



# 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:

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Board of Public Utilities  
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# I. SAA Policy Objectives

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*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.*

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## 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 1a  
PJM Proposal ID: 2021-NJOSW-17

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

[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]

[REDACTED] has a strong commitment to a green future, [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[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]  
[REDACTED]  
[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]  
[REDACTED] [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] has successfully implemented  
[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

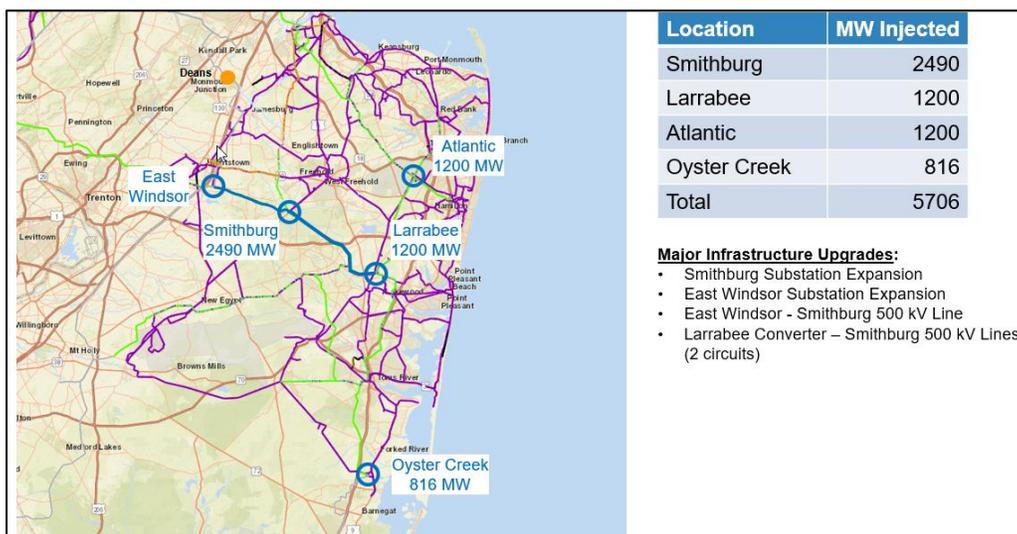
*In addition to the project details requested by PJM, please provide below a narrative description of the proposed project(s) and options; document the projected benefits in terms of design, flexibility, ratepayer costs, and environmental impacts; identify major risks of (such as delay or non-completion 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 upgrades proposed in this Option 1a Submittal (2021-NJOSW-17) and expansions proposed in the Option 1b Submittal (2021-NJOSW-453), 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 1a Submittal and in the Option 1b 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**



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## A. NARRATIVE DESCRIPTION OF PROPOSED PROJECT(S)

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*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.*

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### 1. Upgrades 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 NJBPU 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 NJBPU selected 1,510 MW to inject at the Atlantic City Electric Company-owned Cardiff 230-kV Substation and 1,148 MW to inject at the JCP&L-owned Smithburg Substation.

With the combined addition of 3,758 MW into the grid, JCP&L has flagged capacity violations on the Oyster Creek-Manitou 230-kV Lines. In addition to the reconductoring of the lines to a higher ampacity, the remote end terminal equipment at both Oyster Creek and Manitou Substations will need to be upgraded to handle the additional capacity. [REDACTED] plans to construct a new 500-kV line in the existing East Windsor-Smithburg corridor, as well as reductor the existing East Windsor-Smithburg E2005 230-kV Line. At the Smithburg Substation, a new transformer will be installed to accommodate the new 500-kV line. [REDACTED] has in parallel proposed in the Option 1b submittal solutions to the violations caused at the Smithburg Substation.

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. The durations include the engineering, design, construction, and commissioning process for each upgrade.

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

| Option        | Name   | Description  | Cost Estimate (million) <sup>1</sup> | Duration (months) | Proposed ISD |
|---------------|--|--|--------------------------------------|-------------------|--------------|
| 1a            | Reconductor Oyster Creek-Manitou No.1 (N1018) 230-kV         | Reconductor the Oyster Creek-Manitou N1028 230-kV Line. Update remote end equipment at Oyster Creek and Manitou.   | \$24                                 | 30                | 6/1/2026     |
| 1a            | Reconductor Oyster Creek-Manitou No.2 (O1029) 230-kV         | Reconductor the Oyster Creek-Manitou O1029 230-kV Line. Update remote end equipment at Oyster Creek and Manitou.   | \$28                                 | 32                | 12/1/2026    |
| 1a            | Build New East Windsor-Smithburg 500-kV Line                 | Construct a new 500-kV Line from East Windsor-Smithburg sharing the same structure as the existing East Windsor-Smithburg E2005 230-kV Line. Rebuild the existing 6-wired East Windsor-Smithburg E2005 230-kV Line. Expand the East Windsor 500-kV Ring by installing an additional breaker. | \$237                                | 49                | 6/1/2027     |
| 1a            | Smithburg 500 kV, 230 kV- Install-2nd-500/230 kV Transformer | Install 500-kV Breaker Position for the new transformer. Install a new 500/230-kV Transformer. Add a new string on the 230-kV Breaker and a half station at Smithburg for a position for the new 500/230-kV Transformer.   | \$15                                 | 49                | 6/1/2027     |
| <b>Total:</b> |  |  | <b>\$304</b>                         |                   |              |

<sup>1</sup> – Costs are included as in-service costs; AFUDC is excluded.

## 2. Upgrades for Solicitation 3 – Larrabee Substation Injection

██████ proposes the injection of 1,200 MW to support Solicitation 3 at the existing JCP&L-owned 230-kV Larrabee Substation. There are no necessary Option 1a upgrades required for the injection at the Larrabee Substation. Expansions to substations and transmission lines at the Larrabee Converter Station are discussed later in Section III.B.1 and the Option 1b Submittal.

## 3. Upgrades for Solicitation 4 – Atlantic Substation Injection

██████ proposes an injection of 1,200 MW at the existing JCP&L-owned 230-kV Atlantic Substation. The additional capacity injected at the Atlantic Substation will cause an overload on the Lake Nelson-Kilmer Line will need to be reconducted and related equipment replaced. The Middlesex Circuit Switcher for the Lake Nelson I1023 Line will also need to be replaced. The total cost of Option 1a upgrades for this Project is estimated to be \$7 million, and the Solicitation 4 upgrades are proposed to be in service by June 2030. Table III-2 below details the proposed Option 1a upgrades with the estimated cost, duration, and proposed ISD for each.

**Table III-2: Solicitation 4 Cost and Duration Estimates**

| Option        | Name  | Description   | Cost Estimate (million) <sup>1</sup> | Duration (months) | Proposed ISD |
|---------------|---|---|--------------------------------------|-------------------|--------------|
| 1a            | Reconductor Lake Nelson-Kilmer 230-kV Line                            | Reconductor the Lake Nelson-Kilmer Section on the I1023 230-kV Line.                    | \$6                                  | 25                | 6/1/2030     |
| 1a            | Replace Middlesex Circuit Switcher for the Lake Nelson I1023 Terminal | Replace the Circuit Switcher at Middlesex Switch point for the Lake Nelson 230-kV exit. | \$1                                  | 10                | 6/1/2030     |
| <b>Total:</b> |   |   | <b>\$7</b>                           |                   |              |

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

#### 4. Upgrades for Solicitation 5 – Additional Smithburg Substation Injection

█ 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 generation through the Smithburg and East Windsor Substations. The proposed injection minimizes the impact on the communities and environment that would otherwise be impacted by a new transmission line built directly to Public Service Electric and Gas Company’s (“PSEG’s”) Deans Substation.

The additional capacity injected at the Smithburg Substation will cause an overload on the Clarksville-Lawrence and Clarksville-Windsor Lines. These transmission lines will need to be reconducted and related equipment replaced. The total cost of Solicitation 5 upgrades in this Option 1a Submittal is estimated to be \$23 million, and the Solicitation 5 upgrades are proposed to be in service by June 2032. Table III-3 below details the proposed Option 1a upgrades with the estimated cost, duration, and ISD for each.

**Table III-3: Solicitation 5 Upgrade Cost and Duration Estimates**

| Option        | Name   | Description   | Cost Estimate (million) <sup>1</sup> | Duration (months) | Proposed ISD |
|---------------|--|---|--------------------------------------|-------------------|--------------|
| 1a            | Six Wire Windsor-Clarksville (C1017) Line Section      | Rebuild the section of existing span of the Windsor-Clarksville 230-kV Line and the line drops to Windsor. Replace Windsor Substation equipment | \$4                                  | 29                | 6/1/2032     |
| 1a            | Reconductor the Clarksville-Lawrence D1018 230-kV Line | Reconductor the Clarksville-Lawrence (D1018) 230-kV Line Section.   | \$19                                 | 29                | 6/1/2032     |
| <b>Total:</b> |  |   | <b>\$23</b>                          |                   |              |

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



**Table III-4: Proposed In-Service Date by Solicitation**

| Offshore Wind Solicitation | Capacity (MW)  | Estimated COD | Corresponding POIs (Substations)                     | Proposed ISD                          |
|----------------------------|----------------|---------------|--|---------------------------------------|
| 1                          | 816<br>432     | 2024-25       | Oyster Creek 230 kV<br>BL England 138 kV             | No projects included in this proposal |
| 2                          | 1,510<br>1,148 | 2027-29       | Cardiff 230 kV<br>Smithburg 500 kV (first injection) | 6/1/2027                              |
| 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                                      | 6/1/2032                              |

## 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.*

██████████ 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. ██████████ 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.

██████████ 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 ██████████



██████████ This solution is expected to have great benefits for PJM in the coordination and implementation of new or upgraded infrastructure.

Given that ██████████ is proposing an alternative POI to the PJM base case solution, some of the violations identified by PJM are no longer applicable. Table III-6 details the violations and costs that will be avoided in the selection of ██████████ solution.

**Table III-6: Mitigated External Violations**

| Name  | Transmission Owner | Estimated Cost (Million) |
|---|--------------------|--------------------------|
| Deans-Brunswick 230 kV                          | PSEG               | \$7 <sup>1</sup>         |
| Hope Creek-LS Power Cable East 230 kV Circuit 1 | PSEG / SRE         | \$20 <sup>2</sup>        |
| Hope Creek-LS Power Cable East 230 kV Circuit 2 | PSEG / SRE         | \$20 <sup>2</sup>        |
| Richmond-Waneeta 230 kV                         | PECO               | \$19 <sup>1</sup>        |

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

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*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.*

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The Projects would provide significant benefits in the fact that they utilize existing transmission corridors and build upon existing substation infrastructure. ██████████ ██████████ ██████████ is committed to ██████████ 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

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*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.*

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The primary driver of risk mitigation in cost, schedule, constructability, and environmental impact is the ability for ██████████ to buildout the proposed infrastructure within existing corridors and at existing substations. In development of this proposal, ██████████ reviewed the existing facilities and performed preliminary engineering for the Projects including coordination with the transmission operations team



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

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*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.*

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

## IV. Proposal Benefits

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*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.*

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### A. RELIABILITY BENEFITS

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*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.*

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

Through planned investments [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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

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

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*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*

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

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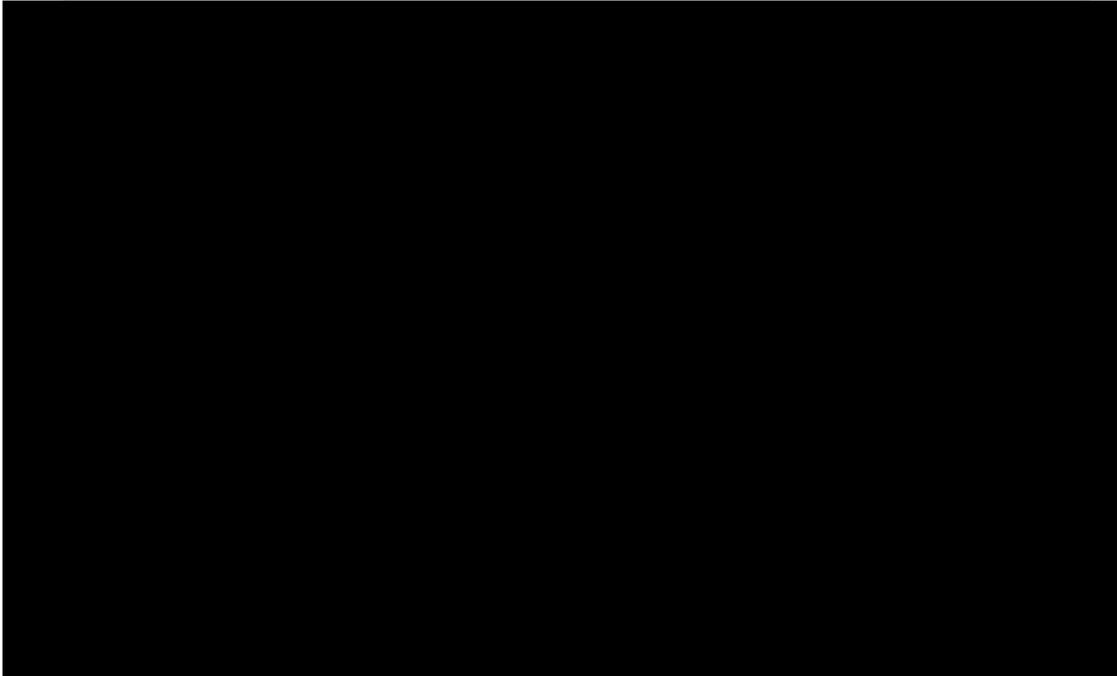
Along the Projects' routes, there have been [REDACTED]  
[REDACTED]  
[REDACTED] see [Attachment 3](#) [REDACTED]  
[REDACTED] for further details.

[REDACTED] has a strong record of responding quickly and safely to service interruptions. [REDACTED]  
[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] new fiber optic-cable across its system 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]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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

**Figure IV-1 –** [REDACTED]



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

As a whole, [REDACTED] [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]

[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]  
[REDACTED]  
[REDACTED]  
[REDACTED]

[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]  
[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] [REDACTED] [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] system. [REDACTED]  
[REDACTED]

[REDACTED] This experience and 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]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] Many of the upgrades proposed will include replacing infrastructure with newer, more resilient equipment. [REDACTED]  
[REDACTED]  
[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]  
[REDACTED]  
[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]

[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.



## 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]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[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] 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 [REDACTED] 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]  
[REDACTED]  
[REDACTED] No additional incentive adders have been included.

## 8. Exceptions to Cost Cap

Not applicable.

---

## B. PRE-DETERMINED REVENUE REQUIREMENTS

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*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:*
- 

The estimated energy loss for the new and upgraded facilities proposed in [REDACTED] Option 1a proposal as compared to the 2026 RTEP Summer case is a reduction of 1.6MW of losses.

---

- *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.





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.*
- 

There is often outage competition in the New Jersey service territory for planned construction.

[REDACTED]  
[REDACTED]  
[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

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*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).

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### **B. BIOLOGICAL RESOURCES**

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- *Biological Resources- avian and bat species, benthic and shellfish, coastal and terrestrial habitat, finfish 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   | Marine Archaeology | Terrestrial Archaeology |
|--|--------------------------------|--|--------------------|-------------------------|
| Smithburg to East Windsor Rebuild 500/230-kV                         | 8 Agress Road & Davidson House | 1mi. through NJ Homestead  | None               | Grid DL157              |
| Smithburg & East Windsor Substation Expansions                       | None                           | None   | None               | None                    |
| Clarksville-Windsor 230-kV Reconductor                               | None                           | None   | None               | None                    |
| Clarksville-Lawrence 230-kV Rebuild                                  | None                           | None   | None               | None                    |
| Oyster Creek-Manitou 230-kV Reconductor                              | None                           | Portion of Garden State Parkway Historic District  | None               | Grids E1201/EJ194       |
| Lake Nelson-Kilmer Line Section of the I1023 230-kV Line Reconductor | None                           | Camp Kilmer Military Reservation Historic District; Inch Lines Linear MultiState Historic District | None               | 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 19.2 miles of the 500-kV Smithburg to East Windsor 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**

██████████ is committed to creating a framework to implement activities that promotes environmental justice ██████████, 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 all ██████████ 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**

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

#### **10. Economy**

██████████ 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 |
|--|---|----------------|----------------|
| Smithburg to East Windsor Rebuild 500/230-kV                         | Wood Turtle<br>Pine Barrens Treefrog<br>Barred Owl<br>Swamp Pink  | 5 Potential    | None           |
| Smithburg Substation Expansion                                       | Barred Owl & Pine Barrens Treefrog<br>Swamp Pink – None in the expansion area, species found <u>south</u> of Project area | None           | None           |
| East Windsor Substation Expansion                                    | None  | None           | None           |
| Clarksville-Windsor 230-kV Reconductor                               | American Kestrel (Mapped on the other side of the structure due for maintenance)  | None           | None           |
| Clarksville-Lawrence 230-kV Rebuild                                  | Indiana Bat<br>Northern Long-eared Bat  | None           | None           |
| Oyster Creek-Manitou 230-kV Reconductor                              | Northern Pine Snake<br>Timber Rattlesnake<br>Pine Barrens Treefrog<br>Barred Owl<br>Endangered Plants                     | 1 Potential    | None           |
| Lake Nelson-Kilmer Line Section of the I1023 230-kV Line Reconductor | Bald Eagle foraging (nest over 3 mi away)<br>Indiana Bat (Potential Range)  | None           | None           |

**Table VII-3: GIS Desktop Study (Wetlands)**

| Project  | Wetland & Transition Areas | Riparian Zone/ FHA     | Waterways/ State Open Waters |
|--|----------------------------|------------------------|------------------------------|
| Smithburg to East Windsor Rebuild 500/230-kV                         | ~3.6 miles Wetland & TA    | ~1.0 mi Riparian Zone  | 12 stream crossings          |
| Smithburg Expansion  | TBD                        | TBD                    | 2 streams (vicinity)         |
| East Windsor Substation Expansion                                    | TBD                        | TBD                    | None                         |
| Clarksville-Windsor 230-kV Reconductor                               | ~0.03 mi TA                | None                   | None                         |
| Clarksville-Lawrence 230-kV Rebuild                                  | ~0.5 mi Wetland & TA       | ~.14 mi Riparian Zone  | 2 stream crossings           |
| Oyster Creek-Manitou 230-kV Reconductor                              | ~4.75 mi Wetland & TA      | ~3.5 mi Riparian Zone  | 17 stream crossings          |
| Lake Nelson-Kilmer Line Section of the I1023 230-kV Line Reconductor | ~1.2 mi Wetland & TA       | ~0.78 mi Riparian Zone | 4 stream crossings           |

**Table VII-4: GIS Desktop Study (Waterways)**

| Project  | Waterways            | Classification         |
|--|----------------------|------------------------|
| Smithburg to East Windsor Rebuild 500/230-kV                         | 12 stream crossings  | FW2-NT                 |
| Smithburg Substation Expansion                                       | 2 streams (vicinity) | FW2-NT/C1 (Category 1) |
| East Windsor Substation Expansion                                    | None                 |                        |
| Clarksville-Windsor 230-kV Reconductor                               | None                 |                        |
| Oyster Creek-Manitou 230-kV Reconductor                              | 17 stream crossings  | Majority PL            |
| Lake Nelson-Kilmer Line Section of the I1023 230-kV Line Reconductor | 4 stream crossings   | FW2-NT                 |

## 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 reconducted 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.

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## 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.

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- *A description of whether and how the project infrastructure, including offshore platforms, could provide direct ocean and ecological observations throughout the water column;*
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Not applicable. The Project routes are existing [REDACTED] & [REDACTED] interior ROW and substation locations for interconnection. There are no oceanfront or marine Project route locations.

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*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.

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*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.*

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Not applicable.

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

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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.

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## G. PERMITTING

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*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]
- [REDACTED]
- [REDACTED]
- [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.

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

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**Not applicable. No beach or oceanfront Project locations.**

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*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;*

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- 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)

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

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**Table VII-5: Land Use Matrix**

| Project  | Municipality   | County    |
|--|--|-----------|
| Smithburg to East Windsor Rebuild 500/230-kV                         | Freehold Township<br>Millstone Township<br>Roosevelt Borough                             | Monmouth  |
|  | East Windsor Township  | Mercer    |
| Smithburg & East Windsor Substation Expansions                       | Freehold Township  | Monmouth  |
|  | East Windsor Township  | Mercer    |
| Clarksville-Windsor 230-kV Reconductor                               | Robbinsville Township<br>West Windsor Township<br>Hamilton Township<br>Lawrence Township | Mercer    |
| East Windsor-Windsor 230-kV Reconductor                              | East Windsor Township<br>Robbinsville Township   | Mercer    |
| Clarksville-Lawrence 230-kV Rebuild                                  | Lawrence Township  | Mercer    |
| Oyster Creek-Manitou 230-kV Reconductor                              | Lacey Township<br>Berkley Township<br>South Toms River Borough                           | Ocean     |
| Lake Nelson-Kilmer Line Section of the I1023 230-kV Line Reconductor | Piscataway Township  | Middlesex |

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.

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- *Identify each appropriate State or Federal agency the Applicant has contacted for land acquisition issues and provide a summary of the required arrangements;*
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Not applicable. Projects' routes and properties are JCP&L and FirstEnergy property. No property acquisition on state or federally owned land is anticipated.

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- *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.*
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Attachment 4 [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]