Constructability Report: Option 1a Proposals

2021 SAA Proposal Window to Support NJ OSW

September 19, 2022

For Public Use

The information contained herein is based on information provided in project proposals submitted to PJM by third parties through its 2021 SAA Proposal Window. PJM analyzed such information for the purpose of identifying potential solutions for NJ BPU's consideration as contemplated under the SAA Agreement, FERC Rate Schedule No. 49. Any decision made using this information should be based upon independent review and analysis, and shall not form the basis of any claim against PJM.

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Introduction

Background

As part of the 2021 SAA Proposal Window to support NJ Offshore Wind ("OSW"), PJM received proposals to meet New Jersey's goal of interconnecting up to 7,500 MW of offshore wind. The proposals were categorized into four options according to the function and location of the proposal.

- Option 1a proposals: Onshore transmission upgrades 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).
- Option 1b proposals: Onshore new transmission connection facilities
- Option 2 proposals: Offshore new transmission connection facilities
- Option 3 proposals: Offshore new transmission network facilities

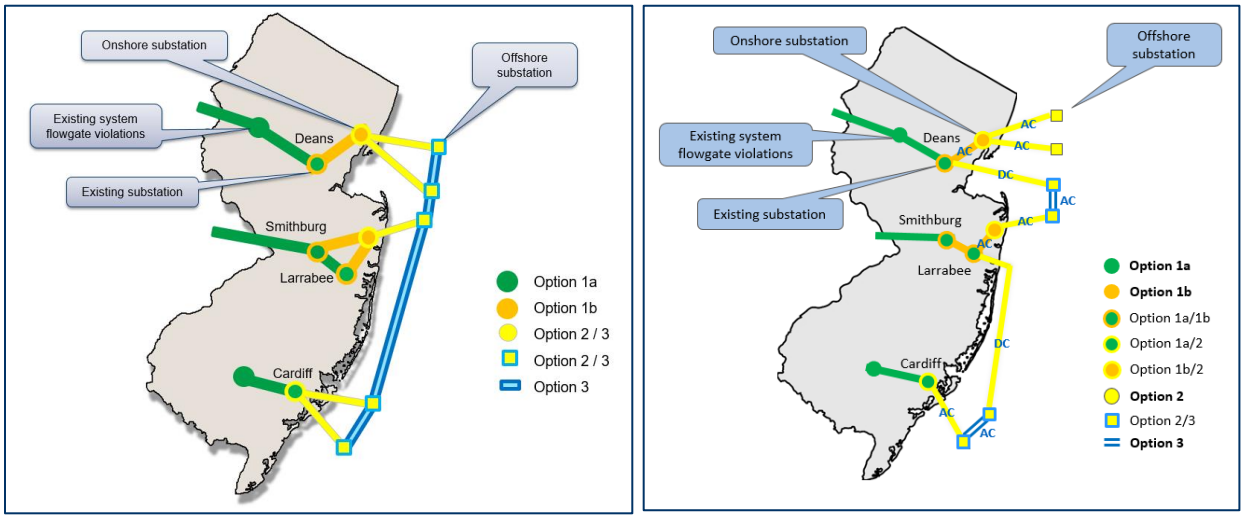

Figure 1 Potential Options for the NJ Offshore Wind Transmission Solution (Concepts depicted are for illustration purposes only; details of new lines and facilities are to be provided by sponsors in proposals to meet objectives of this solicitation.)

Altogether, PJM received a diverse set of 80 proposals submitted by 13 different entities each falling into one or more of the four options described above.

Option 1a Problem Statement

This report focuses projects that were submitted to address the Option 1a problem statement, which is to address reliability violations on existing and planned PJM transmission facilities, both onshore and offshore, resulting from the injections at identified points of injection (POI) representing future offshore wind generation and the transmission facilities necessary to connect the offshore wind to the PJM grid.

Option 1a proposals may resolve one or more reliability violations, whether independently or in combination with other proposals or portions of proposals. Proposals for Option 1a should be complete and responsive in addressing the reliability criteria specified in the appendix of the Proposal Window Overview document and consider the system needs identified in all four problem statements.

Option 1a proposals should not be dependent on the implementation of work identified in the other options, i.e., Options 1b, 2 or 3. However, the Option 1a proposals that are ultimately selected by PJM and the NJBPU will need

to satisfy all reliability criteria for the final set of POIs, injection amounts and proposals awarded for Options 1b, 2 and 3. Any expected interdependencies with other proposals for the various options should be clearly described in the proposal submission.

Objective

This report incorporates the results of reviews performed by PJM and its consultants to evaluate the extent to which each submitted Option 1a proposal identified, addressed, and mitigated the constructability, environmental, and permitting challenges of the proposed solution. These reviews included evaluation of project scope, complexity and constructability factors that impact the project cost and/or schedule including but not limited to right-of-way acquisition, land acquisition, siting and permitting requirements, project complexity, project coordination complexity, outage coordination and project schedule.

General Approach

PJM reviewed the information submitted by the proposing entities for each proposal, which included the following:

- Completed PJM Proposal Submittal Template (including project description, value proposition to NJ and cost control and risk mitigation measures)
- Completed BPU Supplemental Offshore Wind Transmission Proposals Data Collection Form – consisting of supplemental information related to proposals, including: a narrative description of the proposed project(s) and options; documentation of the projected benefits in terms of design, flexibility, ratepayer costs, and environmental impacts; an identification of 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); strategies to limit risks to NJ customers; and cost recovery and containment provisions.
- Project diagrams and schedules
- Technical analysis files and documentation

With the submitted information, PJM and its consultants conducted a detailed review of each project, and the findings are detailed in this report. The following is an outline of the general approach followed for evaluation of the projects:

1. Environmental (Regulatory) Analysis: Examine each Project utilizing available public-sector data, aerial photographs, and internet based real estate records to determine if the Project is feasible and to identify potential regulatory permitting risks. The following is a list of the subtasks that are performed as part of this task:

    a) Conduct a desktop review to identify significant barriers that might add additional risk to the Project and determine whether the proposed Project area (a Study Area which is defined for each project) can support the economical construction of the electric transmission and/or substation facilities

    The following target information will be referenced by as required and as allowable by available public data sources:

    - National Wetland Inventory mapping from United States Fish and Wildlife Service (USFWS), which will include counts and acreages of:
        - Total Wetlands;

- Non-Tidal (Non-Forested) Wetlands;
- Non-Tidal (Forested) Wetlands;
- Total Non-Tidal Wetlands;
- Wetlands of Special State Concern; and
- Subaqueous Lands.

- Mapping of specially designated wetlands, streams, or rivers, which will include:
  - Non-Tidal Waterbodies (Count/Acres);
  - 100-Year Floodplain (Acres);
  - Watershed Boundaries (Count);
  - Outstanding and Exceptional Waters (Count);
  - Wild and Scenic Rivers (Count); and
  - United States Geologic Survey Blue Line Streams (Count).
- United States Department of Agriculture(USDA)/The Natural Resources Conservation Service (NRCS) Land Cover mapping, which will include acreages of:
  - Sub-Aquatic Vegetation;
  - Forested Uplands;
  - Unforested Uplands; and
  - Agricultural Lands.
- Land Use Mapping, which will include:
  - Residences within 100 feet (Count);
  - Residences within 250 feet (Count);
  - Land Zoned Conservation (Acres);
  - Rural Legacy (Acres);
  - Program Open Space (Acres);
  - Private Conservation Easements (Acres & Count);
  - Public Land (Acres & Count);
  - Parcels Crossed (Count);
  - Green Infrastructure/Green Acres program (Acres);
  - National Estuarine Research Reserve Project Areas (Acres & Count);
  - Natural Heritage Areas (Acres & Count);

- Environmental Trust Easements (Acres & Count);
- Forest Legacy Easements (Acres & Count); and
- Tidelands.

For projects located in NJ, using the NJDEP's Bureau of GIS' "State, Local and Nonprofit Open Space of New Jersey" dataset (2022) each Study Area was reviewed for US National Parks, NJ State Forests and Parks, NJ Fish and Wildlife management areas, Natural Lands Trust Preserves, and County, Municipal, and nonprofit preserves, conservation areas, parks, and recreation areas. This database was also used to identify NJ Green Acres Program encumberment status. NJ Farmland Preservation Program's preserved farmland database (2022) was reviewed for agricultural easements. NJ Coastal Management Program's list of Excluded Federal Lands was reviewed as was New Jersey Public Access Locations Search Tool for NJDEP's lands and waters subject to public trust rights.

- Public Lands Mapping Review, will include the types, counts, and acreages of the following:
  - State/National Forests;
  - Natural Areas;
  - Preserves;
  - Game Lands; and
  - Recreation Areas
- Cultural Resources Mapping Review, including the count of previously identified resources, which will include the types, counts, and acreages of the following:
  - Listed and Eligible Historic Structures;
  - Listed and Eligible Historic Districts; and
  - Listed and Eligible Archeological Sites.

  For projects located in NJ, the NJ Historic Preservation Office's data sets for historic districts, historic properties, and archaeological site grids were used to determine the presence of cultural resources in each the Study Area.
- Aquatic Resource Mapping, including the count of Submerged Historic Resources (if applicable);
- Online distribution data of Rare, Threatened, and Endangered species within a 0.5 mile radius of the Study Area;
  - This review was conducted utilizing the United States Fish and Wildlife Service (USFWS) maintained Information for Planning and Consultation (IPaC) online tool, NatureServe Explorer Pro online mapping tool, and the List of TE Species of NJ published by the NJDEP.
- Major utility and transportation (roads and rail lines) corridors.

b) Identify those permits and agency consultations that are complex and require long lead times, therefore, potentially significantly affecting the project in-service date. Specifically, evaluate federal and state authorizations required for potential impacts to sensitive environmental resources such as wetlands, rivers and streams, coastal zone management areas, critical habitats, wildlife refuges, conservation land, rare, threatened, and endangered species The assessment will result in a preliminary list of potential siting issues and permits that could impact cost and/or schedule including estimated Agency review times. Anticipated permit requirements may include the following:

- U.S. Army Corps of Engineers (USACE) – Section 404 Clean Water Act and Section 10 Rivers and Harbors Act;
- U.S. Fish and Wildlife Service (USFWS) – Section 7 Endangered Species Act, Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Acts;
- U.S. Forest Service – National Forest Special Use Permit and Archaeological Protection Resources Act;
- National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service - Magnuson-Stevens Fishery Conservation and Management Act (MSA);
- U.S. Bureau of Ocean Energy Management
- U.S. Bureau of Land Management – Right-of-Way Grant and Archaeological Protection Resources Act;
- Federal Aviation Administration (FAA) – Obstruction Determination and FAA Hazard Evaluation;
- U.S. Coast Guard – Aids to Navigation;
- State Commission approvals;
- State Agency – Rare, threatened, and endangered species issues and clearance requirements;
- State Historic Preservation Office (SHPO) and clearance requirements;
- State Agency - Section 401 Water Quality Certifications and other applicable water permits;
- State Agency – National Pollutant Discharge Elimination System permit;
- Local and/or State floodplain permit requirements; and
- State Department of Transportation and clearance requirements.

c) Identify potential high-level risks and items that may require protracted permitting timeframes or that may raise serious issues during the permitting process.

2. Transmission Line Analysis: Review of transmission line modifications proposed based on desktop reviews investigating routing, conductor size and length, rights-of-way (ROW) and easements, structures, and construction required.

3. Substation Analysis: Review of substation modifications proposed based on industry practices to estimate the equipment, bus and general layout required.

4. Construction Schedule: Prepare a preliminary Project schedule for each Project. The Project schedule will be broken into four (4) project phases: Engineering; siting and major permit acquisition; long lead equipment procurement; and construction and commissioning. Any significant risks to the Project schedule will be discussed.

5. Cost Review: Prepare preliminary estimate for each project based on engineering expertise and the most recent material and equipment costs. Costs will be broken into seven (8) categories, as required: materials and equipment; engineering and design; construction and commissioning; permitting/routing/siting; right of-way (ROW)/land acquisition; construction management; company overheads and other miscellaneous costs; and project contingency. Prepare a summary of the cost estimating technique and assumptions used for the costs.

Jersey Central Power & Light Company (JCPL) Proposal

Executive Summary

Jersey Central Power & Light Company ("JCP&L") is a subsidiary of the electric public utility company FirstEnergy. JCP&L proposes one Option 1b proposal (Proposal ID 453), and an Option 1a proposal (Proposal ID 17), jointly to allow the injection of 6400 MW of offshore wind generation at the proposed POIs, and address the associated violations identified.

This report focuses on the results of the independent evaluation of Proposal ID 17 (Project), which includes upgrades to address violations caused by offshore wind points of injections at the Cardiff, Smithburg, Larrabee, and Atlantic substations in Ocean, Monmouth, Mercer, and Middlesex Counties, NJ. The Project components satisfy the violations caused by the injection of 6,400 MW by upgrading and strengthening the grid.

Table 1. **JCPL Proposal 453**

Proposal ID(s)	Description(s)	Notes
17	2021 SAA Proposal to Support NJ OSW: Option 1a	Compatible with JCPL Option 1B Proposal 453

Proposal 17

Project Overview

The Project proposes to resolve the following PJM identified flowgates:

28-GD-L14, 28-GD-S2-S1, 28-GD-S2-S11, 28-GD-S2-S2, 28-GD-S2-S3, 28-GD-S2-S8, 28-GD-S2-S9, 28-GD-S2-W102, 28-GD-S2-W6, 28-GD-S2-W7, 28-GD-S2-W89, 28-GD-S2-W91, 28-GD-S2-W92, 28-GD-S2-W94, 28-GD-S2-W95, 28-GD-S2-W97, 28-GD-S2-W98, 28-GD-S64, 28-GD-S65, 28-GD-S66, 28-GD-S72, 28-GD-W108, 28-GD-W109, 28-GD-W15, 28-GD-W17, 28-GD-W18, 28-GD-W21, 28-GD-W22, 28-GD-W3, 28-GD-W6, 28-GD-W8, 35-GD-L14, 35-GD-S2-S2, 35-GD-S2-W10A, 35-GD-S2-W11, 35-GD-S2-W13, 35-GD-S2-W14, 35-GD-S2-W15, 35-GD-S2-W16, 35-GD-S2-W18, 35-GD-W16, 35-GD-W22, 35-GD-W23, 35-GD-W4, 35-GD-W7, 35-GD-W9

The scope of work for the Project consists of the following:

- Reconductoring the two Oyster Creek – Manitou 230kV circuits,
- Upgrading the remote end terminal equipment at Oyster Creek and Manitou substations,
- Rebuilding the East Windsor – Smithburg E2005 230kV line as a double circuit 500kV/230kV line,
- Upgrading equipment at East Windsor and Smithburg substations,
- Relocating the Smithburg – Deans T5020 500kV line at Smithburg substation,
- Converting the K137 Windsor – Twin Rivers – Wyckoff Street 34.5kV to underground outside of East Windsor substation,
- Converting the X752 Jerseyville-Smithburg 34.5kV and B158 Gravel Hill Smithburg 34.5kV lines to underground outside of Smithburg substation,
- Reconductoring one span of the C1017 Clarksville-Windsor 230kV line into Windsor substation, replacing the deadend structure and upgrading equipment at Windsor substation,

- Rebuilding a section of the D1018 Clarksville – Lawrence and Hopewell – Lawrence 230kV double circuit line,
- Reconductoring the Lake Nelson-Kilmer No. 1 230kV line between Lake Nelson and Kilmer substations, and upgrading equipment at Middlesex substation.

Constructability Summary

Project 17 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Components of this project run through Green Acres-encumbered properties. However, given that the project uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- Components of this project run through Pineland management areas. However, given that the project uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.

Transmission Line Analysis:

- If the existing structure conditions and new conductor loads warrant a rebuild, cost and schedule will be impacted.
- Reconductoring the lines instead of rebuilding could result in higher maintenance costs in the future
- Vertical design with 500kV over 230kV will result in very tall structures and could result in siting issues or FAA issues.
- Multiple outages and coordination will be required for all existing line reconductors and rebuilds.

Schedule:

- Using the longest component as the critical path, the project is estimated to take approximately 36 months.
- The entity's schedule does not include permitting timelines
- The entity's overall project schedule of 17 months seems aggressive.

Cost Review:

- Independent cost estimate: $126,712,697
- Entity's cost estimate: $288,459,584
- Component 7's total cost seems high for 1 span.
- Component 19 has no contingency.
- Costs for Construction Management seem high across all components.

Constructability Reviews

Proposal 17

Desktop Review

The on-shore portion of Project 17 is comprised of aerial transmission line work in five locations, underground transmission line work in two locations, and the expansion of a substation.

- The East Windsor-Smithburg component consists of a rebuilding of an aerial 230 kV line and adding an aerial 500 kV line within approximately nine miles of existing right-of way (ROW).
- The modifications in the East Windsor-Smithburg ROW will require that approximately 0.3-mile of the Windsor-Twin River-Wyckoff St 34.5 kV line be moved underground near the East Winsor Substation.
- Additionally, the modifications in the East Windsor-Smithburg ROW will require that approximately 0.2-mile of the Gravel Hill-Smithburg 34.5 kV line and Jerseyville-Smithburg 34.5 kV line be moved to underground to enter the Smithburg Substation, and that the final two aerial spans of the Smithburg-Dean 500 kV line be relocated within the ROW to enter the Smithburg Substation.
- The Smithburg Substation is proposed to be expanded to accommodate these changes.
- The Oyster Creek-Manitou component consists of reconductoring two circuits in approximately 11.6 miles of existing ROW.
- The Lake Nelson-Kilmer component consists of reconductoring one circuit in approximately two miles of existing ROW.
- The Windsor-Clarksville component consists of reconductoring the last span of the line into the Windsor Substation.
- The Clarksville – Lawrence and Hopewell – Lawrence component consists of rebuilding two circuits in approximately 0.8-mile of existing ROW.

Study Area

The Study Area is a 200-foot buffer centered on the component alignments and a 200-foot-wide buffer to the north and east of the Smithburg Substation. The results of the desktop review for this Study Area are discussed below, and summarized in Appendix A -Tables 7, 8, and 9.

Land Use

Aerial Imagery was used to develop a high-level review of land use and cover in the Project Study Area. The components are largely within existing transmission line ROWs and adjacent land use for each component is as follows:

- East Windsor-Smithburg component is largely comprised of forested and agricultural land and some low-density residential areas
- Oyster Creek-Manitou component is largely forest and scrub land
- Lake Nelson-Kilmer component is mostly commercial, forested, and medium density residential
- Windsor-Clarksville component is transportation and scrub lands
- Clarksville – Lawrence and Hopewell – Lawrence components are transportation, scrub lands, and forest lands

Public and Protected Lands

The East Windsor-Smithburg component crosses three public lands. East Windsor Park is owned and managed by Mercer County. Perrineville Lake Park is owned and managed by Monmouth County. The Charleston Spring Golf Course is owned and managed by Monmouth County.

The Oyster Creek-Manitou component crosses three public or preserved lands as well. Double Trouble State Park is owned and managed by the NJDEP. The Candace McKee Ashmun Preserve is owned and managed by the NJ Conservation Foundation. The Forked River Mountain Wildlife Management Area is owned and managed by the NJDEP.

The Lake Nelson-Kilmer component crosses one public land. The Ambrose and Dotys Park is owned and managed by Middlesex County.

The Windsor-Clarksville, and Clarksville – Lawrence and Hopewell – Lawrence components do not cross any public or protected lands identified as a result of this review.

In addition to these public lands, a review of the New Jersey Public Access Locations Search Tool showed that no waterways crossed by the Project are subject to public trust rights.

The review of NJ Coastal Management Program's list of Excluded Federal Lands showed that no excluded federal lands are crossed by the Project. Review of NJ Farmland Preservation Program's preserved farmland database shows that the East Windsor-Smithburg component crosses seven farmland conservation easements including, Mellmann Farm, Kyle Farm, Everette Farm, Fund for Roosevelt Farm, Hoffman Farm, McFie Farm, and Mullery Farm.

Public and/or protected land easements can restrict land use in perpetuity while retaining private ownership and typically have strict guidelines on future development. In general, easements can contain language precluding certain activities from occurring within the easement area. Utilizing existing ROWs to cross these areas should mitigate some risk associated with easement language, however the details of the easements cannot be fully known until the easement is reviewed. Therefore, attempting to identify all impacted parcels that contain restrictive easements early in the planning stages of the Project should be of high priority so that the constraints associated with each easement can be properly assessed.

Special Regulation Regions

Certain urban areas within NJ are deemed as "Special Areas" due to their importance for human use or stringent planning requirements. According to the Division of Land Resource Protection, these areas include Atlantic City, The Hudson River Waterfront Area, and "Special Urban Areas" which are areas the New Jersey Department of Community Affairs (DCA) defines as municipalities in urban aid legislation qualified to receive State aid to enable them to maintain and upgrade municipal services and offset local property taxes. The Project is not located within the boundaries of either Atlantic City or the Hudson River Waterfront Area. Additionally, the Project does not cross any municipalities that qualify as a Special Urban Area (DCA 2022).

Certain ecological regions have special protections and regulations administered by the State of NJ. The Pinelands Protection Area is designated for state regulation by the Pinelands Protection Act and the Hackensack Meadowlands District is designated for state regulation by the Hackensack Meadowlands Reclamation and Development Act. The Project is not located within the Hackensack Meadowlands District, however, the Oyster Creek-Manitou portion of the Project crosses through the Pinelands Protection Area. This portion of the Project is located entirely within an existing Transmission line ROW with no expansion to the ROW anticipated during construction, so impacts to the Pinelands Protection Area are anticipated to be minimal in nature

Special Landscape or Hazard Areas

Special hazard areas are areas that the NJDEP deems as having a known actual or potential hazard to public health, safety, and welfare, or to public or private property (NJDEP 2021). These areas include the navigable airspace around airports and seaplane landing areas, potential evacuation zones, hazardous material disposal sites, and areas of hazardous material contamination. Review of special hazard areas within the Study Area showed that no seaplane landing areas or airports were in the vicinity of the Project. The Oyster Creek-Manitou component crosses three hurricane evacuation routes, CR-530, CR-614, and Garden State Parkway. The East Windsor-Smithburg component crosses one hurricane evacuation route, CR-537. The Windsor-Clarksville, Lake Nelson-Kilmer, and Clarksville – Lawrence and Hopewell – Lawrence components do not cross any hurricane evacuation routes. Additionally, the review showed that no components of the Project cross known hazardous material disposal sites or known areas of hazardous material contaminations.

Aerial imagery of the Project was reviewed for special landscape features, which include: coastal bluffs, wet and dry borrow pits, dunes, erosional hazard areas, lagoon edges, and overwash areas. Based on the review it was determined that wet burrow pits are likely crossed by the Oyster Creek-Manitou component. No other special landscape feature appears to be crossed by the Project. Furthermore, the Study Area was reviewed for mapped beaches. No beaches were located in the Projects Study Area.

The review showed that the Lake Nelson-Kilmer component crosses two areas of filled water's edge, the Clarksville – Lawrence and Hopewell – Lawrence component crosses one area of filled water's edge, the Windsor-Clarksville component crosses one area of filled water's edge, and the Oyster Creek-Manitou component crosses seven areas of filled water's edge. The East Windsor-Smithburg component does not cross any areas of filled water's edge. USACE data also showed that none of the components cross Dredged Material Management Areas.

NJ Geodetic Controls are established as reference points used for mapping and charting activities. Review of the control locations showed that a total of one mark was located within the Lake Nelson-Kilmer component.
Federal Emergency Management Agency's Floodplains and Floodways data was reviewed for coastal high hazard areas and flood hazard areas. The review found that no coastal high hazard floodplains are crossed by the Project. However, floodplains and floodways are crossed by all the components of the Project, except the Clarksville – Lawrence and Hopewell – Lawrence component.

Based on the desktop review it is anticipated that the Project will cross Special Landscape or Hazard Areas. This may result in more rigorous permitting processes or special construction requirements.

Waterbodies and Wetlands

The presence of wetlands can impact Project permitting and construction. In addition to the need to adopt special construction techniques (including avoidance) for specific wetland types and field conditions, the types of wetlands encountered has significant implications from a permitting and compensatory mitigation perspective.

Based on the desktop review, wetlands and waterbodies appear to be crossed by the Project. Depending on the type of crossings, permitting and construction schedules can be impacted. An on-site delineation would be required to determine the actual location and extent of wetlands and waterbodies present and to assess permitting implications for jurisdictional features.

Threatened and Endangered (TE) Species and Protected Habitats

Threatened and endangered species and protected habitats can impact permitting, construction schedules, and construction techniques.

Given the results of the desktop review of publicly available data, it is anticipated that the Project is within the range of both federally- and state-listed species, and that coordination with state and federal agencies will be required. A listing of these species is provided in the Appendix A -Table 8 of this report. Construction restrictions, timeframe, or mitigation may be necessary to comply with avoidance of sensitive species, however, the extent of which cannot be known until after coordination with the NJDEP takes place.

Cultural Resources

The review showed that the Project crosses through several historic districts. The Oyster Creek-Manitou component crosses the Garden State Parkway Historic District and is adjacent to the Double Trouble State Park Historic District. The East Windsor-Smithburg component crosses the Jersey Homesteads Historic District. The Winsor-Clarksville component crosses the Camden and Amboy Railroad Main Line Historic District. The Lake Nelson-Kilmer component crosses the Inch Lines Linear Multistate, and Camp Kilmer Military Reservation Historic Districts.

While not pinpointing the exact location, the archaeological site grid identifies the presence of known archaeological resources within a half-mile by half-mile area. The Lake Nelson-Kilmer component crosses through one grid with identified resources. The Oyster Creek-Manitou component crosses through two grids with identified resources and one grid with listed features. The East Windsor-Smithburg component crosses one grid with identified resources. The East Windsor-Smithburg component crosses through two Historic Properties identified as 8 Agress Road and Davison House.

Impacts associated with cultural resources include both direct (physical) and indirect (viewshed) considerations. Utilization of existing ROWs for the Project should mitigate some potential concerns regarding both consideration types, however changes in tower heights and other necessary construction elements such as access roads or laydown yards must also be considered when assessing impacts. Coordination with NJ Historic Preservation Office will need to be conducted to determine required surveys (if any) to assess the extent of impact to cultural resources in the Project vicinity.

Federal, State, and Local Environmental Permits

Appendix A -Table 9 lists the environmental permits, authorizations, clearances, and consultations that could be required for the Project's components. For each authorization, the table identifies the administrating agency/authority, anticipated agency review timeframe, and additional information to be considered. The table represents a list of typically required permits for similar projects in the same area and is not specific to the Project.
Although the Project-specific details included in this report can assist in the planning stages of the Project, additional reviews should be conducted as the Project is further developed and the extent of environmental impacts is known.

Federal Permits and Authorizations

Depending on the outcome of the environmental survey and Division of Land Resource Protection (DLRP) inspection and the final design of Project facilities, the Project could require several federal permits, authorizations, and consultations prior to construction. In addition, USFWS consultations and authorizations under Section 7 of the Endangered Species Act (ESA) could also be required to be obtained prior to receiving federal permits. These consultation and concurrences are discussed below in greater detail.

USACE Section 404:
In NJ, the NJDEP is the agency delegated responsibility to implement Section 404 of the Clean Water Act (33 U.S.C. 13574), which regulates the discharge of dredged or fill material into waters (including wetlands) of the United States. The exception being an activity proposed in a tidal water or water designated under Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403), for which the USACE has regulatory authority. The Project is located within the jurisdictional boundaries of both the New York and Philadelphia Districts of the USACE, with the majority of the proposed work occurring in the Philadelphia District. No Section 10 waters are crossed in the Philadelphia District. The New York District Office would need to be contacted to confirm if a Section 10 designated water is crossed by the Project within their district.

USFWS Endangered Species Consultation and Clearance:
For federally funded or permitted projects, consultation with the USFWS is necessary to ensure that impacts to federally-listed threatened or endangered species and critical habitats are appropriately addressed under Section 7 of the ESA. The Project falls within the jurisdictional boundary of the USFWS NJ Ecological Services Field Office. Initial screening for many projects in NJ may be conducted online utilizing the IPaC online tool and county data compiled by the NJDEP. A "preliminary" screening for the Project has been completed, with results discussed in detail in the previous TE Species section of this report.

Typically, early consultation with USFWS will be of paramount importance. Coordination with the USFWS NJ Ecological Services Field Office will be required to determine the extent of survey and/or mitigation needed for each species.

USFWS authorizations are generally valid for two years. If construction is not completed after two years or new species are added to the list before construction begins, the protected species assessment must be revalidated through renewed consultation and, potentially, new or additional field surveys. Species-specific surveys and construction timeframes may be applicable.

State Permits

It is anticipated that the Project could require the following state environmental permits, consultations, clearances, and authorizations, including:

- State Protected Species Consultations
- State Historic Preservation Office (SHPO) Consultations and Clearances
- Freshwater Wetlands Permits
- Coastal Wetlands Permits
- Waterfront Development Permit
- Flood Hazard Area Permit
- Tidelands License
- Green Acres Program Diversion Permit
- Pineland Management Area/National Reserve
- NJ Pollutant Discharge Elimination System Permits (NJPDES) Basic Industrial Stormwater Permit
- Air Quality Permits

Green Acres Program Diversion Permit:

Green Acres is a NJDEP land acquisition program that supports the addition of land resources and greenways to New Jersey's state parks, forests, natural areas, and wildlife management areas. Three sections of the Project, the Clarksville – Lawrence, Hopewell – Lawrence, and Clarksville – Windsor components cross Green Acres properties, however their ROWs predate the Green Acres program and are therefore not governed by it. The East Windsor Substation is partially surrounded by East Windsor Park and the substation and East Windsor – Smithburg line does not predate the program. A diversion or disposal may be required if the substation is expanded onto Green Acres properties. Double Trouble State Park is crossed by the Oyster Creek – Manitou C component. New Jersey State Parks and Forests fall under the jurisdiction of the Green Acres Program; however, all linear components of the Project are within existing maintained ROWs. Pending final design, the substation expansion and reconfigurations may extend outside existing ROW and may impact Green Acres areas.

Pinelands Management Area/ National Reserve:

The Pinelands National Reserve is a 1.1-million-acre reserve and management area, which is overseen by the Pinelands Commission. The Pinelands Commission consists of federal, state and local representatives who maintain a comprehensive management plan to protect the unique ecosystem of the New Jersey Pinelands. The boundaries for the Pinelands National Reserve and Management Areas differ however the Oyster Creek – Manitou component, Manitou Substation and Oyster Creek Substation are within both the reserve and management area. If the Project does not comply with the Pinelands comprehensive management plan, the DLRP may not approve the other state permits. In addition, the Pinelands Commission is a commenting agency for projects within the Pinelands, and often reviews the CAFRA and freshwater wetland permits in conjunction with DLRP. Environmental features within The Pinelands are often subject to more stringent regulations and both the DLRP and The Pinelands Commission would need to be consulted early in the permitting process. While the Project is proposed to be performed within an existing ROW and substation work is to be confined to the existing substation footprint, permits and coordination with the DLRP and Pinelands Commission are still anticipated to be necessary. If tree clearing is needed, it will be required to follow the Pinelands vegetation management ROW plan.

Local Permits

It is anticipated that the Project could require the following county and municipal permits, consultations, clearances, and authorizations, including:

- Zoning Permits
- Road Permits
- Building Permits
- Erosion and Sediment Control Plan

Various permits may be required by county and the local municipalities, including zoning permits, building permits, and roadway permits. Multiple townships and boroughs are proposed to be crossed by the Project, including Freehold and East Windsor Townships, which may require additional permits as they are the proposed locations for substation expansions and underground lines. Each county will also consult with the NJDEP for permit issuance for the Project. Legislation passed in 2021 may allow the NJBPU to supersede certain local municipal requirements related to approvals for off-shore wind transmission projects.

Roadway Permits

Activities located within public road ROWs require permits from local, and state departments of transportation. Activities requiring permits could include the placement of overhead or underground transmission lines within road ROWs and temporary construction access points. Major highways crossed by the Project including Interstate 195 (twice), US 9, NJ 18, and the Garden State Parkway. Crossings of Interstate 195 will require permission of the Federal Highways Administration. The Garden State Parkway is managed by the NJ Turnpike Authority (NJTA) and requires a license to cross for utility lines as well as construction easements when NJTA property is impacted. Roadway permits carry an average review time of six months.

Environmental (Regulatory) Risks

Right-of-Way and Easement Risks

- A critical constraint identified is securing easements and previously secured easements. Easements can be held in perpetuity and may not allow for additional development, depending on the easement type and language. Each parcel crossed by the transmission line ROW could have an easement with the property owner, which needs to be reviewed to identify the extent of the easement and the restrictions surrounding it. Coordination with the Grantees, including the County Board or other stakeholders, of the easement may also be necessary to determine what development, if any, can take place on the parcel.
- Supplemental easements may be necessary if an expansion of the existing ROW is needed or for the development of access roads and the requirements or availability of obtaining supplemental easements is unclear until coordination with the property owner or review of the easement language is conducted. Additional or modifications to easements may be required for the three 34.5kV lines that are being converted to underground. ROW easements were not reviewed as part of this study and the easements may not be discovered until parcel title review is conducted. Several public lands or conservation easements were identified along the Study Area of the rebuild and reconductor components; however, since these are existing transmission lines, it is possible that there are existing agreements in place.

Permitting Risks

The various sections of the Project have the potential to impact environmental resources including streams and wetlands within freshwater ecosystems during construction. The majority of the impacts should be

covered under the blanket permit, however additional permits may still need to be acquired for any work proposed outside of the existing ROWs or for underground facilities.

If impacts to freshwater wetlands within these areas exceed a threshold of 0.5-acre for aboveground impacts, or one-acre of total wetland impact, general permits may not be applicable and an individual permit may need to be acquired, which could include a lengthier review time. Mitigation is also required if the Project permanently disturbs or impacts 0.1-acre or more of freshwater wetland.

All linear components of the Project are within existing maintained ROWs. However, pending final design, the substation expansion and reconfigurations may extend outside existing ROW and may impact Green Acres areas requiring a Green Acres Program Diversion permit.

In addition, the Project crosses the Pinelands Reserve and Management Area which can result in more stringent regulations. Consultation with the NJDEP's DLRP and the Pinelands Commission earlier in the Project's development will help mitigate risks by addressing permitting concerns and allowing for a larger consultation and permitting timeline. If helicopters are used to install or reconductor the electric transmission line structures, impacts to environmental areas of concern may be reduced.

TE Species Risks

- Review of various sources that maintain TE species records indicated the potential for numerous species to be located within the vicinity of the Project. The Project's proponents should conduct an independent TE species review once the potential limits of disturbance and environmental impacts are better known to fully ascertain the requirements for mitigation associated with the sensitive species. Additionally, it is possible that new TE species location information may be added to the state and federal agency databases, and that the Project will be located within the new occurrence area. This could result in the need to conduct further consultation, and possibly the need to conduct surveys for the TE species. Depending on the results of the consultation and surveys, agencies could impose time-of-year restrictions on Project activities, require mitigation, or require another form of impact avoidance.

Transmission Line Analysis

- The height of the structures for the double circuit East Windsor-Smithburg 500kV over 230kV line could possibly involve Federal Aviation Administration (FAA) approval.
- Rebuilding or reconductoring the existing lines within the existing ROW minimizes construction and design risks. For the reconductors, it is assumed that the existing structures are in good condition and can be reused. It is assumed that a portion of the existing towers will need to be reinforced. If a rebuild is needed due to structure conditions, over-stressed structures, or clearance violations caused by the proposed conductor; costs and schedule will be affected.

Substation Analysis

- Schedule risks identified based on outage windows for the existing 230kV and 500kV substations and transmission lines.

Construction Schedule

- The conceptual project schedule developed by the consultant indicates that the Project will take approximately 36 months to complete, from Project initiation to energization.
- It is assumed that the engineering process can continue as siting permit is reviewed. There are four major activities on the critical path: Engineering; Siting and major permit acquisition; long lead equipment

procurement; construction and commissioning. Delays in completing any of these activities would jeopardize completing the Project within the estimated schedule.

Cost Review

Proposal 17

Proposal Cost Estimates

The total proposal cost for JCP&L proposal 17 is provided below.

Category	Full Project
	$
Materials and Equipment	$49,620,658.42
Engineering and Design	$9,263,987.69
Construction and Commissioning	$108,327,495.79
Permitting/Routing/Siting	$1,499,725.00
ROW/Land Acquisition	$2,814,010.00
Construction Management	$16,018,814.80
Overheads/Misc. Cost	$79,769,189.74
Contingency	$21,145,702.12
Total Cost (Current Year)	**$288,459,583.56**

Independent Cost Estimates

As part of this study, PJM's consultant performed a high-level conceptual cost estimate for the Project. The consultant's estimate is based on a high-level assessment of probable costs for the current conceptual design and is reflective of their previous experience with substation engineering, transmission line engineering, and construction. The total does include a contingency of 30 percent as it is a concept level estimate.

The Independent estimates for JCP&L's Proposal 17 are summarized in the table below:

Category	Full Project
Materials and Equipment	$35,121,704.84

Engineering and Design	$4,653,901.34
Construction and Commissioning	$47,707,767.82
Permitting/Routing/Siting	$1,852,574.69
ROW/Land Acquisition	$1,278,750.00
Construction Management	$7,903,253.88
Overheads/Misc. Cost/ Contingency	$28,194,743.97
Total Cost (Current Year)	**$126,712,696.54**

Cost Estimate Comparison

- Independent cost estimate: $126,712,697
- Entity's cost estimate: $288,459,584

Independent evaluation of JCP&L Proposal cost estimates:

- Total costs for Component 7 (T5020 Smithburg-Deans 500kV Transmission lines) are high for 1 span.
- Component 19 (Lake Nelson-Kilmer No. 1 230kV Transmission Line) has no contingency.
- Costs for Construction Management seem high across all components.

Assumptions for Proposal 17 Independent Cost Estimates

Component 1: O1029 (Oyster Creek-Manitou No.2) 230kV Transmission Line:

- Reconductor 11.6 miles of the O1029 (Oyster Creek-Manitou No.2) 230kV circuit with 1590 ACSS 54/19 "Falcon" conductor and new Optical Ground Wire (OPGW) shield wire.
- All hardware and insulators will be replaced for 17 deadends and 42 tangents.
- The existing structures are in good condition and can be reused.
- The reconductored line will use the existing corridor and no additional ROW will be needed.

Component 2: Manitou Substation:

- The existing substation will not need to be expanded to accommodate the new equipment.
- The substation upgrade will contain the following equipment:
  - One 230kV Circuit Breaker
  - One 230kV Motor Operated Air Break Switch
  - Four 230kV Group Operated Air Break Switches
  - One 230kV Wave Trap and Line Tuner
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 3: Oyster Creek Substation:

- The existing substation will not need to be expanded to accommodate the new equipment.
- The substation upgrade will contain the following equipment:

  - One 230kV Motor Operated Air Break Switch
  - Four Group Operated Air Break Switches
  - One 230kV Wave Trap and Line Tuner
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 4: East Windsor-Smithburg 500kV Transmission Line:

- Rebuild and convert the 9.15-mile six-wired East Windsor-Smithburg E2005 230kV line to a double circuit line between East Windsor and Smithburg Substations. The two circuits will be 500kV and 230kV. This component is for the 500kV circuit.
- New conductor will be double bundled 2493 kcmil 54/37 ACAR with 48 Fiber OPGW.
- Existing towers to be removed.
- New structures will be self-supporting steel monopoles with drilled shaft foundations. Structure costs are split between this component and component 5. New structures include:
  - 3 – single circuit deadend
  - 2 – double circuit deadend
  - 24 – double circuit suspension
- The rebuilt line will use the existing corridor. Some new ROW will be required to route the line into each substation.
- Minimal clearing will be required.

Component 5: East Windsor-Smithburg 230kV Transmission Line:

- Rebuild and convert the 9.15-mile six-wired East Windsor-Smithburg E2005 230kV line to a double circuit line between East Windsor and Smithburg Substations. The two circuits will be 500kV and 230kV. This component is for the 230kV circuit.
- New conductor will be double bundled double bundled 1590 ACSR 45/7 with 48 Fiber OPGW.
- Existing towers to be removed.
- New structures will be self-supporting steel monopoles with drilled shaft foundations. Structure costs are split between this component and component 4. New structures include:
  - 3 – single circuit deadend
  - 2 – double circuit deadend
  - 23 – double circuit suspension
- The rebuilt line will use the existing corridor. Some new ROW will be required to route the line into each substation.
- Minimal clearing will be required.

Component 6: East Windsor Substation:

- The existing substation will need to be expanded to accommodate the new equipment.
- The substation upgrade will contain the following equipment:
  - One Prefabricated Control Building
  - Three 500kV Motor Operated Air Break Switches
  - Three 500kV dead end structures
  - Two 500kV Circuit Breakers
  - Four 500kV Motor Operated Disconnect Switches
  - Fifteen 500kV CCVTs
  - Nine 500kV Surge Arresters
  - Four 500kV Wave Traps and line tuners
  - One 230kV Motor Operated Air Break Switch

  - Six Line Relay Panels
  - Four Transformer Differential Panels
  - Ten Breaker Control Panels
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 7: T5020 Smithburg-Deans 500kV Transmission Line:

- Rebuild approximately 0.1-mile of the existing T5020 Smithburg-Deans 500kV transmission line from Structure 1 to a new bay position at Smithburg substation, located to the north of its current location.
- Replace Structure 1 with a new deadend monopole and install one suspension monopole between Structure 1 and the new substation bay.
- New structures will be self-supporting steel monopoles with drilled shaft foundations.
- New conductor will be double bundled 2493 kcmil 54/37 ACAR with 19#9 Alumoweld shield wires.
- Majority of the relocated line will be on substation property. Assumed one easement update.
- Minimal clearing will be required.

Component 8: K137 Windsor-Twin Rivers-Wyckoff Street 34.5kV Line:

- Convert 0.3-miles of the existing overhead K137 Windsor-Twin Rivers-Wyckoff Street 34.5kV line to an underground line between structures #80 and #88, near East Windsor Substation.
- The existing centerline along Cedarville Road appears to be located in Road ROW and will require new ROW.
- The existing centerline between structures #80 and #88 will be shifted to the edge of the existing ROW to accommodate the new East Windsor-Smithburg double circuit 500kV/230kV line. Assumed new easements may be needed along the ROW.
- Nine existing structures to be removed.
- New structures will be self-supporting steel monopoles with drilled shaft foundations. New structures include:
  - 2 – single circuit deadend, riser/transition structures
- New conductor will be 1250 kcmil copper underground cable, two cables per phase.
- The underground concrete cable duct bank will be 4’ below ground and installed using trenching. No vaults will be needed.
- Minimal clearing will be required.

Component 9: X752 Jerseyville-Smithburg 34.5kV Line:

- Convert 0.2-miles of the existing overhead X752 Jerseyville-Smithburg 34.5kV line to an underground line from Monmouth Road to Smithburg Substation to accommodate the new East Windsor-Smithburg double circuit 500kV/230 kV line.
- The existing centerline along Monmouth Road appears to be located in Road ROW and will require new easements.
- The centerline between Monmouth Road and Smithburg Substation is assumed to be on substation property and will not require additional ROW.
- Six existing structures to be removed.
- New structures will be self-supporting steel monopoles with drilled shaft foundations. New structures include:
  - 2 – single circuit deadend, riser/transition structures
- New conductor will be 1250 kcmil copper underground cable, two cables per phase (6 total).

- The underground concrete cable duct bank will be 4' below ground and installed using trenching. No vaults will be needed.
- Minimal clearing will be required.

Component 10: B158 Gravel Hill Smithburg 34.5kV Line:

- Convert 0.2-mile of the existing overhead B158 Gravel Hill Smithburg 34.5kV line to an underground line from Monmouth Road to Smithburg Substation to accommodate the new East Windsor-Smithburg double circuit 500kV/230 kV line.
- The existing centerline along Monmouth Road appears to be located in Road ROW and will require new easements.
- The centerline between Monmouth Road and Smithburg Substation is assumed to be on substation property and will not require additional ROW.
- Six existing structures to be removed.
- New structures will be self-supporting steel monopoles with drilled shaft foundations. New structures include:
  - 2 – single circuit deadend, riser/transition structures
- New conductor will be 1250 kcmil copper underground cable, two cables per phase (6 total).
- The underground concrete cable duct bank will be 4' below ground and installed using trenching. No vaults will be needed.
- Minimal clearing will be required.

Component 11: Smithburg 230 kV Substation:

- The existing substation will need to be expanded to accommodate the new equipment.
- The substation upgrade will contain the following equipment:
  - One 500kV Circuit Breaker
  - Two 500kV Breaker Disconnect Switches
  - One 500kV Line Disconnect Switch
  - One 500kV dead end structure
  - Three 500kV CCVTs
  - Three 500kV Surge Arresters
  - One Line Relay Panel
  - One Breaker Control Panel
- The existing relays will be re-used and settings will be adjusted.
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 12: N1028 Manitou-Oyster Creek 230kV Transmission Line Reconductor:

- Reconductor 11.6 miles of the N1028 Manitou-Oyster Creek 230kV circuit with 1590 ACSS 54/19 "Falcon" conductor and new OPGW shield wire.
- All hardware and insulators will be replaced for 17 deadends and 42 tangents.
- The existing structures are in good condition and can be reused.
- The reconductored line will use the existing corridor and no additional ROW will be needed.

Component 13: Manitou 230 kV Substation:

- The existing substation will need to be expanded to accommodate the new equipment.
- The substation upgrade will contain the following equipment:
  - Two 230kV Circuit Breakers
  - One 230kV Motor Operated Air Break Line Switch

  - Four 230kV Group Operated Air Break Switches
  - One 230kV Wave Trap and line tuner
  - One Line Relay Panel
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 14: C1017 (Clarksville-Windsor) 230kV Transmission Line:

- Reconductor one span of the existing C1017 (Clarksville-Windsor) 230kV transmission line from Structure 126 to a new bay position at Windsor substation.
- Structure 126 is in good condition and shall remain.
- New conductor will be double bundled 1590 kcmil ACSR 45/7 with a 7#6 Alumoweld shield wire.
- One new wave trap to be installed.
- All work is in existing ROW and no new ROW will be required. Assumed one easement update and one crossing permit.
- Minimal clearing will be required.

Component 15: Windsor 230 kV Substation:

- The existing substation will not need to be expanded to accommodate the new equipment.
- The substation upgrade will contain the following equipment:
  - One 230kV dead end structure
  - One 230kV Wave Trap/CVT combo and line tuner
- The estimate includes the relocation of the following equipment:
  - Two 230kV Disconnect Switches
  - Three 230kV Surge Arresters
  - Two 230kV CCVTs
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 16: D1018 (Clarksville-Lawrence) 230kV Transmission Line:

- Rebuild approximately 0.8-mile of the D1018 (Clarksville-Lawrence) 230kV Line between Lawrence Substation (PSEG) and Structure #63. The line is double circuited with the Hopewell – Lawrenceville 230kV line.
- New conductor will be double bundled 1590 kcmil 45/7 ACSR.
- Existing OPGW shield wire to be transferred.
- Existing towers to be removed.
- New structures will be self-supporting steel monopoles with drilled shaft foundations. Structure #63 is assumed to be a two-pole structure, with one pole on this component and one pole on component #17. New structures include:
  - 1 – single circuit deadend
  - 2 – double circuit deadend
  - 2 – double circuit suspension
- The rebuilt line will use the existing corridor. Assume easements will need to be updated and new crossing permits will be required.
- Minimal clearing will be required.

Component 17: Hopewell-Lawrence 230kV Transmission Line:

- Rebuild approximately 0.8-mile of the Hopewell-Lawrence 230kV Line between Lawrence Substation (PSEG) and Structure #63. The line is double circuited with the Hopewell – Lawrenceville 230kV line.
- New conductor will be double bundled 1590 kcmil 45/7 ACSR.

- Existing OPGW shield wire to be transferred.
- Existing towers to be removed.
- Structure #63 is assumed to be a two-pole structure, with one pole on this component and one pole on component #16. All other structures between Lawrence Substation and #63 are included in component #16. New structures include:
    - 1 – double circuit deadend
- The rebuilt line will use the existing corridor. Assume easements will need to be updated and new crossing permits will be required.
- Minimal clearing will be required.

Component 18: Smithburg Substation:

- The existing substation will be expanded to accommodate the new equipment. Site expansion will occur on JCPL owned real estate.
- The substation upgrade will contain the following equipment:
    - One 500kV/230kV Transformer
    - One 500kV Circuit Breakers
    - Two 500kV Breaker Disconnect Switches
    - One 500kV Motor Operated Disconnect Switch
    - Three 500kV CCVTs
    - Three 500kV Surge Arresters
    - Two 230kV Circuit Breakers
    - Four 230kV Breaker Disconnect Switches
    - One 230kV Motor Operated Disconnect Switch
    - Three 230kV CCVTs
    - Three 230kV Surge Arresters
    - Two Transformer Relay Panels
    - Three Breaker Control Panels
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 19: Lake Nelson-Kilmer No. 1 230kV Transmission Line:

- Reconductor 2.0 miles of the Lake Nelson-Kilmer line section of the Lake Nelson – Raritan River No. 1 230kV line with 1590 ACSS 54/19 conductor and new OPGW shield wire.
- All hardware and insulators will be replaced for 4 deadend, 9 suspension, and 2 substation structures.
- The existing line is constructed on double circuit towers, mutual with the Lake Nelson-Raritan River No. 2 230kV Line. The existing structures are in good condition and can be reused.
- There is an existing wood pole in span 74-75 that shall be replaced with a direct embedded steel pole.
- Install engineered steel strain plates on two Type I lattice towers to convert the hardware configurations to floating deadends.
- The reconductored line will use the existing corridor and no additional ROW will be needed.

Component 20: Middlesex 230 kV Substation:

- The existing substation will not need to be expanded to accommodate the new equipment.
- The substation upgrade will contain the following equipment:
    - One 230kV Circuit Switches
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 21: Oyster Creek Substation (2):

- The existing substation will not need to be expanded to accommodate the new equipment.
- The substation upgrade will contain the following equipment:
  - Two 230kV Circuit Breakers
  - One 230kV Motor Operated Air Break Switch
  - Four 230kV Group Operated Air Break Switches
  - One 230kV Wave Trap and line tuner
  - One 230kV CCVT
  - Three 230kV Surge Arresters
- The contractor will be performing the testing of major material, relays, and construction labor.

LS Power Grid Mid-Atlantic (CNTLTM) Proposals

Executive Summary

LS Power Grid Mid-Atlantic, LLC's (LSPG) provided three Option 1a proposals to resolve PJM identified violations on the existing transmission system that result from integrating offshore wind into New Jersey.

Two of the proposals (Proposal 103 and 203) are submitted through Central Transmission, LLC, a wholly owned subsidiary of LS Power, and PJM member. LS Power intends to own the Project through LS Power Grid Mid-Atlantic, LLC, which will register as a member of PJM. The third Proposal (Proposal 229) was submitted by Central Transmission, LLC on behalf of Silver Run Electric, LLC (SRE), another wholly owned subsidiary of LS Power, and transmission owning member of PJM.

Table 2. **LSPG Option 1a Proposals**

Proposal ID(s)	Description(s)	Notes
103	Old York 230/500 kV	Included in LSPG Solution B Projects: 72, 629 & 627
203	Broad Creek- Robinson Run 500/230 kV	Stand-alone project
229	Silver Run Upgrade	Stand-alone project

Proposal 103

Project Overview

Project #103 (Old York Project) is located within Bordentown Township in Burlington County, New Jersey and includes the construction of a new gas insulated 500/230 kV substation. The proposed substation will be approximately 4.2 acres and will reside in Bordentown, NJ. The new substation will interconnect the East Windsor – New Freedom 500 kV transmission line as well as the Burlington – Crosswick and Mansfield-William 230 kV transmission lines (see figure below). Old York project is intended to relieve overloads on the Windsor–Clarksville 230 kV, Clarksville–Lawrence 230 kV, and Deans–Brunswick 230 kV lines, and is included as a component of LS Power Option 1b (Solution B) Projects 72, 629 & 627.

The Project proposes to resolve the following PJM identified flowgates:

28-GD-L14, 28-GD-S2-S1, 28-GD-S2-S2, 28-GD-S2-S3, 28-GD-S2-W6, 28-GD-S2-W7, 28-GD-S2-W94, 28-GD-S2-W97, 28-GD-S2-W98, 28-GD-S64, 28-GD-S65, 28-GD-S66, 28-GD-S72, 28-GD-S73, 28-GD-W108, 28-GD-W109, 28-GD-W3, 28-GD-W6, 28-GD-W8, 35-GD-L14, 35-GD-S2-S2, 35-GD-S2-W13, 35-GD-S2-W15, 35-GD-S2-W16, 35-GD-W4, 35-GD-W7, 35-GD-W9

The Project will consist of the following components:

- Construct new Old York Substation 500/230kV GIS Substation
  - Four position, breaker and a half arranged 500 kV switchyard;
  - Six position, four thirds arranged 230 kV switchyard
  - Two new 500/230 kV transformers;
  - Associated protection and control equipment, line termination structures, and ancillary systems

- East Windsor–New Freedom 500 kV Transmission Interconnection
- Burlington–Crosswick 230 kV Transmission Interconnection
- Mansfield–William 230 kV Transmission Interconnection

Constructability Summary

Project 103 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Potential for wetlands and presence of impaired water are within a 100 feet of the Study Area, so wetland delineations may be required if expansion of the Project Area is deemed necessary during construction. If wetlands are present, additional permitting will be required.
- Otherwise, the Study Area is clear of environmental risks.

Schedule:

- Using the longest component as the critical path, the project is independently estimated to take approximately 36 months.
- The entity's overall construction schedule of 52 months seems reasonable.

Cost Review:

- Independent cost estimate: $ 93,666,905
- Entity's cost estimate: $ 75,631,956

Proposal 203

Project Overview

Project #203 proposes the construction of two (2) greenfield substations Broad Creek 500/230 kV and Robinson Run 500kV, and a greenfield Broad Creek to Robinson Run 500 kV transmission line. Broad Creek substation will be interconnected between existing Bagley to Graceton #1 and #2 230 kV transmission lines. Robinson Run substation will be interconnected between the existing Peach Bottom – Delta Power Plant 500 kV transmission line.

This is a stand-alone project intended to relieve overloads on the Peach Bottom–Conastone & Furnace Run–Conastone 500 kV lines, as well as the Furnace Run 500/230kV transformers.

The Project proposes to resolve the following PJM identified flowgates:

28-GD-S2-W1, 28-GD-S2-W100, 28-GD-S2-W101, 28-GD-S2-W2, 28-GD-S2-W3, 28-GD-S2-W82, 28-GD-S2-W83, 28-GD-S2-W84, 28-GD-S2-W85, 28-GD-S2-W86, 28-GD-S2-W87, 28-GD-S2-W88, 28-GD-S2-W96, 28-GD-S2-W99, 28-GD-W1, 28-GD-W110, 28-GD-W111, 28-GD-W112, 28-GD-W16, 28-GD-W19, 28-GD-W2, 28-GD-W20, 28-GD-W4, 28-GD-W5, 35-GD-S2-W17, 35-GD-S2-W19, 35-GD-S2-W5, 35-GD-S2-W8A, 35-GD-W5, 35-GD-W6

The Project will consist of the following components:

- Construct new Broad Creek Substation 500/230kV Substation
    - Six position, breaker and a half arranged 230 kV switchyard.
    - Three position, ring bus arranged 500 kV switchyard.

  - Two new 500/230 kV transformers.
  - Associated protection and control equipment, line termination structures, and ancillary systems.
- Construct new Robinson Run Substation 500 Switching Station
  - Three position, ring bus arranged 500 kV switchyard.
  - Associated protection and control equipment, line termination structures, and ancillary systems.
- Broad Creek-Robinson Run 500 kV line
  - 6 mile transmission circuit built in existing ROW on new double circuit structures with the existing Graceton - Cooper 230kV line.
  - The Graceton – Cooper line will be demolished in the portions that it overlaps with the proposed Broad Creek - Robinson Run transmission line and rebuilt onto a double circuit structure that will also contain the new 500kV Broad Creek – Robinson Run transmission line.
- Bagley-Graceton #1 and #2 230 kV Transmission Interconnection (Loop into new Broad Creek station)
- Delta Power Plant – Peach Bottom 500 kV Transmission Interconnection (Loop into new Robinson Run station)

Constructability Summary

Project 203 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Transmission Line Analysis:

- Project assumes right-of-way from incumbent transmission owner's line Graceton-Cooper 230 kV, indicating that the Graceton – Cooper line will be demolished in the portions that it overlaps with the proposed Broad Creek - Robinson Run transmission line and rebuilt onto a double circuit structure that will also contain the new 500kV Broad Creek – Robinson Run transmission line.
- No details provided indicating that the incumbent transmission owner has been consulted about the proposed removal/rebuild of their line.

Schedule:

- The entity's overall construction schedule of 52 months seems reasonable.

Cost Review:

- Independent cost estimate: $ 104,180,009
- Entity's cost estimate: $ 159,977,233

Proposal 229

Project Overview

Project #229 is located within Lower Alloways Creek Township in Salem County, New Jersey and Townsend, New Castle County, Delaware and includes the construction of two new transition structures and new submarine cables. The proposed structures will reside in Lower Alloways Creek Township in Salem County, New Jersey and Townsend, New Castle County, Delaware.

The Project is an upgrade to the existing Silver Run – Hope Creek 230kV transmission line. The Project consists of installing an additional set of submarine cables (1 cable per phase) and re-rating the overhead portion of the Silver Run – Hope Creek 230 kV transmission line.

The Project proposes to resolve the following PJM identified flowgates:

28-GD-S2-W14, 28-GD-S2-W15, 28-GD-S2-W91, 28-GD-S2-W92, 28-GD-S2-W93, 28-GD-W124, 28-GD-W125, 28-GD-W21, 28-GD-W22, 28-GD-W23, 35-GD-S2-W10A, 35-GD-S2-W11, 35-GD-S2-W12, 35-GD-W22, 35-GD-W23, 35-GD-W24

The Project will consist of the following components:

- Upgrade Silver Run–Hope Creek 230 kV line by installing a third set of cables on the submarine segment and increasing rating on existing overhead conductor.
- Upgrade terminal equipment at Silver Run Substation

Constructability Summary

Project 229 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Project consists of submarine cable crossing of navigable Delaware River between NJ/DE. USACE Section 10/Section 404 Nationwide Permit 57 approvals will be required.
- Permitting requirements in NJ and DE

Transmission Line Analysis:

- General concerns about submarine cable construction

Schedule:

- The project is independently estimated to take approximately 36 months to construct.
- The entity's overall construction schedule of 52 months seems reasonable.

Cost Review:

- Independent cost estimate: $ 77,191,737
- Entity's cost estimate: $ 61,198,526

Constructability Reviews

Proposal 103

Environmental (Regulatory) Analysis

Desktop Review

Project #103 (Old York Project) is located within Bordentown Township in Burlington County, New Jersey and includes the construction of a new gas insulated 500/230 kV substation. The proposed substation will be approximately 4.2 acres and will reside in Bordentown, NJ.

Study Area

The environmental review consisted of mapping and assessing the water/wetlands resources, biological resources, public lands, cultural resources, existing infrastructure, soils and farmland resources within a ¼ mile of the proposed Project centerline (henceforth known as the Study Area). The results of the desktop review for this Study Area are discussed below, and summarized in Appendix A -Table 10.

Land Use

According to the USGS National Land Cover Database (NLCD, 2019), the 6.48-acre Study Area is mainly comprised of land classified as Deciduous Forest.

Land Cover Type	Area (Acres)	Percent of Total
Developed, Open Space	0.19	2.92
Deciduous Forest	6.29	97.08
Total	**6.48**	**100**

*Values rounded to the nearest hundredth.

Public and Protected Lands

There is one easement found inside the quarter-mile buffer of the Project Area, Easement #67. This easement is agricultural, containing 66.7 acres of preserved farmland. The easement does not fall within the Project Area.

Special Landscape or Hazard Areas

A search for known environmental contaminants within ¼-mile of the Project Area was completed using the New Jersey Department of Environmental Protection: NJ-GeoWeb and the U.S. Environmental Protection Agency: MyEnvironment online application. One regulated site is located within a quarter-mile of the Project Area but poses no threat to the Project.

Floodplains, Waterbodies and Wetlands

According to FEMA Flood Insurance Rate Map (FIRM) (Panel #34005C0155F, effective December 21, 2017), there are no mapped floodways, 100-year floodplains, or 500-year floodplains within the Project Boundary.

The NWI dataset did not identify any wetlands within the Study Area. EPA data indicates that the Blacks Creek watershed (NJ02040201080030) is considered impaired for Drinking Water, Swimming and Boating, Fish and Shellfish Consumption, and Aquatic Life. Impairment categories include bacteria and other microbes, murky water, nitrogen and/or phosphorus, PCBs, and Salts. There are no Impaired Waters occurring within the Study Area, however, Blacks Creek is mapped within 30 feet of the Project boundary.

The NHD dataset, which includes intermittent streams and unnamed tributaries, did not document any flowlines or waterbodies within the Study Area.

Threatened and Endangered (TE) Species and Protected Habitats

Threatened and endangered species and protected habitats can impact permitting, construction schedules, and construction techniques.

Given the results of the desktop review of publicly available data, it is anticipated that the Project is within the range of both federally- and state-listed species, and that coordination with state and federal agencies will be required. Construction restrictions, timeframe, or mitigation may be necessary to comply with avoidance of sensitive species, however, the extent of which cannot be known until after coordination with the NJDEP takes place.

Cultural Resources

The results of the review for previously recorded archaeological sites and historic resources within the Project Area and the ¼-mile buffer are summarized below.

Archaeological Sites

According to the Archaeological Site Grid, no archaeological sites are located within ¼-mile of the Project Area.

Historic Resources

Two Historic Properties are within ¼-mile of the Project Area. One property in the buffer is NRHP Eligible as a contributing resource to the Metuchen to Burlington Transmission Line Historic District (see below).

Three Historic Property Features are within ¼-mile of the Project Area. Two contributing elements of the NRHP Eligible historic district were identified in the buffer.

One Historic Districts is within ¼-mile of the Project Area. A portion of the Metuchen to Burlington Transmission Line Historic District is NRHP Eligible, and at least three of its contributing resources, is in the ¼-mile buffer.

Federal, State, and Local Environmental Permits

Federal Permits

Depending on the outcome of wetland and stream delineations and the final design, Project #103 could require federal permits, authorizations, and consultations prior to construction. These include but are not limited to the US Army Corps of Engineers (USACE) Section 404 permits for dredge and fill activities in wetlands and other waters of the US and USACE Section 10 permits for structure construction along the banks of or within, over, or under navigable waters. In addition, USFWS consultations and authorizations under Section 7 of the ESA could also be required. To be in compliance with these federal permits, consultation and concurrence typically needs to be received from state agencies as well.

More information regarding the Federal regulatory review process can be found in the Permit Matrix prepared for Project #103 in Appendix A -Table 10.

State Permits

Potential approvals required for Project development include the 5G3 - Construction Activity Stormwater General Permit; Freshwater Wetlands (FWW) Individual Permit and FWW General Permits; Flood Hazard Area (FHA) Individual Permit and Streams/Rivers & Flood Hazard General Permits and Permit-by-Rule (PBR) 33; Coastal

Permitting General Permits, Waterfront Development (WFD) Individual Permit and Coastal Zone Management Federal Consistency, CAFRA Individual Permit, Coastal Wetlands Individual Permit; and the Tidelands License/Grants Approval.

More information regarding the state regulatory review process can be found in the Permit Matrix prepared for Project #103 in Appendix A -Table 10.

Local Permits and Approvals

At the local level, Project #103 is located in the jurisdiction of the City of Bordentown, NJ. Construction of a Public utility use will require approval of a Conditional Use Permit. Article XVI of the City of Bordentown Code of Ordinances discusses the conditional use permit procedures, application, notice of hearing, and specific public utility uses regulations. Site Plan Reviews demonstrating compliance with all zoning and land use regulations will be required. All City of Bordentown permits for construction, building, electrical, plumbing, and fire protection are issued by the State of New Jersey, Department of Community Affairs Building Inspectors and Officials.
Ultimately, consultation with the City of Bordentown is recommended to ensure Project designs adhere to local regulations and all permitting requirements are met.

At the County-level, the Project is sited in Burlington County. Any proposed developments may trigger a review from the Planning Board for conformity with state statutes and local bylaws and regulations. It is likely that City of Bordentown review will supersede the need for any additional County review. A Road Opening and Driveway Access Form / Road Occupancy Permit will be required for any excavation work or driveway access construction using County Road 660 (Old York Road).

Construction activities resulting in one or more acres of earth disturbance require Soil Erosion and Sediment Control (SESC) Plan Approval from the Burlington County soil conservation district. Any land disturbances of 5,000 square feet or more need to apply for certification.

More information regarding the local regulatory review process can be found in the Permit Matrix prepared for Project #103 in Appendix A -Table 10.

Infrastructure

A review of aerial photography indicates that various types of several developed land structures are present within the quarter mile buffer of the proposed substation location.

No railroads intersect the quarter-mile buffer.

No water wells are mapped within the quarter-mile buffer.

No oil/gas wells are located within the quarter-mile.

The Transcontinental Gas Pipeline Corp natural gas pipeline runs northeast-southwest through the quarter-mile buffer.

The New Freedom to East Windsor 500 kV transmission line runs northeast-southwest through the quarter-mile buffer. The Crosswick to Burlington 138 kV transmission line also runs northeast-southwest through the quarter-mile buffer.

No substations are located within the quarter-mile buffer.

No airports are mapped within one-mile of the proposed substation location.

Environmental (Regulatory) Risks

A summary of the environmental risks that may impact the Project is provided in the table below.

Risk Analysis		
Category	**Items of Note**	**Significant Constraints/Hurdles**
Floodplain	The Study Area is located outside of any floodways, 100-year floodplains, and 500-year floodplains.	None identified.
Water Resources	Potential wetlands were not identified on any public datasets (NWI, NHD, etc.)	None identified.
Water resources regulations	If jurisdictional wetlands/waterways are present, project infrastructure such as access roads and foundations should be sited to avoid water resources to the degree practicable. There are no Impaired Waters within the Study Area, however, Blacks Creek occurs within 30 feet of the Project boundary.	Additional construction BMPs may be required due to the proximity of an Impaired Water.
Biological Resources	**IPaC** Two federally threatened species and one candidate for listing species have the potential to occur within the Project Area and surrounding region. Please note that candidate species are not currently afforded any statutory protections. Likelihood of occurrences are as follows: **High:** NLEB **Moderate:** Bog turtle, monarch butterfly. **Low to Moderate:** Bald Eagle.	Recommend that tree clearing be avoided; if necessary, restrict it to the NLEB inactive season (November 1 – March 31). If present, all active eagle nests require at least a 660' construction buffer during the breeding season. Rare species surveys could be required for bog turtles due to the documentation of a state threatened species within the quarter-mile buffer of the Project Area.
Archaeological and Historic Resources	There are no archaeological sites in the vicinity of the Project. No historic properties or districts intersect or are located adjacent to the Project Area.	None identified.
Public Lands	One agricultural easement falls within the quarter-mile buffer of the Project Area.	Public lands and conservation areas may have specific permits and/or land use restrictions. Project will need to confirm any restrictions/setbacks

		during design process to avoid and/or implement controls/setbacks as necessary.
Land Cover	The Study Area is mainly comprised of deciduous forest.	None identified.
Zoning and Land Use	The Project Area is located in the City of Bordentown, Burlington County, New Jersey. Construction of utility uses will require approval of a Conditional Use Permit from the City. Other permits administered by local authorities include a Site Plan Review and Construction Permit. An assortment of permits are administered by the State and Federal Governments, see Appendix A -Table 10 for further information and discussions.	Recommend additional coordination with regulatory agencies and permitting authorities as the plans for this Project develop.
Infrastructure	Two transmission lines run northeast-southwest through the quarter-mile buffer.	None identified.
Soils	Soils are classified as not prime farmland, all areas are prime farmland, or farmland of statewide importance.	None identified.
Environmental Hazards	No significant records identified in NJ DEP: NJ-GeoWeb or the US EPA: MyEnvironment search.	None identified.

Transmission Line Analysis

Conceptual Design Summary and Risks

The transmission elements proposed under Proposal #103 are listed in detail below.

Interconnection of Existing 500 kV and 230 kV lines to Old York Substation

- Proposal #103 contains minimal information regarding the assumptions for the transmission tie in of the identified 500kV and 230kV lines.
- It is assumed that the 500kV tie in will require two (2) new steel lattice towers as indicated in the LS Power documents. It is also assumed that the 230kV tie in will require two (2) structures that will be self-supporting engineered steel mono-poles on drilled concrete piers.

500kV Line Interconnection Assumptions:

Structure Type:	Steel Lattice Towers
Foundation:	Concrete Piers
Framing:	Terminal Dead End
# of Structures:	2

230kV Line Interconnection Assumptions:

Structure Type:	Custom Steel Mono Poles w/ Davit Arms
Foundation:	Concrete Pier
Framing:	Terminal Dead End
# of Structures:	2

Substation Analysis

Conceptual Design Summary and Risks

Potential Substation Component Constraints and Risks

- A proposed substation yard of approximately 4.2 acres as shown in the original proposal documents is adequate.
- However, the size and layout of the GIS buildings will need to be re-evaluated from the proposal to ensure that all the components still fit in the substation area. The non-electrical components such as drainage retention or entrance roadways will have adequate space to fit within the property line, however that need to be re-assessed as well if there are going to be any changes.

Construction Schedule

- The conceptual project schedule developed by the onshore consultant indicates that the on-shore aspects of the project will take approximately 36 months to complete, from Project initiation to energization. It is assumed that the engineering process can continue as siting permit is reviewed. There are four major activities on the critical path: Engineering; Siting and major permit acquisition; long lead equipment procurement; construction and commissioning. Delays in completing any of these activities would jeopardize completing the Project within the estimated schedule.
- Review of the environmental factors indicate that construction of the proposed substation is feasible, and that the project area is clear of environmental risks. As a result, no significant risks have been identified for the proposed schedule.

Proposal 203

Environmental (Regulatory) Analysis

Desktop Review

- Project #203 proposes the construction of two (2) greenfield substations Broad Creek 500/230 kV and Robinson Run 500kV, and a greenfield Broad Creek to Robinson Run 500 kV transmission line. Broad Creek substation will be interconnected between existing Bagley to Graceton #1 and #2 230 kV transmission lines. Robinson Run substation will be interconnected between the existing Peach Bottom – Delta Power Plant 500 kV transmission line. The Project area spans from York County, PA to Harford County, MD.

- An analysis of the Project area was performed to assist in the identification of major environmental and socioeconomic features and to provide a base for the extrapolation and derivation of future construction,

permitting, mitigation, and land costs studies for the overall Project. The results of the desktop review for this Study Area are discussed below, and details provided in Appendix A -Tables 11, 12, 13, and 14.

Environmental (Regulatory) Risks

The following is a brief summary of the potential risks identified.

Federal, State, Local Permitting

- See Appendix Table 14 for details.
- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Resource Crossings

- See Appendix Tables 11 and 12 for details
- Scott Creek (PA): Chapter 93 designated (Cold Water Fishes and Trout Stocked)
- Jack's Hole (MD): Designation NA, but should be considered when permitting
- Broad Creek (MD): Designation NA, but should be considered when permitting
- Falling Branch (MD): Designation NA, but should be considered when permitting
- Big Branch (MD): Designation NA, but should be considered when permitting
- Island Branch (MD): Designation NA, but should be considered when permitting
- Deer Creek (MD): Designation NA, but should be considered when permitting

Cultural Resources

- See Appendix Tables 11 and 12 for details
- Potential Cultural Resource impacts identified in both MD and PA.

Flood Plains/Wetlands

- See Appendix Tables 11 and 12 for details
- Wetlands/Hydric soils present within project area; wetland delineations will be needed

Threatened and Endangered Species

- See Appendix Table 13 for details
- Pennsylvania
    - American Holly (*Ilex opaca*): PA; Atom Road Woods
    - Lobed Spleenwort (*Asplenium pinnatifidum*): PA; Atom Road Woods
    - Harbinger-of-spring (*Erigenia bulbosa)*: PA; Peach Bottom Woods
    - Declined Trillium (*Trillium flexipes)*: PA; Peach Bottom Woods
    - Broad-headed Skink (*Plestiodon laticeps)*: Pennsylvania
    - Indiana Bat (*Myotis sodalist)*; potential within project area
    - Northern Long-eared Bat (*Myotis septentrionalis)*; potential within project area
    - Bog Turtle (*Clemmys muhlenbergii*); potential within project area
    - Monarch Butterfly (*Danaus plexippus*); potential within project area
- Maryland
    - Several Maryland T&E species identified, additional survey/review needed to determine species/habitat specifics and impact on project area

Infrastructure

- See Appendix Tables 11 and 12 for details
- Additional review of land use around proposed project areas identified no airports in proximity (approx. 3 mile) to project area.
- Based on publicly available data, there will be no impacts due to crossing of active railroads.

Transmission & Substation Analysis

- Engineering:
  - 500 kV crossings at Broad Creek and Robinson Run substations
  - Some concern about existing ROW being wide enough for the proposed greenfield double circuit Broad Creek – Robinson Run transmission line
- Siting and Major Permit Acquisition
  - Project assumes right-of-way from incumbent transmission owner's line Graceton-Cooper 230 kV, indicating that the Graceton – Cooper line will be demolished in the portions that it overlaps with the proposed Broad Creek - Robinson Run transmission line and rebuilt onto a double circuit structure that will also contain the new 500kV Broad Creek – Robinson Run transmission line.
    - No details provided indicating that the incumbent transmission owner has been consulted about the proposed removal/rebuild of their line.
  - Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commission via issuance of Certificate of Public Convenience and Necessity (CPCN)
- Long-lead Equipment Procurement
  - 24-36 months typically required for 500/230 Transformers (1 required for Orchard substation upgrades)
  - Project assumes prompt ordering, may incur high cost from scarcity; delays to design will impact material delivery risk.
  - Concern with lead times for delivery of large power equipment as both foreign and US manufacturers have been delayed due to logistics and material delays.
- Construction and Commissioning
  - Demolition of Graceton-Cooper 230 kV line required prior to construction of the proposed greenfield double circuit Broad Creek – Robinson Run transmission line.

Construction Schedule

The proposed project schedule is summarized below

Proposal 203	
Start Date:	1/2024
Construction Start Date	1/2026
In Service Date	5/2028
Total Project Duration	52 months

The proposed schedule is adequate for the outlined scope, with moderate risks assessed due to engineering considerations.

Proposal 229

Environmental (Regulatory) Analysis

Desktop Review

Project #229 is located within Lower Alloways Creek Township in Salem County, New Jersey and Townsend, New Castle County, Delaware and includes the construction of two new transition structures and new submarine cables (the cables will not be addressed in this report). The proposed structures will reside in Lower Alloways Creek Township in Salem County, New Jersey and Townsend, New Castle County, Delaware. Project #229 includes the following two components:

- Component 1: Silver Run – Hope Creek Upgrade
- Component 2: Silver Run Substation Upgrade

Study Area

The environmental review consisted of mapping and assessing the water/wetlands resources, biological resources, public lands, cultural resources, existing infrastructure, soils and farmland resources within a ¼ mile of the proposed Project centerline (henceforth known as the Study Area). The results of the desktop review for this Study Area are discussed below, and summarized in Appendix A -Table 15.

Land Use

According to the USGS National Land Cover Database (NLCD, 2019), the 12.96-acre Study Area is mainly comprised of land classified as Open Water.

Land Cover Type	Area (Acres)	Percent of Total
Open Water	6.33	48.81
Developed, Open Space	2.49	19.19
Developed, Low Intensity	1.33	10.25
Emergent Herbaceous Wetlands	1.25	9.63
Developed, Medium Intensity	1.01	7.76
Developed, High Intensity	0.57	4.36
Total	**12.96**	**100**

*Values rounded to the nearest hundredth.

Public and Protected Lands

The Project Area or its quarter-mile buffer intersects two parcels of public and conservation lands: the Delaware Bayshore Marshes Conservation Focal Area (CFA) and the Augustine State Wildlife Management Area. The National Oceanic and Atmospheric Administration (NOAA) manages the Delaware River, which is located immediately adjacent to the Project. No other federal public lands are located within one mile of the Project Area (PADUS 2021).

Special Landscape or Hazard Areas

A search for known environmental contaminants within ¼-mile of the Project Area was completed using the New Jersey Department of Environmental Protection: NJ-GeoWeb and the U.S. Environmental Protection Agency: MyEnvironment online application. One regulated site is located within a quarter-mile of the Project Area but poses no threat to the Project.

Floodplains, Waterbodies and Wetlands

According to FEMA Flood Insurance Rate Map (FIRM), there are 7.16 acres of mapped 100-year floodplain (Zones AE and VE) within the Study Area, Zone VE should be noted as it is associated with storm wave hazards. There are also 1.96 acres of mapped 500-year floodplain (Zone X). There are no FEMA mapped floodways, however, the Study Area crosses the Delaware River which is classified as 0.39 acres of open water.

According to NWI data, 3 wetlands totaling 7.00 acres were identified within the Study Area. Wetlands are classified as Estuarine and Marine Wetland and Estuarine and Marine Deepwater. See below for a breakdown of NWI wetland types and their respective acreages within the Study Area.

Wetland Classification		Count	Acres within Study Area
Tidal Wetlands	Estuarine and Marine Deepwater	2	6.79
	Estuarine and Marine Wetland	1	0.21
	Total	***3***	***7***

Threatened and Endangered (TE) Species and Protected Habitats

Threatened and endangered species and protected habitats can impact permitting, construction schedules, and construction techniques.

Given the results of the desktop review of publicly available data, it is anticipated that the Project is within the range of both federally- and state-listed species, and that coordination with state and federal agencies will be required. Construction restrictions, timeframe, or mitigation may be necessary to comply with avoidance of sensitive species, however, the extent of which cannot be known until after coordination with the NJDEP takes place.

Cultural Resources

The results of the review for previously recorded archaeological sites and historic resources within the Project Area and the ¼-mile buffer are summarized below.

Archaeological Sites

According to the Archaeological Site Grid, no archaeological sites are located within ¼-mile of the Project Area.

Historic Resources

One Historic Property is recorded within ¼-mile of the Project Area. The farm is nonextant.

No Historic Property Features or Historic Districts were identified in the Study Area.

Federal, State, and Local Environmental Permits

Federal Permits

Depending on the outcome of wetland and stream delineations and the final design, Project #103 could require federal permits, authorizations, and consultations prior to construction. These include but are not limited to the US Army Corps of Engineers (USACE) Section 404 permits for dredge and fill activities in wetlands and other waters of

the US and USACE Section 10 permits for structure construction along the banks of or within, over, or under navigable waters. In addition, USFWS consultations and authorizations under Section 7 of the ESA could also be required. To be in compliance with these federal permits, consultation and concurrence typically needs to be received from state agencies as well.

More information regarding the Federal regulatory review process can be found in the Permit tables in Appendix A - Table 15.

State Permits

Delaware:
The Delaware Public Utilities Commission regulates electric utility providers and transmission line construction and operation under Title 26 of the Delaware Code. No person or entity shall begin the business of an electric transmission utility providing transmission facilities, as defined in §1001(26) of Del. Code tit. 26 § 203E, without having first obtained from the Commission a certificate that the present or future public convenience and necessity requires, or will be served by, the operation of such business.

A Cultural and Historic Resource Review from the Delaware State Historic Preservation Office (DE SHPO) will be required for any State or Federal undertakings. A Project Review is available for voluntary submissions, should a due diligence review be desired. The Delaware Department of Natural Resources and Environmental Control (DNREC) regulates all State tidal wetlands as well as those non-tidal wetlands that include 400 or more contiguous acres under the Delaware Wetlands Act (7 Del. Code, Chapter 66) and the Wetlands Regulations (7 DE Admin. Code 7502). "State-regulated" wetlands protected by law are defined as "those lands lying at or below two feet above local mean high water which support or are capable of supporting" certain plant species that are listed in the law and regulations. The types of activities in these wetlands that are regulated (i.e. that require a permit from DNREC) include dredging, draining, filling, construction of any kind, bulkheading, mining, drilling and excavation. All permits for wetland impacts will use the Wetlands and Subaqueous Lands Section Permit Application Form. The DNREC has attached appendices for a variety of other activities, which will be required for authorization. Applicable appendices include the Road Crossing, Channel Modifications or Impoundment Structures, Utility Crossings, Fill, Rip-Rap, Vegetative Stabilization, Construction in State Wetlands, Excavating, and Stormwater Management Appendices. A Jurisdictional Determination and Map Change Request Form determines that jurisdictional State wetlands or waters of the State are either present or absent on the property, which is recommended in the event of any proposed wetland impacts.

The Study Area is located in the Delaware Coastal Zone, regulated under the Coastal Zone Permit Act of 2017. Manufacturing, heavy industry, and bulk product transfer activities require a coastal zone permit in addition to other applicable DNREC permits. Various heavy industry activities remain prohibited within the coastal zone, such as oil refineries, paper mills, incinerators, steel manufacturing plants, and liquefied natural gas terminals. Substations and transmission lines are not discussed as a heavy industry use and may be considered a permitted use in the Coastal Zone. A Request for Status Decision is recommended to determine whether the proposed Project would be prohibited, exempt from permitting, or would require a standard or conversion permit.

New Jersey:

Potential approvals required for Project development include the 5G3 - Construction Activity Stormwater General Permit; Freshwater Wetlands (FWW) Individual Permit and FWW General Permits; Flood Hazard Area (FHA) Individual Permit and Streams/Rivers & Flood Hazard General Permits and Permit-by-Rule (PBR) 33; Coastal Permitting General Permits, Waterfront Development (WFD) Individual Permit and Coastal Zone Management Federal Consistency, CAFRA Individual Permit, Coastal Wetlands Individual Permit; and the Tidelands License/Grants Approval.

More information regarding the state regulatory review process can be found in the Permit tables in Appendix A - Table 15.

Local Permits and Approvals

At the local level, Project #229 crosses is located in Lower Alloways Creek Township, Salem County, NJ and unincorporated areas of New Castle County, DE. Lower Alloways Creek Township and New Castle County will be the local authority having jurisdiction of Project development in the applicable corporate boundaries. Westwood reviewed each jurisdictions Government Website regarding zoning, land use ordinances, and potential municipal level permitting for substation and transmission line construction projects. Substation construction is considered a conditional land use in Lower Alloways Township. Utilitity construction in New Castle County is considered a use permitted via limited zoning review. Site Plan Reviews and or Building/Construction permits demonstrating compliance with all zoning and building regulations are required in local jurisdictions. Other identified approvals from local jurisdictions include soil erosion and sediment control plan approvals, road access permits, and road opening applications.

Construction activities resulting in one or more acres of earth disturbance require Soil Erosion and Sediment Control (SESC) Plan Approval from the Burlington County soil conservation district. Any land disturbances of 5,000 square feet or more need to apply for certification.

More information regarding the local regulatory review process can be found in the Permit tables in Appendix A - Table 15.

Infrastructure

The Project does not cross any local, State, or Federal Highways.

A review of aerial photography indicates that no structures or other buildings are present in close proximity to the Project Area.

No railroads are crossed by the proposed Project or located immediately adjacent to the Project Area.

No water wells are located in the proposed Project Area. No wellhead protection areas are located in close proximity to the Project Area.

No oil or gas wells are mapped in or within the Project Area. No natural gas pipelines are crossed or located in close proximity to the proposed Project.

The Hope Creek Generating Station is a thermal nuclear power plant located adjacent to the proposed Project.

Two substations are located in close proximity to the Project Area. Seven existing transmission lines are located adjacent to the eastern portion of the Project Area. Identified transmission lines range from step-up voltages up to 500 kV.

No airports are mapped within five miles of the Project Area. The proposed Project is unlikely to trigger Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard) through the Federal Aviation Administration (FAA) for construction of any structure exceeding 200 feet in height.

Environmental (Regulatory) Risks

A summary of the environmental risks that may impact the Project is provided in the table below.

Risk Analysis		
Category	**Items of Note**	**Significant Constraints/Hurdles**
Floodplain	The Study Area has FEMA mapped open water, 100-year floodplains, and 500-year floodplains.	State and local permits will be required for any development within a floodway or 100-year floodplain.
Water Resources	Potential wetlands and other regulated waters, transition areas, and tidelands are present in the Study Area. Section 10 waters are present within the Study Area.	None identified.
Water resources regulations	If jurisdictional wetlands/waterways are present, project infrastructure should be sited to avoid water resources to the degree practicable. There are impaired waters within the Study Area. Section 10 waters are present within the Study Area.	State and Federal permits will be required for impacts to jurisdictional waters. Additional stormwater BMPs are likely. Addition restrictions likely due to presence of Section 10 Water.
Sensitive Biological Resources	Five species were identified by the IPaC: Rufa Red Knot, bog turtle, monarch butterfly, sensitive joint-vetch, and swamp pink. Bald Eagle was also reviewed. Likelihood of occurrence within the Project Area are as follows: **High**: Rufa Red Knot, bog turtle, monarch butterfly, and Bald Eagle. **Low**: swamp pink, sensitive joint-vetch.	A spring and fall Rufa Red Knot avoidance period is recommended. Phase I bog turtle habitat assessment is recommended; all potentially suitable wetlands should be avoided until the need for a Phase II survey can be determined. Rare plant surveys may be necessary. Bald Eagle nest surveys are recommended. If present, all in-use (active) eagle nests require at least a 660’ no-construction buffer. Alternate (inactive) nests may also require a buffer.
Archaeological and Historic Resources	No known cultural resources recorded in the Study Area.	None identified.
Public Lands	The Project Area or its quarter-mile buffer intersects two parcels of public and conservation lands: the Delaware Bayshore Marshes CFA and the Augustine State Wildlife Management Area.	Public lands and conservation areas may have specific permits and/or land use restrictions. Project will need to confirm any restrictions/setbacks during design process to avoid and/or implement controls/setbacks as necessary.
Land Cover	The Study Area is mainly comprised of open water.	None identified.
Zoning and Land Use	The Project Area is located two jurisdictions between New Jersey and Delaware. A variety of local permits may be required including:	Recommend additional coordination with regulatory agencies and

	Conditional Use, Zoning, Special Review/Limited Review, Site Plan Reviews, Construction Permits, and roadway permits. An assortment of permits are administered by the State and Federal Governments, see Appendix A – Table 15 for further information and discussions.	permitting authorities as the plans for this Project develop.
Infrastructure	Minimal infrastructure is located in or adjacent to the proposed Project Area. Several transmission lines and substations are located at the adjacent Hope Creek Generating Station.	Avoidance or setbacks from structures may be necessary. Crossing agreements with other utility operators may be required. Consultation with Hope Creek Generating Station officials should be conducted.
Soils	Soils within the Study Area are classified as not prime farmland.	None identified.
Environmental Hazards	No significant records identified in NJ DEP: NJ-GeoWeb or the US EPA: MyEnvironment search.	None identified.

Transmission Line Analysis

Conceptual Design Summary and Risks

The transmission elements proposed under Proposal #229 are listed in detail below.

Silver Run to Hope Creek 230 kV Project

Proposed UP-RATED OH Line Rating Data

New OH Conductor: Single (1) 1033.5 KCMIL ACSS "Curlew" Per Phase

Winter Rating
- Normal: 1364 MVA
- Emergency: 1614 MVA

Summer Rating
- Normal: 1364 MVA
- Emergency: 1614 MVA

Line Length: UNKNOWN – Unable to determine route.

Proposed UP-RATED UG Line Rating Data

New OH Conductor: Add a single (1) 3500KCMIL COPPER 230kV HVAC Submarine Power Cable Per Phase

Winter Rating
- Normal: 1364 MVA
- Emergency: 1614 MVA

Summer Rating

Normal: 1364 MVA
Emergency: 1614 MVA
Line Length: 2.78 Miles (approximately)

- There are general concerns with construction projects of this type specifically the submarine cable construction, outage coordination and difficult permitting process.

Substation Analysis

Conceptual Design Summary and Risks

The substation elements proposed under Proposal #229 are reviewed in detail below.

Silver Run Substation Upgrades

- Upgrades have been proposed at the Silver Run substation. The transmission line equipment for the Silver Run to Hope Creek 230kV transmission line will be upgraded to a capacity of 5,000 amps.
- This upgrade will include all equipment from the transmission line terminals to the substation main buses. Included in this upgrade will be three (3) 230kV circuit breakers, six (6) group operated air insulated disconnect circuit breaker isolation switches and one (1) group operated air insulated disconnect line isolation switch and all main bus conductor and equipment jumpers to handle the 5,000A project requirement.
- This project is replacing equipment on a one for one basis and will not require additional property to complete. The equipment foundations will require review in relation to the new equipment to confirm suitability for the new equipment. This project can be done in small stages to reduce the outage coordination efforts required to one transmission line at a time.
- The Silver Run substation project will be a simple one for one replacement of existing equipment within the Silver Run substation.
- No additional property will be required for this project.
- Outage coordination will be required for the Red Lion #2 230kV transmission line during upgrades to the three (3) circuit breakers impacted by this project in the breaker-and-a-half bay containing the Hope Creek 230kV transmission line.

Construction Schedule

- The conceptual project schedule developed by the onshore consultant indicates that the on-shore aspects of the project will take approximately 36 months to complete, from Project initiation to energization. It is assumed that the engineering process can continue as siting permit is reviewed. There are four major activities on the critical path: Engineering; Siting and major permit acquisition; long lead equipment procurement; construction and commissioning. Delays in completing any of these activities would jeopardize completing the Project within the estimated schedule.

Cost Reviews

Proposal 103

Proposal Cost Estimates

The total proposal costs for LSPG Proposal 103 are given below.

Category	Proposal 103
Materials and equipment	$40,177,495
Construction and commissioning	$15,188,390
Engineering and design	$2,452,926
Permitting / routing / siting	$652,527
ROW / land acquisition	$7,565,553
Construction management	$1,669,795
Overheads and miscellaneous costs	$4,114,225
Contingency	$3,811,045
Total Project	**$75,631,956**

Independent Cost Estimates

PJM's consultant assembled independent cost estimates for the proposed facilities using historical data from similar projects, information collected from original equipment vendors and contractors supplying similar services, and other publicly available sources. The accuracy of consultant's estimates is expected to be ±25%. The estimates are in 2022 dollars and includes a 30% contingency.

The Independent estimate for the Proposal 103 is:

Category	Proposal 103
Materials and equipment	$49,407,148
Construction and commissioning	$9,742,199
Engineering and design	$3,022,530
Permitting / routing / siting	$600,000
ROW / land acquisition	$7,350,000
Construction management	$1,507,421
Overheads and miscellaneous costs	$2,118,320
Contingency	$19,919,286
Total Project	**$93,666,905**

Proposal 203

Proposal Cost Estimates

The total proposal costs for LSPG Proposal 203 are given below.

Category	Proposal 203
Materials and equipment	$45,942,159
Construction and commissioning	$26,733,757
Engineering and design	$4,845,519
Permitting / routing / siting	$2,479,094
ROW / land acquisition	$3,821,718
Construction management	$4,814,121
Overheads and miscellaneous costs	$1,954,944
Contingency	$13,588,697
Work by Others	$2,530,000
Total Project	**$104,180,009**

Independent Cost Estimates

PJM's consultant assembled independent cost estimates for the proposed facilities using historical data from similar projects, information collected from original equipment vendors and contractors supplying similar services, and other publicly available sources. The accuracy of consultant's estimates is expected to be ±25%. The estimates are in 2022 dollars and includes a 30% contingency.

The Independent estimate for the Proposal 203 is:

Category	Proposal 203
Materials and equipment	$41,496,895
Construction and commissioning	$53,089,017
Engineering and design	$10,512,509
Permitting / routing / siting	$1,525,000
ROW / land acquisition	$899,000
Construction management	$5,376,121
Overheads and miscellaneous costs	$10,160,869
Contingency	$36,917,823
Total Project	**$159,977,233**

Proposal 229

Proposal Cost Estimates

The total proposal costs for SRE Proposal 229 are given below.

Category	Proposal 229
Materials and equipment	$17,315,611
Construction and commissioning	$25,341,657
Engineering and design	$2,039,603
Permitting / routing / siting	$1,598,888
ROW / land acquisition	$2,616,594
Construction management	$1,871,405
Overheads and miscellaneous costs	$2,432,351
Contingency	$7,982,417
Total Project	**$61,198,526**

Independent Cost Estimates

PJM's consultant assembled independent cost estimates for the proposed facilities using historical data from similar projects, information collected from original equipment vendors and contractors supplying similar services, and other publicly available sources. The accuracy of consultant's estimates is expected to be ±25%. The estimates are in 2022 dollars and includes a 30% contingency.

The Independent estimate for SRE Proposal 229 is:

Category	Proposal 229
Materials and equipment	$46,723,608
Construction and commissioning	$1,455,025
Engineering and design	$3,064,557
Permitting / routing / siting	$1,550,000
ROW / land acquisition	$2,050,000
Construction management	$2,717,357
Overheads and miscellaneous costs	$399,204
Contingency	$19,231,986
Total Project	**$77,191,737**

Public Service Electric & Gas Company (PSEG) Proposals

Executive Summary

Public Service Electric and Gas (PSE&G) proposed two Option 1a proposals to address multiple reliability violations identified by PJM resulting from the injections at identified default Points of Interconnection (POI) representing future offshore wind generation and the transmission facilities necessary to connect the future offshore wind to the PJM grid.

The "Central Jersey Grid Upgrade" (CJGU), Proposal 180, technical solution will address the identified generator deliverability criteria violations in the PSE&G and PSE&G/JCP&L affected areas. While the "South Jersey Grid Upgrade Project" (SJGU), Proposal 894, located in New Jersey and Delaware is proposed to resolve reliability violations of the existing Hope Creek-Silver Run 230-kV circuit projected to arise as a result of injections of future offshore wind (OSW) generation onto the system.

Table 3. **PSEG Option 1a Proposals**

Proposal ID(s)	Description(s)	Notes
180 894	Central Jersey Grid Upgrades South Jersey Grid Upgrade	Stand-alone project Stand-alone project

Proposal 180 (Central Jersey Grid Upgrade)

Project Overview

Project # 180 is located in Middlesex, Union, Bergen, and Mercer Counties, New Jersey, and includes include looping the Brunswick – Devils Brook 230 Kilovolts (kV) line into Deans Substation, upgrading equipment at Deans Substation, upgrading equipment at Linden Switching Station, reconfiguring the Windsor – Clarksville 230kV line outside of each substation, upgrading equipment at Windsor and Clarksville Substations, and upgrading equipment at Bergen Substation.

The Project proposes to resolve the following PJM identified flowgates:

28-GD-L14, 28-GD-S2-S1, 28-GD-S2-S136, 28-GD-S2-S137, 28-GD-S2-S2, 28-GD-S2-S3, 28-GD-S2-W6, 28-GD-S2-W7, 28-GD-S2-W90, 28-GD-S2-W94, 28-GD-S2-W97, 28-GD-S2-W98, 28-GD-S64, 28-GD-S65, 28-GD-S66, 28-GD-S72, 28-GD-S73, 28-GD-W108, 28-GD-W109, 28-GD-W12, 28-GD-W3, 28-GD-W6, 28-GD-W8, 35-GD-L14, 35-GD-S13, 35-GD-S14, 35-GD-S2-S2, 35-GD-S2-S6, 35-GD-S2-S8B, 35-GD-S2-S9, 35-GD-S2-W13, 35-GD-S2-W15, 35-GD-S2-W16, 35-GD-S2-W9A, 35-GD-W13, 35-GD-W4, 35-GD-W7, 35-GD-W9

The Project will consist of the following components:

- Reroute the Brunswick to Devil's Brook 230-kV T-2351 circuit into and out of new positions at the PSE&G Deans 230-kV Switching Station via two new breaker and half bays.
- Increase fault rating of the PSE&G Deans 230-kV Switching Station from 63-kA to 80-kA, via replacement of twelve 230-kV 4000A circuit breakers, replacement of insulators, bus, grounding, controls, etc. to achieve desired rating.

- Relocate the existing Tosco-Linden 230-kV B-2254 circuit from Linden 230-kV to Linden 345-kV via a new 345/230-kV Transformer at Linden.
- Reconfigure the Windsor to Clarksville 230-kV circuit to have two conductors per phase & make appropriate station upgrades at Clarksville (PSE&G) and Windsor (JCP&L)
- Install one (1) new breaker to expand PSE&G's Bergen 138-kV bus switching Station

Constructability Summary

Project 180 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Components of this project run through Green Acres-encumbered properties. However, given that the project predominantly uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- The Project has the potential to impact environmental resources, including streams and wetlands within coastal and freshwater ecosystems, and impacts to these resources may require a number of permits from the state and county.

Transmission Line Analysis:

- Rebuilding or reconductoring the existing lines within the existing ROW minimizes construction and design risks.
- For the reconductors, it is assumed that the existing structures are in good condition and can be reused. It is assumed that a portion of the existing towers will need to be reinforced.
- If a rebuild is needed due to structure conditions, over stressed structures, or clearance violations caused by the proposed conductor, costs and schedule will be affected.

Construction Schedule:

- Using the longest component as the critical path, the project is estimated to take approximately 36 months.
- The entity's overall project schedule of 48 months seems reasonable.

Cost Review:

- Independent cost estimate: $ 55,729,037
- Entity's cost estimate: $ 86,766,814

Proposal 894 (South Jersey Grid Upgrade)

Project Overview

Project # 894 is located within Lower Alloways Creek Township in Salem County, New Jersey and Townsend, New Castle County, Delaware. PSE&G has proposed a plan to increase the capacity of the Hope Creek to Silver Run 230kV line. They are proposing to install a new undersea route across the Delaware River which would run alongside the existing underground 230kV line.

The Project proposes to resolve the following PJM identified flowgates:

28-GD-S2-W14, 28-GD-S2-W15, 28-GD-S2-W91, 28-GD-S2-W92, 28-GD-S2-W93, 28-GD-W124, 28-GD-W125, 28-GD-W21, 28-GD-W22, 28-GD-W23, 35-GD-S2-W10A, 35-GD-S2-W11, 35-GD-S2-W12, 35-GD-W22, 35-GD-W23, 35-GD-W24

The Project will consist of the following components:

- New 230-kV submarine cable crossing located below the Delaware River paralleling the existing submarine portion of the Hope Creek-Silver Run 230-kV circuit
- Installation of two (2) new cable riser structures to accommodate the connection of 2.6-mile new submarine section crossing between New Jersey and Delaware
- Installation of two (2) double circuit structures on each side of the Delaware River after the new riser structures to facilitate the pairing of the circuit with the existing Hope Creek-Silver Run 230-kV circuit

Constructability Summary

Project 894 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Project consists of submarine cable crossing of navigable Delaware River between NJ/DE. USACE Section 10/Section 404 Nationwide Permit 57 approvals will be required.
- Permitting requirements in NJ and DE

Transmission Line Analysis:

- General concerns about submarine cable construction

Schedule:

- The project is independently estimated to take approximately 36 months to construct.
- The entity's overall construction schedule of 52 months seems reasonable.

Cost Review:

- Independent cost estimate: $63,694,010
- Entity's cost estimate: $ 71,924,163

Constructability Reviews

Proposal 180

Environmental (Regulatory) Analysis

Desktop Review

The desktop review focuses on the on-shore Project components outside existing substations. These components are comprised of aerial transmission line work adjacent to four substations and a substation expansion. Project components are as follows:

Linden component (0.4-mile)

- Relocate the TOSCO-Linden 230kV line.

- Expand Linden Substation to accommodate equipment upgrades.

Windsor component (0.1-mile)

- Reconfiguring the last span of the Windsor – Clarksville 230kV line

Clarksville component (0.1-mile)

- Reconfiguring the last span of the Windsor – Clarksville 230kV line

Deans component (0.7-mile)

- Loop the Brunswick – Devils Brook 230kV line into and out of new positions

Study Area

Therefore, the Study Area is a 400-foot buffer centered on the line routes and the area provided for the substation upgrades and expansion. The results of the desktop review for this Study Area are discussed below, and summarized in Appendix A -Table 16, 17 and 18.

Land Use

Aerial imagery was used to develop a high-level review of land use and cover in the Project Study Area. The majority of the Project's Study Area is within existing transmission line ROW or within/adjacent to existing substation footprints. Adjacent land use to the Linden component is largely industrial and transportation land use. Adjacent land use to the Deans, Windsor, and Clarksville components is largely forested land use.

The Project is compatible with the land uses crossed. However, coordination with transmission line companies holding the existing ROW easements would need to be conducted to negotiate use of their ROW.

Public and Protected Lands

The desktop review showed that the Study Area crosses one public land. Davidson Mill County Park, in South Brunswick Township, is crossed by the Deans component. A review of the NJ Public Access Locations Search Tool showed that no waterways within the Study Area are subject to public trust rights.

Special Landscape or Hazard Areas

Special hazard areas are areas that the NJDEP deems as having a known actual or potential hazard to public health, safety, and welfare, or to public or private property (NJDEP 2021). These areas include the navigable airspace around airports and seaplane landing areas, potential evacuation zones, hazardous material disposal sites, and areas of hazardous material contamination. Review showed that no special hazard areas are crossed by the Project.

Aerial imagery of the Project was reviewed for special landscape features, including coastal bluffs, wet and dry borrow pits, dunes, erosional hazard areas, lagoon edges, and overwash areas. Based on the review, it was determined that these special landscape features are not likely impacted by the Project. Furthermore, the Study Area was reviewed for mapped beaches and no beaches were located in the Project's Study Area.

Floodplains, Waterbodies and Wetlands

Federal Emergency Management Agency's Floodplains and Floodways data was reviewed for coastal high hazard areas and flood hazard areas. No coastal high hazard floodplains are crossed by the Project. However, floodplains or floodways are crossed by the Windsor, Linden, and Clarksville components of the Project.

The NJGIN Wetlands of NJ (2021) was used to gather data on wetland areas potentially crossed by the Study Area. The data indicates that the Project has the potential to cross modified, deciduous wooded, and phragmites dominant interior wetland areas. The majority of these wetlands are associated with the floodplains of Bear Brook, and

unnamed tributaries (UNTs) to Lawrence Brook, Pile's Creek, and Shipetauken Creek. A wetland buffer or "transition area" of 150 feet around these wetlands is regulated by the NJDEP as an area of protection, which minimizes impacts to the wetlands. On-site delineations would be required to determine the actual location and extent of wetlands not compiled in the NJGIN data and/or to verify the accuracy of the NJGIN data.

The presence of streams and riparian zones can impact Project permitting and construction. The number of "blue line" mapped waterbodies located within the Study Area was assessed through review of the NJDEP's Bureau of GIS' Surface Water Quality Classification of NJ Data set (2021). The review showed that streams crossed by the Study Area include Bear Brook, and UNTs to Lawrence Brook, Bear Brook, Pile's Creek, and Shipetauken Creek.

However, no canals were found to be crossed by the Study Area. Stream crossings appear to be unavoidable, as many are centrally located within the Study Area. Based on the NJDEP Surface Water Classification List, all mapped stream segments are designated as freshwater non-trout waters (FW2-NT) or saline waters (SE3). All of these streams are considered regulated waters by the state of NJ and thus are considered to be intermittent stream corridors as well as having a riparian zone associated with them. Additionally, the review found that no streams crossed by the Project are listed as Finifish Migratory Pathways, defined as streams that serve as passageways for diadromous fish to or from seasonal spawning areas for Alewife (Alosa pseudoharengus) (NJDEP 1977).

Based on the desktop review, wetlands and waterbodies appear to be crossed by the Project. Depending on the type of crossings, permitting and construction schedules can be impacted. An on-site delineation would be required to determine the actual location and extent of wetlands and waterbodies present and to assess permitting implications for jurisdictional features.

Threatened and Endangered (TE) Species and Protected Habitats

Threatened and endangered species and protected habitats can impact permitting, construction schedules, and construction techniques.

Given the results of the desktop review of publicly available data, it is anticipated that the Project is within the range of both federally- and state-listed species, and that coordination with state and federal agencies will be required. See Appendix A -Table 17 for more details on these findings. Construction restrictions, timeframe, or mitigation may be necessary to comply with avoidance of sensitive species, however, the extent of which cannot be known until after coordination with the NJDEP takes place.

Cultural Resources

The NJ SHPO's data sets for historic districts, historic properties, and archaeological site grids were used to determine the presence of cultural resources in the Study Area. The review showed that the Project crosses through four historic districts. The Windsor component crosses the Camden and Amboy Railroad Main Line Historic District. The Deans component crosses the Metuchen to Burlington Transmission Line Historic District. The Linden component crosses the Perth Amboy and Elizabethport Branch of the Central Railroad of NJ, and Sound Shore Railroad Historic Districts. Additionally, the Deans component crosses the Brunswick-Trenton 230kv Electrical Transmission historic property and Electrical Substation in South Brunswick Township historic property.

While not pinpointing the exact location, the archaeological site grid identifies the presence of an archaeological resource within a half-mile by half-mile area. The Clarksville component crosses through one grid with identified resources.

Coordination with NJ SHPO will need to be conducted to determine required surveys (if any) to assess the extent of impact to the cultural resources.

Federal, State, and Local Environmental Permits

Appendix A -Table 18 lists the environmental permits, authorizations, clearances, and consultations that could be required for the Project's components. For each authorization, the table identifies the administrating agency/authority, anticipated agency review timeframe, and additional information to be considered. The table represents a list of typically required permits for similar projects in the same area and is not specific to the Project.
Although the Project-specific details included in this report can assist in the planning stages of the Project, additional reviews should be conducted as the Project is further developed and the extent of environmental impacts is known.

Federal Permits and Authorizations

Depending on the outcome of the environmental survey and Division of Land Resource Protection (DLRP) inspection and the final design of Project facilities, the Project could require several federal permits, authorizations, and consultations prior to construction. In addition, USFWS consultations and authorizations under Section 7 of the Endangered Species Act (ESA) could also be required to be obtained prior to receiving federal permits. These consultation and concurrences are discussed below in greater detail.

USACE Section 404:
In NJ, the NJDEP is the agency delegated responsibility to implement Section 404 of the Clean Water Act (33 U.S.C. 13574), which regulates the discharge of dredged or fill material into waters (including wetlands) of the United States. The exception being an activity proposed in a tidal water or water designated under Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403), for which the USACE has regulatory authority. The Project is located within the jurisdictional boundaries of both the New York and Philadelphia Districts of the USACE, with the majority of the proposed work occurring in the Philadelphia District. No Section 10 waters are crossed in the Philadelphia District. The New York District Office would need to be contacted to confirm if a Section 10 designated water is crossed by the Project within their district.

USFWS Endangered Species Consultation and Clearance:
For federally funded or permitted projects, consultation with the USFWS is necessary to ensure that impacts to federally-listed threatened or endangered species and critical habitats are appropriately addressed under Section 7 of the ESA. The Project falls within the jurisdictional boundary of the USFWS NJ Ecological Services Field Office. Initial screening for many projects in NJ may be conducted online utilizing the IPaC online tool and county data compiled by the NJDEP. A "preliminary" screening for the Project has been completed, with results discussed in detail in the previous TE Species section of this report.

Typically, early consultation with USFWS will be of paramount importance. Coordination with the USFWS NJ Ecological Services Field Office will be required to determine the extent of survey and/or mitigation needed for each species.

USFWS authorizations are generally valid for two years. If construction is not completed after two years or new species are added to the list before construction begins, the protected species assessment must be revalidated through renewed consultation and, potentially, new or additional field surveys. Species-specific surveys and construction timeframes may be applicable.

State Permits

It is anticipated that the Project could require the following state environmental permits, consultations, clearances, and authorizations, including:

- State Protected Species Consultations
- State Historic Preservation Office (SHPO) Consultations and Clearances
- Freshwater Wetlands Permits

- Coastal Wetlands Permits
- Waterfront Development Permit
- Flood Hazard Area Permit
- Tidelands License
- Green Acres Program Diversion Permit
- Pineland Management Area/National Reserve
- NJ Pollutant Discharge Elimination System Permits (NJPDES) Basic Industrial Stormwater Permit
- Air Quality Permits

Green Acres Program Diversion Permit:
Green Acres is a NJDEP land acquisition program that supports the addition of land resources and greenways to NJ's state parks, forests, natural areas, and wildlife management areas. Sections of the Primary Route cross Green Acres parcels, however the parcels are crossed within an existing maintained utility ROW.

Local Permits and Approvals
It is anticipated that the Project could require the following environmental permits, consultations, clearances, and authorizations, including:

- Zoning Permits
- Road Permits
- Building Permits
- Erosion & Sediment Control Plan (E&SCP)

Various permits may be required by Middlesex, Mercer, Union, and Bergen Counties and the local municipalities, including zoning permits, building permits, and roadway permits. Multiple townships and boroughs are proposed to be impacted during Project activities. The counties may also consult with the NJDEP for permit issuance for the Project. Legislation passed in 2021 may allow the NJ Board of Public Utilities to supersede certain local municipal requirements related to approvals for off-shore wind transmission projects.
E&SCPs are required under the 5G3 Permit. While the 5G3 permits are submitted to the NJDEP, the E&SCPs may be reviewed and approved at the county-level by the designated Soil Conservation District, as authorized by NJDEP. Upon completion of construction, the Soil Conservation District would certify compliance and completion, and provide notification to the NJDEP.

Roadway Permits
Activities located within public road ROWs require permits from local, state, and federal departments of transportation. Activities requiring permits could include the placement of overhead transmission lines within road ROWs and temporary construction access points. Roadway permits carry an average review time of six months.

Environmental (Regulatory) Risks

A summary of the environmental risks that may impact the Project are summarized below.

ROW and Easement Risks

- A critical constraint identified is securing easements and review of previously secured easements. Easements can be held in perpetuity and may not allow for additional development, depending on the easement type and language. Each parcel crossed by the Project could have an easement with the property owner, which needs to be reviewed to identify the extent of the easement and the restrictions surrounding it. Coordination with the

Grantees, including the County Board or other stakeholders, of the easement may also be necessary to determine what development, if any, can take place on the parcel.

- Supplemental easements may be necessary if an expansion of the existing ROW is needed or for the development of access roads, and the requirements or availability of obtaining supplemental easements is unclear until coordination with the property owner or review of the easement language is conducted. ROW easements were not reviewed as part of this study and the easements may not be discovered until parcel title review is conducted. One public lands or conservation easements was identified along the Study Area, however, since work is proposed within existing ROWs, it is possible that there are existing agreements in place.

Permitting Risks

- Components of this project run through Green Acres-encumbered properties. However, given that the project predominantly uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- The Project has the potential to impact environmental resources, including streams and wetlands within coastal and freshwater ecosystems, and impacts to these resources may require a number of permits from the state and county. If impacts to freshwater wetlands exceed a threshold of 0.5-acre for aboveground impacts or one acre of total wetland impact, general permits may not be applicable and an individual permit may need to be acquired, which will include a lengthier review time.
- Mitigation is also required if the Project permanently disturbs or impacts 0.1-acre or more of freshwater wetland. Consultation with the NJDEP early in the Project's development will help mitigate risks by addressing permitting concerns and allowing for a longer consultation and permitting timeline.

TE Species Risks

- Review of various sources that maintain TE species records indicated the potential for numerous species to be located within the Project Study Area. The Project proponents should conduct an independent TE species review once the potential limits of disturbance and environmental impacts are better known to fully ascertain the requirements for mitigation associated with the sensitive species.
- Additionally, it is possible that new TE species location information may be added to the state and federal agency databases, and that the Project will be located within the new occurrence area. This could result in the need to conduct further consultation and possibly the need to conduct surveys for the TE species. Depending on the results of the consultation and surveys, agencies could impose time-of-year restrictions on Project activities, require mitigation, or require another form of impact avoidance.

Transmission Line Analysis

- Rebuilding or reconductoring the existing lines within the existing ROW minimizes construction and design risks. For the reconductors, it is assumed that the existing structures are in good condition and can be reused. It is assumed that a portion of the existing towers will need to be reinforced.
- If a rebuild is needed due to structure conditions, over stressed structures, or clearance violations caused by the proposed conductor, costs and schedule will be affected.

Substation Analysis

- Schedule risks based on outage windows for the existing 230kV substations and transmission lines.

Construction Schedule

- The conceptual project schedule developed by the onshore consultant indicates that the on-shore aspects of the project will take approximately 36 months to complete, from Project initiation to energization. It is assumed that the engineering process can continue as siting permit is reviewed. There are four major activities on the critical path: Engineering; Siting and major permit acquisition; long lead equipment procurement; construction and commissioning. Delays in completing any of these activities would jeopardize completing the Project within the estimated schedule.

Proposal 894

Environmental (Regulatory) Analysis

Desktop Review

Project #894 is located within Lower Alloways Creek Township in Salem County, New Jersey and Townsend, New Castle County, Delaware. PSE&G has proposed a plan to increase the capacity of the Hope Creek to Silver Run 230kV line. They are proposing to install a new undersea route across the Delaware River which would run alongside the existing underground 230kV line.

Study Area

The environmental review consisted of mapping and assessing the water/wetlands resources, biological resources, public lands, cultural resources, existing infrastructure, soils and farmland resources within a ¼ mile of the proposed Project centerline (henceforth known as the Study Area). The results of the desktop review for this Study Area are discussed below, and summarized in Appendix A -Table 15.

Land Use

According to the USGS National Land Cover Database (NLCD, 2019), the 462-acre Study Area is mainly comprised of land classified as Open Water.

Land Cover Type	Area (Acres)	Percent of Total
Open Water	249.96	54.01
Emergent Herbaceous Wetlands	119.51	25.82
Cultivated Crops	44.75	9.67
Developed, High Intensity	20.10	4.34
Developed, Medium Intensity	8.53	1.84
Developed, Low Intensity	6.88	1.49
Developed, Open Space	6.40	1.38
Woody Wetlands	6.01	1.30
Barren Land	0.67	0.14
Total	**462.81**	**100**

*Values rounded to the nearest hundredth.

Public and Protected Lands

The Project Area or its quarter-mile buffer intersects four parcels of public and conservation lands: the Delaware Bayshore Marshes Conservation Focal Area (CFA), Augustine State Wildlife Management Area, and two conservation easements (Exhibit 4). The Project crosses the Delaware River, managed by the National Oceanic and

Atmospheric Administration (NOAA). No other federal public lands are located within one mile of the Project Area (PADUS 2021).

Special Landscape or Hazard Areas

A search for known environmental contaminants within ¼-mile of the Project Area was completed using the New Jersey Department of Environmental Protection: NJ-GeoWeb and the U.S. Environmental Protection Agency: MyEnvironment online application. No significant hazards were identified in the Project Area.

Floodplains, Waterbodies and Wetlands

According to FEMA Flood Insurance Rate Map (FIRM), there are 150.64 acres of mapped 100-year floodplain (Zones AE and VE) within the Project Area, Zone VE should be noted as it is associated with storm wave hazards. There are also 16.21 acres of mapped 500-year floodplain (Zone X). There are no FEMA mapped floodways, however, the Project Area crosses the Delaware River which is classified as 231.62 acres of open water.

According to NWI data, 15 wetlands totaling 331.04 acres were identified within the Project Area. Wetlands are classified as Freshwater Pond, Non-Tidal Riverine Wetland, Estuarine and Marine Wetland, and Estuarine and Marine Deepwater.

Wetland Classification		Count	Acres within Project Area
Tidal Wetlands	Estuarine and Marine Deepwater	4	256.05
	Estuarine and Marine Wetland	12	71.27
	Total	***16***	***327.32***
Non-Tidal, Non-Forested Wetlands	Freshwater Pond	3	3.68
	Non-Tidal Riverine	1	0.04
	Total	***4***	***3.72***

NHD data, which includes intermittent streams and unnamed tributaries, documented 32 flowline segments within the Project Area. Named flowlines include Appoquinimink River, Delaware River, and Skunk Hill Ditch. NHD also mapped 8 waterbodies totaling 348.25.0 acres within the Project Area. The NHD and NWI datasets significantly overlap.

EPA data indicate that all the watersheds the Project Area spans within New Jersey are considered impaired for at least one, usually multiple, impairment types. In addition, the Delaware River Basin Zone 5c and Lower Appoquinimink River are considered impaired in Delaware. Impairments include Swimming and Boating, Aquatic Life, Fish and Shellfish Consumption, and Drinking Water. Specific impairment categories include dioxins, low oxygen, metals, PCBs, pesticides, bacteria and other microbes, and murky water.

The Project Area is located within the following 3 USGS HUC Level 12 watersheds: Delaware River-Delaware Bay, Mad Horse Creek-Frontal Delaware Bay, and Drawyer Creek-Appoquinimink River.

The Appoquinimink River and Delaware River are the Navigable Waters located within the Project Area.

There are no Wild and Scenic Rivers identified within the Project Area.

There are no New Jersey Outstanding National Resource Waters, Category One waters, or EPA Priority Wetlands within the Project Area.

Threatened and Endangered (TE) Species and Protected Habitats

Threatened and endangered species and protected habitats can impact permitting, construction schedules, and construction techniques.

Given the results of the desktop review of publicly available data, it is anticipated that the Project is within the range of both federally- and state-listed species, and that coordination with state and federal agencies will be required. Construction restrictions, timeframe, or mitigation may be necessary to comply with avoidance of sensitive species, however, the extent of which cannot be known until after coordination with the NJDEP takes place.

Cultural Resources

This preliminary investigation into cultural resources was limited to a desktop review of publicly available online data. The Study Area included a ¼-mile buffer around the Study Area and included a review of the Archaeological Site Grid, Historic Properties, Historic Property Features, and Historic Districts geospatial datasets maintained by the NJ Historic Preservation Office (HPO). Initial research utilized LUCY, the New Jersey Cultural Resources GIS (NJCRGIS) Online Map Viewer. The four sets of data were also downloaded from the NJ Department of Environmental Protection's (NJDEP) Bureau of GIS to map the resources in relation to the Project.

The results of the review for previously recorded archaeological sites and historic resources within the Project Area and the ¼-mile buffer are summarized below.

Archaeological Sites

According to the Archaeological Site Grid, no archaeological sites are located within ¼-mile of the Project Area.

Historic Resources

In Delaware, six historic properties are within ¼-mile of the Project Area. The properties are all unevaluated for NRHP eligibility and none of them intersect or are adjacent to the Project.

In New Jersey, no Historic Properties, Historic Property Features, or Historic Districts are within the ¼-mile Project Area buffer.

Federal, State, and Local Environmental Permits

Federal Permits

Depending on the outcome of wetland and stream delineations and the final design, Project #894 could require federal permits, authorizations, and consultations prior to construction. These include but are not limited to the US Army Corps of Engineers (USACE) Section 404 permits for dredge and fill activities in wetlands and other waters of the US and USACE Section 10 permits for structure construction along the banks of or within, over, or under navigable waters. In addition, USFWS consultations and authorizations under Section 7 of the ESA could also be required. To be in compliance with these federal permits, consultation and concurrence typically needs to be received from state agencies as well.

Any Project that has a federal nexus, such as a Project that occurs on federally-managed land, receives federal funding, or requires a federal permit or other federal authorization will require a NEPA review (National Environmental Policy Act of 1969, 42 U.S.C. §4332). Any Project requiring a federal permit or other authorization is subject to National Historic Preservation Act of 1966 (as amended) (NHPA) Section 106 Review. Project #894 crosses the NOAA-managed Delaware River and may require review under NEPA and Section 106 compliance. Consultation with the USACE and NOAA is recommended to determine the scope of studies required for construction of a transmission line over a federally-managed navigable waterway.

The USACE permits pertaining to utility line construction, including substations, fall into two main categories: Clean Water Action (CWA) Section 404 Individual Permits and Regional General Permits (RGPs). For projects with minor impacts to the WOTUS, RGPs can be applied for, which include Nationwide Permits (NWPs). These "general" permits cover various commonly encountered activities such as linear transportation projects and utility line activities. Applicable NWPs include NWP 14 Linear Transportation projects, NWP 18 Minor Discharges, NWP 33 Temporary Construction, Access, and Dewatering, and NWP 57 Electric Utility Line and Telecommunications Activities. Applications are submitted to and generally processed/granted by the USACE Philadelphia Regulatory District. Any CWA 404 Individual Permits will require a Section 401 Water Quality Certification to the New Jersey Department of Environmental Protection (NJDEP) and/or Delaware Department of Natural Resources and Environmental Control (DNREC).

Threatened and endangered species are protected under the Endangered Species Act (ESA) of 1973 administered by the USFWS and Commerce Department's National Marine Fisheries Service (NMFS). The USFWS is responsible for terrestrial and freshwater species and the NMFS is responsible for marine species. The ESA protects endangered and threatened species and their habitats by prohibiting the "take" of listed animals and trade of listed plants or animals without a permit. The purpose of the ESA is to protect and recover imperiled species and their habitats.

USFWS authorizations are generally valid for two years. If construction is not completed after two years or new species are added to the list before construction begins, the protected species assessment must be revalidated through renewed consultation and, potentially, additional field surveys. Species-specific surveys and construction timeframes may be applicable. Due to Project #894 being within the range of federally-listed species, it is possible that field surveys and potentially other timeframe restrictions may be needed for compliance.

The Federal Aviation Administration (FAA) requires an Obstruction Evaluation / Airport Airspace Analysis (OE/AAA) to be completed and with the submission of notice at least 45 days prior to construction for proposed structures entering the airspace based on a variety of factors including height, proximity to airports, location, and frequencies emitted from structures. More specifically, if the structure will exceed 200 feet above ground level, the FAA must be notified prior to construction. The FAA is notified through submittal of the Notice of Proposed Construction or Alteration, FAA Form 7460-1 (FAA, 2019). Early consultation with the FAA regarding the proposed Project tower heights and locations is highly encouraged to ensure the required approvals are met in a timely manner prior to the start of construction.

More information regarding the Federal regulatory review process can be found in the Permit Matrix in Appendix A - Table 15.

State Permits (Delaware)

The Delaware Public Utilities Commission regulates electric utility providers and transmission line construction and operation under Title 26 of the Delaware Code. No person or entity shall begin the business of an electric transmission utility providing transmission facilities, as defined in §1001(26) of Del. Code tit. 26 § 203E, without having first obtained from the Commission a certificate that the present or future public convenience and necessity requires, or will be served by, the operation of such business.

A Cultural and Historic Resource Review from the Delaware State Historic Preservation Office (DE SHPO) will be required for any State or Federal undertakings. A Project Review is available for voluntary submissions, should a due diligence review be desired.

The Delaware Department of Natural Resources and Environmental Control (DNREC) regulates all State tidal wetlands as well as those non-tidal wetlands that include 400 or more contiguous acres under the Delaware Wetlands Act (7 Del. Code, Chapter 66) and the Wetlands Regulations (7 DE Admin. Code 7502). "State-regulated" wetlands protected by law are defined as "those lands lying at or below two feet above local mean high water which support or are capable of supporting" certain plant species that are listed in the law and regulations. The types of

activities in these wetlands that are regulated (i.e. that require a permit from DNREC) include dredging, draining, filling, construction of any kind, bulkheading, mining, drilling and excavation. All permits for wetland impacts will use the Wetlands and Subaqueous Lands Section Permit Application Form. The DNREC has attached appendices for a variety of other activities, which will be required for authorization. Applicable appendices include the Road Crossing, Channel Modifications or Impoundment Structures, Utility Crossings, Fill, Rip-Rap, Vegetative Stabilization, Construction in State Wetlands, Excavating, and Stormwater Management Appendices. A Jurisdictional Determination and Map Change Request Form determines that jurisdictional State wetlands or waters of the State are either present or absent on the property, which is recommended in the event of any proposed wetland impacts. The Study Area is located in the Delaware Coastal Zone, regulated under the Coastal Zone Permit Act of 2017. Manufacturing, heavy industry, and bulk product transfer activities require a coastal zone permit in addition to other applicable DNREC permits. Various heavy industry activities remain prohibited within the coastal zone, such as oil refineries, paper mills, incinerators, steel manufacturing plants, and liquefied natural gas terminals. Substations and transmission lines are not discussed as a heavy industry use and may be considered a permitted use in the Coastal Zone. A Request for Status Decision is recommended to determine whether the proposed Project would be prohibited, exempt from permitting, or would require a standard or conversion permit.

Construction activities with land disturbing activities of one acre or more must submit a Notice of Intent (NOI) prior to a stormwater pollution prevention plan (SWP3) approval and agree to comply with requirements outlined in the NPDES General Permit for Stormwater Discharges from Construction Activity, also known as the Delaware Construction General Permit or CGP. Project SWP3 must be designed in compliance with the Delaware Erosion and Sediment Control Handbook, Post Construction Stormwater BMP Standards and Specifications, and the Standard Guidelines for Operation and Maintenance of Stormwater BMPs Online submittal for NOI.

Other non-water resource approvals administered by the DNREC include Environmental Review (Threatened and Endangered Species Review).

Delaware Department of Transportation (DelDOT) permits and approvals are required for oversize/overweight vehicles and driveways/entrances. A permit is required for vehicles exceeding the weights adopted in Chapter 45, Title 21 of the Delaware Code. Determine if construction of the Project will require travel on state roads with oversize/overweight vehicles. If so, determine the length, weight, and number of trips necessary to complete the Project. Typically, these types of permits will be sought out by the contractor responsible for transporting materials. An Entrance Permit will be required to construct a new entrance or modify an existing entrance of a State-managed roadway. No state-managed roadways are located in or adjacent to the proposed Study Area. The minimum vertical clearance of 23.5 feet above track rails of railroads and a minimum clearance of 18 feet above roads, streets, entrances and other areas subject to truck traffic (see DE Admin Code, Title 2, Division of Transportation Solutions, 2401 Utilities Manual Regulations). However, higher vertical clearances may be required by the NESC.

More information regarding the State regulatory review process can be found in the Permit Matrix in Appendix A - Table 15.

State Permits (New Jersey)

Potential approvals required for Project development include the 5G3 - Construction Activity Stormwater General Permit; Freshwater Wetlands (FWW) Individual Permit and FWW General Permits; Flood Hazard Area (FHA) Individual Permit and Streams/Rivers & Flood Hazard General Permits and Permit-by-Rule (PBR) 33; Coastal Permitting General Permits, Waterfront Development (WFD) Individual Permit and Coastal Zone Management Federal Consistency, CAFRA Individual Permit, Coastal Wetlands Individual Permit; and the Tidelands License/Grants Approval.

Other non-water resource approvals administered by the NJDEP include a New Jersey Natural Heritage Program) - State T&E Species Consultation, which is discussed in Section 4.3.1. More information regarding the State NJDEP regulatory review process can be found in the Permit Matrix prepared for Project #229 in Appendix A -Table X.

A Cultural and Historic Resource Review from the New Jersey Historic Preservation Office (HPO) will be required for any State or Federal undertakings. Review may be triggered by a variety of NJDEP approvals for water resource impacts.

New Jersey Department of Transportation (NJDOT) permits and approvals are required for oversize/overweight vehicles, driveway access roads, utility openings, and highway occupancies. Project #894 crosses numerous New Jersey Highways, US Highways, and a US Interstate; therefore, it is likely that approval of MT17A will be required. In addition, it is likely that Highway Occupancy Permit (MT120A) will be required for utility infrastructure occupancies of State-managed roadways. The minimum clearances for overhead power and communication lines must be no less than the standards prescribed by the National Electrical Safety Code (NESC) under N.J. Admin Code 16:25-10.4.

More information regarding the State regulatory review process can be found in the Permit Matrix in Appendix A - Table 15.

Local Permits and Approvals

At the local level, Project #894 is located in Lower Alloways Creek Township, Salem County, NJ and unincorporated areas of New Castle County, DE. Lower Alloways Creek Township and New Castle County will be the local authority having jurisdiction of Project development in the applicable corporate boundaries. Consultant reviewed each jurisdictions Government Website regarding zoning, land use ordinances, and potential municipal level permitting for substation and transmission line construction projects. Substation and transmission line construction is considered a conditional land use in Lower Alloways Township. Utility construction in New Castle County is considered a use permitted via limited zoning review or special use review. Site Plan Reviews and or Building/Construction permits demonstrating compliance with all zoning and building regulations are required in local jurisdictions. Other identified approvals from local jurisdictions include soil erosion and sediment control plan approvals, road access permits, and road opening applications.

Ultimately, consultation with each identified local jurisdiction is recommended to ensure Project designs adhere to local regulations and all permitting requirements are met.

More information regarding the local regulatory review process can be found in the Permit Matrix in Appendix A - Table 15.

Infrastructure

The Project crosses numerous New Jersey Highway 9. The proposed Project does not cross any other Federal or State Highways.

A review of aerial photography indicates that minimal residential and commercial structures or other buildings are present in close proximity to the Project Area.

No railroads are crossed by the proposed Project or located immediately adjacent to the Project Area.

No water wells are located in the proposed Project Area. No wellhead protection areas are located in close proximity to the Project Area.

No oil or gas wells are mapped in or within the Project Area. No natural gas pipelines are crossed or located in close proximity to the proposed Project.

The Hope Creek Generating Station is a thermal nuclear power plant located adjacent to the proposed Project.

Two substations are located in close proximity to the Project Area. Nine existing transmission lines are crossed or run parallel to the proposed Project. Identified transmission lines range from step-up voltages to 69 kV, up to 500 kV.

No airports are mapped within five miles of the Project Area. The proposed Project is unlikely to trigger Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard) through the Federal Aviation Administration (FAA) for construction of any structure exceeding 200 feet in height.

Environmental (Regulatory) Risks

A summary of the environmental risks that may impact the Project are summarized in the table below.

Risk Analysis		
Category	**Items of Note**	**Significant Constraints/Hurdles**
Floodplain	The Project Area has FEMA mapped open water, 100-year floodplains, and 500-year floodplains.	An NJDEP permit is required for any development within a floodway or 100-year floodplain.
Water Resources	Potential wetlands and other regulated waters, transition areas, and tidelands are present in the Project Area. Section 10 Navigable Waters are present.	None identified.
Water resources regulations	If jurisdictional wetlands/waterways are present, project infrastructure should be sited to avoid water resources to the degree practicable. There are impaired waters within the Project Area. Section 10 Navigable Waters present.	State and Federal permits will be required for impacts to jurisdictional waters. Additional stormwater BMPs are likely. Additional restrictions likely due to presence of Section 10 Navigable Waters.
Sensitive Biological Resources	NJDEP and DNREC information will be updated once New Jersey and Delaware natural heritage data has been received. Seven species were identified by the IPaC: northern long-eared bat (NLEB), Rufa Red Knot, Eastern Black Rail, bog turtle, sensitive joint-vetch, swamp pink, and monarch butterfly. Bald Eagle was also reviewed. Likelihood of occurrence within the Project Area are as follows: **High:** Rufa Red Knot, bog turtle, monarch butterfly, and Bald Eagle. **Low:** NLEB, Eastern Black Rail, swamp pink, sensitive joint-vetch	A spring and fall Rufa Red Knot avoidance period is recommended. Phase I bog turtle habitat assessment is recommended; all potentially suitable wetlands should be avoided until the need for a Phase II survey can be determined. Rare plant surveys may be necessary. Bald Eagle nest surveys are recommended. If present, all active (in-use) eagle nests require at least a 660’ no-construction buffer. Alternate (inactive) nests may also require a buffer

Archaeological and Historic Resources	There are no archaeological sites in the New Jersey portion of the Project. Archaeological data was not reviewed for the Delaware portion. No NRHP listed or eligible historic properties or districts are located in the vicinity of the Project Area.	None identified.
Public Lands	The Project Area or its quarter-mile buffer intersects four parcels of public and conservation lands: the Delaware Bayshore Marshes CFA, Augustine State Wildlife Management Area, and two conservation easements. The Project crosses the NOAA-managed Delaware River.	Public lands and conservation areas may have specific permits and/or land use restrictions. Project will need to confirm any restrictions/setbacks during design process to avoid and/or implement controls/setbacks as necessary.
Land Cover	The Project Area is mainly comprised of open water.	None identified.
Zoning and Land Use	The Project Area is located two jurisdictions between New Jersey and Delaware. A variety of local permits may be required including: Conditional Use, Zoning, Special Review/Limited Review, Site Plan Reviews, Construction Permits, and roadway permits. An assortment of permits are administered by the State and Federal Governments, Appendix A – Table 15 for further information and discussions.	Recommend additional coordination with regulatory agencies and permitting authorities as the plans for this Project develop.
Infrastructure	The proposed Project crosses one major highway, nine transmission lines, and is located near two substations. The Hope Creek Generating Station is adjacent to the proposed Project.	Avoidance or setbacks from structures may be necessary. Crossing agreements with other utility operators may be required. Consultation with Hope Creek Generating Station officials should be conducted.
Soils	Most of the Project Area is classified as not prime farmland.	None identified.
Environmental Hazards	No significant records identified in NJ DEP: NJ-GeoWeb or the US EPA: MyEnvironment search.	None identified.

Transmission Line Analysis

Conceptual Design Summary and Risks

- PSE&G has proposed a plan to increase the capacity of the Hope Creek to Silver Run 230kV line. They are proposing to install a new undersea route across the Delaware River which would run alongside the existing underground 230kV line.
- A single 2500 KCMIL copper UG conductor per phase will be installed across the Delaware River. At the termination locations on shore, they propose installing one 100ft steel riser structure and one 145ft tall double-

circuit structure to tie the new undersea circuit into the existing 230kV Hope Creek to Silver Run OH Line with a short single span on either side.

Potential Transmission Component Constraints and Risks

- Proposal #894 presented by PSE&G represents a medium risk project. The overall approach taken by PSE&G is specific and well researched. There are general concerns with construction projects of this type specifically the outage coordination and difficult permitting process. The majority of the concern with the PSE&G proposal has to do with the permitting process, including Army Corps, and outage coordination.
- PSE&G has provided a reasonable project implementation schedule as well as a comprehensive risk assessment review. The majority of concerns identified by PSE&G revolve around permitting & construction coordination. Due to the relatively small number of transmission components and limited construction scope, the risks due to transmission construction can be significant due to the Army Corps of Engineers and their requirements.
- The major design element which may present project risks are the submarine cable lead time, and the logistics involved with building a submarine duct bank. However, these elements of design may be mitigated through sufficient planning and proper contractor selection and preparation.

Substation Analysis

- There are no explicitly indicated substation components for Proposal 894.

Construction Schedule

- The conceptual project schedule developed by the onshore consultant indicates that the onshore aspects of the project will take approximately 36 months to complete, from Project initiation to energization. It is assumed that the engineering process can continue as siting permit is reviewed. There are four major activities on the critical path: Engineering; Siting and major permit acquisition; long lead equipment procurement; construction and commissioning. Delays in completing any of these activities would jeopardize completing the Project within the estimated schedule.

Cost Reviews

Proposal 180

Proposal Cost Estimates

The total proposal costs for PSEG Proposal 180 are given below.

Category	Proposal 180
Materials and equipment	$22,185,726
Construction and commissioning	$29,716,101
Engineering and design	$5,014,251
Permitting / routing / siting	$1,082,560
ROW / land acquisition	$250,000

Construction management	$2,669,946
Overheads and miscellaneous costs	$7,558,478
Contingency	$18,289,752
Total Project	**$86,766,814**

Independent Cost Estimates

PJM's consultant assembled independent cost estimates for the proposed facilities using historical data from similar projects, information collected from original equipment vendors and contractors supplying similar services, and other publicly available sources. The accuracy of consultant's estimates is expected to be ±25%. The estimates are in 2022 dollars and includes a 30% contingency.

The Independent estimate for the PSEG Proposal 180 is:

Category	Proposal 180
Materials and equipment	$13,047,771
Construction and commissioning	$21,036,184
Engineering and design	$3,967,493
Permitting / routing / siting	$564,159
ROW / land acquisition	$230,300
Construction management	$5,144,128
Overheads/Miscellaneous costs/Contingency	$11,739,002
Contingency	**$55,729,037**

Proposal 894

Proposal Cost Estimates

The total proposal costs for PSEG Proposal 894 are given below.

Category	Proposal 894
Materials and equipment	$15,355,727
Construction and commissioning	$30,273,130
Engineering and design	$3,986,488
Permitting / routing / siting	$1,780,186
ROW / land acquisition	$0
Construction management	$114,067
Overheads and miscellaneous costs	$4,034,681
Contingency	$16,379,884

Total Project	**$71,924,163**

Independent Cost Estimates

PJM's consultant assembled independent cost estimates for the proposed facilities using historical data from similar projects, information collected from original equipment vendors and contractors supplying similar services, and other publicly available sources. The accuracy of consultant's estimates is expected to be ±25%. The estimates are in 2022 dollars and includes a 30% contingency.

The Independent estimate for the PSEG Proposal 894 is:

Category	Proposal 894
Materials and equipment	$42,407,611
Construction and commissioning	$360,000
Engineering and design	$427,676
Permitting / routing / siting	$3,280,186
ROW / land acquisition	$500,000
Construction management	$2,138,381
Overheads/Miscellaneous costs/Contingency	$14,580,156
Contingency	**$63,694,010**

NextEra Energy Transmission MidAtlantic Holdings (NEETMH) Proposals

Executive Summary

NextEra Energy Transmission MidAtlantic Holdings, LLC (NEETMH) has provided eleven (11) Option 1a proposals to address multiple reliability violations resulting from the injections at identified Points of Interconnection (POI) representing future offshore wind generation.

Seven of these Option 1a proposals are intended to directly supplement NEETMH Option 2 proposals for varying levels of MW injections into Deans POI (3000, 4500 and 6000 MW), Oceanview (1500, 2400 and 3000 MW), and Cardiff (2700 MW). Three of the remaining Option 1 proposals are proposed to resolve overloads on the Peach Bottom – Conastone 500 kV line, and Hope Creek – LS Power 230 kV lines. The last Option 1a proposal is intended to address reliability violations resulting from greater than 8,300 MW of offshore wind injection into New Jersey.

Table 4. **NEETMH Option 1a Proposals**

Proposal ID(s)	Description(s)	Notes
11	**Wiley Rd 500/230 kV -Wheeler 500/230 kV**	Wiley Project 1
982	**Wiley Rd 500 kV -Wheeler 500/230 kV**	Wiley Project 2
587	**Wiley Rd-Conastone 500 kV**	Wiley Project 3
44	Upgrades for Deans 3000 MW Injection	Goes with Deans #461 (3000 MW)
315	Upgrades for Deans 4500 MW Injection	Goes with Deans #860 (4500 MW)
651	**Upgrades for Deans 6000 MW Injection**	Goes with Deans #250 (6000 MW)
520	Upgrades for Oceanview 1500 MW Injection	Goes with Oceanview #27 (1500 MW)
878	Upgrades for Oceanview 2400 MW Injection	Goes with Oceanview #298 (2400 MW)
331	**Upgrades for Oceanview 3000 MW Injection**	Goes with Oceanview #15 (3000 MW)
793	**Upgrades for Cardiff 2700 MW Injection**	Goes with Cardiff #604 (2700 MW)
158	**Combinations**	Upgrades for OSW injections >8300 MW

Due to expected similarities in constructability results between the three Deans upgrade Proposals (Proposals 44, 315, and 651), only the upgrades for the maximum Deans injection, Proposal 651, for 6,000 MW are addressed in this report. Similarly, for the three Oceanview upgrade proposals (Proposals 520, 878, and 331), only the upgrades for maximum Oceanview injection, Proposal 331, for 3,000 MW are addressed in this report.

Proposal 11 (1A-WILEY1)

Project Overview

Project 11 (1A-WILEY1) is the first of NEETMH's proposals addressing violations on the Peach Bottom – Conastone 500 kV and the Hope Creek – LS Power Cable 230 kV lines. Project 11 includes new transmission facilities located in Maryland and Pennsylvania.

The Project will consist of the following components:

- Construct a new Wiley Rd 500/230 kV substation which include connections to Cooper 230 kV, Delta 500 kV, Peach Bottom 500 kV, and a new NEETMA Wheeler 500/230 kV substation
- Remove approximately 5 miles of the existing 230 kV line between Graceton – Cooper.
- Construct a new 500 kV line from Wiley to Wheeler, approximately 5 miles using the existing right-of-way made available by the removal of the Graceton – Cooper 230 kV line.
- Construct a new 230 kV line from Wiley to Cooper.
- Construct a new Wheeler 230/500 kV Substation which includes connections to Graceton 230 kV, NEETMA's Wiley Rd 500/230 kV substation, Peach Bottom 500 kV, and Conastone 500 kV.
- Construct a new double circuit 230 kV line from Wheeler to Graceton.
- Add two new 230 kV breakers and line terminations at the Graceton 230 kV switchyard to accommodate the new lines from Wheeler.
- Add one new Phase Angle Regulator (PAR) on the Hope Creek – LS Power 230kV Cable 1 and a new PAR on the Hope Creek – LS Power 230kV Cable 2.

Constructability Summary

Project 11 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Transmission Line Analysis:

- Project assumes right-of-way from incumbent transmission owner's line Graceton-Cooper 230 kV, indicating that the Graceton – Cooper line will be removed to make room for Wiley – Wheeler 500 kV transmission line.
- No details provided indicating that the incumbent transmission owner has been consulted about the proposed removal of their line.

Schedule:

- The entity's overall construction schedule of 45 months seems aggressive as proposed for the sub-phases of the project – long lead time equipment procurement, and construction & commissioning each with less than a year's duration.

Cost Review:

- Independent cost estimate: $ 246,790,276
- Entity's cost estimate: $ 231,059,517

Proposal 982 (1A-WILEY2)

Project Overview

Project 982 (1A-WILEY2) is the second of NEETMH's proposals addressing violations on the Peach Bottom – Conastone 500 kV and the Hope Creek – LS Power Cable 230 kV lines. Project 982 includes new transmission facilities located in Maryland and Pennsylvania.

The Project will consist of the following components:

- Construct a new Wiley Rd 500 kV substation which include connections to Delta 500 kV, Peach Bottom 500 kV, and a new NEETMA Wheeler 500/230 kV substation.
- Construct a new 500 kV line from Wiley to Wheeler, approximately 5 miles adjacent to the existing utility right-of-way (ROW).
- Construct a new Wheeler 230/500 kV Substation which includes connections to Graceton 230 kV, NEETMA's Wiley Rd 500/230 kV substation, Peach Bottom 500 kV, and Conastone 500 kV.
- Construct a new double circuit 230 kV line from Wheeler to Graceton.
- Add two new 230 kV breakers and line terminations at the Graceton 230 kV switchyard to accommodate the new lines from Wheeler.
- Add one new Phase Angle Regulator (PAR) on the Hope Creek – LS Power 230kV Cable 1 and a new PAR on the Hope Creek – LS Power 230kV Cable 2.

Constructability Summary

Project 982 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Schedule:

- The entity's overall construction schedule of 45 months seems aggressive as proposed for the sub-phases of the project – long lead time equipment procurement, and construction & commissioning each with less than a year's duration.

Cost Review:

- Independent cost estimate: $ 221,693,841
- Entity's cost estimate: $ 211,920,291

Proposal 587 (1A-WILEY3)

Project Overview

Project 587 (1A-WILEY3) is the third of NEETMH's proposals addressing violations on the Peach Bottom – Conastone 500 kV and the Hope Creek – LS Power Cable 230 kV lines. Project 587 includes new transmission facilities located in Maryland and Pennsylvania.

The Project will consist of the following components:

- Construct a new Wiley Rd 500 kV substation which include connections to Delta 500 kV, Peach Bottom 500 kV, and Conastone 500 kV.
- Construct a new 500 kV line from Wiley to Conastone, approximately 14 miles adjacent to the existing utility right-of-way (ROW).
- Add new 500 kV breaker and line termination at the Conastone 500 kV switchyard to accommodate new 500 kV line from Wiley.
- Add one new Phase Angle Regulator (PAR) on the Hope Creek – LS Power 230kV Cable 1 and a new PAR on the Hope Creek – LS Power 230kV Cable 2.

Constructability Summary

Project 587 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Schedule:

- The entity's overall construction schedule of 45 months seems aggressive as proposed for the sub-phases of the project – long lead time equipment procurement, and construction & commissioning each with less than a year's duration.

Cost Review:

- Independent cost estimate: $ 151,465,437
- Entity's cost estimate: $ 126,348,141

Proposal 651 (1A-D60)

Project Overview

Project 651 is located in Middlesex, Mercer, Hunterdon, Monmouth, Union, and Bergen Counties, New Jersey (NJ) and Bucks County, Pennsylvania (PA). The Project includes upgrades to the grid to accommodate the 6,000 MW off-shore wind injection at Deans substation. The components include reconductoring the Deans – Brunswick 230kV, Windsor – Clarksville 230kV, Gilbert – Springfield 230kV, and Pierson Avenue H – Metuchen 230kV lines; upgrading the 500/230 transformer (ID #3) at Deans substation; putting the spare transformer (ID #1) into service at Smithburg substation; adding 1x Phase Shifting Transformer at Aldene 230kV substation; and increasing the existing Linden Bergen 4 – Bergen R 138kV bus section ratings.

The project includes the following components. Assumptions for the scope of work required have also been included.

Component 1: Reconductor the existing Deans – Brunswick 230kV line:

- Reconductor 3.6 miles of 230kV line between Deans and Brunswick substations.
- The structures are double circuit. Only one circuit to be reconductored.
- New conductor will be 2156 kcmil ACSS/TW "Bluebird" and the existing shield wire is to be reused where feasible.

- The existing structures are in good condition and can be reused. 10 lattice towers will need to be analyzed and reinforced.
- No new structures to be installed.
- New insulators and hardware to be included for one circuit on the following existing structures:
  - 12 – Deadend structures
  - 25 – Suspension structures with v-string insulators
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 2: Reconductor the existing Windsor - Clarksville 230kV line:

- Reconductor 7.8 miles of 230kV line between Windsor and Clarksville substations.
- The structures are double circuit. Only the northern circuit to be reconductored.
- New conductor will be 1033.5 kcmil ACSS “Snowbird” and the existing shield wire is to be reused where feasible.
- The existing structures are in good condition and can be reused. 10 lattice towers will need to be analyzed and reinforced.
- No new structures are to be installed.
- New insulators and hardware to be included for one circuit on the following existing structures:
  - 12 – Deadend structures
  - 32 – Suspension structures with single insulators
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 3: Reconductor the existing Gilbert – Springfield 230kV line:

- Reconductor 11.95 miles of 230kV line between Gilbert and Springfield substations.
- The structures are double circuit. Only one circuit to be reconductored.
- New conductor will be 1033.5 kcmil ACSS “Curlew” and the existing shield wire is to be reused where feasible.
- The existing structures are in good condition and can be reused. 20 lattice towers will need to be analyzed and reinforced.
- No new structures are to be installed.
- New insulators and hardware to be included for one circuit on the following existing structures:
  - 14 – Deadend structures
  - 61 – Suspension structures with single insulators
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 4: Reconductor the existing Pierson Avenue H – Metuchen 230kV line:

- Reconductor 0.35 mile of 230kV line between Pierson Avenue H and Metuchen substations.
- New conductor will be 1272 kcmil ACSS “Bittern” and the existing shield wire is to be reused where feasible.
- The existing structures are in good condition and can be reused.
- No new structures are to be installed.
- New insulators and hardware to be included for one circuit on the following existing structures:
  - 3 – Deadend structures
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 5: Increase Deans 500/230 Transformer (ID '3') ratings:

- The existing substation will not need to be expanded to accommodate the new equipment
- The substation upgrade will contain the following equipment:
  - Three Single Phase 500/230kV Transformers
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 6: Put Smithburg 500/230 kV Spare Transformer (ID '1') in service:

- The existing substation will not need to be expanded to accommodate the new equipment

- The substation upgrade will contain the following equipment:
  - Miscellaneous connectors and conductors to put spare transformer into service.
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 7: Add 1x Phase Shifting Transformer (PST) at Aldene 230kV substation:

- The existing substation will not need to be expanded to accommodate the new equipment
- The substation upgrade will contain the following equipment:
  - One 230kV Phase Shifting Transformer
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 8: Increase existing Linden Bergen_4 - Bergen_R 138 kV bus section ratings:

- The existing substation will not need to be expanded to accommodate the new equipment
- The substation upgrade will contain the following equipment:
  - Miscellaneous connectors and conductors to upgrade station buswork ratings.
- The contractor will be performing the testing of major material, relays, and construction labor.

Constructability Summary

Project 651 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Components of this project run through Green Acres-encumbered properties. However, given that the project predominantly uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- The Project has the potential to impact environmental resources, including streams and wetlands within coastal and freshwater ecosystems, and impacts to these resources may require a number of permits from the state and county.
- No environmental plan was provided by the entity, with the assumption that any permitting would be responsibility of the incumbent transmission owner.
- Permitting may be required in multiple states (NJ and PA)

Transmission Line Analysis:

- If the existing structure conditions and new conductor loads warrant a rebuild, cost and schedule will be impacted.
- Reconductoring the lines instead of rebuilding could result in higher maintenance costs in the future
- Multiple outages and coordination will be required for the reconductors

Construction Schedule:

- Using the longest component as the critical path, the project is estimated to take approximately 26 months.
- The entity's overall project schedule of 34 months seems reasonable.

Cost Review:

- Independent cost estimate: $ 41,336,597
- Entity's cost estimate: $ 56,670,000

Proposal 331 (1A-O30)

Project Overview

Project 331 is located in Monmouth, Ocean, Mercer, and Middlesex Counties, New Jersey (NJ). The Project includes upgrades to the grid to accommodate the 3,000 MW off-shore wind injection at Oceanview substation. The components include retiring the existing Atlantic – Larrabee 230kV Line, installing a new 230kV line from Larrabee substation to Oceanview (NEETMA) substation utilizing existing structures, reconductoring the Atlantic – New Prospect Road – Smithburg 230kV line, installing a new 230kV line from Atlantic substation to Smithburg substation utilizing existing structures, reconductoring both circuits of the Larrabee – Smithburg 230kV line, reconductoring the Windsor – Clarksville 230kV line, reconductoring both circuits of the East Windsor – Windsor 230kV line, reconductoring the Raritan River – Kilmer 230kV line, eliminating conditions which derate the Smithburg – East Windsor 230kV line, adding one line position at Atlantic and Smithburg substations, and upgrading equipment at Raritan River substation.

The project includes the following components. Assumptions for the scope of work required have also been included.

Component 1: Build one new Atlantic - Smithburg 230kV circuit:

- Install a new 23.6-mile 230kV circuit between Atlantic and Smithburg substations utilizing open positions on existing lattice towers and steel monopoles.
- The structures will be double circuited with the proposed Atlantic – New Prospect Road – Smithburg 230kV Circuit, included in components 4 and 5.
- New conductor will be 1272 kcmil 45/7 ACSS and the existing shield wire is to be reused where feasible.
- The existing structures are in good condition and can be reused. 20 lattice towers will need to be analyzed and reinforced.
- Four new single circuit self-supporting steel monopoles with drilled shaft foundations to be installed to accommodate any required reconfigurations.
- New insulators and hardware to be included for one circuit on the following existing structures:
    - 35 – Deadend structures
    - 151 – Suspension structures with braced post insulators
    - 51 – Davit arms for suspension steel monopoles (nine structures)
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 2: Reconductor the existing Larrabee - Smithburg 230kV line Circuit 1:

- Reconductor 11.8 miles of 230kV line between Larrabee and Smithburg substations.
- The structures are double circuit. The other circuit is included in component 3.
- New conductor will be 1272 kcmil 45/7 ACSS and the existing shield wire is to be reused where feasible.
- The existing structures are in good condition and can be reused. 10 lattice towers will need to be analyzed and reinforced.
- Two new single circuit self-supporting steel monopoles with drilled shaft foundations to be installed to accommodate the new circuits.
- New insulators and hardware to be included for one circuit on the following existing structures:
    - 13 – Deadend structures
    - 56 – Suspension structures with single insulators
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 3: Reconductor the existing Larrabee - Smithburg 230kV line Circuit 2:

- Reconductor 11.8 miles of 230kV line between Larrabee and Smithburg substations.
- The structures are double circuit. The other circuit is included in component 2.
- New conductor will be 1272 kcmil 45/7 ACSS and the existing shield wire is to be reused where feasible.
- The existing structures are in good condition and can be reused. 10 lattice towers will need to be analyzed and reinforced.
- Two new single circuit self-supporting steel monopoles with drilled shaft foundations to be installed to accommodate the new circuits.
- New insulators and hardware to be included for one circuit on the following existing structures:
    - 13 – Deadend structures
    - 56 – Suspension structures with single insulators
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 4: Reconductor the existing Atlantic - New Prospect Road 230kV line:

- Reconductor 18.3 miles of 230kV line between Atlantic and New Prospect Road substations.
- The structures are double circuit. The other circuit is included in component 1.
- New conductor will be 1272 kcmil 45/7 ACSS and the existing shield wire is to be reused where feasible.
- The existing structures are in good condition and can be reused. 20 lattice towers will need to be analyzed and reinforced.
- Four new single circuit self-supporting steel monopoles with drilled shaft foundations to be installed to accommodate the reconfigured routes.
- New insulators and hardware to be included for one circuit on the following existing structures:
    - 29 – Deadend structures
    - 98 – Suspension structures with V-string insulators
    - 51 – Davit arms for suspension steel monopoles (nine structures)
    - The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 5: Reconductor the existing New Prospect Road - Smithburg 230kV line:

- Reconductor 6.6 miles of 230kV line between New Prospect Road and Smithburg substations.
- The structures are double circuit. The other circuit is included in component 1.
- New conductor will be 1272 kcmil 45/7 ACSS and the existing shield wire is to be reused where feasible.
- The existing structures are in good condition and can be reused.
- Two new single circuit self-supporting steel monopoles with drilled shaft foundations to be installed to accommodate the reconfigured routes.
- New insulators and hardware to be included for one circuit on the following existing structures:
    - 6 – Deadend structures
    - 53 – Suspension structures with single insulators
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 6: Reconductor the existing Windsor - Clarksville 230kV line:

- Reconductor 7.8 miles of 230kV line between Windsor and Clarksville substations.
- The structures are double circuit. Only the northern circuit to be reconductored.
- New conductor will be 1033.5 kcmil ACSS “Snowbird” and the existing shield wire is to be reused where feasible.

- The existing structures are in good condition and can be reused. 10 lattice towers will need to be analyzed and reinforced.
- No new structures are to be installed.
- New insulators and hardware to be included for one circuit on the following existing structures:
  - 11 – Deadend structures
  - 32 – Suspension structures with single insulators
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 7: Reconductor the existing Raritan River - Kilmer 230kV line:

- Reconductor 6.1 miles of 230kV line between Raritan River and Kilmer substations.
- The structures are double circuit. Only the northern circuit to be reconductored.
- New conductor will be 1033.5 kcmil ACSS “Curlew” and the existing shield wire is to be reused where feasible.
- The existing structures are in good condition and can be reused. 10 lattice towers will need to be analyzed and reinforced.
- No new structures are to be installed.
- New insulators and hardware to be included for one circuit on the following existing structures:
  - 9 – Deadend structures
  - 29 – Suspension structures with single insulators
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 8: Reconductor the existing Windsor - E. Windsor 230kV line Circuit 1:

- Reconductor 2.7 miles of 230kV line between Windsor and East Windsor substations.
- The structures are double circuit. The other circuit is included in component 9.
- New conductor will be 1033.5 kcmil ACSS “Curlew” and the existing shield wire is to be reused where practical.
- The existing structures are in good condition and can be reused. Four lattice towers will need to be analyzed and reinforced.
- No new structures are to be installed.
- New insulators and hardware to be included for one circuit on the following existing structures:
  - 2 – Deadend structures
  - 12 – Suspension structures with single insulators
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 9: Reconductor the existing Windsor - E. Windsor 230kV line Circuit 2:

- Reconductor 2.7 miles of 230kV line between Windsor and East Windsor substations.
- The structures are double circuit. The other circuit is included in component 8.
- New conductor will be 1033.5 kcmil ACSS “Curlew” and the existing shield wire is to be reused where practical.
- The existing structures are in good condition and can be reused. Four lattice towers will need to be analyzed and reinforced.
- No new structures are to be installed.
- New insulators and hardware to be included for one circuit on the following existing structures:

    - 2 – Deadend structures
    - 12 – Suspension structures with single insulators
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.
- Component 10: Eliminate conditions which derate the Smithburg – East Windsor 230kV line:
- The existing substation will not need to be expanded to accommodate the new equipment
- The substation upgrade will contain the following equipment:
    - Miscellaneous connectors and conductors to upgrade station buswork ratings.
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 11: Atlantic 230kV Substation Upgrade:

- The existing substation will not need to be expanded to accommodate the new equipment
- The substation upgrade will contain the following equipment:
- Four 230kV Circuit Breakers
- Eight 230kV Group Operated Disconnect Switches
- Four sets line terminal equipment such as CCVTs, wave traps and line tuners
- Four Line Relaying Panels
- Four Breaker Control Panels
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 12: Smithburg 230kV Substation Upgrade:

- The existing substation will not need to be expanded to accommodate the new equipment
- The substation upgrade will contain the following equipment:
- Two 230kV Circuit Breakers
- Four 230kV Group Operated Disconnect Switches
- One Line Relaying Panel
- Two Breaker Control Panels
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 13: Add 1x Phase Shifting Transformer (PST) at Raritan River substation:

- The existing substation will not need to be expanded to accommodate the new equipment
- The substation upgrade will contain the following equipment:
    - One 230kV Phase Shifting Transformer
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 14: Add 1x Phase Shifting Transformer (PST) at Raritan River substation:

- The existing substation will not need to be expanded to accommodate the new equipment
- The substation upgrade will contain the following equipment:
- One 230kV Phase Shifting Transformer
- The contractor will be performing the testing of major material, relays, and construction labor.

Component 15: Build one new Larrabee - Oceanview 230kV circuit:

- Install a new 16.6-mile 230kV circuit between Larrabee and Oceanview substations utilizing open positions on existing lattice towers and steel monopoles.
- The structures will be double circuited with the proposed Larrabee – Neptune 230kV Circuit, which is not part of this proposal.

- New conductor will be double-bundle 795 kcmil 26/7 ACSS and the existing shield wire is to be reused where feasible.
- The existing structures are in good condition and can be reused. 10 lattice towers will need to be analyzed and reinforced.
- Two new double circuit self-supporting steel monopoles with drilled shaft foundations to be installed to accommodate any required reconfigurations.
- New insulators and hardware to be included for one circuit on the following existing structures:
  - 28 – Deadend structures
  - 108 – Suspension structures with V-string insulators
  - 225 – Davit arms for suspension steel monopoles (75 structures)
- The reconductored line will use the existing corridor and no additional ROW will be needed.
- Minimal clearing will be required.

Component 16: Retire the existing Larrabee - Atlantic 230kV line:

- Remove approximately 11.6 miles of conductor and hardware from the Larrabee – Atlantic 230kV transmission line.

Constructability Summary

Project 331 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Components of this project run through Green Acres-encumbered properties. However, given that the project predominantly uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- The Project has the potential to impact environmental resources, including streams and wetlands within coastal and freshwater ecosystems, and impacts to these resources may require a number of permits from the state and county.
- Portions of the Project are located within railroad ROW and will require significant coordination and permits.
- No environmental plan was provided by the entity, with the assumption that any permitting would be responsibility of the incumbent transmission owner.

Transmission Line Analysis:

- Project assumes right-of-way from incumbent transmission owner's line Atlantic-Larrabee 230 kV, indicating that the Atlantic-Larrabee line will be retired to make room for two new circuits – Larrabee-Oceanview 230 kV, and Atlantic – Smithburg 230 kV transmission lines.
- No details provided indicating that the incumbent transmission owner has been consulted about the proposed retirement of their line.

Construction Schedule:

- Using the longest component as the critical path, the project is estimated to take approximately 30 months.
- The entity's overall project schedule of 34 months seems adequate.

Cost Review:

- Independent cost estimate: $ 265,810,000

- Entity's cost estimate: $ 137,097,345
- Material costs seem high across all components. ROW costs seem high for rebuilds along existing ROW.

Proposal 793 (1A-C27)

Project Overview

Project 793 is located in Atlantic, Camden, and Ocean Counties, New Jersey (NJ). The Project includes upgrades to the grid to accommodate the 2,700 MW off-shore wind injection at Reega substation near Cardiff.

The project includes the following components.

- Component 1: Reconductor Lewis #1 – Cardiff 138kV OH line
- Component 2: Reconductor Lewis #2 – Cardiff 138kV OH line
- Component 3: Eliminate conditions which derate Oyster – Manitou 230 kV OH Circuit
- Component 4: Eliminate conditions (contingencies such as "JC-P2-3-230-11")
- Component 5: Add 1x Phase Shifting Transformer (PST) at New Freedom 230 kV substation
- Component 6: New Freedom 230 kV substation upgrade and reconfiguring existing line
- Component 7: Add 1x Phase Shifting Transformer (PST) at Cardiff 230 kV substation
- Component 8: Increase Cardiff 230/138 kV T6 transformer ratings
- Component 9: Increase Cardiff 230/69 kV T1 transformer ratings
- Component 10: Cardiff 230 kV Substation Upgrade
- Component 11: Add 1x Phase Shifting Transformer (PST) at Hope Creek 230kV substation
- Component 12: Add 1x Phase Shifting Transformer (PST) at Hope Creek substation

Constructability Summary

Project 793 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Components of this project run through Green Acres-encumbered properties.
- Components of this project run through the Pinelands Area.
- The Project has the potential to impact environmental resources, including streams and wetlands within coastal and freshwater ecosystems, and impacts to these resources may require a number of permits from the state and county.
- No environmental plan was provided by the entity, with the assumption that any permitting would be responsibility of the incumbent transmission owner.

Construction Schedule:

- Using the longest component as the critical path, the project is estimated to take approximately 36 months.
- The entity's overall project schedule of 34 months seems adequate.

Cost Review:

- Independent cost estimate: $ 60,371,775
- Entity's cost estimate: $ 114,300,000

Proposal 158 (1A-8300MW)

Project Overview

Project #158 is located within Philadelphia in Philadelphia County, Pennsylvania; Nockamixon and Springfield Townships in Bucks County, Pennsylvania; Holland Township in Hunterdon County, New Jersey; and New Castle County, Delaware.

It includes the reconductoring of two 230 kV lines and an upgrade to a substation. The reconductoring of both the existing Gilbert-Springfield 230 kV OH Line and Richmond-Waneeta 230 kV OH Line and the upgrade to the Red Lion 500 kV Substation will use existing easements/utility owned property. The Gilbert-Springfield 230 kV OH Line is 11.95 miles and the Richmond-Waneeta 230 kV OH Line is 3.2 miles. The Gilbert-Springfield 230 kV OH Line is located within Holland Township, New Jersey and Springfield Townships, Pennsylvania. The Richmond-Waneeta 230 kV OH Line is located within Philadelphia, PA. The Red Lion Substation resides in New Castle County, Delaware.

Project #158 includes the following three components:

- Component 1: Reconductor existing Gilbert-Springfield 230 kV OH Line
- Component 2: Reconductor existing Richmond-Waneeta 230 kV OH Line
- Red Lion 500 kV Substation Upgrade

Constructability Summary

Project 158 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- No environmental plan was provided by the entity, with the assumption that any permitting would be responsibility of the incumbent transmission owner.
- Permitting may be required in multiple states (NJ, DE and PA)

Construction Schedule:

- Using the longest component as the critical path, the project is estimated to take approximately 30 months.
- The entity's overall schedule of 78 months seems overly long.

Cost Review:

- Independent cost estimate: $ 16,344,059
- Entity's cost estimate: $ 24,680,000

Constructability Reviews

Wiley Projects (Proposals 11, 982 & 587)

Environmental (Regulatory) Analysis

Desktop Review

- Project #11 proposes to rebuild/upgrade or construct new overhead ROW infrastructure from Peach Bottom, PA in York County to Conastone, MD, Harford County, MD. This project includes 2 greenfield substations and rebuild/upgrade of 4.69 miles of ROW.

- Project #982 proposes to rebuild/upgrade or construct new overhead ROW infrastructure from Peach Bottom, PA in York County to Conastone, MD, Harford County, MD. This project includes 2 greenfield substations and rebuild/upgrade of 4.79 miles of ROW new construction adjacent to existing ROW.

- Project #587 proposes to rebuild/upgrade or construct new overhead ROW infrastructure from Peach Bottom, PA in York County to Conastone, MD, Harford County, MD. This project includes 1 greenfield substation and 14.45 miles of ROW new construction adjacent to existing ROW.
- An analysis of the Project area for each of the projects was performed to assist in the identification of major environmental and socioeconomic features and to provide a base for the extrapolation and derivation of future construction, permitting, mitigation, and land costs studies for each Project. The results of the desktop review for are discussed below, and details provided in Appendix A -Tables 11, 12, 13, and 14.

Environmental (Regulatory) Risks

The following is a brief summary of the potential risks identified.

Federal, State, Local Permitting

- See Appendix Table 14 for details.
- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Resource Crossings

- See Appendix Tables 11 and 12 for details
- Scott Creek (PA): Chapter 93 designated (Cold Water Fishes and Trout Stocked)
- Jack's Hole (MD): Designation NA, but should be considered when permitting
- Broad Creek (MD): Designation NA, but should be considered when permitting
- Falling Branch (MD): Designation NA, but should be considered when permitting
- Big Branch (MD): Designation NA, but should be considered when permitting
- Island Branch (MD): Designation NA, but should be considered when permitting
- Deer Creek (MD): Designation NA, but should be considered when permitting

Cultural Resources

- See Appendix Tables 11 and 12 for details
- Potential Cultural Resource impacts identified in both MD and PA.

Flood Plains/Wetlands

- See Appendix Tables 11 and 12 for details
- Wetlands/Hydric soils present within project area; wetland delineations will be needed

Threatened and Endangered Species

- See Appendix Table 13 for details
- Pennsylvania
    - American Holly (*Ilex opaca*): PA; Atom Road Woods
    - Lobed Spleenwort (*Asplenium pinnatifidum*): PA; Atom Road Woods
    - Harbinger-of-spring (*Erigenia bulbosa)*: PA; Peach Bottom Woods
    - Declined Trillium (*Trillium flexipes)*: PA; Peach Bottom Woods
    - Broad-headed Skink (*Plestiodon laticeps)*: Pennsylvania
    - Indiana Bat (*Myotis sodalist)*; potential within project area
    - Northern Long-eared Bat (*Myotis septentrionalis)*; potential within project area
    - Bog Turtle (*Clemmys muhlenbergii*); potential within project area
    - Monarch Butterfly (*Danaus plexippus*); potential within project area
- Maryland
    - Several Maryland T&E species identified, additional survey/review needed to determine species/habitat specifics and impact on project area

Infrastructure

- See Appendix Tables 11 and 12 for details
- Additional review of land use around proposed project areas identified no airports in proximity (approx. 3 mile) to project area.
- Based on publicly available data, there will be no impacts due to crossing of active railroads.

Transmission & Substation Analysis

Proposal 11

Conceptual Design Summary

The following is a detailed description of the new and upgraded facilities for Project 11.

- Wheeler Greenfield Substation
    - Install (2) 500kV Busses
        - Six (6) terminal breaker and a half configuration
    - Install (7) 500kV Circuit Breakers (CBs) and associated equipment
    - Install (2) 500/230kV Transformers
- Wiley Road Greenfield Substation
    - Install (4) terminal 500kV ring bus
    - Install (4) 500kV CBs and associated equipment
    - Install (1) 500/230kV Transformer
- Wheeler to Wiley Road 500kV Single Circuit Line
    - Install new 500kV single circuit line between the two new greenfield substations
    - Utilize existing Right-Of-Way (ROW) for the Graceton to Cooper 230kV line
- Conastone to Wheeler 230kV Double Circuit Line
    - Utilize existing ROW of the Conastone to Cooper 230kV line between Wheeler and Conastone substations

    - Terminate at the 230/500kV Transformers 1&2
- Loop the existing Conastone to Cooper 230kV into Wiley Road
    - Utilize existing conductor
    - Terminate at the 230/500kV Transformer 1
        - Utilizing existing towers
- Conastone Substation
    - Add (2) new line positions
    - Install (2) new CBs in the tie positions
        - One of the terminals will replace existing Cooper Terminal
        - The other terminal will be the second terminal in a breaker and a half configuration with Conastone to Graceton 230kV line
- Hope Creek Substation
    - Install (2) Phase Shifting Transformers (PST) at Hope Creek
        - One PST installed in series with LS Power Cable-1
        - One PST installed in series with LS Power Cable-2

Potential Risks

- Engineering
    - No high side protection for Transformers 1 & 2 at Wheeler and Wiley Road
    - Wiley to Wheeler 500kv line installation using existing ROW.
    - Relaying at Hope Creek and Silver Run, 230kV CBs at Silver Run not noted.
    - Relaying at Conastone & Peach Bottom not noted.
- Siting and Major Permit Acquisition
    - Option to purchase agreements with private owners for siting Wiley Road and Wheeler substations.
    - Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commission via issuance of Certificate of Public Convenience and Necessity (CPCN)
    - Project assumes right-of-way from incumbent transmission owner's line Graceton-Cooper 230 kV, indicating that the Graceton – Cooper line will be removed to make room for Wiley – Wheeler 500 kV transmission line.
    - No details provided indicating that the incumbent transmission owner has been consulted about the proposed removal of their line.
    - Adequate space exists for Phase Shifter installs at Hope Creek.
- Long-lead Equipment Procurement
    - 24-36 months typically required for 500/230 Transformers
    - Project assumes prompt ordering, may incur high cost from scarcity; delays to design will impact material delivery risk.
- Construction and Commissioning
    - Missing a high amount of detail regarding the rebuilds
        - Substation work description only includes major equipment
        - Distance for some transmission line rebuilds not provided.
    - Incumbent work required at Hope Creek & Graceton, which may introduce schedule risks due to required coordination
        - Two (2) Phase Angle Regulators (PARs) at Hope Creek
        - Two (2) 230kV Line terminals at Graceton.

Construction Schedule

The proposed project schedule is provided in the Table below

Proposal #11	
Start Date:	1/2022
Construction Start Date	12/2024
In Service Date	10/2025
Total Project Duration	45 months

The proposed schedule is tight for the outlined scope, with less than a year for long lead time equipment procurement and for construction and commissioning.

Proposal 982

Conceptual Design Summary

The following is a detailed description of the new and upgraded facilities for Project 11.

- Wheeler Greenfield Substation
  - Install (2) 500kV Busses,
    - Six (6) terminal breaker and a half arrangement
  - Install (7) 500kV Circuit Breakers (CBs) and associated equipment
  - Install (2) 500/230kV Transformers
- Wiley Road Greenfield Substation
  - Install (3) terminal 500kV ring bus.
  - Install (3) 500kV CBs and associated equipment
- Loop in the Peach Bottom to Conastone 500kV line at Wheeler
  - Creating the Wheeler to Conastone and Peach Bottom to Conastone 500kV lines
  - Existing conductor remains between Peach Bottom to Wheeler and Wheeler to Conastone
- Wheeler to Wiley Road 500kV Single Conductor Line
  - New ROW required for the 5 miles
- Loop the Delta to Peach Bottom 500kV line into Wiley Road
  - Creating the Delta to Wiley Road and Wiley Road to Peach Bottom 500kV lines
  - Existing conductor remains between the Delta and Peach Bottom
- Conastone to Wheeler 230kV Double Circuit Line
  - Requires new ROW Wheeler and Conastone 1+ miles
  - Terminate at the 230/500kV Transformers 1&2
- Graceton Substation
  - Install (2) new 230kV CBs in the Tie positions
    - Breaker and a half bay with the Cooper Terminal
    - Breaker and a half bay with the Conastone Terminal
- Hope Creek Substation
  - Install (2) Phase Shifting Transformers
    - One PST installed in series with LS Power Cable-1
    - One PST installed in series with LS Power Cable-2

Potential Risks

- Engineering
  - No high side protection for Transformers at Wheeler
  - Relaying at Hope Creek and Silver Run, 230kV CBs at Silver Run not noted.
  - Relaying at Conastone & Peach Bottom not noted.
- Siting and Major Permit Acquisition
  - Option to purchase agreements with private owners for siting Wiley Road and Wheeler substations.
  - Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commission via issuance of Certificate of Public Convenience and Necessity (CPCN)
  - About 5 miles of new transmission ROW required; 3+ miles are privately owned; adjacent to the existing ROW.
  - Adequate space exists for Phase Shifter installs at Hope Creek.
- Long-lead Equipment Procurement
  - 24-36 months typically required for 500/230 Transformers
  - Project assumes prompt ordering, may incur high cost from scarcity; delays to design will impact material delivery risk.
- Construction and Commissioning
  - Missing a high amount of detail regarding the rebuilds
    - Substation work description only includes major equipment
  - Incumbent work required at Hope Creek & Graceton, which may introduce schedule risks due to required coordination
    - Two (2) Phase Angle Regulators (PARs) at Hope Creek
    - Two (2) 230kV Line terminals at Graceton.

Construction Schedule

The proposed project schedule is provided in the Table below

Proposal #982	
Start Date:	1/2022
Construction Start Date	12/2024
In Service Date	10/2025
Total Project Duration	45 months

The proposed schedule is tight for the outlined scope, with less than a year for long lead time equipment procurement and for construction and commissioning.

Proposal 587

Conceptual Design Summary

The following is a detailed description of the new and upgraded facilities for Project 587.

- Wiley Road 500kV Greenfield Substation
  - Install (3) terminal 500kV ring bus

    - Install (3) 500kV Circuit Breakers (CBs) and associated equipment.
- Conastone to Wiley Road 500kV Single Circuit Line
    - New ROW required for the 14+ miles
        - 3+ miles are privately owned
- Delta to Peach Bottom 500kV line loop into Wiley Road
    - Will create the Delta to Wiley Road and Peach Bottom to Wiley Road 500kV lines
    - Existing conductor remains between the Delta and Peach Bottom
- Conastone Substation
    - Add (1) 500kV CB in bay with Hunterstown 500kV line terminal
    - Bay becomes a breaker and a half configuration
- Hope Creek Substation
    - Install (2) Phase Shifting Transformers
        - One PST installed in series with LS Power Cable-1
        - One PST installed in series with LS Power Cable-2

Potential Risks

- Engineering
    - Two 500 kV line crossings, and four 230 kV line crossings noted, which requires outage coordination
    - Relaying at Hope Creek and Silver Run, 230kV CBs at Silver Run not noted.
    - Relaying at Conastone & Peach Bottom not noted.
- Siting and Major Permit Acquisition
    - Option to purchase agreements with private owners for siting Wiley Road substations.
    - Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commission via issuance of Certificate of Public Convenience and Necessity (CPCN)
    - About 14 miles of new transmission ROW required; 3+ miles are privately owned; adjacent to the existing ROW.
    - Adequate space exists for Phase Shifter installs at Hope Creek.
- Long-lead Equipment Procurement
    - 24-36 months typically required for 500/230 Transformers
    - Project assumes prompt ordering, may incur high cost from scarcity; delays to design will impact material delivery risk.
- Construction and Commissioning
    - Missing some detail regarding the rebuilds
        - Substation work description only includes major equipment
    - Incumbent work required at Hope Creek & Graceton, which may introduce schedule risks due to required coordination
        - Two (2) Phase Angle Regulators (PARs) at Hope Creek
        - Two (2) 230kV Line terminals at Graceton.

Construction Schedule

The proposed project schedule is provided in the Table below

Proposal #587	
Start Date:	1/2022
Construction Start Date	12/2024
In Service Date	10/2025
Total Project Duration	45 months

The proposed schedule is tight for the outlined scope, with less than a year for long lead time equipment procurement and for construction and commissioning.

Proposal 651

Environmental (Regulatory) Analysis

Desktop Review

The desktop review focuses on the on-shore Project components outside existing substations. These components are comprised of aerial transmission line work largely within existing right-of-way (ROW). The Project components are as follows:

- Deans – Brunswick Component (3.6 miles) is a proposed reconductor of the existing Deans – Brunswick 230kV overhead line, which is proposed to utilize existing towers and hardware to the extent feasible. It is located in NJ.
- Windsor - Clarksville Component (7.75 miles) is a proposed reconductor of the existing Windsor – Clarksville 230kV overhead line, which is proposed to utilize existing towers and hardware to the extent feasible. It is located in NJ.
- Gilbert – Springfield Component (11.95 miles) is a proposed reconductor of the existing Gilbert – Springfield 230kV overhead line, which is proposed to utilize existing towers and hardware to the extent feasible. It is located in PA and NJ.
- Pierson Avenue H - Metuchen Component (0.35 mile) is a proposed reconductor of the existing Pierson Avenue H - Metuchen 230kV overhead line, which is proposed to utilize existing towers and hardware to the extent feasible. It is located in NJ.

An analysis of the Project components mentioned above was performed to assist in the identification of major environmental and socioeconomic features and to provide a base for the extrapolation and derivation of future construction, permitting, mitigation, and land costs studies for the overall Project. The major risks are summarized in the following section, and a listing of the environmental, socioeconomic, and required permits is provided in the Appendix A -Tables 19 thru 22.

Environmental (Regulatory) Risks

Right-of-Way and Easement Risks

- Securing easements and using previously secured easements with private landowners has been identified as a critical constraint. Easements can be held in perpetuity and may not allow for additional development, depending on the easement type and language. Each parcel crossed by the Project could have an easement with the property owner, which needs to be reviewed to identify the extent of the easement and the restrictions surrounding it. The majority of the Project is in existing ROWs and it is possible that there

are existing agreements in place that would accommodate the Project. Coordination with the Grantees, including the County Board or other stakeholders, of the easement may also be necessary to determine what development, if any, can take place on the parcel.

- Supplemental easements may be necessary if an expansion of the existing ROW is needed, or for the development of access roads, and the requirements or availability of obtaining supplemental easements is unclear until coordination with the property owner or review of the easement language is conducted. ROW easements were not reviewed as part of this study and the easements may not be discovered until parcel title review is conducted. Several public lands or conservation easements are crossed by the Project; however, since these are existing transmission lines, it is possible that the existing agreements allow for construction associated with reconductoring.

Permitting Risks

- New Jersey
  - The Project has the potential to impact environmental resources including streams and wetlands within freshwater ecosystems and impacts to these resources will require a number of permits from the state and county.
  - If impacts to freshwater wetlands in NJ exceed a threshold of 0.5 acre for aboveground impacts, or one acre of total wetland impact, general permits may not be applicable and an individual permit may need to be acquired, which will include a lengthier review time.
  - Mitigation is also required if the Project permanently disturbs or impacts 0.1-acre or more of freshwater wetland. Consultation with the NJDEP early in the Project's development will help mitigate risks by addressing permitting concerns and allowing for a longer consultation and permitting timeline.
  - Sections of the Windsor – Clarksville component cross listed Green Acres parcels. The portions of the Project within Green Acres property are part of an existing maintained utility ROW. The Deans – Brunswick component follows an existing utility ROW adjacent to Green Acres properties. Further information will be required to determine if the easement for the existing ROW covers the Project activities or if a diversion will be required.
- Pennsylvania
  - Impacts to exceptional value streams and wetlands or construction in high quality watersheds will trigger the need for permits with longer review times. This should be accounted for in the Project schedule to prevent construction delays.

TE Species Risks

- Review of various sources that maintain TE species records indicated the potential for numerous species to be located within the vicinity of the Project. The Project's proponents should conduct an independent TE species review once the potential limits of disturbance and environmental impacts are better known to fully ascertain the requirements for mitigation associated with the sensitive species.
- Additionally, it is possible that new TE species location information may be added to the state and federal agency databases, and that the Project will be located within the new occurrence area. This could result in the need to conduct further consultation, and possibly the need to conduct surveys for the TE species. Depending on the results of the consultation and surveys, agencies could impose time-of-year restrictions on Project activities, require mitigation, or require another form of impact avoidance.

Transmission Line Analysis

- Rebuilding or reconductoring the existing lines within the existing ROW minimizes construction and design risks. For the reconductors, it is assumed that the existing structures are in good condition and can be reused. It is assumed that a portion of the existing towers will need to be reinforced. If a rebuild is needed due to structure conditions, over-stressed structures, or clearance violations caused by the proposed conductor; costs and schedule will be affected.
- Schedule risks based on outage windows for the existing 230kV lines.

Substation Analysis

- Substation outage and major equipment availability poses a risk to construction schedules.
- The proposal was unclear on the necessary upgrades to Component 8 (Bergen SS), which poses a risk to the final project cost.

Construction Schedule

- The conceptual project schedule developed by the consultant indicates that the Project will take approximately 26 months to complete, from Project initiation to energization.
- It is assumed that the engineering process can continue as siting permit is reviewed. There are four major activities on the critical path: Engineering; Siting and major permit acquisition; long lead equipment procurement; construction and commissioning. Delays in completing any of these activities would jeopardize completing the Project within the estimated schedule.

Proposal 331

Environmental (Regulatory) Analysis

Desktop Review

The components of Project 331 are comprised of aerial transmission line work within existing ROWs. For the purpose of the desktop review the various Project components have been grouped by the substation-to-substation ROW they pass through. Project components are grouped as follows:

Atlantic-Oceanview ROW (4.7 miles)

- Portion of new Larrabee - Oceanview (NEETMA) 230kV circuit (install new circuit on existing structures)

Atlantic-Larrabee ROW (11.5 miles)

- Portion of new Larrabee – Oceanview (NEETMA) 230kV circuit (install new circuit on existing structures)
- Portion of reconductoring of Atlantic – New Prospect Road – Smithburg 230kV circuit
- Portion of new Atlantic – Smithburg 230kV circuit (install new circuit on existing structures)

Larrabee-New Prospect Road ROW (6 miles)

- Portion of reconductoring of Atlantic – New Prospect Road – Smithburg 230kV circuit
- Portion of new Atlantic – Smithburg 230kV circuit (install new circuit on existing structures)
- Portion of reconductoring of Larrabee – Smithburg 203kv circuits 1 and 2

New Prospect Road-Smithburg ROW (6 miles)

- Portion of new Atlantic – Smithburg 230kV circuit (install new circuit on existing structures)

- Portion of reconductoring of Larrabee – Smithburg 203kv circuits 1 and 2
- Portion of reconductoring Atlantic – New Prospect Road – Smithburg 230kV circuit

East Windsor-Windsor ROW (2.5 miles)

- Reconductoring Windsor – E Windsor 230kV circuits 1 and 2

Windsor-Clarksville ROW (7.5 miles)

- Reconductoring Windsor – Clarksville 230kV circuit

Raritan River – Kilmer ROW (5.9 miles)

- Reconductoring Raritan River – Kilmer 230kV circuit

Using the mapped components associated with the Project shown in the attached Figures, environmental feature and socioeconomic information based on NJ Department of Environmental Protection (NJDEP) Division of Land Resources Protection Special Areas was derived from several federal, state, and county databases.

An analysis of the Atlantic-Oceanview, Atlantic-Larrabee, Larrabee-New Prospect Road, New Prospect Road-Smithburg, East Windsor-Windsor, Windsor-Clarksville, and Raritan River-Kilmer components was performed to assist in the identification of major environmental and socioeconomic features and to provide a base for the extrapolation and derivation of future construction, permitting, mitigation, and land costs studies for the overall Project. The major risks are summarized in the following section, and a listing of the environmental, socioeconomic, and required permits are provided in the Appendix A -Tables 23 thru 25.

Environmental (Regulatory) Risks

Right-of-Way and Easement Risks

- Securing easements and using previously secured easements has been identified as a potential risk. Easements can be held in perpetuity and may not allow additional development, depending on the easement type and language. Each parcel crossed by the transmission line ROW could have an easement with the property owner, which would need to be reviewed to identify the extent of the easement and the restrictions surrounding it. The majority of the rebuilds and reconductors associated with the Project are in existing ROWs and it is possible that there are existing agreements in place that would accommodate the Project.
- Supplemental ROW agreements or easements may be required for the development of construction access roads. The requirements or availability of obtaining supplemental easements is unclear until coordination with the property owner or review of the easement language is conducted.

Permitting Risks

- Portions of the Project are proposed to be located within railroad ROW and will require permits. Railroads are privately owned, and each has its own requirements. While railroad permitting for the Project may be better received by the railroad due to it being underground, significant coordination regarding placement of the line and construction techniques may be required that prolong the permitting process.
- The Atlantic-Larrabee, Larrabee-New Prospect Road, New Prospect Road-Smithburg, East Windsor-Windsor, Windsor-Clarksville, and Raritan River – Kilmer ROW components of the Project are encumbered by Green Acres properties. The Atlantic-Larrabee component crosses Allaire State Park and multiple municipal green spaces. The New Prospect Road-Smithburg component also crosses multiple municipal green spaces and approximately 3.5 miles of Turkey Swamp State Park and Wildlife Management Area. Raritan River – Kilmer component crosses multiple Green Acres properties including many marsh and

estuary parcels along the Raritan River. The Windsor-Clarksville component crosses Mercer County Park and the Van Nest Wildlife management area and other municipal Green Acres properties. All proposed impacts on Green Acres properties are within existing ROWs and agreements may already be in place that allow for future diversions or upgrades to the transmission facilities.

- The Project has the potential to impact environmental resources including streams and wetlands within coastal and freshwater ecosystems and impacts to these resources may require a number of permits from the state and county. If impacts to freshwater wetlands exceed a threshold of 0.5-acre for aboveground impacts, or one acre of total wetland impact, general permits may not be applicable and an individual permit may need to be acquired, which will include a lengthier review time. Mitigation is also required if the Project permanently disturbs or impacts 0.1-acre or more of freshwater wetland. Consultation with the NJDEP earlier in the Project's development will help mitigate risks by addressing permitting concerns and allowing for a larger consultation and permitting timeline.

TE Species Risks

- Review of various sources that maintain TE species records indicated the potential for numerous species to be located within the vicinity of the Project. The Project's proponents should conduct an independent TE species review once the potential limits of disturbance and environmental impacts are better known to fully ascertain the requirements for mitigation associated with the sensitive species.
- Additionally, it is possible that new TE species location information may be added to the state and federal agency databases, and that the Project will be located within the new occurrence area. This could result in the need to conduct further consultation, and possibly the need to conduct surveys for the TE species. Depending on the results of the consultation and surveys, agencies could impose time-of-year restrictions on Project activities, require mitigation, or require another form of impact avoidance.

Transmission Line Analysis

- Rebuilding or reconductoring the existing lines within the existing ROW minimizes construction and design risks. For the reconductors, it is assumed that the existing structures are in good condition and can be reused. It is assumed that a portion of the existing towers will need to be reinforced. If a rebuild is needed due to structure conditions, over-stressed structures, or clearance violations caused by the proposed conductor; costs and schedule will be affected.
- Project assumes right-of-way from incumbent transmission owner's line Atlantic-Larrabee 230 kV, indicating that the Atlantic-Larrabee line will be retired to make room for two new circuits – Larrabee – Oceanview 230 kV, and Atlantic – Smithburg 230 kV transmission lines.
- No details provided indicating that the incumbent transmission owner has been consulted about the proposed retirement of their line.
- For the lines that contain double circuit structures with an open circuit, it is assumed that the structures were designed for the conductor being installed and will not need to be replaced.
- Schedule risks based on outage windows for the existing 230kV lines.

Substation Analysis

- Substation outage and major equipment availability poses a risk to construction schedules.
- The proposal was unclear on the necessary upgrades in component 10 (Smithburg-East Windsor), which poses a risk to the final project cost.

Construction Schedule

- The conceptual project schedule developed by the consultant indicates that the Project will take approximately 30 months to complete, from Project initiation to energization.
- It is assumed that the engineering process can continue as siting permit is reviewed. There are four major activities on the critical path: Engineering; Siting and major permit acquisition; long lead equipment procurement; construction and commissioning. Delays in completing any of these activities would jeopardize completing the Project within the estimated schedule.

Proposal 793

Environmental (Regulatory) Analysis

Desktop Review

Project 793 is located in Atlantic, Camden, and Ocean Counties, New Jersey (NJ). The Project includes upgrades to the grid to accommodate the 2,700 MW off-shore wind injection at Reega substation near Cardiff, which include the following components:

- Component 1: Reconductor Lewis #1 – Cardiff 138kV OH line
- Component 2: Reconductor Lewis #2 – Cardiff 138kV OH line
- Component 3: Eliminate conditions which derate Oyster – Manitou 230 kV OH Circuit
- Component 4: Eliminate conditions (contingencies such as "JC-P2-3-230-11")
- Component 5: Add 1x Phase Shifting Transformer (PST) at New Freedom 230 kV substation
- Component 6: New Freedom 230 kV substation upgrade and reconfiguring existing line
- Component 7: Add 1x Phase Shifting Transformer (PST) at Cardiff 230 kV substation
- Component 8: Increase Cardiff 230/138 kV T6 transformer ratings
- Component 9: Increase Cardiff 230/69 kV T1 transformer ratings
- Component 10: Cardiff 230 kV Substation Upgrade
- Component 11: Add 1x Phase Shifting Transformer (PST) at Hope Creek 230kV substation
- Component 12: Add 1x Phase Shifting Transformer (PST) at Hope Creek substation

An analysis of the Project components mentioned above was performed to assist in the identification of major environmental and socioeconomic features and to provide a base for the extrapolation and derivation of future construction, permitting, mitigation, and land costs studies for the overall Project. The major risks are summarized in the following section, and a listing of the environmental, socioeconomic, and required permits are provided in the Appendix A -Table 26.

Environmental (Regulatory) Risks

A summary of the environmental risks that may impact the Project is provided in the table below.

Risk Analysis		
Category	**Items of Note**	**Significant Constraints/Hurdles**
Floodplain	The Project Area has FEMA mapped floodways, 100-year floodplains, and 500-year floodplains.	An NJDEP permit is required for any development within a floodway or 100-year floodplain.

Water Resources	Potential wetlands and other regulated waters, transition areas, and tidelands are most likely present in the Project Area. EPA Priority Wetlands, Wild and Scenic Rivers and Outstanding Natural Resource Waters are present.	None identified.
Water resources regulations	If jurisdictional wetlands/waterways are present, project infrastructure should be sited to avoid water resources to the degree practicable. There are impaired waters within the Project Area. EPA Priority Wetlands, Wild and Scenic Rivers and Outstanding Natural Resource Waters are present.	State and Federal permits will be required for impacts to jurisdictional waters. Additional stormwater BMPs are likely. Additional restrictions likely. EPA will likely review application.
Sensitive Biological Resources	Six species were identified by the IPaC: American chaffseed, northern long-eared bat (NLEB), knieskern's beaked rush, swamp pink, and monarch butterfly. Bald Eagle was also reviewed. Likelihood of occurrence within the Project Area are as follows: **High**: NLEB, Knieskern's beak-rush, swamp pink, monarch butterfly, and Bald Eagle, **Low**: American chaffseed	Tree clearing should be avoided; if necessary, restrict to the northern long-eared bat inactive season (November 1 – March 31), or at a minimum outside of the pup-rearing season (June 1 – July 31). Rare plant surveys may be necessary. Bald Eagle nest surveys are recommended. If present, all active (in-use) eagle nests require at least a 660' no-construction buffer. Alternate (inactive) nests may also require a buffer
Archaeological and Historic Resources	Twenty-one archaeological sites may intersect the Project Area (1 is NRHP eligible). One site may be adjacent to the Project. Five historic districts, of which 4 are NRHP eligible, intersect the Project. Most of the historic resources that intersect or are adjacent to the Project are elements in historic districts. Four resources intersect the Project, although the two NRHP eligible properties are demolished.	Recommend avoiding archaeological sites and historic districts.
Public Lands	The Project Area intersects 45 parcels of public and conservation lands. These include Makepeace Lake State Wildlife Management Area, Great Egg Harbor State Wildlife Management Area, Penny Pot Preserve, and two Conservation Focal Areas (CFA): Great Egg Harbor Watershed CFA and Core Pinelands Area CFA, and 40 conservation or agricultural easements. No federal wildlife refuges, or military lands were located within one mile of the Project Area.	Public lands and conservation areas may have specific permits and/or land use restrictions. Project will need to confirm any restrictions/setbacks during design process to avoid and/or implement controls/setbacks as necessary.

Land Cover	The Project Area is mainly comprised of Woody Wetlands.	None identified.
Zoning and Land Use	The Project Area is located across seven different Townships and Boroughs in the State of New Jersey. A variety of local permits may be required including: Zoning, Land Use Board Applications, Site Plan Reviews, Construction Permits, and roadway permits. An assortment of permits are administered by the State and Federal Government Agencies, see Appendix A -Table 26 for further information.	Recommend additional coordination with regulatory agencies and permitting authorities as the plans for this Project develop.
Infrastructure	The proposed Project crosses numerous major highways, two railroads, one pipelines, numerous substations, and abundant transmission lines.	Avoidance or setbacks from structures may be necessary. Crossing agreements with other utility operators may be required.
Soils	Farmland of unique importance, farmland of statewide importance, all areas are prime farmland, not prime farmland, farmland of local importance, and farmland of statewide importance, if drained all occur within the Project Area.	None identified.
Environmental Hazards	Several active remediation sites, underground storage tanks, areas of immediate environmental concern, four superfund sites, and groundwater contamination areas were found within the quarter-mile buffer of the Project Area.	Avoidance or setbacks from environmental hazards may be necessary.

Transmission Line Analysis

- For the lines that contain double circuit structures with an open circuit, it is assumed that the structures were designed for the conductor being installed and will not need to be replaced.
- The project relied solely upon desktop assessments and local contacts in order to produce the general transmission modification plans.

Substation Analysis

- The New Freedom substation yard will require expansion to accept the new high voltage equipment. It is recommended to expand the yard to the north of the existing substation into the wooded land that surrounds the substation.
- The New Freedom substation is already configured in a breaker-and-a-half configuration. The additional equipment already has designated locations within the current substation equipment layout. Outage coordination will need to be undertaken during the transmission line rerouting to ensure the scheduling of work within the substation, however the majority of the new equipment should be constructible with minimal interruption to the existing substation equipment.
- A number of upgrades are being proposed at the Cardiff substation. Individually they will not pose undue hardship in expanding the substation equipment. As a whole the work required at the substation may require expansion of the substation yard as indicated on the Cardiff General Arrangement.

- The Cardiff transformer T6 replacement will not present undue hardship for the existing substation. It is assumed that the new transformer will not be significantly larger than the existing transformer. If the transformer is considerably larger than the existing unit it may require the existing equipment to be relocated to allow for the new transformer installation.
- The Cardiff substation is already designed with the expansion proposed in mind. This component will not require additional property, nor will it require any relocation of the existing equipment. Consideration must be given the new group operated disconnect switches to align the terminal pads with the existing buswork.
- The Hope Creek substation is constructed in the middle of a generating facility and is thus locked at its current fence size. To add the new phase shifting transformer an additional parcel of property will be required along the north side of the generating facility. This new property will contain a new substation yard for the phase shifting transformers and attendant equipment.

Construction Schedule

- The conceptual project schedule developed by the consultant indicates that the Project will take approximately 36 months to complete, from Project initiation to energization.
- It is assumed that the engineering process can continue as siting permit is reviewed. There are four major activities on the critical path: Engineering; Siting and major permit acquisition; long lead equipment procurement; construction and commissioning. Delays in completing any of these activities would jeopardize completing the Project within the estimated schedule.

Proposal 158

Environmental (Regulatory) Analysis

Desktop Review

Project #158 is located within Philadelphia in Philadelphia County, Pennsylvania; Nockamixon and Springfield Townships in Bucks County, Pennsylvania; Holland Township in Hunterdon County, New Jersey; and New Castle County, Delaware.

It includes the reconductoring of two 230 kV lines and an upgrade to a substation. The reconductoring of both the existing Gilbert-Springfield 230 kV OH Line and Richmond-Waneeta 230 kV OH Line and the upgrade to the Red Lion 500 kV Substation will use existing easements/utility owned property. The Gilbert-Springfield 230 kV OH Line is 11.95 miles and the Richmond-Waneeta 230 kV OH Line is 3.2 miles. The Gilbert-Springfield 230 kV OH Line is located within Holland Township, New Jersey and Springfield Townships, Pennsylvania. The Richmond-Waneeta 230 kV OH Line is located within Philadelphia, PA. The Red Lion Substation resides in New Castle County, Delaware.

An analysis of the Project components mentioned above was performed to assist in the identification of major environmental and socioeconomic features and to provide a base for the extrapolation and derivation of future construction, permitting, mitigation, and land costs studies for the overall Project. The major risks are summarized in the following section, and a listing of the environmental, socioeconomic, and required permits are provided in the Appendix A -Table 27.

Environmental (Regulatory) Risks

A summary of the environmental risks that may impact the Project is provided in the table below.

Risk Analysis		
Category	**Items of Note**	**Significant Constraints/Hurdles**
Floodplain	The Project Area has FEMA mapped open water, 100-year floodplains, and 500-year floodplains.	State and local permits are required for any development within a floodway or 100-year floodplain.
Water Resources	Potential wetlands and other regulated waters, transition areas, and tidelands are present in the Project Area.	None identified.
Water resources regulations	If jurisdictional wetlands/waterways are present, project infrastructure should be sited to avoid water resources to the degree practicable. There are impaired waters within the Project Area.	State and Federal permits will be required for impacts to jurisdictional waters. Additional stormwater BMPs are likely. Additional restrictions likely due to crossing of a Section 10 Navigable Water and portions of the Project containing Tidelands.
Biological Resources	**IPaC** Four federally threatened species and one candidate for listing species have the potential to occur within the Project Area and surrounding region. Please note that candidate species are not currently afforded any statutory protections. Likelihood of occurrences are as follows: **Moderate to High:** NLEB, swamp pink, monarch butterfly. **Moderate:** Bog turtle **Low to Moderate:** Bald Eagle. **Low:** Seabeach amaranth	Recommend that tree clearing is avoided; if necessary, restrict it to the NLEB inactive season (November 1 – March 31). If present, all active eagle nests require at least a 660' construction buffer during the breeding season. Rare species surveys could be required for swamp pink and bog turtle due to the documentation of rare plant species in the Natural Heritage Priority sites located in the Project Area.
Archaeological and Historic Resources	No archaeological sites have been identified within or adjacent to the Project. Three surveys have been conducted in the area, portions of which intersect the Project. Eleven historic resources intersect or are adjacent to the Project, of which four are NRHP eligible, 2 are listed, and 1 is listed also listed as a National Historic Landmark (NHL). Two NRHP eligible historic districts intersect and are adjacent to the Project.	Further research of the Belvue Cemetery is recommended to verify the physical parameters of this supposedly non-extant historic cemetery.
Public Lands	There are two conservation focal areas within the Project Area and quarter-mile buffer. Two environmental easements also fall within the Project Area and quarter-mile buffer. 5,345.4	Recommend avoiding impacts to nearby public lands, the two conservation focal areas, and the

	acres of additional public lands fall within the Project Area and quarter-mile buffer. These additional public lands are mostly local parks, sport complexes, greenways, and museums.	conservation easements mapped within the Project Area.
Land Cover	The Project Area is mainly comprised of open water.	None identified.
Zoning and Land Use	The Project Area is located across three townships and one city from New Jersey to Pennsylvania. A variety of local permits may be required including: Zoning, Land Development, Site Plan Review, Building, Electrical, Utility, Construction, and roadway permits. An assortment of permits are administered by the State and Federal Governments, see Appendix A -Table 27 for further information.	Recommend additional coordination with regulatory agencies and permitting authorities as the plans for this Project develop.
Infrastructure	The proposed Project crosses several major highways, two railroads, four pipelines, numerous substations, and abundant transmission lines.	Avoidance or setbacks from structures may be necessary. Crossing agreements with other utility operators may be required.
Soils	Most of the Project Area is classified as not prime farmland.	None identified.
Environmental Hazards	Several active remediation sites, underground storage tanks, areas of immediate environmental concern, and groundwater contamination areas were found within the quarter-mile buffer of the Project Area.	Avoidance or setbacks from environmental hazards may be necessary.

Transmission Line Analysis

- The project relied solely upon desktop assessments and local contacts in order to produce the general transmission modification plans.

Substation Analysis

- Upgrades are proposed at the Red Lion 500kV Substation. Two (2) new circuit breakers are to be added to the existing ring bus, in order to eliminate the loss of the line coming from Keeney and one of the 500/230kV transformers due to stuck breaker contingency.
- The southern portion of the yard adjacent to the 500kV section will have to be expanded to complete this update. Expansion of the yard would include approximately 0.75 to 1.0 acres of new land development, including moving the existing access road within the yard.
- There is an existing cable trench within the yard which must not be disturbed during construction. There is also a storage building that would most likely have to be removed or relocated.
- In the proposed area of expansion, there is an existing 500kV transmission tower, and a 230kV line. It is probably that the 230kV line would have to be rerouted.

Construction Schedule

- The conceptual project schedule developed by the consultant indicates that the Project will take approximately 30 months to complete, from Project initiation to energization.

- It is assumed that the engineering process can continue as siting permit is reviewed. There are four major activities on the critical path: Engineering; Siting and major permit acquisition; long lead equipment procurement; construction and commissioning. Delays in completing any of these activities would jeopardize completing the Project within the estimated schedule.

Cost Reviews

Wiley Projects (Proposals 11, 982 & 587)

Proposal Cost Estimates

The total proposal costs for Wiley Projects (Proposals 11, 982, and 587) are provided below.

Category	Proposal 11	Proposal 982	Proposal 587
Materials and Equipment	$40,320,000	$33,840,000	$15,390,000
Engineering and Design	$3,870,000	$3,690,000	$1,890,000
Construction and Commissioning	$106,101,000	$93,859,200	$40,728,600
Permitting/Routing/Siting	$1,566,450	$1,746,450	$1,854,450
ROW/Land Acquisition	$11,862,567	$11,870,141	$11,125,591
Construction Management	$2,880,000	$2,430,000	$1,170,000
Overheads & Misc. Costs	$3,649,500	$3,649,500	$3,649,500
Contingency	$10,440,000	$9,090,000	$8,460,000
Work by others	$50,370,000	$51,745,000	$42,080,000
Total Project Costs	**$231,059,517**	**$211,920,291**	**$126,348,141**

Independent Cost Estimates

PJM's consultant assembled independent cost estimates for the proposed facilities using historical data from similar projects, information collected from original equipment vendors and contractors supplying similar services, and other publicly available sources. The accuracy of consultant's estimates is expected to be ±25%. The estimates are in 2022 dollars and include a 30% contingency.

The independent estimated total costs for Wiley Projects (Proposals 11, 982, and 587) are provided below.

Category	Proposal 11	Proposal 982	Proposal 587
Materials and Equipment	$61,749,316	$54,148,666	$33,649,694
Engineering and Design	$16,705,001	$14,806,172	$9,239,875
Construction and Commissioning	$67,523,737	$60,067,923	$43,929,315
Permitting/Routing/Siting	$3,950,000	$3,850,000	$1,700,000
ROW/Land Acquisition	$15,842,424	$15,944,424	$13,282,667

Construction Management	$8,288,524	$7,440,859	$5,090,078
Overheads & Misc. Costs	$15,779,672	$14,275,679	$9,620,247
Contingency (30%)	$56,951,602	$51,160,117	$34,953,562
Total Project Costs	**$246,790,276**	**$221,693,841**	**$151,465,437**

NEETMH Proposals 651, 331, 793 & 158

Proposal Cost Estimates

The total proposal costs for NEETMH Proposals 651, 331, 793 & 158 are provided below.

Category	Proposal 651	Proposal 331	Proposal 793	Proposal 158
Materials and Equipment	$14,040,000	$66,460,000	$ 28,580,000	$6,170,000.00
Engineering and Design	$4,330,000	$21,260,000	$ 9,140,000	$1,970,000.00
Construction and Commissioning	$22,290,000	$100,880,000	$ 50,570,000	$9,390,000.00
Permitting/Routing/Siting	$320,000	$2,130,000	$ 200,000	$200,000.00
ROW/Land Acquisition	$2,820,000	$19,250,000	$ 1,820,000	$1,770,000.00
Construction Management	$2,660,000	$10,630,000	$ 4,570,000	$990,000.00
Overheads & Misc. Costs	$5,380,000	$23,940,000	$ 10,280,000	$2,220,000.00
Contingency	$4,830,000	$21,260,000	$ 9,140,000	$1,970,000.00
Total Project Costs	**$56,670,000**	**$265,810,000**	**$114,300,000**	**$24,680,000.00**

Independent Cost Estimates

PJM's consultant assembled independent cost estimates for the proposed facilities using historical data from similar projects, information collected from original equipment vendors and contractors supplying similar services, and other publicly available sources. The accuracy of consultant's estimates is expected to be ±25%. The estimates are in 2022 dollars and include a 30% contingency.

The independent estimated total costs for NEETMH Proposals 651, 331, 793 & 158 are provided below.

Category	Proposal 651	Proposal 331	Proposal 793	Proposal 158
Materials and Equipment	$11,177,007	$26,533,839	$28,888,648	$4,809,982
Engineering and Design	$2,171,199	$6,129,541	$4,148,360	$1,482,664
Construction and Commissioning	$14,706,746	$57,953,255	$6,704,765	$4,169,887
Permitting/Routing/Siting	$523,703	$2,320,814	$200,000	$550,000
ROW/Land Acquisition	$1,129,250	$5,821,375	$1,000,000	$1,250,000

Construction Management	$2,453,418	$7,338,892	$3,668,240	$601,332
Overheads & Misc. Costs	-	-	$1,829,815	$680,213
Contingency (30%)	$9,175,275	$30,999,628	$13,931,948	$2,799,982
Total Project Costs	**$41,336,597**	**$137,097,345**	**$60,371,775**	**$16,344,059**

Atlantic City Electric Company (ACE) Proposals

Executive Summary

Exelon Corporation (Exelon), on behalf of its affiliate Atlantic City Electric Company (ACE), submitted one Option 1b proposal, along with 4 other Option 1a proposals in in response to the PJM 2021 Off Shore Wind Proposal Window.

ACE's Option 1a projects are intended to enable the interconnection of various levels of offshore wind injections at Cardiff by upgrading the Cardiff facilities, and providing solutions to address PJM identified constraints.

Table 5. **ACE Option 1a Proposals**

Proposal ID(s)	Description(s)	Notes
975 734 127 929	ACE 01 ACE 02 ACE 03 ACE 04	Base Case – Default POIs – 1510 MW at Cardiff 2000 MW at Cardiff & New Freedom ACE 05 Compatible – 2,658 MW at Cardiff & N.Freedom ACE 05 Compatible – 2,658 MW at Cardiff & Orchard

Point of Interconnection (POI)	Base Case - ACE 01 2021-NJOSW-975	ACE 02 2021-NJOSW-734	ACE 03 2021-NJOSW-127	ACE 04 2021-NJOSW-929
Deans (500kV)	2,542 MW	2,052 MW	2,542 MW	2,542 MW
Smithburg (500kV)	1,148 MW	1,148 MW	0 MW	0 MW
Larrabee (230kV)	1,200 MW	1,200 MW	1,200 MW	1,200 MW
Oyster Creek (230kV)	816 MW	816 MW	816 MW	816 MW
Cardiff (230kV)	1,510 MW	1,510 MW	1,510 MW	1,510 MW
BL England (138kV)	432 MW	432 MW	432 MW	432 MW
New Freedom (230kV)	0 MW	490 MW	1,148 MW	0 MW
Orchard (500kV)	0 MW	0 MW	0 MW	1,148 MW
Total Injection	7,648 MW	7,648 MW	7,648 MW	7,648 MW
No. of POIs	6	7	6	6
POI Costs	$1,321.00	$1,299.00	$826.00	$826.00
No. of Network Violations	19	21	21	19
Total 1A Costs ($M's)	$592.78	$758.09	$1,069.48	$774.52
Total Costs ($M's)- 1A + POI Costs	$1,913.78	$2,057.09	$1,895.48	$1,600.52
Cost per MW	$250,231.79	$272,832.83	$247,839.36	$209,272.82
Increase over Base Case Costs ($M's)	$0.00	$143.31[1]	-$18.30	-$313.25

Proposal 975 (ACE 01)

Project Overview

The ACE 01 solution for the NJ OSW SAA Base Case is a standalone proposal; it allows for default interconnection and injection of 1,510MW at Cardiff that was awarded as part of the state of New Jersey's award Soliciation#2 to Atlantic Shores Offshore Wind, LLC ("ASOW").

This proposal includes a rebuild of the existing Cardiff substation located in ACE territory and upgrades to existing transmission facilities in ACE, PECO and BGE territories. The ACE transmission facilities include the New Freedom to Cardiff 230 kV line, which is a tie line with PSEG, the Cardiff-Lewis 138 kV line and the Lewis #2-Lewis #1 138 kV bus tie. The PECO transmission facilities include the Peach Bottom-Conastone 500 kV line, which is a tie line with

BGE, the Peach Bottom-Furnace Run 500 kV line, which is a tie line with Transource, and the Richmond-Waneeta 230 kV line.

The project proposes to resolve the following PJM identified flowgates:

28-GD-S2-S134, 28-GD-S2-S138, 28-GD-S2-S139, 28-GD-S2-W1, 28-GD-S2-W137, 28-GD-S2-W140, 28-GD-S2-W141, 28-GD-S2-W142, 28-GD-S2-W2, 28-GD-S2-W3, 28-GD-S2-W82, 28-GD-S2-W83, 28-GD-S2-W86, 28-GD-S2-W87, 28-GD-S2-W88, 28-GD-S2-W95, 28-GD-S2-W96, 28-GD-S2-W99, 28-GD-W110, 28-GD-W111, 28-GD-W112, 28-GD-W15, 28-GD-W16, 28-GD-W4, 28-GD-W5, 35-GD-S2-S8A, 35-GD-S2-W10B, 35-GD-S2-W14, 35-GD-S2-W17, 35-GD-S2-W19, 35-GD-S2-W5, 35-GD-S2-W7, 35-GD-S2-W8A, 35-GD-S2-W8B, 35-GD-S2-W9B, 35-GD-W16, 35-GD-W5, 35-GD-W6

The following is a description of the project scope:

- Cardiff-Lewis #2 138kV line.
  - Replace the 1590 kcmil strand bus inside of Lewis Substation.
- Lewis #2-Lewis #1 138kV Bus Tie CB
  - Replace the Lewis #2-Lewis #1 138kV Bus Tie CB with a 2000 ampere (A) CB
- Cardiff-New Freedom 230kV line.
  - Increase line capacity by modifying existing relay settings.
- Reconductor the Peach Bottom-Conastone 500kV line
  - Reconductor 16.4 miles, utilizing existing towers.
- Upgrade Peach Bottom Substation
  - Expand the existing North 500kV Bus to the Southwest.
  - Install a new 500kV Bus Section between the North and South Busses
  - Install two (2) new 500kV CBs and associated equipment, creating a new bay position.
  - Terminate the rebuilt Peach Bottom-Conastone 500kV line into new bay position.
- Upgrade Conastone Substation.
  - Replace the existing B&C 500kV CBs with 5000A rated CBs.
- Richmond Substation
  - Install Smart Wire device.
- Upgrade the Peach Bottom to Furnace Run 500kV line
  - Reconductor 10.2 miles, utilizing existing towers
- Rebuild Cardiff 230kV Substation
  - Upgrade by installing 230kV GIS Double Bus in a Breaker and a half configuration.
    - GIS will have 8 bus sections, divided by 6 Bus Sectionalizing CBs.
    - Install up to 24 230kV CBs in the Breaker and a half configuration.
    - Connect to existing 230/138kV, 230/69kV Transformers and Cap Banks.
    - Connect to existing 230kV lines, Cardiff-New Freedom, Cardiff-Orchard & Cardiff-Cedar.
    - Connect 2 new circuits from Proposal 797 to the Offshore Wind Generators.

Constructability Summary

Project 975 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Components of this project run through Green Acres-encumbered properties. However, given that the project uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.

- Components of this project run through Pineland management areas. However, given that the project uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- For the Peach Bottom-Conastone area project components, approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Schedule:

- The entity's overall construction schedule of 65 months seems reasonable for the project.

Cost Review:

- Independent cost estimate: $ 186,734,543
- Entity's cost estimate: $ 186,660,576

Proposal 734 (ACE 02)

Project Overview

This proposed solution deviates from the default Point of Injection ("POI") injection amounts and offers an alternative injection amount consisting of 1,910MW of OSW at the existing Cardiff substation, utilizing a normally open breaker design at Cardiff. Utilizing the normally open bus tie at Cardiff, the 490 MW of offshore wind energy can flow from the connection at Cardiff to the New Freedom substation via a new 230kV circuit between Cardiff and New Freedom, paralleling the existing Cardiff to New Freedom. The new 230kV circuit will be capable of carrying 490MW but will have the capacity to deliver up to a total of 1,200MW.

This proposal includes a rebuild of the existing Cardiff substation located in ACE territory and upgrades to existing transmission facilities in ACE, PECO and BGE territories. The ACE transmission facilities include the New Freedom to Cardiff 230 kV line, which is a tie line with PSEG, the Cardiff-Lewis 138 kV line and the Lewis #2-Lewis #1 138 kV bus tie. The PECO transmission facilities include the Peach Bottom-Conastone 500 kV line, which is a tie line with BGE, the Peach Bottom-Furnace Run 500 kV line, which is a tie line with Transource, and the Richmond-Waneeta 230 kV line. In addition, this proposal includes a rebuild of the existing Cardiff-New Freedom line to a double circuit tower line with two circuits from Cardiff to New Freedom.

The project proposes to resolve the following PJM identified flowgates:

28-GD-S2-S134, 28-GD-S2-S138, 28-GD-S2-S139, 28-GD-S2-W1, 28-GD-S2-W137, 28-GD-S2-W140, 28-GD-S2-W141, 28-GD-S2-W142, 28-GD-S2-W2, 28-GD-S2-W3, 28-GD-S2-W82, 28-GD-S2-W83, 28-GD-S2-W86, 28-GD-S2-W87, 28-GD-S2-W88, 28-GD-S2-W95, 28-GD-S2-W96, 28-GD-S2-W99, 28-GD-W110, 28-GD-W111, 28-GD-W112, 28-GD-W15, 28-GD-W16, 28-GD-W4, 28-GD-W5, 35-GD-S2-S8A, 35-GD-S2-W10B, 35-GD-S2-W14, 35-GD-S2-W17, 35-GD-S2-W19, 35-GD-S2-W5, 35-GD-S2-W7, 35-GD-S2-W8A, 35-GD-S2-W8B, 35-GD-S2-W9B, 35-GD-W16, 35-GD-W5, 35-GD-W6

The following is a description of the project scope:

- Cardiff-Lewis #2 138kV line.
  - Replace the 1590 kcmil strand bus inside of Lewis Substation.
- Lewis #2-Lewis #1 138kV Bus Tie CB

    - Replace the Lewis #2-Lewis #1 138kV Bus Tie CB with a 2000 ampere (A) CB
- Reconductor the Peach Bottom-Conastone 500kV line
    - Reconductor 16.4 miles, utilizing existing towers.
- Upgrade Peach Bottom Substation
    - Expand the existing North 500kV Bus to the Southwest.
    - Install a new 500kV Bus Section between the North and South Busses
    - Install two (2) new 500kV CBs and associated equipment, creating a new bay position.
    - Terminate the rebuilt Peach Bottom-Conastone 500kV line into new bay position.
- Upgrade Conastone Substation.
    - Replace the existing B&C 500kV CBs with 5000A rated CBs.
- Upgrade the Peach Bottom to Furnace Run 500kV line
    - Reconductor 10.2 miles, utilizing existing towers
- Cardiff-New Freedom 230kV line.
    - Increase line capacity by modifying existing relay settings.
- Upgrade Richmond Substation
    - Install Smart Wire device.
- Rebuild Cardiff 230kV Substation
    - Upgrade by installing 230kV GIS Double Bus in a Breaker and a half configuration.
        - GIS will have 8 bus sections, divided by 6 Bus Sectionalizing CBs.
        - Install up to 24 230kV CBs in the Breaker and a half configuration.
        - Connect to existing 230/138kV, 230/69kV Transformers and Cap Banks.
        - Connect to existing 230kV lines, Cardiff-New Freedom, Cardiff-Orchard & Cardiff-Cedar.
        - Connect new second circuit from Cardiff to New Freedom
        - Connect 2 new circuits from Proposal 797 to the Offshore Wind Generators.
- Rebuild the Cardiff to New Freedom 230kV line from single to double circuit 33.2 miles.
        - Utilizing existing towers.
        - Existing line will be rebuilt/re-conductored.
        - Using existing ROW.

Constructability Summary

Project 734 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Components of this project run through Green Acres-encumbered properties. However, given that the project uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- Components of this project run through Pineland management areas. However, given that the project uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- For the Peach Bottom-Conastone area project components, approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Schedule:

- The entity's overall construction schedule of 65 months seems reasonable for the project.

Cost Review:

- Independent cost estimate: $ 386,673,090
- Entity's cost estimate: $ 341,321,582

Proposal 127 (ACE 03)

Project Overview

This proposed solution deviates from the base case Point of Interconnection ("POI") injection amounts and offers an alternative injection amount consisting of 2,658MW of OSW at the existing Cardiff substation, utilizing a normally open breaker design at Cardiff. Utilizing the normally open bus tie at Cardiff, the 1,148MW of offshore wind energy can flow from the connection at Cardiff to the New Freedom substation via a new 230kV circuit between Cardiff and New Freedom, paralleling the existing Cardiff to New Freedom. The new 230kV circuit will be capable of carrying 1,148MW but will have the capacity to deliver up to a total of 1,200MW.

This proposal includes a rebuild of the existing Cardiff substation located in ACE territory and upgrades to existing transmission facilities in ACE, PECO and BGE territories. The ACE transmission facilities include the New Freedom to Cardiff 230 kV line, which is a tie line with PSEG, the Cardiff-Lewis 138 kV line and the Lewis #2-Lewis #1 138 kV bus tie. The PECO transmission facilities include the Peach Bottom-Conastone 500 kV line, which is a tie line with BGE, the Peach Bottom-Furnace Run 500 kV line, which is a tie line with Transource, and the Richmond-Waneeta 230 kV line. In addition, this proposal includes a rebuild of the existing Cardiff-New Freedom line to a double circuit tower line with two circuits from Cardiff to New Freedom.

The project proposes to resolve the following PJM identified flowgates:

28-GD-S2-S134, 28-GD-S2-S138, 28-GD-S2-S139, 28-GD-S2-W1, 28-GD-S2-W137, 28-GD-S2-W140, 28-GD-S2-W141, 28-GD-S2-W142, 28-GD-S2-W2, 28-GD-S2-W3, 28-GD-S2-W82, 28-GD-S2-W83, 28-GD-S2-W86, 28-GD-S2-W87, 28-GD-S2-W88, 28-GD-S2-W95, 28-GD-S2-W96, 28-GD-S2-W99, 28-GD-W110, 28-GD-W111, 28-GD-W112, 28-GD-W15, 28-GD-W16, 28-GD-W4, 28-GD-W5, 35-GD-S2-S8A, 35-GD-S2-W10B, 35-GD-S2-W14, 35-GD-S2-W17, 35-GD-S2-W19, 35-GD-S2-W5, 35-GD-S2-W7, 35-GD-S2-W8A, 35-GD-S2-W8B, 35-GD-S2-W9B, 35-GD-W16, 35-GD-W5, 35-GD-W6

The following is a description of the project scope:

- Cardiff-Lewis #2 138kV line
  - Replace the 1590 kcmil strand bus inside of Lewis Substation
- Lewis #2-Lewis #1 138kV Bus Tie CB
  - Replace the Lewis #2-Lewis #1 138kV Bus Tie CB with a 2000 amp (A) CB
- Cardiff-New Freedom 230kV line
  - Increase line capacity by modifying existing relay settings
- Reconductor the Peach Bottom-Conastone 500kV line
  - Reconductor 16.4 miles, utilizing existing towers
- Upgrade Peach Bottom Substation
  - Expand the existing North 500kV Bus to the Southwest
  - Install a new 500kV Bus Section between the North and South Busses
  - Install two (2) new 500kV CBs and associated equipment, creating a new bay position
  - Terminate the rebuilt Peach Bottom-Conastone 500kV line into new bay position
- Upgrade Conastone Substation
  - Replace the existing B&C 500kV CBs with 5000A rated CBs.
- Upgrade the Peach Bottom to Furnace Run 500kV line
  - Reconductor 10.2 miles, utilizing existing towers

- Rebuild Cardiff 230kV Substation
    - Upgrade by installing 230kV GIS Double Bus in a Breaker and a half configuration
        - GIS will have 8 bus sections, divided by 6 Bus Sectionalizing CBs
        - Install up to 24 - 230kV CBs in the Breaker and a half configuration
        - Connect to existing 230/138kV, 230/69kV Transformers and Cap Banks
        - Connect to existing 230kV lines, Cardiff-New Freedom, Cardiff-Orchard & Cardiff-Cedar
        - Connect new second circuit from Cardiff to New Freedom
        - Connect 2 new circuits from Proposal 797 to the Offshore Wind Generators
- Rebuild the Cardiff to New Freedom 230kV line from single to double circuit
    - 33.2 miles
    - Utilizing existing towers
    - Utilize existing ROW
- Rebuild the Richmond to Waneeta 230kV line
    - 0.95 miles
    - Reconductor the UG portion only
- Upgrade Peach Bottom North Substation
    - Replace two (2) current transformers (CTs) inside Peach Bottom North Substation

Constructability Summary

Project 127 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Components of this project run through Green Acres-encumbered properties. However, given that the project uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- Components of this project run through Pineland management areas. However, given that the project uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- For the Peach Bottom-Conastone area project components, approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Schedule:

- The entity's overall construction schedule of 65 months seems reasonable for the project.

Cost Review:

- Independent cost estimate: $ 400,404,589
- Entity's cost estimate: $ 352,751,582

Proposal 929 (ACE 04)

Project Overview

This proposed solution deviates from the base case Point of Interconnection ("POI") injection amounts and offers an alternative injection amount consisting of 2,658MW of OSW at the existing Cardiff substation, utilizing a normally open breaker design at Cardiff. Utilizing the normally open bus tie at Cardiff, the 1,148MW of offshore wind energy can flow from the connection at Cardiff to the Orchard substation via a new 230kV circuit between Cardiff and

Orchard, paralleling the existing Cardiff to Orchard. The new 230kV circuit will be capable of carrying 1,148MW but will have the capacity to deliver up to a total of 1,200MW.

This proposal includes a rebuild of the existing Cardiff substation located in ACE territory and upgrades to existing transmission facilities in ACE, PECO and BGE territories. The ACE transmission facilities include the New Freedom to Cardiff 230 kV line, which is a tie line with PSEG, the Cardiff-Lewis 138 kV line and the Lewis #2-Lewis #1 138 kV bus tie. The PECO transmission facilities include the Peach Bottom-Conastone 500 kV line, which is a tie line with BGE, the Peach Bottom-Furnace Run 500 kV line, which is a tie line with Transource, and the Richmond-Waneeta 230 kV line. In addition, this proposal includes building a new 230 kV line from Cardiff to Orchard.

The project proposes to resolve the following PJM identified flowgates:

28-GD-S2-S134, 28-GD-S2-S138, 28-GD-S2-S139, 28-GD-S2-W1, 28-GD-S2-W137, 28-GD-S2-W140, 28-GD-S2-W141, 28-GD-S2-W142, 28-GD-S2-W2, 28-GD-S2-W3, 28-GD-S2-W82, 28-GD-S2-W83, 28-GD-S2-W86, 28-GD-S2-W87, 28-GD-S2-W88, 28-GD-S2-W95, 28-GD-S2-W96, 28-GD-S2-W99, 28-GD-W110, 28-GD-W111, 28-GD-W112, 28-GD-W15, 28-GD-W16, 28-GD-W4, 28-GD-W5, 35-GD-S2-S8A, 35-GD-S2-W10B, 35-GD-S2-W14, 35-GD-S2-W17, 35-GD-S2-W19, 35-GD-S2-W5, 35-GD-S2-W7, 35-GD-S2-W8A, 35-GD-S2-W8B, 35-GD-S2-W9B, 35-GD-W16, 35-GD-W5, 35-GD-W6

The following is a description of the project scope:

- Cardiff-Lewis #2 138kV line.
  - Replace the 1590 kcmil strand bus inside of Lewis Substation.
- Lewis #2-Lewis #1 138kV Bus Tie CB
  - Replace the Lewis #2-Lewis #1 138kV Bus Tie CB with a 2000 ampere (A) CB
- Cardiff-New Freedom 230kV line.
  - Increase line capacity by modifying existing relay settings.
- Reconductor the Peach Bottom-Conastone 500kV line
  - Reconductor 16.4 miles, utilizing existing towers.
- Upgrade Peach Bottom Substation
  - Expand the existing North 500kV Bus to the Southwest.
  - Install a new 500kV Bus Section between the North and South Busses
  - Install two (2) new 500kV CBs and associated equipment, creating a new bay position.
  - Terminate the rebuilt Peach Bottom-Conastone 500kV line into new bay position.
- Upgrade Conastone Substation.
  - Replace the existing B&C 500kV CBs with 5000A rated CBs.
- Upgrade the Peach Bottom to Furnace Run 500kV line
  - Reconductor 10.2 miles, utilizing existing towers
- Richmond Substation
  - Install Smart Wire device.
- Rebuild Cardiff 230kV Substation
  - Upgrade by installing 230kV GIS Double Bus in a Breaker and a half configuration.
    - GIS will have 8 bus sections, divided by 6 Bus Sectionalizing CBs.
    - Install up to 24 230kV CBs in the Breaker and a half configuration.
    - Connect to existing 230/138kV, 230/69kV Transformers and Cap Banks.
    - Connect to existing 230kV lines, Cardiff-New Freedom, Cardiff-Orchard & Cardiff-Cedar.
    - Connect new second circuit from Cardiff to Orchard
    - Connect 2 new circuits from Proposal 797 to the Offshore Wind Generators.
- Build a new 230kV line from Cardiff to Orchard
    - Parallel and in the same ROW with the existing Cardiff to Orchard 230kV line.
- Upgrade Peach Bottom North Substation

  - Replace two (2) Bus CTs.
- Upgrade Orchard Substation
  - Install three (3) single phase 500/230kV 450 MVA Transformers (banked).
  - Install voltage compensation equipment (100 MVAR STATCOM proposed)

Constructability Summary

Project 929 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Components of this project run through Green Acres-encumbered properties. However, given that the project uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- Components of this project run through Pineland management areas. However, given that the project uses pre-disturbed ROW, the impacts are expected to be minimal, although any expansion required during construction could result in additional impacts and require permitting.
- For the Peach Bottom-Conastone area project components, approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Schedule:

- The entity's overall construction schedule of 65 months seems reasonable for the project.

Cost Review:

- Independent cost estimate: $ 369,536,016
- Entity's cost estimate: $ 384,312,027

Constructability Reviews

Proposals 975, 734, 127, 929

Environmental (Regulatory) Analysis

Desktop Review

- Proposal 975 includes a rebuild of the existing Cardiff substation located in ACE territory and upgrades to existing transmission facilities in ACE, PECO and BGE territories. The ACE transmission facilities include the New Freedom to Cardiff 230 kV line, which is a tie line with PSEG, the Cardiff-Lewis 138 kV line and the Lewis #2-Lewis #1 138 kV bus tie, located in Atlantic, Camden, and Ocean Counties, NJ. The PECO transmission facilities include the Peach Bottom-Conastone and the Peach Bottom-Furnace Run 500 kV 500 kV lines, spanning from York County, PA to Harford County, MD, as well as the Richmond-Waneeta 230 kV line, located within Philadelphia, PA.
- Proposal 734 includes a rebuild of the existing Cardiff substation located in ACE territory and upgrades to existing transmission facilities in ACE, PECO and BGE territories. The ACE transmission facilities include the New Freedom to Cardiff 230 kV line, which is a tie line with PSEG, the Cardiff-Lewis 138 kV line and the Lewis #2-Lewis #1 138 kV bus tie, located in Atlantic, Camden, and Ocean Counties, NJ. The PECO

transmission facilities include the Peach Bottom-Conastone and the Peach Bottom-Furnace Run 500 kV 500 kV lines, spanning from York County, PA to Harford County, MD, as well as the Richmond-Waneeta 230 kV line, located within Philadelphia, PA. In addition, this proposal includes a rebuild of the existing Cardiff-New Freedom line to a double circuit tower line with two circuits from Cardiff to New Freedom.

- Proposal 127 includes a rebuild of the existing Cardiff substation located in ACE territory and upgrades to existing transmission facilities in ACE, PECO and BGE territories. The ACE transmission facilities include the New Freedom to Cardiff 230 kV line, which is a tie line with PSEG, the Cardiff-Lewis 138 kV line and the Lewis #2-Lewis #1 138 kV bus tie, located in Atlantic, Camden, and Ocean Counties, NJ. The PECO transmission facilities include the Peach Bottom-Conastone and the Peach Bottom-Furnace Run 500 kV 500 kV lines, spanning from York County, PA to Harford County, MD, as well as the Richmond-Waneeta 230 kV line, located within Philadelphia, PA. In addition, this proposal includes a rebuild of the existing Cardiff-New Freedom line to a double circuit tower line with two circuits from Cardiff to New Freedom, and an expansion of the New Freedom station to accommodate a 1200 MW circuit.
- Proposal 929 includes a rebuild of the existing Cardiff substation located in ACE territory and upgrades to existing transmission facilities in ACE, PECO and BGE territories. The ACE transmission facilities include the New Freedom to Cardiff 230 kV line, which is a tie line with PSEG, the Cardiff-Lewis 138 kV line and the Lewis #2-Lewis #1 138 kV bus tie, located in Atlantic, Camden, and Ocean Counties, NJ. The PECO transmission facilities include the Peach Bottom-Conastone and the Peach Bottom-Furnace Run 500 kV 500 kV lines, spanning from York County, PA to Harford County, MD, as well as the Richmond-Waneeta 230 kV line, located within Philadelphia, PA. In addition, this proposal includes building a new 230 kV line from Cardiff to Orchard, and an expansion of the Orchard station to accommodate a 1200 MW circuit.

An analysis of the Projects above was performed to assist in the identification of major environmental and socioeconomic features and to provide a base for the extrapolation and derivation of future construction, permitting, mitigation, and land costs studies for the overall Projects. The results of the desktop review for are discussed below, and details provided in Appendix A -Tables 11, 12, 13, and 14.

Environmental (Regulatory) Risks

The following is a brief summary of the potential risks identified.

Federal, State, Local Permitting

- See Appendix Table 14 for details.
- Components of these projects run through Green Acres-encumbered properties. These components of the Project are within existing maintained ROWs. However, pending final design, the substation expansion and reconfigurations may extend outside existing ROW and may impact Green Acres areas requiring a Green Acres Program Diversion permit.
- Components of these projects run through the Pinelands Reserve and Management Area, which can result in more stringent regulations. Consultation with the NJDEP's DLRP and the Pinelands Commission earlier in the Project's development will help mitigate risks by addressing permitting concerns and allowing for a larger consultation and permitting timeline.
- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Resource Crossings

- See Appendix Tables 11 and 12 for details
- Scott Creek (PA): Chapter 93 designated (Cold Water Fishes and Trout Stocked)
- Jack's Hole (MD): Designation NA, but should be considered when permitting

- Broad Creek (MD): Designation NA, but should be considered when permitting
- Falling Branch (MD): Designation NA, but should be considered when permitting
- Big Branch (MD): Designation NA, but should be considered when permitting
- Island Branch (MD): Designation NA, but should be considered when permitting
- Deer Creek (MD): Designation NA, but should be considered when permitting

Cultural Resources

- See Appendix Tables 11 and 12 for details
- Potential Cultural Resource impacts identified in both MD and PA.

Flood Plains/Wetlands

- See Appendix Tables 11 and 12 for details
- Wetlands/Hydric soils present within project area; wetland delineations will be needed

Threatened and Endangered Species

- See Appendix Table 13 for details
- Pennsylvania
    - American Holly (*Ilex opaca*): PA; Atom Road Woods
    - Lobed Spleenwort (*Asplenium pinnatifidum*): PA; Atom Road Woods
    - Harbinger-of-spring (*Erigenia bulbosa)*: PA; Peach Bottom Woods
    - Declined Trillium (*Trillium flexipes)*: PA; Peach Bottom Woods
    - Broad-headed Skink (*Plestiodon laticeps)*: Pennsylvania
    - Indiana Bat (*Myotis sodalist)*; potential within project area
    - Northern Long-eared Bat (*Myotis septentrionalis)*; potential within project area
    - Bog Turtle (*Clemmys muhlenbergii*); potential within project area
    - Monarch Butterfly (*Danaus plexippus*); potential within project area
- Maryland
    - Several Maryland T&E species identified, additional survey/review needed to determine species/habitat specifics and impact on project area

Infrastructure

- See Appendix Tables 11 and 12 for details
- Additional review of land use around proposed project areas identified no airports in proximity (approx. 3 mile) to project area.
- Based on publicly available data, there will be no impacts due to crossing of active railroads.

Transmission & Substation Analysis

Proposal 975

Potential Risks

- Engineering:
    - Smart Wire device installation for Richmond – Waneeta circuit
        - Proposed footprint looks adequate for installation
    - Potential schedule complications due to Transource Project 9A currently suspended, which places Furnace Run project components in question.

    - Some concern about space required for upgrades at Peach Bottom and New Freedom substations.
- Siting and Major Permit Acquisition
    - No evidence provided indicating that Right-Of-Way (ROW) or land acquisitions have been secured.
    - Permitting risks with Pineland Commission approvals required for components of the project in Pinelands management areas.
    - Approvals needed from both Maryland and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)
- Long-lead Equipment Procurement
    - No issues worth noting
- Construction and Commissioning
    - Some concerns with the sequencing of the construction and commissioning for the various components of the project.

Construction Schedule
The proposed project schedule is provided in the Table below

Proposal 975	
Start Date:	1/2023
Construction Start Date	1/2023
In Service Date	6/2028
Total Project Duration	65 months

The proposed schedule is adequate for the outlined scope, with most risk assessed for the engineering and construction and commissioning timeframe.

Proposal 734

Potential Risks

- Engineering:
    - Smart Wire device installation for Richmond – Waneeta circuit
        - Proposed footprint looks adequate for installation
    - Potential schedule complications due to Transource Project 9A currently suspended, which places Furnace Run project components in question.
    - Some concern about space required for upgrades at Peach Bottom and New Freedom substations.
- Siting and Major Permit Acquisition
    - No evidence provided indicating that Right-Of-Way (ROW) or land acquisitions have been secured.
    - Permitting risks with Pineland Commission approvals required for components of the project in Pinelands management areas.
    - Approvals needed from both Maryland and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)
- Long-lead Equipment Procurement
    - No issues worth noting
- Construction and Commissioning

- Some concerns with the sequencing of the construction and commissioning for the various components of the project.

Construction Schedule
The proposed project schedule is provided in the Table below

Proposal 734	
Start Date:	1/2023
Construction Start Date	1/2023
In Service Date	6/2028
Total Project Duration	65 months

The proposed schedule is adequate for the outlined scope, with most risk assessed for the engineering and construction and commissioning timeframe.

Proposal 127

Potential Risks

- Engineering:
  - Rebuild of Richmond – Waneeta 230 kV circuit
    - Permitting delays anticipated with building about .95 miles of underground 230 kV circuits in Philadelphia
  - Potential schedule complications due to Transource Project 9A currently suspended, which places Furnace Run project components in question.
  - Some concern about space required for upgrades at Peach Bottom and New Freedom substations.
- Siting and Major Permit Acquisition
  - No evidence provided indicating that Right-Of-Way (ROW) or land acquisitions have been secured.
  - Permitting risks with Pineland Commission approvals required for components of the project in Pinelands management areas.
  - Approvals needed from both Maryland and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)
- Long-lead Equipment Procurement
  - No issues worth noting
- Construction and Commissioning
  - Some concerns with the sequencing of the construction and commissioning for the various components of the project.

Construction Schedule
The proposed project schedule is provided in the Table below

Proposal 127	
Start Date:	1/2023
Construction Start Date	1/2023
In Service Date	6/2028

Total Project Duration	65 months

The proposed schedule is adequate for the outlined scope, with most risk assessed for the engineering and construction and commissioning timeframe.

Proposal 929

Potential Risks

- Engineering:
  - Smart Wire device installation for Richmond – Waneeta circuit
    - Proposed footprint looks adequate for installation
  - Potential schedule complications due to Transource Project 9A currently suspended, which places Furnace Run project components in question.
  - Some concern about space required for upgrades at Peach Bottom and New Freedom substations.
- Siting and Major Permit Acquisition
  - No evidence provided indicating that Right-Of-Way (ROW) or land acquisitions have been secured.
  - Permitting risks with Pineland Commission approvals required for components of the project in Pinelands management areas.
  - Approvals needed from both Maryland and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)
- Long-lead Equipment Procurement
  - 24-36 months typically required for 500/230 Transformers (1 required for Orchard substation upgrades)
  - Project assumes prompt ordering, may incur high cost from scarcity; delays to design will impact material delivery risk.
  - Concern with lead times for delivery of large power equipment (Orchard upgrades require 500/230 kV transformer, and 100 MVAR STATCOM) as both foreign and US manufacturers have been delayed due to logistics and material delays.
- Construction and Commissioning
  - Some concerns with the sequencing of the construction and commissioning for the various components of the project.

Construction Schedule

The proposed project schedule is provided in the Table below

Proposal 929	
Start Date:	1/2023
Construction Start Date	1/2023
In Service Date	6/2028
Total Project Duration	65 months

The proposed schedule is adequate for the outlined scope, with moderate risks assessed for the engineering, long-lead equipment procurement, and construction and commissioning timeframes.

Cost Reviews

Proposal 975

Proposal Cost Estimates

The proposal costs for ACE's Proposal 975 are given below.

Component	Cost (Current Year)
1. Upgrade Cardiff-Lewis #2 138 kV line	$100,000
2. Upgrade Lewis #2 - Lewis #1 138 kV bus tie	$500,000
3. Upgrade Cardiff-New Freedom 230 kV line	$300,000
4. Upgrade Peach Bottom-Conastone 500 kV line	$36,289,000
5. Upgrade Peach Bottom South substation	$49,598,167
6. Upgrade Conastone substation	$2,078,000
7. Upgrade Richmond substation	$4,700,000
8. Upgrade Peach Bottom-Furnace Run 500 kV line	$23,000,000
9. Rebuild Cardiff substation	$70,095,409
Total	**$186,660,576**

Independent Cost Estimates

- Costs were developed leveraging standardized units for construction, material, and land acquisition costs
- Costs for engineering, project management, construction management, and overheads utilized standard industry percentages for the size and type of project.
- Units and % were applied evenly across projects where like units were expected or detailed across projects.
- Project costs were evaluated at current year value as projected in the proposal reports.
- Proposal costs associated with Proposal 975 are within reasonable execution ranges with standard risk of underground construction, land development, site development, and scope clarity for components associated with brownfield upgrades.
- The estimates are in 2022 dollars and includes a 20% contingency.

The following are the independent cost estimates for ACE's proposal 975.

Component	Cost (Current Year)

1. Upgrade Cardiff-Lewis #2 138 kV line	$491,150
2. Upgrade Lewis #2 - Lewis #1 138 kV bus tie	$299,182
3. Upgrade Cardiff-New Freedom 230 kV line	$132,190
4. Upgrade Peach Bottom-Conastone 500 kV line	$42,192,445
5. Upgrade Peach Bottom South substation	$28,104,521
6. Upgrade Conastone substation	$2,481,899
7. Upgrade Richmond substation	$4,580,629
8. Upgrade Peach Bottom-Furnace Run 500 kV line	$21,773,088
9. Rebuild Cardiff substation	$86,679,438
Total	**$186,734,543**

Proposal 734

Proposal Cost Estimates

The proposal costs for ACE's Proposal 734 are given below.

Component	Cost (Current Year)
1. Upgrade Cardiff-Lewis #2 138 kV line	$100,000
2. Upgrade Lewis #2 - Lewis #1 138 kV bus tie	$500,000
3. Upgrade Cardiff-New Freedom 230 kV line	$300,000
4. Upgrade Peach Bottom-Conastone 500 kV line	$36,289,000
5. Upgrade Peach Bottom South substation	$49,598,167
6. Upgrade Conastone substation	$2,078,000
7. Upgrade Richmond substation	$4,700,000
8. Upgrade Peach Bottom-Furnace Run 500 kV line	$23,000,000
9. Rebuild Cardiff substation	$70,095,409
10. Rebuild Cardiff-New Freedom 230 kV line	$154,661,006
Total	**$341,321,582**

Independent Cost Estimates

- Costs were developed leveraging standardized units for construction, material, and land acquisition costs
- Costs for engineering, project management, construction management, and overheads utilized standard industry percentages for the size and type of project.
- Units and % were applied evenly across projects where like units were expected or detailed across projects.

- Project costs were evaluated at current year value as projected in the proposal reports.
- Proposal costs associated with Proposal 734 are within reasonable execution ranges with standard risk of underground construction, land development, site development, and scope clarity for components associated with brownfield upgrades.
- The estimates are in 2022 dollars and includes a 20% contingency.

The following are the independent cost estimates for ACE's proposal 734.

Component	Cost (Current Year)
1. Upgrade Cardiff-Lewis #2 138 kV line	$491,150
2. Upgrade Lewis #2 - Lewis #1 138 kV bus tie	$299,182
3. Upgrade Cardiff-New Freedom 230 kV line	$132,190
4. Upgrade Peach Bottom-Conastone 500 kV line	$42,192,445
5. Upgrade Peach Bottom South substation	$28,104,521
6. Upgrade Conastone substation	$2,481,899
7. Upgrade Richmond substation	$4,580,630
8. Upgrade Peach Bottom-Furnace Run 500 kV line	$21,773,089
9. Rebuild Cardiff substation	$86,679,438
10. Rebuild Cardiff-New Freedom 230 kV line	$199,938,547
Total	**$386,673,090**

Proposal 127

Proposal Cost Estimates

The proposal costs for ACE's Proposal 127 are given below.

Component	Cost (Current Year)
1. Upgrade Cardiff-Lewis #2 138 kV line	$100,000
2. Upgrade Lewis #2 - Lewis #1 138 kV bus tie	$500,000
3. Upgrade Cardiff-New Freedom 230 kV line	$300,000
4. Upgrade Peach Bottom-Conastone 500 kV line	$36,289,000
5. Upgrade Peach Bottom South substation	$49,598,167
6. Upgrade Conastone substation	$2,078,000
7. Upgrade Peach Bottom-Furnace Run 500 kV line	$23,000,000
8. Rebuild Cardiff substation	$70,095,409
9. Rebuild the Cardiff-New Freedom 230 kV line	$154,661,006

10. Upgrade Richmond-Waneeta 230 kV line	$16,000,000
11. Upgrade Peach Bottom North substation	$130,000
Total	**$352,751,582**

Independent Cost Estimates

- Costs were developed leveraging standardized units for construction, material, and land acquisition costs
- Costs for engineering, project management, construction management, and overheads utilized standard industry percentages for the size and type of project.
- Units and % were applied evenly across projects where like units were expected or detailed across projects.
- Project costs were evaluated at current year value as projected in the proposal reports.
- Proposal costs associated with Proposal 127 are within reasonable execution ranges with standard risk of underground construction, land development, site development, and scope clarity for components associated with brownfield upgrades.
- The estimates are in 2022 dollars and includes a 30% contingency.

The following are the independent cost estimates for ACE's proposal 127.

Component	Cost (Current Year)
1. Upgrade Cardiff-Lewis #2 138 kV line	$491,150
2. Upgrade Lewis #2 - Lewis #1 138 kV bus tie	$299,181
3. Upgrade Cardiff-New Freedom 230 kV line	$132,190
4. Upgrade Peach Bottom-Conastone 500 kV line	$42,192,445
5. Upgrade Peach Bottom South substation	$28,104,521
6. Upgrade Conastone substation	$2,481,899
7. Upgrade Peach Bottom-Furnace Run 500 kV line	$21,773,089
8. Rebuild Cardiff substation	$86,679,438
9. Rebuild the Cardiff-New Freedom 230 kV line	$199,938,547
10. Upgrade Richmond-Waneeta 230 kV line	$17,113,096
11. Upgrade Peach Bottom North substation	$1,199,033
Total	**$400,404,589**

Proposal 929

Proposal Cost Estimates

The proposal costs for ACE's Proposal 929 are given below.

Component	Cost (Current Year)
1. Upgrade Cardiff-Lewis #2 138 kV line	$100,000
2. Upgrade Lewis #2 - Lewis #1 138 kV bus tie	$500,000
3. Upgrade Cardiff-New Freedom 230 kV line	$300,000
4. Upgrade Peach Bottom-Conastone 500 kV line	$36,289,000
5. Upgrade Peach Bottom South substation	$49,598,167
6. Upgrade Conastone substation	$2,078,000
7. Upgrade Peach Bottom-Furnace Run 500 kV line	$4,700,000
8. Rebuild Cardiff substation	$23,000,000
9. Rebuild the Cardiff-New Freedom 230 kV line	$70,095,409
10. Upgrade Richmond-Waneeta 230 kV line	$159,301,681
11. Upgrade Peach Bottom North substation	$130,000
12. Upgrade Orchard substation	$38,219,770
Total	**$384,312,027**

Independent Cost Estimates

- Costs were developed leveraging standardized units for construction, material, and land acquisition costs
- Costs for engineering, project management, construction management, and overheads utilized standard industry percentages for the size and type of project.
- Units and % were applied evenly across projects where like units were expected or detailed across projects.
- Project costs were evaluated at current year value as projected in the proposal reports.
- Proposal costs associated with Proposal 929 are within reasonable execution ranges with standard risk of underground construction, land development, site development, and scope clarity for components associated with brownfield upgrades.
- The estimates are in 2022 dollars and includes a 20% contingency.

The following are the independent cost estimates for ACE's proposal 929.

Component	Cost (Current Year)
1. Upgrade Cardiff-Lewis #2 138 kV line	$491,150
2. Upgrade Lewis #2 - Lewis #1 138 kV bus tie	$299,181
3. Upgrade Cardiff-New Freedom 230 kV line	$132,190
4. Upgrade Peach Bottom-Conastone 500 kV line	$42,192,445

5. Upgrade Peach Bottom South substation	$28,104,521
6. Upgrade Conastone substation	$2,481,899
7. Upgrade Richmond substation	$4,580,630
8. Upgrade Peach Bottom-Furnace Run 500 kV line	$21,773,089
9. Rebuild Cardiff substation	$86,679,438
10. Build 230 kV line from Cardiff to Orchard	$130,210,542
11. Upgrade Peach Bottom North substation	$1,199,033
12. Upgrade Orchard substation	$51,391,898
Total	**$369,536,016**

Transource Energy, LLC (Transource) Proposals

Executive Summary

Transource, a partnership between American Electric Power (AEP) and Evergy, Inc., has provided four (4) Option 1a proposals to address multiple reliability violations identified by PJM resulting from the injections at identified default Points of Interconnection (POI) representing future offshore wind generation and the transmission facilities necessary to connect the future offshore wind to the PJM grid.

Transource proposed 4 solutions for two distinct areas: Artificial Island and Peach Bottom. Transource's solution for the Artificial Island area (Claymont – Bridgeport) in combination with any of the other 3 options for the Peach Bottom area are intended to resolve the identified constraints and accommodate the addition of New Jersey's projected off shore wind generation.

Table 6. **Transource Option 1a Proposals**

Proposal ID(s)	Description(s)	Notes
63	North Delta Option A	Stand-alone project
296	North Delta Option B	Stand-alone project
345	Peach Bottom – Conastone	Stand-alone project
419	Claymont - Bridgeport	Stand-alone project

Proposal 63 (North Delta Option A)

Project Overview

Project 63 (North Delta Option A) is the first of Transource's three proposals addressing violations in the Peach Bottom area, and includes new transmission facilities located in Maryland (Harford County) and Pennsylvania (York County). The project includes removing the existing Cooper – Graceton 230 kV tie-line between PECO/BGE, and will result in two new North Delta – Graceton 230 kV #1 & #2 tie-lines between PECO/BGE.

The Project proposes to resolve the following PJM identified flowgates:

28-GD-S2-W1, 28-GD-S2-W100, 28-GD-S2-W101, 28-GD-S2-W2, 28-GD-S2-W3, 28-GD-S2-W82, 28-GD-S2-W83, 28-GD-S2-W84, 28-GD-S2-W85, 28-GD-S2-W86, 28-GD-S2-W87, 28-GD-S2-W88, 28-GD-S2-W96, 28-GD-S2-W99, 35-GD-S2-W17, 35-GD-S2-W19, 35-GD-S2-W8A, 35-GD-W5

The Project will consist of the following components:

- Build a new station called "North Delta" with two 500/230 kV 1500 MVA transformers, and 9 breakers (4 high-side and 5 low-side) in ring bus configuration.
- Bring 2 existing lines, Peach Bottom – Delta Power Plant 500 kV and Cooper - Graceton 230 kV, in/out of North Delta.
- Build a new North Delta – Graceton 230 kV line by rebuilding 6.07 miles of the existing Cooper - Graceton 230 kV line from single circuit to double circuit using BOLD double circuit construction within existing ROW.

- Install 1 breaker at Graceton 230 kV to terminate the new line from North Delta.

Constructability Summary

Project 63 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Transmission Line Analysis:

- Project assumes right-of-way from incumbent transmission owner's line Graceton-Cooper 230 kV, indicating that the Graceton – Cooper 230 kV line will be removed in the portions that it overlaps with the proposed North Delta - Graceton transmission line and rebuilt onto a double circuit structure that will also contain the new 230 kV North Delta - Graceton Run transmission line.
- No details provided indicating that the incumbent transmission owner has been consulted about the proposed removal/rebuild of their line.

Schedule:

- The entity's overall construction schedule of 30 months seems reasonable.

Cost Review:

- Independent cost estimate: $ 133,246,971
- Entity's cost estimate: $ 109,676,334

Proposal 296 (North Delta Option B)

Project Overview

Project 296 (North Delta Option B) is the second of Transource's three proposals addressing violations in the Peach Bottom area, and includes new transmission facilities located in Maryland (Harford County) and Pennsylvania (York County). The proposed project will remove the existing Cooper – Graceton 230 kV tie-line between PECO/BGE and result in a new North Delta – Graceton 230 kV tie-line between PECO/BGE.

The Project proposes to resolve the following PJM identified flowgates:

28-GD-S2-W1, 28-GD-S2-W100, 28-GD-S2-W101, 28-GD-S2-W2, 28-GD-S2-W3, 28-GD-S2-W82, 28-GD-S2-W83, 28-GD-S2-W84, 28-GD-S2-W85, 28-GD-S2-W86, 28-GD-S2-W87, 28-GD-S2-W88, 28-GD-S2-W96, 28-GD-S2-W99, 28-GD-W5, 35-GD-S2-W17, 35-GD-S2-W19, 35-GD-S2-W8A

The Project will consist of the following components:

- Build a new station called "North Delta" with one 500/230 kV 1500 MVA transformer and 6 breakers (3 high-side and 3 low-side).
- Bring 2 existing lines, Peach Bottom – Delta Power Plant 500 kV and Cooper - Graceton 230 kV, in/out of North Delta.
- Rebuild 6.07 miles of the existing Cooper – Graceton 230 kV line as single circuit.

- Install a 0.5% series reactor on the rebuilt North Delta – Graceton 230 kV line at North Delta.
- Additionally, upgrade terminal equipment at Peach Bottom 500 kV to increase the Winter ratings of the existing Peach Bottom – Conastone 500 kV line.

Constructability Summary

Project 296 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Transmission Line Analysis:

- Project assumes right-of-way from incumbent transmission owner's line Graceton-Cooper 230 kV, indicating that the Graceton – Cooper 230 kV line will be rebuilt as a new 230 kV North Delta - Graceton transmission line.
- No details provided indicating that the incumbent transmission owner has been consulted about the proposed removal/rebuild of their line.

Schedule:

- The entity's overall construction schedule of 30 months seems reasonable.

Cost Review:

- Independent cost estimate: $ 112,103,080
- Entity's cost estimate: $ 87,020,047

Proposal 345 (Peach Bottom - Conastone)

Project Overview

Project 345 (Peach Bottom - Conastone) is the third of Transource's three proposals addressing violations in the Peach Bottom area, and includes new transmission facilities located in Maryland (Harford County) and Pennsylvania (York County). The proposed project will result in a new Peach Bottom – Conastone 500 kV tie-line between PECO/BGE paralleling the existing Peach Bottom – Conastone 500 kV circuit.

The Project proposes to resolve the following PJM identified flowgates:

28-GD-S2-W1, 28-GD-S2-W100, 28-GD-S2-W101, 28-GD-S2-W2, 28-GD-S2-W3, 28-GD-S2-W82, 28-GD-S2-W83, 28-GD-S2-W84, 28-GD-S2-W85, 28-GD-S2-W86, 28-GD-S2-W87, 28-GD-S2-W88, 28-GD-S2-W96, 28-GD-S2-W99, 35-GD-S2-W17, 35-GD-S2-W19, 35-GD-S2-W5, 35-GD-S2-W8A

The Project will consist of the following components:

- Build a new 17.23 mile 500 kV line from Peach Bottom station (PECO) to Conastone station (BG&E) in parallel with the existing Conastone-Peach Bottom 500 kV line.
- Upgrade Peach Bottom Station with 2 new 500 kV breakers, and associated equipment

- Upgrade Conastone Station with 1 new 500 kV breaker.

Constructability Summary

Project 345 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Transmission Line Analysis:

- Project assumes right-of-way from incumbent transmission owner's line Graceton-Cooper 230 kV, indicating that the Graceton – Cooper 230 kV line will be rebuilt as a new 230 kV North Delta - Graceton transmission line.
- No details provided indicating that the incumbent transmission owner has been consulted about the proposed removal/rebuild of their line.

Schedule:

- The entity's overall construction schedule of 38 months seems reasonable.

Cost Review:

- Independent cost estimate: $ 149,965,292
- Entity's cost estimate: $ 104,293,575

Proposal 419 (Clayport - Bridgeport)

Project Overview

Project 419 (Clayport – Bridgeport) is Transource's proposal to address violations in the Artificial Island area, and includes new transmission facilities located in New Castle County, Delaware and Gloucester County, New Jersey. This project will result in a new 230 kV tie line between ACE and DPL.

The Project proposes to resolve the following PJM identified flowgates:

28-GD-S2-W1, 28-GD-S2-W100, 28-GD-S2-W101, 28-GD-S2-W2, 28-GD-S2-W3, 28-GD-S2-W82, 28-GD-S2-W83, 28-GD-S2-W84, 28-GD-S2-W85, 28-GD-S2-W86, 28-GD-S2-W87, 28-GD-S2-W88, 28-GD-S2-W96, 28-GD-S2-W99, 35-GD-S2-W17, 35-GD-S2-W19, 35-GD-S2-W5, 35-GD-S2-W8A

The Project will consist of the following components:

- Build a 2.3 mile 230 kV line from Claymont Station (DPL&E) to Bridgeport Station (ACE) using three 3-core submarine cables.
- Install one breaker at Claymont 230 kV and another at Bridgeport 230 kV station to accommodate the new line.

Constructability Summary

Project 419 is constructible as proposed, with the following key takeaways:

Environmental (Regulatory) Risks:

- Project consists of submarine cable crossing of navigable Delaware River between NJ/DE. USACE Section 10/Section 404 Nationwide Permit 57 approvals will be required.
- Permitting requirements in NJ and DE

Transmission Line Analysis:

- General concerns about submarine cable construction

Schedule:

- The entity's overall construction schedule of 59 months seems reasonable.

Cost Review:

- Independent cost estimate: $ 216,199,698
- Entity's cost estimate: $ 193,067,515

Constructability Reviews

Transource Proposals 63, 296 & 345

Environmental (Regulatory) Analysis

Desktop Review

- Project 63 (North Delta Option A) includes new transmission facilities located in Maryland (Harford County) and Pennsylvania (York County). The project includes removing the existing Cooper – Graceton 230 kV tie-line between PECO/BGE, and will result in two new North Delta – Graceton 230 kV #1 & #2 tie-lines between PECO/BGE.
- Project 296 (North Delta Option B) includes new transmission facilities located in Maryland (Harford County) and Pennsylvania (York County). The project will remove the existing Cooper – Graceton 230 kV tie-line between PECO/BGE and result in a new North Delta – Graceton 230 kV tie-line between PECO/BGE.
- Project 345 (Peach Bottom – Conastone) includes new transmission facilities located in Maryland (Harford County) and Pennsylvania (York County). The project will result in a new Peach Bottom – Conastone 500 kV tie-line between PECO/BGE paralleling the existing Peach Bottom – Conastone 500 kV circuit.

An analysis of the Projects above was performed to assist in the identification of major environmental and socioeconomic features and to provide a base for the extrapolation and derivation of future construction, permitting, mitigation, and land costs studies for the overall Project. The results of the desktop review for are discussed below, and details provided in Appendix A -Tables 11, 12, 13, and 14.

Federal, State, Local Permitting

- See Appendix Table 14 for details.

- Components of these projects run through Green Acres-encumbered properties. These components of the Project are within existing maintained ROWs. However, pending final design, the substation expansion and reconfigurations may extend outside existing ROW and may impact Green Acres areas requiring a Green Acres Program Diversion permit.
- Components of these projects run through the Pinelands Reserve and Management Area, which can result in more stringent regulations. Consultation with the NJDEP's DLRP and the Pinelands Commission earlier in the Project's development will help mitigate risks by addressing permitting concerns and allowing for a larger consultation and permitting timeline.
- Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commissions via issuance of Certificate of Public Convenience and Necessity (CPCN)

Resource Crossings

- See Appendix Tables 11 and 12 for details
- Scott Creek (PA): Chapter 93 designated (Cold Water Fishes and Trout Stocked)
- Jack's Hole (MD): Designation NA, but should be considered when permitting
- Broad Creek (MD): Designation NA, but should be considered when permitting
- Falling Branch (MD): Designation NA, but should be considered when permitting
- Big Branch (MD): Designation NA, but should be considered when permitting
- Island Branch (MD): Designation NA, but should be considered when permitting
- Deer Creek (MD): Designation NA, but should be considered when permitting

Cultural Resources

- See Appendix Tables 11 and 12 for details
- Potential Cultural Resource impacts identified in both MD and PA.

Flood Plains/Wetlands

- See Appendix Tables 11 and 12 for details
- Wetlands/Hydric soils present within project area; wetland delineations will be needed

Threatened and Endangered Species

- See Appendix Table 13 for details
- Pennsylvania
    - American Holly (*Ilex opaca*): PA; Atom Road Woods
    - Lobed Spleenwort (*Asplenium pinnatifidum*): PA; Atom Road Woods
    - Harbinger-of-spring (*Erigenia bulbosa)*: PA; Peach Bottom Woods
    - Declined Trillium (*Trillium flexipes)*: PA; Peach Bottom Woods
    - Broad-headed Skink (*Plestiodon laticeps)*: Pennsylvania
    - Indiana Bat (*Myotis sodalist)*; potential within project area
    - Northern Long-eared Bat (*Myotis septentrionalis)*; potential within project area
    - Bog Turtle (*Clemmys muhlenbergii*); potential within project area
    - Monarch Butterfly (*Danaus plexippus*); potential within project area
- Maryland
    - Several Maryland T&E species identified, additional survey/review needed to determine species/habitat specifics and impact on project area

Infrastructure

- See Appendix Tables 11 and 12 for details

- Additional review of land use around proposed project areas identified no airports in proximity (approx. 3 mile) to project area.
- Based on publicly available data, there will be no impacts due to crossing of active railroads.

Transmission & Substation Analysis

Proposal 63

Potential Risks

- Engineering:
  - BOLD Transmission proprietary design proposed for double-circuit line for Cooper – Graceton 230 kV line rebuild.
    - Possible increased cost due to proprietary system; requires a license to use and special training to construct.
    - May require special hardware, concerns of availability over product service life for maintenance.
  - Crossing over (2) 230kV lines at Graceton
  - Consideration of higher surge impedance loading (SIL) with the BOLD design and effects during low load periods, requires additional cost/benefit analysis
- Siting and Major Permit Acquisition
  - Proposed North Delta substation site is 30.8 acres located in York County, PA.
  - Proposed land parcel is currently undeveloped and agricultural
  - Project assumes right-of-way from incumbent transmission owner's line Graceton-Cooper 230 kV, indicating that the Graceton – Cooper 230 kV line will be removed in the portions that it overlaps with the proposed North Delta - Graceton transmission line and rebuilt onto a double circuit structure that will also contain the new 230 kV North Delta - Graceton transmission line.
  - No details provided indicating that the incumbent transmission owner has been consulted about the proposed removal/rebuild of their line.
  - Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commission via issuance of Certificate of Public Convenience and Necessity (CPCN)
- Long-lead Equipment Procurement
  - 24-36 months typically required for 500/230 Transformers
  - Project assumes prompt ordering, may incur high cost from scarcity; delays to design will impact material delivery risk.
  - Lead times for delivery of large power equipment both foreign and US manufacturers have been delayed due to logistics and material delays.
- Construction and Commissioning
  - Missing detail regarding in scope and cost estimates
    - Major control house equipment for greenfield sites, demo costs at brownfield sites, foundation material costs, commissioning costs.

Construction Schedule

The proposed project schedule is provided in the Table below

Proposal #63

Start Date:	11/2022
Construction Start Date	02/2024
In Service Date	05/2025
Total Project Duration	30 months

The proposed schedule is adequate for the outlined scope, with most risk assessed for the proposed construction and commissioning timeframe.

Proposal 296

Potential Risks

- Engineering:
  - Remote terminal relaying is considered in the proposal
  - Incumbent is responsible for line rebuilds and cut-ins, and proposed schedule does not include incumbent portion of engineering.
- Siting and Major Permit Acquisition
  - Proposed North Delta substation site is 30.8 acres located in York County, PA.
  - Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commission via issuance of Certificate of Public Convenience and Necessity (CPCN)
  - Proposed land parcel is currently undeveloped and agricultural
  - Project assumes right-of-way from incumbent transmission owner's line Graceton-Cooper 230 kV, indicating that the Graceton – Cooper 230 kV line will be rebuilt as a new 230 kV North Delta - Graceton transmission line.
  - No evidence provided indicating that Right-Of-Way (ROW) or land acquisitions have been secured.
- Long-lead Equipment Procurement
  - 24-36 months typically required for 500/230 Transformers
  - Project assumes prompt ordering, may incur high cost from scarcity; delays to design will impact material delivery risk.
  - Lead times for delivery of large power equipment both foreign and US manufacturers have been delayed due to logistics and material delays.
- Construction and Commissioning
  - Missing detail regarding in scope and cost estimates
    - Major control house equipment for greenfield sites, demo costs at brownfield sites, foundation material costs, commissioning costs.

Construction Schedule

The proposed project schedule is provided in the Table below

Proposal #296	
Start Date:	11/2022
Construction Start Date	02/2024
In Service Date	05/2025
Total Project Duration	30 months

The proposed schedule is adequate for the outlined scope, with most risk assessed for the proposed engineering, and construction & commissioning timeframes.

Proposal 345

Potential Risks

- Engineering:
  - 500 kV line crossing near Delta Substation.
- Siting and Major Permit Acquisition
  - Proposed North Delta substation site is 30.8 acres located in York County, PA.
  - Proposed greenfield line ROW land use is private, and predominantly agricultural and residential.
  - Approvals needed from both Maryland Public Service Commission and Pennsylvania Public Utility Commission via issuance of Certificate of Public Convenience and Necessity (CPCN)
  - No evidence provided indicating that Right-Of-Way (ROW) has been secured for the greenfield line.
- Long-lead Equipment Procurement
  - Should not be an issue assuming procurement starts upon project initiation.

Construction Schedule

The proposed project schedule is provided in the Table below

Proposal #345	
Start Date:	8/2022
Construction Start Date	08/2024
In Service Date	10/2025
Total Project Duration	38 months

The proposed schedule is adequate for the outlined scope, with most risk assessed for the proposed siting and major permit acquisition, and construction & commissioning timeframes.

Transource Proposal 419

Environmental (Regulatory) Analysis

Desktop Review

- Project 419 (Clayport – Bridgeport) includes new transmission facilities located in New Castle County, Delaware and Gloucester County, New Jersey. This project will result in a new 230 kV tie line between ACE and DPL.

An analysis of the Project was performed to assist in the identification of major environmental and socioeconomic features and to provide a base for the extrapolation and derivation of future construction, permitting, mitigation, and land costs studies for the overall Project. The results of the desktop review for the Project are discussed below, and summarized in Appendix A -Table 15.

Environmental (Regulatory) Risks

The following is a brief summary of the potential risks identified.

Federal, State, Local Permitting

- See Appendix A - Table 15 for details.

Resource Crossings

- Project consists of submarine cable crossing of navigable Delaware River between NJ/DE. USACE Section 10/Section 404 Nationwide Permit 57 approvals will be required.
- Project will cross 2 existing gas pipelines and 3 hazardous liquid pipelines

Flood Plains/Wetlands

- Wetlands/Hydric soils present within project area; wetland delineations will be needed

Threatened and Endangered Species

- Bald Eagle (*Haliaeetus leucocephalus*): both foraging and nesting
- Great Blue Heron (*Ardea herodias*): foraging
- Peregrine Falcon (*Falco peregrinus*): nesting
- Shortnose/Atlantic Sturgeon (*Acipenser brevirostrum/Acipenser oxyrhynchus oxyrhynchus*): adult/juvenile sightings; migration corridor within area of submarine cable installation
    - Monarch Butterfly (*Danaus plexippus*); potential within project area

Cultural Resources

- Cultural Resource reviews determined several properties in close proximity to project area (J.H Wright Farm, Historic Rte. 130 Bridge); additional surveys/review will be needed.

Infrastructure

- Additional review of land use around proposed project areas identified no airports in proximity (approx. 3 mile) to project area.
- Based on publicly available data, there will be no impacts due to crossing of active railroads.

Transmission & Substation Analysis

Proposal 419

Potential Risks

- Siting and Major Permit Acquisition
    - Federal permits for a navigable water way will be required
    - Project spans multiple states which could cause issues due to varying regulations and requirements
    - Project involves multiple utilities, which would present issues in getting all utilities in agreement on the scope
    - No evidence of the acquisition of the required underground Right-Of-Way (ROW) for the cable route.
    - Private lands for ROW classified as industrial/utility.
- Long-lead Equipment Procurement
    - Submarine cable has limited availability due to worldwide demand and supply chain constraints.
- Construction and Commissioning
    - Limited availability of specialized equipment needed to lay submarine cable

Construction Schedule
The proposed project schedule is provided in the Table below

Proposal #419	
Start Date:	8/2022
Construction Start Date	02/2025
In Service Date	07/2027
Total Project Duration	59 months

The proposed schedule is adequate for the outlined scope, with moderate risk assessed for the proposed permit acquisitions, long-lead equipment procurement, and construction and commissioning timeframes.

Cost Reviews

Peach Bottom Projects (Proposals 63, 296, 345)

Proposal Cost Estimates

The total proposal costs for Transource's Peach Bottom Projects (Proposals 63, 296, and 345) are provided below.

Category	Proposal 63	Proposal 296	Proposal 345
Materials and Equipment	$48,489,859	$33,628,318	$30,783,402
Engineering and Design	$5,531,850	$5,310,886	$4,116,198
Construction and Commissioning	$31,297,491	$29,203,760	$27,488,958
Permitting/Routing/Siting	$1,107,912	$880,667	$3,796,938
ROW/Land Acquisition	$2,055,756	$1,938,722	$19,681,338
Construction Management	$9,189,369	$6,221,855	$7,178,366
Overheads & Misc. Costs	$6,809,728	$5,427,332	$7,292,762
Contingency	$5,194,369	$4,408,508	$3,955,615
Total Project Costs	**$109,676,334**	**$87,020,047**	**$104,293,575**

Independent Cost Estimates

PJM's consultant assembled independent cost estimates for the proposed facilities using historical data from similar projects, information collected from original equipment vendors and contractors supplying similar services, and other publicly available sources. The accuracy of consultant's estimates is expected to be ±25%. The estimates are in 2022 dollars and include a 30% contingency.

The independent estimated costs for Transource's Peach Bottom Projects (Proposals 63, 296, and 345) are provided below.

Category	Proposal 63	Proposal 296	Proposal 345

Materials and Equipment	$37,590,115	$30,571,611	$34,944,644
Engineering and Design	$8,822,465	$7,387,176	$8,286,271
Construction and Commissioning	$41,431,943	$35,699,700	$48,137,372
Permitting/Routing/Siting	$825,000	$800,000	$300,000
ROW/Land Acquisition	$887,200	$887,200	$9,125,000
Construction Management	$4,477,836	$3,767,284	$5,039,664
Overheads & Misc. Costs	$8,463,110	$7,120,167	$9,524,966
Contingency (30%)	$30,749,301	$25,869,942	$34,607,375
Total Project Costs	**$133,246,971**	**$112,103,080**	**$149,965,292**

Transource Proposal 419

Proposal Cost Estimates

The total proposal costs for Transource Proposal 419 are provided below.

Category	Proposal 419
Materials and Equipment	$37,806,345
Engineering and Design	$1,553,662
Construction and Commissioning	$74,587,753
Permitting/Routing/Siting	$2,099,941
ROW/Land Acquisition	$914,060
Construction Management	$26,449,359
Overheads & Misc. Costs	$17,102,042
Contingency	$32,554,352
Total Project Costs	**$193,067,515**

Independent Cost Estimates

PJM's consultant assembled independent cost estimates for the proposed facilities using historical data from similar projects, information collected from original equipment vendors and contractors supplying similar services, and other publicly available sources. The accuracy of consultant's estimates is expected to be ±25%. The estimates are in 2022 dollars and include a 30% contingency.

The independent estimated proposal costs for Transource Proposal 419 are provided below.

Category	Proposal 419
Materials and Equipment	$18,954,950
Engineering and Design	$11,547,747

Construction and Commissioning	$113,107,446
Permitting/Routing/Siting	$1,500,000
ROW/Land Acquisition	$200,000
Construction Management	$7,265,507
Overheads & Misc. Costs	$13,731,809
Contingency (30%)	$49,892,238
Total Project Costs	**$216,199,698**

Appendix A – Permit Tables

JCP&L Proposal 17 Permit Tables

Table 7. NJDEP Division of Land Resources Protection Special Areas

Special Area	Presence	Facility Involved	Comment
Atlantic City	No	-	-
Beaches	No	-	-
Canals	No	-	-
Coastal bluffs	Not Likely	-	Based on aerial imagery
Coastal high hazard areas	No	-	-
Critical wildlife habitats	Unknown	Unknown	Until maps are publicly available, sites must be considered on a case-by-case basis by the NJDEP's Division of Fish and Wildlife.
Dredged material management areas	No	-	-
Dry borrow pits	Not Likely	-	Based on review of aerial imagery
Dunes	Not Likely	-	Based on review of aerial imagery
Endangered or threatened wildlife or plant species habitat	Likely	Oyster Creek-Manitou East Windsor-Smithburg	Natural Heritage Sites: JCPL Swamp Forked River Mountain Macrosite Pits and Pond Natural Heritage Grids: crosses 13 grids
Erosion hazard areas	Not Likely	-	Based on review of aerial imagery
Excluded federal lands	No	-	-
Existing lagoon edges	No	-	Based on review of aerial imagery
Farmland conservation areas	Yes	East Windsor-Smithburg	Mellmann Farm Kyle Farm Everette Farm Fund for Roosevelt Hoffman Farm McFie Farm Mullery Farm
Filled water's edge	Yes	Lake Nelson-Kilmer Windsor-Clarksville Oyster Creek-Manitou Clarksville–Lawrence & Hopewell–Lawrence	11 Areas along route where Historic Fill data overlaps mapped wetlands or streams
Finfish migratory pathways	Yes	Oyster Creek-Manitou East Windsor-Smithburg	Cedar Creek-Blueback Herring Jakes Branch- Alewife & Blueback Herring Millstone River-Blueback Herring

Special Area	Presence	Facility Involved	Comment
Flood hazard areas	Yes	Lake Nelson-Kilmer Windsor-Clarksville Oyster Creek-Manitou East Windsor-Smithburg	Floodplain Types Present: A, AE
Geodetic control reference marks	Yes	Lake Nelson-Kilmer	1 located within ROW
Hackensack Meadowlands District	No	-	-
Historic and archaeological resources	Yes	Lake Nelson-Kilmer Windsor-Clarksville Oyster Creek-Manitou East Windsor-Smithburg	**Historic Districts:** Inch Lines Linear Multistate Historic District Camp Kilmer Military Reservation Historic District Camden and Amboy Railroad Main Line Historic District Jersey Homesteads Historic District Garden State Parkway Historic District Double Trouble State Park Historic District **Archeological site Grids:** crosses 5 grids **Historic Properties:** 8 Agress Road Davison House
Hudson River Waterfront Area	No	-	-
Intermittent stream corridors	Yes	All Facilities	Manalapan Brook, Millstone River, UNTs to Millstone River, UNTs to Rocky Brook, Little Shabakunk Creek ,UNT to Little Shabakunk Creek ,Ambrose Brook, UNTs to Ambrose Brook, Jake's Branch, UNT to Jake's Branch, Cedar Creek, UNTs to Cedar Creek, Factory Branch, Deep Hollow Branch, Huckleberry Branch, North Branch Forked River, Middle Branch Forked River, UNTs to Middle Branch Forked River, South Branch Forked River, UNTs to South Branch Forked River
Lands and waters subject to public trust rights	No	-	-
Overwash areas	Not Likely	-	Based on review of aerial imagery
Pinelands National Reserve and Pinelands Protection Area	Yes	Oyster Creek-Manitou	Pinelands Reserve/New Jersey Pinelands Area
Public open space	Yes	East Windsor-Smithburg Oyster Creek-Manitou Lake Nelson-Kilmer	Double Trouble State Park Forked River Mountain Wildlife Management Area Candace McKee Ashmun Preserve Perrineville Lake Park Charleston Spring Golf Course East Windsor Park Ambrose and Dotys Park

Special Area	Presence	Facility Involved	Comment
Riparian zones	Yes	All Facilities	Manalapan Brook Manalapan Brook, Millstone River, UNTs to Millstone River, UNTs to Rocky Brook, Little Shabakunk Creek ,UNT to Little Shabakunk Creek ,Ambrose Brook, UNTs to Ambrose Brook, Jake's Branch, UNT to Jake's Branch, Cedar Creek, UNTs to Cedar Creek, Factory Branch, Deep Hollow Branch, Huckleberry Branch, North Branch Forked River, Middle Branch Forked River, UNTs to Middle Branch Forked River, South Branch Forked River, UNTs to South Branch Forked River
Shellfish habitat	No	-	-
Special hazard areas	Yes	Oyster Creek-Manitou East Windsor-Smithburg	CR-537-Hurricane evacuation Route CR-614-Hurricane evacuation Route CR-530 Hurricane Evacuation Route Garden State Parkway-Hurricane evacuation Route
Special urban areas	No	-	-
Specimen trees	No	-	-
Submerged vegetation habitat	No	-	-
Wet borrow pits	Likely	Oyster Creek-Manitou	Based on review of aerial imagery
Wetland buffers	Yes	All Facilities	See Wetland Below
Wetlands	Yes	All Facilities	Types Present: Deciduous Wooded Wetlands Coniferous Wooded Wetlands Herbaceous Wetlands Coniferous Scrub/Shrub Wetlands Deciduous Scrub/Shrub Wetlands Mixed Scrub/Shrub Wetlands Modified Wetlands Atlantic White Cedar Wetlands
Wild and scenic river corridors	No	-	-

Table 8. **Federally- and State-Listed Threatened and Endangered Species**

Common Name	Species Name	Status
Federal[1]		
Indiana Bat	Myotis sodalist	Endangered
Northern Long-Eared Bat	Myotis septentrionalis	Threatened
Bog Turtle	Glyptemys muhlenbergii	Threatened
Monarch Butterfly	Danaus plexippus	Candidate
American Chaffseed	Schwalbea americana	Endangered
Kienskern's Beaked-rush	Rhynchospora knieskernii	Threatened
Swamp Pink	Helonias bullata	Threatened
State-Listed[2]		
Atlantic Sturgeon	Acipenser oxyrinchus	Endangered
Triangle Floater	Alasmidonta undulata	Threatened
Brook Floater	Alasmidonta varicosa	Endangered
Henslow's Sparrow	Ammodramus henslowii	Endangered
Grasshopper Sparrow	Ammodramus savannarum	Threatened
Long-eared Owl	Asio otus	Threatened
Arogos Skipper	Atrytone arogos	Endangered
Fin Whale	Balaenoptera physalus	Endangered
Upland Sandpiper	Bartramia longicauda	Endangered
American Bittern	Botaurus lentiginosus	Endangered
Cattle Egret	Bubulcus ibis	Threatened
Red-shouldered Hawk	Bueto lineatus	Endangered
Loggerhead Sea Turtle	Caretta	Endangered
Piping Plover	Charadrius melodus	Endangered
Green Sea Turtle	Chelonia mydas	Threatened
Northern Harrier	Circus hudsonius	Endangered
Timber Rattlesnake	Crotalus horridus	Endangered
Bobolink	Dolichonyx oryxivorus	Threatened
Horned Lark	Eremophila alpestris	Threatened
Peregrine Falcon	Falco peregrinus	Endangered
American Kestrel	Falco sparverius	Threatened
Wood Turtle	Glyptemys insculpta	Threatened
Bog Turtle	Glyptemys muhlenbergii	Endangered
Bald Eagle	Haliaeetus leucocephalus	Threatened
Pine Barrens Treefrog	Hyla andersonii	Threatened
Southern Gray Treefrog	Hyla chrysocelis	Endangered
Eastern Lampmussel	Lampsilis radiata	Threatened

Common Name	Species Name	Status
Loggerhead Shrike	Lanius ludovicianus	Endangered
Green Floater	Lasmigona subvirdis	Endangered
Black rail	Laterallus jamaicensis	Endangered
Kemp's Ridley Sea Turtle	Lepidochelys Kempii	Endangered
Eastern Pondmussel	Ligumia nasutla	Threatened
Bobcat	Lynx rufus	Endangered
Red-headed Woodpecker	Melanerpes erythrocephalus	Threatened
Osprey	Pandion haliaetus	Threatened
Savannah Sparrow	Passerculus sandwichensis	Threatened
Northern Pinesnake	Pituophis melanoleucus	Threatened
Pied-billed Grebe	Podilymbus podiceps	Endangered
Vesper Sparrow	Pooecetes gramineus	Endangered
Black Skimmer	Rhychops niger	Endangered
Least Tern	Sternula antillarum	Endangered
Barred Owl	Strix varia	Threatened
Seabeach Amaranth	Amaranthus pumilus	Endangered
Puttyroot	Aplectrum hyemale	Endangered
Pawpaw	Asimina triloba	Endangered
Eaton's Beggarticks	Bidens etonii	Endangered
Pickering's Reedgrass	Calamagrostis pickeringii	Endangered
Broom Crowberry	Corema conradii	Endangered
Buttonbush Dodder	Cuscuta cephalanthi	Endangered
Lancaster Flatsedge	Cyperus lancasterii	Endangered
Squirrel-corn	Dicentra canadensis	Endangered
Twisted Spikerush	Eleocharis tortilis	Endangered
Variegated Horestail	Equisetum variegatum var. variegatum	Endangered
Pine Barrens Boneset	Eupatorium resinosum	Endangered
Swamp Pink	Helonias bullata	Endangered
Featherfoil	Hottonia inflata	Endangered
Goldenseal	Hydrastis canadensis	Endangered
Floating Marsh-pennywort	Hydrocotyle ranunculoides	Endangered
New Jersey Rush	Juncus caesariensis	Endangered
Slim Pod Rush	Juncus diffusissimus	Endangered
Torrey's Rush	Juncus torreyi	Endangered
Hairy Woodrush	Luzula acuminata var. acuminata	Endangered
Lance-leaf Loostrife	Lysimachia hybrida	Endangered
Slender Water-milfoil	Myriophyllum tenellum	Endangered

Common Name	Species Name	Status
Wild Blue Phlox	Phlox divaricate ssp. Divaricate	Endangered
Dwarf Plantain	Plantago pusilla	Endangered
Seabeach Knotweed	Polygonum glaucum	Endangered
Torrey's Mountainmint	Pycnanthemum torrei	Endangered
Knieskern's Beaksedge	Rhynchospora knieskernii	Endangered
Southern Arrowhead	Sagittaria australis	Endangered
Slatmarsh bulrush	Schoenoplectus maritimus	Endangered
Long's Woolgrass	Scirpus longii	Endangered
Pickering's Morning-glory	Stylism pickeringii var. pickeringii	Endangered
Reversed Bladderwort	Utricularia resupinate	Endangered
Beaked Cornsalad	Valerianella radiata	Endangered
Deathcamas	Zigadenus leimanthoides	Endangered

Notes:

1 Species listed are according to the USFWS Information for Planning and Consultation (IPaC) Online Tool.

2 According to the NatureServe Biodiversity Report.

Table 9. **Preliminary Permits, Authorizations, and Clearances**

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Federal			
Section 10 Permit Authorization	USACE – New York District/ Philadelphia District	3 months	Required when spanning or impacting a navigable waterway. USACE would need to confirm if Project crosses a Section 10 Water
Notification of Helicopter construction	Federal Aviation Administration (FAA)		A Construction FAA Notification is required if helicopters are used during Project construction.
Endangered Species Act of 1973 Consultation	USFWS	6-12 months	Required if proposed activities have potential effect on federally listed species.
Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act		2-4 months	Required if activities have the potential to effect migratory birds or protected eagles.
State of New Jersey			
Certificate of Public Convenience and Necessity	New Jersey Board of Public Utilities	12-18 months	
Freshwater Wetlands General/Individual Permit	NJDEP DLRP	12-18 months	A Freshwater Wetland General Permit 1 is included under the blanket permit. Additional permits may be required if impacts are outside of the ROW, underground, or include activities not covered under General Permit 1.
Coastal Wetlands General/Individual Permit	NJDEP DLRP	6-12 months	A Coastal Wetlands General Permit 19 is included in the blanket permit however additional permits may still be required for various activities if impacts are outside of the ROW, underground, or include activities not covered under General Permit 19. NJDEP coastal wetland maps will need to be referenced to determine if impacts to regulated coastal wetlands are proposed.
CAFRA Permit	NJDEP DLRP	6-12 months	Portions of Oyster Creek-Manitou are located within the CAFRA Zone. A CAFRA Permit may be required if impacts are proposed within the CAFRA Zone but outside of the blanket permit areas.
Federal Coastal Zone Consistency Determination	NJDEP DLRP	-	
Flood Hazard Area- General/Individual Permit	NJDEP DLRP	6-12 months	A Flood Hazard Area Individual Permit is included with the blanket permit.
State Species Consultation	NJDEP DLRP	N/A	To be included with the DLRP permits
Air Quality General Permit	NJDEP Bureau of Stationary Sources	3-6 months	A General Permit may be needed for the use of temporary equipment
Tidelands License	New Jersey Tidelands Council- NJDEP Bureau of Tidelands Management	3-9 months	Sections of Oyster Creek- Manitou 230kV are within tidelands areas

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
NJPDES General Construction Stormwater Permit (5G3)	NJDEP Department of Water Quality Bureau of Stormwater Permitting	To be filed prior to construction	Coordination may be required with the local Soil Conservation District
NJPDES Basic Industrial Stormwater Permit (5G2)	NJDEP Department of Water Quality Bureau of Stormwater Permitting	6 Months	
Green Acres Division	NJDEP Bureau of Legal Services and Stewardship – Green Acres Program	12-18 months	The entire Project is within existing ROWs Clarksville - Windsor, Clarksville – Lawrence, and Hopewell – Lawrence sections pre-date Green Acres regulations. Expansion of the East Windsor Substation may encroach on Green Acres property.
Roadway Permits	New Jersey Department of Transportation Division of Right of Way and Access Management	6 Months	Federal Highway Administration approval for is needed for the I-295 crossing. Oversized load permits may be required for substation expansion equipment.
License to Cross	New Jersey Turnpike Authority	TBD	New Jersey Turnpike Authority maintains and manages the Garden State Parkway. The Turnpike Authority encourages submittal of license to cross as soon as possible
Pinelands Commission	New Jersey Pinelands Commission/ DLRP	Prior to application submittal	Activities performed within the Pinelands Reserve are required to follow Pinelands Comprehensive Management Plan guidelines The Pinelands Commission and DLRP recommend consultation and early in the permitting process
Middlesex, Mercer, Monmouth, and Ocean County			
Consultation on NJDEP permits (air, waste, noise, water)	County Environmental Health Division	-	
Road Permit (potential, for work on county roads)	Office of Public Works	1-3 months	
Site plan application (potential, for work on county roads)	Office of Planning	3-6 months	
Municipal			
Excavation Street Opening Permit	Freehold Township, East Windsor Township	-	Freehold Township and East Windsor Township pending final underground line design

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Construction Permit	Freehold Township, East Windsor Township	-	Substation expansion will require a local site plan and construction approvals. Municipalities with transmission line construction may require approval or notifications.
Floodplain Permit		-	
Street Opening Permit	Freehold, Millstone, East Windsor, Robbinsville, Hamilton, Lawrence, Lacey, Berkley, and Piscataway Townships and Roosevelt and South Toms River Boroughs	1-3 Months	Additional local approvals and authorizations could be required for structures and permanent land alterations Oversized load permits maybe required for substation expansion equipment.
Site Plan Approval (Underground cables as well as substation expansion)		3-9 months	NJ Board of Public Utilities may be able to override local regulatory approvals Additional approvals from local authorities could be required for structures and permanent land alterations.
Variance/Rezoning		3-12 months	Parcels where substations are expanded onto may require re-zoning
Zoning Permit		-	East Windsor substation expansion may require land acquisition for substation expansion
Building Permit		1-3 months	

LS Power Proposal 103 Permit Table

Table 10. **City of Bordentown, Burlington County, New Jersey**

Agency	Permit/Approval	Trigger	Potential for Need	Permit Risk	Lead/ Processing Time	Permit Fees	Future Actions/Comments
FEDERAL							
Lead Federal Agency	National Environmental Policy Act (NEPA) Review - Categorical Exclusion (CE), Environmental Assessment (EA), or Environmental Impact Statement (EIS)	Any Project that has a federal nexus, such as a Project that occurs on federally-managed land, receives federal funding, or requires a federal permit or other federal authorization will require a NEPA review (National Environmental Policy Act of 1969, 42 U.S.C. §4332).	TBD	No Issue	CE - Lead: 2 months EA - Lead: 2 months Processing: 6 to 10 months; EIS - Lead: 3 months Processing: 12 to 20 months	No fees; however, Applicant is typically responsible for cost of preparing the environmental document and supporting studies, as appropriate. (**This note may apply to numerous permits or approvals below**)	NEPA review will be required if the Project will be built on or crosses a federal easement or federally owned or managed lands such as but not limited to: National Forest Service (NFS), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Bureau of Land Management (BLM) and etc., or if the Project relies on a U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) real estate mortgage, a Department of Energy (DOE), or Rural Development (RD) Rural Energy for America Program (REAP) loan guarantee, etc. Consultant recommends further review and determination of NEPA triggers that may be associated with the Project as additional Project details become available.
	Federal Section 106 Review	Any Project requiring a federal permit or other authorization is subject to National Historic Preservation Act of 1966 (as amended) (NHPA) Section 106 Review.	TBD	No Issue	Lead: 1 month; Processing: 4-6 months	None	Determine whether a federal nexus exists for the Project. This nexus would trigger Section 106 compliance under the National Historic Preservation Act (NHPA) and should be completed prior to ground disturbance associated with any project. The federal lead agency would determine scope of work in coordination with the New Jersey State Historic Preservation Office and appropriate Tribal Historic Preservation Offices (THPOs).

U.S. Army Corps of Engineers (USACE)	Clean Water Act (CWA) Nationwide Permit (NWP). Authorization for discharge of fill to Waters of the US (WOTUS) under Section 404 of the CWA. Applicable NWPs include: NWP 14 Linear Transportation projects, NWP 18 Minor Discharges, NWP 33 Temporary Construction, Access, and Dewatering, NWP 57 Electric Utility Line and Telecommunications Activities.	Discharge of fill to a jurisdictional waters of the US.	Low	No Issue	Lead: 4 weeks; 30 day completeness review, 45 days for notification of permit coverage by USACE	None	Project is located in the USACE Philadelphia District. 100 Penn Square East, Wanamaker Bldg, Philadelphia, PA 19107-3390. 215-656-6728 Information to consider: a desktop wetland evaluation can be completed for planning. An on-site wetland delineation within construction footprint is required to obtain NWP coverage for projects that result in discharge to WOTUS greater than 0.1 ac in extent. Delineations must be conducted in conformance with the 1987 USACE Wetlands Delineation Manual and the applicable Regional Supplement. The U.S. Army Corps of Engineers (USACE) generally regulates the discharge of dredged and fill material into waters of the U.S. under Section 404 of the Federal Clean Water Act (CWA) however in the State of New Jersey, Section 404 Jurisdiction has been assumed by the State and is enforced through the Freshwater Wetlands Protection Act. In most cases, the State of New Jersey maintains sole jurisdiction over wetlands, however the USACE still works closely with the NJDEP and maintains joint jurisdiction over navigable waters and other interstate waters.
	Approved Jurisdictional Determination (AJD)	This is the at Applicants request; it is not required by the USACE.	TBD on project to project basis	No Issue	Lead: 2 weeks; Processing: 4-12 months (dependent on complexity of water resources)	None	An AJD is an official USACE determination that jurisdictional wetlands or WOTUS are either present or absent on the property. AJDs can generally be relied upon for five years and may be appealed through the USACE administrative appeal process.
	Preliminary Jurisdictional Determination (PJD)	This is the at Applicants request; it is not required by the USACE.	TBD on project to project basis	No Issue	Lead: 2 weeks; Processing: 1 month	None	A PJD is a non-binding written indication from the USACE that waters, including wetlands, may be WOTUS. A permit decision made on the basis of a PJD will often treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. A PJD is advisory in nature and may not be appealed.
	CWA Section 404 Regional General Permit (RGP) or Nationwide Permit (NWP) for authorization of discharge to WOTUS.	Generally speaking, discharge or fill placed in a jurisdictional WOTUS resulting in loss of more than 0.1 acre of WOTUS.	Low	No Issue	Lead: 1 month; Processing: 2-4 months	None	Consultant recommends designing the Project to avoid/minimize impacts to wetland and water resources to the greatest extent practicable. It is also recommended to design the Project in order to take advantage of applicable non-reporting NWPs or RGPs. A Pre-Construction Notification (PCN) is required for the locations, impact thresholds, and activities listed in the particular RGP or NWP. Section 404 Jurisdiction has been assumed by the State and is enforced through the Freshwater Wetlands Protection Act.

	CWA Section 404 Individual or Standard Permit (IP or SP) for authorization of discharge to WOTUS exceeding RGP or NWP limits, resulting in more than minimal adverse effects to WOTUS.	Discharge or fill placed in a jurisdictional WOTUS resulting in loss of more than 0.5 acre of WOTUS.	Low	No Issue	Lead: 1 month; Processing: 6-12 + months	Permit issuance fee of $10 for non-commercial Projects and $100 for commercial Projects. Applicant is responsible for studies and mitigation costs if applicable.	Consultant recommends designing the Project to avoid/minimize impacts to wetland and water resources to the greatest extent practicable. An individual permit will require an alternatives analysis demonstrating that the Project has been designed to avoid and minimize temporary and permanent impacts to WOTUS. Generally speaking, compensatory mitigation will be required for all permanent WOTUS impacts exceeding 1,000 square feet. A 30 day public notice period is required.
	Rivers and Harbors Act Section 10 Crossing Permit	Construction of any structure in, over or under a navigable water (Section 10 Waters) of the U.S.	Low	No Issue	Lead: 1 month; Processing: 4 to 6 months.	Permit issuance fee of $10 for non-commercial projects and $100 for commercial projects. Applicant is responsible for studies and mitigation costs if applicable.	Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the USACE, for construction of any structure or work in, under or over any navigable water of the US. Requires PCN. Section 10 waters are major water bodies such as the Delaware River. No Section 10 navigable waters were identified within the Project Area; however, Consultant recommends confirming Project design and layout does not cross Section 10 waters. The Manasquan River is a navigable waterway located adjacent to the eastern portion of the Project.
U.S. Department of the Interior Bureau of Ocean Management (BOEM)	Outer Continental Shelf (OCS) Renewable Energy Lease	Required for "commercial activities" conducted in Federal OCS lands.	Low	No Issue	Lead: 1 month; Processing: 4 to 12 + months	TBD	The Energy Policy Act of 2005 (EPAct) authorized BOEM to issue leases, easements and rights of way to allow for renewable energy development on the Outer Continental Shelf (OCS). EPAct provided a general framework for BOEM to follow when authorizing these renewable energy activities. For example, EPAct requires that BOEM coordinate with relevant Federal agencies and affected state and local governments, obtain fair return for leases and grants issued, and ensure that renewable energy development takes place in a safe and environmentally responsible manner. An OCS Renewable Energy Lease under 30 CFR Ch. V (7–1–14 Edition) is required for any commercial activities conducted in Federal OCS lands. Commercial activities for renewable energy leases and grants is defined as all activities associated with the generation, storage, or transmission of electricity or other energy product from a renewable energy project on the OCS. It is likely that construction of a transmission line for an offshore renewable energy projects in the OCS will trigger the need for an OCS Renewable Energy Lease. Consultant recommends further review of the OCS areas and the proposed offshore renewable energy project to determine the need for an OCS Renewable Energy Lease.

U.S. Fish and Wildlife Service (USFWS)	Section 7 Endangered Species Act (ESA) Consultation	Any project with a federal nexus that may adversely affect a listed threatened, endangered, or candidate species as determined by the lead federal agency.	Initial Consultation Completed	Moderate Risk	Lead: 1 month; Processing: 2 to 6 months	None	Consultant conducted an Information for Planning and Consultation (IPaC) coordination with the U.S. Fish and Wildlife Service (USFWS 2022a). The results of this effort identified three species including the federally threatened northern long-eared bat (Myotis septentrionalis; NLEB), bog turtle (Glyptemys muhlenbergii), and candidate for listing species monarch butterfly (Danaus plexippus) as potentially occurring within the Project Area and surrounding region (Appendix B). Please note that candidate species are not afforded statutory protections under the ESA. The species identified in the IPaC and their probability of occurrences are described in more detail in the Report prepared for #103. It is recommended that all tree clearing take place during the inactive season (November 1 – March 31), or, at a minimum, outside of the pup-rearing season which occurs from June 1 – July 31. If wetland impacts are proposed, a Phase I bog turtle habitat assessment should be completed; all potentially suitable wetlands should be avoided until a Phase II survey can be conducted. Nesting surveys for bald eagles are recommended. If present, all active eagle nests require at least a 660' construction buffer during the breeding season.
	Section 10a ESA Incidental Take Permit	Potential for "Take" of a federally endangered or threatened species resulting from a project requiring federal funding, permit, or approval.	TBD	No Issue	Lead: 6-8 months; Processing: 12 to 24 months	The cost of a Biological Assessment and Habitat Conservation Plan are borne by the project proponent.	If lead federal agency determines that a project may adversely affect a listed species a Biological Assessment (BA) must be prepared to identify impacts to federally-listed species in the project area are likely to occur. A Habitat Conservation Plan (HCP) must be prepared to identify conservation measures to offset the permitted take of listed species under ESA Section 10. EA, and 30 day public notice required.
Environmental Protection Agency (EPA)	Oil Pollution Act (OPA) Spill Prevention Control and Countermeasure (SPCC) Rule	Onsite above-ground oil storage tanks with an aggregate capacity of 1,320 gallons or underground storage tanks with total capacity over 42,000 gallons in a location where discharge may reach navigable waters or adjoining shorelines.	Low	No Issue	Lead: 3 weeks; Processing: 1 month	None	Assumes the Project will have no oil or petroleum storage that would surpass triggers; if not, reassess whether an SPCC Plan is required. If temporary storage is needed above the threshold, a SPCC Plan still applies.
	Resource Conservation and Recovery Act (RCRA) Notification requirements for regulated waste activity	Generation of not more than 100 kg (220 lbs.) of hazardous waste and less than 1 kg (2.2 lb.) of acute hazardous waste, and no more than 100 kg of acute	Low	No Issue	Lead: 1 week; Processing: 1 week	None	Assess the potential volume of hazardous waste that will be generated by the Project. Confirm that the Project will not generate not more than 100 kg (220 lbs.) of hazardous waste and less than 1 kg (2.2 lb.) of acute hazardous waste, and no more than 100 kg of acute spill residue or soil per month to qualify as a Very Small Quantity Generator. In the event that any of these thresholds are

		spill residue or soil per month.					exceeded, evaluate record keeping and reporting requirements at 40 CFR part 262.
U.S. Department of Agriculture (USDA)	Form AD-1006, Farmland Conversion Impact Rating for Farmland Conversion under Farmland Protection Policy Act (FPPA)	A project that uses federal financing, loans, or assistance and will convert farmland to nonagricultural use.	TBD	No Issue	Lead: 3 weeks; Processing: 1 month	None	Confirm that the Project does not involve federal funding or assistance and, therefore, does not require Form AD-1006. A discussion with the local Natural Resources Conservation Service (NRCS) may be necessary.
	Form AD-1026, Highly Erodible Land Conservation (HELC)	A project that converts land enrolled in federal farm programs to make production of a commodity crop possible.	TBD	No Issue	Lead: 3 weeks; Processing: 1 to 3 months	None	Confirm that the Project will not convert federal farm program wetlands or highly erodible lands to make production of a commodity crop possible.
	Environmental Assessment (EA) for Class I Action (Form RD1940-21)	Leased lands include property encumbered by federal Farm Service Agency (FSA) or Farmers Home Administration (FmHA) real estate mortgages. Projects that use federal financing, loans, or assistance.	Low	No Issue	Lead: 1 month; Processing: 2 to 3 months	None	If Project plans call for leasing land, determine whether leased lands for the Project are encumbered by FSA or FmHA federally guaranteed real estate mortgages as soon as possible. Also confirm whether Project will use federal financing, loans, or assistance.
	Conservation Reserve Program (CRP) Contract Amendment	Project affects lands enrolled in CRP.	Low	No Issue	Lead: 2 weeks; Processing: 1 to 2 months	Reimbursement of past CRP payments plus interest for impact area.	Obtain confirmation from landowners that affected lands are not enrolled in CRP.
	A loan guarantee from USDA RD Rural Business-Cooperative Service (RBCS)	Application for a RBCS loan guarantee.	Low	No Issue	Lead: 1 month; Processing: 1-2 months	None	Determine whether a federal loan guarantee is sought as soon as possible.

Federal Aviation Administration (FAA)	Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard)	Needed for construction of any structure exceeding 200 feet in height.	Low	No Issue	Lead: 1 week; Processing: 3 to 6 months, possibly longer if there are identified constraints.	None	The proposed Project is unlikely to trigger Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard) through the Federal Aviation Administration (FAA) for construction of any structure exceeding 200 feet in height.
	Notice of Actual Construction or Alteration (Form 7460-2)	Needed for construction of any structure exceeding 200 feet in height.	Low	No Issue	Lead: 1 week; Processing: 1 week	None	Should the filing of Form 7460-1 reveal that the proposed Project has potential to impact navigable airspace, Notice of Actual Construction or Alteration will be required prior to initiating construction activities.
STATE							
New Jersey Board of Public Utilities (BPU)	NJ Rev Stat § 40:55D-19 - Appeal	An electric utility may appeal a disapproval from a single municipality in the event of the Project being denied in accordance with local municipal regulations.	TBD	No Issue	Lead: 35 days; Processing: 35 days	TBD	If a public utility, as defined in R.S.48:2-13, or an electric power generator, as defined in section 3 of P.L.1999, c.23 (C.48:3-51), is aggrieved by the action of a municipal agency through said agency's exercise of its powers under this act, with respect to any action in which the public utility or electric power generator has an interest, an appeal to the Board of Public Utilities of the State of New Jersey may be taken within 35 days after such action without appeal to the municipal governing body pursuant to section 8 of this act unless such public utility or electric power generator so chooses. In such case appeal to the Board of Public Utilities may be taken within 35 days after action by the governing body. A hearing on the appeal of a public utility to the Board of Public Utilities shall be had on notice to the agency from which the appeal is taken and to all parties primarily concerned, all of whom shall be afforded an opportunity to be heard. If, after such hearing, the Board of Public Utilities shall find that the present or proposed use by the public utility or electric power generator of the land described in the petition is necessary for the service, convenience or welfare of the public, including, but not limited to, in the case of an electric power generator, a finding by the board that the present or proposed use of the land is necessary to maintain reliable electric or natural gas supply service for the general public and that no alternative site or sites are reasonably available to achieve an equivalent public benefit, the public utility or electric power generator may proceed in accordance with such decision of the Board of Public Utilities, any ordinance or regulation made under the authority of this act notwithstanding. This act or any ordinance or regulation made under authority thereof, shall not apply to a development proposed by a public utility for installation in more than one municipality for the furnishing of service, if upon a petition

							of the public utility, the Board of Public Utilities shall after hearing, of which any municipalities affected shall have notice, decide the proposed installation of the development in question is reasonably necessary for the service, convenience or welfare of the public.
New Jersey Historic Preservation Office (HPO)	Cultural and Historic Resources Review (Technical Assistance)	Required for State and Federal Undertakings, including a variety of NJDEP Permits listed below.	Moderate	Moderate Risk	Lead: 1 month; Processing: Estimated 30 days	None	Depending on other permit triggers including the Department of Environmental Protections Freshwater Wetlands Permit, CAFRA Permit, and more, a Cultural and Historic Resources Review (Email Submittal Form) may be required as a part of Project development. Any federal undertakings will require a Cultural and Historic Resources review under Section 106.
New Jersey Department of Environmental Protection (NJDEP)	5G3 - Construction Activity Stormwater General Permit	Construction activity disturbing one or more acres of land. Requires development of site specific SWP3 and compliance with all SWP3 conditions.	High	No Issue	Lead: 4 weeks; Processing: Estimated 3-4 weeks	TBD	Permit Number: NJ0088323 (5G3 - Construction Activity Stormwater General Permit) became effective on March 1, 2022 and will expire February 28, 2027. Project development will require NJ0088323 for disturbances greater than one acre. Prepare a Stormwater Pollution Prevention Plan (SWPPP) as part of construction plans; prepare and submit the NJ0088323 application along with a complete Request for Authorization (RFA) and the appropriate fee required under N.J.A.C. 7:14A-3.1(j) shall be submitted via the NJDEP Online Portal. Authorization becomes effective when the Department certifies the RFA. Local conservation district approval of a Soil Erosion and Sediment Control (SESC) Plan may be required prior to RFA certification.

	401 Water Quality Certification	Projects requiring fill in Water of the US require a Water Quality Certification. Typically associated with USACE Permits and State Individual Permits.	TBD	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	A 401 Water Quality Certification authorization is required as a part of federal waterway/wetland permitting. Design project to avoid/minimize wetlands to the extent practicable. Align infrastructure to avoid temporary and permanent impacts to wetlands, waterways, and drainages. If the Project design includes impacts to wetlands or waterways, it is recommended to request an early coordination meeting with NJDEP staff to ensure all State permitting requirements are met.
	Freshwater Wetlands (FWW) Individual Permit and FWW General Permits	The maintenance or construction of utility lines within freshwater wetlands, transition areas, and/or State open waters requires a Freshwater Wetlands (FWW) permit or FWW Transition Area waiver. Several FWW General Permits (GP) are available for these types of activities.	Low	No Issue	Lead: 1 month; Processing: Estimated 1-6 months	TBD	General Permits provide a means to perform a variety of activities within a regulated freshwater wetland, freshwater wetland transition area and/or State open water, provided that the various conditions are met for the type of general permit requested. There are requirements, conditions and restrictions that apply to all general permits which must be considered prior to applying for a permit. If the proposed activity does not meet the applicable requirements, conditions, and/or restrictions, a FWW Individual Permit is available. Several noteworthy General Permits applicable to Project development include: underground utility lines (GP2), Non-tributary wetlands (GP6), above ground utility lines (GP 21), redevelopment of previously disturbed areas (GP26), and others. The #103 Project does not contain any wetland areas.
	Flood Hazard Area (FHA) Individual Permit and Streams/Rivers & Flood Hazard General Permits; Permit-by-Rule (PBR) 33	Required for any structure or activity that in any manner changes, expands, or diminishes the course, current or cross-section of any watercourse or flood hazard area.	Moderate-High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	Placement of utility poles would likely be authorized under Permit-By-Rule 33 which is for the placement of one or more utility poles, provided that the proposed design meets the applicable conditions of the permit. There are also permit-by-rules for open-frame or monopole towers. Road or bridge construction to facilitate access would like be authorized under Regional General Permit 9 if the regulated water has a drainage area less than 50 acres, otherwise an Individual Permit would likely be required. Additionally, if the Project is regulated to the Coastal Zone Management Rules at N.J.A.C. 7:7, then no separate Flood Hazard approval is required. In these instances, the applicant need only submit a report and plans demonstrating compliance with the Flood Hazard Area Control Act Rules as part of the coastal permit application. General Permits provide a means to perform a variety of activities within a regulated flood hazard area and regulated streams/rivers, provided that the various conditions are met for the type of general permit requested. There are requirements, conditions and restrictions that apply to all general permits which must be considered prior to applying for a permit. If the proposed activity does not meet the applicable requirements, conditions, and/or restrictions, a FHA Individual Permit is available. Several noteworthy General Permits applicable to Project

							development include: Habitat Creation/Restoration/Enhancement (GP4), Reconstruct and/or Elevation-Building in Floodway (GP5), Development SFH/Duplex and Driveway (GP6), In-kind replacement of public infrastructure (GP15), and others. The #103 Project contains special flood hazard areas in the buffer and may require a Streams/Rivers & Flood Hazard General Permits; Permit-by-Rule (PBR) 33, or Flood Hazard Area (FHA) Individual Permit. Consultant recommends initiating consultation with the NJDEP to ensure the proper permitting process is selected for construction of a transmission line with respect to FHA impacts.
	Coastal Permitting General Permits, Waterfront Development (WFD) Individual Permit and Coastal Zone Management Federal Consistency, CAFRA Individual Permit, Coastal Wetlands Individual Permit	Required for waterfront developments and/or coastal zone impacts.	Low	No Issue	Lead: 1 month; Processing: Estimated 1-6 months	TBD	Activities conducted in tidal waters (at or below the mean high water line) that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a Waterfront Development Individual Permit. Activities conducted in the CAFRA zone that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a CAFRA Individual Permit. Activities conducted within wetlands subject to the Wetlands Act of 1970 that do not meet the requirements require a Coastal Wetlands Individual Permit. Activities conducted within wetlands subject to the Wetlands Act of 1970 that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a Coastal Wetlands Individual Permit. Applicable general permits include Landfall of Utilities (GP12), Eroded Shoreline Stabilization (GP17), Mod of Existing Electrical Substations (GP19), Geotechnical Survey Borings (GP23), and more. If the project is regulated pursuant to the Coastal Zone Management Rules at N.J.A.C. 7:7, then no separate Flood Hazard approval is required. In these instances, the applicant need only submit a report and plans demonstrating compliance with the Flood Hazard Area Control Act Rules as part of the coastal permit application. The #103 Project is located outside of the CAFRA Zone. It

							is unlikely that Project development will trigger any Coastal Permit-by-rule, General Permit-by-certification, General Permit, or Individual Permit.
	Tidelands License/Grant	Private use of State tidelands for Utility or Utility related project (Tidelands Act 12:3 (1 to 28) NJSA 13:1B-13.1 to 13.14).	Low	No Issue	Lead: 1 month; Processing: 3-12 months	Fair Market Value of Land for Grant, annual license fees depend on total amount of area licensed.	The #103 Project is located outside of any NJ tidelands and therefore, no license or grant will be necessary for Project development.
	Permit-by-rule (PBR) 8	Construction of a utility line attached to a bridge or culvert.	Low	No Issue	Lead: 1 month; Processing: Estimated 1-3 months	TBD	PBR 8 - authorizes construction of a utility line, including cable (electric, television, or fiber optic), telecommunication, wastewater, petroleum, natural gas, or water, attached to a bridge or culvert, provided: No excavation, dredging or filling is undertaken within the water body over which the utility line crosses; The utility line is firmly attached to the existing bridge or culvert structure so that no part of the utility line, its encasement, or any attachment device extends above or below the existing bridge or culvert structure; If the crossing is a bridge, the utility line, its encasement, and all attachment devices must be located entirely above the elevation of the low chord of the superstructure and entirely below the elevation of the bridge surface; If the crossing is a culvert, the utility line, its encasement, and all attachment devices must be located entirely above the overt elevation of the culvert and entirely below the elevation of the top of the culvert; If the utility line is a pipeline that conveys any substance other than potable water, the utility line must be sufficiently encased within ductile iron or concrete to protect the utility line from damage from impact with floating debris during floods; and If there is a predominant direction of flow within the water body, the utility line must be attached to the downstream face of the bridge or

							culvert; The installation of the utility line has no adverse impacts to special areas as described at N.J.A.C. 7:7-9; and Construction equipment is operated from land, the top of the bridge or culvert, or from barges, and shall under no circumstances be allowed to enter the water body. Please be advised, this PBR only applies to that portion of the utility line that will be constructed across the tidal waterway up to the mean high water line, provided a tidelands instrument has been obtained for the utility line. In addition, this PBR does not relieve the permittee from the obligation of obtaining all necessary approvals from the U.S. Army Corps of Engineers. See N.J.A.C. 7:7-4.8 for complete rule requirements.
	New Jersey Natural Heritage Program) - State T&E Species Consultation	Routinely recommended; natural resources investigations including wildlife will be required for the various coastal, wetlands, and waterway permits.	Routinely recommended	Moderate Risk	Lead: 1 week; Processing: 1-2 weeks	TBD	A Data Request was submitted to the New Jersey Natural Heritage Program for information regarding State-listed threatened and endangered species. No response has been received to date; Consultant will update the Permit Matrix and Project Reports once a response has been received.
	Construction Dewatering Permit	For temporary ground and surface water control (dewatering) diversions in excess of 100,000* gallons of water per day, the project owner must obtain a Dewatering Allocation Permit, or Dewatering Permit-by-Rule or Short Term Permit-by-Rule depending on the duration of the diversion and the method employed.	Low	No Issue	Lead: 1 month; Processing: Estimated 1 month	TBD	Consultant recommends review of the listed permit triggers to determine if a dewatering approval will be necessary, and to determine the appropriate permit selection.

	Air Quality Permit	Permit requirements dependent on construction techniques and equipment used in Project development.	TBD	No Issue	Lead: 1 month; Processing: Estimated 1-2 months	TBD	Depending on the construction techniques and equipment used for Project development, a variety of air quality permit thresholds may be met. Consultant recommends reviewing construction techniques and equipment used with the Air Quality permitting thresholds discussed on the NJDEP Air Quality, Energy & Sustainability webpage.
New Jersey Department of Community Affairs	Development Plan Review	Required in the event that the local municipalities where the subcode officials and construction official do not possess code enforcement licenses of the appropriate class.	High	No Issue	Lead: 1 month; Processing: Estimated 1-2 months	TBD	Should any of the local permit issuing municipalities not possess code enforcement licenses of the appropriate class, a review from the Department of Community Affairs would be required. Class I : A Departmental plan review and release is required prior to the issuance of a construction permit unless the construction official and each appropriate subcode official in the municipal enforcing agency is certified as a HHS construction official or subcode official; Class II: A Departmental plan review and release is required prior to the issuance of a construction permit unless the construction official and each appropriate subcode official in the municipal enforcing agency is certified as a HHS or ICS construction official or subcode official; Class III: A Departmental plan review shall not be required except when the Department acts as the enforcing agency. Application should be made to the local construction office, not the Department. Refer to the local permitting section below for additional information.
New Jersey Pinelands Commission	Application for Development in the Pinelands Area (Certificate of Filing)	Required for developments located in the Pinelands Area.	Low	No Issue	Lead: 1 month; Processing: 30 days	$187.50 per acre of all land in ROW, $250 minimum	Project is located outside of the Pinelands Area; therefore, no Application for Development will be required.
New Jersey Department of Transportation (NJDOT)	Oversize/Overweight Application for Special Hauling Permit	Permit required for vehicles exceeding the weights adopted in N.J.A.C. 13:18, Subchapter 1: Permits for Over dimensional or Overweight Vehicles	Moderate	No Issue	Lead: 1 week; Processing: 1 days to 1 week	Dependent on vehicle size and number of trips	Determine if construction of the Project will require travel on state roads with oversize/overweight vehicles. If so, determine the length, weight, and number of trips necessary to complete the Project. Consult with the DOT to select the most appropriate permit. Typically, these types of permits will be sought out by the contractor responsible for transporting materials.
	Driveway Access Permit Application	Required for driveway access construction using a State roadway.	Moderate	No Issue	Lead: 1 week; Processing: Estimated 2-4 weeks	TBD	If Project development will require any driveway access using NJDOT roadways, prior permit approval will be required.
	Application for Utility Opening (MT17A)	Required for utility infrastructure openings in NJDOT roadways.	Moderate	Moderate Risk	Lead: 1 week; Processing: 2-4 weeks	TBD, based on square footage of opening; $725-$1,580	If Project development will require any openings on NJDOT roadways for installation of utility infrastructure, prior permit approval will be required. The Project is located in close proximity to US Interstate 95 and US Highway 206; therefore, it is likely that approval of MT17A will be required.

	Highway Occupancy Permit (MT120A)	Permit required for construction or alteration of utility facilities.	Moderate	Moderate Risk	Lead: 3 weeks; Processing: Estimated 2-4 weeks	TBD based on construction activities	If Project development will require any occupancies on NJDOT roadways for installation of utility infrastructure, prior permit approval will be required. The Project is located in close proximity to US Interstate 95 and US Highway 206; therefore, it is likely that approval of MT120A will be required.
LOCAL							
Burlington County, NJ	Site Plan Review	A review from the Planning Board may be required for the proposed development project for conformity with state statutes and local bylaws and regulations.	TBD	No Issue	Lead: 2-3 weeks; Processing: 30 days	$100	No permit triggers were listed for a County Site Plan Review. It is likely that review from the City of Bordentown will supersede the need for additional County Review; however, Consultant recommends confirming with City and County Officials.
	Road Opening and Driveway Access Form / Road Occupancy Permit	Required for any excavation work in a County right-of-way or new driveway access construction.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	County Road 660 (Old York Road) is located adjacent to the proposed Project. Any excavation work or driveway access construction using County Road 660 will require prior permit approval.
Burlington County Soil Conservation District (BSCD)	Soil Erosion and Sediment Control (SESC) Plan Approval	Construction activities resulting in one or more acres of earth disturbance require SESC Plan Approval from the local soil conservation district. Any land disturbances of 5,000 square feet or more need to apply for certification.	High	No Issue	Lead: 1 month; Processing: 30 days	TBD	Permittees are required to submit their applications and payment electronically online utilizing the NJDEP's Stormwater Construction Activity E-Permitting System, or via paper application to the NJDEP's Bureau of Permits Management. Soil Erosion and Sediment Control Plan applications must still be submitted to the local district offices for certification. However, for those projects requiring a NJPDES Stormwater Construction Activity permit, the district shall issue a SCD Certification Code to the permittee verifying that the 251 Plan has been approved. This code is necessary to complete either the online E-Permitting or paper RFA process. Project development may require SESC Plan Approval from FSCD prior to receiving NJDEP Approval for 5G3 - Construction Activity Stormwater General Permit. Submit a SESC Plan following the Standards for Soil Erosion and Sediment Control in New Jersey document (Appendix A2). Note that a 48 hour advance notice of soil disturbance is required.
City of Bordentown, Burlington County, NJ	Conditional Use Permit	Construction of public utility uses in any Bordentown Zoning District.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-3 months	TBD	Public utility uses are listed as a conditional use in all of the City's Zoning Districts. The current (2018) City of Bordentown Zoning Map does not cover the Project Area. It is likely that Project development will trigger the need for a Conditional Use Permit approval from the City, prior to initiating construction activities. Article XVI of the City of Bordentown Code of Ordinances discusses the conditional use permit procedures, application, notice of hearing, and specific public utility uses regulations.

	Zoning Permit	Required for new construction on a property.	TBD	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	The Conditional Use Permit approval will likely supersede the need for a Zoning Permit Approval. Discussions with City Officials during the preparation of the conditional use permit application are recommended to ensure that no Zoning Permit Approvals would be necessary.
	Site Plan Review Approval	Required for issuance of the conditional use permit.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	The proposed Project will require approval of a Site Plan Review prior to submittal of the Conditional Use Permit in accordance with Section 300-101 of the City Code of Ordinances. Site Plan Review Procedures are detailed in Chapter 244 of the City Code. Submittal materials include compliance with the Zoning Ordinance, design plans, and other materials listed in the requirements and procedures.
	Construction Permit	No building or structure shall be erected, expanded or structurally altered until a permit therefor has been issued by the Construction Official.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Applications for a Construction Permit shall be made in accordance with the requirements of the New Jersey State Uniform Construction Code. Note that all City of Bordentown permits for construction, building, electrical, plumbing, and fire protection are issued by the State of New Jersey, Department of Community Affairs Building Inspectors and Officials.
	Building Permit	Construction, erection or alteration of any structure in conjunction with the Construction Permit.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD-	All City of Bordentown permits for construction, building, electrical, plumbing, and fire protection are issued by the State of New Jersey, Department of Community Affairs Building Inspectors and Officials.
	Electrical Permit	Required for construction of a new electrical system in conjunction with the Construction Permit.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	All City of Bordentown permits for construction, building, electrical, plumbing, and fire protection are issued by the State of New Jersey, Department of Community Affairs Building Inspectors and Officials.

Peach Bottom – Conastone Area Projects (LSPG 203, Transource 63, 296, 345, NEETMH 11, 587, 982) Permit Tables

Table 11. **Pennsylvania Environmental and Cultural Features**

Feature	Presence	Comments	Impacted Proposals
Federal Lands	*No*	N/A	N/A
State Lands	Yes	-State Game lands No. 181 (adjacent to, not directly impacted)	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Local Government Lands	Yes	-Rocky Ridge County Park -Conoy Canal Park	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Conservation Easements	Yes	-Approximately 5 Conservation Easements observed	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Agricultural Easements	Yes	-Approximately 30 Agricultural Easements observed	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Wetlands	Yes	-Numerous wetland areas and/or hydric soils identified within proposal areas -Wetlands areas observed: Freshwater Emergent Wetlands, Freshwater Ponds/Lakes, Freshwater Forested Wetlands	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Exceptional Value Wetlands	*No*	-No EV Wetlands observed during review; additional studies may be required	N/A
Exceptional Value, High-Quality Streams	No	-No EV Wetlands observed during review; additional studies may be required	N/A

Wild and scenic Rivers	No	N/A	N/A
Historic Districts	Yes	-Delta Historic District (Listed: Resource Number 1983RE00063) -Corodus Forge and Furnace District (Listed: Resource Number 1988RE00659) -Northern Central Railway District (Eligible: Resource Number 2010RE03887) -Pennsylvania Railroad: Enola Branch Low Grade (Keeper DOE-E: Resource Number 1994RE01133) -Pennsylvania Railroad: Main Line (Eligible: Resource Number 1995RE45037)	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
NRHP Eligible Resource (Pennsylvania Archeological and Architectural Sites included)	Yes	-Hugh Whiteford and Elizabeth Ross House (Listed: Resource Number 2017RE00786) -Martin Schultz House (Listed: Resource Number 1987RE00040) -Sample House (Eligible: Resource Number 2001RE00562) -Richard Staner Farm (Eligible: Resource Number 1994RE01031) -Peter Keller Farmstead (Eligible: Resource Number 2017RE03034)	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203

		-Hursh House (Eligible: Resource Number 2012RE00166) -Michael and Catharine Rudy Farmstead (Eligible: Resource Number 2012RE00470) -Shoe House (Eligible: Resource Number 1987RE00022)	

Table 12. **Maryland Environmental and Cultural Features**

FEATURE	PRESENCE	COMMENTS	IMPACTED PROPOSALS
Federal Lands	*No*	N/A	N/A
State Lands	Yes	-Rocks State Park	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Local Government Lands	Yes	-Parker Conservation Area	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Conservation Easements	Yes	-Rocks State Park	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Agricultural Easements	Yes	-Approximately 30 Agricultural Easements observed	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Wetlands	Yes	-Numerous wetland areas and/or hydric soils identified within proposal areas	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203

		-Wetlands areas observed: Freshwater Emergent Wetlands, Freshwater Ponds/Lakes, Freshwater Forested Wetlands	
Exceptional Value Wetlands	*No*	-No EV Wetlands observed during review; additional studies may be required	N/A
Exceptional Value, High-Quality Streams	No	-No EV Wetlands observed during review; additional studies may be required	N/A
Wild and scenic Rivers	No	N/A	N/A
Historic Districts	No	Cultural Resource reviews in Maryland (MERLIN) returned no immediate impact to Historic Districts	N/A
NRHP Eligible Resource (Maryland Archeological and Architectural Sites included)	Yes	-James A Reed House (MIHP: HA-2264) -John C.B. Wright House (MIHP: HA-2263) -Zenas Hughes House (MIHP: HA-457) -Small-Wylie House (MIHP: HA-456) -Smithson's Log Toolhouse (MIHP: HA-557) -Smithson Store and Framehouse (MIHP: HA-556) -Butler Loghouse (MIHP: HA-558) -Herrald Log Cabin (MIHP: HA-559) -Rocks State Park (MIHP: HA-2047)	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203

		-Falling Branch Falls (MIHP: HA-904) -Falling Branch Ruins: Isaac Jones Mill (MIHP: HA-905) -Saint Mary's Roman Catholic Church (MIHP: HA-470) -Old Saint Mary's Church (MIHP: HA-471) -Wilson's Log House (MIHP: HA-472) -John E. Webster House (MIHP: HA-476) -Jenkin's Mansion (MIHP: HA-958)	

Table 13. **Federally- and State-Listed Threatened and Endangered Species**

Common Name	Species Name	Status/Survey Window	Proposals Impacted
State-Listed			
American Holly	*Ilex opaca*	Threatened (PA); Survey: Flowers May-early June, Fruits October	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Lobed Spleenwort	*Asplenium pinnatifidum*	Special Concern (PA, MD): Survey: Year-round	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Harbinger-of-Spring	*Erigenia bulbosa*	Threatened (PA, MD); Survey: Flowers March-April	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Declined Trillium	*Trillium flexipes*	Special Concern (PA, MD); Survey: Flowers late April-early May	Transource: 63, 296, 345 NextEra: 11, 587, 982

			LSP: 203
Tooth-Cup	*Rotala ramosior*	Species of Concern (PA)	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Godfrey's Thoroughwort	*Eupatorium godfreyanum*	Species of Concern (PA)	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Broad-headed Skink	*Plestiodon laticeps*	Candidate (PA)	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
Elktoe	*Alasmidonta marginata*	Species of Concern (PA)	Transource: 63, 296, 345 NextEra: 11, 587, 982 LSP: 203
FEDERAL-LISTED			
Indiana Bat	*Myotis sodalist*	Endangered; Phase 1) Summer/Winter Habitat Assessments; Phase 2) Summer Presence/Absence Surveys	Transource: 63, 296, 345, 419 NextEra: 11, 587, 982 LSP: 203
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened; Phase 1) Summer/Winter Habitat Assessments; Phase 2) Summer Presence/Absence Surveys	Transource: 63, 296, 345, 419 NextEra: 11, 587, 982 LSP: 203
Bog Turtle	*Clemmys muhlenbergii*	Threatened; Phase 1) Habitat Assessment (anytime); Phase 2) Presence/Absence Survey to take place between April 15 and June 15	Transource: 63, 296, 345, 419 NextEra: 11, 587, 982 LSP: 203
Monarch Butterfly	*Danaus plexippus*	Candidate	Transource: 63, 296, 345, 419 NextEra: 11, 587, 982 LSP: 203

Unnamed Federal-Listed Species in Maryland	-	During review, 5 unnamed species were identified in Maryland; additional reviews needed	Transource: 63, 296, 345, NextEra: 11, 587, 982 LSP: 203

Table 14. **Preliminary Permits, Authorizations, and Clearances**

Permit/Application	Agency	Review Timeframe	Comments
Federal			
PASPGP-6	USACE (PADEP)	3-6 Months	Reviewed concurrently with a Section 401 General Permit application. PADEP may issue authorization, or may forward to USACE for individual review, depending on project impacts. An on-site delineation would be necessary to determine the extent of necessary impacts
Pennsylvania			
Pennsylvania Certificate of Public Convenience and Necessity (CPCN)	Maryland Public Utility Commission	12-18 months	Required for construction of transmission line in Pennsylvania
NPDES Construction Stormwater Permit	PADEP Southeast Regional Office/ York County Conservation District/ Lancaster County Conservation District	6-9 months	Required when construction activity disturbs more than 1-acre. Individual Permit is required when working in a HQ or EV watershed.
Rare, Threatened, and Endangered Species Consultation	DCNR, PFBC, PGC	0-12 months	Required when activities have potential effect on state-listed species. Length of review time is dictated by what species (if any) are impacted and the extent of the impact.
Cultural Resources Clearance	State Historic Preservation Office (SHPO)	3-6 months	Required with the submission of a federal permit, Individual NPDES permits or activities that have

			potential effect on historic or archaeological resources
Submerged Land License Agreement	PADEP	3-6 months	Required when impacting a submerged land of PA
Section 401 Clean Water Act/ Chapter 105	PADEP	3-6 months	Required before construction of structures, aerial crossings, or access roads in, across, or under regulated waters and wetlands
Highway Occupancy Permits	PENNDOT	3 months	PennDOT HOPs are required to install utilities in PennDOT right-of-way
Driveway Permits	PENNDOT	3 months	PennDOT driveway permits applications are required to enter and exit from state roads.
Aerial Crossing Permits	PENNDOT	3 months	Consultant assumes PennDOT aerial crossing permits only required for limited access roadways.
Excessive Maintenance Agreement	PENNDOT	3 months	PennDOT EMAs are required to for hauling on state roads.
Act 167 Stormwater Management Plan (Municipality)	-Delta Boro -Peach Bottom Township -Lower Chanceford Township -Chanceford Township -Lower Windsor Township -Hellam Township -East Manchester Township -Conoy Township	1-3 Months	Consultation with each governing municipality should be conducted early in the planning process to determine precise timeframes and requirements.
Construction Permit (Municipality)	-Delta Boro -Peach Bottom Township	1-3 Months	

	-Lower Chanceford Township -Chanceford Township -Lower Windsor Township -Hellam Township -East Manchester Township -Conoy Township		
Floodplain Permit (Municipality)	-Delta Boro -Peach Bottom Township -Lower Chanceford Township -Chanceford Township -Lower Windsor Township -Hellam Township -East Manchester Township -Conoy Township	1-3 Months	
Road Permits (Municipality)	-Delta Boro -Peach Bottom Township -Lower Chanceford Township -Chanceford Township -Lower Windsor Township -Hellam Township -East Manchester Township -Conoy Township	1-3 Months	May include Stormwater Management Ordinances, Roadway Occupancy Permits, Excessive Maintenance Agreements and Driveway Permits
MARYLAND			
Maryland Certificate of Public Convenience and Necessity (CPCN)	Maryland Public Service Commission	18-24 months	Required for construction of transmission line in Maryland

MDE 20-CP Permit/ NPDES Construction Stormwater Permit	Maryland Department of the Environment	6-9 months	Required for all construction activity over 1 acre to regulate erosion and sediment control
Erosion/Sediment and Stormwater Management Plan	Maryland Department of the Environment	6 months	Required prior to construction to prevent pollution and siltation to resources around active construction sites.
Nontidal Wetlands and Waterways Permit	Maryland Department of the Environment	6-12 months	Required when conducting work (i.e grading/filling, vegetation removal, changing of drainage patterns, excavating/dredging, etc.) within a nontidal wetland area to provide essential resource protection
Utility Permit	MDOTSHA	varies	Required for utility work within state DOT right-of-way
PRIVATE			
Railroad Permit		varies	Proposed work in the vicinity of Maryland & Pennsylvania Railroad (PA & MD), Pennsylvania Railroad (PA), and Northern Central Railway (PA)

Artificial Island Area Projects (SRE 229, PSEG 894, Transource 419) Permit Tables

Table 15. New Castle County, Delaware & Salem County, New Jersey

Agency	Permit/Approval	Trigger	Potential for Need	Permit Risk	Lead/ Processing Time	Permit Fees	Future Actions/Comments
FEDERAL							
Lead Federal Agency	National Environmental Policy Act (NEPA) Review - Categorical Exclusion (CE), Environmental Assessment (EA), or Environmental Impact Statement (EIS)	Any Project that has a federal nexus, such as a Project that occurs on federally-managed land, receives federal funding, or requires a federal permit or other federal authorization will require a NEPA review (National Environmental Policy Act of 1969, 42 U.S.C. §4332).	TBD	No Issue	CE - Lead: 2 months EA - Lead: 2 months Processing: 6 to 10 months; EIS - Lead: 3 months Processing: 12 to 20 months	No fees; however, Applicant is typically responsible for cost of preparing the environmental document and supporting studies, as appropriate. (**This note may apply to numerous permits or approvals below**)	NEPA review will be required if the Project will be built on or crosses a federal easement or federally owned or managed lands such as but not limited to: National Forest Service (NFS), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Bureau of Land Management (BLM) and etc., or if the Project relies on a U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) real estate mortgage, a Department of Energy (DOE), or Rural Development (RD) Rural Energy for America Program (REAP) loan guarantee, etc. Consultant recommends further review and determination of NEPA triggers that may be associated with the Project as additional Project details become available.
	Federal Section 106 Review	Any Project requiring a federal permit or other authorization is subject to National Historic Preservation Act of 1966 (as amended) (NHPA) Section 106 Review.	TBD	No Issue	Lead: 1 month; Processing: 4-6 months	None	Determine whether a federal nexus exists for the Project. This nexus would trigger Section 106 compliance under the National Historic Preservation Act (NHPA) and should be completed prior to ground disturbance associated with any project. The federal lead agency would determine scope of work in coordination with the New Jersey State Historic Preservation Office, Delaware State Historic Preservation Office, and appropriate Tribal Historic Preservation Offices (THPOs).

U.S. Army Corps of Engineers (USACE)	Clean Water Act (CWA) Nationwide Permit (NWP). Authorization for discharge of fill to Waters of the US (WOTUS) under Section 404 of the CWA. Applicable NWPs include: NWP 14 Linear Transportation projects, NWP 18 Minor Discharges, NWP 33 Temporary Construction, Access, and Dewatering, NWP 57 Electric Utility Line and Telecommunications Activities.	Discharge of fill to a jurisdictional waters of the US.	High	Moderate Risk	Lead: 4 weeks; 30 day completeness review, 45 days for notification of permit coverage by USACE	None	Project is located in the USACE Philadelphia District. 100 Penn Square East, Wanamaker Bldg, Philadelphia, PA 19107-3390. 215-656-6728 Information to consider: a desktop wetland evaluation can be completed for planning. An on-site wetland delineation within construction footprint is required to obtain NWP coverage for projects that result in discharge to WOTUS greater than 0.1 ac in extent. Delineations must be conducted in conformance with the 1987 USACE Wetlands Delineation Manual and the applicable Regional Supplement. Pre-construction Notification (PCN) requirements vary with the NWP under which permit coverage is sought. Design in order to take advantage of non-reporting NWPs. Project must be designed to avoid and minimize temporary and permanent impacts to WOTUS in order to qualify for NWP coverage. Pre-Construction notification is required for projects resulting in loss of more than 0.1 acre of WOTUS. Section 404 Jurisdiction has been assumed by the State of New Jersey and is enforced through the Freshwater Wetlands Protection Act. In most cases, the State of New Jersey maintains sole jurisdiction over wetlands, however the USACE still works closely with the NJDEP and maintains joint jurisdiction over navigable waters and other interstate waters.
	Approved Jurisdictional Determination (AJD)	This is the at Applicants request; it is not required by the USACE.	TBD on project to project basis	No Issue	Lead: 2 weeks; Processing: 4-12 months (dependent on complexity of water resources)	None	An AJD is an official USACE determination that jurisdictional wetlands or WOTUS are either present or absent on the property. AJDs can generally be relied upon for five years and may be appealed through the USACE administrative appeal process.
	Preliminary Jurisdictional Determination (PJD)	This is the at Applicants request; it is not required by the USACE.	TBD on project to project basis	No Issue	Lead: 2 weeks; Processing: 1 month	None	A PJD is a non-binding written indication from the USACE that waters, including wetlands, may be WOTUS. A permit decision made on the basis of a PJD will often treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. A PJD is advisory in nature and may not be appealed.
	CWA Section 404 Regional General Permit (RGP) or Nationwide Permit (NWP) for authorization of discharge to WOTUS.	Generally speaking, discharge or fill placed in a jurisdictional WOTUS resulting in loss of more than 0.1 acre of WOTUS.	Moderate-High	Moderate Risk	Lead: 1 month; Processing: 2-4 months	None	Consultant recommends designing the Project to avoid/minimize impacts to wetland and water resources to the greatest extent practicable. It is also recommended to design the Project in order to take advantage of applicable non-reporting NWPs or RGPs. A Pre-Construction Notification (PCN) is required for the locations, impact thresholds, and activities listed in the particular RGP or NWP. Consultant recommends

							additional review for applicable NWPs or RGPs and corresponding PCN requirements once the extent and nature of impacts to WOTUS are more accurately determined. Note that Section 404 is under the State of New Jersey jurisdiction.
	CWA Section 404 Individual or Standard Permit (IP or SP) for authorization of discharge to WOTUS exceeding RGP or NWP limits, resulting in more than minimal adverse effects to WOTUS.	Discharge or fill placed in a jurisdictional WOTUS resulting in loss of more than 0.5 acre of WOTUS.	Moderate	No Issue	Lead: 1 month; Processing: 6-12 + months	Permit issuance fee of $10 for non-commercial Projects and $100 for commercial Projects. Applicant is responsible for studies and mitigation costs if applicable.	Consultant recommends designing the Project to avoid/minimize impacts to wetland and water resources to the greatest extent practicable. An individual permit will require an alternatives analysis demonstrating that the Project has been designed to avoid and minimize temporary and permanent impacts to WOTUS. Generally speaking, compensatory mitigation will be required for all permanent WOTUS impacts exceeding 1,000 square feet. A 30 day public notice period is required.
	Rivers and Harbors Act Section 10 Crossing Permit	Construction of any structure in, over or under a navigable water (Section 10 Waters) of the U.S.	High	Moderate Risk	Lead: 1 month; Processing: 4 to 6 months.	Permit issuance fee of $10 for non-commercial projects and $100 for commercial projects. Applicant is responsible for studies and mitigation costs if applicable.	Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the USACE, for construction of any structure or work in, under or over any navigable water of the US. Requires PCN. Section 10 waters are major water bodies such as the Delaware River. The Delaware River is located adjacent to the proposed Project Areas. Consultant recommends initiating consultation with USACE and NJDEP Officials for construction of a transmission line in, under or over the navigable Delaware River.
U.S. Department of the Interior Bureau of Ocean Management (BOEM)	Outer Continental Shelf (OCS) Renewable Energy Lease	Required for "commercial activities" conducted in Federal OCS lands.	Low	No Issue	Lead: 1 month; Processing: 4 to 12 + months	TBD	The Energy Policy Act of 2005 (EPAct) authorized BOEM to issue leases, easements and rights of way to allow for renewable energy development on the Outer Continental Shelf (OCS). EPAct provided a general framework for BOEM to follow when authorizing these renewable energy activities. For example, EPAct requires that BOEM coordinate with relevant Federal agencies and affected state and local governments, obtain fair return for leases and grants issued, and ensure that renewable energy development takes place in a safe and environmentally responsible manner. An OCS Renewable Energy Lease under 30 CFR Ch. V (7–1–14 Edition) is required for any commercial activities conducted in Federal OCS lands. Commercial activities for renewable energy leases and grants is defined as all activities associated with the generation, storage, or transmission of electricity or other energy product from a renewable energy project on the OCS. It is likely that construction of a transmission line for an offshore renewable energy projects in the OCS will trigger the need for an OCS

							Renewable Energy Lease. Consultant recommends further review of the OCS areas and the proposed offshore renewable energy project to determine the need for an OCS Renewable Energy Lease.
U.S. Fish and Wildlife Service (USFWS)	Section 7 Endangered Species Act (ESA) Consultation	Any project with a federal nexus that may adversely affect a listed threatened, endangered, or candidate species as determined by the lead federal agency.	Initial Consultation Completed	Moderate Risk	Lead: 1 month; Processing: 2 to 6 months	None	The U.S. Fish and Wildlife Service (USFWS) (2022) Information for Planning and Consultation (IPaC) request identified four federally threatened species and one candidate species as potentially occurring within the Project Area or surrounding region. These species are the Rufa Red Knot (Calidris canutus rufa), the bog turtle (Glyptemys muhlenbergii), the monarch butterfly (Danaus plexippus), sensitive joint-vetch (Aeschynomene virginica), and swamp pink (Helonias bullata). The species identified in the IPaC and their probability of occurrences are described in more detail below. The species identified in the IPaC and their probability of occurrences are described in more detail in the Report prepared for #894. If the Project Area will be requiring wetlands permitting, swamp pink habitat and bog turtle phase I evaluations or surveys may be required.
	Section 10a ESA Incidental Take Permit	Potential for "Take" of a federally endangered or threatened species resulting from a project requiring federal funding, permit, or approval.	TBD	No Issue	Lead: 6-8 months; Processing: 12 to 24 months	The cost of a Biological Assessment and Habitat Conservation Plan are borne by the project proponent.	If lead federal agency determines that a project may adversely affect a listed species a Biological Assessment (BA) must be prepared to identify impacts to federally-listed species in the project area are likely to occur. A Habitat Conservation Plan (HCP) must be prepared to identify conservation measures to offset the permitted take of listed species under ESA Section 10. EA, and 30 day public notice required.
Environmental Protection Agency (EPA)	Oil Pollution Act (OPA) Spill Prevention Control and Countermeasure (SPCC) Rule	Onsite above-ground oil storage tanks with an aggregate capacity of 1,320 gallons or underground storage tanks with total capacity over 42,000 gallons in a location where discharge may reach navigable	Low	No Issue	Lead: 3 weeks; Processing: 1 month	None	Assumes the Project will have no oil or petroleum storage that would surpass triggers; if not, reassess whether an SPCC Plan is required. If temporary storage is needed above the threshold, a SPCC Plan still applies.

		waters or adjoining shorelines.					
	Resource Conservation and Recovery Act (RCRA) Notification requirements for regulated waste activity	Generation of not more than 100 kg (220 lbs.) of hazardous waste and less than 1 kg (2.2 lb.) of acute hazardous waste, and no more than 100 kg of acute spill residue or soil per month.	Low	No Issue	Lead: 1 week; Processing: 1 week	None	Assess the potential volume of hazardous waste that will be generated by the Project. Confirm that the Project will not generate not more than 100 kg (220 lbs.) of hazardous waste and less than 1 kg (2.2 lb.) of acute hazardous waste, and no more than 100 kg of acute spill residue or soil per month to qualify as a Very Small Quantity Generator. In the event that any of these thresholds are exceeded, evaluate record keeping and reporting requirements at 40 CFR part 262.
U.S. Department of Agriculture (USDA)	Form AD-1006, Farmland Conversion Impact Rating for Farmland Conversion under Farmland Protection Policy Act (FPPA)	A project that uses federal financing, loans, or assistance and will convert farmland to nonagricultural use.	TBD	No Issue	Lead: 3 weeks; Processing: 1 month	None	Confirm that the Project does not involve federal funding or assistance and, therefore, does not require Form AD-1006. A discussion with the local Natural Resources Conservation Service (NRCS) may be necessary.
	Form AD-1026, Highly Erodible Land Conservation (HELC)	A project that converts land enrolled in federal farm programs to make production of a commodity crop possible.	TBD	No Issue	Lead: 3 weeks; Processing: 1 to 3 months	None	Confirm that the Project will not convert federal farm program wetlands or highly erodible lands to make production of a commodity crop possible.
	Environmental Assessment (EA) for Class I Action (Form RD1940-21)	Leased lands include property encumbered by federal Farm Service Agency (FSA) or Farmers Home Administration (FmHA) real estate mortgages. Projects that use federal financing, loans, or assistance.	Low	No Issue	Lead: 1 month; Processing: 2 to 3 months	None	If Project plans call for leasing land, determine whether leased lands for the Project are encumbered by FSA or FmHA federally guaranteed real estate mortgages as soon as possible. Also confirm whether Project will use federal financing, loans, or assistance.
	Conservation Reserve Program (CRP) Contract Amendment	Project affects lands enrolled in CRP.	Low	No Issue	Lead: 2 weeks; Processing: 1 to 2 months	Reimbursement of past CRP payments plus interest for impact area.	Obtain confirmation from landowners that affected lands are not enrolled in CRP.
	A loan guarantee from USDA RD Rural Business-Cooperative Service (RBCS)	Application for a RBCS loan guarantee.	Low	No Issue	Lead: 1 month; Processing: 1-2 months	None	Determine whether a federal loan guarantee is sought as soon as possible.

Federal Aviation Administration (FAA)	Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard)	Needed for construction of any structure exceeding 200 feet in height.	Low	No Issue	Lead: 1 week; Processing: 3 to 6 months, possibly longer if there are identified constraints.	None	The proposed Project is unlikely to trigger Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard) through the Federal Aviation Administration (FAA) for construction of any structure exceeding 200 feet in height.
	Notice of Actual Construction or Alteration (Form 7460-2)	Needed for construction of any structure exceeding 200 feet in height.	Low	No Issue	Lead: 1 week; Processing: 1 week	None	Should the filing of Form 7460-1 reveal that the proposed Project has potential to impact navigable airspace, Notice of Actual Construction or Alteration will be required prior to initiating construction activities.
STATE							
Delaware Public Utilities Commission (PUC)	Certificate of Public Convenience and Necessity (CPCN)	Required for new transmission utilities.	High	Moderate Risk	Lead: 2-3 months; Processing: 90 days	TBD	No person or entity shall begin the business of an electric transmission utility providing transmission facilities, as defined in §1001(26) of Del. Code tit. 26 § 203E, without having first obtained from the Commission a certificate that the present or future public convenience and necessity requires, or will be served by, the operation of such business. Consultant is under the assumption that PJM has previously acquired a CPCN and is authorized to provide electric transmission utility services in the State of Delaware.
Delaware State Historic Preservation Office (DE SHPO)	Cultural and Historic Resources Review (Project Review Forms)	Required for State and Federal Undertakings.	Low	Moderate Risk	Lead: 1 month; Processing: 30 days	None	Any state or federal undertakings will require SHPO review of the proposed Project.
Delaware Department of Natural Resources and Environmental Control (DNREC)	Delaware Construction General Permit	Construction activity disturbing one or more acres of land. Requires development of site specific SWP3 and compliance with all SWP3 conditions.	High	No Issue	Lead: 4 weeks; Processing: Estimated 1-2 weeks	TBD	Construction activities with land disturbing activities of one acre or more must submit a Notice of Intent (NOI) prior to plan approval and agree to comply with requirements outlined in the NPDES General Permit for Stormwater Discharges from Construction Activity, also known as the Delaware Construction General Permit or CGP. Project SWP3 must be designed in compliance with the Delaware Erosion and Sediment Control Handbook, Post Construction Stormwater BMP Standards and Specifications, and the Standard Guidelines for Operation and Maintenance of Stormwater BMPs. Online submittal for NOI.

	401 Water Quality Certification	Required for activities that trigger an USACE Individual Permit under Section 404 of the Clean Water Act (CWA) or Federal Energy Regulatory Commission (FERC) approval.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	US Clean Water Act requires states to certify that the discharge of dredged or fill material into waters of the United States, including wetlands, that is authorized by the federal government, will not violate the State Water Quality Standards. A project-specific application for Water Quality Certification is generally required for all projects requiring an individual permit from the U.S. Army Corps of Engineers, as well as for certain projects that qualify for a Corps Nationwide Permit but are located in environmentally sensitive areas. A 401 Water Quality Certification can be applied for using the Wetlands and Subaqueous Lands Section Permit Application Form.
	Wetlands and Subaqueous Lands Section Permit Application Form	Required for activities in tidal wetlands or in tidal and non-tidal waters in the State of Delaware. The Section issues various types of authorizations depending upon the location and type of activity proposed including tidal leases.	High	Moderate Risk	Lead: 1 month; Processing: 1-4 weeks (no public notice); 60-90 days (with public notice)	TBD	The Wetlands and Subaqueous Lands Section of the DNREC regulates and permits impacts to wetlands and waters in the State. All permits for wetland impacts will use the Wetlands and Subaqueous Lands Section Permit Application Form. The DNREC has attached appendices for a variety of other activities, which will be required for authorization. Applicable appendices include the Road Crossing, Channel Modifications or Impoundment Structures, Utility Crossings, Fill, Rip-Rap, Vegetative Stabilization, Construction in State Wetlands, Excavating, and Stormwater Management Appendices. Consultant recommends reviewing Project design plans in conjunction with the various appendices to determine the need for a Wetlands and Subaqueous Lands Section Permit Application Form submittal. Public notice is required for most projects. This consists of advertising a basic project description in the newspaper and waiting for a period of twenty days to receive public comments or requests for public hearings. Statewide Activity Approvals, Jurisdictional Determinations, and Letters of Authorization do not require a public notice period and thus have an abbreviated processing time.
	Jurisdictional Determination and Map Change Request Form	This is the at Applicants request; it is not required by the DNREC.	TBD on project to project basis	No Issue	Lead: 2 weeks; Processing: 1-4 weeks	TBD	A Jurisdictional Determination and Map Change Request Form determines that jurisdictional State wetlands or waters of the State are either present or absent on the property.
	Coastal Zoning Permit	DNREC must determine whether a proposed activity would be prohibited, if it would not require a coastal zone permit because it is not manufacturing or heavy industry, or if it would require a permit (and which type).	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	The Project Area is located in the Delaware Costal Zone, regulated under the Coastal Zone Permit Act of 2017. Manufacturing, heavy industry, and bulk product transfer activities require a coastal zone permit in addition to other applicable DNREC permits. Various heavy industry activities remain prohibited within the coastal zone, such as oil refineries, paper mills, incinerators, steel manufacturing plants, and liquefied natural gas terminals. Substations and transmission lines are not discussed as a heavy industry use and

							may be considered a permitted use in the Coastal Zone. A Request for Status Decision is recommended to determine whether the proposed Project would be prohibited, exempt from permitting, or would require a standard or conversion permit.
	Environmental Review (Threatened and Endangered Species Review)	Routinely recommended as a part of Project due diligence.	High - Routinely recommended	Moderate Risk	Lead: 1 week; Processing: 30 days	$35/hour (1 minimum)	A Data Request was submitted to the DNREC for information regarding State-listed threatened and endangered species. No response has been received to date; Consultant will update the Permit Matrix and Project Reports once a response has been received.
Delaware Office of the State Fire Marshal	Plan Review	Required for new buildings, additions, changes of use, flammable and/or combustible liquid and gas installations, fire protection system installations, and other activities.	Low	No Issue	Lead: 1 month; Processing: Estimated 1 months	TBD	Transmission lines and substations were not mentioned as an activity triggering the need for a Site Plan, Building Plan, Tank Plan, or Fire Protection Plan Submittal. Should any other activities or construction be proposed, it is recommended to review the Office of the State Fire Marshal's Plan Review program to determine the need for a Plan Review.
Delaware Department of Transportation (DelDOT)	Oversize/Overweight Permit	Required for movement on the highways of the State of Delaware when any vehicle, vehicle combination, vehicle and load combination, and/or equipment or machinery being moved under its own power exceeds the dimensional and/or weight limits set forth in Chapter 45, Title 21 of the Delaware Code.	Moderate	No Issue	Lead: 1 week; Processing: 1-2 weeks	Dependent on vehicle size and number of trips	Determine if construction of the Project will require travel on state roads with oversize/overweight vehicles. If so, determine the length, weight, and number of trips necessary to complete the Project. Consult with the DelDOT to select the most appropriate permit. Typically, these types of permits will be sought out by the contractor responsible for transporting materials. Online permit submittal.
	Entrance Permit	Required to construct a new entrance or modify an existing entrance of a State-managed roadway.	TBD	No Issue	Lead: 1-3 weeks; Processing: 1-4 weeks	TBD	Consultant recommends a review of Project design plans to determine the need for any State-managed roadways will be used for Project access. To submit an application for DelDOT Entrance Permit, use the online Entrance Permitting System and choose the county in which you would like to apply for a permit. The online application system will guide Applicants through the steps to fill out and submit the application for DelDOT Entrance Permit

New Jersey Board of Public Utilities (BPU)	NJ Rev Stat § 40:55D-19 - Appeal	An electric utility may appeal a disapproval from a single municipality in the event of the Project being denied in accordance with local municipal regulations.	TBD	No Issue	Lead: 35 days; Processing: 35 days	TBD	If a public utility, as defined in R.S.48:2-13, or an electric power generator, as defined in section 3 of P.L.1999, c.23 (C.48:3-51), is aggrieved by the action of a municipal agency through said agency's exercise of its powers under this act, with respect to any action in which the public utility or electric power generator has an interest, an appeal to the Board of Public Utilities of the State of New Jersey may be taken within 35 days after such action without appeal to the municipal governing body pursuant to section 8 of this act unless such public utility or electric power generator so chooses. In such case appeal to the Board of Public Utilities may be taken within 35 days after action by the governing body. A hearing on the appeal of a public utility to the Board of Public Utilities shall be had on notice to the agency from which the appeal is taken and to all parties primarily concerned, all of whom shall be afforded an opportunity to be heard. If, after such hearing, the Board of Public Utilities shall find that the present or proposed use by the public utility or electric power generator of the land described in the petition is necessary for the service, convenience or welfare of the public, including, but not limited to, in the case of an electric power generator, a finding by the board that the present or proposed use of the land is necessary to maintain reliable electric or natural gas supply service for the general public and that no alternative site or sites are reasonably available to achieve an equivalent public benefit, the public utility or electric power generator may proceed in accordance with such decision of the Board of Public Utilities, any ordinance or regulation made under the authority of this act notwithstanding. This act or any ordinance or regulation made under authority thereof, shall not apply to a development proposed by a public utility for installation in more than one municipality for the furnishing of service, if upon a petition of the public utility, the Board of Public Utilities shall after hearing, of which any municipalities affected shall have notice, decide the proposed installation of the development in question is reasonably necessary for the service, convenience or welfare of the public.
New Jersey Historic Preservation Office (HPO)	Cultural and Historic Resources Review (Technical Assistance)	Required for State and Federal Undertakings, including a variety of NJDEP Permits listed below.	Moderate-High	Moderate Risk	Lead: 1 month; Processing: Estimated 30 days	None	Depending on other permit triggers including the Department of Environmental Protections Freshwater Wetlands Permit, CAFRA Permit, and more, a Cultural and Historic Resources Review (Email Submittal Form) may be required as a part of Project development. Any federal undertakings will require a Cultural and Historic Resources review under Section 106.

New Jersey Department of Environmental Protection (NJDEP)	5G3 - Construction Activity Stormwater General Permit	Construction activity disturbing one or more acres of land. Requires development of site specific SWP3 and compliance with all SWP3 conditions.	High	No Issue	Lead: 4 weeks; Processing: Estimated 3-4 weeks	TBD	Permit Number: NJ0088323 (5G3 - Construction Activity Stormwater General Permit) became effective on March 1, 2022 and will expire February 28, 2027. Project development will require NJ0088323 for disturbances greater than one acre. Prepare a Stormwater Pollution Prevention Plan (SWPPP) as part of construction plans; prepare and submit the NJ0088323 application along with a complete Request for Authorization (RFA) and the appropriate fee required under N.J.A.C. 7:14A-3.1(j) shall be submitted via the NJDEP Online Portal. Authorization becomes effective when the Department certifies the RFA. Local conservation district approval of a Soil Erosion and Sediment Control (SESC) Plan may be required prior to RFA certification.
	401 Water Quality Certification	Projects requiring fill in Water of the US require a Water Quality Certification. Typically associated with USACE Permits and State Individual Permits.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	A 401 Water Quality Certification authorization is required as a part of federal waterway/wetland permitting. Design project to avoid/minimize wetlands to the extent practicable. Align infrastructure to avoid temporary and permanent impacts to wetlands, waterways, and drainages. If the Project design includes impacts to wetlands or waterways, it is recommended to request an early coordination meeting with NJDEP staff to ensure all State permitting requirements are met.
	Freshwater Wetlands (FWW) Individual Permit and FWW General Permits	The maintenance or construction of utility lines within freshwater wetlands, transition areas, and/or State open waters requires a Freshwater Wetlands (FWW) permit or FWW Transition Area waiver. Several FWW General Permits (GP) are available for these types of activities.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	General Permits provide a means to perform a variety of activities within a regulated freshwater wetland, freshwater wetland transition area and/or State open water, provided that the various conditions are met for the type of general permit requested. There are requirements, conditions and restrictions that apply to all general permits which must be considered prior to applying for a permit. If the proposed activity does not meet the applicable requirements, conditions, and/or restrictions, a FWW Individual Permit is available. Several noteworthy General Permits applicable to Project development include: underground utility lines (GP2), Non-tributary wetlands (GP6), above ground utility lines (GP 21), redevelopment of previously disturbed areas (GP26), and others. The #894 Project contains a minor amount wetlands in the State and may require FWW General Permits or an Individual Permit. Consultant recommends initiating consultation with the NJDEP to ensure the proper permitting process is selected for construction of a transmission line with respect to freshwater wetland impacts.

	Flood Hazard Area (FHA) Individual Permit and Streams/Rivers & Flood Hazard General Permits; Permit-by-Rule (PBR) 33	Required for any structure or activity that in any manner changes, expands, or diminishes the course, current or cross-section of any watercourse or flood hazard area.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	Placement of utility poles would likely be authorized under Permit-By-Rule 33 which is for the placement of one or more utility poles, provided that the proposed design meets the applicable conditions of the permit. There are also permit-by-rules for open-frame or monopole towers. Road or bridge construction to facilitate access would like be authorized under Regional General Permit 9 if the regulated water has a drainage area less than 50 acres, otherwise an Individual Permit would likely be required. Additionally, if the Project is regulated to the Coastal Zone Management Rules at N.J.A.C. 7:7, then no separate Flood Hazard approval is required. In these instances, the applicant need only submit a report and plans demonstrating compliance with the Flood Hazard Area Control Act Rules as part of the coastal permit application. General Permits provide a means to perform a variety of activities within a regulated flood hazard area and regulated streams/rivers, provided that the various conditions are met for the type of general permit requested. There are requirements, conditions and restrictions that apply to all general permits which must be considered prior to applying for a permit. If the proposed activity does not meet the applicable requirements, conditions, and/or restrictions, a FHA Individual Permit is available. Several noteworthy General Permits applicable to Project development include: Habitat Creation/Restoration/Enhancement (GP4), Reconstruct and/or Elevation-Building in Floodway (GP5), Development SFH/Duplex and Driveway (GP6), In-kind replacement of public infrastructure (GP15), and others. The #894 Project contains a variety of special flood hazard areas associated with the Delaware River and will likely require a Streams/Rivers & Flood Hazard General Permits; Permit-by-Rule (PBR) 33, or Flood Hazard Area (FHA) Individual Permit. Consultant recommends initiating consultation with the NJDEP to ensure the proper permitting process is selected for construction of a transmission line with respect to FHA impacts.

	Coastal Permitting General Permits, Waterfront Development (WFD) Individual Permit and Coastal Zone Management Federal Consistency, CAFRA Individual Permit, Coastal Wetlands Individual Permit	Required for waterfront developments and/or coastal zone impacts.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	Activities conducted in tidal waters (at or below the mean high water line) that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a Waterfront Development Individual Permit. Activities conducted in the CAFRA zone that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a CAFRA Individual Permit. Activities conducted within wetlands subject to the Wetlands Act of 1970 that do not meet the requirements require a Coastal Wetlands Individual Permit. Activities conducted within wetlands subject to the Wetlands Act of 1970 that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a Coastal Wetlands Individual Permit. Applicable general permits include Landfall of Utilities (GP12), Eroded Shoreline Stabilization (GP17), Mod of Existing Electrical Substations (GP19), Geotechnical Survey Borings (GP23), and more. If the project is regulated pursuant to the Coastal Zone Management Rules at N.J.A.C. 7:7, then no separate Flood Hazard approval is required. In these instances, the applicant need only submit a report and plans demonstrating compliance with the Flood Hazard Area Control Act Rules as part of the coastal permit application. The #894 Project is located inside of the Coastal Area Facilities Review Act (CAFRA) Boundary.
	Tidelands License/Grant	Private use of State tidelands for Utility or Utility related project (Tidelands Act 12:3 (1 to 28) NJSA 13:1B-13.1 to 13.14).	High	Moderate Risk	Lead: 1 month; Processing: 3-12 months	Fair Market Value of Land for Grant, annual license fees depend on total amount of area licensed.	The #894 Project is located inside of one New Jersey Tidelands in the Delaware Central Tidelands Region. The State of New Jersey claims ownership of these tidelands and holds them in trust for the people of the state. The management of the tidelands is overseen by the Tidelands Resource Council, a twelve member Governor-appointed board of volunteers, along with DEP staff at the Bureau of Tidelands Management. Since tidelands are public lands, a developer must obtain written permission from the State and pay a fee in order to use these lands. Some tidelands may be sold in the form of a Riparian Grant while others may only be rented through either a Tidelands License or Lease. It is likely that a tidelands license or grant would be required for Project development.

	Permit-by-rule (PBR) 8	Construction of a utility line attached to a bridge or culvert.	TBD	No Issue	Lead: 1 month; Processing: Estimated 1-3 months	TBD	PBR 8 - authorizes construction of a utility line, including cable (electric, television, or fiber optic), telecommunication, wastewater, petroleum, natural gas, or water, attached to a bridge or culvert, provided: No excavation, dredging or filling is undertaken within the water body over which the utility line crosses; The utility line is firmly attached to the existing bridge or culvert structure so that no part of the utility line, its encasement, or any attachment device extends above or below the existing bridge or culvert structure; If the crossing is a bridge, the utility line, its encasement, and all attachment devices must be located entirely above the elevation of the low chord of the superstructure and entirely below the elevation of the bridge surface; If the crossing is a culvert, the utility line, its encasement, and all attachment devices must be located entirely above the overt elevation of the culvert and entirely below the elevation of the top of the culvert; If the utility line is a pipeline that conveys any substance other than potable water, the utility line must be sufficiently encased within ductile iron or concrete to protect the utility line from damage from impact with floating debris during floods; and If there is a predominant direction of flow within the water body, the utility line must be attached to the downstream face of the bridge or culvert; The installation of the utility line has no adverse impacts to special areas as described at N.J.A.C. 7:7-9; and Construction equipment is operated from land, the top of the bridge or culvert, or from barges, and shall under no circumstances be allowed to enter the water body. Please be advised, this PBR only applies to that portion of the utility line that will be constructed across the tidal waterway up to the mean high water line, provided a tidelands instrument has been obtained for the utility line. In addition, this PBR does not relieve the permittee from the obligation of obtaining all necessary approvals from the U.S. Army Corps of Engineers. See N.J.A.C. 7:7-4.8 for complete rule requirements.
	New Jersey Natural Heritage Program) - State T&E Species Consultation	Routinely recommended; natural resources investigations including wildlife will be required for the various coastal, wetlands, and waterway permits.	Routinely recommended	Moderate Risk	Lead: 1 week; Processing: 1-2 weeks	TBD	A Data Request was submitted to the New Jersey Natural Heritage Program for information regarding State-listed threatened and endangered species. No response has been received to date; Consultant will update the Permit Matrix and Project Reports once a response has been received.

	Construction Dewatering Permit	For temporary ground and surface water control (dewatering) diversions in excess of 100,000* gallons of water per day, the project owner must obtain a Dewatering Allocation Permit, or Dewatering Permit-by-Rule or Short Term Permit-by-Rule depending on the duration of the diversion and the method employed.	Low	No Issue	Lead: 1 month; Processing: Estimated 1 month	TBD	Consultant recommends review of the listed permit triggers to determine if a dewatering approval will be necessary, and to determine the appropriate permit selection.
	Air Quality Permit	Permit requirements dependent on construction techniques and equipment used in Project development.	TBD	No Issue	Lead: 1 month; Processing: Estimated 1-2 months	TBD	Depending on the construction techniques and equipment used for Project development, a variety of air quality permit thresholds may be met. Consultant recommends reviewing construction techniques and equipment used with the Air Quality permitting thresholds discussed on the NJDEP Air Quality, Energy & Sustainability webpage.
New Jersey Department of Community Affairs	Development Plan Review	Required in the event that the local municipalities where the subcode officials and construction official do not possess code enforcement licenses of the appropriate class.	TBD	No Issue	Lead: 1 month; Processing: Estimated 1-2 months	TBD	Should any of the local permit issuing municipalities not possess code enforcement licenses of the appropriate class, a review from the Department of Community Affairs would be required. Class I : A Departmental plan review and release is required prior to the issuance of a construction permit unless the construction official and each appropriate subcode official in the municipal enforcing agency is certified as a HHS construction official or subcode official; Class II: A Departmental plan review and release is required prior to the issuance of a construction permit unless the construction official and each appropriate subcode official in the municipal enforcing agency is certified as a HHS or ICS construction official or subcode official; Class III: A Departmental plan review shall not be required except when the Department acts as the enforcing agency. Application should be made to the local construction office, not the Department. Refer to the local permitting section below for additional information.
New Jersey Pinelands Commission	Application for Development in the Pinelands Area (Certificate of Filing)	Required for developments located in the Pinelands Area.	Low	No Issue	Lead: 1 month; Processing: 30 days	$187.50 per acre of all land in ROW, $250 minimum	Project is located outside of the Pinelands Area; therefore, no Application for Development will be required.

New Jersey Department of Transportation (NJDOT)	Oversize/Overweight Application for Special Hauling Permit	Permit required for vehicles exceeding the weights adopted in N.J.A.C. 13:18, Subchapter 1: Permits for Over dimensional or Overweight Vehicles	Moderate	No Issue	Lead: 1 week; Processing: 1 days to 1 week	Dependent on vehicle size and number of trips	Determine if construction of the Project will require travel on state roads with oversize/overweight vehicles. If so, determine the length, weight, and number of trips necessary to complete the Project. Consult with the DOT to select the most appropriate permit. Typically, these types of permits will be sought out by the contractor responsible for transporting materials.
	Driveway Access Permit Application	Required for driveway access construction using a State roadway.	Low	No Issue	Lead: 1 week; Processing: Estimated 2-4 weeks	TBD	If Project development will require any driveway access using NJDOT roadways, prior permit approval will be required.
	Application for Utility Opening (MT17A)	Required for utility infrastructure openings in NJDOT roadways.	Low	No Issue	Lead: 1 week; Processing: 2-4 weeks	TBD, based on square footage of opening; $725-$1,580	If Project development will require any openings on NJDOT roadways for installation of utility infrastructure, prior permit approval will be required. The Project does not cross any NJDOT roadways; therefore, it is unlikely that approval of MT17A will be required.
	Highway Occupancy Permit (MT120A)	Permit required for construction or alteration of utility facilities.	Low	No Issue	Lead: 3 weeks; Processing: Estimated 2-4 weeks	TBD based on construction activities	If Project development will require any occupancies on NJDOT roadways for installation of utility infrastructure, prior permit approval will be required. The Project does not cross any NJDOT roadways; therefore, it is unlikely that approval of MT120A will be required.
LOCAL							
Salem County, NJ	Site Plan Approval	Any site plans that abut a County road or County drainage structure will require Salem County approval in addition to local municipal approvals. Developments exceeding one acre may also trigger the need for Site Plan Approval.	High	No Issue	Lead: 2-3 weeks; Processing: Up to 90 days	TBD	The Project is located across several County roadways, triggering the need for a Site Plan Approval. Any impacts or crossings of County roadways will trigger the need for a County Site Plan Review.
	Road Opening Permit	Required to open, excavate, burrow under, or in any way impair any portion of the right-of-way of a County-maintained roadway.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	A Road Opening Permit will be required to impact any portion of a County ROW. Project development will likely trigger the need for a Road Opening Permit from the County.
	Road Access Permit	Construction of a driveway or access road utilizing County roadways.	TBD	No Issue	Lead: 1 week; Processing: Estimated 1 week	TBD	Should any driveways be proposed using a County roadway, prior permit approval will be necessary.

Cumberland Salem Conservation District (CSCD)	Soil Erosion and Sediment Control (SESC) Plan Approval	Construction activities resulting in one or more acres of earth disturbance require SESC Plan Approval from the local soil conservation district.	High	No Issue	Lead: 1 month; Processing: 30 days	TBD, based on acres of disturbances	Permittees are required to submit their applications and payment electronically online utilizing the NJDEP's Stormwater Construction Activity E-Permitting System, or via paper application to the NJDEP's Bureau of Permits Management. Soil Erosion and Sediment Control Plan applications must still be submitted to the local district offices for certification. However, for those projects requiring a NJPDES Stormwater Construction Activity permit, the district shall issue a SCD Certification Code to the permittee verifying that the 251 Plan has been approved. This code is necessary to complete either the online E-Permitting or paper RFA process. Project development may require SESC Plan Approval from CSCD prior to receiving NJDEP Approval for 5G3 - Construction Activity Stormwater General Permit. Submit a SESC Plan following the Standards for Soil Erosion and Sediment Control in New Jersey document (Appendix A2). Note that a 48 hour advance notice of soil disturbance is required by CSCD.
Lower Alloways Creek Township, Salem County, NJ	Conditional Use Permit / Zoning Permit	Alter, erect, or use a structure; or to use land in the Township.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 3-6 weeks	TBD	According to the Township's Zoning Map, the Project Area is located in the Industrial Zoning District. According to the Land Development Ordinance Section 5.15A, public utility uses considered a permitted use in the Industrial Zoning District. Substations and Transmission lines are considered a conditional use, subject to the requirements of Section 5.11B4. Project development will be allowed via a Conditional Use Permit approval. The design and location of all utilities shall be based on Township standards and the public utility having primary jurisdiction. The location of all utilities shall he coordinated by the Township Engineer. Necessary approvals from the County Health Office, where applicable, shall also be required.
	Construction Permit	Required to construct, enlarge, alter or demolish a structure.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Applications for a Construction Permit shall be made in accordance with the requirements of the New Jersey State Uniform Construction Code.
New Castle County, DE	Special Use Review / Limited Review - Zoning	Required for substation and transmission lines construction in the Suburban Reserve Zoning District.	High	No Issue	Lead: 1 month; Processing: 1-2 months	TBD	According to the County's Zoning Map, the Project Area is located in the SR - Suburban Reserve Zoning District. The Unified Development Code, Use Table (40.03.110) states that utilities (minor) are considered a use permitted under Limited Review in the SR Zoning District. Utilities (major) are considered a use permitted by Special Use Review in the SR Zoning District. Transmission lines under 230 kV are considered a utility (minor). Transmission Lines in excess of 230 kV are considered a utility (major). If the proposed transmission line exceeds 230 kV, a Special

							Use Review under Sec. 40.03.312. and Sec. 40.31.430. will be required. Ultimately, Project development will require approval of a Special Use Review or Limited Zoning Review. Consultation with County Officials is recommended to determine the appropriate permitting process.
	Building Permit (Non-Residential)	Required for any new homes, additions, other accessory residential structures, solar PV panels, and other non-residential structures.	Low-Moderate	No Issue	Lead: 2-3 weeks; Processing: 30 days	TBD	Transmission lines and substations were not mentioned as an activity triggering the need for a Building Permit Approval. Consultation with New Castle County Officials is recommended to determine the proper permitting process for Project construction.
	Plan Review	Required for stormwater management review.	High	No Issue	Lead: 4 weeks; Processing: Estimated 1-2 weeks	TBD	New Castle County is a designated agency for regulating the Delaware Sediment and Stormwater Program. The Engineering Division reviews proposed development plans to ensure that stormwater is managed according to code requirements. Construction activities with land disturbing activities of one acre or more must comply with State and Local regulations, see Delaware Construction General Permit above for further information.
New Castle County Conservation District	Soil Erosion and Sediment Control (SESC) Plan Approval/Certification	Required for stormwater management review.	None	No Issue	Lead: 4 weeks; Processing: Estimated 1-2 weeks	TBD, based on acres of disturbances	New Castle County is the designated agency for regulating the Delaware Sediment and Stormwater Program. New Castle County Conservation District is the responsible delegated authority for several municipalities, none of which are located in the proposed Project Area. Reviews will be conducted by the State and County for stormwater.

PSEG Proposal 180 Permit Tables

Table 16. **NJDEP Division of Land Resources Protection Special Areas**

Special Area	Presence	Facility Involved	Comment
Atlantic City	No	-	-
Beaches	No	-	-
Canals	No	-	-
Coastal bluffs	Not Likely	-	Based on review of aerial imagery
Coastal high hazard areas	No	-	-
Critical wildlife habitats	Unknown		Until maps are publicly available, sites must be considered on a case-by-case basis by the NJDEP's Division of Fish and Wildlife.
Dredged material management areas	No	-	-
Dry borrow pits	Not Likely	-	Based on review of aerial imagery
Dunes	Not Likely	-	Based on review of aerial imagery
Endangered or threatened wildlife or plant species habitat	Yes	Deans	2 Natural heritage grids crossed
Erosion hazard areas	Not Likely	-	Based on review of aerial imagery
Excluded federal lands	No	-	-
Existing lagoon edges	No	-	Based on review of aerial imagery
Farmland conservation areas	No	-	-
Filled water's edge	Yes	Linden Windsor	3 Areas where historic fill data overlaps mapped wetlands or streams
Finfish migratory pathways	No	-	-
Flood hazard areas	Yes	Windsor Linden Clarksville	Floodplain Types Present: AE
Geodetic control reference marks	No	-	-
Hackensack Meadowlands District	Yes	Bergen	Work to take place within existing substation fence
Historic and archaeological resources	Yes	Deans Linden Windsor	Historic Districts: Camden and Amboy Railroad Main Line Historic District, Metuchen to Burlington Transmission Line Historic District, Sound Shore Railroad Historic District, Perth Amboy and Elizabeth port Branch of the Central Railroad of New Jersey Historic District Historic Properties: Brunswick-Trenton 230kv Electrical Transmission and Electrical Substation in South Brunswick Township Archeological Site Grids:1 identified grid

Special Area	Presence	Facility Involved	Comment
Hudson River Waterfront Area	No	-	-
Intermittent stream corridors	Yes	All Facilities	Lawrence Brook UNT, Shipetauken Creek UNT's, Bear Brook UNT
Lands and waters subject to public trust rights	No	-	-
Overwash areas	No	-	Based on review of aerial imagery
Pinelands National Reserve and Pinelands Protection Area	No	-	-
Public open space	Yes	Deans	Davidson Mill Park
Riparian zones	Yes	All Facilities	Lawrence Brook UNT, Shipetauken Creek UNT's, Bear Brook, Pile's Creek UNT
Shellfish habitat	No	-	-
Special hazard areas	No	-	-
Special urban areas	No	-	-
Specimen trees	No	-	-
Steep slopes			
Submerged vegetation habitat	No	-	-
Wet borrow pits	Not Likely	-	Based on review of aerial imagery
Wetland buffers	Yes	All Facilities	See wetlands below
Wetlands	Yes	All Facilities	Types Present: Modified wetlands Deciduous Wooded wetlands Phragmites Dominant Interior wetlands
Wild and scenic river corridors	No	-	-

Table 17. **Federally- and State-Listed Threatened and Endangered Species**

Common Name	Species Name	Status
Federal[1]		
Northern Long-Eared Bat	Myotis septentrionalis	Threatened
Monarch Butterfly	Danaus plexippus	Candidate
State-Listed[2]		
Henslow's Sparrow	Ammodramus henslowii	Endangered
Triangle Floater	Alasmidonta undulata	Threatened
Brook Floater	Alasmidonta varicose	Endangered
Grasshopper Sparrow	Ammodramus savannarum	Threatened
Short-eared Owl	Asio flammeus	Endangered
Long-eared Owl	Asio otus	Threatened
Upland Sandpiper	Bartramia longicauda	Endangered
Silver-bordered Fritillary	Boloria selene myrina	Threatened
Cattle Egret	Bublcus ibis	Threatened
Red-shouldered Hawk	Bueto lineatus	Endangered
Loggerhead Sea Turtle	Caretta	Endangered
Northern Harrier	Circus hudsonius	Endangered
Bobolink	Dolichonyx oryzivorus	Threatened
Horned Lark	Eremophila alpestris	Threatened
Peregrine Falcon	Falco peregrinus	Endangered
American Kestrel	Falco sparverius	Threatened
Wood Turtle	Glyptemys insculpta	Threatened
Bald Eagle	Haliaeetus leucocephalus	Threatened
Pine Barrens Treefrog	Hyla andersonii	Threatened
Southern Gray Treefrog	Hyla chrysocelis	Endangered
Eastern Lampmussel	Lampsilis radiata	Threatened
Loggerhead Shrike	Lanius ludovicianus	Endangered
Green Floater	Lasmigona subviridis	Endangered
Eastern Pondmussel	Ligumia nasuta	Threatened
Red-headed Woodpecker	Melanerpes erythrocephalus	Threatened
Yellow-crowned Night Heron	Nyctanassa violacea	Threatened
Black-crowned Night-Heron	Nycticorax	Threatened
Osprey	Pandion haliaetus	Threatened
Savannah Sparrow	Passerculus sandwichensis	Threatened
Northern Pinesnake	Pituophis melanoleucuc melanoleucus	Threatened
Pied-billed Grebe	Podilymbus Podiceps	Endangered
Vesper Sparrow	Pooecetes gramineus	Endangered

Common Name	Species Name	Status
Least Tern	Sternula antillarum	Endangered
Barred Owl	Strix varia	Threatened
Seabeach Amaranth	Amaranthus pumilus	Endangered
Puttyroot	Aplectrum hyemale	Endangered
Pawpaw	Asimina triloba	Endangered
Eaton's Beggarticks	Bidens etonii	Endangered
Buttonbush Dodder	Cuscuta cephalanthi	Endangered
Lancaster Flat Sedge	Cyperus lancastriensis	Endangered
Squirrel-corn	Dicentra canadensis	Endangered
Swamp Pink	Hellonias bullata	Endangered
Featherfoil	Hottonia inflata	Endangered
Goldenseal	Hydrastis canadensis	Endangered
Floating Marsh-pennywort	Hydrocotyle ranunculoides	Endangered
Torrey's Rush	Juncus torreyi	Endangered
Minute Duckweed	Lemna perpusilla	Endangered
Lanceleaf Loostrife	Lysimachia hybrida	Endangered
Slender Water-milfoil	Myriophyllum tenellum	Endangered
Wild Blue Phlox	Phlox divaricate ssp. Divaricate	Endangered
Torrey's Mountainmint	Pycnanthemum torrei	Endangered
Southern Arrowhead	Sagittaria australis	Endangered
Veined Skullcap	Sctellaria nervosa	Endangered
Deathcamas	Zigadenus leimanthoides	Endangered

Notes:

1 Species listed are according to the USFWS Information for Planning and Consultation (IPaC) Online Tool.

2 According to the NatureServe Biodiversity Report.

Table 18. **Preliminary Permits, Authorizations, and Clearances**

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Federal			
Section 10 Permit Authorization	USACE – New York/ Philadelphia District	3 Months	Required when spanning or impacting a navigable waterway. Not anticipated for onshore portion of project
Nationwide Permit 57 or Individual Permit	USACE New York District	3 Months	Linden Substation component located within 1000 feet of tidally influenced waters.
Endangered Species Act of 1973 Consultation	USFWS	6-12 Months	Required if proposed activities have potential effect on federally listed species
Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act		2-4 Months	Required if activities have the potential to effect migratory birds or protected eagles.
State of New Jersey			
Certificate of Public Convenience and Necessity	New Jersey Board of Public Utilities	12-18 Months	
Freshwater Wetlands General/Individual Permit	NJDEP DLRP	12-18 Months	May be required if aboveground structures, access roads or facilities are proposed in freshwater wetlands or transition areas.
Coastal Wetlands General/Individual Permit	NJDEP DLRP	6-12 Months	Project is not located within the CAFRA zone. NJDEP Coastal Wetland Maps will need to be referenced to determine if impacts to regulated coastal wetlands are proposed.
Waterfront Development General/Individual Permit	NJDEP DLRP	3-9 Months	
Federal Coastal Zone Consistency Determination	NJDEP DLRP	-	
State Species Consultation	NJDEP DLRP	N/A	To be included with the DLRP permits
Air Quality General Permit	NJDEP Bureau of Stationary Sources	3-6 Months	A general permit may be required for temporary equipment
Tidelands License	New Jersey Tidelands Council- NJDEP Bureau of Tidelands Management	3-9 Months	The Linden Substation component is proposed within the tidelands claim line

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
NJPDES General Construction Stormwater Permit (5G3)	NJDEP Department of Water Quality Bureau of Stormwater Permitting	To be filed prior to construction	Coordination may be required with the local Soil Conservation District
NJPDES Basic Industrial Stormwater Permit (5G2)	NJDEP Department of Water Quality Bureau of Stormwater Permitting	6 Months	
Access Permits	New Jersey Department of Transportation Division of Right of Way and Access Management	6 Months	
Middlesex, Mercer, and Union Counties			
Consultation on NJDEP permits (air, waste, noise, water)	Middlesex County Environmental Health Division	-	
Road Permit (potential, for work on county roads)	Office of Public Works	1-3 Months	
Site plan Application (potential, for work on county roads)	Office of Planning	3-6 Months	
Municipal			
Construction Permit	South Brunswick, Lawrence and Robbinsville Townships, Linden City, and Ridgefield Borough	-	Additional local approvals and authorizations could be required for structures and permanent land alterations
Floodplain Permit	South Brunswick, Lawrence and Robbinsville Townships, Linden City, and Ridgefield Borough	-	

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Street Opening Permit	South Brunswick, Lawrence and Robbinsville Townships, Linden City, and Ridgefield Borough	1-3 Months	
Site Plan Approval (Underground cables as well as fresh pond road converter station)	South Brunswick, Lawrence and Robbinsville Townships, Linden City	3-9 Months	NJ Board of Public Utilities may be able to override local regulatory approvals Additional approvals from local authorities could be required for structures and permanent land activities
Variance/Rezoning	South Brunswick, Lawrence and Robbinsville Townships, and Ridgefield Borough	3-12 Months	Assuming only aboveground structures will be associated with the project
Zoning Permit	South Brunswick, Lawrence and Robbinsville Townships, Linden City, and Ridgefield Borough	-	Additional easement required for Deans Station component The Bergen Substation is located within the Meadowlands District and regulated by NJSEA. Site plan and zoning certificate will be sent to New Jersey Sports and Exposition Authority.
Building Permit	South Brunswick, Lawrence and Robbinsville Townships, Linden City, and Ridgefield Borough	1-3 Months	

NEETMH Proposal 651 Permit Tables

Table 19. **NJDEP Division of Land Resources Protection Special Areas**

Special Area	Presence	Facility Involved	Comments
Atlantic City	No	-	-
Beaches	No	-	-
Canals	No	-	-
Coastal bluffs	No	-	Based on review of aerial imagery
Coastal high hazard areas	No	-	-
Critical wildlife habitats	Unknown	-	Until maps are publicly available, sites must be considered on a case-by-case basis by the NJDEP's Division of Fish and Wildlife.
Dredged material management areas	No	-	-
Dry borrow pits	Not Likely	-	Based on review of aerial imagery
Dunes	No	-	-
Endangered or threatened wildlife or plant species habitat	Yes	Deans-Brunswick Windsor-Clarksville	Natural Heritage Priority Sites: Beaverdam Branch and Farrington Lake Natural Heritage Site Grids: Study area crosses 17 grids
Erosion hazard areas	Not Likely	-	Based on review of aerial imagery
Excluded federal lands	No	-	-
Existing lagoon edges	No	-	Based on review of aerial imagery
Farmland conservation areas	No	-	-
Filled water's edge	Yes	Deans-Brunswick Windsor-Clarksville	14 sites along routes where historic fill data overlaps mapped wetlands and streams
Finfish migratory pathways	Yes	Clarksville-Windsor 230kV Deans-Brunswick 230kV Gilbert-Springfield 230kV	Assunpink Creek-Alewife Lawrence Brook-Alewife Delaware River-Blueback Herring and Alewife
Flood hazard areas	Yes	Deans-Brunswick Windsor Clarksville Gilbert Springfield	Floodplain Types crossed: A, AE
Geodetic control reference marks	Yes	Deans-Brunswick Gilbert-Springfield	2 Marks crossed by Study Area
Hackensack Meadowlands District	No	-	-

Special Area	Presence	Facility Involved	Comments
Historic and archaeological resources	Yes	Pierson Avenue H-Metuchen Deans-Brunswick Windsor-Clarksville Gilbert-Springfield	Historic Districts: Metuchen to Burlington Transmission Line Historic District, Camden and Amboy Railroad Main Line Historic District, PA Railroad New York to Philadelphia Historic District, Holland Rural Agricultural District Archeological Site Grids: 3 identified grids and 7 eligible grids crossed by study area
Hudson River Waterfront Area	No	-	-
Intermittent stream corridors	Yes	Deans-Brunswick Windsor-Clarksville Gilbert-Springfield	Ireland Brook, Beaverdam Brook, Beaverdam Brook UNT's, Lawrence Brook, Lawrence Brook UNT's, Bear Brook, Bridgegroom Run, Assunpink Creek, Assunpink Creek UNT's, Shipetauken Creek UNT's, Delaware River
Lands and waters subject to public trust rights	Yes	Gilbert-Springfield	Delaware River
Overwash areas	Not Likely	-	Based on review of aerial imagery
Pinelands National Reserve and Pinelands Protection Area	No	-	-
Public open space	Yes	Deans-Brunswick Windsor-Clarksville	Ireland Brook Park, Farrington Lake Shoreline, Farrington Oaks Park, Farrington Lake Natural Area, Elks Open Space, Tamarack Hollow, Davidson Mill Park, Bear Creek Open Space, Blyman Farm, Waterford Woods, Mercer County Park, Van Nest Wildlife Management Area
Riparian zones	Yes	Deans-Brunswick Windsor-Clarksville Gilbert-Springfield	Ireland Brook, Beaverdam Brook, Beaverdam Brook UNT's, Lawrence Brook, Lawrence Brook UNT's, Bear Brook, Bridgegroom Run, Assunpink Creek, Assunpink Creek UNT's, Shipetauken Creek UNT's, Delaware River
Shellfish habitat	No	-	-
Special hazard areas	No	-	-
Special urban areas	No	-	-
Specimen trees	No	-	-
Steep slopes			
Submerged vegetation habitat	No	-	-
Wet borrow pits	Not Likely	-	Based on review of aerial imagery
Wetland buffers	Yes	Deans-Brunswick Gilbert-Springfield Windsor-Clarksville	See wetlands below
Wetlands	Yes	Deans-Brunswick Gilbert-Springfield Windsor-Clarksville	Types Present: Modified wetlands Deciduous Wooded wetlands Herbaceous wetlands Deciduous Scrub/Shrub wetlands Mixed Scrub/Shrub wetlands
Wild and scenic river corridors	No		Stretch of Delaware River that is Wild and Scenic starts roughly ½ mile downstream from Crossing

Table 20. **PA Component - Environmental and Socioeconomic Features**

Features	Presence	Comment
Federal Lands	No	
State Lands	Yes	Delaware Canal State Park State Game Lands #56
Local Government Lands	No	
National Conservation Easements	Yes	17easements in study area
Agricultural easements	Yes	6 easements in study area
Wetlands	Yes	Types Present: Freshwater Forested/Shrub Wetland Freshwater Pond Freshwater Emergent Wetland
EV wetlands	Yes	Wetlands draining to the EV and HQ streams identified below
Exceptional Value or High-Quality Stream	Yes	Cooks Creek and its unnamed tributaries Hollow Run and its unnamed tributaries Delaware River
Wild and scenic Rivers	No	Stretch of Delaware River that is Wild and Scenic starts roughly ½ mile downstream from Crossing
Archaeological Sites	Yes	Site 36BU0001 (Eligible) Site 36BU0005 (Eligible)
Architectural Sites	Yes	Springhouse Farm (Resource # 2006RE00689) (Listed) Old Bethlehem Road Bridge (Resource # 1983RE02374) (Eligible) Jacob Kintner House (Resource # 1982RE00555) (Eligible) Ahler's Bridge (Resource # 2004RE03380) (Eligible) Ahler's Bridge (Resource # 2004RE03382) (Eligible) Smith-Cressman-Davis Farmstead (Resource # 2002RE02009) (Eligible)
Historic Districts	Yes	Delaware Division of the PA Canal (National Historic Landmark) Kintnersville Historic District (Resource # 1994RE00224) (Eligible)
NRHP Eligible Resource	Yes	Site 36BU0001 (Eligible) Site 36BU0005 (Eligible) Old Bethlehem Road Bridge (Resource # 1983RE02374) (Eligible) Jacob Kintner House (Resource # 1982RE00555) (Eligible) Ahler's Bridge (Resource # 2004RE03380) (Eligible) Ahler's Bridge (Resource # 2004RE03380) (Eligible)

Features	Presence	Comment
		Smith-Cressman-Davis Farmstead (Resource # 2002RE02009) (Eligible) Kintnersville Historic District (Resource # 1994RE00224) (Eligible)

Table 21. **Federally- and State-Listed Threatened and Endangered Species**

Common Name	Species Name	Status
Federal[1]		
Indiana Bat	Myotis sodalis	Endangered
Northern Long-Eared Bat	Myotis septentrionalis	Threatened
Bog Turtle	Glyptemys muhlenbergii	Threatened
Monarch Butterfly	Danaus plexippus	Candidate
Swamp Pink	Helonias bullata	Threatened
NJ State-Listed[2]		
Shortnose Sturgeon	Acipenser brevirostrum	Endangered
Atlantic Sturgeon	Acipenser oxyrinchus	Endangered
Triangle Floater	Alasmidonta undulata	Threatened
Brook Floater	Alasmidonta varicose	Endangered
Henslow's Sparrow	Ammodramus henslowii	Endangered
Grasshopper Sparrow	Ammodramus savannarum	Threatened
Short-eared Owl	Asio flammeus	Endangered
Long-eared Owl	Asio otus	Threatened
Upland Sandpiper	Bartramia longicauda	Endangered
Silver-bordered Fritillary	Boloria selene myrina	Threatened
Red-shouldered Hawk	Buteo lineatus	Endangered
Cattle Egret	Bubulcus ibis	Threatened
Loggerhead Sea Turtle	Caretta caretta	Endangered
Northern Harrier	Circus hudsonius	Endangered
Bobolink	Dolichonyx oryzivorus	Threatened
Horned Lark	Eremophila alpestris	Threatened
Longtail Salamander	Eurycea longicauda	Threatened
Peregrine Falcon	Falco peregrinus	Endangered
American Kestrel	Falco sparverius	Threatened
Wood Turtle	Glyptemys insculpta	Threatened
Bog Turtle	Glyptemys muhlenbergii	Endangered
Bald Eagle	Haliaeetus leucocephalus	Threatened
Pine Barrens Treefrog	Hyla andersonii	Threatened
Southern Gray Treefrog	Hyla chrysoscelis	Endangered
Yellow Lampmussel	Lampsilis cariosa	Threatened
Eastern Lampmussel	Lampsilis radiata	Threatened
Loggerhead Shrike	Lanius ludovicianus	Endangered
Green Floater	Lasmigona subvirdis	Endangered
Eastern Pondmussel	Ligumia nasuta	Threatened

Common Name	Species Name	Status
Bobcat	Lynx rufus	Endangered
Red-headed Woodpecker	Melanerpes erythrocephalus	Threatened
Yellow-crowned Night-Herron	Nyctanassa violacea	Threatened
Black-crowned Night-Heron	Nycticorax nycticorax	Threatened
Brook Snaketail	Ophiogomphus aspersus	Threatened
Osprey	Pandion haliaetus	Threatened
Savannah Sparrow	Passerculus sandwichensis	Threatened
Northern Pine Snake	Pituophis melanoleucus melanoleucus	Threatened
Pied-billed Grebe	Podilymbus Podiceps	Endangered
Vesper Sparrow	Pooecetes gramineus	Endangered
Black Skimmer	Pynchops niger	Endangered
Least Tern	Sternula antillarum	Endangered
Barred Owl	Strix varia	Threatened
Seabeach Amaranth	Amaranthus pumilus	Endangered
Puttyroot	Aplectrum hyemale	Endangered
Pawpaw	Asimina triloba	Endangered
Eaton's Beggarticks	Bidens eatonii	Endangered
Side-oats Grama Grass	Bouteloua curtipendula var. curtipendula	Endangered
False Boneset	Brickellia eupatorioides	Endangered
Pickering's Reedgrass	Calamagrostis pickeringii	Endangered
Bush's Sedge	Carex bushii	Endangered
Cloud Sedge	Carex haydenii	Endangered
Hop-like Sedge	Carex lupuliformis	Endangered
Mead's Sedge	Carex meadii	Endangered
Plantain-leaf Sedge	Carex plantaginea	Endangered
Variable Sedge	Carex polymorpha	Endangered
Hillside Sedge	Carex siccata	Endangered
Pear Hawthorn	Crataegus calpodendron	Endangered
Buttonbush Dodder	Cuscuta cephalanthi	Endangered
Lancaster Flat Sedge	Cyperus lancasteriensis	Endangered
Schweinitz's Flat Sedge	Cyperus schweinitzii	Endangered
Trailing Tick-trefoil	Desmodium glabellum	Endangered
Squirrel-corn	Dicentra canadensis	Endangered
Carolina Whitlow-grass	Draba reptans	Endangered
Log Fern	Dryopteris celsa	Endangered
Aunt Lucy	Ellisia nyctelea	Endangered

Common Name	Species Name	Status
Slender Cottongrass	Eriophorum gracile	Endangered
Pine Barrens Boneset	Eupatorium resinosum	Endangered
Swamp Pink	Helonias bullata	Endangered
Featherfoil	Hottonia inflata	Endangered
Goldenseal	Hydrastis canadensis	Endangered
Floating Marsh-pennywort	Hydrocotyle ranunculoides	Endangered
Broad-leaf Waterleaf	Hydrophyllum canadense	Endangered
NJ Rush	Juncus caesariensis	Endangered
Torrey's Sedge	Juncus torreyi	Endangered
Minute Duckweed	Lemna perpusilla	Endangered
Pale Duckweed	Lemna valdiviana	Endangered
Sandplain Flax	Linum intercursum	Endangered
Lanceleaf Loosestrife	Lycopodium hybrida	Endangered
Bayard Long's Adder's-mouth	Malaxis bayardii	Endangered
Virginia Bunchflower	Melanthium virginicum	Endangered
Rock Sandwort	Minuartia michauxii	Endangered
Common Water-milfoil	Myriophyllum sibiricum	Endangered
Slender Water-milfoil	Myriophyllum tenellum	Endangered
American Lotus	Nelumbo lutea	Endangered
Virginia False Gromwell	Obolaria virginica	Endangered
Southern Adder's-tongue	Ophioglossum vulgatum	Endangered
Wiry Panic Grass	Panicum flexile	Endangered
Smooth Beardtongue	Penstemon laevigatus	Endangered
Wild Blue Phlox	Phlox divaricate ssp. Divaricate	Endangered
Dwarf Plantain	Plantago pusilla	Endangered
Purple Fringeless Orchid	Platanthera peromoena	Endangered
Illinois Pondweed	Potamogeton illinoensis	Endangered
White-stem Pondweed	Potamogeton praelongus	Endangered
Eel-grass Pondweed	Potamogeton zosteriformis	Endangered
Low Sand Cherry	Prunus Pumila var. depressa	Endangered
Basil Mountain-mint	Pycnanthemum clinopodioides	Endangered
Torrey's Mountain-mint	Pycnanthemum torrei	Endangered
Greenish-flower Wintergreen	Pyrola chlorantha	Endangered
Knieskern's Beak sedge	Rhynchospora knieskernii	Endangered
Orange Coneflower	Rudbeckia fulgida	Endangered
Southern Arrowhead	Sagittaria australis	Endangered
Saltmarsh Bulrush	Schoenoplectus maritimus	Endangered

Common Name	Species Name	Status
Veined Skullcap	Scutellaria nervosa	Endangered
Bear's Foot	Smallanthus uvedalius	Endangered
Narrow-leaf Horse-gentian	Triosteum angustifolium	Endangered
Spreading Globe Flower	Trollius laxus ssp. laxus	Endangered
Beaked Cornsalad	Valerianella radiata	Endangered
Death camus	Zigadenus leimanthoides	Endangered
PA State Listed[3]		
Peregrine Falcon	Falco peregrinus	Special Concern Species[4]
Sedge	Carex sprengelii	Special Concern Species[4]
Erosional remnant	Erosional remnant	Special Concern Species[4]
Downy Phlox	Phlox Pilosa	Special Concern Species[4]
White Heath Aster	Symphyotrichum ericoides	Special Concern Species[4]
Unnamed Sensitive Species for PADCNR	-	Special Concern Species[4]
Unnamed Sensitive Species for PADCNR	-	Endangered
Unnamed Sensitive Species for PAFBC	-	Endangered
Unnamed Sensitive Species for PAFBC	-	Threatened

Notes:

1 Species listed are according to the USFWS Information for Planning and Consultation (IPaC) Online Tool.
2 According to the NatureServe Biodiversity Report.
3 Species listed are according to the PA Natural Diversity Index (PNDI) Online Tool, accessed April 22, 2022.
4 Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.

Table 22. **Preliminary Permits, Authorizations, and Clearances**

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Federal			
Section 10 Permit Authorization	USACE – New York/ Philadelphia District	3 Months	Required when spanning or impacting a navigable waterway. Gilbert – Springfield component crosses the Delaware River, a Section 10 designated waterbody.
PASPGP-6	PADEP from USACE	3-6 Months	Reviewed concurrently with a Section 401 General Permit application. PADEP may issue authorization, or may forward to USACE for individual review, depending on project impacts. An on-site delineation would be necessary to determine the extent of necessary impacts
Endangered Species Act of 1973 Consultation	USFWS	6-12 Months	Required if proposed activities have potential effect on federally listed species.
Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act		2-4 Months	Required if activities have the potential to effect migratory birds or protected eagles.
State of NJ			
Certificate of Public Convenience and Necessity	NJ Board of Public Utilities	12-18 Months	
Freshwater Wetlands General/Individual Permit	NJDEP Division of Land Resource Protection (DLRP)	12-18 Months	May be required if aboveground structures, access roads or facilities are proposed in freshwater wetlands or transition areas.
Flood Hazard Area- General/Individual Permit	NJDEP DLRP	6-12 Months	May be needed if C-1 waters or their riparian corridors are impacted during construction on the Windsor-Clarksville component.
State Species Consultation	NJDEP DLRP	N/A	To be included with the DLRP permits
Air Quality Pre-Construction Permit	NJDEP Bureau of Stationary Sources	3-6 Months	A general permit may be required for temporary equipment.
Tidelands License	NJ Tidelands Council- NJDEP Bureau of Tidelands Management	3-9 Months	
NJPDES General Construction Stormwater Permit (5G3)	NJDEP Department of Water Quality Bureau of Stormwater Permitting	To be filed prior to construction	Coordination may be required with the local Soil Conservation District
NJPDES Basic Industrial Stormwater Permit (5G2)	NJDEP Department of Water Quality Bureau of Stormwater Permitting	6 Months	

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Green Acres Division	NJDEP Bureau of Legal Services and Stewardship – Green Acres Program	12-18 Months	File as early as possible
Access permits	NJ Department of Transportation Division of Right of Way and Access Management	12-18 Months	Joint Federal Highway Administration approval is required for crossing interstate highways
Commonwealth of PA			
Rare, Threatened, and Endangered Species Consultation	PADCNR, PFBC, PGC	0-12 Months	Required when activities have potential effect on state-listed species. Length of review time is dictated by what species (if any) are impacted and the extent of the impact.
Cultural Resources Clearance	PA SHPO	3-6 Months	Required with the submission of a federal permit, Individual NPDES permits or activities that have potential effect on historic or archaeological resources
Submerged Land License Agreement	PADEP	3-4 Months	Required when impacting a submerged land of PA
Section 401 Clean Water Act/ Chapter 105 General Permits	PADEP	3-4 Months	Required before construction of structures, aerial crossings, or access roads in, across, or under regulated waters and wetlands
Section 401/404 Joint Permit or General Permit	PADEP/USACE	4-6 Months	Required for impacts to rivers, streams, wetlands that do not qualify for a Section 401 State General Permit. An on-site delineation would be necessary to determine the extent of necessary impacts.
NPDES Individual Construction Stormwater Permit	PADEP Southeast Regional Office	6-8 Months	Required when construction activity disturbs more than 1-acre. Individual Permit is required when working in a HQ or EV watershed.
Highway Occupancy Permit	PA Department of Transportation, District 6	3 Months	PennDOT HOPs are required to install utilities in PennDOT right-of-way not anticipated to be required.
Driveway Permit			PennDOT driveway permits applications are required to enter and exit from state roads.
Aerial Crossing Permit			Consultant assumes PennDOT aerial crossing permits only required for limited access roadways.
Excessive Maintenance Agreement			PennDOT EMAs are required to for hauling on state roads.
Middlesex, Mercer, Bergen, Union, and Hunterdon Counties (NJ)			
Consultation on NJDEP permits (air, waste, noise, water)	County Environmental Health Division	-	
Road Permit (potential, for work on county roads)	Office of Public Works	1-3 Months	

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Site plan application (potential, for work on county roads)	Office of Planning	3-6 Months	
Municipal (NJ)			
Construction Permit	North Brunswick, South Brunswick, East Brunswick, Robbinsville, West Windsor, Hamilton, Lawrence, Edison, and Holland Townships and Ridgefield Borough	-	Local submittals to follow permit applications
Floodplain Permit	North Brunswick, South Brunswick, East Brunswick, Robbinsville, West Windsor, Hamilton, Lawrence, Edison, and Holland Townships and Ridgefield Borough	-	
Street Opening Permit	North Brunswick, South Brunswick, East Brunswick, Robbinsville, West Windsor, Hamilton, Lawrence, Edison, and Holland Townships and Ridgefield Borough	1-3 Months	Additional local approvals and authorizations could be required for structures and permanent land alterations
Site Plan Approval (Substation upgrades)	Freehold, South Brunswick, and Cranford Townships	3-9 Months	NJ Board of Public Utilities may be able to override local regulatory approvals Additional approvals from local authorities could be required for structures and permanent land activities
Variance/Rezoning (Substation upgrades)	Freehold, South Brunswick, and Cranford Townships	3-12 Months	Assuming only aboveground structures will be associated with the proposed updates to substations
Zoning Permit (Substation upgrades)	Freehold, South Brunswick, and Cranford Townships	-	

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Building Permit (Substation upgrades)	Freehold, South Brunswick, and Cranford Townships	1-3 Months	Assuming only aboveground structures will be associated with the proposed updates to substations
Bucks County (PA)			
Erosion and Sediment Control Plan	Bucks County Conservation District	1-4 Months	
Municipality (PA)			
Act 167 Stormwater Management Plan	Bucks County and Richland, Durham, Springfield, Bridgeton, Haycock, Nockamixon Townships in PA	1-3 Months	Consultation with each governing municipality should be conducted early in the planning process to determine precise timeframes and requirements.
Construction Permit	Bucks County and Richland, Durham, Springfield, Bridgeton, Haycock, Nockamixon Townships in PA	1-3 Months	
Floodplain Permit	Bucks County and Richland, Durham, Springfield, Bridgeton, Haycock, Nockamixon Townships in PA	1-3 Months	
Road Permits	Bucks County and Richland, Durham, Springfield, Bridgeton, Haycock, Nockamixon Townships in PA	1-3 Months	May include Stormwater Management Ordinances, Roadway Occupancy Permits, Excessive Maintenance Agreements and Driveway Permits
Private			
Railroad Permit	Delaware and Rockway River Railroad, Conrail	TBD	Gilbert – Springfield component crosses D&R RR lines, Windsor – Clarksville crosses Conrail rail lines.

NEETMH Proposal 331 Permit Tables

Table 23. **NJDEP Division of Land Resources Protection Special Areas**

Special Area	Presence	Facility Involved	Comment
Atlantic City	No	-	-
Beaches	No	-	-
Canals	No	-	-
Coastal bluffs	Not likely	-	Based on review of aerial imagery
Coastal high hazard areas	No	-	-
Critical wildlife habitats	Unknown		Until maps are publicly available, sites must be considered on a case-by-case basis by the NJDEP's Division of Fish and Wildlife.
Dredged material management areas	No	-	-
Dry borrow pits	Not Likely	-	Based on review of aerial imagery
Dunes	Not Likely	-	Based on review of aerial imagery
Endangered or threatened wildlife or plant species habitat	Yes	All Facilities	Natural Heritage Priority Sites: Shark River Station Site, JCPL Swamp Natural Heritage Grids: 38 Grids crossed by project
Erosion hazard areas	Not Likely	-	Based on Review of aerial imagery
Excluded federal lands	No	-	-
Existing lagoon edges	Not Likely	-	Based on review of aerial imagery
Farmland conservation areas	Yes	Larrabee-Atlantic-Windsor-E Windsor	Krystal Farms, Tullo Vaccaro Farm
Filled water's edge	Yes	All Facilities	44 areas along route where Historic fill data overlaps mapped wetlands or streams
Finfish migratory pathways	Yes	New Prospect Road-Smithburg Larrabee-New Prospect Road Windsor-Clarksville Raritan River-Kilmer	North Branch Metedeconk River-Alewife Assunpink Creek-Alewife Raritan River- Blueback Herring
Flood hazard areas	Yes	All Facilities	Floodplains Types: A, AE
Geodetic control reference marks	Yes	Atlantic-Larrabee Larrabee-New Prospect Road	3 located within ROW
Hackensack Meadowlands District	No	-	-

Special Area	Presence	Facility Involved	Comment
Historic and archaeological resources	Yes	Atlantic-Oceanview Atlantic-Larrabee Larrabee-New Prospect Road Windsor-Clarksville Raritan River-Kilmer	Historic Districts: Camp Kilmer Military Reservation Historic District, Pennsylvania railroad New York to Philadelphia Historic District, Metuchen to Burlington Transmission Line, Camden and Amboy Railroad Main Line Historic District, New Jersey Southern Railroad Historic District, Garden State Parkway Historic District Archaeological Site Grids: 9 Eligible, and 6 identified Grids
Hudson River Waterfront Area	No	-	-
Intermittent stream corridors	Yes	All Facilities	Ambrose Brook, Ambrose Brook UNT's, Mill Brook, Mill Brook UNT's, Rum Creek, Rum Creek UNT's, Raritan River, Raritan River UNT's, Shipetauken Creek UNT's, Assunpink Creek, Assunpink Creek UNT's, Bridgegroom Run, Bear Brook, Bear Brook UNT's, North Branch Metedeconk River, North Branch Metedeconk River UNT's, Snake Creek, South Creek, Dick's Brook, Haystack Brook, Tarkiln Brook, Woodcock Brook, Muddy Ford Brook, Muddy Ford Brook UNT's, Squankum Brook, Masasquan River, Masasquan River UNT's, Mingamahone Brook, tree Swamp Brook, Tree Swamp Brook UNT's, Webley's Brook, Shark River Brook, Shark River Brook UNT's, Jumping Brook, Jumping Brook UNT's, Betty Brook, Hollow Brook
Lands and waters subject to public trust rights	Yes	Raritan River-Kilmer	Raritan River
Overwash areas	Not Likely	-	Based of review of aerial imagery
Pinelands National Reserve and Pinelands Protection Area	No	-	-
Public open space	Yes	All Facilities	Shark River Park, Allaire State Park, Bear Swamp Natural Area, 3 Municipal Open Spaces, Linear Park, Woodland Park, Edgewood Park, Turkey Swamp Park, Turkey Swamp Management area, Turnpike Park, Bear Brook Greenway, Woods Road Park, 4 green acers program parcels, Waterford Woods, Mercer County Park, South Meadows, Meadow Road South, Van Nest Wildlife Management Area, Bear Brook Park, Frank J Papaianni Jr Park

Special Area	Presence	Facility Involved	Comment
Riparian zones	Yes	All Facilities	Ambrose Brook, Ambrose Brook UNT's, Mill Brook, Mill Brook UNT's, Rum Creek, Rum Creek UNT's, Raritan River, Raritan River UNT's, Shipetauken Creek UNT's, Assunpink Creek, Assunpink Creek UNT's, Bridgegroom Run, Bear Brook, Bear Brook UNT's, North Branch Metedeconk River, North Branch Metedeconk River UNT's, Snake Creek, South Creek, Dick's Brook, Haystack Brook, Tarkiln Brook, Woodcock Brook, Muddy Ford Brook, Muddy Ford Brook UNT's, Squankum Brook, Masasquan River, Masasquan River UNT's, Mingamahone Brook, Tree Swamp Brook, Tree Swamp Brook UNT's, Webley's Brook, Shark River Brook, Shark River Brook UNT's, Jumping Brook, Jumping Brook UNT's, Betty Brook, Hollow Brook
Shellfish habitat	No	-	-
Special hazard areas	Yes	Atlantic-Oceanview Atlantic-Larrabee New Prospect Road-Smithburg	Hurricane evacuation routes: NJ-18, NJ-66, Garden State Parkway, NJ-33, I-195, US-9 Hazardous Waste Facilities: Monmouth Co Reclamation Transfer Station Rosano Howell Land, LLC John Blewett, Inc Resource Engineering, LLC
Special urban areas	Yes	Atlantic-Oceanview Larrabee-New Prospect Road	Neptune Township Lakewood Township
Specimen trees	No	-	-
Steep slopes			
Submerged vegetation habitat	No	-	-
Wet borrow pits	Not Likely	-	Based on review of aerial imagery
Wetland buffers	Yes	All Facilities	See Wetlands Below
Wetlands	Yes	All Facilities	Types Present: Deciduous Wooded wetlands Coniferous Wooded wetlands Mixed Wooded wetlands Deciduous Scrub/Shrub wetlands Coniferous Scrub/Shrub wetlands Mixed Scrub/Shrub wetlands Herbaceous wetlands Modified wetlands Saline Marsh (Low Marsh) wetlands Saline Marsh (High Marsh) wetlands Phragmites Dominant Costal wetlands
Wild and scenic river corridors	No	-	-

Table 24. **Federally- and State-Listed Threatened and Endangered Species**

Common Name	Species Name	Status
Federal[1]		
Indiana Bat	Myotis sodalist	Endangered
Northern Long-Eared Bat	Myotis septentrionalis	Threatened
Bog Turtle	Glyptemys muhlenbergii	Threatened
Monarch Butterfly	Danaus plexippus	Candidate
American Chaffseed	Schwalbea americana	Endangered
Kienskern's Beaked-rush	Rhynchospora knieskernii	Threatened
Swamp Pink	Helonias bullata	Threatened
State-Listed[2]		
Shortnose Sturgeon	Acipenser brevirostrum	Endangered
Atlantic Sturgeon	Acipenser oxyrinchus	Endangered
Triangle Floater	Alasmidonta undulata	Threatened
Brook Floater	Alasmidonta varicose	Endangered
Henslow's Sparrow	Ammodramus henslowii	Endangered
Grasshopper Sparrow	Ammodramus savannarum	Threatened
Short-eared Owl	Asio flammeus	Endangered
Long-eared Owl	Asio otus	Threatened
Fin Whale	Balaenoptera physalus	Endangered
Upland Sandpiper	Bartramia longicauda	Endangered
Silver-bordered Fritillary	Boloria selene myrina	Threatened
American Bittern	Botaurus lentiginosus	Endangered
Cattle Egret	Bubulcus ibis	Threatened
Red-shouldered Hawk	Bueto lineatus	Endangered
Red Knot	Calidris canutus	Endangered
Loggerhead Sea Turtle	Caretta caretta	Endangered
Piping Plover	Charadrius melodus	Endangered
Green Sea Turtle	Chelonia mydas	Threatened
Norther Harrier	Circus hudsonius	Endangered
Timber Rattlesnake	Crotalus horridus	Endangered
Leatherback Sea Turtle	Dermochelys coriacea	Endangered
Bobolink	Doichonyx oryzivorus	Threatened
Horned Lark	Eremophila alpestris	Threatened
Peregrine Falcon	Falco peregrinus	Endangered
American Kestrel	Falco sparverius	Threatened
Wood Turtle	Glyptemys inscuplta	Threatened
Bog Turtle	Glyptemys muhlenbergii	Endangered

Common Name	Species Name	Status
Bald Eagle	Haliaeetus leucocephalus	Threatened
Pine Barrens Treefrog	Hyla andersonii	Threatened
Southern Gray Treefrog	Hyla chrysocelis	Endangered
Eastern Lampmussel	Lampsilis radiata	Threatened
Loggerhead Shrike	Lanius ludovicianus	Endangered
Green Floater	Lasmigona subviridis	Endangered
Kemp's Ridley Sea Turtle	Lepidochelys kempii	Endangered
Eastern Pondmussel	Ligumia nasuta	Threatened
Bobcat	Lynx rufus	Endangered
Humpback Whale	Megaptera novaeangliae	Endangered
Red-headed Woodpecker	Melanerpes erythrocephalus	Threatened
Yellow-crowned Night-Herron	Nyctanassa violacea	Threatened
Black-crowned Night-Heron	Nycticorax nycticorax	Threatened
Osprey	Pandion Haliaetus	Threatened
Savannah Sparrow	Passerculus sandwichensis	Threatened
Northern Pinesnake	Pituophis melanoleucus melanoleucus	Threatened
Vesper Sparrow	Pooecetes gramineus	Endangered
Black Skimmer	Rynchops niger	Endangered
Least Tern	Sternula antillarum	Endangered
Barred Owl	Strix varia	Threatened
Seabeach Amaranth	Amarantha pumilus	Endangered
Puttyroot	Aplectrum yemale	Endangered
Pawpaw	Asimina triloba	Endangered
Saline Orache	Atriplex subspicata	Endangered
Eaton's Beggarticks	Bidens etonii	Endangered
Pickering's Reedgrass	Calamagrostis pickerinii	Endangered
Buttonbush Dodder	Cuscuta cephalanthi	Endangered
Lancaster Flatsedge	Cyperus lancasteriensis	Endangered
Schweinitz's Flatsedge	Cyperus schweinitzii	Endangered
Squirrel-corn	Dicentra canadensis	Endangered
Pine Barrens Boneset	Eupatorium resinosum	Endangered
Swamp Pink	Helonias Bullata	Endangered
Featherfoil	Hottonia inflata	Endangered
Goldenseal	Hydrastis canadensis	Endangered
Floating Marsh-pennywort	Hydrocotyle ranunculoides	Endangered
New Jersey Rush	Juncus caesariensis	Endangered

Common Name	Species Name	Status
Torrey's Rush	Juncus torreyi	Endangered
Minute Duckweed	Lemna perpusilla	Endangered
Hairy Woodrush	Luzula acuminata var. acuminata	Endangered
Lanceleaf Loosestrife	Lysimachia hybrida	Endangered
Slender Water-milfoil	Myriophyllum tenellum	Endangered
Wild Blue Phlox	Phlox divaricate ssp. Divaricate	Endangered
Dwarf Plantain	Plantago pusilla	Endangered
Torrey's Mountainmint	Pycnanthemum torrei	Endangered
Seabeach Knotweed	Polygonum glaucum	Endangered
Knieskern's Beaksedge	Rhynchospora knieskernii	Endangered
Southern Arrowhead	Sagittaria australis	Endangered
Slatmarsh Bulrush	Schoenoplectus maritimus	Endangered
Beaked Cornsalad	Valerianella radiata	Endangered
Deathcamas	Zigadenus leimanthoides	Endangered

Notes:

1 Species listed are according to the USFWS Information for Planning and Consultation (IPaC) Online Tool.

2 According to the NatureServe Biodiversity Report.

Table 25. **Preliminary Permits, Authorizations, and Clearances**

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Federal			
Section 10 Permit Authorization	USACE – New York and Philadelphia Districts	3 months	Required when spanning or impacting a navigable waterway.
Endangered Species Act of 1973 Consultation	USFWS	6-12 months	Required if proposed activities have potential effect on federally-listed species.
Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act		2-4 months	Required if activities have the potential to effect migratory birds or protected eagles.
State of New Jersey			
Certificate of Public Convenience and Necessity	New Jersey Board of Public Utilities	12-18 months	
Freshwater Wetlands General/Individual Permit	NJDEP, DLRP	12-18 months	May be required if aboveground structures, access roads or other facilities are proposed in freshwater wetlands or transition areas.
Coastal Wetlands General/Individual Permit	NJDEP DLRP	6-12 months	Project is not located within the CAFRA zone. NJDEP Coastal Wetland Maps will need to be referenced to determine if impacts to regulated coastal wetlands are proposed.
Federal Coastal Zone Consistency Determination	NJDEP DLRP	-	
Flood Hazard Area- General/Individual Permit	NJDEP DLRP	6-12 months	C1 Waters are crossed on the Project's Atlantic-Larrabee and Larrabee-New Prospect Road components. A Flood Hazard Area Permit may be needed if impacts are proposed to these waters during construction
State Species Consultation	NJDEP DLRP	N/A	To be included with the DLRP permits
Air Quality Pre-Construction Permit	NJDEP Bureau of Stationary Sources	3-6 months	A General Permit may be needed for the use of temporary equipment
Tidelands License	New Jersey Tidelands Council- NJDEP Bureau of Tidelands Management	3-9 months	Raritan River Substation and portions of Raritan River- Kilmer are within NJ Tidelands

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
NJPDES General Construction Stormwater Permit (5G3)	NJDEP Department of Water Quality Bureau of Stormwater Permitting	To be filed prior to construction	Coordination may be required with the local Soil Conservation District
NJPDES Basic Industrial Stormwater Permit (5G2)	NJDEP Department of Water Quality Bureau of Stormwater Permitting	6 Months	
Green Acres Division	NJDEP Bureau of Legal Services and Stewardship – Green Acres Program	12-18 months	File as early as possible proposed projects are within existing ROWs, some impacts may pre-date Green Acres regulations
Roadway permits	New Jersey Department of Transportation Division of Right of Way and Access Management	6 Months	Joint Federal Highway Administration approval for crossing of interstate 95 and 195. Garden State Parkway, US 9, and NJ 18 may also be required local approvals. Oversized load permits may be required for substation upgrade equipment.
License to Cross	New Jersey Turnpike Authority	TBD	New Jersey Turnpike Authority manages the New Jersey Turnpike (I-95) and Garden State Parkway The Turnpike Authority encourages submittal of license to cross as soon as possible
Middlesex, Mercer, Monmouth, and Ocean Counties			
Consultation on NJDEP permits (air, waste, noise, water)	Middlesex, Mercer, Monmouth, and Ocean Counties	-	
Road Permit (potential, for work on county roads)	Office of Public Works	1-3 months	
Site plan application (potential, for work on county roads)	Office of Planning	3-6 months	

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Municipal			
Construction Permit	Freehold, Howell, Lakewood, Jackson, Neptune, Colts Neck, and Edison Townships and Tinton Falls and Sayreville Boroughs	-	Substation upgrades may require a local site plan and construction approvals. Municipalities with transmission line construction may require approval or notifications.
Floodplain Permit	Freehold, Howell, Lakewood, Jackson, Neptune, Colts Neck, and Edison Townships and Tinton Falls and Sayreville Boroughs	-	
Street Opening Permit	Freehold, Howell, Lakewood, Jackson, Neptune, Colts Neck, and Edison Townships and Tinton Falls and Sayreville Boroughs	1-3 Months	Additional local approvals and authorizations could be required for structures and permanent land alterations
Site Plan Approval (Substation expansion)	Freehold, Howell, Lakewood, Jackson, Neptune, Colts Neck, and Edison Townships and Tinton Falls and Sayreville Boroughs	3-9 months	NJ Board of Public Utilities may be able to override local regulatory approvals Additional approvals from local authorities could be required for structures and permanent land alterations
Variance/Rezoning	Freehold, Howell, Lakewood, Jackson, Neptune, Colts Neck, and Edison Townships and Tinton Falls and Sayreville Boroughs	3-12 months	Assuming only aboveground structures will be associated with the proposed substation upgrades
Zoning Permit	Sayreville Borough,	-	
Building Permit		1-3 months	

Permit/Approval	Regulatory Agency	Agency Review Timeframe	Comments
Street Opening Permit	Freehold, Howell, Lakewood, Jackson, Neptune, Colts Neck, and Edison Townships and Tinton Falls and Sayreville Boroughs	1-3 months	
Private			
Railroad Permit	Consolidated Rail Corporation (Conrail), New Jersey Transit	TBD	Crossings are proposed within an existing ROW, agreements may already be in place.

NEETMH Proposal 793 Permit Table

Table 26. **Atlantic, Camden, and Ocean Counties, New Jersey**

Agency	Permit/Approval	Trigger	Potential for Need	Permit Risk	Lead/ Processing Time	Permit Fees	Future Actions/Comments
FEDERAL							
Lead Federal Agency	National Environmental Policy Act (NEPA) Review - Categorical Exclusion (CE), Environmental Assessment (EA), or Environmental Impact Statement (EIS)	Any Project that has a federal nexus, such as a Project that occurs on federally-managed land, receives federal funding, or requires a federal permit or other federal authorization will require a NEPA review (National Environmental Policy Act of 1969, 42 U.S.C. §4332).	TBD	No Issue	CE - Lead: 2 months EA - Lead: 2 months Processing: 6 to 10 months; EIS - Lead: 3 months Processing: 12 to 20 months	No fees; however, Applicant is typically responsible for cost of preparing the environmental document and supporting studies, as appropriate. (**This note may apply to numerous permits or approvals below**)	NEPA review will be required if the Project will be built on or crosses a federal easement or federally owned or managed lands such as but not limited to: National Forest Service (NFS), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Bureau of Land Management (BLM) and etc., or if the Project relies on a U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) real estate mortgage, a Department of Energy (DOE), or Rural Development (RD) Rural Energy for America Program (REAP) loan guarantee, etc. Consultant recommends further review and determination of NEPA triggers that may be associated with the Project as additional Project details become available.
	Federal Section 106 Review	Any Project requiring a federal permit or other authorization is subject to National Historic Preservation Act of 1966 (as amended) (NHPA) Section 106 Review.	TBD	No Issue	Lead: 1 month; Processing: 4-6 months	None	Determine whether a federal nexus exists for the Project. This nexus would trigger Section 106 compliance under the National Historic Preservation Act (NHPA) and should be completed prior to ground disturbance associated with any project. The federal lead agency would determine scope of work in coordination with the New Jersey Historic Preservation Office and appropriate Tribal Historic Preservation Offices (THPOs).

U.S. Army Corps of Engineers (USACE)	Clean Water Act (CWA) Nationwide Permit (NWP). Authorization for discharge of fill to Waters of the US (WOTUS) under Section 404 of the CWA. Applicable NWPs include: NWP 14 Linear Transportation projects, NWP 18 Minor Discharges, NWP 33 Temporary Construction, Access, and Dewatering, NWP 57 Electric Utility Line and Telecommunications Activities.	Discharge of fill to a jurisdictional waters of the US.	Moderate -High	Moderate Risk	Lead: 4 weeks; 30 day completeness review, 45 days for notification of permit coverage by USACE	None	Project is located in USACE Philadelphia District. 100 Penn Square East, Wanamaker Bldg, Philadelphia, PA 19107-3390. 215-656-6728 Information to consider: a desktop wetland evaluation can be completed for planning. An on-site wetland delineation within construction footprint is required to obtain NWP coverage for projects that result in discharge to WOTUS greater than 0.1 ac in extent. Delineations must be conducted in conformance with the 1987 USACE Wetlands Delineation Manual and the applicable Regional Supplement. The U.S. Army Corps of Engineers (USACE) generally regulates the discharge of dredged and fill material into waters of the U.S. under Section 404 of the Federal Clean Water Act (CWA) however in the State of New Jersey, Section 404 Jurisdiction has been assumed by the State and is enforced through the Freshwater Wetlands Protection Act. In most cases, the State of New Jersey maintains sole jurisdiction over wetlands, however the USACE still works closely with the NJDEP and maintains joint jurisdiction over navigable waters and other interstate waters.
	Approved Jurisdictional Determination (AJD)	This is the at Applicants request; it is not required by the USACE.	TBD on project to project basis	No Issue	Lead: 2 weeks; Processing: 4-12 months (dependent on complexity of water resources)	None	An AJD is an official USACE determination that jurisdictional wetlands or WOTUS are either present or absent on the property. AJDs can generally be relied upon for five years and may be appealed through the USACE administrative appeal process.
	Preliminary Jurisdictional Determination (PJD)	This is the at Applicants request; it is not required by the USACE.	TBD on project to project basis	No Issue	Lead: 2 weeks; Processing: 1 month	None	A PJD is a non-binding written indication from the USACE that waters, including wetlands, may be WOTUS. A permit decision made on the basis of a PJD will often treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. A PJD is advisory in nature and may not be appealed.
	CWA Section 404 Regional General Permit (RGP) or Nationwide Permit (NWP) for authorization of discharge to WOTUS.	Generally speaking, discharge or fill placed in a jurisdictional WOTUS resulting in loss of more than 0.1 acre of WOTUS.	Moderate	Moderate Risk	Lead: 1 month; Processing: 2-4 months	None	Consultant recommends designing the Project to avoid/minimize impacts to wetland and water resources to the greatest extent practicable. It is also recommended to design the Project in order to take advantage of applicable non-reporting NWPs or RGPs. A Pre-Construction Notification (PCN) is required for the locations, impact thresholds, and activities listed in the particular RGP or NWP. Section 404 Jurisdiction has been assumed by the State and is enforced through the Freshwater Wetlands Protection Act.

	CWA Section 404 Individual or Standard Permit (IP or SP) for authorization of discharge to WOTUS exceeding RGP or NWP limits, resulting in more than minimal adverse effects to WOTUS.	Discharge or fill placed in a jurisdictional WOTUS resulting in loss of more than 0.5 acre of WOTUS.	Low-Moderate	No Issue	Lead: 1 month; Processing: 6-12 + months	Permit issuance fee of $10 for non-commercial Projects and $100 for commercial Projects. Applicant is responsible for studies and mitigation costs if applicable.	Consultant recommends designing the Project to avoid/minimize impacts to wetland and water resources to the greatest extent practicable. An individual permit will require an alternatives analysis demonstrating that the Project has been designed to avoid and minimize temporary and permanent impacts to WOTUS. Generally speaking, compensatory mitigation will be required for all permanent WOTUS impacts exceeding 1,000 square feet. A 30 day public notice period is required.
	Rivers and Harbors Act Section 10 Crossing Permit	Construction of any structure in, over or under a navigable water (Section 10 Waters) of the U.S.	Low	Moderate Risk	Lead: 1 month; Processing: 4 to 6 months.	Permit issuance fee of $10 for non-commercial projects and $100 for commercial projects. Applicant is responsible for studies and mitigation costs if applicable.	Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the USACE, for construction of any structure or work in, under or over any navigable water of the US. Requires PCN. Section 10 waters are major water bodies such as the Delaware River. Project development avoids Section 10 waterways, therefore it is unlikely any Rivers and Harbors Action Section 10 Crossing Permits will be necessary.
U.S. Department of the Interior Bureau of Ocean Management (BOEM)	Outer Continental Shelf (OCS) Renewable Energy Lease	Required for "commercial activities" conducted in Federal OCS lands.	Low	No Issue	Lead: 1 month; Processing: 4 to 12 + months	TBD	The Energy Policy Act of 2005 (EPAct) authorized BOEM to issue leases, easements and rights of way to allow for renewable energy development on the Outer Continental Shelf (OCS). EPAct provided a general framework for BOEM to follow when authorizing these renewable energy activities. For example, EPAct requires that BOEM coordinate with relevant Federal agencies and affected state and local governments, obtain fair return for leases and grants issued, and ensure that renewable energy development takes place in a safe and environmentally responsible manner. An OCS Renewable Energy Lease under 30 CFR Ch. V (7–1–14 Edition) is required for any commercial activities conducted in Federal OCS lands. Commercial activities for renewable energy leases and grants is defined as all activities associated with the generation, storage, or transmission of electricity or other energy product from a renewable energy project on the OCS. It is likely that construction of a transmission line for an offshore renewable energy projects in the OCS will trigger the need for an OCS Renewable Energy Lease. Consultant recommends further review of the OCS areas and the proposed offshore renewable energy project to determine the need for an OCS Renewable Energy Lease.

U.S. Fish and Wildlife Service (USFWS)	Section 7 Endangered Species Act (ESA) Consultation	Any project with a federal nexus that may adversely affect a listed threatened, endangered, or candidate species as determined by the lead federal agency.	Initial Consultation Completed	Moderate Risk	Lead: 1 month; Processing: 2 to 6 months	None	The U.S. Fish and Wildlife Service (USFWS) (2022) Information for Planning and Consultation (IPaC) request identified one federally endangered, three federally threatened, and one candidate species as potentially occurring within the Project Area or surrounding region. These species include the northern long-eared bat (NLEB) (Myotis septentrionalis), Monarch Butterfly (Danaus plexippus), American Chaffseed (Schwalbea americana), Knieskern's Beaked-rush (Rhynchospora knieskernii), and Swamp Pink (Helonias bullata). The species identified in the IPaC and their probability of occurrences are described in more detail in the Report prepared for #793. It is recommended that all tree clearing take place during the inactive season (November 1 – March 31), or, at a minimum, outside of the pup-rearing season which occurs from June 1 – July 31. If the Project Area will be requiring wetlands permitting, swamp pink evaluation or surveys may be required. Nesting surveys for bald eagles are recommended. If present, all active eagle nests require at least a 660' construction buffer during the breeding season.
	Section 10a ESA Incidental Take Permit	Potential for "Take" of a federally endangered or threatened species resulting from a project requiring federal funding, permit, or approval.	TBD	No Issue	Lead: 6-8 months; Processing: 12 to 24 months	The cost of a Biological Assessment and Habitat Conservation Plan are borne by the project proponent.	If lead federal agency determines that a project may adversely affect a listed species a Biological Assessment (BA) must be prepared to identify impacts to federally-listed species in the project area are likely to occur. A Habitat Conservation Plan (HCP) must be prepared to identify conservation measures to offset the permitted take of listed species under ESA Section 10. EA, and 30 day public notice required.
Environmental Protection Agency (EPA)	Oil Pollution Act (OPA) Spill Prevention Control and Countermeasure (SPCC) Rule	Onsite above-ground oil storage tanks with an aggregate capacity of 1,320 gallons or underground storage tanks with total capacity over 42,000 gallons in a location where discharge may reach navigable waters or adjoining shorelines.	Low	No Issue	Lead: 3 weeks; Processing: 1 month	None	Assumes the Project will have no oil or petroleum storage that would surpass triggers; if not, reassess whether an SPCC Plan is required. If temporary storage is needed above the threshold, a SPCC Plan still applies.
	Resource Conservation and Recovery Act (RCRA) Notification requirements for regulated waste activity	Generation of not more than 100 kg (220 lbs.) of hazardous waste and less than 1 kg (2.2 lb.) of acute hazardous waste, and no more than 100 kg of acute spill residue or soil per month.	Low	No Issue	Lead: 1 week; Processing: 1 week	None	Assess the potential volume of hazardous waste that will be generated by the Project. Confirm that the Project will not generate not more than 100 kg (220 lbs.) of hazardous waste and less than 1 kg (2.2 lb.) of acute hazardous waste, and no more than 100 kg of acute spill residue or soil per month to qualify as a Very Small Quantity Generator. In the event that any of these thresholds are exceeded, evaluate record keeping and reporting requirements at 40 CFR part 262.

U.S. Department of Agriculture (USDA)	Form AD-1006, Farmland Conversion Impact Rating for Farmland Conversion under Farmland Protection Policy Act (FPPA)	A project that uses federal financing, loans, or assistance and will convert farmland to nonagricultural use.	TBD	No Issue	Lead: 3 weeks; Processing: 1 month	None	Confirm that the Project does not involve federal funding or assistance and, therefore, does not require Form AD-1006. A discussion with the local Natural Resources Conservation Service (NRCS) may be necessary.
	Form AD-1026, Highly Erodible Land Conservation (HELC)	A project that converts land enrolled in federal farm programs to make production of a commodity crop possible.	TBD	No Issue	Lead: 3 weeks; Processing: 1 to 3 months	None	Confirm that the Project will not convert federal farm program wetlands or highly erodible lands to make production of a commodity crop possible.
	Environmental Assessment (EA) for Class I Action (Form RD1940-21)	Leased lands include property encumbered by federal Farm Service Agency (FSA) or Farmers Home Administration (FmHA) real estate mortgages. Projects that use federal financing, loans, or assistance.	Low	No Issue	Lead: 1 month; Processing: 2 to 3 months	None	If Project plans call for leasing land, determine whether leased lands for the Project are encumbered by FSA or FmHA federally guaranteed real estate mortgages as soon as possible. Also confirm whether Project will use federal financing, loans, or assistance.
	Conservation Reserve Program (CRP) Contract Amendment	Project affects lands enrolled in CRP.	Low	No Issue	Lead: 2 weeks; Processing: 1 to 2 months	Reimbursement of past CRP payments plus interest for impact area.	Obtain confirmation from landowners that affected lands are not enrolled in CRP.
	A loan guarantee from USDA RD Rural Business-Cooperative Service (RBCS)	Application for a RBCS loan guarantee.	Low	No Issue	Lead: 1 month; Processing: 1-2 months	None	Determine whether a federal loan guarantee is sought as soon as possible.
Federal Aviation Administration (FAA)	Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard)	Needed for construction of any structure exceeding 200 feet in height.	Low	No Issue	Lead: 1 week; Processing: 3 to 6 months, possibly longer if there are identified constraints.	None	The proposed Project is unlikely to trigger Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard) through the Federal Aviation Administration (FAA) for construction of any structure exceeding 200 feet in height.
	Notice of Actual Construction or Alteration (Form 7460-2)	Needed for construction of any structure exceeding 200 feet in height.	Low	No Issue	Lead: 1 week; Processing: 1 week	None	Should the filing of Form 7460-1 reveal that the proposed Project has potential to impact navigable airspace, Notice of Actual Construction or Alteration will be required prior to initiating construction activities.
STATE							

New Jersey Board of Public Utilities (BPU)	NJ Rev Stat § 40:55D-19 - Appeal	An electric utility may appeal a disapproval from a single municipality in the event of the Project being denied in accordance with local municipal regulations.	TBD	No Issue	Lead: 35 days; Processing: 35 days	TBD	If a public utility, as defined in R.S.48:2-13, or an electric power generator, as defined in section 3 of P.L.1999, c.23 (C.48:3-51), is aggrieved by the action of a municipal agency through said agency's exercise of its powers under this act, with respect to any action in which the public utility or electric power generator has an interest, an appeal to the Board of Public Utilities of the State of New Jersey may be taken within 35 days after such action without appeal to the municipal governing body pursuant to section 8 of this act unless such public utility or electric power generator so chooses. In such case appeal to the Board of Public Utilities may be taken within 35 days after action by the governing body. A hearing on the appeal of a public utility to the Board of Public Utilities shall be had on notice to the agency from which the appeal is taken and to all parties primarily concerned, all of whom shall be afforded an opportunity to be heard. If, after such hearing, the Board of Public Utilities shall find that the present or proposed use by the public utility or electric power generator of the land described in the petition is necessary for the service, convenience or welfare of the public, including, but not limited to, in the case of an electric power generator, a finding by the board that the present or proposed use of the land is necessary to maintain reliable electric or natural gas supply service for the general public and that no alternative site or sites are reasonably available to achieve an equivalent public benefit, the public utility or electric power generator may proceed in accordance with such decision of the Board of Public Utilities, any ordinance or regulation made under the authority of this act notwithstanding. This act or any ordinance or regulation made under authority thereof, shall not apply to a development proposed by a public utility for installation in more than one municipality for the furnishing of service, if upon a petition of the public utility, the Board of Public Utilities shall after hearing, of which any municipalities affected shall have notice, decide the proposed installation of the development in question is reasonably necessary for the service, convenience or welfare of the public.
New Jersey Historic Preservation Office (HPO)	Cultural and Historic Resources Review (Technical Assistance)	Required for State and Federal Undertakings, including a variety of NJDEP Permits listed below.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 30 days	None	Depending on other permit triggers including the Department of Environmental Protections Freshwater Wetlands Permit, CAFRA Permit, and more, a Cultural and Historic Resources Review (Email Submittal Form) may be required as a part of Project development. Any federal undertakings will require a Cultural and Historic Resources review under Section 106.
New Jersey Department of Environmental Protection (NJDEP)	5G3 - Construction Activity Stormwater General Permit	Construction activity disturbing one or more acres of land. Requires development of site specific SWP3 and compliance with all SWP3 conditions.	High	No Issue	Lead: 4 weeks; Processing: Estimated 3-4 weeks	TBD	Permit Number: NJ0088323 (5G3 - Construction Activity Stormwater General Permit) became effective on March 1, 2022 and will expire February 28, 2027. Project development will require NJ0088323 for disturbances greater than one acre. Prepare a Stormwater Pollution Prevention Plan (SWPPP) as part of construction plans; prepare and submit the NJ0088323 application along with a complete Request for Authorization (RFA) and the appropriate fee required under N.J.A.C. 7:14A-3.1(j) shall be submitted via the NJDEP Online Portal. Authorization becomes effective when the Department certifies the

							RFA. Local conservation district approval of a Soil Erosion and Sediment Control (SESC) Plan may be required prior to RFA certification.
	401 Water Quality Certification	Projects requiring fill in Water of the US require a Water Quality Certification. Typically associated with USACE Permits and State Individual Permits.	TBD	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	A 401 Water Quality Certification authorization is required as a part of federal waterway/wetland permitting. Design project to avoid/minimize wetlands to the extent practicable. Align infrastructure to avoid temporary and permanent impacts to wetlands, waterways, and drainages. If the Project design includes impacts to wetlands or waterways, it is recommended to request an early coordination meeting with NJDEP staff to ensure all State permitting requirements are met.
	Freshwater Wetlands (FWW) Individual Permit and FWW General Permits	The maintenance or construction of utility lines within freshwater wetlands, transition areas, and/or State open waters requires a Freshwater Wetlands (FWW) permit or FWW Transition Area waiver. Several FWW General Permits (GP) are available for these types of activities.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	General Permits provide a means to perform a variety of activities within a regulated freshwater wetland, freshwater wetland transition area and/or State open water, provided that the various conditions are met for the type of general permit requested. There are requirements, conditions and restrictions that apply to all general permits which must be considered prior to applying for a permit. If the proposed activity does not meet the applicable requirements, conditions, and/or restrictions, a FWW Individual Permit is available. Several noteworthy General Permits applicable to Project development include: underground utility lines (GP2), Non-tributary wetlands (GP6), above ground utility lines (GP 21), redevelopment of previously disturbed areas (GP26), and others. The #793 Project crosses numerous wetlands and watercourses and will likely require FWW General Permits or an Individual Permit. Consultant recommends initiating consultation with the NJDEP to ensure the proper permitting process is selected for construction of a transmission line with respect to freshwater wetland impacts.

	Flood Hazard Area (FHA) Individual Permit and Streams/Rivers & Flood Hazard General Permits; Permit-by-Rule (PBR) 33	Required for any structure or activity that in any manner changes, expands, or diminishes the course, current or cross-section of any watercourse or flood hazard area.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	Placement of utility poles would likely be authorized under Permit-By-Rule 33 which is for the placement of one or more utility poles, provided that the proposed design meets the applicable conditions of the permit. There are also permit-by-rules for open-frame or monopole towers. Road or bridge construction to facilitate access would like be authorized under Regional General Permit 9 if the regulated water has a drainage area less than 50 acres, otherwise an Individual Permit would likely be required. Additionally, if the Project is regulated to the Coastal Zone Management Rules at N.J.A.C. 7:7, then no separate Flood Hazard approval is required. In these instances, the applicant need only submit a report and plans demonstrating compliance with the Flood Hazard Area Control Act Rules as part of the coastal permit application. General Permits provide a means to perform a variety of activities within a regulated flood hazard area and regulated streams/rivers, provided that the various conditions are met for the type of general permit requested. There are requirements, conditions and restrictions that apply to all general permits which must be considered prior to applying for a permit. If the proposed activity does not meet the applicable requirements, conditions, and/or restrictions, a FHA Individual Permit is available. Several noteworthy General Permits applicable to Project development include: Habitat Creation/Restoration/Enhancement (GP4), Reconstruct and/or Elevation-Building in Floodway (GP5), Development SFH/Duplex and Driveway (GP6), In-kind replacement of public infrastructure (GP15), and others. The #793 Project crosses numerous special flood hazard areas and will likely require a Streams/Rivers & Flood Hazard General Permits; Permit-by-Rule (PBR) 33, or Flood Hazard Area (FHA) Individual Permit. Consultant recommends initiating consultation with the NJDEP to ensure the proper permitting process is selected for construction of a transmission line with respect to FHA impacts.

	Coastal Permitting General Permits, Waterfront Development (WFD) Individual Permit and Coastal Zone Management Federal Consistency, CAFRA Individual Permit, Coastal Wetlands Individual Permit	Required for waterfront developments and/or coastal zone impacts.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	Activities conducted in tidal waters (at or below the mean high water line) that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a Waterfront Development Individual Permit. Activities conducted in the CAFRA zone that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a CAFRA Individual Permit. Activities conducted within wetlands subject to the Wetlands Act of 1970 that do not meet the requirements will require a Coastal Wetlands Individual Permit. Activities conducted within wetlands subject to the Wetlands Act of 1970 that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a Coastal Wetlands Individual Permit. Applicable general permits include Landfall of Utilities (GP12), Eroded Shoreline Stabilization (GP17), Mod of Existing Electrical Substations (GP19), Geotechnical Survey Borings (GP23), and more. If the project is regulated pursuant to the Coastal Zone Management Rules at N.J.A.C. 7:7, then no separate Flood Hazard approval is required. In these instances, the applicant need only submit a report and plans demonstrating compliance with the Flood Hazard Area Control Act Rules as part of the coastal permit application. The #793 Project is partially located in the Coastal Area Facilities Review Act (CAFRA) Boundary and will likely require Coastal Permit-by-rule, General Permit-by-certification, General Permit, or Individual Permit. Consultant recommends initiating consultation with the NJDEP to ensure the proper permitting process is selected for construction of a transmission line.
	Tidelands License/Grant	Private use of State tidelands for Utility or Utility related project (Tidelands Act 12:3 (1 to 28) NJSA 13:1B-13.1 to 13.14).	High	Moderate Risk	Lead: 1 month; Processing: 3-12 months	Fair Market Value of Land for Grant, annual license fees depend on total amount of area licensed.	The #793 Project is partially located across twelve (12) New Jersey Riparian Tidelands in the Atlantic Central and Atlantic North Tidelands Regions. Of the 12 identified tidelands, four are considered "claimed" tidelands. The State of New Jersey claims ownership of these tidelands and holds them in trust for the people of the state. The management of the tidelands is overseen by the Tidelands Resource Council, a twelve member Governor-appointed board of volunteers, along with DEP staff at the Bureau of Tidelands Management. Since tidelands are public lands, a developer must obtain written permission from the State and pay a fee in order to use these lands. Some tidelands may be sold in the form of a Riparian Grant while others may only be rented through either a Tidelands License or Lease. Consultant recommends contacting the Bureau of Tidelands Management to determine whether a Tidelands License or a Tidelands Grant would be best suited for the proposed Project.

	Permit-by-rule (PBR) 8	Construction of a utility line attached to a bridge or culvert.	TBD	No Issue	Lead: 1 month; Processing: Estimated 1-3 months	TBD	PBR 8 - authorizes construction of a utility line, including cable (electric, television, or fiber optic), telecommunication, wastewater, petroleum, natural gas, or water, attached to a bridge or culvert, provided: No excavation, dredging or filling is undertaken within the water body over which the utility line crosses; The utility line is firmly attached to the existing bridge or culvert structure so that no part of the utility line, its encasement, or any attachment device extends above or below the existing bridge or culvert structure; If the crossing is a bridge, the utility line, its encasement, and all attachment devices must be located entirely above the elevation of the low chord of the superstructure and entirely below the elevation of the bridge surface; If the crossing is a culvert, the utility line, its encasement, and all attachment devices must be located entirely above the overt elevation of the culvert and entirely below the elevation of the top of the culvert; If the utility line is a pipeline that conveys any substance other than potable water, the utility line must be sufficiently encased within ductile iron or concrete to protect the utility line from damage from impact with floating debris during floods; and If there is a predominant direction of flow within the water body, the utility line must be attached to the downstream face of the bridge or culvert; The installation of the utility line has no adverse impacts to special areas as described at N.J.A.C. 7:7-9; and Construction equipment is operated from land, the top of the bridge or culvert, or from barges, and shall under no circumstances be allowed to enter the water body. Please be advised, this PBR only applies to that portion of the utility line that will be constructed across the tidal waterway up to the mean high water line, provided a tidelands instrument has been obtained for the utility line. In addition, this PBR does not relieve the permittee from the obligation of obtaining all necessary approvals from the U.S. Army Corps of Engineers. See N.J.A.C. 7:7-4.8 for complete rule requirements.
	New Jersey Natural Heritage Program) - State T&E Species Consultation	Routinely recommended; natural resources investigations including wildlife will be required for the various coastal, wetlands, and waterway permits.	Routinely recommended	Moderate Risk	Lead: 1 week; Processing: 1-2 weeks	TBD	A Data Request was submitted to the New Jersey Natural Heritage Program for information regarding State-listed threatened and endangered species. No response has been received to date; Consultant will update the Permit Matrix and Project Reports once a response has been received.
	Construction Dewatering Permit	For temporary ground and surface water control (dewatering) diversions in excess of 100,000* gallons of water per day, the project owner must obtain a Dewatering Allocation Permit, or Dewatering Permit-by-Rule or Short Term Permit-by-Rule depending on the duration	Low	No Issue	Lead: 1 month; Processing: Estimated 1 month	TBD	Consultant recommends review of the listed permit triggers to determine if a dewatering approval will be necessary, and to determine the appropriate permit selection.

		of the diversion and the method employed.					
	Air Quality Permit	Permit requirements dependent on construction techniques and equipment used in Project development.	TBD	No Issue	Lead: 1 month; Processing: Estimated 1-2 months	TBD	Depending on the construction techniques and equipment used for Project development, a variety of air quality permit thresholds may be met. Consultant recommends reviewing construction techniques and equipment used with the Air Quality permitting thresholds discussed on the NJDEP Air Quality, Energy & Sustainability webpage.
New Jersey Department of Community Affairs	Development Plan Review	Required in the event that the local municipalities where the subcode officials and construction official do not possess code enforcement licenses of the appropriate class.	TBD	No Issue	Lead: 1 month; Processing: Estimated 1-2 months	TBD	Should any of the local permit issuing municipalities not possess code enforcement licenses of the appropriate class, a review from the Department of Community Affairs would be required. Class I : A Departmental plan review and release is required prior to the issuance of a construction permit unless the construction official and each appropriate subcode official in the municipal enforcing agency is certified as a HHS construction official or subcode official; Class II: A Departmental plan review and release is required prior to the issuance of a construction permit unless the construction official and each appropriate subcode official in the municipal enforcing agency is certified as a HHS or ICS construction official or subcode official; Class III: A Departmental plan review shall not be required except when the Department acts as the enforcing agency. Application should be made to the local construction office, not the Department. Refer to the local permitting section below for additional information.
New Jersey Pinelands Commission	Application for Development in the Pinelands Area (Certificate of Filing)	Required for developments located in the Pinelands Area.	High	Moderate Risk	Lead: 1 month; Processing: 30 days	$187.50 per acre of all land in ROW, $250 minimum	Project development will require approval of an Application for Development in the Pinelands Area through the NJ Pinelands Commission. The Project and Application should be designed in conjunction with the Pinelands Comprehensive Management Plan.
New Jersey Department of Transportation (NJDOT)	Oversize/Overweight Application for Special Hauling Permit	Permit required for vehicles exceeding the weights adopted in N.J.A.C. 13:18, Subchapter 1: Permits for Over dimensional or Overweight Vehicles	Moderate	No Issue	Lead: 1 week; Processing: 1 days to 1 week	Dependent on vehicle size and number of trips	Determine if construction of the Project will require travel on state roads with oversize/overweight vehicles. If so, determine the length, weight, and number of trips necessary to complete the Project. Consult with the DOT to select the most appropriate permit. Typically, these types of permits will be sought out by the contractor responsible for transporting materials.
	Driveway Access Permit Application	Required for driveway access construction using a State roadway.	Moderate	No Issue	Lead: 1 week; Processing: Estimated 2-4 weeks	TBD	If Project development will require any driveway access using NJDOT roadways, prior permit approval will be required.

	Application for Utility Opening (MT17A)	Required for utility infrastructure openings in NJDOT roadways.	High	Moderate Risk	Lead: 1 week; Processing: 2-4 weeks	TBD, based on square footage of opening; $725-$1,580	If Project development will require any openings on NJDOT roadways for installation of utility infrastructure, prior permit approval will be required. The Project crosses numerous New Jersey Highways and a US Highway; therefore, it is likely that approval of MT17A will be required.
	Highway Occupancy Permit (MT120A)		High	Moderate Risk	Lead: 3 weeks; Processing: Estimated 2-4 weeks	TBD based on construction activities	If Project development will require any occupancies on NJDOT roadways for installation of utility infrastructure, prior permit approval will be required. The Project crosses numerous New Jersey Highways and a US Highway; therefore, it is likely that approval of MT120A will be required.
LOCAL							
Atlantic County, NJ	Development Review	Any site plans that abut a County road or County drainage structure will require Atlantic County approval in addition to local municipal approvals.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	N.J.S.A. 40: 27 - 6.2 permits planning boards to review and either approve or disapprove site plans which are along a County road or which affect County drainage. The Project crosses County roadways and likely County drainages, a Development Review from the Atlantic County Development Review Committee (DRC) will be required for Project development. The Site Plans must be designed in conformance with the County Land Development Standards. Submission Requirements are detailed in Chapter 504.
	Highway Occupancy Permit	Permit required for construction or alteration of utility facilities occupying a County road right-of-way.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Project development will likely require approval of a Highway Occupancy Permit from Atlantic County for placement of utility infrastructure in County road rights-of-way. The Development Review must be approved prior to the Highway Occupancy Permit submittal. Several attachment forms are available for Highway Occupancies, Utility Openings, and Bridge Attachments.
Cape Atlantic Conservation District (CACD)	Soil Erosion and Sediment Control (SESC) Plan Approval	Construction activities resulting in one or more acres of earth disturbance require SESC Plan Approval from the local soil conservation district. Any land disturbances of 5,000 square feet or more need to apply for certification.	High	No Issue	Lead: 1 month; Processing: 30 days	TBD	Permittees are required to submit their applications and payment electronically online utilizing the NJDEP's Stormwater Construction Activity E-Permitting System, or via paper application to the NJDEP's Bureau of Permits Management. Soil Erosion and Sediment Control Plan applications must still be submitted to the local district offices for certification. However, for those projects requiring a NJPDES Stormwater Construction Activity permit, the district shall issue a SCD Certification Code to the permittee verifying that the 251 Plan has been approved. This code is necessary to complete either the online E-Permitting or paper RFA process. Project development may require SESC Plan Approval from CACD prior to receiving NJDEP Approval for 5G3 - Construction Activity Stormwater General Permit. Submit a SESC Plan following the Standards for Soil Erosion and Sediment Control in New Jersey document (Appendix A2). Note that a 48 hour advance notice of soil disturbance is required by CACD.
Hamilton Township, Atlantic County, NJ	Zoning Permit	Required before the construction or installation of any structure on a property.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 45 days	TBD, based on size of project	According to the Township's Zoning Map, the Project Area is located is across numerous Forested, Agricultural, Growth Areas, and Designed Commercial Zoning Districts. According to the Land Use Regulations for the Pinelands Area, public utility substations are listed as a permitted use in the Growth Areas Zoning District; however, electric transmission lines and substations are not listed as a permitted or conditional use in the Forested, Agricultural, or Designed Commercial Zoning Districts. Consultant recommends initiating a consultation meeting with Hamilton Township Staff to

							determine the appropriate permitting process for construction of the Project.
	Site Plan Review	Likely required to assess stormwater plans.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	The proposed Project will likely require approval of a Site Plan Review prior to submittal of the Zoning Permit. Site Plan Review Procedures are detailed in § 163-21 of the Hamilton Township Code of Ordinances.
	Construction Permit	No building or structure shall be erected, expanded or structurally altered until a permit therefor has been issued by the Construction Official.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Applications for a Construction Permit shall be made in accordance with the requirements of the New Jersey State Uniform Construction Code.
	Floodplain Development Permit	Required for construction activities conducted in a special flood hazard area.	TBD	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	The Project contains some areas of Zone A, characterized by a 1.0% annual chance of flooding. Should any construction activities impact a floodplain in Hamilton Township, prior permit approval would be necessary.
	Road Opening Permit	Required excavation of any Township street, sidewalk, curb, gutter roadway or any portion of a Township right of way.	TBD	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Consultant recommends reviewing Project design plans to determine if any street openings or ROW excavations will be required for Project development. Apply for permit as needed.
Egg Harbor Township, Atlantic County, NJ	Zoning Permit	Required before the construction or installation of any structure on a property.	High	No Issue	Lead: 2-3 weeks; Processing: 10 days	$100	Zoning Permits are required as a condition precedent to the commencement of a use or the construction, reconstruction, alteration, conversion or installation of a structure or building. It acknowledges that such use, structure or building complies with the provisions of Chapter 225 (Zoning) of the Township Code or by a variance authorized by the Planning Board or Zoning Board of Adjustment. Public utility installations, public services, distribution lines and mains, and substations less than 400 square feet in floor area, but not including equipment material storage yards and maintenance facilities, shall be permitted uses in all zoning districts, subject to applicable state and federal regulations.
	Site Plan Review	Required for issuance of zoning and construction permits.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	The proposed Project will require approval of a Site Plan Review prior to submittal of the Zoning and Construction Permit. Site Plan Review Procedures are detailed in § 198-15 of the Township Code of Ordinances. The Planning Board will review the Application for conformity to the Township Ordinances.
	Construction Permit	No building or structure shall be erected, expanded or structurally altered until a permit therefor has been issued by the Construction Official.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD, based on size of project	Prior to issuing a Construction Permit, a Zoning Permit must be approved by Egg Harbor Township. Applications for a Construction Permit shall be made in accordance with the requirements of the New Jersey State Uniform Construction Code.

	Road Opening Permit	Required for road opening construction activities.	TBD	No Issue	Lead: 1-2 weeks; Processing: Estimated 2-4 weeks	TBD	Consultant recommends reviewing Project design plans to determine if any street openings or ROW excavations will be required for Project development. Apply for permit as needed.
Hammonton Town, Atlantic County, NJ	Zoning Permit	Required before the construction or installation of any structure on a property.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	According to the Township's Zoning Map, the Project Area is located is across the Forested Area (FA) and Agricultural Production (AP) Zoning Districts. According to the Land Use Regulations, public service infrastructure is listed as a permitted use in the AP and FA Zoning Districts. Consultant recommends initiating a consultation meeting with Hammonton Township Staff to confirm the appropriate permitting process for construction of the Project. A Joint Land Use Board Application may be required as a part of the Zoning Permit.
	Site Plan Review	Required for issuance of zoning and construction permits.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	The proposed Project will require approval of a Site Plan Review prior to submittal of the Zoning and Construction Permit. Site Plan Review Procedures are detailed in § 175-52 of the Town Code of Ordinances. The Planning Board will review the Application for conformity to Town Ordinances.
	Construction Permit	No building or structure shall be erected, converted, expanded or altered until a permit has been issued by the Construction Official.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD, based on size of project	Applications for a Construction Permit shall be made in accordance with the requirements of the New Jersey State Uniform Construction Code.
	Floodplain Development Permit	Required for construction activities conducted in a special flood hazard area.	TBD	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	The Project contains some areas of Zone A, characterized by a 1.0% annual chance of flooding. Should any construction activities impact a floodplain in Hammonton Town, prior permit approval would be necessary.
	Tree Removal Permit	Required for removal of trees in each of four categories: Street Trees, Town Trees, Trees on Developed Lots, and Trees on Undeveloped Lots.	TBD	No Issue	Lead: 1-2 weeks; Processing: Estimated 2-4 weeks	$150	In accordance with Hammonton Municipal Code, Chapter 267, Article II, §267-7 through §267-18, removal of trees in each of the previously mentioned categories will trigger the need for a Tree Removal Permit. Consultant recommends reviewing Project design plans to determine the need for tree removal in the Project Area.
Camden County, NJ	Site Plan Review	Any site plans that abut a County road or County drainage structure will require Ocean County approval in addition to local municipal approvals.	High	No Issue	Lead: 2-3 weeks; Processing: 30 days	$500	Camden County planning process concerns itself primarily with a review of factors that directly impact county facilities such as county owned roads and stormwater management systems. Since Project development will likely impact a County-owned roadway, a Site Plan Review will likely be required. Follow the Camden County Planning Board Application Submission Requirements Checklist for the review submittal.
	Road Opening Permit	Required excavation of any County street, sidewalk, curb, gutter roadway or any portion of a County right of way.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Project development crosses a County Roadway and may require a County Road Opening Permit should any excavations be proposed. Consultant recommends reviewing Project design plans to determine the need for a County Road Opening Permit Application.

Camden County Soil Conservation District (CCSCD)	Soil Erosion and Sediment Control (SESC) Plan Approval/Certification	Construction activities resulting in one or more acres of earth disturbance require SESC Plan Approval from the local soil conservation district. Any commercial, industrial, linear projects, land grading or single lots disturbing 5,000 square feet or more and all multi lot subdivisions need to apply for certification.	High	No Issue	Lead: 1 month; Processing: 30 days	TBD, based on acres of disturbances	Permittees are required to submit their applications and payment electronically online utilizing the NJDEP's Stormwater Construction Activity E-Permitting System, or via paper application to the NJDEP's Bureau of Permits Management. Soil Erosion and Sediment Control Plan applications must still be submitted to the local district offices for certification. However, for those projects requiring a NJPDES Stormwater Construction Activity permit, the district shall issue a SCD Certification Code to the permittee verifying that the 251 Plan has been approved. This code is necessary to complete either the online E-Permitting or paper RFA process. Project development may require SESC Plan Approval from CSSCD prior to receiving NJDEP Approval for 5G3 - Construction Activity Stormwater General Permit. Submit a SESC Plan following the Standards for Soil Erosion and Sediment Control in New Jersey document (Appendix A2). Note that a 48 hour advance notice of soil disturbance is required by CSSCD.
Winslow Township, Camden County, NJ	Zoning Permit	Zoning Permits are required prior to commencement of a use or the erection, construction, reconstruction, alternation, conversion or installation of a structure or building.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 1 month	$25	According to the Township's Zoning Map, the Project Area is located is across numerous Pinelands Agricultural (PA), Recreation and Conservation (PRC), and Rural Residential (PR-1) Zoning Districts. According to the Land Use Regulations for the Pinelands Area, public service infrastructure intended to primarily serve the needs of the Pinelands is considered a permitted use across the identified zoning districts. Project development will likely be allowed via approval of a Zoning Permit; however, Consultant recommends consultation with City officials to ensure the appropriate permitting process for construction of a transmission line.
	Site Plan Application	Required for a change of land use.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	$300 fee, $1,500 escrow	A Site Plan Application for review of Project design plans may be required. Consultation with the Township is recommended to determine the need for a Site Plan Application approval,
	Construction Permit	Required to construct, enlarge, alter or demolish a structure.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Applications for a Construction Permit shall be made in accordance with the requirements of the New Jersey State Uniform Construction Code.
	Road Opening Permit	Required for road opening construction activities.	TBD	No Issue	Lead: 1-2 weeks; Processing: Estimated 2-4 weeks	TBD	Consultant recommends reviewing Project design plans to determine if any street openings or ROW excavations will be required for Project development. Apply for permit as needed.
Ocean County, NJ	Site Plan Review	Any site plans that abut a County road or County drainage structure will require Ocean County approval in addition to local municipal approvals.	High	No Issue	Lead: 2-3 weeks; Processing: 30 days	TBD	The Project crosses County roadways and likely County drainages, a Site Plan Review from Ocean County will likely be required for Project development. The Site Plans must be designed in conformance with the County Land Development Standards.
	Road Opening Permit	Required to open, excavate, burrow under, or in any way impair any portion of the right-of-way	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Project development crosses a County Roadway and may require a County Road Opening Permit should any excavations be proposed. Consultant recommends reviewing Project design plans to determine the need for a County Road Opening Permit Application.

		of a County-maintained roadway.					
Ocean County Soil Conservation District (OSCD)	Soil Erosion and Sediment Control (SESC) Plan Approval/Certification	Construction activities resulting in one or more acres of earth disturbance require SESC Plan Approval from the local soil conservation district. Any commercial, industrial, linear projects, land grading or single lots disturbing 5,000 square feet or more and all multi lot subdivisions need to apply for certification.	High	No Issue	Lead: 1 month; Processing: 30 days	TBD, based on acres of disturbances	Permittees are required to submit their applications and payment electronically online utilizing the NJDEP's Stormwater Construction Activity E-Permitting System, or via paper application to the NJDEP's Bureau of Permits Management. Soil Erosion and Sediment Control Plan applications must still be submitted to the local district offices for certification. However, for those projects requiring a NJPDES Stormwater Construction Activity permit, the district shall issue a SCD Certification Code to the permittee verifying that the 251 Plan has been approved. This code is necessary to complete either the online E-Permitting or paper RFA process. Project development may require SESC Plan Approval from OSCD prior to receiving NJDEP Approval for 5G3 - Construction Activity Stormwater General Permit. Submit a SESC Plan following the Standards for Soil Erosion and Sediment Control in New Jersey document (Appendix A2). Note that a 48 hour advance notice of soil disturbance is required by OSCD.
South Toms River Borough, Ocean County, NJ	Land Use Board Application	Likely required for construction in the Municipal Lands Zoning District	High	Moderate Risk	Lead: 1 month; Processing: 1-3 months	TBD	According to the Township's Zoning Map, the Project Area is located in the Municipal Lands Zoning District within the Pinelands Management Area. According to the Land Development Regulations for the Pinelands Area, no person shall carry out any development within the Pinelands Area of the Borough without obtaining a Certificate of Filing from the Pinelands Commission pursuant to N.J.A.C. 7:50-4.34. Project development will likely be allowed via approval of a Certificate from the Pinelands Commission and a Land Use Board Application from the Borough; however, Consultant recommends consultation with Borough officials to ensure the appropriate permitting process for construction of a transmission line.
	Zoning Permit	Zoning Permits are required prior to commencement of a use or the erection, construction, reconstruction, alternation, conversion or installation of a structure or building.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 1 month	TBD	Zoning Permits are required as a condition precedent to the commencement of a use or the construction, reconstruction, alteration, conversion or installation of a structure or building. Project development will require a Zoning Permit Approval prior to applying for a Construction (Building) Permit approval through Toms River Borough, who is the authority having jurisdiction of administering Construction Permits in the Borough.
	Site Plan Application	May be required as a part of the Land Use Board and Zoning Permit approvals.	High	No Issue	Lead: 2-3 weeks; Processing: 90 days	TBD	A Site Plan Application for review of Project design plans may be required. Consultation with the Borough is recommended to determine the need for a Site Plan Application approval.
	Street Opening Permit	Required for road opening construction activities.	TBD	No Issue	Lead: 1-2 weeks; Processing: Estimated 2-4 weeks	TBD	Consultant recommends reviewing Project design plans to determine if any street openings or ROW excavations will be required for Project development. Apply for permit as needed.

Berkeley Township, Ocean County, NJ	Zoning Permit	Zoning Permits are required prior to commencement of a use or the erection, construction, reconstruction, alternation, conversion or installation of a structure or building.	High	No Issue	Lead: 2-3 weeks; Processing: 10 days	TBD	According to the Township's Zoning Map, the Project Area is located is across numerous Public Preservation Conservation, Manitou Park Rehabilitation Planned District, Regional Growth Residential, Agricultural Production, and Forest Area Conservation in the Pinelands Overlay District. According to the Land Development Regulations for the Pinelands Area, no person shall carry out any development within the Pinelands Area of the Township without obtaining approval from an approval agency and without obtaining development approval in accordance with the procedures set forth in Article XIX of the Township Code. Project development will likely be allowed via approval of a Zoning Permit; however, Consultant recommends consultation with City officials to ensure the appropriate permitting process for construction of a transmission line in the Pinelands Area.
	Site Plan Application	Required for a change of land use.	High	No Issue	Lead: 2-3 weeks; Processing: 20 days	TBD	A Site Plan Application for review of Project design plans may be required. Consultation with the Township is recommended to determine the need for a Site Plan Application approval,
	Construction Permit	Required to construct, enlarge, alter or demolish a structure.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Applications for a Construction Permit shall be made in accordance with the requirements of the New Jersey State Uniform Construction Code.
	Road Opening / Right-of-Way Excavation Permit	Required for any street opening or excavation construction activities in a Township right-of-way (ROW).	TBD	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Consultant recommends reviewing Project design plans to determine if any street openings or ROW excavations will be required for Project development. Apply for permit as needed.
Lacey Township, Ocean County, NJ	Zoning Permit	Zoning Permits are required prior to commencement of a use or the erection, construction, reconstruction, alternation, conversion or installation of a structure or building.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	No Zoning Map from Lacey Township was identified during review. It is assumed that the proposed Project will be located in the Pinelands Area and require approval of a Zoning Permit from Township Officials. A Certificate of Filing with the Pinelands Commission will likely be required. The Project should be designed in conformance with Article IV Pinelands Area Development Standards. Regulations state that new utility distribution lines and telephone lines to locations not presently served by utilities shall be placed underground, except for those lines which are located on or adjacent to active agricultural operations. Aboveground generating facilities, switching complexes, pumping stations and substations shall be screened with vegetation from adjacent uses in accordance with § 335-25 of the Code. All electric transmission lines shall be located on existing towers or underground to the maximum extent practical.
	Site Plan Application	Required for a change of land use.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	A Site Plan Application for review of Project design plans may be required. Consultation with the Township is recommended to determine the need for a Site Plan Application approval,
	Construction Permit	Required to construct, enlarge, alter or demolish a structure.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Applications for a Construction Permit shall be made in accordance with the requirements of the New Jersey State Uniform Construction Code.

	Road Opening / Right-of-Way Excavation Permit	Required for any street opening or excavation construction activities in a Township right-of-way (ROW).	TBD	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Consultant recommends reviewing Project design plans to determine if any street openings or ROW excavations will be required for Project development. Apply for permit as needed.

NEETMH Proposal 158 Permit Table

Table 27. **Bucks and Philadelphia Counties, PA & Hunterdon County, New Jersey**

Agency	Permit/Approval	Trigger	Potential for Need	Permit Risk	Lead/ Processing Time	Permit Fees	Future Actions/Comments
FEDERAL							
Lead Federal Agency	National Environmental Policy Act (NEPA) Review - Categorical Exclusion (CE), Environmental Assessment (EA), or Environmental Impact Statement (EIS)	Any Project that has a federal nexus, such as a Project that occurs on federally-managed land, receives federal funding, or requires a federal permit or other federal authorization will require a NEPA review (National Environmental Policy Act of 1969, 42 U.S.C. §4332).	TBD	No Issue	CE - Lead: 2 months EA - Lead: 2 months Processing: 6 to 10 months; EIS - Lead: 3 months Processing: 12 to 20 months	No fees; however, Applicant is typically responsible for cost of preparing the environmental document and supporting studies, as appropriate. (**This note may apply to numerous permits or approvals below**)	NEPA review will be required if the Project will be built on or crosses a federal easement or federally owned or managed lands such as but not limited to: National Forest Service (NFS), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Bureau of Land Management (BLM) and etc., or if the Project relies on a U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) real estate mortgage, a Department of Energy (DOE), or Rural Development (RD) Rural Energy for America Program (REAP) loan guarantee, etc. Consultant recommends further review and determination of NEPA triggers that may be associated with the Project as additional Project details become available.
	Federal Section 106 Review	Any Project requiring a federal permit or other authorization is subject to National Historic Preservation Act of 1966 (as amended) (NHPA) Section 106 Review.	TBD	No Issue	Lead: 1 month; Processing: 4-6 months	None	Determine whether a federal nexus exists for the Project. This nexus would trigger Section 106 compliance under the National Historic Preservation Act (NHPA) and should be completed prior to ground disturbance associated with any project. The federal lead agency would determine scope of work in coordination with the Pennsylvania State Historic Preservation Office, New Jersey State Historic Preservation Office, and appropriate Tribal Historic Preservation Offices (THPOs).

U.S. Army Corps of Engineers (USACE)	Authorization for discharge of fill to Waters of the US (WOTUS) under Section 404 of the Clean Water Act (CWA). The Pennsylvania State Programmatic General Permit-5 (PASPGP-5) replaces many of the Nationwide Permits (NWP's) in PA. The PASPGP-5 authorizes certain impacts to WOTUS up to 1.0 acre or 1,000 linear feet and is administered by the USACE.	Impacts to jurisdictional WOTUS including wetlands up to 1.0 acre of temporary and/or permanent impacts, both direct and indirect or up to 1,000 linear feet of permanent loss to stream channels. For Project cumulative impacts greater than 1.0 acres/1,000 linear feet see Section 404 Individual Permit (IP) discussion below.	Moderate	Moderate Risk	Lead: 4 weeks; 30 day completeness review, 45 days for notification of permit coverage by USACE	None	Project is located in the USACE Philadelphia District. 100 Penn Square East, Wanamaker Bldg, Philadelphia, PA 19107-3390. 215-656-6728. Consultant recommends designing the Project to avoid/minimize impacts to wetland and water resources to the greatest extent practicable. The PASPGP-5 is a federal authorization pursuant to Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act of 1899 (RHA), which authorizes the discharge of dredged and/or fill material into waters of the United States. Eligible activities include single and complete projects temporarily and/or permanently impacting 1.0 acre or less of waters of the United States. In most instances, the PASPGP-5 will be verified by the Pennsylvania Department of Environmental Protection (DEP) or a delegated county Conservation District along with the approved Chapter 105 Water Obstruction and Encroachment authorization(s). Consultant recommends additional review of the Pennsylvania State Programmatic General Permit-5 depending on proposed water resource impacts once Project designs are completed. Section 404 Jurisdiction has been assumed by the State of New Jersey and is enforced through the Freshwater Wetlands Protection Act. In most cases, the State of New Jersey maintains sole jurisdiction over wetlands, however the USACE still works closely with the NJDEP and maintains joint jurisdiction over navigable waters and other interstate waters.
	Approved Jurisdictional Determination (AJD)	This is the at Applicants request; it is not required by the USACE.	TBD on project to project basis	No Issue	Lead: 2 weeks; Processing: 4-12 months (dependent on complexity of water resources)	None	An AJD is an official USACE determination that jurisdictional wetlands or WOTUS are either present or absent on the property. AJDs can generally be relied upon for five years and may be appealed through the USACE administrative appeal process.
	Preliminary Jurisdictional Determination (PJD)	This is the at Applicants request; it is not required by the USACE.	TBD on project to project basis	No Issue	Lead: 2 weeks; Processing: 1 month	None	A PJD is a non-binding written indication from the USACE that waters, including wetlands, may be WOTUS. A permit decision made on the basis of a PJD will often treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. A PJD is advisory in nature and may not be appealed.
	CWA Section 404 Regional General Permit (RGP) or Nationwide Permit (NWP) for authorization of discharge to WOTUS.	Generally speaking, discharge or fill placed in a jurisdictional WOTUS resulting in loss of more than 0.1 acre of WOTUS.	Moderate	Moderate Risk	Lead: 1 month; Processing: 2-4 months	None	Consultant recommends designing the Project to avoid/minimize impacts to wetland and water resources to the greatest extent practicable. It is also recommended to design the Project in order to take advantage of applicable non-reporting NWPs or RGPs. Section 404 Jurisdiction has been assumed by the State of Pennsylvania and State of New Jersey. Consultant recommends additional review for applicable NWPs or RGPs and corresponding PCN requirements once the extent and nature of impacts to WOTUS are more accurately determined.

	CWA Section 404 Individual or Standard Permit (IP or SP) for authorization of discharge to WOTUS exceeding RGP or NWP limits, resulting in more than minimal adverse effects to WOTUS.	Discharge or fill placed in a jurisdictional WOTUS resulting in loss of more than 0.5 acre of WOTUS.	Low-Moderate	No Issue	Lead: 1 month; Processing: 6-12 + months	Permit issuance fee of $10 for non-commercial Projects and $100 for commercial Projects. Applicant is responsible for studies and mitigation costs if applicable.	Consultant recommends designing the Project to avoid/minimize impacts to wetland and water resources to the greatest extent practicable. An individual permit will require an alternatives analysis demonstrating that the Project has been designed to avoid and minimize temporary and permanent impacts to WOTUS. Generally speaking, compensatory mitigation will be required for all permanent WOTUS impacts exceeding 1,000 square feet. A 30 day public notice period is required.
	Rivers and Harbors Act Section 10 Crossing Permit	Construction of any structure in, over or under a navigable water (Section 10 Waters) of the U.S.	Moderate	No Issue	Lead: 1 month; Processing: 4 to 6 months.	Permit issuance fee of $10 for non-commercial projects and $100 for commercial projects. Applicant is responsible for studies and mitigation costs if applicable.	Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the USACE, for construction of any structure or work in, under or over any navigable water of the US. Requires PCN. Section 10 waters are major water bodies such as the Delaware River. No Section 10 navigable waters were identified within the Project Area; however, Consultant recommends confirming Project design and layout does not cross Section 10 waters. The Delaware River is a navigable waterway located adjacent to the proposed Project.
U.S. Department of the Interior Bureau of Ocean Management (BOEM)	Outer Continental Shelf (OCS) Renewable Energy Lease	Required for "commercial activities" conducted in Federal OCS lands.	Low	No Issue	Lead: 1 month; Processing: 4 to 12 + months	TBD	The Energy Policy Act of 2005 (EPAct) authorized BOEM to issue leases, easements and rights of way to allow for renewable energy development on the Outer Continental Shelf (OCS). EPAct provided a general framework for BOEM to follow when authorizing these renewable energy activities. For example, EPAct requires that BOEM coordinate with relevant Federal agencies and affected state and local governments, obtain fair return for leases and grants issued, and ensure that renewable energy development takes place in a safe and environmentally responsible manner. An OCS Renewable Energy Lease under 30 CFR Ch. V (7–1–14 Edition) is required for any commercial activities conducted in Federal OCS lands. Commercial activities for renewable energy leases and grants is defined as all activities associated with the generation, storage, or transmission of electricity or other energy product from a renewable energy project on the OCS. It is likely that construction of a transmission line for an offshore renewable energy projects in the OCS will trigger the need for an OCS Renewable Energy Lease. Consultant recommends further review of the OCS areas and the proposed offshore renewable energy project to determine the need for an OCS Renewable Energy Lease.

U.S. Fish and Wildlife Service (USFWS)	Section 7 Endangered Species Act (ESA) Consultation	Any project with a federal nexus that may adversely affect a listed threatened, endangered, or candidate species as determined by the lead federal agency.	Initial Consultation Completed	Moderate Risk	Lead: 1 month; Processing: 2 to 6 months	None	Consultant conducted an Information for Planning and Consultation (IPaC) coordination with the U.S. Fish and Wildlife Service (USFWS 2022a). The results of this effort identified five species including the federally threatened northern long-eared bat (Myotis septentrionalis; NLEB), bog turtle (Glyptemys muhlenbergii), seabeach amaranth (Amaranthus pumilus), swamp pink (Helonias bullata), and candidate for listing species monarch butterfly (Danaus plexippus) as potentially occurring within the Project Area and surrounding region (Appendix B). Please note that candidate species are not afforded statutory protections under the ESA. The species identified in the IPaC and their probability of occurrences are described in more detail in the Report prepared for #158. It is recommended that all tree clearing take place during the inactive season (November 1 – March 31), or, at a minimum, outside of the pup-rearing season which occurs from June 1 – July 31. If wetland impacts are proposed, a Phase I bog turtle habitat assessment should be completed; all potentially suitable wetlands should be avoided until a Phase II survey can be conducted. If the Project Area will be requiring wetlands permitting, swamp pink habitat evaluation or surveys may be required. Nesting surveys for bald eagles are recommended. If present, all active eagle nests require at least a 660' construction buffer during the breeding season.
	Section 10a ESA Incidental Take Permit	Potential for "Take" of a federally endangered or threatened species resulting from a project requiring federal funding, permit, or approval.	TBD	No Issue	Lead: 6-8 months; Processing: 12 to 24 months	The cost of a Biological Assessment and Habitat Conservation Plan are borne by the project proponent.	If lead federal agency determines that a project may adversely affect a listed species a Biological Assessment (BA) must be prepared to identify impacts to federally-listed species in the project area are likely to occur. A Habitat Conservation Plan (HCP) must be prepared to identify conservation measures to offset the permitted take of listed species under ESA Section 10. EA, and 30 day public notice required.
Environmental Protection Agency (EPA)	Oil Pollution Act (OPA) Spill Prevention Control and Countermeasure (SPCC) Rule	Onsite above-ground oil storage tanks with an aggregate capacity of 1,320 gallons or underground storage tanks with total capacity over 42,000 gallons in a location where discharge may reach navigable waters or adjoining shorelines.	Low	No Issue	Lead: 3 weeks; Processing: 1 month	None	Assumes the Project will have no oil or petroleum storage that would surpass triggers; if not, reassess whether an SPCC Plan is required. If temporary storage is needed above the threshold, a SPCC Plan still applies.
	Resource Conservation and Recovery Act (RCRA) Notification requirements for regulated waste activity	Generation of not more than 100 kg (220 lbs.) of hazardous waste and less than 1 kg (2.2 lb.) of acute hazardous waste, and no more than 100 kg of acute spill residue or soil per month.	Low	No Issue	Lead: 1 week; Processing: 1 week	None	Assess the potential volume of hazardous waste that will be generated by the Project. Confirm that the Project will not generate not more than 100 kg (220 lbs.) of hazardous waste and less than 1 kg (2.2 lb.) of acute hazardous waste, and no more than 100 kg of acute spill residue or soil per month to qualify as a Very Small Quantity Generator. In the event that any of these thresholds are exceeded, evaluate record keeping and reporting requirements at 40 CFR part 262.

U.S. Department of Agriculture (USDA)	Form AD-1006, Farmland Conversion Impact Rating for Farmland Conversion under Farmland Protection Policy Act (FPPA)	A project that uses federal financing, loans, or assistance and will convert farmland to nonagricultural use.	TBD	No Issue	Lead: 3 weeks; Processing: 1 month	None	Confirm that the Project does not involve federal funding or assistance and, therefore, does not require Form AD-1006. A discussion with the local Natural Resources Conservation Service (NRCS) may be necessary.
	Form AD-1026, Highly Erodible Land Conservation (HELC)	A project that converts land enrolled in federal farm programs to make production of a commodity crop possible.	TBD	No Issue	Lead: 3 weeks; Processing: 1 to 3 months	None	Confirm that the Project will not convert federal farm program wetlands or highly erodible lands to make production of a commodity crop possible.
	Environmental Assessment (EA) for Class I Action (Form RD1940-21)	Leased lands include property encumbered by federal Farm Service Agency (FSA) or Farmers Home Administration (FmHA) real estate mortgages. Projects that use federal financing, loans, or assistance.	Low	No Issue	Lead: 1 month; Processing: 2 to 3 months	None	If Project plans call for leasing land, determine whether leased lands for the Project are encumbered by FSA or FmHA federally guaranteed real estate mortgages as soon as possible. Also confirm whether Project will use federal financing, loans, or assistance.
	Conservation Reserve Program (CRP) Contract Amendment	Project affects lands enrolled in CRP.	Low	No Issue	Lead: 2 weeks; Processing: 1 to 2 months	Reimbursement of past CRP payments plus interest for impact area.	Obtain confirmation from landowners that affected lands are not enrolled in CRP.
	A loan guarantee from USDA RD Rural Business-Cooperative Service (RBCS)	Application for a RBCS loan guarantee.	Low	No Issue	Lead: 1 month; Processing: 1-2 months	None	Determine whether a federal loan guarantee is sought as soon as possible.
Federal Aviation Administration (FAA)	Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard)	Needed for construction of any structure exceeding 200 feet in height.	Low	No Issue	Lead: 1 week; Processing: 3 to 6 months, possibly longer if there are identified constraints.	None	The proposed Project is unlikely to trigger Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard) through the Federal Aviation Administration (FAA) for construction of any structure exceeding 200 feet in height.
	Notice of Actual Construction or Alteration (Form 7460-2)	Needed for construction of any structure exceeding 200 feet in height.	Low	No Issue	Lead: 1 week; Processing: 1 week	None	Should the filing of Form 7460-1 reveal that the proposed Project has potential to impact navigable airspace, Notice of Actual Construction or Alteration will be required prior to initiating construction activities.
STATE							

Pennsylvania Public Utilities Commission (PUC)	High Voltage Transmission Line (HV Line) Permit	An electric utility must apply for and obtain a permit to construct and operate a HV Line (defined as a transmission line with a design voltage of greater than 100 kilovolts) pursuant to PA Code Title 52, Sections 57.71 to 57.77.	High	Moderate Risk	Lead: 2-3 months; Processing: TBD	TBD	Siting HV Lines (greater than 100 kV) proposed by public utilities is regulated by the PUC. Consultant recommends further review of HV Line permit requirements and Project plans to determine if a PUC permit is needed. Consultant recommends consulting legal counsel to initiate coordination with the Pennsylvania Public Utilities Commission. The Pennsylvania appellate courts have long held that the Commission has exclusive jurisdiction over the siting and construction of transmission lines and municipalities have no residual local jurisdiction over such utility construction activities. See Duquesne Light Company v. Upper St. Clair Township, 103 A. 2d 287 (Pa. Supreme 1954).See the Pennsylvania Code Commission Review of Siting and Construction of Electric Transmission Lines (Public Utility Code regulations at Title 52 Public Utilities § 57.71-57.77).
Pennsylvania State Historic Preservation Office (PA SHPO)	Cultural and Historic Resources Review (Project Review Form)	Required for State and Federal Undertakings.	Low	No Issue	Lead: 1 month; Processing: 30 days	None	Any state or federal undertakings will require SHPO review of the proposed Project.
Pennsylvania Department of Environmental Protection (DEP)	General Permit for Discharges of Stormwater Associated with Construction Activities (PAG-02)	Construction activity disturbing one or more acres of land. Requires development of site specific SWP3 and compliance with all SWP3 conditions.	High	No Issue	Lead: 4 weeks; Processing: 60 to 90 days Potter and Tioga Conservation Districts are PADEP's Delegated Authorities, see local permits below	PAG-02 General Permit Fee: $500 + $100 for each proposed acre of disturbance plus E&S fees per SCD, see local permits below	PAG-02 became effective on December 8, 2019 and will expire December 7, 2024. Project development will require PAG-02 for disturbances greater than one acre. Prepare a Stormwater Pollution Prevention Plan (SWPPP) as part of construction plans; prepare and submit PAG-02 General Permit application along with a NOI form, E&SC and PCSM plans and supporting calculations to Bucks County Conservation District and the City of Philadelphia, see local permits discussion below for additional timing and process information.
	401 Water Quality Certification	Required for activities that trigger an USACE Individual Permit under Section 404 of the Clean Water Act (CWA) or Federal Energy Regulatory Commission (FERC) approval.	Moderate	Moderate Risk	Lead: 1 month; Processing: 15-60 days	TBD	Determine if the Project(s) will require a USACE Permit for impacts to waters of the US or FERC Approval. The DEP has created a Permit Application Tool (PACT) which can determine other DEP permits which may be triggered by Project development. The DEP integrated the 401 Certification Process into other state permits, such as the Erosion and Sediment Control Permit or Obstruction and Encroachment Permit, i.e. the Erosion and Sediment Control Permit and/or Obstruction and Encroachment Permit will trigger an internal 401 Water Quality Certification by the DEP. If the 401 Certification is required, and the Erosion and Sediment Control Permit or Obstruction and Encroachment Permit are not necessary, it is recommended to complete and submit the Environmental Assessment Form to the DEP. Once deemed complete by DEP, the application will be published for a 30-day public review period and subsequently reviewed by the DEP. In conjunction with the minor amendment request/application indicated above, Consultant recommends confirming with DEP that the 401 Certification requirements are also addressed by the above-discussed applications.

	Chapter 105 Water Obstruction & Encroachments General Permit (Joint Permit)	Required for any structure or activity that in any manner changes, expands, or diminishes the course, current or cross-section of any watercourse, floodway, or body of water including wetlands. Earth disturbances, encroachments, or obstructions within 50 feet of regulated waters.	Moderate	Moderate Risk	Lead: 1 month; Processing: Estimated 1-3 months	TBD, based on construction activities	Should any obstruction or encroachments activities be proposed for Project development, it is recommended to acquire the Water Obstruction & Encroachment General Permit, several general permits are available based on the type of construction activity in addition to Individual Permits. The Permit application will be processed jointly with the DEP and USACE. Water obstructions and encroachments must comply with Pennsylvania's Clean Streams Law which requires that all earth moving activities must have an erosion and sedimentation control plan and Chapter 105 Dam Safety and Waterways Management regulations. An Environmental Assessment must be approved by the DEP as part of the permit review process. The Environmental Assessment is an essential part in deeming the Chapter 105 Dam Safety and/or Water Obstruction and Encroachment Permit application complete. Note that more stringent regulations would be imposed by the DEP should the Project propose obstructions or encroachments on Class A Wild Trout Waters.
Pennsylvania Department of Conservation & Natural Resources (DCNR), Pennsylvania Fish and Boat Commission (PFBC), the Pennsylvania Game Commission (PGC), and the Western Pennsylvania Conservancy (WPC)	Pennsylvania Natural Heritage Program (PNHP) Threatened and Endangered Species Review	Proposed Project will likely require environmental review using the PNHP to determine potential impacts to state-listed threatened and endangered species.	High - In Progress	Moderate Risk	Lead: 1 week; Processing: 1-2 weeks	None	An Environmental Review from the Pennsylvania Natural Diversity Inventory (PNDI) (2022) was submitted on February 21, 2022, to the Pennsylvania Game Commission (PGC), Pennsylvania Fish and Boat Commission (PFBC), Pennsylvania Department of Conservation and Natural Resources (PDCNR), and U.S. Fish and Wildlife (USFWS) to assess potential impacts to threatened and endangered species and/or special concern species and resources within the Project Area. No response has been received to date; Consultant will update the Permit Matrix and Project Reports once a response has been received.
Pennsylvania Department of Transportat	Oversize/Overweight Application for Special Hauling Permit	Permit required for vehicles exceeding the weights in Chapter 179 of the Pennsylvania State Code.	Moderate	No Issue	Lead: 1 week; Processing: 1-2 weeks	Dependent on vehicle size and number of trips	Determine if construction of the Project will require travel on state roads with oversize/overweight vehicles. If so, determine the length, weight, and number of trips necessary to complete the Project. Consult with the DOT to select the most appropriate permit. Typically, these types of permits will be sought out by the contractor responsible for transporting materials.

ion (PennDOT)	Highway Occupancy Permit (HOP)	Permit required for construction or alteration of a driveway/access road, installation or replacement of utility facilities, opening of the surface, and/or adjusting highway slope.	High	No Issue	Lead: 3 weeks; Processing: TBD	TBD based on construction activities	Determine if Project will require constructing or reconstructing utilities, driveways, or other construction activities within ROW of an Interstate, U.S. State Route, state route, or state maintained roadway. Several State Roadways and US Interstate 95 traverse or are located adjacent to the Project Area. If any aforementioned construction activities are proposed, a Highway Occupancy Permit would be required. The Electronic Permitting System (ePermitting, EPS) is available for online application submittal.
New Jersey Board of Public Utilities (BPU)	NJ Rev Stat § 40:55D-19 - Appeal	An electric utility may appeal a disapproval from a single municipality in the event of the Project being denied in accordance with local municipal regulations.	TBD	No Issue	Lead: 35 days; Processing: 35 days	TBD	If a public utility, as defined in R.S.48:2-13, or an electric power generator, as defined in section 3 of P.L.1999, c.23 (C.48:3-51), is aggrieved by the action of a municipal agency through said agency's exercise of its powers under this act, with respect to any action in which the public utility or electric power generator has an interest, an appeal to the Board of Public Utilities of the State of New Jersey may be taken within 35 days after such action without appeal to the municipal governing body pursuant to section 8 of this act unless such public utility or electric power generator so chooses. In such case appeal to the Board of Public Utilities may be taken within 35 days after action by the governing body. A hearing on the appeal of a public utility to the Board of Public Utilities shall be had on notice to the agency from which the appeal is taken and to all parties primarily concerned, all of whom shall be afforded an opportunity to be heard. If, after such hearing, the Board of Public Utilities shall find that the present or proposed use by the public utility or electric power generator of the land described in the petition is necessary for the service, convenience or welfare of the public, including, but not limited to, in the case of an electric power generator, a finding by the board that the present or proposed use of the land is necessary to maintain reliable electric or natural gas supply service for the general public and that no alternative site or sites are reasonably available to achieve an equivalent public benefit, the public utility or electric power generator may proceed in accordance with such decision of the Board of Public Utilities, any ordinance or regulation made under the authority of this act notwithstanding. This act or any ordinance or regulation made under authority thereof, shall not apply to a development proposed by a public utility for installation in more than one municipality for the furnishing of service, if upon a petition of the public utility, the Board of Public Utilities shall after hearing, of which any municipalities affected shall have notice, decide the proposed installation of the development in question is reasonably necessary for the service, convenience or welfare of the public.
New Jersey Historic Preservation Office (HPO)	Cultural and Historic Resources Review (Technical Assistance)	Required for State and Federal Undertakings, including a variety of NJDEP Permits listed below.	Moderate -High	Moderate Risk	Lead: 1 month; Processing: Estimated 30 days	None	Depending on other permit triggers including the Department of Environmental Protections Freshwater Wetlands Permit, CAFRA Permit, and more, a Cultural and Historic Resources Review (Email Submittal Form) may be required as a part of Project development. Any federal undertakings will require a Cultural and Historic Resources review under Section 106.

New Jersey Department of Environmental Protection (NJDEP)	5G3 - Construction Activity Stormwater General Permit	Construction activity disturbing one or more acres of land. Requires development of site specific SWP3 and compliance with all SWP3 conditions.	High	No Issue	Lead: 4 weeks; Processing: Estimated 3-4 weeks	TBD	Permit Number: NJ0088323 (5G3 - Construction Activity Stormwater General Permit) became effective on March 1, 2022 and will expire February 28, 2027. Project development will require NJ0088323 for disturbances greater than one acre. Prepare a Stormwater Pollution Prevention Plan (SWPPP) as part of construction plans; prepare and submit the NJ0088323 application along with a complete Request for Authorization (RFA) and the appropriate fee required under N.J.A.C. 7:14A-3.1(j) shall be submitted via the NJDEP Online Portal. Authorization becomes effective when the Department certifies the RFA. Local conservation district approval of a Soil Erosion and Sediment Control (SESC) Plan may be required prior to RFA certification.
	401 Water Quality Certification	Projects requiring fill in Water of the US require a Water Quality Certification. Typically associated with USACE Permits and State Individual Permits.	TBD	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	A 401 Water Quality Certification authorization is required as a part of federal waterway/wetland permitting. Design project to avoid/minimize wetlands to the extent practicable. Align infrastructure to avoid temporary and permanent impacts to wetlands, waterways, and drainages. If the Project design includes impacts to wetlands or waterways, it is recommended to request an early coordination meeting with NJDEP staff to ensure all State permitting requirements are met.
	Freshwater Wetlands (FWW) Individual Permit and FWW General Permits	The maintenance or construction of utility lines within freshwater wetlands, transition areas, and/or State open waters requires a Freshwater Wetlands (FWW) permit or FWW Transition Area waiver. Several FWW General Permits (GP) are available for these types of activities.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	General Permits provide a means to perform a variety of activities within a regulated freshwater wetland, freshwater wetland transition area and/or State open water, provided that the various conditions are met for the type of general permit requested. There are requirements, conditions and restrictions that apply to all general permits which must be considered prior to applying for a permit. If the proposed activity does not meet the applicable requirements, conditions, and/or restrictions, a FWW Individual Permit is available. Several noteworthy General Permits applicable to Project development include: underground utility lines (GP2), Non-tributary wetlands (GP6), above ground utility lines (GP 21), redevelopment of previously disturbed areas (GP26), and others. The #158 Project crosses a minor amount wetlands and watercourses in the State and will likely require FWW General Permits or an Individual Permit. Consultant recommends initiating consultation with the NJDEP to ensure the proper permitting process is selected for construction of a transmission line with respect to freshwater wetland impacts.

	Flood Hazard Area (FHA) Individual Permit and Streams/Rivers & Flood Hazard General Permits; Permit-by-Rule (PBR) 33	Required for any structure or activity that in any manner changes, expands, or diminishes the course, current or cross-section of any watercourse or flood hazard area.	High	Moderate Risk	Lead: 1 month; Processing: Estimated 1-6 months	TBD	Placement of utility poles would likely be authorized under Permit-By-Rule 33 which is for the placement of one or more utility poles, provided that the proposed design meets the applicable conditions of the permit. There are also permit-by-rules for open-frame or monopole towers. Road or bridge construction to facilitate access would like be authorized under Regional General Permit 9 if the regulated water has a drainage area less than 50 acres, otherwise an Individual Permit would likely be required. Additionally, if the Project is regulated to the Coastal Zone Management Rules at N.J.A.C. 7:7, then no separate Flood Hazard approval is required. In these instances, the applicant need only submit a report and plans demonstrating compliance with the Flood Hazard Area Control Act Rules as part of the coastal permit application. General Permits provide a means to perform a variety of activities within a regulated flood hazard area and regulated streams/rivers, provided that the various conditions are met for the type of general permit requested. There are requirements, conditions and restrictions that apply to all general permits which must be considered prior to applying for a permit. If the proposed activity does not meet the applicable requirements, conditions, and/or restrictions, a FHA Individual Permit is available. Several noteworthy General Permits applicable to Project development include: Habitat Creation/Restoration/Enhancement (GP4), Reconstruct and/or Elevation-Building in Floodway (GP5), Development SFH/Duplex and Driveway (GP6), In-kind replacement of public infrastructure (GP15), and others. The #158 Project crosses special flood hazard areas and will likely require a Streams/Rivers & Flood Hazard General Permits; Permit-by-Rule (PBR) 33, or Flood Hazard Area (FHA) Individual Permit. Consultant recommends initiating consultation with the NJDEP to ensure the proper permitting process is selected for construction of a transmission line with respect to FHA impacts.
	Coastal Permitting General Permits, Waterfront Development (WFD) Individual Permit and Coastal Zone Management Federal Consistency, CAFRA Individual Permit, Coastal Wetlands Individual Permit	Required for waterfront developments and/or coastal zone impacts.	Low	No Issue	Lead: 1 month; Processing: Estimated 1-6 months	TBD	Activities conducted in tidal waters (at or below the mean high water line) that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a Waterfront Development Individual Permit. Activities conducted in the CAFRA zone that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a CAFRA Individual Permit. Activities conducted within wetlands subject to the Wetlands Act of 1970 that do not meet the requirements require a Coastal Wetlands Individual Permit. Activities conducted within wetlands subject to the Wetlands Act of 1970 that do not meet the requirements of a Permit-by-rule, General Permit-by-certification, or General Permit will require a Coastal Wetlands Individual Permit. Applicable general permits include Landfall of Utilities (GP12), Eroded Shoreline Stabilization (GP17), Mod of Existing Electrical Substations (GP19), Geotechnical Survey Borings (GP23), and more. If the project is regulated pursuant to the Coastal Zone Management Rules at N.J.A.C. 7:7, then no separate Flood Hazard approval is required. In these instances, the applicant need only submit a report and plans

							demonstrating compliance with the Flood Hazard Area Control Act Rules as part of the coastal permit application. The #158 Project is located outside of the Coastal Area Facilities Review Act (CAFRA) Boundary.
	Tidelands License/Grant	Private use of State tidelands for Utility or Utility related project (Tidelands Act 12:3 (1 to 28) NJSA 13:1B-13.1 to 13.14).	Low	No Issue	Lead: 1 month; Processing: 3-12 months	Fair Market Value of Land for Grant, annual license fees depend on total amount of area licensed.	The #158 Project is located outside of, but adjacent to across New Jersey Tidelands in the Atlantic North Tidelands Region. The State of New Jersey claims ownership of these tidelands and holds them in trust for the people of the state. The management of the tidelands is overseen by the Tidelands Resource Council, a twelve member Governor-appointed board of volunteers, along with DEP staff at the Bureau of Tidelands Management. Since tidelands are public lands, a developer must obtain written permission from the State and pay a fee in order to use these lands. Some tidelands may be sold in the form of a Riparian Grant while others may only be rented through either a Tidelands License or Lease. It is unlikely that any tidelands license or grant would be required for Project development.

	Permit-by-rule (PBR) 8	Construction of a utility line attached to a bridge or culvert.	TBD	No Issue	Lead: 1 month; Processing: Estimated 1-3 months	TBD	PBR 8 - authorizes construction of a utility line, including cable (electric, television, or fiber optic), telecommunication, wastewater, petroleum, natural gas, or water, attached to a bridge or culvert, provided: No excavation, dredging or filling is undertaken within the water body over which the utility line crosses; The utility line is firmly attached to the existing bridge or culvert structure so that no part of the utility line, its encasement, or any attachment device extends above or below the existing bridge or culvert structure; If the crossing is a bridge, the utility line, its encasement, and all attachment devices must be located entirely above the elevation of the low chord of the superstructure and entirely below the elevation of the bridge surface; If the crossing is a culvert, the utility line, its encasement, and all attachment devices must be located entirely above the overt elevation of the culvert and entirely below the elevation of the top of the culvert; If the utility line is a pipeline that conveys any substance other than potable water, the utility line must be sufficiently encased within ductile iron or concrete to protect the utility line from damage from impact with floating debris during floods; and If there is a predominant direction of flow within the water body, the utility line must be attached to the downstream face of the bridge or culvert; The installation of the utility line has no adverse impacts to special areas as described at N.J.A.C. 7:7-9; and Construction equipment is operated from land, the top of the bridge or culvert, or from barges, and shall under no circumstances be allowed to enter the water body. Please be advised, this PBR only applies to that portion of the utility line that will be constructed across the tidal waterway up to the mean high water line, provided a tidelands instrument has been obtained for the utility line. In addition, this PBR does not relieve the permittee from the obligation of obtaining all necessary approvals from the U.S. Army Corps of Engineers. See N.J.A.C. 7:7-4.8 for complete rule requirements.
	New Jersey Natural Heritage Program) - State T&E Species Consultation	Routinely recommended; natural resources investigations including wildlife will be required for the various coastal, wetlands, and waterway permits.	Routinely recommended	Moderate Risk	Lead: 1 week; Processing: 1-2 weeks	TBD	A Data Request was submitted to the New Jersey Natural Heritage Program for information regarding State-listed threatened and endangered species. No response has been received to date; Consultant will update the Permit Matrix and Project Reports once a response has been received.
	Construction Dewatering Permit	For temporary ground and surface water control (dewatering) diversions in excess of 100,000* gallons of water per day, the project owner must obtain a Dewatering Allocation Permit, or Dewatering Permit-by-Rule or Short Term Permit-by-Rule depending on the duration of the diversion and the method employed.	Low	No Issue	Lead: 1 month; Processing: Estimated 1 month	TBD	Consultant recommends review of the listed permit triggers to determine if a dewatering approval will be necessary, and to determine the appropriate permit selection.

	Air Quality Permit	Permit requirements dependent on construction techniques and equipment used in Project development.	TBD	No Issue	Lead: 1 month; Processing: Estimated 1-2 months	TBD	Depending on the construction techniques and equipment used for Project development, a variety of air quality permit thresholds may be met. Consultant recommends reviewing construction techniques and equipment used with the Air Quality permitting thresholds discussed on the NJDEP Air Quality, Energy & Sustainability webpage.
New Jersey Department of Community Affairs	Development Plan Review	Required in the event that the local municipalities where the subcode officials and construction official do not possess code enforcement licenses of the appropriate class.	TBD	No Issue	Lead: 1 month; Processing: Estimated 1-2 months	TBD	Should any of the local permit issuing municipalities not possess code enforcement licenses of the appropriate class, a review from the Department of Community Affairs would be required. Class I : A Departmental plan review and release is required prior to the issuance of a construction permit unless the construction official and each appropriate subcode official in the municipal enforcing agency is certified as a HHS construction official or subcode official; Class II: A Departmental plan review and release is required prior to the issuance of a construction permit unless the construction official and each appropriate subcode official in the municipal enforcing agency is certified as a HHS or ICS construction official or subcode official; Class III: A Departmental plan review shall not be required except when the Department acts as the enforcing agency. Application should be made to the local construction office, not the Department. Refer to the local permitting section below for additional information.
New Jersey Pinelands Commission	Application for Development in the Pinelands Area (Certificate of Filing)	Required for developments located in the Pinelands Area.	Low	No Issue	Lead: 1 month; Processing: 30 days	$187.50 per acre of all land in ROW, $250 minimum	Project is located outside of the Pinelands Area; therefore, no Application for Development will be required.
New Jersey Department of Transportation (NJDOT)	Oversize/Overweight Application for Special Hauling Permit	Permit required for vehicles exceeding the weights adopted in N.J.A.C. 13:18, Subchapter 1: Permits for Over dimensional or Overweight Vehicles	Moderate	No Issue	Lead: 1 week; Processing: 1 days to 1 week	Dependent on vehicle size and number of trips	Determine if construction of the Project will require travel on state roads with oversize/overweight vehicles. If so, determine the length, weight, and number of trips necessary to complete the Project. Consult with the DOT to select the most appropriate permit. Typically, these types of permits will be sought out by the contractor responsible for transporting materials.
	Driveway Access Permit Application	Required for driveway access construction using a State roadway.	Low	No Issue	Lead: 1 week; Processing: Estimated 2-4 weeks	TBD	If Project development will require any driveway access using NJDOT roadways, prior permit approval will be required.
	Application for Utility Opening (MT17A)	Required for utility infrastructure openings in NJDOT roadways.	Low	No Issue	Lead: 1 week; Processing: 2-4 weeks	TBD, based on square footage of opening; $725-$1,580	If Project development will require any openings on NJDOT roadways for installation of utility infrastructure, prior permit approval will be required. The Project does not cross any NJDOT roadways; therefore, it is unlikely that approval of MT17A will be required.
	Highway Occupancy Permit (MT120A)	Permit required for construction or alteration of utility facilities.	Low	No Issue	Lead: 3 weeks; Processing: Estimated 2-4 weeks	TBD based on construction activities	If Project development will require any occupancies on NJDOT roadways for installation of utility infrastructure, prior permit approval will be required. The Project does not cross any NJDOT roadways; therefore, it is unlikely that approval of MT120A will be required.
LOCAL							

Bucks County, PA	Subdivision and Land Development Permit Review Application	Required for construction of a subdivision or land development Projects.	High	No Issue	Lead: 1 month; Processing: Estimated 1-2 months	TBD, based on size	It is likely that the Project will be required to obtain approval of the Subdivision and Land Development Permit Review Application from Bucks County. The Land Development Permit Review Process is regulated under the Pennsylvania Municipalities Planning Code Act of 1968, P.L.805, No.247 (23rd Edition, January 2017). It is recommended to complete and submit the permit application along with a Sketch Plan to the Bucks County Planning Commission and to initiate the permit review process. It is likely that a copy of the Subdivision and Land Development Permit Review Application will need to be sent to Nockamixon and Springfield Townships.
Bucks County Conservation District (BCCD)	Erosion and Sediment Pollution Control Plan Review Application (E&S Plan)	Construction activities resulting in greater than 1,000 sf of earth disturbance require E&S Plan permit approval. Construction activities resulting in one or more acres of earth disturbance require E&S Plan permit and NPDES permit approvals (PAG-02).	High	No Issue	Lead: 1 month; Processing: Estimated 1-2 months	TBD, based amount of acres disturbed	For projects affecting 1,000 square feet or more of earth disturbances, an Erosion and Sediment Pollution Control Plan permit and review is required. Additional requirements for disturbances in excess of one acre include a NPDES Stormwater Construction Permit (PAG-02). All items must be submitted as a package to the BCCD for review and approval including the Project narrative, design plans, and associated fees. BCCD is DEP's delegated authority and will coordinate PAG-02 NPDES permit indicated in the state section above with DEP's Regional Office.
Nockamixon Township, Bucks County, PA	Zoning Permit	No zoning permit shall be required for utilities to be located in public streets or rights-of-way.	None	No Issue	Lead: 1 month; Processing: 60-120 days	TBD	According to § 234-22 of the Nockamixon Township Zoning Ordinance, Public utilities in a public right-of-way do not require a Zoning Permit.
	Building Permit	Required to construct, enlarge, alter or demolish a structure.	High	No Issue	Lead: 1 month; Processing: Estimated 30 days	TBD	It is likely that the Project will be required to complete and seek approval for a Building Permit from the Township. Ensure the Project design plans conform to the applicable Township rules and regulations.
	Electrical Permit	Installation, alteration, renewal, replacement, or repair of electrical systems and components.	High	No Issue	Lead: 2 weeks; Processing: Estimated 30 days	TBD	It is likely that the Project will be required to complete and seek approval for an Electrical Permit from the Township. Ensure the Project design plans conform to the applicable Township rules and regulations.
	Stormwater Management/Grading Plan Application	Required prior to land disturbances activities and grading.	High	No Issue	Lead: 1 week; Processing: Estimated 1 month	TBD based on construction activities	It is likely that Project development will require land disturbances and grading construction activities; therefore, it is likely that a Stormwater Management/Grading Plan Application will be necessary. The Stormwater Management Plan must be approved before issuance of the Building Permit. It is recommended to complete and submit the Stormwater Management/Grading Plan to the Township.
	Floodplain Development Permit	Required prior to construction activities in special flood hazard areas.	TBD	No Issue	Lead: 1 week; Processing: Estimated 1 month	$100 fee; $1,500 Professional Services Escrow Account	The Project Area contains special flood hazard areas. Should construction activities or other land development activities occur in floodplains in Nockamixon Township, prior Floodplain Development Permit approval would be required.
	Driveway Permit	Construction of a driveway or access road utilizing local roadways.	TBD	No Issue	Lead: 1 week; Processing: Estimated 1 week	$150 fee; $1,000 Professional Services Escrow Account	If Project development proposes construction of a driveway or access road utilizing local roadways, a Driveway Permit would be required.

Springfield Township, Bucks County, PA	Zoning Permit	Required prior to the erection, construction, reconstruction, extension, moving, razing, or alteration of any building, structure, or portion thereof, and prior to the use or change in use of a building or land and prior to the change or extension of a nonconforming use	High	No Issue	Lead: 1 month; Processing: 60-120 days	TBD	According to § 404-F of the Springfield Township Zoning Ordinance, Utility Operating Facilities in a public right-of-way do not require a Zoning Permit.
	Building Permit	Required to construct, enlarge, alter or demolish a structure.	High	No Issue	Lead: 1 month; Processing: Estimated 30 days	TBD	It is likely that the Project will be required to complete and seek approval for a Building Permit from the Township. Ensure the Project design plans conform to the applicable Township rules and regulations.
	Stormwater Management/Grading Plan Application	Required prior to land disturbances activities and grading in excess of 1,000 square feet.	High	No Issue	Lead: 1 week; Processing: Estimated 1 month	TBD based on construction activities	It is likely that Project development will require land disturbances and grading construction activities; therefore, it is likely that a Stormwater Management/Grading Plan Application will be necessary. The Stormwater Management Plan must be approved before issuance of the Building Permit. It is recommended to complete and submit the Stormwater Management/Grading Plan to the Township.
	Driveway Permit	Construction of a driveway or access road utilizing local roadways.	TBD	No Issue	Lead: 1 week; Processing: Estimated 1 week	TBD based on construction activities	If Project development proposes construction of a driveway or access road utilizing local roadways, a Driveway Permit would be required.
City of Philadelphia, Philadelphia County, PA	Zoning Permit	In most cases, you must get a Zoning Permit before you can apply for a Building Permit.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 1-2 months	TBD	According to the City's Zoning Map, the Project Area is located is across numerous Industrial (I-2 and I-3), Industrial/Industrial Mixed-Use (ICMX), and other Commercial Zoning Districts. The City Zoning Code defines Utilities and Services, Basic as public and quasi-public facilities and services that need to be located in the area where the service is to be provided, such as water and sewer pump stations; electrical transforming substations; wind energy conversion systems; solar collector systems; water conveyance systems; gas regulating stations; stormwater facilities and conveyance systems; telephone switching equipment; emergency communication warning/broadcast facilities; and central heating facilities. Utilities and Services (Basic) are generally listed as permitted land uses across the Industrial, Industrial Mixed-Use, and Commercial Zoning Districts. It is likely that Project development will be allowed via Zoning Permit approval. Consultant recommends consultation with City officials to confirm the appropriate permitting process for construction of a transmission line.
	Building Permit	Required to construct, enlarge, alter or demolish a structure. Any disturbances in excess of 5,000 square feet.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD, based on project type and size	Project development will likely trigger a Building Permit with the City. Prior to submittal of the Building Permit, a Zoning Permit will be required. Consultant recommends Project designs conform to the City Code. Applications and documents can be submitted online using eCLIPSE or in-person at the Permit and License Center. Any developments in floodplains will require Flood Protection document submittals in addition to the Building Permit required materials.

	Electrical Permit	Installation, alteration, renewal, replacement, or repair of electrical systems and components.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD, based on project type and size	Project development may require submittal of Electrical Plans, following the Building Permit approval. Consultation with City Officials during the Building Permit approval process is recommended to discuss the need for an Electrical Permit approval.
	Fence Permit	Construction of fences six feet in height or higher, composed of heavy material, or located directly along a street front.	TBD	No Issue	Lead: 1-2 weeks; Processing: Estimated 2-4 weeks	$100	Both Zoning and Building Permit approvals will be required as a part of the Fence Permit application submittal. Consultant recommends reviewing Project design plans to determine the need for fencing six feet in height or fencing along any street fronts.
	Site Work and Site Utility Permit	Projects where the only site work is 5,000 sq. ft. or more of earth disturbance, such as parking lots, for any location outside of a Special Flood Hazard Area. Any earth disturbance within a Special Flood Hazard Area.	TBD	No Issue	Lead: 2-3 weeks; Processing: 20 business days	TBD	Should any site clearing, removal of vegetation, earth movement, or grading activities be proposed, prior Site Work and Site Utility Permit approval will be required. A Zoning Permit may be required for disturbing steep slopes within the Wissahickon watershed or in a floodplain. Permits can be applied for online using eCLIPSE.
Hunterdon County, NJ	Development Review Application	Any site plans that abut a County road or County drainage structure will require Hunterdon County approval in addition to local municipal approvals.	High	No Issue	Lead: 2-3 weeks; Processing: 30 days	TBD	The Project is located across several County roadways, triggering the need for a Site Plan Approval. Any impacts or crossings of County roadways will trigger the need for a County Site Plan Review.
	Road Opening Permit	Required to open, excavate, burrow under, or in any way impair any portion of the right-of-way of a County-maintained roadway.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	A Road Opening Permit will be required to impact any portion of a County ROW. Project development will likely trigger the need for a Road Opening Permit from the County.
	Driveway Permit	Construction of a driveway or access road utilizing County roadways.	TBD	No Issue	Lead: 1 week; Processing: Estimated 1 week	TBD based on construction activities	Should any driveways be proposed using a County roadway, prior permit approval will be necessary.
Hunterdon County Soil Conservation District (HSCD)	Soil Erosion and Sediment Control (SESC) Plan Approval/Certification	Construction activities resulting in one or more acres of earth disturbance require SESC Plan Approval from the local soil conservation district. Any commercial, industrial, linear projects, land grading or single lots disturbing 5,000 square feet or more and all multi lot subdivisions need to apply for certification.	High	No Issue	Lead: 1 month; Processing: 30 days	TBD, based on acres of disturbances	Permittees are required to submit their applications and payment electronically online utilizing the NJDEP's Stormwater Construction Activity E-Permitting System, or via paper application to the NJDEP's Bureau of Permits Management. Soil Erosion and Sediment Control Plan applications must still be submitted to the local district offices for certification. However, for those projects requiring a NJPDES Stormwater Construction Activity permit, the district shall issue a SCD Certification Code to the permittee verifying that the 251 Plan has been approved. This code is necessary to complete either the online E-Permitting or paper RFA process. Project development may require SESC Plan Approval from HSCD prior to receiving NJDEP Approval for 5G3 - Construction Activity Stormwater General Permit. Submit a SESC Plan following the Standards for Soil Erosion and Sediment Control in New Jersey document (Appendix A2). Note that a 48 hour advance notice of soil disturbance is required by OSCD.

Holland Township, Hunterdon County, NJ	Zoning Permit	Public utility installations in Industrial Zoning Districts.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 1-2 months	TBD	According to the Township's Zoning Map, the Project Area is located in the Industrial Zoning District. According to the Land Use Regulations, transmission of electric power is considered a permitted use in the Industrial Zoning District. Project development will be allowed via a Zoning Permit approval.
	Construction Permit	Required to construct, enlarge, alter or demolish a structure.	High	No Issue	Lead: 2-3 weeks; Processing: Estimated 2-4 weeks	TBD	Applications for a Construction Permit shall be made in accordance with the requirements of the New Jersey State Uniform Construction Code. A Zoning Permit is required prior to issuance of the Construction Permit.
	Road Opening Permit	Required for any road opening activities.	TBD	No Issue	Lead: 1-2 weeks; Processing: Estimated 2-4 weeks	TBD	Should any roadway opening activities be proposed, prior permit approval would be necessary.
	Driveway Permit	Construction of a driveway or access road utilizing Local roadways.	TBD	No Issue	Lead: 1-2 weeks; Processing: Estimated 2-4 weeks	$300 application fee; $500 escrow	Should any driveway construction activities be necessary for Project development, prior permit approval would be necessary.

Appendix B – Option 1a Constructability Matrices

PJM Constructability Risk Assessment Approach

- PJM conducted its constructability evaluation of the project data submitted by proposers, and engaged expert consultants to evaluate the constructability and permitting risks of the projects.
- PJM held discussions with the NJ BPU, and the NJ Department of Environmental Protection (NJDEP), who also reviewed these projects, and our findings are consistent with that of the NJDEP regarding permitting in New Jersey.
- The constructability risk assessment is not intended as a pass/fail test, but rather as qualitative information on potential risks for NJ BPU to take into consideration in its independent evaluation. All proposals were found to be constructible as a result of PJM's constructability review and remained under consideration.
- PJM's constructability risk assessment scale is provided as follows:
  - A Low (Green) risk assessment is an indication that there are relatively minor potential risks to cost and schedule of the project identified by the constructability evaluation.
  - Medium (Yellow) and Medium-High (Orange) risk assessments are indications that there are moderate to significant potential risks identified in the evaluation, which if encountered would introduce significant delays or cost increases for the project. Neither of these are indications that a project is not viable as proposed, but a relative assessment of potential risks to a project that should be considered for a project if not properly mitigated.
  - A High (Red) risk assessment represents a severe potential risk identified by the evaluation, and is reserved for projects that may threaten the feasibility of the project as proposed, if left unmitigated.

For the constructability risk assessment matrices that follow, please also note the following about PJM's conservative approach:

- PJM's assessments are based on the routing/siting of the project and the potential issues that the entities may encounter in constructing the project.
- In some cases, the findings may be appropriately mitigated, either by an entity's experience and planning, or by an entity's use of existing 'pre-disturbed' ROW. However, there is still a possibility of encountering issues during construction, especially if expansion beyond the existing ROW is required, and the fact that protected resources may have moved in since the initial disturbance of the ROW, potentially resulting in additional permitting. This is a key point stressed by the NJDEP during our discussions, and factors into PJM's conservative stance in identifying potential risks.
- An entity's experience and their mitigation plans for the potential constructability risks, however, were part of the information requested as part of the NJ OSW SAA proposal window, and are important factors in the NJ BPU's evaluation and decision process.

Option 1a Proposals - Environmental Risk Assessment

Proposal ID	Proposing Entity	Project Title	Permitting/Routing/Siting	ROW/Land Acquisition	Notes
975	ACE	ACE 01	Medium-High	Low	Green Acres impact, Pinelands permit required
734	ACE	ACE 02	Medium-High	Low	Green Acres impact, Pinelands permit required
127	ACE	ACE 03	Medium-High	Low	Green Acres impact, Pinelands permit required
929	ACE	ACE 04	Medium-High	Low	Green Acres impact, Pinelands permit required
17	JCPL	JCPL Option 1a	Medium-High	Low	Green Acres impact, Pinelands permit required
203	LSPG	Broad Creek - Robinson Run	Medium	Medium	Multi-state permitting required (MD, PA), New DCT lines assume use of incumbent line ROW
103	LSPG	Old York 230/500kV	Low	Low	
229	LSPG	Silver Run Upgrade	Medium	Low	USACE Section 10 Permits required, Multi-state permitting required (NJ, DE)
158	NEETMH	Combinations	Medium-High	Low	Multi-state permitting required (PA, NJ, DE), No environmental plan provided
793	NEETMH	Upgrades for Cardiff 2700 MW	Medium-High	Low	Green Acres impact, Pinelands permit required, No environmental plan provided
651, 44, 315	NEETMH	Upgrades for Deans 6000 MW	Medium-High	Low	Green Acres impact, No environmental plan provided
331, 520, 878	NEETMH	Upgrades for Oceanview 3000 MW	Medium-High	Medium	Green Acres impact, No environmental plan provided, 2 new lines assume use of incumbent line ROW
982	NEETMH	Wiley Rd 500 kV -Wheeler 500/230 kV	Medium	Low	Multi-state permitting required (MD, PA)
11	NEETMH	Wiley Rd 500/230 kV -Wheeler 500/230 kV	Medium	Medium	Multi-state permitting required (MD, PA), New line assumes use of incumbent line ROW
587	NEETMH	Wiley Rd-Conastone 500 kV	Medium	Low	Multi-state permitting required (MD, PA)
180	PSEG	Central Jersey Grid Upgrades	Medium	Low	Green Acres impact
894	PSEG	South Jersey Grid Upgrade	Medium	Low	USACE Section 10 Permits required, Multi-state permitting required (NJ, DE)
419	Transource	Claymont - Bridgeport	Medium	Low	USACE Section 10 Permits required, Multi-state permitting required (NJ, DE)
63	Transource	North Delta Option A	Medium	Medium	Multi-state permitting required (MD, PA), New DCT lines assume use of incumbent line ROW
296	Transource	North Delta Option B	Medium	Medium	Multi-state permitting required (MD, PA), New line assumes use of incumbent line ROW
345	Transource	Peach Bottom - Conastone	Medium	Low	Multi-state permitting required (MD, PA)

Option 1a Proposals – Engineering & Construction Risk Assessment

Proposal ID	Proposing Entity	Project Title	Engineering	Construction	Materials & Equipment	Notes
975	ACE	ACE 01	Low	Low	Low	
734	ACE	ACE 02	Low	Low	Low	
127	ACE	ACE 03	Low	Low	Low	
929	ACE	ACE 04	Low	Low	Low	
17	JCPL	JCPL Option 1a	Low	Low	Low	
203	LSPG	Broad Creek - Robinson Run	Low	Medium	Low	New DCT line construction requires demolition/rebuild of incumbent line (LSPG work)
103	LSPG	Old York 230/500kV	Low	Low	Low	
229	LSPG	Silver Run Upgrade	Low	Medium	Low	Submarine Cable construction
158	NEETMH	Combinations	Low	Medium	Low	Proposed Red Lion expansion conflicts with incumbent lines/structures (incumbent work)
793	NEETMH	Upgrades for Cardiff 2700 MW	Low	Low	Low	
651, 44, 315	NEETMH	Upgrades for Deans 6000 MW	Low	Low	Low	
331, 520, 878	NEETMH	Upgrades for Oceanview 3000 MW	Low	Medium	Low	2 new lines construction require retirement of incumbent line (incumbent work)
982	NEETMH	Wiley Rd 500 kV -Wheeler 500/230 kV	Low	Low	Low	
11	NEETMH	Wiley Rd 500/230 kV -Wheeler 500/230 kV	Low	Medium	Low	New line construction requires retirement of incumbent line (NEETMH work)
587	NEETMH	Wiley Rd-Conastone 500 kV	Low	Low	Low	
180	PSEG	Central Jersey Grid Upgrades	Low	Low	Low	
894	PSEG	South Jersey Grid Upgrade	Low	Medium	Low	Submarine Cable construction
419	Transource	Claymont - Bridgeport	Low	Medium	Low	Submarine Cable construction
63	Transource	North Delta Option A	Low	Medium	Low	New DCT line construction requires demolition/rebuild of incumbent line. Assumes use of AEP BOLD DCT construction (incumbent work)
296	Transource	North Delta Option B	Low	Medium	Low	New line construction requires retirement/rebuild of incumbent line (incumbent work)
345	Transource	Peach Bottom - Conastone	Low	Low	Low	

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