Appendix C

Project Design Envelope and Maximum-Case Scenario

Appendix C: Project Design Envelope and Maximum-Case Scenario

Atlantic Shores would implement a PDE approach. This concept allows Atlantic Shores to define and bracket proposed Project characteristics for environmental review and permitting while maintaining a reasonable degree of flexibility for selection and purchase of Project components such as WTGs, foundations, submarine cables, and OSSs.

BOEM provides Atlantic Shores and other lessees with the option to submit COPs using the PDE approach—providing sufficiently detailed information within a reasonable range of parameters to analyze a "maximum-case scenario" within those parameters for each affected environmental resource. BOEM identified and verified that the maximum-case scenario based on the PDE provided by Atlantic Shores and analyzed in this Final EIS could reasonably occur, if approved. This approach is intended to provide flexibility for lessees and allow BOEM to analyze environmental impacts in a manner that minimizes the need for subsequent environmental and technical reviews as design changes occur.

This Final EIS assesses the impacts of the reasonable range of Project designs that are described in the Atlantic Shores South COP by using the maximum-case scenario process, which analyzes the aspects of each design parameter that would result in the greatest impact for each physical, biological, and socioeconomic resource. This Final EIS considers the interrelationship between aspects of the PDE rather than simply viewing each design parameter independently. This Final EIS also analyzes the Proposed Action impacts of the maximum-case scenario alongside other reasonably foreseeable past, present, and future actions.

Certain resources evaluated in this Final EIS may have multiple maximum-case scenarios, and the most impactful design parameters may not be the same for all resources. A summary of Atlantic Shores' PDE parameters is provided in Table C-1. Table C-2 details the full range of maximum-case design parameters for the proposed Project and which parameters are relevant to the analysis for each EIS section in Chapter 3, *Affected Environment and Environmental Consequences*.

Table C-1. Summary of PDE parameters

Element	Project Design Element	Total	Differentiation Between Project Design Elements	
			Project 1	Project 2
WTGs	Maximum number of WTGs	200 (inclusive of the 31 WTGs in the Overlap Area)[1]	105–136	64–95
	WTG layout	Grid layout with east-northeast/west-southwest rows and approximately north/south columns, consistent with the predominant flow of traffic	--	--
	Maximum rotor diameter	918.6 feet (280.0 meters)	--	--

Element	Project Design Element	Total	Differentiation Between Project Design Elements	
			Project 1	Project 2
	Maximum tip height[2]	1,048.8 feet (319.7 meters)	--	--
OSSs	Maximum number of OSSs	10 small OSSs, or	5	5
		5 medium OSSs, or	2	3
		4 large OSSs	2	2
	OSS layout	Positioned along the same east-northeast/west-southwest rows as WTGs	--	--
	Minimum distance from shore	Small OSS: 12 miles (19.3 kilometers)	--	--
		Medium and large OSS: 13.5 miles (21.7 kilometers)	--	--
WTG and OSS Foundations	Foundation types		--	--
	Piled	Monopiles or piled jackets[3]	--	--
	Suction bucket	Mono-buckets or suction bucket jackets[4]	--	--
	Gravity	Gravity-based structures (GBS)[5]	--	--
	Maximum pile diameter at seabed (for piled foundation types)	Monopile: 49.2 feet (15.0 meters)	--	--
		Piled jacket: 16.4 feet (5.0 meters)	--	--
Interarray and Interlink Cables	Cable types and voltage	Interarray: 66–150 kV HVAC	--	--
		Interlink: 66–275 kV HVAC	--	--
	Maximum total cable length	Interarray: 547 miles (880 kilometers)	273.5 miles (440 kilometers)	273.5 miles (440 kilometers)
		Interlink: 37 miles (60 kilometers)	18.6 miles (30 kilometers)	18.6 miles (30 kilometers)
	Target burial depth range	5 to 6.6 feet (1.5 to 2 meters)	--	--
Export Cables	Cable types and voltage	230–275 kV HVAC cables and/or 320–525 kV HVDC cables	--	--
	Number of ECCs	2: Atlantic ECC and Monmouth ECC	--	--
	Maximum number of cables of HVAC export cables	4 per corridor	--	--
	Maximum number of cables of HVDC export cables	1 per corridor	--	--
	Maximum total cable length	Atlantic Landfall Site to OSSs: 99.4 miles (160.0 kilometers)	--	--
		Monmouth Landfall Site to OSSs: 341.8 miles (550.0 kilometers)	--	--

Element	Project Design Element	Total	Differentiation Between Project Design Elements	
			Project 1	Project 2
	Target burial depth range	5 to 6.6 feet (1.5 to 2 meters)	--	--
Met Towers Metocean Buoys	Maximum number of met towers	Total: 1 (permanent)	1	0
	Maximum number of metocean buoys	Total: 4 (temporary, during construction)	3	1
Landfall Sites	Number of landfall sites	Atlantic Landfall Site	--	--
		Monmouth Landfall Site	--	--
	Installation method	HDD	--	--
Onshore Facilities	Number of onshore interconnection cable routes	Cardiff Onshore Interconnection Cable Route	--	--
		Larrabee Onshore Interconnection Cable Route	--	--
	Approximate route length	9.8 to 23.0 miles (15.8 to 37.0 kilometers) each	--	--
	Onshore interconnection cable types and voltage	230–275 kV HVAC cables installed in underground duct bank	--	--
		or 320–525 kV HVDC cables installed in underground duct bank	--	--
	Number of onshore substations and/or converter stations[6]	Total: two (one per POI), each with up to three potential sites	--	--
	Points of Interconnection (POI)	Cardiff POI	--	--
		Larrabee POI	--	--
O&M Facility	Location	New O&M facility proposed in Atlantic City, New Jersey	--	--

Source: Atlantic Shores 2024.

[1] The number of WTGs in Project 1, Project 2, and the associated Overlap Area would not exceed 200 WTG locations. For example, if Project 1 includes 105 WTGs (the minimum) then the Overlap Area would be incorporated into Project 2, which would include the remaining 95 WTGs; and conversely if the Overlap Area is incorporated into Project 1 such that it includes 136 WTGs, then Project 2 would be limited to 64 WTGs. Each Project may also use only part of the Overlap Area.

[2] All elevations are provided relative to MLLW.

[3] Monopile foundations are included in the PDE for the WTGs in Project 1 and Project 2, the met tower, and the small OSSs, not for the medium or large OSSs. Piled jacket foundations are included in the PDE for the WTGs in Project 2 only, the met tower, and small, medium or large OSSs. Only one foundation type would be used for all WTG foundations in Project 2.

[4] Mono-bucket foundations are included in the PDE for the met tower only. Suction bucket jacket foundations are included in the PDE for the met tower and small, medium or large OSSs only.

[5] GBS foundations are included in the PDE for the met tower and medium or large OSSs only.

[6] Converter station would only be required if HVDC transmission is utilized.

ECC = export cable corridor; HDD = horizontal directional drilling; HVAC = high-voltage alternating current; HVDC = high-voltage direct current; kV = kilovolt; O&M = operations and maintenance; OSS = offshore substation; PDE = Project Design Envelope; POI = Point of Interconnection; WTG = wind turbine generator.

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Table C-2. PDE maximum-case scenario per resource (an "x" indicates that the parameter is relevant to an EIS resource analysis)

Design Parameter	Maximum Design Parameters	3.4.1 Air Quality	3.4.2 Water Quality	3.5.1 Bats	3.5.2 Benthic Resources	3.5.3 Birds	3.5.4 Coastal Habitat and Fauna	3.5.5 Finfish, Invertebrates, and Essential Fish Habitat	3.5.6 Marine Mammals	3.5.7 Sea Turtles	3.5.8 Wetlands	3.6.1 Commercial Fisheries and For-Hire Recreational Fishing	3.6.2 Cultural Resources	3.6.3 Demographics, Employment, and Economics	3.6.4 Environmental Justice	3.6.5 Land Use and Coastal Infrastructure	3.6.6 Navigation and Vessel Traffic	3.6.7 Other Uses (Marine Minerals, Military Use, Aviation, Scientific Research, and Surveys)	3.6.8 Recreation and Tourism	3.6.9 Visual Resources
WIND FARM																				
Total Wind Facility Capacity (MW) Project 1	1,510[5]	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Total Wind Facility Capacity (MW) Project 2	to be determined[5]	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Total Wind Turbine Area (acre) (1 acre = 43,560 square feet)	102,124	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
WIND TURBINES																				
Parameters per Turbine																				
Number of WTGs	200	x	x	x	x	x	-	x	x	x	-	x	x	x	x	-	x	x	x	x
Number of WTGs (Project 1)	105 to 136	x	x	x	x	x	-	x	x	x	-	x	x	x	x	-	x	x	x	x
Number of WTGs (Project 2)	64 to 95	x	x	x	x	x	-	x	x	x	-	x	x	x	x	-	x	x	x	x
Tip Height Relative to the Mean Sea Level (MSL) (feet)	1,046.6	-	-	x	-	x	-	-	-	-	-	-	x	-	-	-	x	x	x	x
Hub Height Relative to MSL (feet)	574.2	-	-	-	-	-	-	-	-	-	-	x	x	-	-	-	x	x	x	x
Rotor Diameter (feet)	918.6	-	-	x	-	x	-	-	-	-	-	x	-	-	-	-	x	x	x	x
Blade Length (feet)	452.8	-	-	-	-	-	-	-	-	-	-	x	x	-	-	-	-	x	x	x
Blade Chord (feet)	32.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tip Clearance Relative to MSL (feet)	75.8	-	-	x	-	x	-	-	-	-	-	x	-	-	-	-	x	-	-	-
Top Tower Diameter for WTG (feet)	27.9	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	x	x
Bottom Tower Diameter for WTG (feet)	32.8	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	x	X
Top of Nacelle Height Relative to MSL (feet)	603.7	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	x	X
Nacelle Dimensions (with hub and helihoist) (feet)	121.4 x 52.5 x 49.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Height Relative to Mean Lower Low Water (MLLW) (feet)	1,048.8	-	-	x	-	x	-	-	-	-	-	-	x	-	x	-	-	x	x	x
Maximum Seabed Disturbance from WTG Installation																				
Area of Seafloor Disturbance per Jack-Up WTG installation Vessel (square feet)	159,348.8[6]	-	x	-	x	-	-	x	x	x	-	-	x	-	-	-	-	-	x	-
Area of Seafloor Disturbance per Jack-Up Feeder Vessel (square feet)	4,869.5	-	x	-	x	-	-	x	x	x	-	-	x	-	-	-	-	-	x	-
Number of Times Vessels Jack-Up Per WTG	1	-	x	-	x	-	-	x	x	x	-	-	-	-	-	-	-	x	x	-
PARAMETERS PER FOUNDATION STRUCTURE																				
Piled (Maximum of Both Monopile and Piled Jacket)																				
Diameter at Seabed (feet)	49.2	-	x	-	x	-	-	x	x	x	-	-	x	-	-	-	-	-	x	-
Number of Legs/ Discrete Contact Points with Seabed	4	-	x	-	x	-	-	x	-	-	-	-	x	-	-	-	-	-	x	-
Depth of Penetration Below Seabed with Scour Protection (feet)	196.9	-	x	-	x	-	-	x	-	-	-	-	x	-	-	-	-	-	x	-
Depth of Penetration Below seabed without Scour Protection (feet)	262.5	-	x	-	x	-	-	-	-	-	-	-	x	-	-	-	-	-	x	-
Monopile Length with Scour Protection (feet)	344.5	-	x	-	-	-	-	x	-	-	-	-	x	-	-	-	-	-	x	-
Monopile Length without Scour Protection (feet)	410.1	-	x	-	-	-	-	x	-	-	-	-	x	-	-	-	-	-	x	-
Distance Between Adjacent Legs at Seabed (feet)	131.2	-	x	-	-	-	-	x	-	-	-	-	x	-	-	-	-	-	x	-
Foundation Diameter/Leg Spacing at MSL (feet)	98.4	-	x	-	x	-	-	x	-	-	-	-	x	-	-	-	-	-	x	-
Total Foundation Footprint Contacting Seabed per Foundation (square feet)	1,902	-	x	-	x	-	-	x	x	x	-	-	x	-	x	-	-	-	x	-
Suction Bucket (Maximum of Mono-Bucket and Suction Bucket Jacket)																				
Diameter of Suction Bucket at Seabed (feet)	114.8	-	x	-	x	-	-	x	x	x	-	-	x	-	-	-	-	-	x	-
Number of Legs/ Discrete Contact Points with Seabed	4	-	x	-	x	-	-	x	-	-	-	-	x	-	-	-	-	-	x	-
Depth of Penetration Below Seabed (feet)	114.8	-	x	-	x	-	-	-	-	-	-	-	x	-	-	-	-	-	x	-
Bucket Length (feet)	147.6	-	x	-	-	-	-	x	-	-	-	-	x	-	-	-	-	-	x	-
Distance Between Adjacent Legs at Seabed (feet)	131.2	-	x	-	-	-	-	x	-	-	-	-	x	-	-	-	-	-	x	-
Foundation Diameter/Leg Spacing at MSL (feet)	98.4	-	x	-	x	-	-	x	-	-	-	-	x	-	-	-	-	-	x	-

Design Parameter	Maximum Design Parameters	3.4.1 Air Quality	3.4.2 Water Quality	3.5.1 Bats	3.5.2 Benthic Resources	3.5.3 Birds	3.5.4 Coastal Habitat and Fauna	3.5.5 Finfish, Invertebrates, and Essential Fish Habitat	3.5.6 Marine Mammals	3.5.7 Sea Turtles	3.5.8 Wetlands	3.6.1 Commercial Fisheries and For-Hire Recreational Fishing	3.6.2 Cultural Resources	3.6.3 Demographics, Employment, and Economics	3.6.4 Environmental Justice	3.6.5 Land Use and Coastal Infrastructure	3.6.6 Navigation and Vessel Traffic	3.6.7 Other Uses (Marine Minerals, Military Use, Aviation, Scientific Research, and Surveys)	3.6.8 Recreation and Tourism	3.6.9 Visual Resources
Total Foundation Footprint Contacting Seabed per Foundation (square feet)	10,356		x		x			x	x	x			x		x				x	
Gravity (Maximum of GBS)																				
Diameter of Gravity-Base or Gravity-Pad at Seabed (feet)	180.5		x		x			x	x	x			x						x	
Number of Legs/ Discrete Contact Points with Seabed	3		x		x			x					x						x	
Depth of Penetration Below Seabed (feet)	9.8		x		x								x						x	
Distance Between Adjacent Legs at Seabed (feet)	246.1		x					x					x						x	
Foundation Diameter/Leg Spacing at MSL (feet)	39.4		x		x			x					x						x	
Total Foundation Footprint Contacting Seabed per Foundation (square feet)	25,572.9		x		x			x	x	x			x		x				x	
FOUNDATION PERMANENT SEABED DISTURBANCE																				
Piled (Maximum of both Monopile and Piled Jacket)																				
Representative Outer Diameter/Size of Scour Protection per Foundation (feet)	269		x		x			x	x	x			x						x	
Thickness of Scour Protection (feet)	8.2		x		x			x					x						x	
Estimate Volume of Scour Protection per Foundation (cubic feet)	314,300.5		x		x			x					x						x	
Total permanent Footprint per Foundation (Foundation + Scour Protection + Mud Mats [post-piled jackets only]) (square feet)	56,844.3		x		x			x	x	x			x		x				x	
Suction Bucket (Maximum of Mono-bucket and Suction Bucket Jacket)																				
Representative Outer Diameter/Size of Scour Protection per Foundation (feet)	347.8 x 328.1		x		x			x	x	x			x						x	
Thickness of Scour Protection (feet)	6.6		x		x			x					x						x	
Estimate Volume of Scour Protection per Foundation (cubic feet)	600,543.6		x		x			x					x						x	
Total permanent Footprint per Foundation (Foundation + Scour Protection + Mud Mats [post-piled jackets only]) (square feet)	111,987.6		x		x			x	x	x			x		x				x	
Gravity (Maximum of GBS)																				
Representative Outer Diameter/Size of Scour Protection per Foundation (feet)	272.3		x		x			x	x	x			x						x	
Thickness of Scour Protection (feet)	4.9		x		x			x					x						x	
Estimate Volume of Scour Protection per Foundation (cubic feet)	151,786		x		x			x					x						x	
Total permanent Footprint per Foundation (Foundation + Scour Protection + Mud Mats [Post-Piled Jackets Only]) (square feet)	58,239.2		x		x			x	x	x			x		x				x	
FOUNDATION TEMPORARY SEABED DISTURBANCE DURING CONSTRUCTION																				
Piled (Maximum of Both Monopile and Piled Jacket)																				
Dimensions of Seabed Preparation per Foundation (feet)	269 x 269		x		x			x	x	x			x						x	
Depth Seabed Preparation (feet)	19.7		x		x			x					x						x	
Area of Seabed Preparation per foundation (square feet)	72,376.5		x		x			x	x	x			x						x	
Average Volume of Seabed Preparation per Foundation (cubic feet)	125,258.1		x		x			x					x						x	
Disturbance Due to Jack-Up or Anchored Vessels per Foundation (square feet)	61,354.2		x		x			x	x	x			x						x	
Total Temporary Seabed Disturbance Beyond Permanent Footprint per Foundation (square feet)	73,657.2		x		x			x	x	x			x		x				x	
Suction Bucket (Maximum of Mono-bucket and Suction Bucket Jacket)																				
Dimensions of Seabed Preparation per Foundation (feet)	347.8 x 328.1		x		x			x	x	x			x						x	
Depth Seabed Preparation (feet)	19.7		x		x			x					x						x	
Area of Seabed Preparation per foundation (square feet)	111,987.6		x		x			x	x	x			x						x	
Average Volume of Seabed Preparation per Foundation (cubic feet)	193,811		x		x			x					x						x	
Disturbance Due to Jack-Up or Anchored Vessels per Foundation (square feet)	61,354.2		x		x			x	x	x			x						x	
Total Temporary Seabed Disturbance Beyond Permanent Footprint per Foundation (square feet)	76,835.7		x		x			x	x	x			x		x				x	
Gravity (Maximum of GBS)																				
Dimensions of Seabed Preparation per Foundation (feet)	311.7 x 344.5		x		x			x	x	x			x						x	
Depth Seabed Preparation (feet)	19.7		x		x			x					x						x	

Design Parameter	Maximum Design Parameters	3.4.1 Air Quality	3.4.2 Water Quality	3.5.1 Bats	3.5.2 Benthic Resources	3.5.3 Birds	3.5.4 Coastal Habitat and Fauna	3.5.5 Finfish, Invertebrates, and Essential Fish Habitat	3.5.6 Marine Mammals	3.5.7 Sea Turtles	3.5.8 Wetlands	3.6.1 Commercial Fisheries and For-Hire Recreational Fishing	3.6.2 Cultural Resources	3.6.3 Demographics, Employment, and Economics	3.6.4 Environmental Justice	3.6.5 Land Use and Coastal Infrastructure	3.6.6 Navigation and Vessel Traffic	3.6.7 Other Uses (Marine Minerals, Military Use, Aviation, Scientific Research, and Surveys)	3.6.8 Recreation and Tourism	3.6.9 Visual Resources
Area of Seabed Preparation per Foundation (square feet)	81,133		x		x			x	x	x			x						x	
Average Volume of Seabed Preparation per Foundation (cubic feet)	133,436.1		x		x			x					x						x	
Disturbance Due to Jack-Up or Anchored Vessels per Foundation (square feet)	13,993.0		x		x			x	x	x			x						x	
Total Temporary Seabed Disturbance Beyond Permanent Footprint per Foundation (square feet)	52,070.4		x		x			x	x	x			x		x				x	
Installation Timeframe																				
Piled (Maximum of both Monopile and Piled Jacket)																				
Approximate Duration to Drive One Pile (hours)	7-9				x	x		x	x	x							x	x	x	
Number of Piles Driven per Day	4				x	x		x	x	x							x	x	x	
OFFSHORE SUBSTATIONS																				
Topside Offshore Substations																				
Number of Small OSSs	10	x	x		x	x		x	x	x			x	x	x		x	x	x	x
Number of Medium OSSs	5	x	x		x	x		x	x	x			x	x	x		x	x	x	x
Number of Large OSSs	4	x	x		x	x		x	x	x			x	x	x		x	x	x	x
Width Small OSS (feet)	114.8																		x	x
Width Medium OSS (feet)	147.6																		x	x
Width Large OSS (feet)	164																		x	x
Length Small OSS (feet)	131.2																		x	x
Length Medium OSS (feet)	213.3																		x	x
Length Large OSS (feet)	295.3																		x	x
Height of Small OSS Above Foundation Interface (feet)	98.4												x					x	x	x
Height of Medium OSS Above Foundation Interface (feet)	114.8												x					x	x	x
Height of Large OSS Above Foundation Interface (feet)	131.2												x					x	x	x
Height of Small OSS of Topside Above MLLW (feet)	174.8												x				x	x	x	x
Height of Medium OSS of Topside Above MLLW (feet)	191.2												x				x	x	x	x
Height of Large OSS of Topside Above MLLW (feet)	207.6												x				x	x	x	x
Offshore Substation Foundation Structure																				
Piled Jacket																				
Number of Foundations (Medium OSS)	5	x	x		x			x	x	x			x	x	x		x	x	x	
Number of Foundations (Large OSS)	4	x	x		x			x	x	x			x	x	x		x	x	x	
Diameter at Seabed (Medium OSS)	16.4		x		x			x	x	x			x						x	
Diameter at Seabed Including Piling Template (Medium OSS)	49.2		x		x			x	x	x			x						x	
Diameter at Seabed (Large OSS)	16.4		x		x			x	x	x			x						x	
Diameter at Seabed Including Piling Template (Large OSS)	65.6		x		x			x	x	x			x						x	
Number of Legs/Discrete Contact Points with Seabed (Medium OSS)	6		x		x			x					x						x	
Number of Legs/Discrete Contact Points with Seabed (Large OSS)	8		x		x			x					x						x	
Depth of Penetration Below Seabed (Medium OSS) (feet)	229.7		x		x								x						x	
Depth of Penetration Below Seabed (Large OSS) (feet)	229.7		x		x								x						x	
Jack Pile Length (Medium OSS) (feet)	295.3		x					x					x						x	
Jack Pile Length (Large OSS) (feet)	295.3		x					x					x						x	
Distance Between Adjacent Legs at Seabed (Medium OSS) (feet)	196.9							x					x						x	
Distance Between Adjacent Legs at Seabed (Large OSS) (feet)	164							x					x						x	
Foundation Size/Leg Spacing at MSL (Medium OSS) (feet)	393.7 x 196.9		x		x			x					x						x	
Foundation Size/Leg Spacing at MSL (Large OSS) (feet)	492.1 x 328.1		x		x			x					x						x	
Total Foundation Footprint Contacting Seabed per Foundation[1] (Medium OSS) (square feet)	11,413		x		x			x	x	x			x		x				x	
Total Foundation Footprint Contacting Seabed per Foundation[1] (Large OSS) (square feet)	27,052.9		x		x			x	x	x			x		x				x	

Design Parameter	Maximum Design Parameters	3.4.1 Air Quality	3.4.2 Water Quality	3.5.1 Bats	3.5.2 Benthic Resources	3.5.3 Birds	3.5.4 Coastal Habitat and Fauna	3.5.5 Finfish, Invertebrates, and Essential Fish Habitat	3.5.6 Marine Mammals	3.5.7 Sea Turtles	3.5.8 Wetlands	3.6.1 Commercial Fisheries and For-Hire Recreational Fishing	3.6.2 Cultural Resources	3.6.3 Demographics, Employment, and Economics	3.6.4 Environmental Justice	3.6.5 Land Use and Coastal Infrastructure	3.6.6 Navigation and Vessel Traffic	3.6.7 Other Uses (Marine Minerals, Military Use, Aviation, Scientific Research, and Surveys)	3.6.8 Recreation and Tourism	3.6.9 Visual Resources
Suction Bucket Jacket																				
Number of Foundations (Medium OSS)	5	x	x		x			x	x	x			x	x	x		x	x	x	
Number of Foundations (Large OSS)	4	x	x		x			x	x	x			x	x	x		x	x	x	
Diameter at Seabed (Medium OSS)	49.2		x		x			x	x	x			x						x	
Diameter at Seabed (Large OSS)	49.2		x		x			x	x	x			x						x	
Number of Legs/Discrete Contact Points with Seabed (Medium OSS)	6		x		x			x					x						x	
Number of Legs/Discrete Contact Points with Seabed (Large OSS)	8		x		x			x					x						x	
Depth of Penetration Below Seabed (Medium OSS) (feet)	82		x		x								x						x	
Depth of Penetration Below Seabed (Large OSS) (feet)	82		x		x								x						x	
Bucket Length (Medium OSS) (feet)	98.4		x					x					x						x	
Bucket Length (Large OSS) (feet)	98.4		x					x					x						x	
Distance Between Adjacent Legs at Seabed (Medium OSS) (feet)	196.9							x					x						x	
Distance Between Adjacent Legs at Seabed (Large OSS) (feet)	164							x					x						x	
Foundation Size/Leg Spacing at MSL (Medium OSS) (feet)	393.7 x 196.9		x		x			x					x						x	
Foundation Size/Leg Spacing at MSL (Large OSS) (feet)	492.1 x 328.1		x		x			x					x						x	
Total Foundation Footprint Contacting Seabed per Foundation[1] (Medium OSS) (square feet)	11,413		x		x			x	x	x			x		x				x	
Total Foundation Footprint Contacting Seabed per Foundation[1] (Large OSS) (square feet)	15,216.9		x		x			x	x	x			x		x				x	
Gravity-Based Foundations																				
Number of Foundations (Medium OSS)	5	x	x		x			x	x	x			x	x	x		x	x	x	
Number of Foundations (Large OSS)	4	x	x		x			x	x	x			x	x	x		x	x	x	
Diameter at Seabed (Medium OSS)	262.5 x 65.6		x		x			x	x	x			x						x	
Diameter at Seabed (Large OSS)	393.7 x 98.4		x		x			x	x	x			x						x	
Number of Legs/Discrete Contact Points with Seabed (Medium OSS)	2		x		x			x					x						x	
Number of Legs/Discrete Contact Points with Seabed (Large OSS)	2		x		x			x					x						x	
Depth of Penetration Below Seabed (Medium OSS) (feet)	9.8		x		x								x						x	
Depth of Penetration Below Seabed (Large OSS) (feet)	9.8		x		x								x						x	
Distance Between Adjacent Legs at Seabed (Medium OSS) (feet)	180.4							x					x						x	
Distance Between Adjacent Legs at Seabed (Large OSS) (feet)	229.7							x					x						x	
Foundation Size/Leg Spacing at MSL (Medium OSS) (feet)	262.5 x 246.1		x		x			x					x						x	
Foundation Size/Leg Spacing at MSL (Large OSS) (feet)	393.7 x 328.1		x		x			x					x						x	
Total Foundation Footprint Contacting Seabed per Foundation[1] (Medium OSS) (square feet)	34,444.5		x		x			x	x	x			x		x				x	
Total Foundation Footprint Contacting Seabed per Foundation[1] (Large OSS) (square feet)	77,500.2		x		x			x	x	x			x		x				x	
OSS Permanent Seabed Disturbance																				
Piled Jacket																				
Representative[2] Outer Diameter/Size of Scour Protection (Medium OSS) (feet)	131.2		x		x			x	x	x			x						x	
Representative[2] Outer Diameter/Size of Scour Protection (Large OSS) (feet)	147.6		x		x			x	x	x			x						x	
Thickness of Scour Protection (Medium OSS) (feet)	6.6		x		x			x					x						x	
Thickness of Scour Protection (Large OSS) (feet)	6.6		x		x			x					x						x	
Estimated Volume of Scour Protection per Foundation (Medium OSS) (cubic feet)	380,427.2		x		x			x					x						x	
Estimated Volume of Scour Protection per Foundation (Large OSS) (cubic feet)	666,998.7		x		x			x					x						x	
Total Permanent Footprint per Foundation (Foundation + Scour Protection + Mud Mats [Post-Piled Jackets Only]) (Medium OSS) (square feet)	81,157.9		x		x			x	x	x			x		x				x	
Total Permanent Footprint per Foundation (Foundation + Scour Protection + Mud Mats [Post-Piled Jackets Only]) (Large OSS) (square feet)	136,953.9		x		x			x	x	x			x		x				x	
Suction Bucket Jacket																				
Representative[2] Outer Diameter/Size of Scour Protection (Medium OSS) (feet)	196.9		x		x			x	x	x			x						x	

Design Parameter	Maximum Design Parameters	3.4.1 Air Quality	3.4.2 Water Quality	3.5.1 Bats	3.5.2 Benthic Resources	3.5.3 Birds	3.5.4 Coastal Habitat and Fauna	3.5.5 Finfish, Invertebrates, and Essential Fish Habitat	3.5.6 Marine Mammals	3.5.7 Sea Turtles	3.5.8 Wetlands	3.6.1 Commercial Fisheries and For-Hire Recreational Fishing	3.6.2 Cultural Resources	3.6.3 Demographics, Employment, and Economics	3.6.4 Environmental Justice	3.6.5 Land Use and Coastal Infrastructure	3.6.6 Navigation and Vessel Traffic	3.6.7 Other Uses (Marine Minerals, Military Use, Aviation, Scientific Research, and Surveys)	3.6.8 Recreation and Tourism	3.6.9 Visual Resources
Representative[2] Outer Diameter/Size of Scour Protection (Large OSS) (feet)	695.5 x 203.4		x		x			x	x	x			x						x	
Thickness of Scour Protection (Medium OSS) (feet)	6.6		x		x			x					x						x	
Thickness of Scour Protection (Large OSS) (feet)	6.6		x		x			x					x						x	
Estimated Volume of Scour Protection per Foundation (Medium OSS) (cubic feet)	885,903.7		x		x			x					x						x	
Estimated Volume of Scour Protection per Foundation (Large OSS) (cubic feet)	1,485,370.2		x		x			x					x						x	
Total Permanent Footprint per Foundation (Foundation + Scour Protection + Mud Mats [Post-Piled Jackets Only]) (Medium OSS) (square feet)	182,605.3		x		x			x	x	x			x		x				x	
Total Permanent Footprint per Foundation (Foundation + Scour Protection + Mud Mats [Post-Piled Jackets Only]) (Large OSS) (square feet)	282,961.4		x		x			x	x	x			x		x				x	
Gravity-Based Foundations																				
Representative[2] Outer Diameter/Size of Scour Protection (Medium OSS) (feet)	393.7 x 377.3		x		x			x	x	x			x						x	
Representative[2] Outer Diameter/Size of Scour Protection (Large OSS) (feet)	524.9 x 459.3		x		x			x	x	x			x						x	
Thickness of Scour Protection (Medium OSS) (feet)	5		x		x			x					x						x	
Thickness of Scour Protection (Large OSS) (feet)	5		x		x			x					x						x	
Estimated Volume of Scour Protection per Foundation (Medium OSS) (cubic feet)	731,013.6		x		x			x					x						x	
Estimated Volume of Scour Protection per Foundation (Large OSS) (cubic feet)	1,186,572.8		x		x			x					x						x	
Total Permanent Footprint per Foundation (Foundation + Scour Protection + Mud Mats [Post-Piled Jackets Only]) (Medium OSS) (square feet)	148,541.8		x		x			x	x	x			x		x				x	
Total Permanent Footprint per Foundation (Foundation + Scour Protection + Mud Mats [Post-Piled Jackets Only]) (Large OSS) (square feet)	241,111.4		x		x			x	x	x			x		x				x	
Total Temporary and Permanent Seabed Disturbance per Foundation (square feet)	18,802.5		x		x			x	x	x			x		x				x	
Installation Timeframe																				
Approximate Duration to Drive One Pile (Medium OSS) (hours)	4				x	x		x	x	x							x	x	x	
Approximate Duration to Drive One Pile (Large OSS) (hours)	4				x	x		x	x	x							x	x	x	
Number of Piles Driven per Day (Medium OSS)	4				x	x		x	x	x							x	x	x	
Number of Piles Driven per Day (Large OSS)	4				x	x		x	x	x							x	x	x	
INTERARRAY AND EXPORT CABLES																				
Interarray Cable (150 kV) and Interlink Cable																				
Number of Foundations per Interarray			x		x			x	x	x			x	x	x		x	x	x	
Project 1 Interarray Cable Length (miles)	273.5	x	x		x			x	x	x			x	x	x		x	x	x	
Project 2 Interarray Cable Length (miles)	273.5	x	x		x			x	x	x			x	x	x		x	x	x	
Project 1 Interlink Cable Length (miles)	18.6	x	x		x			x	x	x			x	x	x		x	x	x	
Project 2 Interlink Cable Length (miles)	18.6	x	x		x			x	x	x			x	x	x		x	x	x	
Target Burial Depth (feet)	5-6.6		x		x			x	x	x			x					x	x	
Interarray Cable Installation Method[3]																				
Jet Trenching Width (feet)	3.3		x		x			x	x	x			x						x	
Jet Trenching Burial Rate (feet/hour)	1,150							x	x	x							x	x	x	
Plowing / Jet Plowing Trench Width (feet)	1.6		x		x			x	x	x			x						x	
Plowing / Jet Plowing Burial Rate (feet/hour)	650							x	x	x							x	x	x	
Mechanical Trenching Width (feet)	2.1		x		x			x	x	x			x						x	
Mechanical Trenching (feet/hour)	820							x	x	x							x	x	x	
Cable Protection Method Utilized (Rock Placement, Concrete Mattresses, Half-Shell)	10%		x		x			x					x						x	
Export and Interlink Cable (230–525 kV)																				
Atlantic Landfall Number of Export Cables	5	x	x		x			x	x	x			x	x	x		x	x	x	
Monmouth Landfall Number of Export Cables	5	x	x		x			x	x	x			x	x	x		x	x	x	
Burial Depth (feet)	5-6.6		x		x			x	x	x			x				x	x	x	

Design Parameter	Maximum Design Parameters	3.4.1 Air Quality	3.4.2 Water Quality	3.5.1 Bats	3.5.2 Benthic Resources	3.5.3 Birds	3.5.4 Coastal Habitat and Fauna	3.5.5 Finfish, Invertebrates, and Essential Fish Habitat	3.5.6 Marine Mammals	3.5.7 Sea Turtles	3.5.8 Wetlands	3.6.1 Commercial Fisheries and For-Hire Recreational Fishing	3.6.2 Cultural Resources	3.6.3 Demographics, Employment, and Economics	3.6.4 Environmental Justice	3.6.5 Land Use and Coastal Infrastructure	3.6.6 Navigation and Vessel Traffic	3.6.7 Other Uses (Marine Minerals, Military Use, Aviation, Scientific Research, and Surveys)	3.6.8 Recreation and Tourism	3.6.9 Visual Resources
Atlantic Landfall to OSS Maximum Length per Export Cable (miles)	24.9	x	x		x			x	x	x			x	x	x		x	x	x	
Monmouth Landfall to OSS Maximum Length per Export Cable (miles)	85.4	x	x		x			x	x	x			x	x	x		x	x	x	
Atlantic Landfall to OSS Maximum Total Length of Export Cable (miles)	99.4	x	x		x			x	x	x			x	x	x		x	x	x	
Monmouth Landfall to OSS Maximum Total Length of Export Cable (miles)	341.8	x	x		x			x	x	x			x	x	x		x	x	x	
Typical Separation Distance of Export Cable (assuming two cables) (feet)	492							x	x	x					x		x	x	x	
Total Corridor Width for Export Cable (Assuming Two Cables) (feet)	5,900		x		x			x	x	x			x		x		x	x	x	
Maximum Length of Interlink Cable (miles)	37	x	x		x			x	x	x			x	x	x		x	x	x	
Maximum Total Length of Export Cables Sand Bedform Removal from Atlantic Landfall Site to OSS (miles)	19.9		x		x			x	x	x			x					x	x	
Maximum total length of Export Cables Sand Bedform Removal from Monmouth Landfall to OSS (miles)	68.4		x		x			x	x	x			x					x	x	
Maximum Width of Sand Bedform Removal – Top of Trench(feet)	98.4		x		x			x	x	x			x					x	x	
Maximum Width of Sand Bedform Removal – Bottom of Trench (feet)	49.2		x		x			x	x	x			x					x	x	
Atlantic Landfall Export Cables Total Sand Bedform Removal Area (square miles)	0.28		x		x			x	x	x			x					x	x	
Monmouth Landfall Export Cables Total Sand Bedform Removal Area (square miles)	0.98		x		x			x	x	x			x					x	x	
Atlantic Landfall Export Cables Total Sand Bedform Removal Volume (cubic yards)	941,724		x		x			x	x	x			x					x	x	
Monmouth Landfall Export Cables Total Sand Bedform Removal Volume (cubic yards)	3,237,176		x		x			x	x	x			x					x	x	
Export Cable Installation Trench and Skid/Track Method[4]																				
Atlantic Landfall to OSS Maximum Depth of Cable Trench (feet)	9.8		x		x				x	x			x				x	x	x	
Monmouth Landfall to OSS Maximum Depth of Cable Trench (feet)	9.8		x		x				x	x			x				x	x	x	
Atlantic Landfall to OSS Maximum Width of Cable Trench (feet)	3.3		x		x			x	x	x			x				x	x	x	
Monmouth Landfall to OSS Maximum Width of Cable Trench (feet)	3.3		x		x			x	x	x			x				x	x	x	
Atlantic Landfall to OSS Width of Additional Skid/Track Disturbance	13.1		x		x			x	x	x			x				x	x	x	
Monmouth Landfall to OSS Width of Additional Skid/Track Disturbance	13.1		x		x			x	x	x			x				x	x	x	
Atlantic Landfall to OSS Maximum Area of Cable Trench and Skid/Track (square miles)	0.31		x		x			x	x	x			x		x		x	x	x	
Monmouth Landfall to OSS Maximum Area of Cable Trench and Skid/Track (square miles)	1.06		x		x			x	x	x			x		x		x	x	x	
Total Permanent Disturbance from Export Cable Installation																				
Atlantic Landfall Site to OSS Total Maximum Area of Seafloor Disturbance for Export Cables (square miles)	0.1		x		x			x	x	x			x		x		x	x	x	
Monmouth Landfall Site to OSS Total Maximum Area of Seafloor Disturbance for Export Cables (square miles)	0.36		x		x			x	x	x			x		x		x	x	x	
Atlantic Landfall Site to OSS Portion of Permanent Disturbance within the WTA (square miles)	0.04		x		x			x	x	x			x		x		x	x	x	
Monmouth Landfall Site to OSS Portion of Permanent Disturbance within the WTA (square miles)	0.04		x		x			x	x	x			x		x		x	x	x	
Atlantic Landfall Site to OSS Portion of Permanent Disturbance within the ECC (square miles)	0.06		x		x			x	x	x			x		x		x	x	x	
Monmouth Landfall Site to OSS Portion of Permanent Disturbance within the ECC (square miles)	0.32		x		x			x	x	x			x		x		x	x	x	
Atlantic Landfall to OSS Total Area of Temporary and Permanent Seafloor Disturbance from Export Cable Installation (square miles)	1.2		x		x			x	x	x			x		x		x	x	x	
Monmouth Landfall to OSS Total Area of Temporary and Permanent Seafloor Disturbance from Export Cable Installation (square miles)	2.87		x		x			x	x	x			x		x		x	x	x	
METEOROLOGICAL TOWER AND METOCEAN BUOYS																				
Project 1 Number of Met Towers (Permanent)	1		x	x	x	x		x	x	x			x				x	x	x	x
Met Tower Maximum Height Above MSL (feet)	590.6			x		x							x				x	x	x	x
Project 1 Number of Metocean Buoys (temporary)	3				x			x	x	x							x	x		x
Project 2 Number of Metocean Buoys (temporary)	1				x			x	x	x							x	x		x
Maximum Area of Temporary Seafloor Disturbance for Buoy Anchor (square miles)	0.005		x		x			x	x	x			X		x		x			
ONSHORE COMPONENT																				

Design Parameter	Maximum Design Parameters	3.4.1 Air Quality	3.4.2 Water Quality	3.5.1 Bats	3.5.2 Benthic Resources	3.5.3 Birds	3.5.4 Coastal Habitat and Fauna	3.5.5 Finfish, Invertebrates, and Essential Fish Habitat	3.5.6 Marine Mammals	3.5.7 Sea Turtles	3.5.8 Wetlands	3.6.1 Commercial Fisheries and For-Hire Recreational Fishing	3.6.2 Cultural Resources	3.6.3 Demographics, Employment, and Economics	3.6.4 Environmental Justice	3.6.5 Land Use and Coastal Infrastructure	3.6.6 Navigation and Vessel Traffic	3.6.7 Other Uses (Marine Minerals, Military Use, Aviation, Scientific Research, and Surveys)	3.6.8 Recreation and Tourism	3.6.9 Visual Resources
Landfall Locations	2		x	x	x	x	x	x	x	x	x		x		x	x			x	x
Landfall Transition Method	HDD		x	x	x	x	x	x	x	x	x		x		x	x			x	x
Atlantic Landfall Site HDD Trajectory for cables (feet)	2,800		x	x	x	x		x	x	x	x		x						x	
Monmouth Landfall Site HDD Trajectory for cables (feet)	2,800		x	x	x	x		x	x	x	x		x						x	
Average Depth of the HDDs Below Seabed (feet)	16 to 131		x		x				x	x			x						x	
Operations and Maintenance Facility Location (proposed)	Atlantic City	x	x	x		x	x	x			x		x	x	x	x			x	x
Length of Cardiff Onshore Interconnection Cable Route (miles)	22.6	x	x	x		x	x	x			x		x	x	x	x			x	
Length of Larrabee Onshore Interconnection Cable Route (miles)	23.0	x	x	x		x	x	x			x		x	x	x	x			x	
Onshore Cardiff Substation and/or Converter Station Site Location	Egg Harbor Township	x	x	x		x	x	x			x		x		x	x			x	x
Onshore Larrabee Substation and/or Converter Station Site Location[7]	Howell Township	x	x	x		x	x	x			x		x		x	x			x	x
Onshore Cardiff Substation and/or Converter Station Parcel Size (acres)	19.7		x	x		x	x				x		x		x	x			x	x
Onshore Larrabee Substation and/or Converter Station Parcel Size (acres)[8]	99.4		x	x		x	x				x		x		x	x			x	x
Onshore Cardiff Substation and/or Converter Station Area of Ground Disturbance (acres)	13.4		x	x		x	x	x			x		x		x	x			x	x
Onshore Larrabee Substation and/or Converter Station Area of Ground Disturbance (acres)	10.2		x	x		x	x	x			x		x		x	x			x	x
Onshore Cardiff Substation and/or Converter Station Area of Tree Clearing (acre)	17.5		x	x		x	x	x			x		x		x	x			x	x
Onshore Larrabee Substation and/or Converter Station Area of Tree Clearing (acre)	8.8		x	x		x	x	x			x		x		x	x			x	x

[1] The footprint of any mud mats (if used) is included in the "Max. total permanent footprint" rather than the "Total foundation footprint contacting seabed."
[2] Scour protection may occur in any shape and size up to maximum footprint provided above, including the possibility of no scour protection.
[3] Listed are the maximum extent of all possible methods of installation. Section subject to change once the installation method is chosen.
[4] Subject to change once installation method is chosen.
[5] The proposed Atlantic Shores South Project (consisting of Project 1 and Project 2) described in the COP and this Final EIS would be approximately 1,510 MW for Project 1 and the number of MW is yet to be determined for Project 2. Atlantic Shores has a goal for Project 2 of 1,327 MW, which would align with Atlantic Shores interconnection service agreements and interconnection construction service agreements Atlantic Shores intends to execute for both projects with the regional transmission organization, PJM.
[6] The maximum extent of temporary and permanent seabed disturbance is 130,501.5 square feet (12,124.0 square meters) for monopile foundations. Monopile foundations would result in the largest area of seabed disturbance. Foundation installation using jack-up vessels is expected to involve one main installation jack-up vessel with a maximum disturbance of 13,993.0 square feet (1,300.0 square meters) (four legs, each disturbing 3,498.0 square feet [325.0 square meters]) and one feeder-jack-up vessel with a maximum disturbance of 4,869.5 square feet (452.4 square meters) (four legs, each disturbing 1,217.4 square feet [113.1 square meters]) at each position. Although less likely, if an anchored heavy lift vessel (HLV) is used, foundation installation is expected to involve one anchored HLV with a maximum disturbance of 47,361.2 square feet (4,400 square meters) (four anchors, each with a disturbance of 1,076.4 square feet [100.0 square meters] for the anchor itself plus 13,993.0 square feet [1,300.0 square meters] for the mooring system) at each position; the feeder barge(s) would moor to the HLV and cause no additional disturbance. If transition pieces are installed in a separate campaign, another jack-up vessel with a maximum disturbance of 13,993.0 square feet (1,300.0 square meters) may be used. The scenario resulting in the greatest seafloor disturbance for each foundation type is assumed in the table above. Additional emergency anchoring or jacking-up may be required.
[7] Three potential sites for the Onshore Larrabee Substation and/or Converter Station are included in the PDE, all of which are in Howell Township.
[8] Of the three potential sites for the Onshore Larrabee Substation and/or Converter Station, the Brook Road Site is the largest at approximately 99.4 acres (40.2 hectares). The Brook Road Site is expected to be prepared and developed as part of the State Of New Jersey's SAA. All siting, environmental review, permitting, and other preparation activities at the site are to be completed by the SAA-Awardee and are thereby not included in the environmental analysis of this Final EIS.

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