric heat and plug-in electric cars become common.

Maine's job now, he said, is to clear away the obstacles, so offshore wind developers can move ahead when it makes economic and technical sense. This process could take 10 years, he said, but it's critical to lay the groundwork now, and not wait until heating oil jumps again to \$4 a gallon.

"This is a matter of urgency," he said. "We can't wait eight or 10 years to muddle through a process."

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