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Offshore wind farm. (photo: BARD Offshore)

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Why California Is Lagging Behind the Rest of the Country When It Comes to Offshore Wind Farms

By Rob Nikolewski, Los Angeles Times
04 July 16

As offshore wind farms gain momentum in the U.S., the industry predicts a clean-energy bonanza from the West Coast's steady and powerful breezes that may go a long way to help the state meet its ambitious clean energy mandates.

But reaping the wind off California's coast must first overcome not only economic and political challenges but also requires technology that is still being developed.

So far, just one company, Trident Winds, has applied for a lease to construct an offshore facility in California. But the Seattle company has laid out plans for a wind farm that would dwarf offshore sites proposed along the East Coast or the Great Lakes.

"Oceans present the largest amount of renewable energy to the planet," said Alla Weinstein, founder of Trident Winds, which wants to place its wind farm off the coast of Morro Bay, along the Central Coast.

The company is targeting 2025 as its start-up date. That's nine years beyond the expected debut this fall of the country's first offshore wind project, the Block Island Wind Farm off the coast of Rhode Island.

Other projects are expected to follow in places such as Virginia, New Jersey and Cleveland — yes, Cleveland.

Why is the Golden State, a place so proud of its renewable energy record, lagging behind the rest of the country when it comes to offshore wind?

Blame the Pacific Ocean and its underwater terrain.



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Unlike the Atlantic Ocean, where offshore wind farms can be bolted into the seabed in relatively shallow water, the West Coast's continental shelf plunges quickly and steeply.

That leaves just one other option: floating wind farms.

"You have to talk about floating wind because the ocean floor is too deep to fix a turbine to it," said Nancy Sopko, manager for advocacy and federal legislative affairs at the American Wind Energy Assn.

Floating wind projects are tethered to the ocean floor by cables rather than the massive steel pilings used for conventional offshore wind turbines. And the technical know-how required to build a floating city of wind turbines is still at an early stage, Trident acknowledged in its lease application.

Offshore wind farms are common off the coast of European countries such as Denmark, but Sopko said she's not aware of any commercial floating wind projects operating at utility scale.

"It's an emerging technology," she said.

Trident Winds plans to build a floating array of about 100 wind turbines, each with a hub height of 400 feet — which works out to up to 600 feet in height when one of the turning blades is at the 12 o'clock position — some 33 nautical miles off Morro Bay. One transmission cable running along the seafloor would send electricity to the shore by connecting to the Morro Bay substation owned by Pacific Gas and Electric Co.

"Bringing power from a resource that's right off your coastline and can feed into the existing infrastructure onshore, that makes a lot of sense," Weinstein said.

The long time frame for the project will allow the technology and permitting process to catch up with Trident's ambitions, she said.

"That's why I believe it's a good idea to start the project now because by the time technology will become commercially available, which is post-2018, 2019, permitting will take a lengthy time, five to seven years," Weinstein said.

The Trident project would have to go through an obstacle course of permitting, regulatory and environmental hearings on the federal, state, local and tribal levels before becoming a reality.

But there are signs of movement.

"While offshore renewable energy resources have not yet played a significant role in California's energy system, they present important potential future opportunities," Gov. Jerry Brown said in a recent letter to Sally Jewell, secretary of the U.S. Department of the Interior.

In response, a task force is being formed by the U.S. Bureau of Ocean Energy Management, which is also checking to see if other companies are interested in competing with Trident Winds for a potential lease.

The Brown and Obama administrations have each made reducing greenhouse gas emissions a major priority and an expanding offshore wind program is seen as a way to help meet those goals.

Brown signed a law last October mandating that utilities generate 50% of their electricity from renewable energy sources by 2030.

On the federal level, the U.S. Department of Energy has handed out \$190 million for 73 offshore wind projects since 2006 through the agency's wind program.

So far, offshore wind projects in the U.S. have concentrated on the East Coast, with some growing interest in the Great Lakes.

But the electricity generation from those projects is considered tiny compared with what is promised from the West Coast.

It's estimated that nearly a terrawatt of electricity will be generated off the coast of California, 13 times more capacity than all the land-based wind farms across the country generate.

Trident sees its flotilla of turbines eventually growing to a net capacity of 1,000 megawatts. The



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28 June 2017

typical land-based wind turbine has a capacity of 2 to 3 megawatts.

But the project has met with some local opposition.

"There are more environmentally friendly options," said Joey Racano, who has launched a Facebook page opposing the project.

Racano's complaints include what effect the turbines' vibrations may have on fish, whales and sharks. He worries about spinning turbine blades that could disrupt the migratory patterns of seabirds or kill the birds.

Trident's proposed lease area is 67,963 acres, which equals 106 square miles.

Last December, about 100 Morro Bay residents turned out for a public forum and grilled Trident Winds officials.

"There is no such thing as no impacts," said Weinstein, who spent 20 years as an engineer at Honeywell. "We as humans impact our environment, period. The question becomes whether the impacts can be mitigated and minimized."

The \$2.6-billion Cape Wind project off the coast of Massachusetts has been debated for more than a decade with loud opposition coming from some homeowners complaining about the wind farms ruining their views.

Citing visibility charts from the Coast Guard, Trident says the Morro Bay project would be so far from the coast that the turbines would not be seen from the shoreline.

"It will not ruin anyone's view," Weinstein said.

Another challenge is the cost.

One analyst from the Bloomberg New Energy Finance research group projected that floating wind projects by 2020 could cost more than twice per megawatt than conventional offshore wind, which itself has been estimated, on average, to cost about three times more per megawatt than many new natural gas and coal power stations.

Wind energy's boosters say the costs of land-based wind projects have come down over the last three decades — "In the past six years, costs have come down two-thirds," Sopko said — and they believe that offshore wind will follow the same pattern.

David Hochschild, a member of the California Energy Commission, said offshore wind is on track to generate 250 gigawatts of electricity by 2020 but noted that floating wind projects in California are in the "very, very early" stages.

"At the end of the day," Hochschild said, floating offshore wind "is going to have to compete against onshore wind, against solar and the other resources in the renewable energy family."

Comments

We are going to return to our original fully-moderated format in the comments section.

The abusive complaints in the comment sections are just too far out of control at this point and have become a significant burden on our staff. As a result, our moderators will review all comments prior to publication. Comments will no longer go live immediately. Please be patient and check back.

To improve your chances of seeing your comment published, avoid confrontational or antagonistic methods of communication. Really that is the problem we are confronting.

We encourage all views. We discourage ad hominem disparagement.

Marc Ash

Founder, Reader Supported News



#Inason@umassd.edu 2016-07-04 12:04

While this is true, off-shore wind faces greater challenges than this.

-8

Coal-fired plants manufacture electricity at a cost of 4-5 cents/kwh. Other fossil fuels, hydro, on-shore wind, and nuclear manufacture electricity at a cost of between 7-12 cents/kwh. Solar and off-shore wind manufacture electricity at costs from 20-27 cents/kwh.

Furthermore, since off-shore wind is intermittent, none of its infrastructure costs can be amortized over the infrastructure required to meet the base load demand.

The result is that investments in off-shore wind are made so that we can sometimes substitute expensive energy for lower-cost energy.

Without government using taxpayer money for such schemes, they would be completely unviable. Since there are cleaner and cheaper and more reliable sources of energy, only corrupt politicians seeking to enrich their friends at the expense of taxpayers could squander our tax money this way.

Lee Nason
New Bedford, Massachusetts



rayb-baby 2016-07-04 20:02

+3

"only corrupt politicians seeking to enrich their friends at the expense of taxpayers could squander our tax money this way."

Typical of you, the SUPER TROLL of RSN, to denigrate ANYTHING that might have a negative effect on the establishment corporate cause. In fact, it is "only corrupt politicians" that stand in the way of us advancing our future. I'll just bet some of those are your best friends. I give you credit, though, Lee. You are the most well-spoken neanderthal to grace RSN, even though you speak half-truths and lies with forked tongue.



Jump Off Joe 2016-07-04 15:04

+2

"It's estimated that nearly a terrawatt of electricity will be generated off coast of California, 13 times more capacity than all the land-based wind farms across the country generate."

Really? A TERRAWATT? Amazing. Enough power for almost one BILLION homes, even in the US of A, a country of major power pigs.

Could the author have meant GIGAWATT?

Just asking.



Patriot 2016-07-04 17:11

+2

1. Why off-shore, which is terribly difficult, given current, tide, and storm? Why not on-shore? Tiny England is practically covered with wind farms, but hasn't been dumb enough to try putting any of them into the water that I know of!

2. So what if the cost is higher? I still like breathing, and I like having decent weather--and terminating the use of fossil fuels to produce energy is the ONLY way I, and the next generation, and generations yet unborn (of both humans and plant and animal life) can expect to be able to continue breathing.

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