

# California's first offshore wind farm proposed near Hearst Castle

**Paul Rogers, Bay Area News Group, 11-9-15**

MORRO BAY -- This sleepy coastal town of 10,000 people along California's Central Coast is known for its fishing fleet, nearby Hearst Castle and Morro Rock, a craggy 581-foot-tall monolith that dominates the views to the ocean.

But a few years from now, Morro Bay may be known for something else: a huge offshore wind farm.

In a venture that could pit the state's commitment to green energy against its famed coastal environmental movement, a Seattle company is proposing to build the first ocean wind farm off California's coast.

Trident Winds has filed early paperwork with Morro Bay city officials for a plan to install 100 floating turbines -- each up to 636 feet tall -- about 15 miles off the San Luis Obispo County shoreline. The project would generate 1,000 megawatts of electricity, enough to power 300,000 homes.

"It's not oil. It's not fossil fuel. It doesn't spill," said Alla Weinstein, CEO of Trident Winds. "It's energy from the jet stream, as pure as it comes."

California is already a national leader in wind energy on land, drawing 8 percent of its electricity from wind turbines. The state now has 1,883 wind turbines, mostly in the Tehachapi Pass area in Kern County, at Altamont Pass in Alameda County, San Gorgonio Pass in Riverside County, and in Solano County. Texas is the only state that generates more electricity from wind.

Weinstein, a native of Russia and a former Honeywell engineer, said California will increasingly need to look to the ocean, with its vast spaces where wind speeds are stronger than on land, to meet its ambitious climate change and clean-energy goals.

Last month, Gov. Jerry Brown signed a law requiring the state's utilities to provide 50 percent of their electricity from solar, wind and other renewable sources by 2030 -- a key piece of the state's strategy to reduce greenhouse gases and smog. Currently, California generates about 20 percent of its electricity from renewable sources, double where it was a decade ago.

To reach the landmark 50 percent goal, the state will need dozens of massive new solar arrays, wind farms and other projects.

**Weinstein harbors no illusions that building huge metal towers in the ocean south of Big Sur will be easy. It will take at least six or seven years to secure permits from the federal government, the Coastal Commission and other agencies, she said. And the politics are likely to be passionate.**

Some environmentalists are taking a wait-and-see attitude.

"California just set a very high goal for renewable energy, so we are going to have to see projects like this," said Andrew Christie, director of the Sierra Club's Santa Lucia chapter. "But whenever we do, just like with real estate, it will always be about location, location, location."

Christie said he will be watching closely.

"All we know right now is that it is really big, and it is going to float," he said. "It won't be ramming concrete

pylons into the ocean floor, which is good. We're concerned about migrating whales, night lighting and birds in general. Are the blades going to be slow enough to prevent them from becoming bird fricassee?"

Other environmentalists -- whose very identities were shaped from decades of battling the oil industry over offshore drilling proposals -- are already girding for a fight.

"It sounds really, really horrible. This is a fairly massive project," said Susan Jordan, director of the California Coastal Protection Network in Santa Barbara. "California places a great deal of value on the Pacific coastline and what it looks like when you travel there. People don't want to look out and see a floating industrial facility."

Fishermen also are wary.

"They want an area where a lot of guys fish," said Tom Hafer, president of the Morro Bay Commercial Fishermen's Organization. "We're willing to work with her on it, but we have some problems with it. We have a lot of areas already taken away. I don't know how much more we can lose. We're worried."

Weinstein already has begun meeting with fishermen, university officials at Cal Poly San Luis Obispo and local political leaders. Her company plans a public forum in December.

In her meetings, she explains how the turbines float. One way is to mount them on triangular bases that can be chained to anchors dug into the ocean floor.

Weinstein is the former CEO of Principle Power, a Berkeley-based company that developed that floating technology and built a prototype turbine off Portugal in 2011. It continues to produce electricity and has survived 45-foot stormy seas.

Floating wind technology is still new. There are three floating turbines off the coast of Japan and one off Norway. But in a major breakthrough last week, Statoil, a Norwegian oil and gas company, won approval from the Scottish government to build a \$236 million floating wind farm 15 miles off Peterhead in northeastern Scotland. It will have five large turbines, each 584 feet high, that are expected to begin producing electricity in 2017 for 20,000 homes.

One common question Morro Bay residents have asked: Just how big will it look?

Because of the distance and the curvature of the Earth, the farther offshore wind farms are, the smaller they appear.

"It all depends where you are," Weinstein said. "From the beach, you won't see it. If you are up in the hills at Hearst Castle, you'll see it."

The 100 turbines would be spaced about half a mile apart, covering 40,000 acres of ocean and linked together with underwater power cables. The electricity would be shipped through one power line buried in the ocean floor back to the Morro Bay Power Plant, a former PG&E facility that was shuttered in 2013 but is still connected to existing transmission lines.

Most offshore wind turbines around the world are fixed to the ocean bottom, usually with foundations held down by steel pilings to withstand huge waves and gale-force winds. Floating turbines are easier to install and less intrusive, supporters say.

In many ways, California is a world leader in clean energy. But when it comes to offshore wind production,

the state and the U.S. in general are far behind other countries.

The world's first offshore wind farm went up off Denmark's coast in 1991. Today, an ocean wind boom is under way in Europe as countries race to reduce greenhouse gas emissions.

There are now 3,072 massive offshore wind turbines -- many with giant rotating blades the size of a Boeing 747's wingspan -- generating clean, pollution-free electricity in 82 locations off Scotland, England, Denmark, Germany and other European countries, producing enough power for 7 million people.

"When I drove along the coast of England, I'd see these things, and I thought they were kind of cool," said Gary Griggs, director of the Institute of Marine Sciences at UC Santa Cruz.

"It's almost like seeing an electric car. It's like, 'Wow, we're doing something right.' They look like the windmills you see in the Midwest."

A recent study by the U.S. Department of Energy found that offshore wind in the United States could supply 4,150 gigawatts of electricity -- four times the electricity now produced by all U.S. power plants combined.

Griggs said he understands that the Morro Bay project will be controversial. But, he said, every energy source has some impact.

"I think of myself as being very environmentally conscious," he said. "But at some point we can't keep burning oil and coal. Let's build solar and wind -- and minimize the impacts."

Voluminous environmental studies will have to be done for the Morro Bay project to move forward.

Weinstein said ocean turbines have less impact on birds than land-based ones because there are fewer birds far offshore. Whales, she said, swim around them, the way they swim around large rocks. She concedes that fishing boats cannot drag nets near them, but says she's willing to compromise on the location.

Another challenge is money. The project will cost hundreds of millions of dollars. So Weinstein's company, which was formed in July, will need major investors.

The Obama administration has been a big supporter of offshore wind turbines.

In recent years, the Department of the Interior has given \$4 million grants each to seven proposed U.S. projects and identified three others -- including one off Coos Bay, Oregon, that Weinstein's former company is planning -- as potential recipients of \$47 million federal grants.

The Coos Bay project has run into problems, however. Its power, projected at 24 cents a kilowatt hour, cost more than the utilities in Oregon want to pay. A bill in the state Legislature to force them to buy it failed this year, slowing the plan.

Weinstein and other offshore wind industry officials note that solar power was considerably more expensive 10 years ago, but as the technology improved and more projects were built, the costs dropped significantly. They say they also expect the cost of offshore wind energy to come down in the decade ahead.

America's first offshore wind project is under construction on the East Coast. Although critics have all but killed the famous Cape Wind project, off Cape Cod, workers this summer began installing turbines 18 miles off the coast of Rhode Island. The project, funded by the hedge fund D.E. Shaw and several banks, features five turbines 600 feet high -- twice the height of the Statue of Liberty -- and is expected to open in 2017.

It won accolades from environmental groups.

"I am going to remember this day and tell my kids and grandkids that I was there when the first U.S. offshore wind farm was built," Emily Norton, director of the Massachusetts chapter of the Sierra Club, said at the groundbreaking in April.

"When we had a choice between bequeathing them a future powered by polluting fossil fuels that lead to extreme storms, heat waves and drought, we chose to power their future from the wind, and the sun, and smart technologies."

Weinstein says her next step will come in 2016, when she plans to apply to the federal government for an offshore lease. She hopes to open the wind farm in 2025 and set an example for other West Coast ocean wind projects.

"Nothing is simple," she said. "But this has great potential."