



*Duke's Biennial Consolidated Carbon Plan and
Integrated Resource Plans*

How Can We Catalyze North Carolina Offshore Wind?

JUN 12 2024

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on behalf of Environmental Defense Fund

NCUC Docket No. E-100 Sub 190 - Technical
Conference

5 key points

- Offshore wind is mature global industry, rapidly maturing in the U.S.
- Offshore wind provides unique benefits.
- Offshore wind needs contractual certainty soon.
- Offshore wind can deliver first projects within 6-7 years of contractual certainty.
- Offshore wind project pipeline can optimize ratepayer value and provide optionality for 2050.

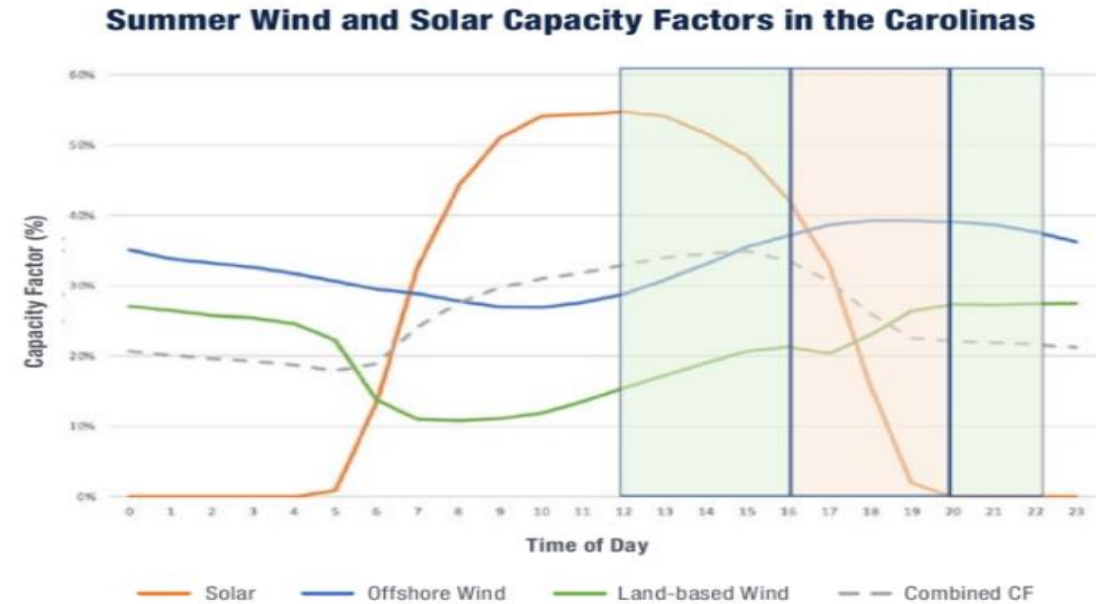
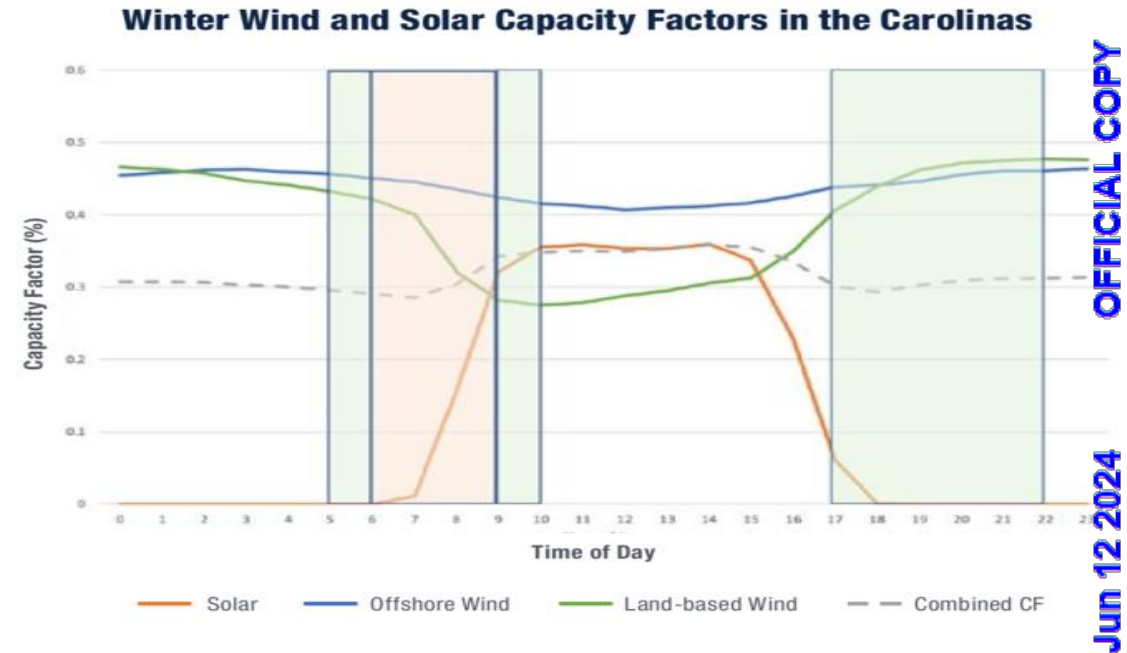
Mature industry

- 75 GW deployed in Europe & Asia by end of 2023
- 4.1 GW under construction in US today
- US on track for 18.7 GW in service by 2031.

Project	Capacity (in MW)	Status
South Fork Wind Farm (NY/RI)	132	Complete
Vineyard Wind 1 (MA)	800	Under construction, complete 2024 (scheduled)
Revolution Wind (RI)	700	Under construction, complete 2025 (scheduled)
CVOW (VA)	2600	Under construction, complete 2026 (scheduled)
Sunrise Wind(RI)	924	Construction starts 2025, complete 2026 (scheduled)
Empire Wind 1 (NY)	812	Construction starts 2025, complete 2027 (scheduled)
New England Wind (MA)	2400 (assuming MA/RI/CT award in 2024)	Permits 2024, construction starts 2026, complete 2028-2029 (estimate)
Atlantic Shores Wind (NJ)	1500 (assuming new NJ contract)	Permits 2024, construction starts 2026, complete 2028-2029 (estimate)
US Wind (MD)	2000 (assuming revised MD contract)	Permits 2024, construction starts 2026, complete 2028-2029 (estimate)
South Coast Wind (MA)	2400 (assuming MA/RI/CT award in 2024)	Permits 2025, construction starts 2027, complete 2029-2030 (estimate)
Empire Wind 2 (NY)	1260 (assuming new NY contract)	Permits 2023, construction starts 2026, complete 2028-2029 (estimate)
Beacon Wind (MA)	2000 (assuming MA/RI/CT/NY contract)	Permits 2026, construction starts 2028, complete 2030 (estimate)
Starboard Wind	1200 (assuming MA/RI/CT award in 2024)	Permits 2027, construction starts 2028, complete 2030 (estimate)
	Total: ~18.7 GW	

Offshore Wind Benefits

- Balances onshore solar
- Port and supply chain development
- Optionality: safest bet for long lead-time generation



The Commission Can Provide a Path to Market

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- Offshore wind succeeds with state-mandated contractual certainty that catalyzes investment.
- Virginia Clean Energy Act: 5.2 GW offshore wind mandate led to CVOW.
- HB951: tech neutral; Commission needs to provide the mandate.
- Permitting cost recovery can be “bridge” to contractual certainty
- Failure to order procurement with ARFI could cause developers to bail

State	Planning Targets		Mandated Procurement		Offtake Contracts Awarded (MW)	Awarded Projects (MW)
	Capacity (MW)	Year	Capacity (MW)	Year		
Maine	156	2030	-	-	12	Aqua Ventus (12)
Massachusetts	23,000	2050	5,600	2035	3,236	Vineyard Wind 1 (804) SouthCoast Wind 1 (804) SouthCoast Wind 2 (400) New England Wind (1,232)
Rhode Island	1,430	2030	1,430	2030	430	Block Island Wind Farm (430) Revolution Wind (400)
Connecticut	2,000	2030	2,000	2030	1,104	Revolution Wind (300) New England Wind (800) South Fork Wind (134)
New York	20,000	2050	9,000	2035	4,362	Empire Wind 1 (816) Sunrise Wind 1 (924) Empire Wind 2 (1,260) Beacon Wind 1 (1,230)
New Jersey	11,000	2040	11,000	2040	3,758	Ocean Wind 1 (1,100) Ocean Wind 2 (1,148) Atlantic Shores Offshore Wind South (Project 1) (1,510)
Maryland	8,500	2031	8,500	2031	2,045	Skipjack 1 (120) MarWin (370) Momentum Wind (809) Skipjack 2 (846)
Virginia	5,200	2034	5,200	2034	2,599	CVOW (Pilot) (12) CVOW (Commercial) (2,587)
North Carolina	8,000	2040	-	-	-	
California	25,000	2045	-	-	-	
Ohio	-	-	-	-	21	LEEDCo (21)
Louisiana	5,000	2035	-	-	-	
Oregon	3,000	2030	-	-	-	
Total	112,288	2050	42,730	2040	17,587	

Timing of first delivery

- First six US offshore wind projects: ~6-7 years between contractual certainty and final power delivery.
- Contractual certainty in 2025 could allow for 2032 delivery of 2.4 GW.

First US Offshore Wind Projects							
Project	Date of COP submittal	Contractual Certainty	COP approval	Onshore Construction Start	Offshore Construction Start	Actual/anticipated power delivery	Approx. Contract to full power
Vineyard Wind 1	Dec. 2017	Late 2018 (PPA from MA)	May 2021	May 2021	Late 2022	800 MW in late 2024	6 years
South Fork Wind Farm	June 2018	Nov. 2018 (PPA from NY-LIPA)	Jan. 2022	Feb. 2022	Fall 2022	1312 MW in March 2024	5.5 years
Revolution Wind	March 2020	2018 & 2019 (PPAs from CT and RI)	Nov. 2023	Late 2023	Spring 2024	704 MW in 2025	6 years
Coastal Virginia Offshore Wind	Dec. 2020	April 2020 (VCEA passage)	Jan. 2024	Nov. 2023	Spring 2024	2,600 MW in 2026	6 years
Empire Wind 1	Jan. 2020	Oct. 2019 (PPA from NY; won rebid contract in Feb. 2024)	March 2024	2024	2025	812 MW in 2027	8 years
Sunrise Wind	Sept. 2020	Oct. 2019 (PPA from NY; won rebid contract in Feb. 2024)	March 2024	2023	2025	924 MW in 2026	7 years

Think big long term

- Don't waste up to 6 GW of NC offshore wind capacity.
- Economies of scale reduce costs to ratepayers.
- Future leasing potential.
- Better long-term transmission planning.
- Optionality for net zero in 2050

