Coastal Wind Link – 7 Sewaren/Deans/Larrabee Tri Collector

General Information

Proposing entity name	PSEGRT
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Yes
Joint proposal ID	7
Company proposal ID	Coastal Wind Link – PSEG & Orsted
PJM Proposal ID	683
Project title	Coastal Wind Link – 7 Sewaren/Deans/Larrabee Tri Collector
Project description	The Sewaren/Deans/Larrabee 400kV Collector is an offshore transmission solution designed to deliver up to 4200 MW of clean, reliable OSW energy to the State of New Jersey. The Project is comprised of three (3) HVDC systems. The Project's offshore converter platforms (OCP) are designed to serve a total of 4200 MW of OSW (offshore wind) generation from lease areas in the NY Bight. The Project's POIs are located at PSE&G's Sewaren Switching Station, PSE&G's Deans Switching Station and JCP&L's Larrabee Substation. The Project will use a High Voltage (HV) system based on HVDC Voltage Source Converter (VSC) technology. Each HVDC system will consist of an OCP, a single HVDC export cable system (all elements bundled together into a single marine corridor), and an onshore HVDC converter. The OCP includes a 275kV AC system containing (5) feeders, (2) shunt reactors, (2) 275kV/400kV transformers, and a ±400kV HVDC converter. The three (3) OCPs are linked via 275kV Interlink submarine cables. The onshore converter substation (OnSS) will have a ±400kV HVDC converter system, (3) 400/500kV single phase transformers, breakers, disconnects and a 230kV cable termination structure at Sewaren and a 500kV cable termination structure at Deans and Larrabee. Upon award of the project to the Project team, a project company ("Coastal Wind Link") will be formed as a joint venture between PSEGRT and Orsted NATH and will be the Designated Entity for the project.
Email	Raymond.DePillo@pseg.com
Project in-service date	12/2032
Tie-line impact	Yes
Interregional project	No

Is the proposer offering a binding cap on capital costs?	Yes
Additional benefits	1) The selection of the POI was based on a comprehensive analysis of station headroom and network upgrades in order to determine the optimal POI for future phases of OSW generation. 2) PSEG investigated 200+ properties to site an onshore converter station. The Project team has secured exclusive rights on property to site the converter station. 3) The Project team has obtained detailed site information on the selected landing location including the location of existing utilities and cables to inform landfall design and is in ongoing discussions with the landowner to determine optimal site layout and secure property rights. 4) Optimization of UG route considered mileage, permitting ease, and critical crossings. Field visits allowed PSEG's underground transmission experts to advance route design and estimates. 5) Design of the subsea cable route incorporated feedback from the NJDEP and USACE, seabed conditions, shipping lanes, fishing areas, crossings with existing cables, construction concerns, known UXO areas, and known areas of wrecks. Site investigation experience off the coast of New Jersey has allowed the team to mature route design prior to detailed surveying. 6) The Project team has met with various agencies to discuss permitting scenarios for this first-of-a-kind offshore transmission system. A comprehensive permitting plan has been created to fast-track project execution, and the team has prepared the IHA and ROW/RUE applications necessary. 7) The team worked with leading OEMs to design a symmetrical monopole system. The project is interlink-capable, offering reliability benefits to NJ's future offshore transmission system, while lowering OREC costs, as curtailment risk is reduced.

Project Components

1. S1 400kV Sewaren POI Upgrades
2. S2 400kV Sewaren AC Tie Line
3. S3 400kV Sewaren Onshore Converter
4. S4 400kV Sewaren Offshore/Onshore HVDC Cable
5. S5 400kV Sewaren Offshore Converter
6. L1 400kV Larrabee POI Upgrade
7. L2 400kV Larrabee AC Tie Line
8. L3 400kV Larrabee Onshore Converter
9. L4 400kV Larrabee Offshore/Onshore HVDC Cable
10. L5 400kV Larrabee Offshore Converter
11. D1 Deans POI Upgrade
12. D2 Deans AC Tie Line
13. D3 Deans Onshore Converter

14. D4 Deans Offshore/Onshore HVDC Cable
15. D5 Deans Offshore Converter
16. Interlink SDL Sewaren/Deans/Larrabee (HS-21 to HS-22)
17. Interlink SDL Sewaren/Deans/Larrabee (HS-22 to HS-12)
18. Interlink SDL Sewaren/Deans/Larrabee (HS-12 to HS-21)

Substation Upgrade Component

Component title	S1 400kV Sewaren POI Upgrades
Project description	
Substation name	Sewaren Switching Station
Substation zone	PSE&G
Substation upgrade scope	To bring up to 1400 MW of offshore wind energy into Sewaren Switching Station, the existing 230-kV A-Frame structure will be upgraded to house a tri-bundled conductor. This will require modifications involving the existing 230-kV A-Frames, which will be reinforced for the extra loading. (Refer to Appendix B for the Sewaren Switching Station POI one line and bus plan arrangement). PSEG would be required to design and construct the 230-kV modifications to accommodate the offshore wind power injection. Connection to Sewaren would be via 230kV strain bus

Transformer Information

None

New equipment description	PSE&G would be required to design and construction modifications of the existing A-Frame, 230-kV overhead strain bus to 3 conductors per phase. New 230kV SF6 AC breaker, disconnect switches and Current Transformers will be installed Please see Appendix B for the full equipment list
Substation assumptions	The switching station is currently a five bay breaker and a half configuration with five 230-kV lines and a spare position in bus section 7. The site requires expansion due to additional 230-kV incoming lines as part of the network upgrades. However, the station can expand the breaker and half arrangement farther north, where the old 138-kV station and the retired generation collector bus used to be located.
Real-estate description	The scope associated with the POI upgrades can be located all on existing PSE&G property. Please refer to the proposal section 5 for the real estate description.
Construction responsibility	PSEG

Benefits/Comments

Component Cost Details - In Current Year $

Engineering & design	Confidential
Permitting / routing / siting	Confidential
ROW / land acquisition	Confidential
Materials & equipment	Confidential
Construction & commissioning	Confidential
Construction management	Confidential
Overheads & miscellaneous costs	Confidential
Contingency	Confidential
Total component cost	$18,066,725.00
Component cost (in-service year)	$21,627,461.00

Greenfield Transmission Line Component

Component title	S2 400kV Sewaren AC Tie Line
Project description	Construct a 230kV OH AC tie-line between the onshore converter station and the 230kV Sewaren Switching Station.
Point A	Sewaren DC/AC Converter Station
Point B	Sewaren Switching Station
Point C	

	Normal ratings	**Emergency ratings**
Summer (MVA)	1400.000000	1400.000000
Winter (MVA)	1400.000000	1400.000000

Conductor size and type	230kV triple 1590 ACSR
Nominal voltage	AC
Nominal voltage	230kV
Line construction type	Overhead
General route description	The AC connection between the two facilities will consist of a short (approximately 250 feet or less) 230-kV AC overhead transmission line (overhead strain bus connection).
Terrain description	The connection is within the existing switching station property.
Right-of-way width by segment	The Sewaren OnSS will be located adjacent to the Sewaren POI (i.e., the Sewaren Switching Station). As a result, the AC connection between the two facilities will consist of a short (approximately 250 feet or less) 230-kV AC overhead transmission line (overhead strain bus connection).
Electrical transmission infrastructure crossings	Electrical infrastructure crossings may be required depending on final line routing and design.
Civil infrastructure/major waterway facility crossing plan	The extent of detail civil infrastructure planning will be determined pending final design.
Environmental impacts	The PSEG/Ørsted Team conducted an assessment of anticipated permits associated with the Project and supported the evaluation of siting, routing, and development scenarios throughout the Project development process. The permitting and environmental assessments included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual Project components. These assessments reflect in-depth analyses of the proposed Project plan reviewed with available GIS data, a detailed understanding of applicable regulations, and significant professional experience with projects of similar scope and in this same locality. As part of this Project analyses, potential Project sites and routes were discussed with a myriad group of experienced planning, engineering and construction professionals to find a competitive route that minimized environmental and built environment concerns. Please see Appendix K.
Tower characteristics	Overhead strain bus will be installed between a-frames at Sewaren switching station and the onshore converter station.
Construction responsibility	Proposer
Benefits/Comments	
Component Cost Details - In Current Year $	
Engineering & design	Confidential

Permitting / routing / siting	Confidential
ROW / land acquisition	Confidential
Materials & equipment	Confidential
Construction & commissioning	Confidential
Construction management	Confidential
Overheads & miscellaneous costs	Confidential
Contingency	Confidential
Total component cost	$648,594.00
Component cost (in-service year)	$793,896.00

Greenfield Substation Component

Component title	S3 400kV Sewaren Onshore Converter
Project description	
Substation name	Sewaren Onshore Converter
Substation description	The converter station will be a ±400-kV DC/230-kV AC 1400 MW facility that will be fed by the HVDC export cable system and connected to Sewaren Switching Substation via the planned AC 230-kV OH cable
Nominal voltage	DC
Nominal voltage	±400-kV DC/230-kV AC 1400 MW facility

Transformer Information

	Name	**Capacity (MVA)**	
Transformer	Converter Transformer Ph1	493	
	High Side	**Low Side**	**Tertiary**

Voltage (kV)	456	230	34.5
	Name	**Capacity (MVA)**	
Transformer	Converter Transformer Ph2	493	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	456	230	34.5
	Name	**Capacity (MVA)**	
Transformer	Converter Transformer Ph3	493	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	456	230	34.5
Major equipment description	Features and equipment include ±400-kV 1400MW Converter Station, Three (3) Active Single Phase Transformers, One (1) Spare Transformer, Cooler for Converter, Control Building, Spare Parts Building. For additional information on Switching, Metering, & Control Devices, AC power equipment, DC/AC inverters, relay and communication etc. please see section 3 in the bid and appendix B		
	Normal ratings	**Emergency ratings**	
Summer (MVA)	1400.000000	1400.000000	
Winter (MVA)	1400.000000	1400.000000	
Environmental assessment	Overview - The Project Team conducted an assessment of anticipated permits associated with the Sewaren route and have supported the evaluation of routing and development scenarios throughout the project development process. The permitting and environmental assessments have included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual project scenarios. For onshore facility siting and routing, the Project Team evaluated land ownership with a dedicated approach to minimize disturbance to Green Acres, wetlands, flood hazard areas, known historic and cultural sites, threatened and endangered species, known contaminated sites, and known sensitive receptors. The site is located in a Flood Zone will require design to meet FEMA+1. No Wetlands and no impacts to threatened and endangered species. Please see Appendix K.		

Outreach plan	The team has developed a comprehensive communication process for all transmission projects to adequately keep stakeholders engaged at all levels, including public officials, municipal officials, environmental organizations, business customers, residents, etc. This process ensures constant and detailed communication efforts throughout all phases of a project, including pre, mid and post-construction activities. This Combined Team is currently working together on the Ocean Wind project and combined has actual permitting experience for the offshore wind environment and vast New Jersey-based permitting experience with firsthand relationships across the Federal and State government. The team has been able to gain a thorough understanding of the various concerns typically raised by either directly impacted or peripheral parties, such as disruptions during construction, concerns around electromagnetic fields (EMF), property value, traffic impacts and other potential matters. However, more importantly, the team has been able to identify solutions for each potential concern, and has strong insight on how to mitigate public apprehension and construction impacts. The team has developed a specific outreach plan tailored towards the Offshore Wind Transmission Project that will be implemented to foster the success of the project. The team's strategy outreach plan uses multiple and concurrent communication methods to reach and inform and address diverse audiences and knowledge levels. A variety of communication tactics will be used, tailored to each stakeholder audience and its particular communication style and preference. Messages and actions will be customized for each stakeholder group. Communications will be designed to provide adequate information to stakeholders. All timings of these communications will be aligned with the project’s schedule pre- and post-bid submission.
Land acquisition plan	The subject property is a portion of the former power generating station for PSEG Power and current Sewaren Switching Station located along the Port Reading Reach of the Arthur Kill. This property is owned by a PSEG affiliate, PSEG Power, LLC. PSEG Power is a deregulated entity, and the Project Team has reached agreement with its sister company to secure rights to the necessary real estate if granted an award. The Project Team is confident that the unique rights available to us ensure that the Projects are constructible if awarded by PJM and the BPU.
Construction responsibility	Proposer
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive

Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$423,929,282.00
Component cost (in-service year)	$518,900,292.00

Greenfield Transmission Line Component

Component title	S4 400kV Sewaren Offshore/Onshore HVDC Cable	
Project description	See Section 3 of Proposal	
Point A	OCP HS-21	
Point B	Sewaren DC/AC Converter Station	
Point C		
	Normal ratings	**Emergency ratings**
Summer (MVA)	1400.000000	1400.000000
Winter (MVA)	1400.000000	1400.000000
Conductor size and type	Onshore - ±400-kV 2500mm^2 single-circuit XLPE HVDC cable Offshore: ±400-kV 2500mm^2, 3000mm^2 XLPE submarine	
Nominal voltage	DC	
Nominal voltage	±400-kV	
Line construction type	Underground, Submarine	
General route description	Onshore - Approximately 6.3 miles extending principally beneath public road ROWs from Keasbey, through Perth Amboy Township, to the new converter station in Sewaren. Offshore - Approximately 92.1 miles in route length in a direction generally north, then west from HS-21 through the Atlantic Ocean then Raritan Bay and into the Raritan River to meet the shore.	

Terrain description	Offshore: The HVDC submarine route was carefully selected to avoid challenging geotechnical conditions, physical obstructions, and known significant environmental features, while efficiently siting the offshore cable system. Onshore: Along almost all of the route, the onshore HVDC cables will be buried beneath public roads.
Right-of-way width by segment	Offshore: Approximately 92.1 miles (HS-21 to the RA-1 Landfall). 60' typical cable width (disturbed) Onshore: 6.3 mile length installed UG with 5'-0" Minimum Width for duct banks
Electrical transmission infrastructure crossings	Electrical infrastructure crossings may be required depending on final line routing and design.
Civil infrastructure/major waterway facility crossing plan	The installation process will typically involve the following tasks: - Trench Excavation/Duct Bank Installation. The cable trench will be excavated to dimensions of approximately 6 to 10 feet deep and 5 to 7 feet wide (for trench depths requiring shoring to stabilize the sidewalls). - Splice Vault Excavation/Installation. At intervals along the cable route, areas will be excavated for the installation of below-grade of reinforced-concrete splice vaults, within which cable sections will be connected. - Proofing/Cable Installation. After successful proofing, the transmission cables will be installed and spliced within the vaults. Special Crossings - Along the HVDC and AC cable routes, where open trenching is not viable, special crossing techniques will be used to install the cable while minimizing environmental impacts. - Jack & Bore (J&B). This method will be used to install the cable system beneath certain infrastructure or other features that cannot be open cut (e.g., a railroad or highway). - Bridge Attachment. This method is applicable in areas where an open-cut installation is not practical and the cable system can instead be attached to an existing bridge, thereby effectively spanning features such as water resources or highway underpasses. - Horizontal Directional Drilling (HDD). This method is typically used to install cable where open cut is not feasible (usually when crossing water bodies or highways), where there is no suitable bridge to attach to, and where J&B is not feasible (water body or too long of a crossing). Please see section 4.4 in the proposal for further information
Environmental impacts	The PSEG/Ørsted Team conducted an assessment of anticipated permits associated with the Project and supported the evaluation of siting, routing, and development scenarios throughout the Project development process. The permitting and environmental assessments included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual Project components. These assessments reflect in-depth analyses of the proposed Project plan reviewed with available GIS data, a detailed understanding of applicable regulations, and significant professional experience with projects of similar scope and in this same locality. This Project was designed to minimize impacts to physical resources on shore, in large party by undergrounding the HVDC cable system primarily within road ROWs. . This approach would result in only temporary impacts to wetlands and water bodies with no offshore and no permanent wetlands impacts expected. Please see Appendix K
Tower characteristics	N/A, the route will be entirely UG
Construction responsibility	Proposer

Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$754,462,236.00
Component cost (in-service year)	$923,481,087.00

Greenfield Substation Component

Component title	S5 400kV Sewaren Offshore Converter
Project description	
Substation name	Sewaren Offshore Converter Platform (OCP HS-21)
Substation description	The OCP that will feed the Sewaren OnSS will be located adjacent to the Hudson South BOEM lease area in the New York Bight. The OCP is made up of two main components: the substructure and the topside. The substructure—the lattice structure that is fixed to the seabed—is commonly referred to as the jacket. The topside is the steel enclosure on top of the jacket that contains the electrical equipment.
Nominal voltage	DC
Nominal voltage	±400-kV

Transformer Information

	Name	Capacity (MVA)	
Transformer	Converter Transformer T1	795	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	413	275	23

	Name	Capacity (MVA)	
Transformer	Converter Transformer T2	795	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	413	275	23

Major equipment description	The OCP will house the equipment necessary to receive AC electrical power from the connected wind farm, convert it to HVDC and export it to the onshore station via HVDC sub-sea and land cable. The main HV components include AC switchgear, transformers, DC converter towers, DC reactors and DC switchgear. Please refer to Appendix B for the full equipment list

	Normal ratings	Emergency ratings
Summer (MVA)	1400.000000	1400.000000
Winter (MVA)	1400.000000	1400.000000

Environmental assessment	Overview - The Project Team conducted an assessment of anticipated permits associated with the Sewaren route and have supported the evaluation of routing and development scenarios throughout the project development process. The permitting and environmental assessments have included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual project scenarios. For offshore facility siting and routing, the Project Team reviewed available GIS data for the presence of marine mammals, fishing and shipping lanes, benthic habitat, anchorage areas, known obstructions, existing cables, and bathymetry. Please see Appendix K.

Outreach plan	The team has developed a comprehensive communication process for all transmission projects to adequately keep stakeholders engaged at all levels, including public officials, municipal officials, environmental organizations, business customers, residents, etc. This process ensures constant and detailed communication efforts throughout all phases of a project, including pre, mid and post-construction activities. This Combined Team is currently working together on the Ocean Wind project and combined has actual permitting experience for the offshore wind environment and vast New Jersey-based permitting experience with firsthand relationships across the Federal and State government. The team has been able to gain a thorough understanding of the various concerns typically raised by either directly impacted or peripheral parties, such as disruptions during construction, concerns around electromagnetic fields (EMF), property value, traffic impacts and other potential matters. However, more importantly, the team has been able to identify solutions for each potential concern, and has strong insight on how to mitigate public apprehension and construction impacts. The team has developed a specific outreach plan tailored towards the Offshore Wind Transmission Project that will be implemented to foster the success of the project. The team's strategy outreach plan uses multiple and concurrent communication methods to reach and inform and address diverse audiences and knowledge levels. A variety of communication tactics will be used, tailored to each stakeholder audience and its particular communication style and preference. Messages and actions will be customized for each stakeholder group. Communications will be designed to provide adequate information to stakeholders. All timings of these communications will be aligned with the project’s schedule pre- and post-bid submission.
Land acquisition plan	The project will complete a Right of Use / Right of Way (RUE/ROW) application with BOEM to be granted authorization to place the offshore collector platform in the area between Hudson South A and Hudson South B lease areas. The platforms will be placed outside of the lease areas such that additional authorization from the lease holders will not be necessary.
Construction responsibility	Proposer
Benefits/Comments	
Component Cost Details - In Current Year $	
Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive

Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$1,133,237,611.00
Component cost (in-service year)	$1,387,111,840.00

Substation Upgrade Component

Component title	L1 400kV Larrabee POI Upgrade
Project description	Provide attachment facilities for Larrabee to accommodate an injection off 1400MW of offshore wind energy
Substation name	Larrabee Substation
Substation zone	JCP&L
Substation upgrade scope	To bring up to 1400 MW of offshore wind energy into Larrabee Substation, a 500-kV position is required. This will require modifications involving an additional 230-kV breaker-and-half bay, and a 500-/230-kV transformer with associated 500-kV breaker. (Refer to Appendix B for the substation one line and bus plan arrangement.) JCP&L would be required to design and construct the 500-kV position to accommodate the offshore wind power injection. Connection to JCP&L would be via 500kV strain bus.

Transformer Information

None

New equipment description	(6)-500KV Cable terminations (2)-500KV A-frame Structures (4)-230KV A-frame structures (3)-500KV CCVT's (3)-500KV Lightning Arresters (1)-500KV 2000A Disc. Sw. (1)-500KV 2000A Disc. Sw. w/ground switch (6)-500KV strain bus assemblies w/2 shield wires (1)-500KV 2000A Circuit Breaker (4)-500/230KV single phase transformers (2)-poles for 500KV transfer bus (2)-strain bus assemblies for 500KV transfer bus (4)-Neutral structure frames for neutral bus connection at transf. (1)-230KV steel box structure (22)-230KV strain assemblies (4) for transfer bus from spare transformer, (18) for single phase transformers 1, 2, & 3 (3)-230KV CCVTS (3)-230KV Metering units (6)-230KV 4000A, disconnect switches (3)-230KV 4000A, circuit breakers (1)-230KV 3000A, circuit breaker (5)-230KV 3 phase-angled bus support structures (20)-230KV 3 phase-straight bus support structures (18)-230KV single phase bus supports (8)-Neutral Bus Support stands (23)-500KV single phase bus supports

Substation assumptions	Larrabee Substation occupies a portion of a 39.6-acre site in Howell, New Jersey. It is currently a four bay breaker and half bay configuration. The station has eight 230-kV lines, with capacity greater than 600 MW each. Because of the size of the site, the substation can be expanded to accommodate additional bays, as needed for the clean wind energy AC connection, without the need to acquire additional property.
Real-estate description	The substation can be expanded to accommodate additional bays, as needed for the clean wind energy AC connection, without the need to acquire additional property. An agreement will need to be reached for an easement where Coastal Wind Link will install the 500kV cable termination structure, A-Frame and private fencing.
Construction responsibility	JCPL
Benefits/Comments	For the upgrades at the Larrabee Substation POI, significant portions of the work can be performed, without outages, in a safe and reliable manner. Ultimately, however, outages will be required to connect the new breaker-and-half-bay and to re-locate the circuits, as required. Outages can be expected to be less than 30-days, with emergency return availability. Consequently, the work to interconnect to the offshore wind energy to the grid at Larrabee Substation would not have a severe impact on reliability during construction.

Component Cost Details - In Current Year $

Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$46,606,904.87
Component cost (in-service year)	$55,792,572.00

Greenfield Transmission Line Component

Component title	L2 400kV Larrabee AC Tie Line	
Project description	Construct a 500kV underground AC tie-line between the onshore converter station and the 230kV Larrabee Substation	
Point A	Larrabee DC/AC Converter Station	
Point B	Larrabee Substation	
Point C		
	Normal ratings	**Emergency ratings**
Summer (MVA)	1400.000000	1400.000000
Winter (MVA)	1400.000000	1400.000000
Conductor size and type	2 per phase - 2000mm² 500-kV Cu (enamel)/XLPE/Cu CWS	
Nominal voltage	AC	
Nominal voltage	500-kV	
Line construction type	Underground	
General route description	Approximately 1.9 miles between the new HVDC/AC converter station and Larrabee Substation	
Terrain description	The majority of the 500-kV AC Tie-Line cable will be installed principally beneath municipal road ROWs.	
Right-of-way width by segment	The Project proposes to utilize a duct bank width of 4'11" feet.	
Electrical transmission infrastructure crossings	Electrical infrastructure crossings may be required depending on final line routing and design.	

Civil infrastructure/major waterway facility crossing plan	The installation process will typically involve the following tasks: - Trench Excavation/Duct Bank Installation. The cable trench will be excavated to dimensions of approximately 6 to 10 feet deep and 5 to 7 feet wide (for trench depths requiring shoring to stabilize the sidewalls). - Splice Vault Excavation/Installation. At intervals along the cable route, areas will be excavated for the installation of below-grade of reinforced-concrete splice vaults, within which cable sections will be connected. - Proofing/Cable Installation. After successful proofing, the transmission cables will be installed and spliced within the vaults. Special Crossings - Along the HVDC and AC cable routes, where open trenching is not viable, special crossing techniques will be used to install the cable while minimizing environmental impacts. - Jack & Bore (J&B). This method will be used to install the cable system beneath certain infrastructure or other features that cannot be open cut (e.g., a railroad or highway). - Bridge Attachment. This method is applicable in areas where an open-cut installation is not practical and the cable system can instead be attached to an existing bridge, thereby effectively spanning features such as water resources or highway underpasses. - Horizontal Directional Drilling (HDD). This method is typically used to install cable where open cut is not feasible (usually when crossing water bodies or highways), where there is no suitable bridge to attach to, and where J&B is not feasible (water body or too long of a crossing). Please see section 4.4 in the proposal for further information
Environmental impacts	Overview - The Project Team conducted an assessment of anticipated permits associated with the Larrabee route and have supported the evaluation of routing and development scenarios throughout the project development process. The permitting and environmental assessments have included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual project scenarios. For onshore routing, the Team evaluated land ownership with a dedicated approach to minimize disturbance to Green Acres, wetlands, flood hazard areas, known historic and cultural sites, threatened and endangered species, known contaminated sites, and known sensitive receptors. Physical Resources - This Project was designed to minimize impacts to physical resources on shore, in large party by undergrounding the transmission line for the onshore portion of the route. The emissions from onshore activities will be minimal and will not require NJDEP air permits. The Project Team will work with the agencies, educational institutions, and other key stakeholders to identify breeding grounds, migratory routes or schooling areas in the vicinity of the cable route. Biological Resources - On shore, there is no anticipated tree removal along the transmission corridor, so bat habitat and designated timing restrictions are unlikely to be applicable. The proposed Larrabee converter station location will also not require any tree clearing, as it is on an already developed parcel and the route is proposed in street rights of ways. No terrestrial wildlife concerns are anticipated by the construction or operation of the onshore portion of the Project. Cultural Resources - The onshore portion of the Project is below grade and thus is not likely to impact above-ground historic properties. The Project Team is cognizant that there may be archeological concerns from a marine archaeology and a terrestrial perspective. The Project Team selected the onshore and offshore route and stations locations to minimize impacts to known locations of concern identified in publicly available data sets and in research on Prehistoric Site Potential and Historic Shipwrecks on the Outer Continental Shelf. This Project Team is currently working together on the Ocean Wind Project. Lessons learned and stakeholder concerns and mitigation ideas from the Ocean Wind Project will be a baseline for partnerships and innovative measures for this Project’s Plan. See Appendix K

Tower characteristics	N/A, the route will be entirely UG
Construction responsibility	Proposer
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$58,397,745.00
Component cost (in-service year)	$76,415,193.00

Greenfield Substation Component

Component title	L3 400kV Larrabee Onshore Converter
Project description	
Substation name	Larrabee Onshore Converter
Substation description	The converter station will be a ±400-kV DC/500-kV AC 1400 MW facility that will be fed by the HVDC export cable system and connected to Larrabee Substation via the planned AC 500-kV underground cable.
Nominal voltage	DC
Nominal voltage	±400-kV DC/500-kV AC 1400 MW facility

Transformer Information

	Name	Capacity (MVA)	
Transformer	Converter Transformer Ph1	493	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	500	456	34.5
	Name	**Capacity (MVA)**	
Transformer	Converter Transformer Ph2	493	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	500	456	34.5
	Name	**Capacity (MVA)**	
Transformer	Converter Transformer Ph3	493	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	500	456	34.5

Major equipment description	Features & Equipment: ±400-kV 1400MW Converter Station, Three (3) Active Single Phase Transformers, One (1) Spare Transformer, Cooler for Converter, Control Building, Spare Parts Building Switching, Metering, & Control Devices - Two (2) 500-kV, 2000A Switches, One (1) 500-kV, 2000A Breaker 63kA, Three (3) Metering Current Transformers (CTs), Three (3) 500-kV Coupled Capacitor Voltage Transformers (CCVTs) AC Power Equipment - Three (3) 500/456-kV/34.5 Single Phase Transformers, 467MVA Per Transformer, Two (2) AC Station Service, 1250 KVA DC/AC Inverters- One (1) Star point unit reactor, One (1) Star point unit resistor, Six (6) VSC Converter Modules, Six (6) Converter Reactors, One (1) DC Braking Chopper, Two (2) Braking reactors, Two (2) DC Disconnectors with two (2) earthing switches For a list of full equipment, see Appendix B

Normal ratings	Emergency ratings

Summer (MVA)	1400.000000	1400.000000
Winter (MVA)	1400.000000	1400.000000
Environmental assessment	Overview - The Project Team conducted an assessment of anticipated permits associated with the Larrabee route and have supported the evaluation of routing and development scenarios throughout the project development process. The permitting and environmental assessments have included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual project scenarios. The Larrabee converter station as designed, is not located in wetlands and will not require a Wetland Permit. For this Project, the only overhead structures will be built at the proposed Larrabee converter station in Lakewood, New Jersey. This proposed location is outside of the 100 year flood zone. At the Larrabee HVDC converter station location, there are no threatened and endangered species mapped through the Landscape Project dataset. Biological Resources - The proposed Larrabee converter station location will also not require any tree clearing, as it is on an already developed parcel and the route is proposed in street rights of ways. No terrestrial wildlife concerns are anticipated by the construction or operation of the onshore portion of the Project. Cultural Resources - The Project Team will consult with NJSHPO, USACE, and BOEM to minimize any impacts during the Project permitting process. Socioeconomic Resources - There will be limited visual impacts at both the offshore collector station and onshore converter station. The visual impacts from the Larrabee converter station can and will be mitigated by working with the landscape architect and engineering team members on appropriate design elements that tie into the area surrounds. See Appendix K	

Outreach plan	The team has developed a comprehensive communication process for all transmission projects to adequately keep stakeholders engaged at all levels, including public officials, municipal officials, environmental organizations, business customers, residents, etc. This process ensures constant and detailed communication efforts throughout all phases of a project, including pre, mid and post-construction activities. This Combined Team is currently working together on the Ocean Wind project and combined has actual permitting experience for the offshore wind environment and vast New Jersey-based permitting experience with firsthand relationships across the Federal and State government. The team has been able to gain a thorough understanding of the various concerns typically raised by either directly impacted or peripheral parties, such as disruptions during construction, concerns around electromagnetic fields (EMF), property value, traffic impacts and other potential matters. However, more importantly, the team has been able to identify solutions for each potential concern, and has strong insight on how to mitigate public apprehension and construction impacts. The team has developed a specific outreach plan tailored towards the Offshore Wind Transmission Project that will be implemented to foster the success of the project. The team's strategy outreach plan uses multiple and concurrent communication methods to reach and inform and address diverse audiences and knowledge levels. A variety of communication tactics will be used, tailored to each stakeholder audience and its particular communication style and preference. Messages and actions will be customized for each stakeholder group. Communications will be designed to provide adequate information to stakeholders. All timings of these communications will be aligned with the project's schedule pre- and post-bid submission. As details are finalized, the team will create a stronger focus to establish and maintain positive relationships with local and county officials. Additionally, the team met with a comprehensive list of stakeholders prior to bid submittal. Refer to Appendix S for the community engagement plan.
Land acquisition plan	The land acquisition strategy is a methodical approach of consulting with property owners to explain the potential Project and the Project Team's need to evaluate the property and secure potential rights to the property. To do so, the Project Team provided owners with a confidentiality and non-disclosure agreement, and subsequently negotiated agreements to obtain access to evaluate and secure potential property rights to each site through the Bid award date and beyond. Those agreements are further detailed in the body of the Project Team's Bid. In addition to real estate already owned by the Project Team, over the past year, the Project Team has secured exclusive rights on 16 different properties in support of the seven proposals that have been submitted. The Project Team is confident that the unique rights available to us from our real estate efforts ensure that the Projects are constructible if awarded by PJM and the BPU.
Construction responsibility	Proposer
Benefits/Comments	
Component Cost Details - In Current Year $	
Engineering & design	Competitive
Permitting / routing / siting	Competitive

ROW / land acquisition	Competitive	
Materials & equipment	Competitive	
Construction & commissioning	Competitive	
Construction management	Competitive	
Overheads & miscellaneous costs	Competitive	
Contingency	Competitive	
Total component cost	$453,753,903.00	
Component cost (in-service year)	$593,750,518.00	

Greenfield Transmission Line Component

Component title	L4 400kV Larrabee Offshore/Onshore HVDC Cable	
Project description		
Point A	HS-12	
Point B	Larrabee DC/AC Converter Station	
Point C		
	Normal ratings	**Emergency ratings**
Summer (MVA)	1400.000000	1400.000000
Winter (MVA)	1400.000000	1400.000000
Conductor size and type	Onshore - ±400-kV 2500mm^2 single-circuit XLPE HVDC cable Offshore: ±400-kV 2500mm^2, 3000mm^2 XLPE submarine	
Nominal voltage	DC	
Nominal voltage	±400-kV	
Line construction type	Underground, Submarine	

General route description	Onshore - Approximately 11.9 miles, extending principally beneath public road ROWs from Sea Girt, through Allenwood Township, to the new converter station in Lakewood Township (Ocean County) Offshore - Approximately 51.3-miles in route length in a direction generally west-northwest from HS-12 to meet the shore (38.2 miles in Federal waters and 13.1 miles in state waters)
Terrain description	Onshore - The majority of the HVDC cable system will be installed beneath municipal road ROWs using standard open-cut techniques that have historically proven to be both efficient and cost-effective. Along the HVDC cable routes, where open trenching is not viable, special crossing techniques will be used to install the cable while minimizing environmental impacts. Offshore - Submarine route traverses a typically uniform seabed in varying water depths; the route avoids major obstructions and excess morphology
Right-of-way width by segment	Onshore - 1.37 miles in Brick, 1.87 mi in Howell, 1.61 miles in Lakewood, 0.92 miles in Manasquan, 1.13 miles in Sea Girt and 4.98 mi in Wall. 5' min duct bank Offshore - Approximately 51.3-miles in route length in a direction generally west-northwest from HS-12 to meet the shore (38.2 miles in Federal waters and 13.1 miles in state waters); the route will involve an all new ROU/ROW. The submarine power cable width is 60' typical. Reference B.7.1 for onshore
Electrical transmission infrastructure crossings	Electrical infrastructure crossings may be required depending on final line routing and design.
Civil infrastructure/major waterway facility crossing plan	The installation process will typically involve the following tasks: - Trench Excavation/Duct Bank Installation. The cable trench will be excavated to dimensions of approximately 6 to 10 feet deep and 5 to 7 feet wide (for trench depths requiring shoring to stabilize the sidewalls). - Splice Vault Excavation/Installation. At intervals along the cable route, areas will be excavated for the installation of below-grade of reinforced-concrete splice vaults, within which cable sections will be connected. - Proofing/Cable Installation. After successful proofing, the transmission cables will be installed and spliced within the vaults. Special Crossings - Along the HVDC and AC cable routes, where open trenching is not viable, special crossing techniques will be used to install the cable while minimizing environmental impacts. - Jack & Bore (J&B). This method will be used to install the cable system beneath certain infrastructure or other features that cannot be open cut (e.g., a railroad or highway). - Bridge Attachment. This method is applicable in areas where an open-cut installation is not practical and the cable system can instead be attached to an existing bridge, thereby effectively spanning features such as water resources or highway underpasses. - Horizontal Directional Drilling (HDD). This method is typically used to install cable where open cut is not feasible (usually when crossing water bodies or highways), where there is no suitable bridge to attach to, and where J&B is not feasible (water body or too long of a crossing). Please see section 4.4 in the proposal for further information

Environmental impacts	Overview - The Project Team conducted an assessment of anticipated permits associated with the Larrabee route and have supported the evaluation of routing and development scenarios throughout the project development process. The permitting and environmental assessments have included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual project scenarios. For onshore routing, the Team evaluated land ownership with a dedicated approach to minimize disturbance to Green Acres, wetlands, flood hazard areas, known historic and cultural sites, threatened and endangered species, known contaminated sites, and known sensitive receptors. Physical Resources - This Project was designed to minimize impacts to physical resources on shore, in large party by undergrounding the transmission line for the onshore portion of the route. The emissions from onshore activities will be minimal and will not require NJDEP air permits. The Project Team will work with the agencies, educational institutions, and other key stakeholders to identify breeding grounds, migratory routes or schooling areas in the vicinity of the cable route. Biological Resources - On shore, there is no anticipated tree removal along the transmission corridor, so bat habitat and designated timing restrictions are unlikely to be applicable. The proposed Larrabee converter station location will also not require any tree clearing, as it is on an already developed parcel and the route is proposed in street rights of ways. No terrestrial wildlife concerns are anticipated by the construction or operation of the onshore portion of the Project. Cultural Resources - The onshore portion of the Project is below grade and thus is not likely to impact above-ground historic properties. The Project Team is cognizant that there may be archeological concerns from a marine archaeology and a terrestrial perspective. The Project Team selected the onshore and offshore route and stations locations to minimize impacts to known locations of concern identified in publicly available data sets and in research on Prehistoric Site Potential and Historic Shipwrecks on the Outer Continental Shelf. This Project Team is currently working together on the Ocean Wind Project. Lessons learned and stakeholder concerns and mitigation ideas from the Ocean Wind Project will be a baseline for partnerships and innovative measures for this Project's Plan. Please see Appendix K.
Tower characteristics	N/A, the route will be entirely UG
Construction responsibility	Proposer
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive

Construction management	Competitive		
Overheads & miscellaneous costs	Competitive		
Contingency	Competitive		
Total component cost	$522,042,948.00		
Component cost (in-service year)	$683,108,773.00		

Greenfield Substation Component

Component title	L5 400kV Larrabee Offshore Converter
Project description	
Substation name	Larrabee Offshore Converter
Substation description	The Project will include one new OCP adjacent to the Hudson South BOEM lease area in the New York Bight. The OCP is made up of two main components: the substructure and the topside. The substructure—the lattice structure that is fixed to the seabed—is commonly referred to as the jacket. The topside is the steel enclosure on top of the jacket that contains the electrical equipment.
Nominal voltage	DC
Nominal voltage	±400-kV

Transformer Information

	Name	**Capacity (MVA)**	
Transformer	T1	795	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	413	275	23
	Name	**Capacity (MVA)**	
Transformer	T2	795	

	High Side	Low Side	Tertiary
Voltage (kV)	413	275	23
Major equipment description	The OCP will house the equipment necessary to receive AC electrical power from the connected wind farm, convert it to HVDC and export it to the onshore station via HVDC sub-sea and land cable. The main HV components include AC switchgear, transformers, DC converter towers, DC reactors and DC switchgear. Please refer to Appendix B for the full equipment list		
	Normal ratings	**Emergency ratings**	
Summer (MVA)	1400.000000	1400.000000	
Winter (MVA)	1400.000000	1400.000000	
Environmental assessment	Overview - The Project Team conducted an assessment of anticipated permits associated with the Larrabee route and have supported the evaluation of routing and development scenarios throughout the project development process. The permitting and environmental assessments have included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual project scenarios. Biological Resources - The Project's offshore collector station will be much lower in elevation than the nearby proposed wind farms, thus the station unlikely to impact avian or bat migration. The Team performed an Aquatic Resource Characterization and Impact Assessment (Appendix M) to document the presence of marine mammals, sea turtles, fish and benthic resources in the generalized offshore area of the Project. Cultural Resources - The Project Team will consult with NJSHPO, USACE, and BOEM to minimize any impacts during the Project permitting process. Socioeconomic Resources - There will be limited visual impacts at both the offshore collector station and onshore converter station. The visual impacts from the Larrabee converter station can and will be mitigated by working with the landscape architect and engineering team members on appropriate design elements that tie into the area surrounds. See Appendix K		

Outreach plan	The team has developed a comprehensive communication process for all transmission projects to adequately keep stakeholders engaged at all levels, including public officials, municipal officials, environmental organizations, business customers, residents, etc. This process ensures constant and detailed communication efforts throughout all phases of a project, including pre, mid and post-construction activities. This Combined Team is currently working together on the Ocean Wind project and combined has actual permitting experience for the offshore wind environment and vast New Jersey-based permitting experience with firsthand relationships across the Federal and State government. The team has been able to gain a thorough understanding of the various concerns typically raised by either directly impacted or peripheral parties, such as disruptions during construction, concerns around electromagnetic fields (EMF), property value, traffic impacts and other potential matters. However, more importantly, the team has been able to identify solutions for each potential concern, and has strong insight on how to mitigate public apprehension and construction impacts. The team has developed a specific outreach plan tailored towards the Offshore Wind Transmission Project that will be implemented to foster the success of the project. The team's strategy outreach plan uses multiple and concurrent communication methods to reach and inform and address diverse audiences and knowledge levels. A variety of communication tactics will be used, tailored to each stakeholder audience and its particular communication style and preference. Messages and actions will be customized for each stakeholder group. Communications will be designed to provide adequate information to stakeholders. All timings of these communications will be aligned with the project's schedule pre- and post-bid submission. As details are finalized, the team will create a stronger focus to establish and maintain positive relationships with local and county officials. Additionally, the team met with a comprehensive list of stakeholders prior to bid submittal.
Land acquisition plan	The project will complete a Right of Use / Right of Way (RUE/ROW) application with BOEM to be granted authorization to place the offshore collector platform in the area between Hudson South A and Hudson South B lease areas. The platforms will be placed outside of the lease areas such that additional authorization from the lease holders will not be necessary.
Construction responsibility	Proposer
Benefits/Comments	
Component Cost Details - In Current Year $	
Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive

Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$1,165,155,768.29
Component cost (in-service year)	$1,525,661,460.00

Substation Upgrade Component

Component title	D1 Deans POI Upgrade
Project description	Provide attachment facilities for Deans to accommodate an injection off 1400MW of offshore wind energy.
Substation name	Deans Switching Station
Substation zone	PSE&G
Substation upgrade scope	To bring up to 1400 MW of offshore wind energy into Deans Switching Station an additional 500-kV position is required to the existing 500kV Breaker and a Half at Deans (Refer to Appendix B for the substation one line and bus plan arrangement.)

Transformer Information

None

New equipment description	(6)-500KV Cable terminations (2)-500KV H-frame Structures (3)-500KV CCVT's (3)-500KV Lightning Arresters (4)-500KV 2000A Disc. Sw. (1)-500KV 2000A Disc. Sw. w/ground switch (6)-500KV strain bus assemblies w/2 shield wires (2)-500KV 2000A Circuit Breaker (3)-500KV Metering units (30)-500KV single phase bus supports
Substation assumptions	Deans Switching Station occupies a portion of a 52 acre site in South Brunswick, New Jersey. It is currently a 500kV three bay breaker and half bay and a 230kV four bay braker and a half configuration. The station has three 500-kV lines, and four 230-kV Lines. Because of the size of the site, the substation can be expanded to accommodate additional bays, as needed for the clean wind energy AC connection, without the need to acquire additional property. Please see appendix B for station drawings

Real-estate description	The substation can be expanded to accommodate additional bays, as needed for the clean wind energy AC connection, without the need to acquire additional property. An agreement may need to be reached for an easement where Coastal Wind Link will install the 500kV cable termination structure, A-Frame.
Construction responsibility	PSEG
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$18,066,725.00
Component cost (in-service year)	$22,114,133.00

Greenfield Transmission Line Component

Component title	D2 Deans AC Tie Line
Project description	Construct a 500kV UG AC tie-line between the onshore converter station and the 500kV Deans Switching Station
Point A	Deans Converter Station
Point B	Deans Switching Station
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	1400.000000	1400.000000
Winter (MVA)	1400.000000	1400.000000
Conductor size and type	2500mm2 Conductors (2 cables per phase)	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Underground	
General route description	The AC route will be installed underground in road ROWs along Fresh Ponds road and along the adjacent overhead ROW between the Deans converter station and Deans substation.	
Terrain description	In paved roads and unpaved grass ROW	
Right-of-way width by segment	Approximately 1,500 feet along Fresh Ponds road ROW and 3,600 feet along the overhead ROW. Entire length is approximately 4'-11" width.	
Electrical transmission infrastructure crossings	Electrical infrastructure crossings may be required depending on final line routing and design.	
Civil infrastructure/major waterway facility crossing plan	The extent of detail civil infrastructure planning will be determined pending final design.	
Environmental impacts	The PSEG/Ørsted Team conducted an assessment of anticipated permits associated with the Project and supported the evaluation of siting, routing, and development scenarios throughout the Project development process. The permitting and environmental assessments included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual Project components. These assessments reflect in-depth analyses of the proposed Project plan reviewed with available GIS data, a detailed understanding of applicable regulations, and significant professional experience with projects of similar scope and in this same locality. As part of this Project analyses, potential Project sites and routes were discussed with a myriad group of experienced planning, engineering and construction professionals to find a competitive route that minimized environmental and built environment concerns. Please see Appendix K.	
Tower characteristics	N/A, the route will be entirely UG	
Construction responsibility	Proposer	
Benefits/Comments		

Component Cost Details - In Current Year $

Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$43,668,294.00
Component cost (in-service year)	$54,653,894.00

Greenfield Substation Component

Component title	D3 Deans Onshore Converter
Project description	
Substation name	Deans Onshore Converter
Substation description	Onshore converter station between the HVDC and Tie-Line AC circuits. Deans OnSS Transformers: 3 – 1 Phase 500/456/34.5kV Transformers
Nominal voltage	DC
Nominal voltage	Deans converter station will be a ±400-kVDC/500-kVAC 1400 MW facility

Transformer Information

	Name	Capacity (MVA)
Transformer	Converter Transformer Ph(1)	493

	High Side	**Low Side**	**Tertiary**
Voltage (kV)	500	456	34.5
	Name	**Capacity (MVA)**	
Transformer	Converter Transformer Ph(2)	493	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	500	456	34.5
	Name	**Capacity (MVA)**	
Transformer	Converter Transformer Ph(3)	493	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	500	456	34.5
Major equipment description	Features and equipment include ±400-kV Symmetrical Monopole Converter, 400-kV/500-kV Transformer Bank (Deans), AC Switching Station, Underground Line. For a list of full equipment, metering and control devices, AC power equipment etc. see Appendix B		
	Normal ratings	**Emergency ratings**	
Summer (MVA)	1400.000000	1400.000000	
Winter (MVA)	1400.000000	1400.000000	
Environmental assessment	Minimal and Managed. Please see Appendix K for full details.		

Outreach plan	The team has developed a comprehensive communication process for all transmission projects to adequately keep stakeholders engaged at all levels, including public officials, municipal officials, environmental organizations, business customers, residents, etc. This process ensures constant and detailed communication efforts throughout all phases of a project, including pre, mid and post-construction activities. This Combined Team is currently working together on the Ocean Wind project and combined has actual permitting experience for the offshore wind environment and vast New Jersey-based permitting experience with firsthand relationships across the Federal and State government. The team has been able to gain a thorough understanding of the various concerns typically raised by either directly impacted or peripheral parties, such as disruptions during construction, concerns around electromagnetic fields (EMF), property value, traffic impacts and other potential matters. However, more importantly, the team has been able to identify solutions for each potential concern, and has strong insight on how to mitigate public apprehension and construction impacts. The team has developed a specific outreach plan tailored towards the Offshore Wind Transmission Project that will be implemented to foster the success of the project. The team's strategy outreach plan uses multiple and concurrent communication methods to reach and inform and address diverse audiences and knowledge levels. A variety of communication tactics will be used, tailored to each stakeholder audience and its particular communication style and preference. Messages and actions will be customized for each stakeholder group. Communications will be designed to provide adequate information to stakeholders. All timings of these communications will be aligned with the project's schedule pre- and post-bid submission.
Land acquisition plan	The land acquisition strategy is a methodical approach of consulting with property owners to explain the potential Project and the Project Team's need to evaluate the property and secure potential rights to the property. To do so, the Project Team provided owners with a confidentiality and non-disclosure agreement, and subsequently negotiated agreements to obtain access to evaluate and secure potential property rights to each site through the Bid award date and beyond. Those agreements are further detailed in the body of the Project Team's Bid. In addition to real estate already owned by the Project Team, over the past year, the Project Team has secured exclusive rights on 16 different properties in support of the seven proposals that have been submitted. The Project Team is confident that the unique rights available to us from our real estate efforts ensure that the Projects are constructible if awarded by PJM and the BPU.
Construction responsibility	Proposer
Benefits/Comments	
Component Cost Details - In Current Year $	
Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive

Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$449,271,635.76
Component cost (in-service year)	$562,294,553.00

Greenfield Transmission Line Component

Component title	D4 Deans Offshore/Onshore HVDC Cable	
Project description		
Point A	HS-22	
Point B	Deans Converter Station	
Point C		
	Normal ratings	**Emergency ratings**
Summer (MVA)	1400.000000	1400.000000
Winter (MVA)	1400.000000	1400.000000
Conductor size and type	Onshore - ±400-kV 2500mm^2 single-circuit XLPE HVDC cable Offshore: ±400-kV 2500mm^2, 3000mm^2 XLPE submarine	
Nominal voltage	DC	
Nominal voltage	±400-kV	
Line construction type	Underground, Submarine	

General route description	Offshore: Approximately 91.9 miles in route length in a direction generally north, then west from HS-22 through the Atlantic Ocean then Raritan Bay and into the Raritan River to meet the shore. Onshore: Approximately 16.3 miles, extending principally beneath public road ROWs from South Amboy to the new converter station in South Brunswick.
Terrain description	Offshore: The HVDC submarine route was carefully selected to avoid challenging geotechnical conditions, physical obstructions, and known significant environmental features, while efficiently siting the offshore cable system. Onshore: Along almost all of the route, the onshore HVDC cables will be buried beneath public roads
Right-of-way width by segment	Offshore: Approximately 91.9 miles (HS-22 to the SA-1 Landfall). 60' typical cable width (disturbed) Onshore: 16.3 mile length installed UG with 5’-0” Minimum Width for duct banks
Electrical transmission infrastructure crossings	Electrical infrastructure crossings may be required depending on final line routing and design.
Civil infrastructure/major waterway facility crossing plan	The installation process will typically involve the following tasks: - Trench Excavation/Duct Bank Installation. The cable trench will be excavated to dimensions of approximately 6 to 10 feet deep and 5 to 7 feet wide (for trench depths requiring shoring to stabilize the sidewalls). - Splice Vault Excavation/Installation. At intervals along the cable route, areas will be excavated for the installation of below-grade of reinforced-concrete splice vaults, within which cable sections will be connected. - Proofing/Cable Installation. After successful proofing, the transmission cables will be installed and spliced within the vaults. Special Crossings - Along the HVDC and AC cable routes, where open trenching is not viable, special crossing techniques will be used to install the cable while minimizing environmental impacts. - Jack & Bore (J&B). This method will be used to install the cable system beneath certain infrastructure or other features that cannot be open cut (e.g., a railroad or highway). - Bridge Attachment. This method is applicable in areas where an open-cut installation is not practical and the cable system can instead be attached to an existing bridge, thereby effectively spanning features such as water resources or highway underpasses. - Horizontal Directional Drilling (HDD). This method is typically used to install cable where open cut is not feasible (usually when crossing water bodies or highways), where there is no suitable bridge to attach to, and where J&B is not feasible (water body or too long of a crossing). Please see section 4.4 in the proposal for further information

Environmental impacts	The PSEG/Ørsted Team conducted an assessment of anticipated permits associated with the Project and supported the evaluation of siting, routing, and development scenarios throughout the Project development process. The permitting and environmental assessments included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual Project components. These assessments reflect in-depth analyses of the proposed Project plan reviewed with available GIS data, a detailed understanding of applicable regulations, and significant professional experience with projects of similar scope and in this same locality. This Project was designed to minimize impacts to physical resources on shore, in large party by undergrounding the HVDC cable system primarily within road ROWs. . This approach would result in only temporary impacts to wetlands and water bodies with no offshore and no permanent wetlands impacts expected. Please see Appendix K
Tower characteristics	N/A. The cable will be underground and submarine.
Construction responsibility	Proposer
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$870,747,640.00
Component cost (in-service year)	$1,089,800,949.00

Greenfield Substation Component

Component title	D5 Deans Offshore Converter

Project description			
Substation name	Deans Offshore Converter Platform (OCP HS-22)		
Substation description	The OCP that will feed the Deans OnSS will be located adjacent to the Hudson South BOEM lease area in the New York Bight. The OCP is made up of two main components: the substructure and the topside. The substructure—the lattice structure that is fixed to the seabed—is commonly referred to as the jacket. The topside is the steel enclosure on top of the jacket that contains the electrical equipment.		
Nominal voltage	DC		
Nominal voltage	±400-kV		

Transformer Information

	Name	**Capacity (MVA)**	
Transformer	T1	795	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	413	275	23
	Name	**Capacity (MVA)**	
Transformer	T2	795	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	413	275	23

Major equipment description	The OCP will house the equipment necessary to receive AC electrical power from the connected wind farm, convert it to HVDC and export it to the onshore station via HVDC sub-sea and land cable. The main HV components include AC switchgear, transformers, DC converter towers, DC reactors and DC switchgear. Please refer to Appendix B for the full equipment list	
	Normal ratings	**Emergency ratings**
Summer (MVA)	1400.000000	1400.000000

Winter (MVA)	1400.000000	1400.000000
Environmental assessment	Overview - The Project Team conducted an assessment of anticipated permits associated with the Deans route and have supported the evaluation of routing and development scenarios throughout the project development process. The permitting and environmental assessments have included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual project scenarios. For offshore facility siting and routing, the Project Team reviewed available GIS data for the presence of marine mammals, fishing and shipping lanes, benthic habitat, anchorage areas, known obstructions, existing cables, and bathymetry. Please see Appendix K.	
Outreach plan	The team has developed a comprehensive communication process for all transmission projects to adequately keep stakeholders engaged at all levels, including public officials, municipal officials, environmental organizations, business customers, residents, etc. This process ensures constant and detailed communication efforts throughout all phases of a project, including pre, mid and post-construction activities. This Combined Team is currently working together on the Ocean Wind project and combined has actual permitting experience for the offshore wind environment and vast New Jersey-based permitting experience with firsthand relationships across the Federal and State government. The team has been able to gain a thorough understanding of the various concerns typically raised by either directly impacted or peripheral parties, such as disruptions during construction, concerns around electromagnetic fields (EMF), property value, traffic impacts and other potential matters. However, more importantly, the team has been able to identify solutions for each potential concern, and has strong insight on how to mitigate public apprehension and construction impacts. The team has developed a specific outreach plan tailored towards the Offshore Wind Transmission Project that will be implemented to foster the success of the project. The team's strategy outreach plan uses multiple and concurrent communication methods to reach and inform and address diverse audiences and knowledge levels. A variety of communication tactics will be used, tailored to each stakeholder audience and its particular communication style and preference. Messages and actions will be customized for each stakeholder group. Communications will be designed to provide adequate information to stakeholders. All timings of these communications will be aligned with the project’s schedule pre- and post-bid submission.	
Land acquisition plan	The project will complete a Right of Use / Right of Way (RUE/ROW) application with BOEM to be granted authorization to place the offshore collector platform in the area between Hudson South A and Hudson South B lease areas. The platforms will be placed outside of the lease areas such that additional authorization from the lease holders will not be necessary.	
Construction responsibility	Proposer	
Benefits/Comments		
Component Cost Details - In Current Year $		
Engineering & design	Competitive	

Permitting / routing / siting	Competitive	
ROW / land acquisition	Competitive	
Materials & equipment	Competitive	
Construction & commissioning	Competitive	
Construction management	Competitive	
Overheads & miscellaneous costs	Competitive	
Contingency	Competitive	
Total component cost	$1,110,150,827.00	
Component cost (in-service year)	$1,389,430,611.00	

Greenfield Transmission Line Component

Component title	Interlink SDL Sewaren/Deans/Larrabee (HS-21 to HS-22)	
Project description	275kV Interlink between HS-21 and HS-22	
Point A	OCP HS-21	
Point B	OCP-HS22	
Point C		
	Normal ratings	**Emergency ratings**
Summer (MVA)	450.000000	450.000000
Winter (MVA)	450.000000	450.000000
Conductor size and type	1800mm^2 Submarine XLPE Cable See Appendix B for Details	
Nominal voltage	AC	
Nominal voltage	275kV	

Line construction type	Submarine
General route description	See Section 3 and Appendix A.
Terrain description	See Section 3 and Appendix A.
Right-of-way width by segment	See Section 3 and Appendix A.
Electrical transmission infrastructure crossings	No crossings exist.
Civil infrastructure/major waterway facility crossing plan	No crossings exist.
Environmental impacts	The PSEG/Ørsted Team conducted an assessment of anticipated permits associated with the Project and supported the evaluation of siting, routing, and development scenarios throughout the Project development process. The permitting and environmental assessments included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual Project components. These assessments reflect in-depth analyses of the proposed Project plan reviewed with available GIS data, a detailed understanding of applicable regulations, and significant professional experience with projects of similar scope and in this same locality. As part of this Project analyses, potential Project sites and routes were discussed with a myriad group of experienced planning, engineering and construction professionals to find a competitive route that minimized environmental and built environment concerns. Please see Appendix K.
Tower characteristics	N/A
Construction responsibility	Proposer
Benefits/Comments	
Component Cost Details - In Current Year $	
Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive

Overheads & miscellaneous costs	Competitive	
Contingency	Competitive	
Total component cost	$18,625,742.00	
Component cost (in-service year)	$23,311,407.00	

Greenfield Transmission Line Component

Component title	Interlink SDL Sewaren/Deans/Larrabee (HS-22 to HS-12)	
Project description		
Point A	OCP HS-22	
Point B	OCP HS-12	
Point C		
	Normal ratings	**Emergency ratings**
Summer (MVA)	450.000000	450.000000
Winter (MVA)	450.000000	450.000000
Conductor size and type	1800mm2 Submarine XLPE cable	
Nominal voltage	AC	
Nominal voltage	275kV	
Line construction type	Submarine	
General route description	See Section 3 and Appendix A.	
Terrain description	See Section 3 and Appendix A.	
Right-of-way width by segment	See Section 3 and Appendix A.	
Electrical transmission infrastructure crossings	No crossings exist.	

Civil infrastructure/major waterway facility crossing plan	No crossings exist.
Environmental impacts	The PSEG/Ørsted Team conducted an assessment of anticipated permits associated with the Project and supported the evaluation of siting, routing, and development scenarios throughout the Project development process. The permitting and environmental assessments included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual Project components. These assessments reflect in-depth analyses of the proposed Project plan reviewed with available GIS data, a detailed understanding of applicable regulations, and significant professional experience with projects of similar scope and in this same locality. As part of this Project analyses, potential Project sites and routes were discussed with a myriad group of experienced planning, engineering and construction professionals to find a competitive route that minimized environmental and built environment concerns. Please see Appendix K.
Tower characteristics	N/A
Construction responsibility	Proposer
Benefits/Comments	
Component Cost Details - In Current Year $	
Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$42,848,694.00
Component cost (in-service year)	$56,068,793.00

Greenfield Transmission Line Component

Component title	Interlink SDL Sewaren/Deans/Larrabee (HS-12 to HS-21)	
Project description		
Point A	OCP HS-12	
Point B	OCP HS-21	
Point C		
	Normal ratings	**Emergency ratings**
Summer (MVA)	450.000000	450.000000
Winter (MVA)	450.000000	450.000000
Conductor size and type	1800mm2 XLPE Submarine Cable	
Nominal voltage	AC	
Nominal voltage	275kV	
Line construction type	Submarine	
General route description	See Section 3 and Appendix A.	
Terrain description	See Section 3 and Appendix A.	
Right-of-way width by segment	See Section 3 and Appendix A.	
Electrical transmission infrastructure crossings	No crossings exist.	
Civil infrastructure/major waterway facility crossing plan	No crossings exist.	

Environmental impacts	The PSEG/Ørsted Team conducted an assessment of anticipated permits associated with the Project and supported the evaluation of siting, routing, and development scenarios throughout the Project development process. The permitting and environmental assessments included a review of Federal, regional, State, and local regulatory requirements that could potentially impact each of the individual Project components. These assessments reflect in-depth analyses of the proposed Project plan reviewed with available GIS data, a detailed understanding of applicable regulations, and significant professional experience with projects of similar scope and in this same locality. As part of this Project analyses, potential Project sites and routes were discussed with a myriad group of experienced planning, engineering and construction professionals to find a competitive route that minimized environmental and built environment concerns. Please see Appendix K.
Tower characteristics	N/A
Construction responsibility	Proposer
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	Competitive
Permitting / routing / siting	Competitive
ROW / land acquisition	Competitive
Materials & equipment	Competitive
Construction & commissioning	Competitive
Construction management	Competitive
Overheads & miscellaneous costs	Competitive
Contingency	Competitive
Total component cost	$50,923,010.00
Component cost (in-service year)	$66,634,277.00

Congestion Drivers

None

Existing Flowgates

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
28-GD-W1	270072	FUR RUN_500	270073	FUR RUN_230	1	500/230	225	Gen Deliv (winter)	Included
28-GD-W2	270072	FUR RUN_500	270073	FUR RUN_230	2	500/230	225	Gen Deliv (winter)	Included
28-GD-S2-W84	270072	FUR RUN_500	270073	FUR RUN_230	1	500/230	225	Gen Deliv (winter)	Included
28-GD-S2-W85	270072	FUR RUN_500	270073	FUR RUN_230	2	500/230	225	Gen Deliv (winter)	Included
28-GD-W21	232012	HOPE CREEK	232014	LSPWR CABLE	1	230	225	Gen Deliv (winter)	Included
28-GD-W22	232012	HOPE CREEK	232014	LSPWR CABLE	2	230	225	Gen Deliv (winter)	Included
28-GD-S2-W91	232012	HOPE CREEK	232014	LSPWR CABLE	1	230	225	Gen Deliv (winter)	Included
28-GD-S2-W92	232012	HOPE CREEK	232014	LSPWR CABLE	2	230	225	Gen Deliv (winter)	Included
28-GD-S2-W93	232014	LSPWR CABLE	232013	SILVER RUN	1	230	225	Gen Deliv (winter)	Included
28-GD-S2-W14	232014	LSPWR CABLE	232013	SILVER RUN	1	230	225	Gen Deliv (winter)	Included
28-GD-S2-W15	232014	LSPWR CABLE	232013	SILVER RUN	1	230	225	Gen Deliv (winter)	Included
28-GD-W23	232014	LSPWR CABLE	232013	SILVER RUN	1	230	225	Gen Deliv (winter)	Included
28-GD-W124	232014	LSPWR CABLE	232013	SILVER RUN	1	230	225	Gen Deliv (winter)	Included
28-GD-W125	232014	LSPWR CABLE	232013	SILVER RUN	1	230	225	Gen Deliv (winter)	Included
35-GD-W22	232012	HOPE CREEK	232014	LSPWR CABLE	1	230/230	225/225	Gen Deliv (winter)	Included
35-GD-W23	232012	HOPE CREEK	232014	LSPWR CABLE	2	230/230	225/225	Gen Deliv (winter)	Included
35-GD-S2-W103	232012	HOPE CREEK	232014	LSPWR CABLE	1	230/230	225/225	Gen Deliv (winter)	Included
35-GD-S2-W11	232012	HOPE CREEK	232014	LSPWR CABLE	2	230/230	225/225	Gen Deliv (winter)	Included
35-GD-S2-W12	232014	LSPWR CABLE	232013	SILVER RUN	1	230/230	225/225	Gen Deliv (winter)	Included
35-GD-W24	232014	LSPWR CABLE	232013	SILVER RUN	1	230/230	225/225	Gen Deliv (winter)	Included
28-GD-S2-S8	206302	28OYSTER C	206297	28MANITOU	1	230	228	Gen Deliv (Summer)	Included
28-GD-S2-S9	206302	28OYSTER C	206297	28MANITOU	1	230	228	Gen Deliv (Summer)	Included
28-GD-S2-S11	206302	28OYSTER C	206297	28MANITOU	2	230	228	Gen Deliv (Summer)	Included
28-GD-W18	206236	28GILBERT	208091	SFLD	1	230	228/229	Gen Deliv (winter)	Included
35-GD-S2-W18	206236	28GILBERT	208091	SFLD	1	230/230	228/229	Gen Deliv (winter)	Included
28-GD-W9	206305	28RAR RVR	218331	KILMER_I	1	230	228/231	Gen Deliv (winter)	Included

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
28-GD-W11	206305	28RAR RVR	218331	KILMER_I	1	230	228/231	Gen Deliv (winter)	Included
28-GD-W7	206305	28RAR RVR	218331	KILMER_I	1	230	228/231	Gen Deliv (winter)	Included
28-GD-W13	206305	28RAR RVR	218331	KILMER_I	1	230	228/231	Gen Deliv (winter)	Included
28-GD-W14	206305	28RAR RVR	218331	KILMER_I	1	230	228/231	Gen Deliv (winter)	Included
28-GD-S66	206316	28WINDSOR	219752	CLRKSVLL_1	1	230	228/231	Gen Deliv (Summer)	Included
28-GD-S2-S3	206316	28WINDSOR	219752	CLRKSVLL_1	1	230	228/231	Gen Deliv (Summer)	Included
28-GD-W15	214277	RICHMOND35	214012	WANEETA3	1	230	230	Gen Deliv (winter)	Included
28-GD-S2-W95	214277	RICHMOND35	214012	WANEETA3	1	230	230	Gen Deliv (winter)	Included
28-GD-S2-W99	200066	PCHBTM1N	270072	FUR RUN_500	1	500	230/225	Gen Deliv (winter)	Included
35-GD-S2-W17	200066	PCHBTM1N	270072	FUR RUN_500	1	500/500	230/225	Gen Deliv (winter)	Included
35-GD-S2-W14	214277	RICHMOND35	214012	WANEETA3	1	230/230	230/230	Gen Deliv (winter)	Included
35-GD-W16	214277	RICHMOND35	214012	WANEETA3	1	230/230	230/230	Gen Deliv (winter)	Included
35-GD-W5	200064	PCHBTM1S	200004	CNASTONE	1	500/500	230/232	Gen Deliv (winter)	Included
35-GD-W6	200064	PCHBTM1S	200004	CNASTONE	1	500/500	230/232	Gen Deliv (winter)	Included
35-GD-S2-W19	200064	PCHBTM1S	200004	CNASTONE	1	500/500	230/232	Gen Deliv (winter)	Included
35-GD-S2-W82	200064	PCHBTM1S	200004	CNASTONE	1	500/500	230/232	Gen Deliv (winter)	Included
35-GD-S2-W5	200064	PCHBTM1S	200004	CNASTONE	1	500/500	230/232	Gen Deliv (winter)	Included
28-GD-S2-W90	218345	ALDENE_6	216911	SPRINGRD_3	1	230	231	Gen Deliv (winter)	Included
28-GD-W12	218345	ALDENE_6	216911	SPRINGRD_3	1	230	231	Gen Deliv (winter)	Included
28-GD-S72	219104	CLRKSVLL_2	217150	LAWRENCE	1	230	231	Gen Deliv (Summer)	Included
28-GD-L14	218306	DEANS	218304	BRUNSWCK	1	230	231	Light Load - Gen Deliv	Included
35-GD-L14	218306	DEANS	218304	BRUNSWCK	1	230	231	Light Load - Gen Deliv	Included
28-GD-S64	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (Summer)	Included
28-GD-S65	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (Summer)	Included
28-GD-W109	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (winter)	Included
28-GD-W108	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (winter)	Included
28-GD-W3	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (winter)	Included
28-GD-W8	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (winter)	Included

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
28-GD-W6	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (winter)	Included
28-GD-S2-S1	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (Summer)	Included
28-GD-S2-S2	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (Summer)	Included
28-GD-S2-W7	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (winter)	Included
28-GD-S2-W6	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (winter)	Included
28-GD-S2-W97	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (winter)	Included
28-GD-S2-W98	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (winter)	Included
28-GD-S2-W94	218306	DEANS	218304	BRUNSWCK	1	230	231	Gen Deliv (winter)	Included
28-GD-S73	200006	DEANS C	218306	DEANS	3	500/230	231	Gen Deliv (Summer)	Included
28-GD-W17	218333	LNELSN_I	218301	MIDDLESEX_I	1	230	231	Gen Deliv (winter)	Included
28-GD-S2-W89	218333	LNELSN_I	218301	MIDDLESEX_I	1	230	231	Gen Deliv (winter)	Included
28-GD-S2-W102	218333	LNELSN_I	218301	MIDDLESEX_I	1	230	231	Gen Deliv (winter)	Included
35-GD-S2-S6	218307	ALDENE_2	218430	STANTER_1	1	230/230	231/231	Gen Deliv (Summer)	Included
35-GD-S2-S9	218307	ALDENE_2	218430	STANTER_1	1	230/230	231/231	Gen Deliv (Summer)	Included
35-GD-S2-S8B	218345	ALDENE_6	216911	SPRINGRD_3	1	230/230	231/231	Gen Deliv (Summer)	Included
35-GD-W13	218345	ALDENE_6	216911	SPRINGRD_3	1	230/230	231/231	Gen Deliv (winter)	Included
35-GD-S2-W9A	218345	ALDENE_6	216911	SPRINGRD_3	1	230/230	231/231	Gen Deliv (winter)	Included
35-GD-S2-W13	218306	DEANS	218304	BRUNSWCK	1	230/230	231/231	Gen Deliv (winter)	Included
35-GD-S2-W15	218306	DEANS	218304	BRUNSWCK	1	230/230	231/231	Gen Deliv (winter)	Included
35-GD-S2-W16	218306	DEANS	218304	BRUNSWCK	1	230/230	231/231	Gen Deliv (winter)	Included
35-GD-W4	218306	DEANS	218304	BRUNSWCK	1	230/230	231/231	Gen Deliv (winter)	Included
35-GD-W7	218306	DEANS	218304	BRUNSWCK	1	230/230	231/231	Gen Deliv (winter)	Included
35-GD-W9	218306	DEANS	218304	BRUNSWCK	1	230/230	231/231	Gen Deliv (winter)	Included
35-GD-S2-S2	218306	DEANS	218304	BRUNSWCK	1	230/230	231/231	Gen Deliv (Summer)	Included
35-GD-S14	218300	LINDEN	219046	TOSCO_3	1	230/230	231/231	Gen Deliv (Summer)	Included
35-GD-S13	218343	TOSCO_2	218441	VFT_2	1	230/230	231/231	Gen Deliv (Summer)	Included
28-GD-S2-S139	227900	CARDIFF C	219100	NEWFRDM	1	230	231/234	Gen Deliv (Summer)	Included
28-GD-S2-W141	227900	CARDIFF C	219100	NEWFRDM	1	230	231/234	Gen Deliv (winter)	Included

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
28-GD-S2-W142	227900	CARDIFF C	219100	NEWFRDM	1	230	231/234	Gen Deliv (winter)	Included
28-GD-S2-W137	227900	CARDIFF C	219100	NEWFRDM	1	230	231/234	Gen Deliv (winter)	Included
28-GD-S2-W140	227900	CARDIFF C	219100	NEWFRDM	1	230	231/234	Gen Deliv (winter)	Included
28-GD-S2-W100	270073	FUR RUN_230	220963	CONASTON	2	230	232/225	Gen Deliv (winter)	Included
28-GD-S2-W101	270073	FUR RUN_230	220963	CONASTON	1	230	232/225	Gen Deliv (winter)	Included
28-GD-W19	270073	FUR RUN_230	220963	CONASTON	1	230	232/225	Gen Deliv (winter)	Included
28-GD-W20	270073	FUR RUN_230	220963	CONASTON	2	230	232/225	Gen Deliv (winter)	Included
28-GD-S2-W82	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-S2-W83	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-S2-W1	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-S2-W2	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-S2-W3	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-S2-W86	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-W4	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-W5	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-W110	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-W111	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-W112	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-W16	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-S2-W96	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-S2-W88	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-S2-W87	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Gen Deliv (winter)	Included
28-GD-S2-S132	227934	CARDIFF2	227945	LEWIS #2	1	138	234	Gen Deliv (Summer)	Included
28-GD-S2-S138	227945	LEWIS #2	227902	LEWIS #1	1	138	234	Gen Deliv (Summer)	Included
35-GD-S2-S8A	227900	CARDIFF C	219100	NEWFRDM	1	230/230	234/231	Gen Deliv (Summer)	Included
35-GD-S2-W7	227900	CARDIFF C	219100	NEWFRDM	1	230/230	234/231	Gen Deliv (winter)	Included
35-GD-S2-W8B	227900	CARDIFF C	219100	NEWFRDM	1	230/230	234/231	Gen Deliv (winter)	Included
35-GD-S2-W102	227900	CARDIFF C	219100	NEWFRDM	1	230/230	234/231	Gen Deliv (winter)	Included

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
35-GD-S2-W92	227900	CARDIFF C	219100	NEWFRDM	1	230/230	234/231	Gen Deliv (winter)	Included

New Flowgates

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type
FG-683-1	216950	ROSELAND	206257	WHIPPANY	1	230	PSEG	Gen Deliv (winter)
FG-683-2	218469	METUCHEN	218357	PRSNAV_Z	1	230	PSEG	Gen Deliv (Summer)
FG-683-3	218357	PRSNAV_Z	218352	MDWRD_Z	1	230	PSEG	Gen Deliv (Summer)
FG-683-4	218352	MDWRD_Z	218304	BRUNSWCK	1	230	PSEG	Gen Deliv (Summer)
FG-683-5	218311	SEWAREN	218353	MINUEST_R	1	230	PSEG	Gen Deliv (Summer)
FG-683-6	218353	MINUEST_R	218300	LINDEN	1	230	PSEG	Gen Deliv (Summer)
FG-683-7	218469	METUCHEN	218355	NEWDOVR_H	1	230	PSEG	Gen Deliv (Summer)
FG-683-8	218355	NEWDOVR_H	218320	FANWOOD_1	1	230	PSEG	Gen Deliv (Summer)
FG-683-9	218300	LINDEN	217958	LINDEN_345	1	345/230	PSEG	Gen Deliv (winter)
FG-683-10	219052	FANWOOD_2	218504	FRONTST_2	1	230	PSEG	Gen Deliv (winter)
FG-683-11	218502	FRONTST_4	216950	ROSELAND	1	230	PSEG	Gen Deliv (winter)

Financial Information

Capital spend start date	06/2022
Construction start date	11/2024
Project Duration (In Months)	126

Cost Containment Commitment

Cost cap (in current year)	$7,097,863,930.00
Cost cap (in-service year)	$8,951,417,544.00

Components covered by cost containment

1. S2 400kV Sewaren AC Tie Line - Proposer
2. S3 400kV Sewaren Onshore Converter - Proposer
3. S4 400kV Sewaren Offshore/Onshore HVDC Cable - Proposer
4. S5 400kV Sewaren Offshore Converter - Proposer
5. L2 400kV Larrabee AC Tie Line - Proposer
6. L3 400kV Larrabee Onshore Converter - Proposer
7. L4 400kV Larrabee Offshore/Onshore HVDC Cable - Proposer
8. L5 400kV Larrabee Offshore Converter - Proposer
9. D2 Deans AC Tie Line - Proposer
10. D3 Deans Onshore Converter - Proposer
11. D4 Deans Offshore/Onshore HVDC Cable - Proposer
12. D5 Deans Offshore Converter - Proposer
13. Interlink SDL Sewaren/Deans/Larrabee (HS-21 to HS-22) - Proposer
14. Interlink SDL Sewaren/Deans/Larrabee (HS-22 to HS-12) - Proposer
15. Interlink SDL Sewaren/Deans/Larrabee (HS-12 to HS-21) - Proposer

Cost elements covered by cost containment

Engineering & design	Yes
Permitting / routing / siting	Yes
ROW / land acquisition	Yes
Materials & equipment	Yes
Construction & commissioning	Yes
Construction management	Yes
Overheads & miscellaneous costs	Yes
Taxes	No
AFUDC	No

Escalation	No
Additional Information	Project is offering a guaranteed availability date of December 31st 2029 subject to the terms in the cost commitment legal language for the first HVDC system in this proposal. Construction Cost Cap Amount will be adjusted for inflation beyond existing expectations based on changes in the Handy-Whitman Index; Cost Cap may increase or decrease based on changes to Handy-Whitman Index. Construction Cost Cap Amount will be adjusted based on changes in foreign exchange rates; Cost Cap may increase or decrease based on changes in foreign exchange rates. Construction Cost Cap may be adjusted based on changes to in taxes or duties that differ from assumptions. Specific cost cap commitments can be found in Section 1.7 of the SAA submittal and the attached legal language.
Is the proposer offering a binding cap on ROE?	Yes
Would this ROE cap apply to the determination of AFUDC?	Yes
Would the proposer seek to increase the proposed ROE if FERC finds that a higher ROE would not be unreasonable?	No
Is the proposer offering a Debt to Equity Ratio cap?	Yes
Additional cost containment measures not covered above	Project has proposed specific cost cap language in the SAA submittal, and is also submitting proposed legal language in the PJM planner. As an overview, the Project is capping costs which it can control, and excluding costs that it cannot. Excluded costs broadly fall into the following categories: Foreign exchange costs in excess of assumptions, inflation and tax costs in excess of assumptions, and excess costs driven by delays in government and regulatory approvals. As specified in the submitted legal language, the Project team would need to demonstrate to the BPU how these changes impacted the price and schedule of the Proposal before any adjustments would be made. Changes caused by delay, inaction, or lack of reasonable diligence on the part of the Project team would not be reason for a cost cap or schedule adjustment.

Additional Comments

None