

Table D2-1. Offshore wind development activities on the U.S. East Coast: Projects and assumptions (Part 1, Turbine and Cable Design Parameters)

Region	Lease, Project, Lease Remainder <sup>a</sup>	Status	Geographic Analysis Area (X denotes lease area is within or overlaps geographic analysis area) <sup>c</sup>						Estimated Construction Schedule <sup>d</sup>	Turbine Number <sup>e</sup>	Generating Capacity (MW)	Offshore Export Cable Length (statute miles) <sup>f</sup>	Offshore Export Cable Installation Tool Disturbance Width (feet)	Inter-Array Cable Length (statute miles) <sup>g</sup>	Hub Height (feet) <sup>h</sup>	Rotor Diameter (feet) <sup>h</sup>	Height of Turbine (feet) <sup>h</sup>	
			Air Quality, Water Quality, Navigation	Benthic	Other Marine Uses (excluding research surveys & navigation)	Marine Archaeology	Birds, Bats, Marine Mammals, Sea Turtles, Finfish, Invertebrates, EFH, Fisheries, Research Surveys	Visual, Recreation & Tourism										
NE	Aquaventis (state waters)	State Project						X	2023	2	11					450	520	
NE	Block Island (state waters)	Built						X	Built	5	30	28	5	2	328	541	659	
	Total State Waters									<b>7</b>	<b>41</b>	<b>28</b>	<b>5</b>	<b>2</b>				
MA/RI	Vineyard Wind 1 part of OCS-A 0501	COP Approved (ROD issued 2021), PPA, SAP	X	X	X			X	X	2023	62	800	98	6.5	171	451	721	812
MA/RI	South Fork, OCS-A 0517	COP Approved (ROD issued 2021), PPA, SAP	X		X			X	X	2023	12	130	139	6.5	24	472	735	840
MA/RI	Sunrise, OCS-A 0487	COP, PPA, SAP	X		X			X	X	2024	94	1,034	105	6.5	180	459	656	787
MA/RI	Revolution, part of OCS-A 0486	COP, PPA, SAP	X		X			X	X	2023–2024	100	880	100	131	155	512	722	873
MA/RI	New England Wind, OCS-A 0534 and portion of OCS-A 0501 (Phase 1 [i.e., Park City Wind])	COP, PPA, SAP	X	X	X			X	X	2024–2026	62	804	125	10	139	630	837	1,047
MA/RI	New England Wind, OCS-A 0534 and portion of OCS-A 0501 (Phase 2 [i.e., Commonwealth Wind])	COP, PPA, SAP	X	X	X			X	X	2024–2026	79	1,500	225	10	201	702	935	1,171
MA/RI	Mayflower Wind, OCS-A 0521	COP, PPA, SAP	X	X	X	X		X	X	2024–2030	147	2,400	1,179	6.5	497	605	919	1,066
MA/RI	Beacon Wind 1, part of OCS-A 0520	PPA, SAP	X	X	X			X	X	2024–2025	78	1,230	233	6.5	186	591	984	853
MA/RI	Beacon Wind 2, part of OCS-A 0520	SAP	X	X	X			X	X	2025–2026	77	1,200	233	6.5	186	591	984	853
MA/RI	Bay State Wind, part of OCS-A 0500	SAP, COP (unpublished), the MW is included in the description below.	X		X			X	X	By 2030, spread over 2025–2030	110	4,200	120	6.5	172	492	722	853
MA/RI	Vineyard Wind Northeast, OCS-A 0522	This group is exposed to 4,200 MW of demand—for MA (2,400 MW remaining), CT (1,200 MW remaining), and RI (600 MW expected). Collectively the remaining technical capacity is 4,764 MW.	X	X	X			X	X		227		360	6.5	368	492	722	853
MA/RI	OCS-A 0500 remainder		X		X			X	X							492	722	853
MA/RI	OCS-A 0487 remainder		X		X			X	X							492	722	853
	Remaining MA/RI Lease Area Total <sup>b</sup>									337	4,200	480	6.5	540	492	722	853	
	Total MA/RI Leases <sup>b</sup>									<b>1,048</b>	<b>14,178</b>	<b>2,917</b>		<b>2,279</b>				
NY/NJ	Ocean Wind 1, OCS-A 0498	COP, PPA, SAP						X		2023–2025	98	1,100	194	98	190	512	788	906
NY/NJ	Atlantic Shores South, OCS-A 0499	COP, PPA, SAP						X		2024–2027	200	1,510	441	58	547	576	919	1,049

Source: Mayflower Wind Project, Draft Environmental Impact Statement (DEIS), dated February 2023, Volume II: Appendix D

Region	Lease, Project, Lease Remainder <sup>a</sup>	Status	Geographic Analysis Area (X denotes lease area is within or overlaps geographic analysis area) <sup>c</sup>						Estimated Construction Schedule <sup>d</sup>	Turbine Number <sup>e</sup>	Generating Capacity (MW)	Offshore Export Cable Length (statute miles) <sup>f</sup>	Offshore Export Cable Installation Tool Disturbance Width (feet)	Inter-Array Cable Length (statute miles) <sup>g</sup>	Hub Height (feet) <sup>h</sup>	Rotor Diameter (feet) <sup>h</sup>	Height of Turbine (feet) <sup>h</sup>
			Air Quality, Water Quality, Navigation	Benthic	Other Marine Uses (excluding research surveys & navigation)	Marine Archaeology	Birds, Bats, Marine Mammals, Sea Turtles, Finfish, Invertebrates, EFH, Fisheries, Research Surveys	Visual, Recreation & Tourism									
NY/NJ	Ocean Wind 2, OCS-A 0532	PPA					X		By 2030, spread over 2026–2030	111	1,554	120	5	173	512	788	906
NY/NJ	Empire Wind 1, part of OCS-A 0512	COP, PPA, SAP					X		2023–2026	57	816	46	5	133	525	853	951
NY/NJ	Empire Wind 2, part of OCS-A 0512	COP, PPA, SAP					X		2023–2027	90	1,260	30	5	166	525	853	951
NY/NJ	Atlantic Shores North, OCS-A 0549	SAP					X		By 2030, spread over 2026–2030	157	2,198	99	58	249	576	919	1,049
NY/NJ	OW Ocean Winds East, OCS-A 0537						X		By 2030, spread over 2026–2030	100	1,200	120	5	157	492	722	853
NY/NJ	Attentive Energy, OCS-A 0538						X		By 2030, spread over 2026–2030	102	1,224	120	5	160	492	722	853
NY/NJ	Bight Wind Holdings, OCS-A 0539						X		By 2030, spread over 2026–2030	145	1,740	120	5	231	492	722	853
NY/NJ	Atlantic Shores Offshore Wind Bight, OCS-A 0541						X		By 2030, spread over 2026–2030	93	1,116	120	5	147	492	722	853
NY/NJ	Invenergy Wind Offshore, OCS-A 0542						X		By 2030, spread over 2026–2030	97	1,164	120	5	153	492	722	853
NY/NJ	Mid-Atlantic Offshore Wind, OCS-A 0544						X		By 2030, spread over 2026–2030	102	1,224	120	5	160	492	722	853
	<b>Total NY/NJ Leases</b>									<b>1,352</b>	<b>16,106</b>	<b>1,650</b>		<b>2,466</b>			
DE/MD	Skipjack, part of OCS-A 0519	COP, PPA, SAP					X		2024	16	120	40	10	30	492	722	853
DE/MD	US Wind, part of OCS-A 0490	COP, PPA, SAP					X		2024–2027	121	2,000	146	7	152	528	820	938
DE/MD	GSOE I, OCS-A 0482	Collectively the technical capacity of this is group is 1,080 MW (90 turbines). The remaining capacity may be utilized by demand from NJ or MD.					X		By 2030, spread over 2023–2030	90	1,080				492	722	853
DE/MD	OCS-A 0519 remainder						X	492							722	853	
	<b>Remaining DE/MD Lease Area Total</b>									<b>90</b>	<b>1,080</b>	<b>240</b>	<b>5</b>	<b>139</b>			
	<b>Total DE/MD Leases</b>									<b>227</b>	<b>3,200</b>	<b>426</b>		<b>321</b>			
VA/NC	CVOW, OCS-A 0497	RAP, FDR/FIR					X		Built	2	12	27	3	9	364	506	620
VA/NC	CVOW-C, OCS-A 0483	COP, SAP					X		2025–2027	205	3,000	417	5	301	489	761	869
VA/NC	Kitty Hawk North, OCS-A 0508	COP, SAP					X		2024–2030	69	1,242	100	30	149	574	935	1,042

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VA/NC	Kitty Hawk South, OCS-A 0508						X		2024–2030	121	1,242	353	30	200	574	935	1,042
	Total VA/NC Leases									<b>397</b>	<b>5,496</b>	<b>897</b>		<b>659</b>			
	OCS Total <sup>ij</sup>									<b>3,031</b>	<b>39,021</b>	<b>5,918</b>		<b>5,728</b>			

<sup>a</sup> The spacing/layout for projects are as follows: NE State water projects include a single strand of WTGs and no OSP. For projects in the RI, MA, NY, NJ, DE, MD lease areas, a 1x1-nm grid spacing is assumed. For the CVOW Project, the spacing is 0.7 nm; and the Dominion commercial lease area off the coast of Virginia would utilize 0.5 nm average spacing, which is less than the 1x1-nm spacing due to the need to attain the state's goals.

<sup>b</sup> Because development could occur anywhere within the RI and MA lease areas and assumes a continuous 1x1-nm grid, the actual development for these projects is expected to be approximately 88% of the collective technical capacity. Under the scenario described in this appendix, the total area in the RI and MA lease areas is greater than the area needed to meet state demand. Therefore, if a project is not constructed, BOEM assumes that another future project would be constructed to fulfill the unmet demand.

<sup>c</sup> This column identifies lease areas that are applicable to each resource based on the geographic analysis areas.

<sup>d</sup> The estimated construction schedule is based on information known at the time of this analysis and could be different when an applicant submits a COP.

<sup>e</sup> The number of turbines for those lease areas without an announced number of turbines has been calculated based on lease size, a 1x1-nm grid spacing, and/or the generating capacity.

<sup>f</sup> BOEM assumes that each offshore wind development would have its own cable (both onshore and offshore) and that future projects would not utilize a regional transmission line. The length of offshore export cable for those lease areas without a known project size is assumed to include two offshore cables totaling 120 miles (193 kilometers). The offshore export cable would be buried a minimum of 4 feet (1.8 meters) but not more than 10 feet (3.1 meters).

<sup>g</sup> If information for a future project could not be obtained from a COP, the length of inter-array cabling is assumed to be the average amount per foundation based on the COPs submitted to date, which is 1.48 miles (2.4 kilometers). In addition, for those lease areas that require more than one OSP, it is assumed that an additional 6.2 miles (9.9 kilometers) of inter-link cable would be required to link the two OSPs. Inter-array cable is assumed to be buried between 4 and 6 feet.

<sup>h</sup> The hub height, rotor diameter, and turbine height for lease areas is based on worst-case scenario for the resource area. Presentation of heights vary by COP and may be presented relative to MLLW, mean sea level, or height above highest astronomical tide.

<sup>i</sup> BOEM recognizes that the estimates presented within this analysis are likely high, conservative estimates; however, BOEM believes that this analysis is appropriately capturing the potential cumulative impacts and errs on the side of maximum impacts. Totals by lease area and by OCS may not fully sum due to rounding errors.

<sup>j</sup> New York's demand is not double-counted, this total comes from looking at New York's state demand, not adding up the potential of the areas because that would double-count New York.

CT = Connecticut; CVOW = Coastal Virginia Offshore Wind; DE = Delaware; FDR = Facility Design Report; FIR = Fabrication and Installation Report; MA = Massachusetts; MD = Maryland; NC = North Carolina; NE = New England; NJ = New Jersey; NY = New York; PPA = Power Purchase Agreement; RAP = research activities plan; RI = Rhode Island; SAP = Site Assessment Plan

**Table C-1. Summary of PDE parameters**

Project Parameter Details
<b>General (Layout and Project Size)</b> <ul style="list-style-type: none"> <li>Up to 147 WTGs</li> <li>Up to 5 OSPs</li> <li>Up to a total of 149 WTG/OSP positions</li> <li>1 nautical mile (nm) x 1 nm (1.9 kilometers x 1.9 kilometers) grid layout with east–west and north–south orientation</li> </ul>
<b>Foundations</b> <ul style="list-style-type: none"> <li>Monopile, piled jacket, suction-bucket jacket, and/or gravity-based structure (up to two different foundation concepts would be installed)</li> <li>Scour protection for up to all foundations</li> <li>Seabed penetration up to 295.3 feet (90 meters) depth</li> <li>Foundation piles would be installed using a pile-driving hammer and/or drilling techniques such as using a hydraulic impact hammer, vibratory hammer, or water jetting</li> </ul>
<b>Wind Turbine Generators</b> <ul style="list-style-type: none"> <li>Rotor diameter up to 918.6 feet (280 meters)</li> <li>Blade length up to 452.8 feet (138 meters)</li> <li>Hub height up to 605.1 feet (184.4 meters) above mean lower low water (MLLW)</li> <li>Upper blade tip height up to 1,066.3 feet (325 meters) above MLLW</li> <li>Lowest blade tip height (air gap) 53.8 feet (16.4 meters) above highest astronomical tide</li> </ul>
<b>Offshore Substation Platforms</b> <ul style="list-style-type: none"> <li>Up to five OSPs</li> <li>OSP installed atop a monopile, piled jacket, suction-bucket jacket, and/or gravity-based structure</li> <li>Total OSP structure height up to 344.5 feet (105 meters) above MLLW</li> <li>Scour protection for all foundations</li> <li>Maximum length and width of topside structure 360.9 feet by 328.1 feet (110 meters by 100 meters; with ancillary facilities)</li> <li>Foundation piles to be installed using a pile-driving hammer and/or drilling techniques such as using a hydraulic impact hammer, vibratory hammer, or water jetting.</li> <li>Up to 10 million gallons per day of once-through non-contact cooling water, with a maximum intake velocity of 0.5 foot per second, with a maximum anticipated temperature change of 18°F (10°C) from ambient water, and a maximum end-of-pipe discharge temperature of 90°F (32.2°C)</li> <li>Depth of withdrawal for cooling water ranging from approximately 25 to 115 feet (7.6 to 35.0 meters) below the surface</li> </ul>
<b>Interarray Cables</b> <ul style="list-style-type: none"> <li>Target burial depth of 3.2 to 8.2 feet (1 to 2.5 meters)</li> <li>Nominal interarray cable voltage: 60 kilovolt (kV) to 72.5 kV</li> <li>Maximum total interarray cable length is 497.1 miles (800 kilometers)</li> <li>Preliminary layout available; however, final layout pending</li> <li>Cable lay, installation, and burial: Activities may involve use of a jetting remotely operated vessel (ROV), mechanical cutting ROV system, plowing (pre-cut and mechanical)</li> </ul>

Project Parameter Details
<b>Falmouth Offshore Export Cables</b>
<ul style="list-style-type: none"> <li>• Up to 5 offshore export cables</li> <li>• Nominal export cable voltage: 200 kV to 345 kV high voltage alternating current (HVAC) or <math>\pm 525</math> kV high voltage direct current (HVDC)</li> <li>• Maximum total cable corridor length is 87 miles (140 kilometers)</li> <li>• Target burial depth of 3.2 to 13.1 feet (1 to 4 meters)</li> <li>• Up to 9 cable / pipeline crossings</li> <li>• Cable lay, installation, and burial: Activities may involve use of a jetting tool (jetting ROV or jetting sled), vertical injection, mechanical cutting ROV system, plowing (pre-cut and mechanical)</li> </ul>
<b>Brayton Point Offshore Export Cables</b>
<ul style="list-style-type: none"> <li>• Up to 6 offshore export cables</li> <li>• Nominal export cable voltage: <math>\pm 320</math> kV HVDC</li> <li>• Maximum total cable corridor length is 124 miles (200 kilometers)</li> <li>• Target burial depth of 3.2 to 13.1 feet (1 to 4 meters)</li> <li>• Up to 16 cable/pipeline crossings</li> <li>• Cable lay, installation, and burial: Activities may involve use of a jetting tool (jetting ROV or jetting sled), vertical injection, mechanical cutting ROV system, plowing (pre-cut and mechanical)</li> </ul>
<b>Falmouth Landfall Site</b>
<ul style="list-style-type: none"> <li>• Three landfall locations under consideration: Worcester Avenue (preferred), Central Park, and Shore Street</li> </ul>
<b>Brayton Point Landfall Site</b>
<ul style="list-style-type: none"> <li>• Two landfall locations under consideration: the western (preferred) and eastern (alternate) shorelines of Brayton Point</li> <li>• Aquidneck Island, Portsmouth, Rhode Island; several locations under consideration for intermediate landfall across the island</li> </ul>
<b>Falmouth Onshore Export Cable Corridor</b>
<ul style="list-style-type: none"> <li>• Up to 12 onshore export cables and up to five communications cables</li> <li>• Nominal underground onshore export cable voltage: 200 kV to 345 kV HVAC</li> <li>• Maximum onshore export cable length is 6.4 statute miles (10.3 kilometers)</li> </ul>
<b>Brayton Point Onshore Export Cable Corridor</b>
<ul style="list-style-type: none"> <li>• Up to 6 onshore export cables and up to two communications cables</li> <li>• Nominal underground onshore export cable voltage: <math>\pm 320</math> kV HVDC</li> <li>• Maximum onshore export cable length is 0.6 mile (1.0 kilometer)</li> </ul>
<b>Brayton Point Onshore Export Cable Corridor on Aquidneck Island (intermediate landfall)</b>
<ul style="list-style-type: none"> <li>• Up to 4 onshore export cables and up to two communications cables</li> <li>• Nominal underground onshore export cable voltage: <math>\pm 320</math> kV HVDC</li> <li>• Onshore export cable corridor length is 3 miles (4.8 kilometers) across Aquidneck Island</li> </ul>

**Project Parameter Details****Falmouth Onshore Substation/Interconnection**

- Two Falmouth locations under consideration - Lawrence Lynch (preferred) and Cape Cod Aggregates (alternate)
- Up to 26 acres (10.5 hectares) permanent area
- New 345-kV overhead (preferred) or underground (alternate) transmission line in existing right-of-way up to 2.1 miles (3.4 kilometers) in length
- Transmission line to Falmouth point of interconnection would be designed, permitted, and constructed by interconnection transmission owner

**Brayton Point Converter Station/Interconnection**

- One Brayton Point location under consideration – existing National Grid substation
- Up to 7.5 acres (3 hectares) permanent area
- New 345-kV underground transmission route to existing Brayton Point point of interconnection, up to 0.2 mile (0.3 kilometer) on Brayton Point property

**Table C-2. Project design envelope maximum-case scenario per resource**

Design Parameter	Maximum Design Parameters
<b>WIND FARM</b>	
Wind Facility Capacity	Up to 2,400 megawatts (MW)
WTG Foundation Arrangement Envelope	1 nm x 1 nm (1.9 kilometers x 1.9 kilometers)
<b>WIND TURBINES</b>	
<b>Parameters per Turbine</b>	
Number of WTG/OSP positions	149 total WTGs and OSPs
Number of WTGs installed	147 WTGs
Tip height above mean lower low water (MLLW)	1,066.3 feet (325 meters)
Hub height above MLLW	605.1 feet (184.4 meters)
Rotor diameter	918.6 feet (280 meters)
Blade length	452.8 feet (138 meters)
Tip clearance above highest astronomical tide	53.8 feet (16.4 meters)
<b>PARAMETERS PER WTG FOUNDATION STRUCTURE (COP Volume 1 Table 3-2)</b>	
<b>WTG Pin-Piled Jacket (COP Volume 1 Table 3-2)</b>	
Diameter at seabed (seabed centerline diameter)	164.0 feet (50.0 meters)
Foundation diameter	14.7 feet (4.5 meters)
Footprint diameter across <sup>a</sup>	380.5 feet (116.0 meters)
Number of legs/discrete contact points with seabed per substructure	4
Depth of penetration below seabed with scour protection	229.6 feet (70.0 meters)
<b>WTG Monopile (COP Volume 1 Table 3-2)</b>	
Foundation diameter	52.5 feet (16.0 meters)
Footprint diameter across <sup>a</sup>	374 feet (114.0 meters)
Number of legs/discrete contact points with seabed per substructure	1
Depth of penetration below seabed with scour protection	164.0 feet (50.0 meters)
<b>WTG Suction Bucket Jacket (COP Volume 1 Table 3-2)</b>	
Diameter of suction bucket at seabed (seabed centerline diameter)	180.4 feet (55.0 meters)
Foundation diameter	65.6 feet (20.0 meters)
Footprint diameter across <sup>a</sup>	521.6 feet (159.0 meters)

Design Parameter	Maximum Design Parameters
Number of legs/discrete contact points with seabed per substructure	4
Depth of penetration below seabed with scour protection	65.6 feet (20.0 meters)
<b>WTG Gravity-based Structure (COP Volume 1 Table 3-2)</b>	
Diameter of gravity-based structure at seabed (seabed centerline diameter) (maximum for 4-foundation gravity-based structure)	393.7 feet (120 meters)
Foundation diameter (maximum for 1-foundation gravity-based structure)	229.6 feet (70.0 meters)
Footprint diameter across <sup>a</sup> (maximum for 4-foundation gravity-based structure)	696.2 feet (212.2 meters)
Number of legs/discrete contact points with seabed per substructure	Up to 4
Depth of penetration below seabed	29.6 feet (9 meters)
Maximum total dredging volume of all locations combined for installation	111,973,203 ft <sup>3</sup> (3,170,728 m <sup>3</sup> )
<b>OFFSHORE SUBSTATIONS</b>	
<b>PARAMETERS PER OSP FOUNDATION STRUCTURE</b>	
<b>Topside Offshore Substations</b>	
Number of OSPs	Up to 5
Height of OSP topside above MLLW	344.5 feet (105 meters)
<b>PARAMETERS PER OSP FOUNDATION STRUCTURE (COP Volume 1 Table 3-3) – Option A Modular</b>	
<b>OSP Monopile (COP Volume 1 Table 3-3)</b>	
Number of OSPs	Up to 5
Diameter at seabed (seabed centerline diameter)	52.5 feet (16.0 meters)
Footprint diameter at mudline	52.5 feet (16.0 meters)
Number of legs/discrete contact points with seabed per substructure	1
Depth of penetration below seabed with scour protection	164.0 feet (50.0 meters)
Total foundation footprint contacting seabed per foundation <sup>a</sup>	2.52 acres (1.02 hectares)
<b>OSP Pin-Pile Jacket (COP Volume 1 Table 3-3)</b>	
Number of OSPs	Up to 5
Diameter at seabed (seabed centerline diameter)	164.0 feet (50.0 meters)
Foundation diameter (pile or bucket diameter at mudline)	14.7 feet (4.5 meters)
Number of legs/discrete contact points with seabed per substructure	Up to 4 foundations and up to 2 piles per foundation
Depth of penetration below seabed with scour protection	229.6 feet (70.0 meters)
Distance between adjacent legs at seabed	116 feet (36 meters)
Total foundation footprint contacting seabed per foundation <sup>a</sup>	2.61 acres (1.05 hectares)



Design Parameter	Maximum Design Parameters
<b>OSP Suction-Bucket Jacket (COP Volume 1 Table 3-3)</b>	
Number of OSPs	Up to 5
Diameter of suction bucket at seabed (seabed centerline diameter)	180.4 feet (55.0 meters)
Foundation diameter (pile or bucket diameter at mudline)	65.6 feet (20.0 meters)
Number of legs/discrete contact points with seabed per substructure	Up to 4 foundations and 1 bucket per foundation
Depth of penetration below seabed with scour protection	65.6 feet (20.0 meters)
Distance between adjacent legs at seabed	65.6 feet (20.0 meters)
Total foundation footprint contacting seabed per foundation <sup>a</sup>	4.90 acres (1.98 hectares)
<b>OSP Gravity-based Structure (COP Volume 1 Table 3-3)</b>	
Number of OSPs	Up to 5
Diameter at seabed (centerline diameter)	Not applicable
Diameter of gravity-based structure at seabed [seabed centerline diameter]	229.6 feet (70 meters)
Number of legs/discrete contact points with seabed	Up to 4 foundations
Depth of penetration below seabed	Not applicable
Distance between adjacent legs at seabed	Not applicable
Total foundation footprint contacting seabed per foundation <sup>a</sup>	11.55 acres (4.67 hectares)
<b>PARAMETERS PER OSP FOUNDATION STRUCTURE (COP Volume 1 Table 3-3) – Option B Integrated</b>	
<b>OSP Pin-Pile Jacket (COP Volume 1 Table 3-3)</b>	
Number of OSPs	Up to 5
Diameter at seabed (seabed centerline diameter)	213 feet x 105 feet (65 meters x 32 meters)
Foundation diameter (pile or bucket diameter at mudline)	11.7 feet (3.57 meters)
Number of legs/discrete contact points with seabed per substructure	Up to 6 foundations and up to 3 piles per foundation
Depth of penetration below seabed with scour protection	277.2 feet (84.5 meters)
Foundation diameter/leg spacing at mean sea level (MSL)	114.8–168.0 feet (35–50 meters)
Total foundation footprint contacting seabed per foundation <sup>a</sup>	7.54 acres (3.05 hectares)
<b>PARAMETERS PER OSP FOUNDATION STRUCTURE (COP Volume 1 Table 3-3) – Option C DC Converter</b>	
<b>OSP Pin-Pile Jacket (COP Volume 1 Table 3-3)</b>	
Number of OSPs	Up to 5
Diameter at seabed (seabed centerline diameter)	279 feet x 197 feet (85 meters x 60 meters)
Foundation diameter (pile or bucket diameter at mudline)	12.8 feet (3.9 meters)

Design Parameter	Maximum Design Parameters
Number of legs/discrete contact points with seabed	4 to 9 foundations and 1 to 3 piles / foundation = 4 to 27 piles
Depth of penetration below seabed with scour protection	262.4 feet (80 meters)
Total foundation footprint contacting seabed per foundation <sup>a</sup>	9.79 acres (3.96 hectares)
<b>OSP Gravity-based Structure (COP Volume 1 Table 3-3)</b>	
Number of OSPs	Up to 5
Diameter of gravity-based structure at seabed (seabed centerline diameter)	361 feet x 328 feet (110 x 100 meters)
Number of legs/discrete contact points with seabed per substructure	4 to 9 foundations
Depth of penetration below seabed	Not applicable
Foundation diameter/leg spacing at mean sea level (MSL)	262.0–328.1 feet (80–100 meters)
Total foundation footprint contacting seabed per foundation <sup>a</sup>	10.90 acres (4.41 hectares)
<b>PERMANENT SEABED DISTURBANCE (COP Volume 1 Table 3-36; Table 3-37)</b>	
<b>Monopile WTG Substructures (COP Volume 1 Table 3-37)</b>	
Total permanent footprint per foundation <sup>a</sup>	2.52 acres (1.02 hectares)
Total permanent footprint for 147 WTG foundations <sup>a</sup>	370.44 acres (149.94 hectares)
<b>Pin-Pile Jacket WTG Substructures (COP Volume 1 Table 3-37)</b>	
Total permanent footprint per foundation <sup>a</sup>	2.61 acres (1.05 hectares)
Total permanent footprint for 147 WTG foundations <sup>a</sup>	383.67 acres (154.35 hectares)
<b>Pin-Pile Jacket OSP Substructures (COP Volume 1 Table 3-36)</b>	
Total permanent footprint per OSP foundation <sup>a</sup>	9.8 acres (3.7 hectares)
Total permanent footprint for 2 OSP foundations <sup>a</sup>	19.6 acres (7.4 hectares)
<b>Suction Bucket Jacket WTG Substructures (COP Volume 1 Table 3-37)</b>	
Total permanent footprint per foundation <sup>a</sup>	4.90 acres (1.98 hectares)
Total permanent footprint for 147 WTG foundations <sup>a</sup>	720.30 acres (291.06 hectares)
<b>WTG Gravity Based Substructures (COP Volume 1 Table 3-37)</b>	
Total permanent footprint per foundation <sup>a</sup>	11.55 acres (4.67 hectares)
Total permanent footprint for 147 WTG foundations <sup>a</sup>	1,697.85 acres (686.49 hectares)

Design Parameter	Maximum Design Parameters
<b>Gravity Based OSP Substructures (COP Volume 1 Table 3-36)</b>	
Total permanent footprint per foundation <sup>a</sup>	10.9 acres (4.4 hectares)
Total permanent footprint for 2 OSP foundations <sup>a</sup>	21.8 acres (8.8 hectares)
<b>TEMPORARY SEABED DISTURBANCE DURING CONSTRUCTION</b>	
<b>Monopile WTG Substructures (COP Volume 1 Table 3-37; Table 3-38)</b>	
Disturbance due to jack-up or anchored vessels per foundation	2.96 acres (1.2 hectares)
Total temporary seabed disturbance beyond permanent footprint per foundation	0.5 acre (0.2 hectare)
Total temporary seabed disturbance beyond permanent footprint for 147 WTG foundations	73.5 acres (29.4 hectares)
<b>Pin-Pile Jacket WTG Substructures (Table 3-37; Table 3-38)</b>	
Disturbance due to jack-up or anchored vessels per foundation	2.96 acres (1.2 hectares)
Total temporary seabed disturbance beyond permanent footprint per foundation	0.5 acre (0.2 hectare)
Total temporary seabed disturbance beyond permanent footprint for 147 WTG foundations	73.5 acres (29.4 hectares)
<b>Pin-Pile Jacket OSP Substructures (COP Volume 1 Table 3-36; Table 3-38)</b>	
Disturbance due to jack-up or anchored vessels per foundation	2.96 acres (1.2 hectares)
Total temporary seabed disturbance beyond permanent footprint per foundation	0.5 acre (0.2 hectare)
Total temporary seabed disturbance beyond permanent footprint for 2 OSP foundations	1.0 acres (0.4 hectare)
<b>Suction Bucket Jacket WTG Substructures (COP Volume 1 Table 3-37; Table 3-38)</b>	
Disturbance due to jack-up or anchored vessels per foundation	2.96 acres (1.2 hectares)
Total temporary seabed disturbance beyond permanent footprint per foundation	0.6 acre (0.3 hectare)
Total temporary seabed disturbance beyond permanent footprint for 147 WTG foundations	88.2 acres (44.1 hectares)
<b>Gravity Base WTG Substructures (COP Volume 1 Table 3-37; Table 3-38)</b>	
Disturbance due to jack-up or anchored vessels per foundation	2.96 acres (1.2 hectares)
Total temporary seabed disturbance beyond permanent footprint per foundation	1.0 acres (0.4 hectare)
Total temporary seabed disturbance beyond permanent footprint for 147 WTG foundations	147.0 acres (58.8 hectares)
<b>Gravity Base OSP Substructures (COP Volume 1 Table 3-36; Table 3-38)</b>	
Disturbance Due to jack-up or anchored vessels per foundation	2.96 acres (1.2 hectares)
Total temporary seabed disturbance beyond permanent footprint per foundation	1.5 acres (0.6 hectare)
Total temporary seabed disturbance beyond permanent footprint for 2 OSP foundations	3.0 acres (1.2 hectares)

Design Parameter	Maximum Design Parameters
<b>Installation Timeframe</b>	
<b>Monopile</b>	
Approximate duration per foundation	4 hours
Number of piles driven per day	2
<b>Piled Jacket</b>	
Approximate duration per foundation	2 hours
Number of piles driven per day	8
<b>Temporary Seabed Disturbance During WTG Construction (COP Volume 1 Table 3-37; Table 3-38)</b>	
Area of seabed preparation per foundation monopile	0.5 acre (0.2 hectare)
Area of seabed preparation per foundation pin-pile jacket	0.5 acre (0.2 hectare)
Area of seabed preparation per foundation suction-bucket jacket	0.6 acre (0.3 hectare)
Area of seabed preparation per foundation gravity-base	1.0 acre (0.4 hectare)
Area of disturbance per jack-up vessel (vessel spuds including all legs)	0.37 acre (0.15 hectare)
Number of vessel visits per WTG location	6 to 8
<b>Temporary Seabed Disturbance During OSP Construction (COP Volume 1 Table 3-36; Table 3-38)</b>	
Area of seabed preparation per foundation pin-pile jacket	0.5 acre (0.2 hectare)
Area of seabed preparation per foundation gravity base	1.5 acre (0.6 hectare)
Number of vessel visits per OSP location	4
<b>Temporary Seabed Disturbance During WTG/OSP Construction (COP Volume 1 Table 3-38)</b>	
Total jack-up vessel spud seabed footprint area (149 WTG/OSP locations)	441.8 acres (178.8 hectares)
<b>INTERARRAY and EXPORT CABLES</b>	
<b>Interarray Cable (COP Volume 1 Table 3-12; Table 3-30)</b>	
Cable diameter	8 inches
Nominal cable voltage (AC)	72.5 kV
Number of WTGs per interarray cable string	1 to up to 9
Seabed preparation (assumes boulder removal and grapnel run over entire length)	99 acres (40 hectares)
Cable installation (assumed 19.7 feet [6 meters] of surface impact around each cable)	1,186 acres (480 hectares)
Cable protection (assumes mattresses or rock placement at cable crossings and as needed; assumes 10 percent of the interarray cable will require additional protection; a 19.7-foot (6-meter)-wide rock berm would be constructed along these cable sections)	122 acres (50 hectares)
Total area disturbed	1,408 acres (570 hectares)

Design Parameter	Maximum Design Parameters
Interarray cable length	497.1 miles (800 kilometers)
Target burial depth	8.2 feet (2.5 meters)
Number of cable/pipeline crossings	Up to 10
<b>Offshore Export Cable (COP Volume 1 Table 3-29; Table 3-14) – Falmouth</b>	
Number of export cables	Up to 5
Nominal cable voltage	345 kV (HVAC) ±525 kV (HVDC)
Burial depth	13.1 feet (4 meters)
Export cable diameter (excluding cable protection)	13.8 inches (350.0 millimeters)
Maximum Length of export cable	434.9 miles (700 kilometers)
Length of Offshore cable corridor	87.0 miles (140 kilometers)
Export cable corridor width	3,280.8 feet (1,000 meters)
Number of cable/pipeline crossings (COP Volume 1 Table 3-15)	Up to 9
Typical separation distance of export cable	328 feet (100 meters)
Seabed preparation (per cable) (assumes suction hopper dredger over 5 percent of route; boulder field clearance 10 percent of route; grapnel run over the entire route)	138 acres (56 hectares)
Cable installation (per cable) (assumes surface impact of 19.7 feet [6 meters] around each cable)	186 acres (75 hectares)
Cable protection (per cable) (an estimated 10 percent of the route will require additional cable protection. It is assumed that a 19.7 foot- (6 meter)-wide rock berm will be constructed)	27 acres (11 hectares)
Total seabed disturbance area (per cable)	351 acres (142 hectares)
Total seabed disturbance area (5 cables)	1,753 acres (709 hectares)
<b>Offshore Export Cable (COP Volume 1 Table 3-29; Table 3-14) – Brayton Point</b>	
Number of export cable bundles (each bundle consisting of two power cables and one communication cable)	Up to 2
Nominal cable voltage (HVDC)	±320 kV
Export cable diameter (excluding cable protection)	6.9 inches (175.0 millimeters)
Burial depth	13.1 feet (4 meters)

Design Parameter	Maximum Design Parameters
Maximum length of export cable	744 miles (1,200 kilometers)
Length of Offshore cable corridor	124 miles (200 kilometers)
Export cable corridor width	2,300 feet (700 meters)
Number of cable/pipeline crossings (COP Volume 1 Table 3-15)	Up to 16
Typical separation distance of export cable	164 feet (50 meters)
Seabed preparation (per cable bundle) (boulder field clearance 10 percent of route; grapnel run over the entire route)	65 acres (26 hectares)
Cable installation (per cable bundle) (assumes surface impact of 19.7 feet [6 meters] around each cable)	242 acres (98 hectares)
Cable protection (per cable bundle) (an estimated 15 percent of the route will require additional cable protection. It is assumed that a 19.7-foot (6-meter)-wide rock berm will be constructed)	56 acres (23 hectares)
Seabed disturbance area (per cable bundle)	363 acres (147 hectares)
Total seabed disturbance area (2 cables bundles)	727 acres (294 hectares)
<b>Onshore Components Falmouth (COP Volume 1 Table 3-18; Table 3-19; Table 3-34; Table 3-39)</b>	
Landfall locations	Worcester Avenue; Shore Street; or Central Park
Landfall transition method	horizontal directional drilling (HDD)
Number of sea to shore HDDs	Up to 4
Area of disturbance per HDD	0.1 acre (0.04 hectare)
Total area of HDD disturbance	0.4 acre (0.16 hectare)
Onshore substation locations	Lawrence Lynch or Cape Cod Aggregates
Maximum distance from landfall to substation (Shore Street to Cape Cod Aggregates)	6.4 miles (10.25 kilometers)
Number of Onshore export power cables	3 to 12
Number of Onshore communications cables	1 to 5
Number of Onshore continuity cables	1 to 4
Approximate cable diameter	5.59 inches (142 millimeters)
Nominal cable voltage (HVAC)	345 kV
Transition joint bay (4 transition joint bays)	0.066 acre (0.027 hectare)
Maximum case duct bank (direct buried duct bank arrangement 12 ducts)	10 acres (4 hectares)

Design Parameter	Maximum Design Parameters
Buried splice vault (installed)	0.4 acre (0.2 hectare)
Maximum case landfall construction	0.91 acre (0.37 hectare)
Trench excavation area along duct bank route	12.4 acres (5 hectares)
Splice vault work area (20 locations; 0.5 acre per location)	10 acres (4 hectares)
Onshore substation (HVAC)	26 acres (10.5 hectares)
Alternate Falmouth underground transmission line	18.86 acres (7.6 hectares)
<b>Onshore Components Brayton Point (COP Volume 1 Table 3-18; Table 3-20; Table 3-35; Table 3-39)</b>	
Landfall locations	East Brayton Point / West Brayton Point
Landfall transition method	HDD
Number of sea to shore HDDs	Up to 12
Area of disturbance per HDD	0.3 acre (0.12 hectare)
Total area of HDD disturbance	1.20 acres (0.48 hectare)
Onshore substation location	Existing National Grid Substation
Maximum length of onshore cable to Brayton Point	3,940 feet (1,200 meters)
Maximum length of onshore cable at intermediate landfall on Aquidneck Island	3 miles (4.8 kilometers)
Maximum distance from landfall to converter station (Western Brayton Point)	0.6 mile (1.0 kilometers)
Number of Onshore export power cables	1 to 4
Number of Onshore communications cables	1 to 2
Approximate cable diameter	5.9 inches (150 millimeters)
Nominal cable voltage (HVDC)	±320 kV
Maximum case duct bank (split duct bank, 4 power conduits)	1.8 acres (0.7 hectare)
Buried transition joint bays and splice vaults (installed)	0.14 acre (0.06 hectare)
Landfall construction area	3 acres (1.2 hectares)
Trench excavation area along duct bank route (split duct bank installation)	2.7 acres (1.1 hectares)
Buried transition and splice vault work area	0.11 acre (0.05 hectare)
Converter station (HVDC)	10 acres (4.0 hectares)
Alternate Brayton Point underground transmission line	0.2 acre (0.10 hectare)

<sup>a</sup> Footprint includes combined area of foundation, scour protection, and mud mats