



# Energy Musings

Insights into the Energy Industry



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*Energy Musings* contains articles and analyses dealing with important issues and developments within the energy industry, including historical perspective, with potentially significant implications for executives planning their companies' future.

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## **Who Will Save The Whales This Time?**

BOEM has proposed changes to its offshore wind farm approval process to speed it up. We do not know what changes will be adopted, but likely whales will remain threatened. Moreover, the changes are designed to help improve the economics of projects by reducing the regulatory burden and cost for developers. Still, BOEM and NOAA officials refuse to acknowledge that underwater noise from offshore wind development likely contributes to whale deaths. A new NOAA report highlights how much is not known about underwater noise and marine mammals.

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## Who Will Save The Whales This Time?

If the Biden administration has anything to say about it, offshore wind farms need to be built faster even at the risk of killing more endangered whales. The johnny-one-note policy of fighting climate change at all costs with renewable energy puts marine mammals at risk. Some 23 whales have died along the East Coast in the past five months as offshore wind activity has picked up. Slowing the activity or pausing it until we better understand how underwater noise from construction activity may disorient marine mammals would be a smart move.

Efforts are underway to revise the government's rules for approving offshore wind farms making it easier for them to advance while ignoring the underwater noise and marine mammal issues. Equally questionable is accelerating approvals without requiring as much environmental data as early in the process as is now required.

After a one-month extension of the public comment period, the Bureau of Ocean Energy Management (BOEM) is considering the feedback it received about its Renewable Energy Modernization Rule proposal. BOEM wants to modify the approval process for new offshore wind developments *"to reduce administrative burdens for both developers and the Department's staff, reduce developer costs and uncertainty, and introduce greater regulatory flexibility in a rapidly changing industry to foster the supply of OCS renewable energy to meet increasing demand, while maintaining environmental safeguards."*

BOEM goes on to say that this is a *"major modernization of the regulations,"* which is based on lessons learned from the last 13 years. Modifying the process is estimated to save *"the renewable energy industry \$1 billion over 20 years,"* certainly meaningful for an industry struggling to improve profitability while dealing with explosive inflationary pressures. Surprisingly, there is no mention of increased *"safety or protection of commercial fisheries and species"* when considering the potential conflict between fishermen and wind farm developers.

When you read the 85 pages of proposed modernization actions in the January 30, 2023, edition of the Federal Register, you find numerous changes proposed that would allow the approval process to proceed at a faster pace than under the existing process. BOEM's proposal lists eight major components for revision. They include:

1. *Eliminating unnecessary requirements for the deployment of meteorological (met) buoys.*
2. *Increasing survey flexibility.*
3. *Improving the project design and installation verification process.*
4. *Establishing a Public Renewable Energy Leasing Schedule.*



5. *Reforming BOEM's renewable energy auction regulations.*
6. *Tailoring financial assurance requirements and instruments.*
7. *Clarifying safety management system regulations.*
8. *Revising other provisions and making technical corrections.*

For example, a proposed change would allow the geotechnical data necessary for the final approval of wind turbine sitings to not be submitted until after preliminary approval is granted. How can you be sure that the proposed wind turbine locations will be the final locations? In the case of Empire Wind, changes to the approved wind turbine locations were made after the geotechnical data confirmed some of the initial locations proved inadequate for installation. Such changes can come as a surprise that may not allow objectors or interested parties involved in the approval process adequate time to comment on the changes. Yet, BOEM wants to speed up this process.

BOEM would argue that these changes are necessary because of what it learned in years of regulating wind developments. Supposedly they learned that the geotechnical data seldom impacts the wind turbine siting decision, therefore, why maintain this early timetable burden for developers? The history of offshore wind projects shows their fate can change radically – shrink, find wind turbines relocated, and projects even abandoned. That makes it hard for followers and critics to track the changes on a timely basis. Remember, this is a low rate-of-return business, so the economics of offshore wind projects are highly sensitive to cost inflation, so minimizing regulatory steps will ease the financial burden on developers.

The U.S. offshore wind industry began in 2001 when Cape Wind's developer applied for a permit under Section 10 of the Rivers and Harbors Act of 1899 with the U.S. Army Corps of Engineers for a 130-turbine development in Horseshoe Shoal in Nantucket Sound located between Cape Cod, Nantucket, and Martha's Vineyard off the coast of Massachusetts. Cape Wind faced intense opposition from locals worried about the turbines spoiling the views from their multi-million-dollar shoreside homes.

Cape Wind forced an examination of technical issues such as radar distortions, unsightly nighttime lights, and limitations of commercial fishing fleet operations. It was surprising that the developers were able to overcome each hurdle – raising \$2 billion in debt financing, securing power-purchase agreements with Massachusetts utilities, gaining state and federal approvals, and winning at least tacit support from the military services who were concerned about the project's impact on their operations and training – before finally throwing in the towel as the battle's length saw escalating costs erode the project's returns. Cape Wind died in 2017 when the developer terminated the leases.

A high-profile controversy for offshore wind is the recent rash of whale and other marine mammal deaths. These marine mammals live in and migrate through proposed wind farm locations. Those 23 whale deaths between December and April along the East



Coast coincided with the increased ocean-bottom sonar surveys and now the commencement of cable laying and turbine foundation installation. These operations create underwater noise.

Marine mammals and especially whales are highly sensitive to noise. That is nature's gift enabling them to find food and evade predators. While the political leadership of BOEM and the National Oceanic and Atmospheric Administration (NOAA) state categorically that there is no link between offshore wind construction work and whale deaths, the scientists of NOAA Fisheries suggest they need to do more research to better understand the impact of underwater noise on whale behavior and potential deaths.

About half the 178 humpback whales that have died since 2016 have been examined. Of those deaths, about 40% were categorized as victims of vessel strikes or entrapped by fishing gear. The remainder died of other causes. What is not fully understood but acknowledged by NOAA scientists is that underwater noise could confuse or disorient whales. The sonar surveys conducted for offshore wind farms may cause whale food sources to move from coastal regions further offshore to be followed by the whales. In the active East Coast shipping lanes whales are at risk of being hit by vessels. These shipping lanes are referred to as M-95, a play on the heavily traveled I-95 interstate highway running along the U.S. East Coast.

Protecting whales necessitates placing restrictions on activities that can harm or kill them. How to protect them is a challenge because their movements are underwater, so they are not always visible. We know from historical visual measurements and tracking that whales migrate between Maine and the Carolinas twice a year, often spending time in specific regions to feed and propagate. These journeys and breeding stops put whales at risk of offshore wind development.

It is understandable why political appointees at BOEM and NOAA declare there is no link between offshore wind and whale deaths. Raising any doubts about the linkage could disrupt the Biden administration's obsession with climate change as an existential threat that requires abandoning fossil fuels. While there is no direct evidence of underwater noise causing marine mammal deaths, it likely contributed to them. This is much like equating deaths **with** Covid to deaths **from** Covid.

### **Fossil Fuels Save The Whales**

Few people realize that Michael Dietz's 1857 invention of a clean-burning kerosene lamp ushered in the oil era and the ending of the whale oil era. Although whaling continues today, conducted by just three nations, it is not to produce oil for lighting lamps. Japan, Norway, and Iceland continue hunting whales. These nations hunt fin, minke, and sei whales for different reasons. Japan claims it is for scientific research. Norway objects to the global ban on whaling, and Iceland hunts under a "reservation" to the whaling ban.



Today, those three nations harvest over 1,000 whales annually. Whale oil, blubber, and cartilage are used in pharmaceuticals and health supplements. Whale meat is often used in pet food, and sometimes it is served as a “traditional dish.” Many years ago, when we were visiting Kristiansand, Norway, the restaurant my hosts took me to for dinner had a sign outside announcing fresh whale meat. We had it in a “traditional dish.”

The introduction of the kerosene lamp altered how people lighted their homes. Prior to 1800, torches, candles from tallow, and lamps burning animal fat-rendered oil were the choices available for homes. Sperm oil became popular because it burned with less odor and smoke. Kerosene was easy to produce, cheap, smelled better, smoked less, and did not spoil on the shelf as whale oil did. Sperm oil was used for lighting, while regular whale oil was used to lubricate the machine parts of trains and other manufacturing equipment.

Whaling was highly risky but usually highly profitable. Documents from the 1851 voyage of the whaler *Benjamin Tucker* of New Bedford, Massachusetts, near the height of the whaling boom, showed a gallon of whale oil sold for 43 cents, while sperm oil was \$1.25 a gallon, and 31 cents a pound for whalebone. The ship’s cargo consisted of 73,707 gallons of whale oil, 5,348 gallons of sperm oil, and 30,012 pounds of whalebone, yielding a value of \$47,682.73. The net revenue was \$45,320. A whaling ship’s owners typically earned 60%-70% of the revenue, with the balance divided among the captain, first mate, harpoon master, and crew members in descending order of experience.

Demand for whale oil lifted prices and the increased profitability drove the whaling fleet expansion. In 1833, there were 392 U.S. whaling ships. The fleet grew to 735 by 1846, and over 800 by the industry’s peak a decade later.

At the industry’s peak in 1856, sperm oil sold for \$1.77 a gallon and the U.S. produced 4-5 million gallons of it and 6-10 million gallons of whale oil annually. The introduction of the kerosene lamp changed the industry’s dynamics. By 1860, there were 30 kerosene plants in operation, and the growing output and low price drove whale oil off the market. From its peak in 1856, sperm oil prices fell to 40 cents a gallon by 1895 when kerosene, an improved lighting fuel, sold for 7 cents a gallon. The death knell for whaling was sounded.

Despite BOEM and NOAA officials’ declaration of no linkage between whale deaths and offshore wind development, a recent NOAA report demonstrates how little is known about the impact of underwater noise and marine mammals. A whale’s hearing sensors are acknowledged to be the first organ to deteriorate upon death, thereby preventing an accurate assessment of the cause of death. Vessel strike marks are evident and do not deteriorate as rapidly as hearing sensors.

A 388-page NOAA Technical Memorandum on “Fisheries and Offshore Wind Interactions: Synthesis of Science,” published in March, reported on the known science of these two industries and the issues needing further research. The Executive



Summary of one section detailed the research on marine ecosystems and highly migratory finfish. The authors wrote:

*“The majority of the limited research on sound perception to date involves the use of sound pressure signals to determine auditory ranges or threshold detection levels, even though most fishes primarily detect particle motion. Behavioral responses to introduced noise have been noted in some HMS [Highly Migratory Species]. OSW [Offshore Wind] operation noise levels are not generally associated with direct physical injury, but short-term behavioral modification has been noted in at least 1 HMS study.”*

*“No studies have directly examined the effects of OSW or operation on the distribution or movements of HMS off the Northeast U.S. However, trophic interactions associated with artificial structures have the potential to impact HMS over variable spatial scales and life stages, particularly for species that undergo extensive migrations between feeding and mating or spawning areas.”*

While agency officials toe the Biden administration line that developing offshore wind farms does not kill whales, BOEM approves “take agreements” allowing the developers to harm marine mammals, including potentially killing them. However, the agencies’ researchers state in their scientific reports and in the required Environmental Impact Statements needed to approve offshore wind farm developments that they “do not know if there is harm from the increased noise” and “more research is needed.”

We recently reviewed and updated a report on the number of North American right whales, the most endangered whale species, allowed to be harassed, injured, or killed. We also considered the takings of fin whales, another endangered species but with a larger population than right whales. These are not the only species examined and approved for “takes.” The table below shows the populations of marine mammals included in the take authorizations.



**Exhibit 1. Marine Mammal Populations In Wind Take Applications**

Marine Mammal Species	NMFS stock Abundance
<b><i>Mysticetes:</i></b>	
Blue whale*	402
Fin whale*	6,802
Humpback whale	1,396
Minke whale	21,968
North Atlantic Right whale*	338
Sei whale*	6,292
<b><i>Odontocetes:</i></b>	
Atlantic Spotted dolphin	39,921
Atlantic Spotted dolphin	93,221
Bottlenose dolphin*	62,581
Common dolphin	172,974
Harbor porpoise	95,543
Pilot whale	68,139
Risso's dolphin	35,215
Sperm whale*	1,180
<b><i>Phocid (pinnipeds):</i></b>	
Gray seal	27,300
Harbor seal	61,336
Harp seal	7.6 M
* Denotes species listed under the Endangered Species Act.	

Source: BOEM, Allen Brooks

We then went through the take authorizations for all the active offshore wind survey and construction and operation applications. Because each wind project is in a different location and marine mammal migration and residence patterns differ, each application has a different take request.



**Exhibit 2. Offshore Wind Marine Mammal Take Authorizations**

<b>Offshore Wind Construction Take Authorizations Pending</b>				
	Fin Whale	Fin Whale %	NA Right Whale	NA Right Whale %
Park City Wind, LLC Construction of the New England Wind Offshore Wind Farm Project off Massachusetts	1,948	29%	228	67%
SouthCoast Wind, LLC Construction of the SouthCoast Wind Offshore Wing Project (Mayflower Wind renamed, off Rhode Island and New York	675	10%	216	64%
Revolution Wind, LLC Construction of the Revolution Wind Energy Facility off Rhode Island	48	1%	62	18%
Dominion Energy CVOW Commercial Project off Virginia	246	4%	23	7%
Sunrise Wind, LLC Construction and Operation of the Sunrise Wind Offshore Wind Farm, off New York	82	1%	35	10%
Ocean Wind, LLC Construction of the Ocean Wind I Wind Energy Facility off New Jersey	31	0%	14	4%
Atlantic Shores Offshore Wind, LLC Construction of the Atlantic Shores Offshore Wind Energy Projects off New Jersey	65	1%	33	10%
Empire Offshore Wind, LLC Construction of the Empire Wind Project (EW1 and EW2) off New York	201	3%	29	9%
US Wind, Inc. Construction and Operation of the Maryland Offshore Wind Project off of Maryland	30	0%	6	2%
<b>Total and Share of Population</b>	<b>3,326</b>	<b>49%</b>	<b>646</b>	<b>191%</b>
<b>Marine Mammal Population</b>	<b>6,802</b>		<b>338</b>	
<b>Offshore Wind Site Characterization Take Authorizations Pending</b>				
	Fin Whale	Fin Whale %	NA Right Whale	NA Right Whale %
Community Offshore Wind, LLC Marine Site Characterization Surveys off New Jersey and New York	76	1%	24	7%
Attentive Energy, LLC Marine Site Characterization Surveys off New Jersey and New York (2023)	38	1%	12	4%
Atlantic Shores Offshore Wind, LLC's Site Characterization Surveys off New Jersey and New York (2023)	6	0%	3	1%
SouthCoast Wind Energy, LLC's Marine Site Characterization Surveys off Massachusetts and Rhode Island	7	0%	6	2%
TerraSond Limited Marine Site Characterization Surveys in the Carolina Long Bay Call Area	2	0%	3	1%
TerraSond Limited Marine Site Characterization Surveys in the New York Bight and Central Atlantic Call Area	106	2%	16	5%
<b>Total and Share of Population</b>	<b>235</b>	<b>3%</b>	<b>64</b>	<b>19%</b>
<b>Marine Mammal Population</b>	<b>6,802</b>		<b>338</b>	
<b>Total Marine Mammal Take Authorizations and Share of Marine Mammal Populations</b>	<b>3,561</b>	<b>52%</b>	<b>710</b>	<b>210%</b>

Source: BOEM, Allen Brooks





As the summary shows, these surveys and construction and operation plans put more than 200% of the existing right whale species at risk of harm, and over half the existing fin whale species. These are huge numbers, and they will grow as there are more offshore wind development projects in the pipeline awaiting approval.

It is possible all these wind farms will be built with minimal harm to the whale populations. However, we still lack knowledge of the possible long-term impact of underwater noise from wind turbine operations on these endangered mammals. Maybe it is time to step back and consider what we do not know about these issues and what can be done to answer those questions before rushing ahead to build them. Without answers, who will save the whales this time?

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