Several months ago, I commented that, although I support a movement to more green energy sources, I had trouble finding any good reason to support Maine's proposed offshore wind projects. To date, the State has answered none of the questions I've raised and other important questions have arisen.

To quickly review, here are the reasons I opposed offshore wind initiatives off the Maine coast:

- *They threaten the economic health, cultural fabric and history of Maine.* They would have a negative impact on all three of Maine's coastal economic engines, most importantly the fisheries, but also the summer yachting population and tourism.
- *They pose a serious hazard to navigation.* Setting and maintaining them require dramatic increases in large boat and barge traffic. The ocean is often blanketed in thick fog and rough seas and recent data indicates that wind turbines can cause radar interference. This is an extremely dangerous combination.
- *They pose a threat to right whales.* The proposed siting area appears to be within their navigating route as they leave Cape Cod Bay for northern locations. The increase in large boat traffic increases the risk of collision. Acoustic vibrations associated can negatively impact whales who are sound dependent for communication and navigation. Anchor lines and marker buoys also create entanglement possibilities.
- *They pose a threat to migrating birds.* Multiple studies have shown that wind turbines are harmful to birds. Illumination at night attracts birds, and conditions of poor visibility during the day also increase the risk of collision. Rapidly falling bird populations exist everywhere, but here the small number of roseate turns, puffins, and razor-bills are of particular concern. Others have expressed concerns about gannets, artic turns, and shearwaters. Bat populations could also be compromised. At least 47 species of birds have been identified as using the proposed area as a flyway.
- *They pose a threat to marine corals and bottom dwelling sea life.* It doesn't matter if you are displacing mud or rock, you are displacing hundreds of marine organisms, interfering with their feeding practices, mating practices, egg production, and growth potential. 190,080 cubic feet per mile is displaced with permanent repercussions by a six-by-six foot trench.
- *They would speed up the warming of ocean waters.* The cables will permanently emit heat up to 36 degrees above normal in the immediate area. This introduced heat permanently disrupts the sub-stratum and benthic communities normally found. Do we really want to heat up the Gulf of Maine further, already facing the global challenge of rapidly warming waters?
- *How Green is it?* Lots of fossil fuel energy is needed to create and maintain these floating platforms (700 ft. tall, with 300 ft. blades), miles of cables, chains and moorings, ships and barges, and onshore infrastructure needs, the turbines themselves use oil to run efficiently.
- *Will it really provide affordable energy?* Given the multiple cost factors this seems highly unlikely. The cost of maintaining these platforms far outweighs the cost of other energy sources. International energy companies don't spend upwards of a billion dollars without expecting significant profits. Who pays?

- *Could it pose a threat to national security?* Floating platforms are sitting ducks. Is there a better way to expose power sources to terrorism?
- *Is the technology already a dinosaur?* Electricity generating wind turbines were invented in 1880. They quickly spread, providing 5kw to 25kw throughout rural areas. In 1935, the Federal Rural Electrification Administration was created to promote expansion, but as power lines were laid a more dependable and cheaper supply of energy replaced them. After 140 years of existence, until now, there has been little motivation to improve the technology. Today the science community has motivation, but how do they capture wind on the water without disturbing wind patterns, creating huge ecosystem changes and causing safety issues?

While all of these original concerns remain unanswered others have popped up:

- *Is our energy grid ready to accept electricity from offshore wind?* The answer is no. Apparently incredibly expensive changes would have to be made. Complicating everything is the fluctuation in natural wind patterns, causing inconsistent (unreliable) inputs. In order to convert this into reliable power, massive battery storage systems would have to be created.

Interestingly, a recent article in the Ellsworth American cited 30 small solar projects just in Hancock County alone waiting to be connected to the grid. "For many projects, interconnectivity is proving to be a costly issue." A survey sent last week to members of the Maine Renewable Energy Association found that more than 100 solar projects in 74 communities have received revised cost estimates from CMP totaling tens of millions of dollars" (Ellsworth American, March 25, 2021).

- *Could offshore wind platforms change wind patterns*? Apparently, yes! It's disturbing to find that natural wind patterns can be changed by these gigantic multi-turbine sites. Subsequently, ocean ecosystems will be changed. For analogy, think of the change caused by the cutting down of rain forests for agricultural purposes.
- *Could the project release buried toxic and possibly radioactive material currently inert in the soil of the ocean bottom? The* approaches to both Wyman's Station and Maine Yankee need to be carefully examined.
- *Who is going to pay for the maintenance, replacement, and possible removal costs?* Some European arrays, still relatively new, already need replacement. Think of any mechanical thing you own. Your car after so many miles, things wear, things need to be replaced. Turbines are no different.
- *Why are we not looking at other countries' experiences?* Grassroots groups protesting against offshore wind are growing all over the globe. In the UK the headlines read, "North Sea Annihilation: Offshore Wind Power Destroying Marine Environment in New and Exciting Ways," Offshore Wind Turbine Noise and Vibration Has Clocked Up a Number of Cetacean Fatalities, Messing With Whales, Sonar Guidance and Communications" (website: stop.these.things)
  It is ironic that a German company RWE Renewables is involved in Maine's proposed project. In Germany, what's happening? "Game Over: German wind industry in freefall: Turbine Makers sack thousands in mass layoffs.

> Moreover: hundreds of citizens' protest groups have sprouted and since become a formidable force pushing for the stop of proposed wind projects." No Trick Zone (website: stop.these.things)

Having been involved in numerous state sponsored Zoom conversations, one things has become crystal clear. Everyone involved (scientists, environmentalists, administrators, and fisherman) agrees that baseline data is necessary to fairly asses environmental/animal impacts offshore wind arrays might have. Are we going to be given time to do that? The taxpayers in the state deserve an answer since "most of the costs will go to the rate-payers."

As of July, 2020, Maine led New England in wind power generation and ranked 6th in the nation in the share of its electricity generated from wind. In 2019, 80% of Maine's electricity net generation came from renewable energy sources (EIA Energy Information Administration).

While I do think that Governor Mills is completely correct in prioritizing non-fossil fuel energy production, at this point she's completely wrong in seeing offshore arrays as a sensible path. I believe most Mainers are extremely proud to live in this state. Maine's unique character distinguishes us from Massachusetts, New York, and Rhode Island. Let them serve as test cases for offshore wind, if they must. Rushing into unknown ecosystem changes and uncertain technologies could make things worse for generations to come.