Board of Public Utilities Offshore Wind Transmission Proposal Data Collection Form

Supplemental Information Requested to Support New Jersey Board of Public Utilities (BPU) in the Evaluation of Transmission Projects Proposed to be Developed Under the 2021 State Agreement Approach (SAA)

Document Date and Revision: August 31, 2021, Revision 3

Document Purpose: Bidders proposing to develop a transmission project to support the integration of offshore wind within the state of New Jersey's 2021 State Agreement Approach competitive solicitation must complete this form as one component of the bid submission. This document provides bidders guidance on criteria that will be used to evaluate alternative transmission proposals, collects information necessary for the BPU to evaluate proposed projects, and allows bidders to describe benefits to New Jersey residents and ratepayers.
Submission Instructions: PJM Competitive Planning Process
Submission Due Date: September 17, 2021
Issued By:

State of New Jersey
Board of Public Utilities
P.O. Box 350
Trenton, New Jersey 08625-0350

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I. SAA Policy Objectives

New Jersey is seeking transmission solutions capable of cost-effectively integrating into the PJM transmission system up to 7,500 MW of offshore wind by 2035. The BPU is undergoing a State Agreement Approach (SAA) process with PJM to receive, evaluate, and select proposals from transmission developers for building out the transmission capability necessary to cost-effectively and reliably interconnect the offshore wind resources. An overview of the process and the PJM Problem Statements that provide additional details on the PJM criteria and transmission upgrades necessary for meeting NJ's offshore wind objectives are available on the PJM Competitive Planning Process page.

As outlined in the Proposal Window Overview document, specific evaluation criteria for proposed solutions to meet the New Jersey public policy requirements under this State Agreement Approach include:

PJM system reliability – ability to provide a solution to the needs defined in the problem statements, additional needs identified by the proposing entities, or the needs associated with alternative POIs and to resolve potential reliability criteria violations on PJM facilities in accordance with all applicable planning criteria (PJM, NERC, SERC, RFC, and Local Transmission Owner criteria), including the solution's ability to (a) resolve identified PJM reliability violations and satisfy any applicable criteria that may impact the performance measurement of the project even if it was not explicitly stated as part of the original problem statement; and (b) reduce the need for must-run generation and special operating procedures, extreme weather outages and weather-related multiple unforced outages, reduced probability of common mode outages due to electrical and non-electrical causes, islanding, power quality degradation.

Project constructability – the extent to which the proposal identifies, addresses, and mitigates (through technical studies and documentation of experience with similar solutions elsewhere) the financing, constructability, execution, technology, environmental, and permitting challenges of the proposed solution, including the need for construction- or other-related outages on related transmission facilities.

Project costs – total cost of proposed solutions and individual elements (partial solutions); quality of proposed innovative cost control approaches (such as phased-in development of project segments, capped project costs or capped revenue requirements, and cost recovery for excess or unused capacity) or levelized cost recovery options (such as trended original costs, which may improve the intergenerational equity of cost recovery); financial commitments regarding rate of return, specific provisions to protect against cost overruns, or other comparable provisions designed to control costs.

Project risk mitigation – ability of the proposed solution to mitigate environmental, permitting, financing, constructability, timing, project-on-project (including the use of financial assurance mechanisms, guaranteed in-service dates or financial commitments contingent on meeting targeted commercial online dates, and delay damage payment provisions), and any other risks that could increase costs, reduce value, or delay the development and delivery of offshore wind generation for New Jersey.

Environmental benefits – ability of the proposed solution to minimize potential environmental impacts; minimize impacts to marine, nearshore, and onshore habitats, listed species, cultural resources, air (emissions) including potential benefits, water quality, noise, aesthetics, tourism, and navigation; minimize impacts related to fisheries resources and the fishing community and industry.

Permitting plan – ability of the proposed solution to minimize permitting risks, including plan for and likelihood of achieving all State and Federal necessary regulatory agency approvals, permits, or other authorizations; likelihood

of meeting projected commercial operation dates, operation and maintenance plans, site control or ability to achieve site control, constructability, project longevity, and project schedule.

Quality of proposal and developer experience – quality of project documentation and proposal description, discussion of commitments and benefits, and supporting analyses and benefits quantifications (including documentation of assumptions and analyses, if any); documentation of developer experience relevant to the successful implementation of the proposed solution.

Flexibility, modularity, and option value of solutions – ability of project proposals to achieve efficient outcomes through combinations of solutions for Options 1a, 1b, 2 and 3 needs, or ways in which proposed solutions, or portions of proposed solutions, can be combined, integrated, and sequenced to more cost effectively achieve the State's overall public policy and risk mitigation objectives; ability of the proposed solution to accommodate future increases in offshore wind generation above current plans; innovative solutions that yield a transmission investment schedule that is optimally aligned with the planned schedule of offshore wind generation procurements.

Market value of offshore wind generation – ability of the proposed solution to maximize the energy, capacity and Renewable Energy Credit (REC) values of offshore wind generation delivered to the chosen POIs, including mitigation of curtailment risks, and the level and sustainability of PJM capacity, congestion, or other rights created by the proposed solution that increase the delivered value of the wind generation or otherwise reduce the total cost of the proposal.

Additional New Jersey benefits – ability of proposed solutions and associated upgrades to provide additional onshore-grid-related benefits, resolve PJM market congestion, and/or otherwise reduce or avoid PJM-related costs and improve PJM market performance; this includes (a) energy market benefits, including energy deliverability of offshore wind production or curtailment, production cost savings, or other benefits; (b) identification of benefits to the transmission system, including synergies with transmission solutions from already-ongoing procurements, opportunistic replacement of aging transmission infrastructure, the creation of valuable transmission-related rights, and other transmission cost savings; (c) capacity market benefits (including CETL increases), improve resiliency/redundancy, avoid future costs (such as future reliability upgrades or aging facilities replacements); (d) other benefits, including state energy sufficiency, improvements in local transmission and distribution outage statistics, reduced utilization of aging infrastructure, improvements in local resiliency.

To submit a proposal to achieve the objectives of this process, transmission developers must submit all of the information requested by PJM through its transmission planning process. Developers can find those materials at PJM's website on the PJM Competitive Planning Process page.

In addition, the New Jersey BPU requests that developers submit additional information concerning their projects that will aid the BPU in evaluating and selecting the projects that best meet New Jersey's needs based on the criteria outlined above.

II. Project Proposal Identification

Proposing Entities shall include the following information in the BPU Supplemental Offshore Wind Transmission Proposal Data Collection Form:

Proposing Entity Name:	[redacted]
Company ID:	[redacted]
Project Title:	2021 SAA Proposal to Support NJ OSW: Option 1b
PJM Proposal ID:	2021-NJOSW-453

[redacted] A primary goal of [redacted] is to put their customers and the environment first, [redacted]:

[redacted]

As part of its commitment to its customers, [redacted], in coordination with PJM, engages in planning for its transmission system. [redacted] experience with systematic transmission upgrades and expansions as a result of new energy generation. [redacted] is familiar with PJM's Regional Transmission Expansion Plan ("RTEP") [redacted].

[redacted] has a strong commitment to a green future, [redacted]

Prompted by Governor Murphy's clean energy goals, New Jersey's 2019 Energy Master Plan has set a target for the State of 100% clean energy by 2050. [redacted]

[redacted] setting goals and publicly tracking their progress is a critical part of demonstrating transparency and accountability on Environmental Social Governance ("ESG") matters. The company tracks various benchmarks in alignment with the United Nations' Sustainable Development Goals as ESG Goals. [redacted]

[redacted]

The implementation of [redacted] four proposed projects as described herein would further the State's benchmark goals and achievement of 100% carbon neutrality by 2050.

III. Project Summary

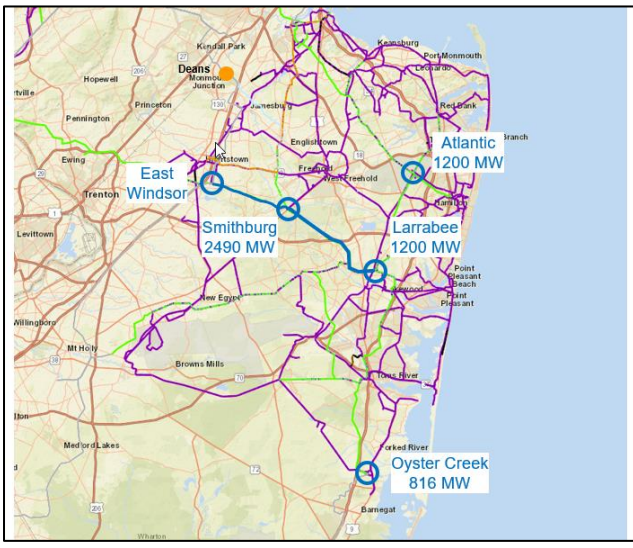
In addition to the project details requested by PJM, please provide below a narrative description of the proposed project(s) and options; document the projected benefits in terms of design, flexibility, ratepayer costs, and environmental impacts; identify major risks of (such as delay or non-completion risks, including the project-on-project risks created by the interdependence of the proposed project(s) and those of other transmission and offshore wind projects); provide strategies to limit risks to NJ customers; and include cost recovery and containment provisions.

The proposed projects are [redacted] response to PJM's Solicitations 2, 3, 4 and 5. Each proposed project addresses the violations caused by the injection of the offshore wind at one or more points of injection ("POIs"). [redacted]

The first proposed project addresses the violations caused by the POIs awarded at the Cardiff and Smithburg Substations resulting from Solicitation 2; the other three projects address the violations caused by the POIs at the Larrabee Substation, a POI at the Atlantic Substation, and a second POI at the Smithburg Substation to support Solicitations 3 through 5, respectively (collectively, the "Projects" or each, a "Project"). Figure III-1 shows the locations of the POIs.

As a wholistic solution, the Projects include expansions proposed in this Option 1b Submittal (2021-NJOSW-453) and upgrades proposed in the Option 1a Submittal (2021-NJOSW-17), which has been provided separately. [redacted] proposal assumes that PJM approves all upgrades and expansions, and they follow the schedule proposed by [redacted], as set forth in this Option 1b Submittal and in the Option 1a Submittal. Any omissions or adjustments to the scope or schedule may cause additional violations to the transmission grid. The interdependency and separability of each Project is discussed in detail in Section III.B.1 – Interdependency of Options below.

Figure III-1: Proposed Offshore Wind Injection Points Map



Location	MW Injected
Smithburg	2490
Larrabee	1200
Atlantic	1200
Oyster Creek	816
Total	5706

Major Infrastructure Upgrades:
- Smithburg Substation Expansion
- East Windsor Substation Expansion
- East Windsor - Smithburg 500 kV Line
- Larrabee Converter – Smithburg 500 kV Lines (2 circuits)

A. NARRATIVE DESCRIPTION OF PROPOSED PROJECT(S)

Provide a narrative description of the project(s) proposed in response to the PJM Problem Statements describing primary technical features, interconnection points (default or alternative POIs) and the associated transfer capability, timeframe for development, and how the project(s) will support New Jersey's policy to cost-effectively develop 7,500 MW of offshore wind.

1. Additions for Solicitation 2 – Cardiff and Smithburg Substation Injections

This Project addresses the violations caused by the POIs identified in Solicitation 2. In Solicitation 1, the BPU selected a combined 1,100 MW total of offshore wind to inject at the JCP&L-owned Oyster Creek 230 kV Substation and the Atlantic City Electric Company-owned BL England 138-kV Substation. In Solicitation 2, the NJ BPU selected 1,510 MW to inject at the Atlantic City Electric Company-owned Cardiff 230 kV Substation and 1,148 MW at the JCP&L-owned Smithburg Substation.

With the combined addition of 3,758 MW into the grid, [redacted] has flagged two additions to the existing Smithburg Substation. The 500-kV Smithburg transmission line, a 3 Breaker Ring Bus, and the Interconnect Offshore Wind Generation need to be built. The 500/230-kV lines also need to be rebuilt to connect Smithburg to the Larrabee Converter Station. These additions to the Smithburg Substation with the proposed solutions in the Option 1a Submittal (2021-NJOSW-17) jointly satisfy the violations identified by PJM.

The total cost of Solicitation 2 additions in this Option 1b Submittal is estimated to be $342 million, and the Solicitation 2 additions are proposed to be in service by December 2027. Table III-1 below details the proposed Option 1b additions with the estimated cost, duration, and proposed in-service date ("ISD") for each. The total cost of Solicitation 2 Upgrades in this Option 1a Submittal is estimated to be $304 million, and the Solicitation 2 Upgrades are proposed to be in service by June 2027. Table III-1 below details the proposed Option 1a upgrades with the estimated cost, duration, and proposed in-service date ("ISD") for each.

Table III-1: Solicitation 2 Upgrade Cost and Duration Estimates

Option	Name	Description	Cost Estimate (million)1	Duration (months)	Proposed ISD
1b	Smithburg -500 kV, Construct - 500kV 3 Breaker Ring Bus and Interconnect OSW Generation	Expand Smithburg 500 kV into a 3 Breaker Ring Bus for the OSW Generation Interconnection.	$67	49	6/1/2027
1b	Larrabee Converter Station-Smithburg No2 500kV Line	Project involves rebuilding the D2004 Larrabee-Smithburg No1 230kV kV line from the Larrabee Substation to the Smithburg Substation as a double circuit 500kV/230kV line on self-supporting steel monopole structures with drilled shaft foundations.	$275	46	12/31/2027
		Total:	**$342**		

1 – Costs are included as in-service costs; AFUDC is excluded.

2. Additions for Solicitation 3 – Larrabee Substation Injection

[redacted] proposes the injection of 1,200 MW to support Solicitation 3 at the existing JCP&L-owned 230-kV Larrabee Substation. To accommodate the additional capacity, the Larrabee Substation needs additional 230-kV equipment, and the substation will be reconfigured to accommodate an additional breaker. The 230-kV line between the Larrabee Converter Station and the Larrabee Substation will also need to be built. The total cost of Solicitation 3 additions in this Option 1b Submittal are estimated to be $20 million, and the Solicitation 3 additions are proposed to be in service by June 2029. Table III-2 below details the proposed Option 1b additions with the estimated cost, duration, and proposed ISD for each.

Table III-2: Solicitation 3 Cost and Duration Estimates

Option	Name	Description	Cost Estimate (million)1	Duration (months)	Proposed ISD
1b	Larrabee 230 kV OSW Injection	Expand Northwest bus and install new breaker and a half layout with three (3) new breakers. Re-terminate circuit from Larrabee to Lakewood 230 kV to new terminal.	$11	21	6/1/2029
1b	Larrabee Converter Station 230 kV Line	Construct approximately 1000ft of new 230 kV line from the Larrabee station to the OSW 230 kV Converter Station.	$9	30	6/1/2029
		Total:	**$20**		

1 – Costs are included as in-service costs; AFUDC is excluded.

3. Additions for Solicitation 4 – Atlantic Substation Injection

[redacted] proposes an injection of 1,200 MW at the existing JCP&L-owned 230 kV Atlantic Substation. To accommodate the additional capacity from the Larrabee Converter Station, a double breaker double bus and interconnect is proposed at the Atlantic Substation. [redacted] also proposes a new 230 kV line to run between the Larrabee Converter Station and the Atlantic Substation. The total cost of Solicitation 4 additions in this Option 1b Submittal is estimated to be $105 million, and the Solicitation 4 additions are proposed to be in service by June 2030. Table III-3 below details the proposed Option 1b additions with the estimated cost, duration, and ISD for each.

Table III-3: Solicitation 4 Cost and Duration Estimates

Option	Name	Description	Cost Estimate (million)[1]	Duration (months)	Proposed ISD
1b	Atlantic 230 kV OSW Injection	Expand the Atlantic 230 kV bus and convert the substation configuration to new double breaker double bus. Provide two line exists for the OSW Generators.	$45	53	6/1/2030
1b	Atlantic-Larrabee Converter 230 kV Line	Construct 11.6 miles of new 230 kV line from the Atlantic station to the OSW 230 kV Converter Station utilizing the existing Atlantic-Larrabee ROW.	$60	52	6/1/2030
		Total:	**$105**		

1 – Costs are included as in-service costs; AFUDC is excluded.

4. Additions for Solicitation 5 – Additional Smithburg Substation Injection

[redacted] proposes a second injection of 1,342 MW at the existing JCP&L-owned 500 kV Smithburg Substation. This project utilizes JCP&L's existing substations and transmission lines to route the offshore

wind electricity through the Smithburg and East Windsor substations. The proposed injection minimizes the impact on the communities and environment that would be impacted by a new transmission line built directly to PSE&G's Deans Substation.

[redacted] proposes a second 500/230 kV line running from the to the Smithburg Substation. This transmission line will utilize the same utility corridor as the first transmission line from the Larrabee Converter Station to the Smithburg Substation. The Smithburg will also need additional ring bus positions to accommodate the additional transmission line and interconnect. The total cost of Solicitation 5 additions in this Option 1b Submittal is estimated to be $287 million, and the Solicitation 5 additions are proposed to be in service by December 2032. Table III-4 below details the proposed Option 1b additions with the estimated cost, duration, and proposed ISD for each.

Table III-4: Solicitation 5 Upgrade Cost and Duration Estimates

Option	Name	Description	Cost Estimate (million)[1]	Duration (months)	Proposed ISD
1b	Larrabee Converter Station-Smithburg No1 500kV Line	Project involves rebuilding a portion of the G1021 (Atlantic-Smithburg) 230kV line from the Larrabee Substation to the Smithburg Substation as a double circuit 500kV/230kV line on self-supporting steel monopole structures with drilled shaft foundations.	$279	45	12/31/2032
1b	Smithburg -500 kV, 500 kV-Construct-Expand Smithburg Ring Bus for Offshore Wind Generation Interconnection	Expand Smithburg 500 kV Ring Bus for Offshore Wind Generation Interconnection	$8	49	6/1/2032
		Total:	**$287**		

1 – Costs are included as in-service costs; AFUDC is excluded.

B. PROJECT OPTIONALITY, FLEXIBILITY, AND MODULARITY

Describe the optionality, flexibility, and modularity offered by the proposed projects, including: ability of project proposals to achieve efficient outcomes through combinations of solutions for Options 1a, 1b, 2 and 3 needs, or ways in which proposed solutions, or portions of proposed solutions, can be combined, integrated, and sequenced to more cost effectively achieve the State's overall public policy and risk mitigation objectives; ability of the proposed solution to accommodate future increases in offshore wind generation above current plans; innovative

solutions that yield a transmission investment schedule that is optimally aligned with the planned schedule of offshore wind generation procurements

[redacted] is proposing the Projects to wholistically satisfy the violations caused by the injection of 6,400 MW of offshore wind generation at the proposed POIs. In this proposal, [redacted] is integrating Options 1a and 1b to upgrade and strengthen the grid to support the added offshore wind capacity. For each Project, both proposed solutions, i.e., Options 1a and 1b, must be implemented to satisfy the violations at the specified POIs.

The Projects create a cost-effective and complete solution for increased capacity in substations and transmission lines. While each Project can be implemented individually to tailor to PJM's specific plan, [redacted] recommends the implementation of the Projects in whole to mitigate the risk of unexpected capacity violations and additional costs. The Projects focus on minimizing cost while mitigating the impact on the environment.

[redacted] plans to utilize [redacted] to reduce the impact of new-builds on New Jersey communities. By avoiding greenfield construction, [redacted] also mitigates schedule and cost risks associated with environmental policies. [redacted] plans for all upgrades and construction to be in service by 2032, with each Project complete before its corresponding offshore wind solicitation, as noted in Table III-5 below. The in-service date proposed for each solicitation is planned to be completed in advance of the backfeed phase of the solicitations. Further detail on the alignment of the Projects and the solicitation schedule can be found in Attachment 1 (*Gantt Chart*).

Table III-5: Proposed In-Service Date by Solicitation

Offshore Wind Solicitation	Capacity (MW)	Estimated COD	Corresponding JCP&L POIs (Substations)	Proposed ISD
1	816 432	2024-25	Oyster Creek 230 kV BL England 138 kV	No projects included in this proposal
2	1,510 1,148	2027-29	Cardiff 230 kV Smithburg 500 kV (first injection)	12/31/2027
3	1,200	2030	Larrabee	6/1/2029
4	1,200	2031	Smithburg 500-kV (second injection)	6/1/2030
5	1,342	2033	Atlantic 230-kV	12/31/2032

1. Interdependency of Options

Describe any interdependence issues or benefits associated with any other proposal also submitted by your company. Namely, describe whether selection of another specific proposal will impact this proposal, and if so – how. Describe whether your project is severable, and the conditions that would be associated with selection of this

single proposal (i.e., one option 1b proposal for one POI). Describe any benefits to cost, cost-containment mechanisms, phasing, or other relevant elements of the proposal that would stem from co-selection of other proposals. Explain any benefits from selection of multiple proposals that may not be available if a single proposal is selected.

[redacted] proposal focuses on utilizing and upgrading the existing grid to handle the increased capacity from the offshore wind while minimizing the impact on the public and the environment. The most cost effective and environmentally conscious option is to implement the Projects in whole for two major reasons: (1) three of the POIs are located along the same transmission corridor and (2) the proposed Larrabee Converter Station acts as a switchyard to connect a majority of the offshore wind to three proposed POIs.

The major interdependencies between the Projects are upgrades along the Smithburg-Larrabee transmission corridor. Portions of some Projects are located along the same transmission corridor between Smithburg and East Windsor. [redacted] strongly encourages all the Projects be implemented wholistically to maximize the benefits of the transmission upgrades between the Larrabee and East Windsor Substations. Individual components of each Project may be selected, although the selection of individual components may not provide the most cost effective and efficient solution.

[redacted] completed preliminary interdependency studies to identify potential violations and issues, in addition to those identified by PJM. Given that some of the identified violations lay outside of [redacted] The external interdependency violations and transmission owners are noted in Table III-6. It is expected that other transmission owners will address these violations as part of any necessary upgrades.

Table III-6: External Violations

Name	Violation	Transmission Owner	Estimated Cost (Million) [1]	PJM Base Case (Y/N)
Cardiff-Lewis 138 kV	Solicitation 2	AE	N/A [2]	Yes
Peach Bottom-Conastone 500 kV	Solicitation 2	PECO / BGE	$347 [3]	Yes
Cardiff-New Freedom 230 kV	Solicitation 2	PSEG / AE	$105 [3]	Yes
Furnace Run 500/230 kV Transformer No. 1	Solicitation 3	Transource	$25 [3]	Yes
Furnace Run 500/230 kV Transformer No. 2	Solicitation 4	Transource	$25 [3]	Yes
LS Power Cable East-LS Power Silver Run 230 kV	Solicitation 5	SRE	$20 [3]	Yes
Aldene-Springfield Road	Solicitation 5	PSEG	$75 [3]	Yes
Peach Bottom-Furnace Run 500 kV	Solicitation 5	PECO / Transource	N/A [4]	Yes

Name	Violation	Transmission Owner	Estimated Cost (Million) [1]	PJM Base Case (Y/N)
Furnace Run-Conastone 230 kV Circuit 1	Solicitation 5	Transource / BGE	N/A [4]	Yes
Furnace Run-Conastone 230 kV Circuit 2	Solicitation 5	Transource / BGE	N/A [4]	Yes
Aldene-Stanley Terrace 230 kV	Solicitation 2	PSEG	$32 [3]	Yes
Gilbert-Springfield 230 kV	Solicitation 5	JCP&L / PPL	$0.75 [3]	Yes
Carson-Chaparral 230kV	Solicitation 3	DVP	$18.7 [3]	No
Chaparal-Locks 230 kV	Solicitation 3	DVP	$7.2 [3]	No
Kilmer W-Lake Nelson W 230 kV	Solicitation 4	JCP&L / PSEG	$1.4 [3]	No
Garrett – Garret 115kV	Solicitation 5	MAIT / APS	N/A [2]	No

1 – [redacted] assumes current cost estimates will be provided by proposing entity through PJM RTEP.
2 – Transmission Line is less than 230 kV, so estimate is not provided.
3 – Estimates provided by PJM and/or public documentation.
4 – PJM not able to provide a cost for this facility upgrade.

As stated above, [redacted] This solution is expected to have great benefits for PJM in the coordination and implementation of new or upgraded infrastructure.

Given that [redacted] is proposing an alternative POI to the PJM base case solution, some of the violations identified by PJM are no longer applicable. Table III-7 details the violations and costs that will be avoided in the selection of [redacted] solution.

Table III-7: Mitigated External Violations

Name	Transmission Owner	Estimated Cost (Million)
Deans-Brunswick 230 kV	PSEG	$7 [1]
Hope Creek-LS Power Cable East 230 kV Circuit 1	PSEG / SRE	$20 [2]
Hope Creek-LS Power Cable East 230 kV Circuit 2	PSEG / SRE	$20 [2]

Richmond-Waneeta 230 kV	PECO	$19 [1]

1 – Estimates provided by PJM and/or public documentation
2 – Based on estimates provided by PJM and/or public documentation

2. Overview of Project Benefits

Describe the benefits that the project offers in support of New Jersey's policy goals to reduce customer costs, advance offshore wind, maintain reliability, mitigate environmental impacts, and achieve other policy goals as outlined above. Explain how any project options or alternatives offered may create value in furtherance of the BPU's stated policy goals as described above.

The Projects would provide significant benefits in the fact that they utilize existing transmission corridors and build upon existing substation infrastructure. [redacted] is committed to [redacted] in the construction process. Benefits would include reducing customer costs, advancing offshore wind, maintaining reliability, mitigating environmental impacts, and achieving other policy goals that are further described in Section IV.

3. Overview of Major Risks and Strategies to Limit Risks

Identify and describe project-related risks, such as: (a) uncertainties that may cause timeline delays or budget increases; (b) uncertainties that may reduce or delay the benefits to New Jersey customers; and (c) project-on-project risks that may exist between this project and other transmission or offshore wind projects. Describe the strategies that will be utilized to limit these risks and the impacts to New Jersey customers.

The primary driver of risk mitigation in cost, schedule, constructability, and environmental impact is the ability for [redacted] to buildout the proposed infrastructure within existing corridors and at existing substations. In development of this proposal, [redacted] reviewed the existing facilities and performed preliminary engineering for the Projects [redacted]

[redacted] As part of this process, each project moves through each stage of the process (initiation, development, engineering, etc.) through a structured hand-off process, (the "gate"). Through the "gate", each stage is required to meet a certain standard and includes a particular set of deliverables prior to the project moving from one stage to the next for further development. This process allows J[redacted] to systematically work through issues each step of the way and in doing so, identify and mitigate various risks to the project.

Throughout this process, [redacted] employs several additional risk mitigation strategies including, but not limited to critical path scheduling methods, which incorporate all environmental permitting activities, cost forecasting and tracking, risk registers, value engineering analysis, and scope change management. Together, these methods help facilitate the proactive mitigation of issues as well as help systematically work through issues as they arise.

[redacted] uses various strategic contracting methods to provide the least cost, most efficient scope for the applicable project(s). These strategies may include leveraging supplier relationships to mitigate cost and

schedule risk with respect to commodity pricing or leveraging contractors with proven New Jersey-specific industry and regulatory knowledge.

[redacted] utilizes lean construction techniques and employs six sigma certified personnel to assist with lean practices. These techniques along with robust pre-energization requirements helps [redacted] projects move forward more easily through each phase of the project.

A key advantage of this proposal is that it will minimize environmental permitting risk in terms of cost and schedule by utilization existing corridors and facilities. The proposed route was selected with the understanding of potential challenges of environmentally sensitive areas. [redacted] plans to apply Best Management Practices currently being utilized during routine vegetative maintenance and emergency projects, as well as obtain any additional approvals from appropriate agencies for the Projects. Further, helicopter construction will be employed for certain aspects of the Projects to minimize cost and impact from building access roads and to minimize cost and environmental impact from building access roads and on ground construction activities.

[redacted] continues to coordinate with regulatory agencies on any potential environmental impacts. To ensure [redacted] is complying with the various approvals, permits, and regulations, [redacted] employs environmental compliance monitors to conduct weekly inspections throughout construction and post-construction until all restoration efforts are completed.

4. Overview of Project Costs, Cost Containment Provisions, and Cost recovery proposals

Summarize the project cost, any cost containment provisions that will be utilized to limit cost impacts on New Jersey customers, and the cost recovery approach.

Proposed Project costs, containment provisions, and cost recovery approaches are described in Section V.

IV. Proposal Benefits

The PJM submission form provides space to identify the reliability criteria violations that the solution resolves and the Market Efficiency flowgate(s) the proposed project mitigates. We provide an opportunity here to identify additional information concerning the benefits of the proposed project.

A. RELIABILITY BENEFITS

Please explain the proposed project's ability to satisfy any applicable reliability criteria that may impact the evaluation of the project even if it was not explicitly stated as part of the original problem statement.

[redacted] That is why [redacted] These investments will benefit the communities they serve by enhancing service reliability [redacted]

Through planned investments [redacted]

In addition, [redacted] has completed [redacted] focused on four areas of investment: [redacted] to aid PJM in creating a cleaner and more energy-diverse grid.

Looking towards the future, [redacted] New Jersey's phased solicitation of 7,500 MW in offshore wind generation development with PJM through the SAA would further[redacted]

Please explain the proposed project's ability to provide additional benefits associated with reliability criteria, including reduce the need for must-run generation and special operating procedures, extreme weather outages and

weather-related multiple unforced outages, reduced probability of common mode outages due to electrical and non-electrical causes, islanding, power quality degradation.

Along the Projects' routes, there have [redacted] see Attachment 3 [redacted] for further details.

[redacted] has a strong record of responding quickly and safely to service interruptions. [redacted] use supervisory control and data acquisition ("SCADA") equipment to learn when a circuit breaker is opened during an unplanned outage event. The equipment enables grid operators to react immediately to disturbances on the system by quickly isolating and rerouting power from other sources. Recently, [redacted] has installed [redacted] to improve network communications. This advanced, secure, communications network improves real-time monitoring and predictive maintenance of their substation equipment and alerts the company to problems [redacted].

[redacted] also has a very robust and comprehensive storm and emergency response process. Specifically, [redacted]

One of the most significant examples of [redacted] service in extreme situations was demonstrated [redacted]

Figure IV-1 – [redacted]

[redacted] it is committed to building a more reliable grid for the future.

As a whole, [redacted] The additional transmission lines and transformers, upgrades to existing transmission lines, and substation expansions comprising the Projects will provide a robust solution to incorporating offshore wind into the New Jersey transmission system. In addition, the proposed transmission upgrades will increase the resiliency and operational flexibility of the grid. These new assets will also help the grid operate more efficiently and reliably during unplanned and planned outages. [redacted] All transmission structures associated with the Projects will meet or exceed the NESC standards and will be specifically designed to survive extreme weather conditions.

B. PUBLIC POLICY BENEFITS

Please explain the proposed project's ability to maximize the energy, capacity, and REC values of offshore wind generation delivered to the chosen POIs, including reduce total costs of the offshore wind generation facilities (including generator leads to the offshore substations), mitigation of curtailment risks, and the level and sustainability of PJM capacity, congestion, or other rights created by the proposed solution that increase the delivered value of the wind generation or provide other benefits.

The Projects do not deliver any offshore wind generation to the proposed POIs and will not obtain renewable energy certificates. While designing for minimal losses, [redacted] will strike a balance with costs

to New Jersey ratepayers for an optimal solution. [redacted] This plan will limit new construction corridors when compared to injecting directly at the Deans Substation.

Please explain the proposed project's ability to accommodate future increases in offshore wind generation above current plans.

As the electricity market pushes for the retirement of more fossil-powered and nuclear generation plants, [redacted] The Projects assist in these goals as they are part of the process to build out a robust backbone for the transmission grid to be more capable of connecting future offshore and other renewable generation resources.

As proposed, the Projects may be capable of providing this additional capacity, although the amount and location of that capacity has not been fully analyzed as part of this proposal. Specifically, there may be additional capacity on the 500-kV Lines from Larrabee Converter Station to Smithburg Substation, but additional upgrades may be required at the Smithburg Substation for such interconnection.

Further, [redacted] can be upgraded as may be required to facilitate the interconnection of additional future offshore wind resources that may want to interconnect to [redacted] This [redacted] commitment to reconductoring existing corridors will prove very useful for accommodating future increases in offshore wind generation above current plans.

C. MARKET EFFICIENCY BENEFITS

Please explain for each item below the proposed project's ability to provide additional onshore-grid-related benefits that improve PJM market performance and provide New Jersey ratepayer cost savings.

- *Energy market benefits, such as ratepayer cost savings (the primary evaluation metric); production cost savings; or other benefits:*

[redacted] will realize production cost savings with clearly defined scopes of work for the Projects and their cost-effective sequencing and coordination of the upgrades and construction as the BPU solicitations proceed, and offshore wind generation comes online. [redacted] plans to utilize existing supplier relationships for advantageous material procurement to avoid pricing fluctuations, outside of the assumed commodity pricing. Further information on costs and savings can be found in Section V.

- *Transmission system benefits, such as synergies with transmission facilities associated with ongoing OSW procurements, replacement of aging transmission infrastructure, and other transmission cost savings to New Jersey customers:*

[redacted] Many of the upgrades proposed will include replacing infrastructure with newer, more resilient equipment. [redacted]

With the proposed upgrades and experience of [redacted] the pathway for additional renewable deployment to New Jersey customers is widened. In addition to offshore wind development, [redacted] is ready to interconnect with a variety of other clean energy generation sources and efficiently and reliably handle the added capacity.

- *Capacity market benefits, that may give rise to New Jersey ratepayer cost savings (which is the primary evaluation metric), including through CETL increases, improved resiliency/redundancy, avoided future costs (such as future reliability upgrades or aging facilities replacements):*

The Capacity Emergency Transfer Limit ("CETL") is used by PJM in its Load Deliverability Analysis and is used as an input to the Reliability Pricing Model Base Residual Auction. The CETL indicates the actual import capability of the zone under study during a capacity emergency. The Projects will increase the CETL into the JCP&L zone, since the additional and upgraded transmission facilities will provide transfer capability above the capability of the current transmission system. In addition, [redacted] anticipates there will be Incremental Capacity Transfer Rights ("ICTRs") allocated to developers connecting to the JCP&L facilities since the import capability into the JCP&L zone will be increased.

[redacted]

D. OTHER BENEFITS

- *Other benefits, including State energy sufficiency, reduced emissions, less dependence on fossil-based thermal resources, improvements in local transmission and distribution outages, improvements in local resiliency:*

[redacted] seeks to benefit local communities with job creation and the promotion of small business. Over the course of the Projects, [redacted] estimates a requirement of between 160 and 245 construction workers (line workers, substation electricians, and equipment operators) and between 90 and 165 support workers (engineers, environmental consultants, siting consultants, construction managers, project managers, traffic control, etc.). It is expected that a portion of the construction and support personnel will come from local union halls and New Jersey based companies. [redacted] consistently works with the International Brotherhood of Electrical Workers ("IBEW") to provide construction labor.

In addition to local and union labor, [redacted] actively seeks out and employs women- and minority-owned businesses whenever possible [redacted] and will continue to partner with diverse contractors on this project.

[redacted] is also focused on minimizing the impacts of the proposal on surrounding communities and the environment. Throughout the proposal, they proposed upgrades and additions to areas that already had existing utility structures to limit construction on undeveloped properties. [redacted] is committed to restoring and enhancing wetlands and natural habitats that were previously or currently impacted. [redacted] These efforts to minimize the environmental impact are addressed in detail in Section VII.

Please attach any relevant supporting analyses and benefits quantifications (including assumptions and analyses, if any) to support the benefits described above that have not been already submitted through the PJM submission forms.

Not applicable.

V. Proposal Costs, Cost Containment Provisions, and Cost Recovery

Proposals with cost containment options that limit New Jersey ratepayer exposure to cost overruns are strongly preferred. Examples of cost caps or cost control measures that the developer should consider proposing include, but are not limited to:

- *Total or partial construction cost caps, similar to the cost control measures requested by the PJM submission forms;*
- *Total or partial operations and maintenance cost caps;*
- *Limits on capital structure and return on equity (ROE);*
- *Fixed revenue requirements over the expected life of the project; and*
- *Innovative cost recovery approaches.*

Developers can propose several (equally-acceptable) alternative cost control and cost recovery mechanisms for each proposal. Such cost control and cost recovery alternative may include:

A. STANDARD REGULATED COST RECOVERY

If developers are requesting cost recovery via a standard revenue requirement, please submit projected project and financing cost information and any proposed cost-cap mechanisms via the PJM submission forms. Indicate below that standard regulated cost recovery will be requested.

Proposers should include the following information via the PJM Competitive Planner submission tool when submitting projected project and financing cost information, any proposed cost-cap mechanisms, and whether values are estimated or firm commitments.

Please provide the following:

[redacted] intends to recover all prudently incurred costs related to options 1a and 1b through the use of [redacted]

Attachment 2 [redacted] presents an estimated revenue requirement for each Project over its book life. [redacted]

1. O&M, G&A Costs

- *Cost estimates for Operations, Maintenance, and G&A FERC US of A 560-570 series, 920 series.*
- *O&M escalation rates*
- *Clarification if O&M, G&A expenses are covered in cost containment*

While [redacted] transmission O&M and administrative and general ("A&G") costs are likely to experience some escalation over time, [redacted] does not expect that these costs will be significantly impacted by the construction of the Projects proposed in Option 1a and 1b. However, [redacted]

[redacted] is not able to predict O&M escalation rates at this time.

2. Capital Structure

- *Debt-to-Equity ratio*
- *Cost of debt*

Please see Attachment 2 ([redacted] *SAA Cost Recovery*) "Capital Structure & Cost" tab.

3. Depreciation

- *Book life by asset class*
- *Tax depreciation method e.g., 5-year MACRS, half-year convention*
- *Book and tax depreciation schedule for CapEx and On-going CapEx*

A book life of 50 years was assumed for revenue modeling purposes [redacted] believes this is reasonable assumption [redacted]

A [redacted] method was utilized for tax depreciation.

Refer to Attachment 2 [redacted] *SAA Cost Recovery*) "Depreciation Rates" tab for the book and tax depreciation schedule for CapEx and on-going CapEx.

4. Taxes

- *Federal and state income tax rates*
- *Description of blended income tax rate calculations, if any*
- *Deferred income tax schedule, if appropriate*

A federal tax rate of 21% and a state income tax rate of [redacted] was used to derive a composite tax rate shown in Attachment 2 [redacted] *SAA Cost Recovery*) "Capital Structure and Cost" tab.

Property taxes are a relatively small part of the revenue requirement [redacted]. Other taxes-Other (which includes property taxes) were assumed to be [redacted] of gross plant in the revenue requirement calculation shown in Attachment 2 [redacted] *SAA Cost Recovery*) "Cost and Rev Requirement Detail" tab. [redacted]

[redacted] as part of Attachment 2 [redacted] *SAA Cost Recovery*).

5. Discount Rate

Not applicable.

6. Revenue Requirement

- *Estimated annual revenue requirement for each proposed solution from commercial operation through the book life of the plant.*
- *Provide revenue requirement build-up workbook, including depreciation, cost of debt, return on equity, federal and state income tax, property tax, and other costs e.g., O&M, A&G, other income tax.*

See Attachment 2 [redacted] *SAA Cost Recovery*).

7. Incentive adders

- *Describe any incentive adders and what it applies to*

[redacted] No additional incentive adders have been included.

8. Exceptions to Cost Cap

Not applicable.

B. PRE-DETERMINED REVENUE REQUIREMENTS

If developer is requesting cost recovery via pre-determined, pre-committed revenue requirements, please submit the committed-to annual revenue requirement amounts over the economic life of the assets below. In this case, the developer does not need to submit project and financing cost information via the PJM submission forms.

Not applicable. This method is not being employed.

C. ALTERNATIVE COST RECOVERY

If developer is requesting an alternative cost recovery (e.g., levelized regulated cost recovery, fixed-priced contract costs, or other mechanism), please submit the projected cost recovery information via the PJM submission forms and describe the alternative cost recovery approach below.

Not applicable. Not proposing cost recovery options.

D. ADDITIONAL INFORMATION

Based on the approach, please provide the following information for the BPU to evaluate the costs of the proposed solutions to New Jersey ratepayers:

- *Any additional cost information not included in PJM's submission forms, including ongoing capital expenditures:*

Not applicable.

- *For the cost estimates submitted via PJM's submission forms, the cost estimate classification and expected accuracy range consistent with AACE International standards:*

Understood.

- *The estimated energy losses of the proposed facilities:*

At 30% dispatch for the offshore wind generator units in the 2026 SUM RTEP case with the addition of facilities proposed in [redacted] Option 1b proposal, the estimated energy loss is a reduction of [redacted] The generation was re-dispatched uniformly for all of PJM excluding the offshore wind generator units to match the swing bus (Brown Ferry TVA) with the original 2026 SUM RTEP case.

- *The physical life and/or economic life (i.e., length over which the facility will request cost recovery) of the facilities:*

The useful life of the assets was assumed to be [redacted] years.

- *A description of each cost structure proposed for the project, including cost containment mechanisms and cost recovery approach:*

The cost and revenue requirement associated with each Project are included in Attachment 2 [redacted] *SAA Cost Recovery*). Information on managing costs and risks is provided in Section VI.

- *If a fixed revenue requirement is being requested, files specifying the annual revenue requirements over the economic life of the proposal. Similar to the proposed cost cap mechanisms submitted to PJM, please include proposed contractual revenue requirement commitment language to be included in the Designated Entity Agreement. The Contractual revenue requirement commitment language must be identical to that submitted in the PJM Competitive Proposal Template.*

Not applicable.

- *Please explain how the costs of the proposed projects may be impacted by selection of a subset of the options versus the entire proposed project:*

The individual costs of the Projects are not dependent on each other, as they were based on equipment specific to each upgrade associated with each POI. However, if individual components of a Project are selected, it may not provide the most cost effective and efficient solution. As noted in Section III.B.1, Projects should be selected in whole to address overloading in the existing New Jersey grid.

- *Please explain any additional cost control mechanisms provisions for the BPU to consider that were not included in the PJM submission forms:*

Information on managing costs and risks is provided in Section VI.

VI. Project Risks and Mitigation Strategy

Please provide the following items to describe the project's risk and risk mitigation strategy:

- *Discuss the project's plan for site control and the ability to achieve site control.*

[redacted] identifies the two most significant project risks under this Option 1b proposal to be site control and the impact of construction on the site and surrounding community. However, [redacted] By staying within the existing transmission line corridors to accommodate the additional capacity, [redacted] will reduce the risk associated with site control. Working within the existing corridors will help mitigate the impact on the environment and surrounding community caused by disturbances from construction. With minimal new ROW permitting required, the risk of delays and/or overrun costs can be reduced.

For substation sites that require an expansion to accommodate the additional capacity, the additional area is expected to be less than an acre at each substation. [redacted] has a substantial full-time internal staff responsible for ROW acquisitions that will be utilized for the expansions. The group has considerable experience working with ROW permits [redacted]

[redacted] This collaboration helps to make the entire construction and development process more efficient and transparent.

- *Identify whether the project will require the issuance of a right-of-way, a right of use and easement, or similar authorization from the U.S. Bureau of Ocean Energy Management ("BOEM"), and the project's plan and timetable for obtaining such any required authorization.*

The Projects are not directly impacted by the U.S. Bureau of Ocean Energy Management ("BOEM"). None of the land will be near or on the beach or property associated with BOEM.

- *Discuss the project stakeholder engagement plan's ability to minimize public opposition risk from the fishing industry, coastal and beach communities, and other stakeholder groups.*

While the Projects do not impact the fishing industry or coastal and beach communities, [redacted] works with federal, state, and local governments to ensure decisions support high-value service for the customers. As the industry evolves, [redacted]

To minimize the impact of the Projects on the public, [redacted] proposes upgrades to transmission lines and substations with minimal site expansions and no greenfield builds. In addition, [redacted] plans to hold public forums as part of its public outreach plan. [redacted]

- *Identify any construction techniques will be needed – benthic substrate, long HDD spans, existing cables, pipelines or other infrastructure, sandwaves/megaripples, contaminated sediment, dredging, or onshore waterbody crossings – that may result in project delays or cost overruns*

[redacted] has several mitigation plans in place to reduce the risk of delay, unnecessary costs, and the impact on the environment during the construction of the Projects.

[redacted] plans to implement sustainable construction contracts that request certain rules for materials, staging, procedures, and isolation strategies. [redacted] plans to use helicopters to construct transmission lines in environmentally sensitive areas. Additional engineering solutions are being considered to mitigate the impact on the environment, including micropile foundations for structures in applicable areas. Since [redacted] has years of prior experience with these construction techniques, they have appropriately planned for buffers in the Project schedule and cost to account for any Projects' delays or cost overruns.

- *Identify known or potential time of year restrictions on construction activity, particularly related to listed species or beach restrictions.*

All Project work will implement timing restrictions and Best Management Practices ("BMP's") as outlined in the *NJDEP Threatened & Endangered Species Guidelines* for the target species mapped and identified along each specific Project route. Biological monitoring by qualified and state approved individuals during construction will be implemented where critical habitat is mapped to minimize impacts to species. Species related restrictions are described in Section VII and Attachment 5 (*DEP Checklist)*, no beach restrictions will apply for the Projects.

- *Identify anticipated construction-related outages and expected duration on existing PJM transmission facilities.*

[redacted]

In addition, Public Safety and Work Zone Safety are top priorities for [redacted]. During construction of [redacted] transmission facilities, it may become necessary to temporarily close roads to limit traffic flow during construction or stringing operations that take place along or across roads and highways in accordance with the New Jersey Department of Transportation ("NJDOT") Work Safety Program. [redacted] and its contractors will perform this work in accordance with all federal (FHWA and OSHA), state (NJDOT), and municipal requirements and in coordination with appropriate state or local law enforcement agencies for Work Zone Safety traffic monitoring and mitigation practices.

- *Identify supply chain constraints or material procurement risks that may impact the project.*

[redacted] has experience using an external online system for tracking various benchmarks such as copper recycling and vehicle emissions in the construction process. It is typical practice to request that suppliers

track their impacts through this same system. [redacted] intends to add this as a requirement of contractors to minimize the overall environmental impact in the supply chain of the Projects.

Most materials (poles, conductors, etc.) come from outside of the New Jersey area. [redacted] has good relationships with its vendors and does not foresee significant material procurement risks. [redacted] intends to leave room in the schedule for material procurement to watch commodity pricing forecasting.

- *Identify project-on-project risks related to the timing or completion of other transmission and offshore wind projects built to achieve the New Jersey public policy requirement.*

[redacted], see Attachment 1 (*Gantt Chart*).

- *Describe and provide proposed contractual language for any project schedule guarantees, including but not limited to guaranteed in-service date(s), financial assurance mechanisms, financial commitments contingent on meeting targeted commercial online dates, and delay damage or liquidated damage payment provisions, that have been proposed.*

[redacted] plans to make schedule and cost adherence priorities during the execution of the Projects. However, [redacted] will not agree to any schedule guarantees for the Projects, including guaranteed in-service dates. [redacted] will not agree to financial assurance mechanisms or commitments that are contingent on meeting targeted commercial online dates and will not agree to liquidated damage payment provisions.

- *Identify any additional risks associated with the project that could lead to increased costs, reduced project benefits (reliability, market efficiency, and/or public policy), or delayed development and delivery of the proposed offshore wind generation.*
    - *Provide any relevant technical studies or documentation related to efforts taken to mitigate the risks identified above.*
    - *Identify compensatory mitigation estimates needed for wetland impacts and any potential risk with availability of wetland credits.*

Permanent impacts to wetlands and transition area as a result of any substation or ROW expansion can be reduced and mitigated for by implementing wetland and buffer enhancement and restoration. Areas throughout these Projects' ROW routes are composed of low-quality wetland areas that are either denuded or composed of monotypic stands of invasive species. These wetland and buffer areas can be restored with appropriate native species (seeding and planting), the composition of which can be targeted to any listed threatened and endangered species in the area. Enhancement can be directed to also promote pollinator habitat. Monitoring of these areas will be performed as per NJDEP permit conditions and will ensure at least 85% success over a five-year period.

VII. Environmental Impacts and Permitting

Please provide an Environmental Protection Plan which describes all associated onshore and/or offshore environmental impacts from the planning, construction, and operation phases of the project, including, but not limited to:

A. PHYSICAL RESOURCES

- *Physical Resources- air quality, electric and magnetic fields (EMF), geological resources, airborne sound, water quality, underwater acoustics, wetlands and waterbodies.*

1. Air Quality

Any emissions will be limited to construction equipment, maintenance vehicles, and portable generators. Fugitive dust emissions will be controlled in compliance with NJAC Title 7, Chapter 27.

2. Electric & Magnetic Fields (EMF)

Transmission lines, distribution lines, and substations are all a source of EMF. The highest levels of EMF are measured close to the source, and rapidly decrease with distance. At the boundary of a substation, the EMF levels are within the typical range of levels found in a home. Although high voltage transmission lines produce more EMF than distribution lines, both will be located at distances to reduce EMF levels within standard ranges.

The construction and operation of all [redacted] facilities will comply with the requirements specified in the National Electrical Safety Code (NESC), will meet all applicable safety standards established by the Occupational Health and Safety Administration (OSHA), and comply with the referenced guidelines for the State of New Jersey in the State Transmission Line Standards and Guidelines prepared by the National Institute of Environmental Health Sciences, National Institutes of Health.

A conservative approach is used to create the model to validate compliance with applicable standards. The model is based on the maximum normal line loading. Additionally, the height of conductors is modeled at the minimum NESC clearance above ground plus [redacted] construction tolerance rather than the conductor's higher height. This conservative approach gives the anticipated maximum electric and magnetic field levels, and measured values are expected to be below these levels. In general, the transmission line connections associated with the Projects are proposed in locations that would not place them in close proximity to existing residential areas and would therefore not significantly increase EMF exposure.

3. Geological Resources

Proposed earthwork will be subject to Standards for Soil Erosion and Sediment Control and [redacted] BMP's.

4. Airborne Sound

An increase in the sound level can be expected for the duration of construction activities. The source of the additional sounds may come from construction vehicles, portable generators, as well as personnel and personnel vehicles. [redacted] will comply with local ordinances with respect to sound levels, especially as it may relate to sensitive timeframes (e.g., nighttime).

5. Water Quality

See below under wetlands and waterbodies and GIS Desktop Study (Table VII-2 through Table VII-4). All waterways traversing the Projects' routes have been identified and evaluated under the NJDEP Surface Water Quality Standards at N.J.A.C.7:9B and Geographic Information System (GIS) data.

6. Underwater Acoustics

Not applicable. No waterbodies to be impacted.

7. Wetlands and Waterbodies

The Projects' route options will traverse areas of mapped and field identified freshwater wetlands and waterways. This is based on limited field delineation data performed (Smithburg Substation and Atlantic Substation), and NJDEP GIS wetland and waterway mapping. These wetlands are identified in existing JCP&L ROW routes and substation properties. Additional information is provided in the GIS Desktop Study (Table VII-2 through Table VII-4).

B. BIOLOGICAL RESOURCES

- *Biological Resources- avian and bat species, benthic and shellfish, coastal and terrestrial habitat, finish and essential fish habitat, marine mammals and sea turtles, terrestrial wildlife*

1. Avian and Bat Species

Indiana Bat and Northern Long Eared Bat mapped in areas of the Projects' routes based on NJ Landscape Project mapping. Additional information is provided in the GIS Desktop Study table presented below.

Project work in mapped and identified listed bat habitat will be in compliance with the NJDEP *Recommended Right-of-Way Management Guidelines for Minimizing Prohibited Take in NJ (NJDEP T & E Guidelines)* (2019). This involves the avoidance of clearing of trees greater than five inches diameter at breast height between April 1 and September 30, or until November 15 in areas of Indiana bat hibernaculum.

2. Benthic and Shellfish

No Impacts. The routes were evaluated under the NJDEP GIS freshwater mussel habitat data. No streams are identified as critical freshwater mussel habitat.

3. Coastal and Terrestrial Habitat

Minimal impacts to any coastal and terrestrial habitat. Rebuild and reconductor work will be in existing ROW locations and will involve existing infrastructure.

Tree clearing is required for the new Larrabee Converter, and the Smithburg Substation to East Windsor Substation 500/230-kV rebuild Project route. This will impact some wooded areas within the existing JCP&L easement; however, the impact is minimized since a majority of the Projects' area will utilize the existing maintained ROW. Minimal clearing may also be needed for access associated with the Lake Nelson-Kilmer Line Section of the I1023 230-kV Line Reconductor route. Tree clearing may also be required for expansion of the Atlantic, East Windsor, and Smithburg Substations. These expansion projects will be designed in an effort to utilize existing maintained and cleared areas of the substation properties, and to minimize impacts to regulated areas, to the maximum extent practicable. Clearing can be mitigated for with other enhancement and restoration activities in JCP&L owned properties.

4. Finfish and Essential Fish Habitat

No Impact. Any project work and expansions as proposed will not result in impacts to any waterways that may be fish habitat. Permanent disturbance to streams/waterways will be avoided, and NJDEP, Soil Conservation District, and [redacted] standard (BMPs) will be implemented for access crossing and any temporary disturbance.

5. Marine Mammals & Sea Turtles

Not applicable. No marine areas.

6. Terrestrial Wildlife

All Project work will implement timing restrictions and BMPs as outlined in the *NJDEP T & E Guidelines* for the target species mapped and identified along each specific Project route. Reconductor work that is completed using helicopter access is not expected to result in any adverse impacts to wildlife. Biological monitoring by qualified and state approved individuals during construction will be implemented where critical habitat is mapped to minimize impacts to wildlife species.

C. CULTURAL RESOURCES

- *Cultural Resources- above-ground historical properties, marine archeology, terrestrial archaeology.*

Table VII-1: CULTURAL RESOURCES

Project	Historic Properties	Historic Districts	Terrestrial Archaeology
Larrabee Converter-Smithburg Substation Rebuild 500/230 kV	None	NJ Southern Railroad HD	None
New Larrabee Converter-Atlantic Substation 230-kV Line	None	None	Grids EP162/EQ163/ EQ165/EQ166
New Larrabee Converter-Larrabee new 230-kV Line	None	Vicinity of NJ Southern Railroad Historic District	None
Larrabee Substation Reconfiguration		Vicinity of NJ Southern Railroad HD	None
Atlantic Substation Expansion	None	Vicinity of Naval Ammunition Depot Earle HD	None

D. SOCIOECONOMIC RESOURCES

- *Socioeconomic Resources- visual resources, commercial and recreational fisheries, commercial shipping, environmental justice, land use and zoning, existing cables, tourism, public health & safety, workforce, economy, demographics.*

1. Visual Resources

Impacts to line of site aesthetics is expected to be moderate at the substation expansion locations and is expected to be improved with the replacement of the existing lattice structures with taller monopole structures on 12 miles of the 500-kV Larrabee Converter Station to Smithburg Line. While the Projects utilize the existing 180-foot corridor, currently only 150 feet is cleared and thus an additional 30 feet of corridor will need to be cleared to facilitate this work.

2. Commercial and Recreational Fisheries

Not applicable. Waterways through these Projects' routes are not associated with commercial or recreational fishery opportunities.

3. Commercial Shipping

Not applicable. No waterways are suitable for shipping or navigation.

4. Environmental Justice

[redacted] is committed to creating a framework to implement activities that promotes environmental justice [redacted], including the siting and construction of transmission projects. To effectively accomplish that objective, environmental justice evaluations, including the use of EJSCREEN, are becoming standard practice in al [redacted] project/permitting activities.

5. Land Use and Zoning

All Projects' routes are in existing JCP&L ROW routes and at existing substation properties therefore, no changes in zoning are expected to be required for the Projects. Any local building permits will be obtained as applicable for construction projects.

6. Existing Cables

The Projects are not expected to disturb existing underground cables.

7. Tourism

Not applicable. The Projects' routes are associated with existing JCP&L ROW and substation properties and are not associated with areas of existing or available tourism.

8. Public Health and Safety

The Projects will adhere to all applicable regulations and standards to ensure the health and safety of the public. Construction will be within existing utility ROW and at existing substations. All necessary precautions and work zone restriction signage and barriers will be in place to limit access by the public to active construction areas.

9. Workforce

[redacted] plans to temporarily increase the construction workforce with the creation of jobs as noted in Section IV.

10. Economy

[redacted] plans to benefit the New Jersey economy with the utilization of local business as noted in Section IV.

11. Demographics

The Projects are not expected to change the demographics of the area or disproportionately impact any demographic group.

GIS Desktop Study of potential impacts to sensitive resources including tabular summaries of acreage and distance calculations: Tables Table VII-2 through Table VII-4 provide a general breakdown of sensitive resources within the Projects' routes. Additional detail provided in Attachment 5 (*DEP Checklist).*

Table VII-2: GIS Desktop Study (Species & Habitats)

Project	T & E Species Mapped	Vernal Habitat	Mussel Habitat
Larrabee Converter-Smithburg Substation Rebuild 500/230 kV	Northern Long-eared Bat Swamp Pink Bald Eagle Barred Owl Pine Barrens Treefrog Northern Pine Snake	1 Confirmed 4 Potential	None
New Larrabee Converter-Atlantic Substation 230-kV Line	Endangered Plants Pine Barrens Treefrog Barred Owl	2 Confirmed 8 Potential	None
New Larrabee Converter-Larrabee new 230-kV Line	None	None	None
Larrabee Substation Reconfiguration	Bald Eagle (vicinity foraging – not nest buffer)	None	None

Table VII-3: GIS Desktop Study (Wetlands)

Project	Waterways	Classification
Larrabee Converter-Smithburg Substation Rebuild 500/230kV	24 stream crossings	All C1 11 Trout Maintenance
New Larrabee Converter-Atlantic Substation 230-kV Line	13 stream crossings	All C1 8 Trout Maintenance
New Larrabee Converter-Larrabee new 230-kV Line	None	
Larrabee Substation Reconfiguration	None	
Atlantic Substation Expansion	1 in vicinity expansion parcel	Non-Trout/C1

Table VII-4: GIS Desktop Study (Waterways)

Project	Wetland & Transition Areas	Riparian Zone/ FHA	Waterways/ State Open Waters
Larrabee Converter-Smithburg Substation Rebuild 500/230 kV	~10.90 mi Wetland & TA	~7.8 mi Riparian Zone	24 stream crossings
New Larrabee Converter-Atlantic Substation 230-kV Line	~7.89 mi Wetland & TA	~4.73 mi Riparian Zone	13 stream crossings
New Larrabee Converter-Larrabee new 230-kV Line	None	None	None
Larrabee Substation Reconfiguration	None	None	None
Atlantic Substation Expansion	~15 acres on expansion parcel	~2 acres within the Riparian Zone	1 stream in vicinity expansion parcel

E. OTHER ENVIRONMENTAL AND PERMITTING IMPACTS

- *Shapefiles of cable routes, landfall locations, offshore platforms, and onshore interconnection points that show.*

Projects do not include cable routing through offshore area or leading up to onshore interconnection points; shapefiles are not applicable.

- *Width of individual cable routes or shared power corridors*

Several of the affected circuits being reconductored or rebuilt have varying width rights-of-way, mainly due to the presence of adjacent circuits of equal or different voltages. In all cases, the new facilities will be installed within the existing easements and at existing property.

- *Footprint of onshore substation including expansion needed and acreage calculations of habitat disturbance, especially related to wetlands, forested areas, or other sensitive habitats.*

Based on preliminary engineering performed, the substation expansions are expected to be approximately an acre each.

- *Description of cable installation methods with locations identified*

The relocation of a 34.5-kV Line underground (east of East Windsor) is necessary to provide clearance for a proposed 500-kV Line. Open trench construction or boring may be used.

- *General footprint and extent of Horizontal Directional Drilling (HDD) boreholes and cable landings*

From East Windsor to Cedarville Road (approx. 0.4 miles), [redacted]. Typical trench depth is 6 to 8 feet with a 4-foot width.

- *Footprint and extent of associated pre-construction and construction activities*

Construction activities shall be within the footprint of existing transmission corridors. The extent of construction activities is detailed in Attachment 1 (Gantt Chart).

- *Projected vessel traffic and/or vehicles needed for project surveys, construction, operation, and project closeout including emissions estimates from vessel and/or vehicle activity*

Typical construction vehicles will be used. Apart from the construction period, emission levels are not expected to exceed typical vehicle emission levels during routine operations.

- *Any needed exclusion zones around project infrastructure including offshore platforms*

At the time of this submittal, [redacted] does not anticipate needed exclusion zones around project infrastructure that would inhibit the construction process.

- *Plan to address the identified impacts described above, including innovative measures to avoid, minimize or mitigate impacts*

[redacted] has several methodologies they utilize throughout all phases of their projects as further described in Section VI herein.

F. ENVIRONMENTAL BENEFIT

Please provide a description of the anticipated environmental benefit of a particular transmission proposal in comparison to radial lines:

There are no anticipated impacts to fisheries. The Projects' routes are not associated with marine resources, and no permanent impact to stream corridors will result from rebuild, expansion or reconductor activities.

Impacts to suitable plant and wildlife habitat will be minimized by primarily utilizing existing JCP&L utility ROW and substation locations. Impacts as a result of tree clearing to habitat and threatened or endangered species mapped habitats will be minimized by initiating consultation with the NJDEP, Division of Land Resource Protection, Threatened and Endangered Species Unit and complying with all BMPs and restrictions presented in the NJDEP T & E Guidelines. Biological monitoring will be performed during all construction activities in those areas that are mapped as critical habitat for target species, specifically listed snake and turtle species, during the active season (spring, summer and fall). This will ensure minimization of impacts to sensitive wildlife species.

Soil erosion and sediment control monitoring will be implemented during all construction activities to ensure standard BMPs are implemented to protect regulated resources (wetlands, transition areas, waterways). This will include matting through all wetland and buffer areas for access, installation of features such as silt fence, silt sock, appropriate temporary soil stockpile locations, etc. An Environmental Construction Requirement Manual ("Manual") will be prepared for contractors that will provide all permit information, conditions, contact information, and aerial environmental resource mapping that provides the Project information, and direction regarding matting, access roads, and BMPs to be implemented. Monitoring will ensure compliance with all permit conditions and the Manual.

Permanent impacts to wetlands and transition area as a result of any substation or ROW expansion can be reduced and mitigated for by implementing wetland and buffer enhancement and restoration. Areas throughout the Projects' routes are composed of low-quality wetland areas that are either denuded or composed of monotypic stands of invasive species. These wetland and buffer areas can be restored with

appropriate native species (seeding and planting), the composition of which can be targeted to any listed threatened and endangered species in the area. Enhancement can be directed to also promote pollinator habitat. Monitoring of these areas will be performed as per NJDEP permit conditions and will ensure at least 85% success over a five (5) year period.

- *What is the reduction in impacts (approximate area) compared to radial lines, temporary and permanent?*

Not applicable. The Projects' routes are existing JCP&L interior ROWs and substation locations for interconnection. There are no oceanfront or marine Project route locations.

- *A description of whether and how the project infrastructure, including offshore platforms, could provide direct ocean and ecological observations throughout the water column;*

Not applicable. The Project routes are existing JCP&L interior ROW and substation locations for interconnection. There are no oceanfront or marine Project route locations.

Please provide a Fisheries Protection Plan that must include the following information:

- *A scientifically rigorous description of the marine resources that exist in the Project area, including biota and commercial and recreational fisheries, that is informed by published studies, fisheries-dependent data, and fisheries-independent data, and identifies species of concern and potentially impacted fisheries;*
- *A scientifically rigorous plan to detect impacts to marine resources, including biota and recreational and commercial fisheries;*
- *Identification of all potential impacts on fish and on commercial and recreational fisheries off the coast of New Jersey from pre-construction activities through project close out;*
- *A plan that describes the specific measures the Applicant will take to avoid, minimize, and/or mitigate potential impacts on fish, and on commercial and recreational fisheries;*
- *An explanation of how the Applicant will provide reasonable accommodations to commercial and recreational fishing for efficient and safe access to fishing grounds;*
- *A description of the Applicant's plan for addressing loss of or damage to fishing gear or vessels from interactions with offshore wind structures, array or export cables, survey activities, concrete mattresses, or other Project-related infrastructure or equipment.*

Not applicable. The Projects are not associated with any marine resources. Any waterways identified are stream/waterway resources that will not be impacted, and do not provide commercial or recreational fishery opportunities.

Please provide a description of how the Applicant will identify (or has identified) environmental and fisheries stakeholders, and how the Applicant proposes to communicate with those stakeholders during preconstruction activities through project closeout, as well as a plan for transparent reporting of how stakeholders' concerns were addressed.

Not applicable.

Please provide an analysis showing that project infrastructure will not impact overburdened communities in a disproportionate fashion.

The Projects are in existing JCP&L easements and at existing JCP&L properties. [redacted] does not anticipate disproportionate impacts on overburdened communities from the Projects. To avoid disproportionate impacts, environmental justice evaluations, including the use of EJSCREEN, are becoming standard

practice in all [redacted] project/permitting activities. EJSCREEN is an environmental justice mapping tool developed by the Environmental Protection Agency ("EPA") that utilizes environmental and demographic indicators based on nationally consistent data. The demographic indicators include income, education, language, race, and age.

G. PERMITTING

Please provide a description of the applicant's permitting plan that includes the following:

- *Identify all local, State and/or Federal permits and/or approvals required to build and operate the Project and the strategy and expected time to obtain such permits and/or approvals;*

1. Local / Other Permits

- Municipal Building and/or Zoning Permit
- Municipal Road Permits (Hauling, Opening, etc)
- Local Site Plan Approval, if applicable
- Railroad Crossing Permits
- Local Approval for Helicopter Construction, if applicable
- Section 401 Water Quality Certification (WQC)
- County Soil Conservation District Approval for any Projects with soil disturbance greater than 5,000 SF

2. State Permits

- New Jersey Board of Public Utilities ("NJBPU") Petition
- Approval through Department of Community Affairs ("DCA"), if applicable.
- Approval through State Agriculture Development Committee ("SADC"), if applicable.
- New Jersey Transit Crossing Permit
- New Jersey Department of Transportation ("NJDOT") Crossing Permit
- New Jersey Department of Transportation ("NJDOT") Over-sized Load Permit
- New Jersey Turnpike Authority Crossing Permit
- New Jersey Department of Transportation ("NJDOT") - Aviation Review, if applicable.
- New Jersey Department of Environmental Protection ("NJDEP") Green Acres Approval
- New Jersey Historic Preservation Office ("HPO") concurrence, as applicable.
- [redacted]
- As necessary for impacts to regulated areas (i.e., wetlands, transition areas, flood hazard area, riparian areas, and flood hazard area) that are outside of the blanket permit authorization, an application will be submitted to the NJDEP for the applicable permitting.

3. Federal Permits:

- Federal Aviation Administration ("FAA") Notification for helicopter construction is anticipated.

Provide documentation of consultation with USACE beach replenishment projects and sand borrow areas, if applicable;

Not applicable. No beach or oceanfront Project locations.

Identify all applicable Federal and State statutes and regulations and municipal code requirements, with the names of the Federal, State, and local agencies to contact for compliance;

- NJDEP Freshwater Wetlands Protection Act Rules (N.J.A.C.7:7A)
- NJDEP Flood Hazard Area Control Act Rules (N.J.A.C.7:13)
- NJDEP Coastal Zone Management Rules (N.J.A.C.7:7)
- The Standards for Soil Erosion and Sediment Control in New Jersey
- Highlands Water Protection & Planning Act Rules (N.J.A.C.7:38)

Submit a land use compatibility / consistency matrix to identify local zoning laws and the consistency of applicant's activities in each local jurisdiction;

Table VII-5: Land Use Matrix

Project	Municipality	County
Larrabee Converter-Smithburg Substation Rebuild 500/230 kV	Howell Township Freehold Township	Monmouth
	Lakewood Township Jackson Township	Ocean
H2008 Larrabee to Smithburg 230-kV Reconductor	Howell Township Freehold Township	Monmouth
	Lakewood Township Jackson Township	Ocean
New Larrabee Converter-Atlantic Substation 230-kV Line	Neptune Township Tinton Falls Borough Colts Neck Township Howell Township	Monmouth
New Larrabee Converter-Larrabee new 230-kV Line	Howell Township	Monmouth
Larrabee Substation Reconfiguration	Howell Township	Monmouth
Atlantic Substation Expansion	Colts Neck Township	Monmouth

For the substation upgrades, [redacted] will work with the appropriate municipal agencies to acquire any necessary site plan approvals and construction permits. For the transmission lines, [redacted] will cooperate with the municipalities and where required, obtain the necessary approvals for construction. As the Projects involve upgrades and expansions of existing facilities, the work proposed is consistent and compatible with local land use devoted to a utility purpose.

- *Identify each appropriate State or Federal agency the Applicant has contacted for land acquisition issues and provide a summary of the required arrangements;*

Not applicable. Projects' routes and properties are JCP&L and FirstEnergy property. No property acquisition on state or federally owned land is anticipated.

- *Include copies of all submitted permit applications and any issued approvals and permits; and*
- *Include copies of all filings made to any other regulatory or governmental administrative agency including, but not limited to, any compliance filings or any inquiries by these agencies.*

Attachment 4 [redacted]