
Final Report

Analysis for the Dominion Virginia Power 1A Proposal

Prepared for
PJM Interconnection

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CH2MHILL®

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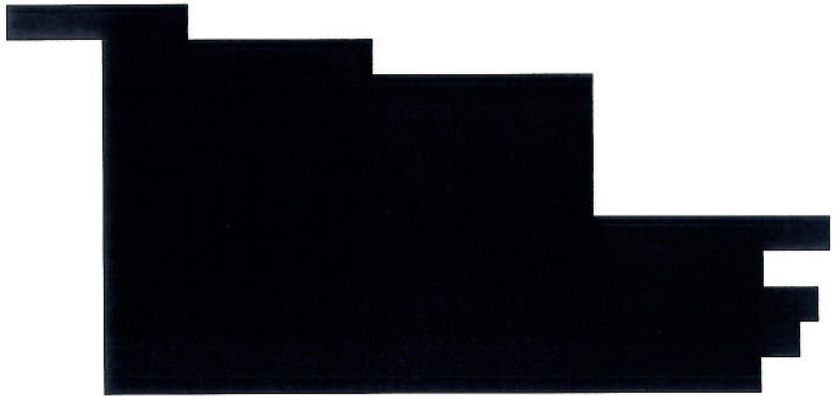
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Acronyms and Abbreviations

AME	African Methodist Episcopalian
CMP	Comprehensive Management Plan
CZM	Coastal Zone Management
DCMP	Delaware Coastal Zone Management Program
DNREC	Delaware Department of Natural Resources and Environmental Control
Dominion	Dominion Virginia Power
FEMA	Federal Emergency Management Agency
FHA	Flood Hazard Area
FWPA	Freshwater Wetlands Protection Act
FWW	Freshwater Wetlands
GIS	geographic information system
IPaC	Information, Planning, and Conservation System
kV	kilovolt
MBTA	Migratory Bird Treaty Act
MM	million
NJ HPO	New Jersey Historic Preservation Office
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
N.J.S.A.	New Jersey Statutes Annotated
NPDES	National Pollutant Discharge Elimination System
PJM	PJM Interconnection, LLC
RFP	request for proposal
SHPO	State Historic Preservation Office
SVC	Static VAR Control
T&E	Threatened and Endangered Species
TCSC	Thyristor Controlled Series Compensation
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

Introduction

1.1 Introduction and Background

In April 2013, PJM Interconnection, LLC (PJM) opened a project proposal window which sought responses detailing technical solution alternatives aimed at improving PJM Operational Performance in the Artificial Island area. These alternatives were to be presented under a range of anticipated system conditions, and the purpose of developing these alternatives was to eliminate potential planning criteria (such as, PJM, NERC, RFC, and Local Transmission Owner criteria) violations in the Artificial Island area. In response to PJM's request for proposal (RFP), Dominion Virginia Power (Dominion) provided a proposal that included new facilities and upgrades to existing facilities discussed below.

New Facility

Install one 750/-375 Mega Volt Ampere Reactive (MVAR) Static VAR Control (SVC) plus two Thyristor Controlled Series Compensation (TCSC) Devices and associated transformers, breakers, controls and protection at a new substation near New Freedom. Dominion identified four potential sites where the new facility could be located as shown on the map provided in Appendix A, Site Analysis of the "Artificial Island Supplemental Proposal Response" prepared by Dominion, dated September 12, 2014. These have been identified as New Substation Site 1 through 4 with the following locations:

- Site 1: 44.0 acres [REDACTED]
- Site 2: 69.9 acres [REDACTED]
- Site 3: 217.5 acres [REDACTED]
- Site 4: 53.6 acres [REDACTED]

Upgrades to Existing Facilities

- Install two 500 kilovolt (kV) breakers at New Freedom substation [REDACTED]
- Install one 500kV breakers at Red Lion substation [REDACTED]
- Install two 500kV breakers at East Windsor substation [REDACTED]
- Install one 500kV breaker at Hope Creek substation [REDACTED]

1.2 Information Sources

CH2M HILL was provided with the following information sources and links with which to conduct this review and prepare the permitting analysis:

- "Artificial Island Supplemental Proposal Response" letter prepared by Dominion, dated September 12, 2014,;
- "Dominion's Artificial Island Constructability P2013_1-1A (SVC)" prepared by Dominion, dated November 4, 2013 including Appendices A through D; and
- "Evaluation of Potential Sites for New Substation Report" prepared by Dominion, dated June 2013.

1.3 Assumptions and Limitations

This work included a desktop analysis only; no fieldwork has been scoped as part of these tasks. CH2M HILL presents this information based on information generated from geographic information system (GIS) analysis of publicly available data, state and federal regulations, and our understanding of the RFP. CH2M HILL developed this report based on the background information described in Sections 1.1 and 1.2, our professional experience, and knowledge of similar projects in this geography.

1.4 Scope of Work

As requested by PJM, CH2M HILL reviewed the reference documents and supplemented those with additional documentation and expertise to provide the following information:

- GIS-based mapping for the four existing substation sites to receive upgrades and the four possible new substation sites presented in the Dominion 1A RFP. The maps include pertinent ecological, land use and infrastructure information material to evaluate the permitting needs of the project.
- A permit matrix and brief discussion of the major anticipated permits. The matrix was developed based on information generated from GIS analysis of publically available data, state and federal regulations, and our understanding of the current RFP. CH2M HILL developed this matrix based on our professional experience and knowledge of similar projects in this geography.
- A summary of the process for obtaining the permits and the potential permitting risks.
- Review of the four new substation site alternatives to determine if they are adequately sized for the proposed substation.
- Cost review of the TCSC and SVC facilities.
- Evaluation of the proposed double breaker installations at the four existing substations.
- Cost review of the implementation of the breakers at the four existing substations.

Document Review and Data Gathering

2.1 Document Review and Constraints Mapping

Each of the four potential sites for a new substation, and the existing substations to be upgraded are affected by multiple regulatory jurisdictions as the federal, regional, state, and local level.

CH2M HILL used data and information provided by PJM identified in Section 1.4, supplemented with state-specific GIS data to assess the type and magnitude of resources located at the sites that would likely trigger a permit threshold. Once collected these data were presented in a permit table (Appendix A) and the likely cost, duration, and mitigation potential were assessed. CH2M HILL reviewed the following data sets for each site:

- Wetlands and waterbodies (e.g., New Jersey Department of Environmental Protection [NJDEP] wetlands GIS data, National Wetland Inventory wetlands, National Hydrography Dataset streams);
- Federal Emergency Management Agency (FEMA) 100-year floodplains;
- Federal (Information, Planning, and Conservation System [IPaC]) and state (if available) threatened and endangered species (e.g. New Jersey Landscape Project (v.3.1));
- Natural Resources Conservation Service (NRCS) Soils data;
- Land use classes, sensitive land use,
- Cultural resources; and
- Existing transmission, distribution, and pipelines.

The data layers were combined into constraint maps for each of the existing and potential new sites [REDACTED]

Evaluation and Comparison of the Proposed Project Site

3.1 Availability of the Proposed Sites

CH2M HILL reviewed publicly available data as well as the title search abstract provided in Appendix A of the “Dominion’s Artificial Island Constructability P2013_1-1A (SVC)” prepared by Dominion, for each of the four potential new substation sites for potential title encumbrances. Based on this limited review, no title encumbrances were found for the four potential new substation sites. However, based on our review of publically available GIS data, sites 2, 3, and 4 are encumbered by the New Jersey Green Acres program.

CH2M HILL recommends that a formal title search be performed by a licensed title company in the State of New Jersey for confirmation.

3.2 Potential Permitting and Environmental Risks

3.2.1 Existing Substation Construction Analysis

Based on the conceptual layout of the two 500kV breakers installation provided in Appendix B of the “Dominion’s Artificial Island Constructability P2013_1-1A (SVC)” letter prepared by Dominion it appears the construction proposed at the four existing substations will fall within the limits of the existing fence line.

CH2M HILL prepared a constraints map for each of the existing substations. Based on this mapping, and the location of the proposed upgrades within the existing fence line in a previously disturbed area, some limited permitting may be required. The most significant would include:

New Freedom, Hope Creek, and East Windsor

- New Jersey Department of Community Affairs Plan Release
- Local Building Permits

Red Lion

- Delaware Department of Natural Resources and Environmental Control (DNREC) – Office of Environmental Protection – Division of Watershed Stewardship, National Pollutant Discharge Elimination System (NPDES) Sediment and Stormwater Plan Construction Permit
- Local Building Permits

If the improvements require an expansion of the station footprint outside the original fence line, the following additional permits may be required:

New Freedom

- NJDEP Freshwater Wetlands (FWW) Individual Permit and Section 401 Water Quality Certification;
- Flood Hazard Area (FHA) Individual Permit; and
- New Jersey Natural Heritage Program State Threatened and Endangered Species (T&E) Consultation.

Hope Creek

- U.S. Army Corps of Engineers (USACE) Section 404 Permit and Section 401 Water Quality Certification;
- FHA Individual Permit; and
- New Jersey Natural Heritage Program State T&E Consultation.

East Windsor

- NJDEP FWW Individual Permit and Section 401 Water Quality Certification;
- FHA Individual Permit;
- New Jersey Natural Heritage Program State T&E Consultation; and
- Green Acres Diversion or Disposal.

Red Lion

- DNREC – Office of Environmental Protection – Division of Water, Wetlands and Subaqueous Lands Permit Application and Section 401 Water Quality Certification; and
- DNREC – Delaware Coastal Zone Management Program (DCMP), Coastal Zone Management Federal Consistency.

3.2.2 New Substation Site Analysis

3.2.2.1 Resource Impact Analysis

CH2M HILL has assessed the potential environmental constraints and associated permitting needs for the four potential new substation sites proposed by Dominion. All information provided in the following sections is based upon publicly available GIS data unless otherwise mentioned. The following is a summary of the major resources mapped at the sites is shown in Table 3-1 below:

TABLE 3-1

Resources Located Within Site Boundary

Resource	Managing Name	New Substation Site 1	New Substation Site 2	New Substation Site 3	New Substation Site 4
Total Area (acres)	N/A	44.0	69.9	217.5	53.6
Protected Lands					
Winslow (acres)	NJDEP				52.7
New Brooklyn – Green Acres Program (acres)	Camden County		56.2	214.4	
Protected Lands Total (acres)		0	56.2	214.4	52.7
Streams and Floodplains					
Streams (Linear Feet)	NJDEP / Pinelands	0	0	10,841	0
New Jersey – FEMA 100 Floodplains (acres)	NJDEP / Pinelands	0.007	31.8	121.2	0.8
Floodplains Total (acres)		0.007	31.8	121.2	0.8
Wetlands					
Forested Wetlands (acres)	NJDEP / Pinelands	15.3	51.6	124.8	34.8
Non-Forested Wetlands (acres)	NJDEP / Pinelands	2.3	2.1	19.8	6.7
Wetlands Total		17.6	53.7	144.6	41.5
Protected Species Present (Y/N)		Y	Y	Y	Y
New Jersey Pinelands Commission Jurisdiction (Y/N)		N	N	Y	Y
Vernal Habitat Present (Y/N)		Y	Y	N	N

3.2.2.2 Public or Protected Lands

Three potential new substation sites contain lands that are subject to protective measures, such as conservation easements.

Site 2

An estimated 56.2 acres of Site 2 falls within the New Brooklyn Green Acres Program, which is administered by Camden County.

Site 3

An estimated 214.4 acres of Site 3 falls within the New Brooklyn Green Acres Program, which is administered by Camden County.

Site 4

An estimated 52.7 acres of Site 4 falls within the Winslow protected area, which is administered by NJDEP.

3.2.2.3 Pinelands

Site 3 and Site 4 fall within the New Jersey Pinelands Commission jurisdictional area.

3.2.2.4 Ecological Resources

All four proposed substation sites appear to contain streams, floodplains, and/or wetlands, in general, is dominated by estuarine and coastal plain habitats.

3.2.2.5 Wetlands

Site 1

Approximately 17.6 acres of mapped wetlands are located within the 44.0-acre boundary of Site 1.

Potential impacts within Site 1 in forested wetlands are estimated to be approximately 15.3 acres.

Site 2

Approximately 53.7 acres of mapped wetlands are located within the 69.9-acre boundary of Site 2.

Potential impacts within Site 2 in forested wetlands are estimated to be approximately 51.6 acres.

Site 3

Approximately 144.6 acres of mapped wetlands are located within the 217.5-acre boundary of Site 3.

Potential impacts within Site 3 in forested wetlands are estimated to be approximately 124.8 acres.

Site 4

Approximately 41.5 acres of mapped wetlands are located within the 53.6-acre boundary of Site 4.

Potential impacts within Site 4 in forested wetlands are estimated to be 34.8 acres.

3.2.2.6 Streams and Flood Hazard Areas

Site 1

No streams are mapped within parcel boundaries of Site 1. However, the Site 1 parcel contains about 0.007 acre of FEMA 100-year floodplain.

Site 2

No streams are mapped within parcel boundaries of Site 1. However, the Site 2 parcel contains approximately 31.8 acres of FEMA 100-year floodplain.

Site 3

Approximately 8.4 acres of streams are mapped within parcel boundaries of Site 3. In addition, the Site 3 parcel contains about 121.2 acres of FEMA 100-year floodplain.

Site 4

No streams are mapped within parcel boundaries of Site 4. However, the Site 4 parcel contains approximately 0.8 acre of FEMA 100-year floodplain.

3.2.2.7 Threatened and Endangered Species

Site 1

Federal

Preliminary review of the U.S. Fish and Wildlife Service's (USFWS's) IPaC data indicates the potential presence of the northern long-eared bat (*Myotis septentrionalis*), a federally proposed endangered species. IPaC also identified the potential presence of American chaffseed (*Schwalbea americana*) – endangered; Knieskern's beaked-rush (*Rhynchospora knieskernii*) – threatened; and swamp pink (*Helonias bullata*) – threatened. Additionally, 25 birds considered Bird of Conservation Concern per the Migratory Bird Treaty Act (MBTA) were identified by USFWS.

State

New Jersey Landscape Project data indicates four New Jersey "Species of Special Concern" (birds) at the site.

Site 2

Federal

Preliminary review of USFWS's IPaC data indicates the potential presence of the northern long-eared bat, a federally proposed endangered species. IPaC also identified the potential presence of American chaffseed – endangered; Knieskern's beaked-rush – threatened; and swamp pink – threatened. Additionally, 25 birds considered Bird of Conservation Concern per the MBTA were identified by USFWS.

State

New Jersey Landscape Project data indicates four New Jersey "Species of Special Concern" (birds) at the site.

Site 3

Federal

Preliminary review of USFWS's IPaC data indicates the potential presence of the northern long-eared bat, a federally proposed endangered species. IPaC also identified the potential presence of American chaffseed – endangered; Knieskern's beaked-rush – threatened; and swamp pink – threatened. Additionally, 25 birds considered Bird of Conservation Concern per the MBTA were identified by USFWS.

State

New Jersey Landscape Project data indicates one state endangered species (bald eagle [*Haliaeetus leucocephalus*]) and one state special concern species (great blue heron [*Ardea herodias*]) at the site.

Site 4

Federal

Preliminary review of USFWS's IPaC data indicates the potential presence of the northern long-eared bat, a federally proposed endangered species. IPaC also identified the potential presence of American chaffseed – endangered; Knieskern's beaked-rush – threatened; and swamp pink – threatened. Additionally, 25 birds considered Bird of Conservation Concern per the MBTA were identified by USFWS.

State

New Jersey Landscape Project data indicates one state endangered species (bald eagle), one state threatened (barred owl [*Strix varia*]), and one state special concern species (great blue heron) at the site.

3.2.2.8 Historic Resources

No known historic resources are mapped within the parcel boundaries of the four potential substation sites. However, we note that historic resources data is typically much less complete relative to other data sources. State Historic Preservation Offices do not have a complete list of every historic and archaeological resource available to them. Thus, the New Jersey Historic Preservation Offices will likely require further studies to assess the presence of potentially important historic resources.

A review of historic resources data identified the following resources in proximity to the sites:

Site 1

Hurff House and outbuildings have been identified as a historic resource within 18,550 feet of Site 1.

Site 2

Grant African Methodist Episcopalian (AME) Church has been identified as a historic resource within 20,340 feet of Site 2.

Site 3

Grant AME Church has been identified as a historic resource within 18,750 feet of Site 3.

Site 4

New Brooklyn Glassworks has been identified as a historic resource within 3,130 feet of Site 4.

3.2.3 Permitting Discussion

CH2M HILL assessed anticipated permits associated with all four potential new substation sites. The assessment included a review of federal, regional, state, and local regulatory issues that would likely have to be addressed for each of the individual sites to be granted regulatory approvals to begin construction. CH2M HILL's assessment is based on our understanding of the information provided by PJM, analysis of available GIS data summarized in the previous section, understanding of applicable regulations, and professional experience with projects of similar scope in this geography. No meetings, correspondence, or discussions with any regulatory officials specific to this analysis or any of the project sites occurred.

It is likely that all four potential new substation sites would likely encounter significant regulatory hurdles if they are to be approved for construction, depending upon proposed site layout and associated impacts. CH2M HILL's analysis provides a range for relative risk and costs to be considered.

Individual project scenario permitting matrices that highlight major permits and approvals, processes for obtaining these permits and approvals, associated timeframes, costs, and issues associated with project risks are provided as Appendix A.

3.2.3.1 Federal Permits and Approvals

The Freshwater Wetlands Protection Act (FWPA), New Jersey Statutes Annotated (N.J.S.A.) 13:9B authorized the State of New Jersey to establish a program for the review of activities in freshwater wetlands and transition areas. To implement the FWPA, the Department promulgated the FWPA rules, New Jersey Administrative Code (N.J.A.C.) 7:7A.

In non-delegable waters (i.e. tidally influenced), the USACE retains jurisdiction under Federal law, and both Federal and State requirements apply. A project in non-delegable waters requires two permits, one from NJDEP under the Coastal Zone Management (CZM) and Coastal Permitting Program rules and one from the USACE under the Federal 404 program. None of the four potential sites falls within non-delegable waters and therefore would be subject to the FWPA rules and not USACE jurisdiction.

Threatened and Endangered Species

All four sites were found to include known occurrences of federally listed T&E species and/or Birds of Conservation Concern. Thus, it is likely that federal conservation agencies (e.g. USFWS) will require consultation and potential field studies in order to obtain a Freshwater Wetlands permit.

3.2.3.2 State of New Jersey Permit Approvals

Below is a summary of the major state permits likely required in New Jersey associated with the four potential new substation sites. A more detailed list is provided within Appendix A.

3.2.3.3 Wetlands

The FWPA, N.J.S.A. 13:9B authorized the State of New Jersey to establish a program for the review of activities in freshwater wetlands and transition areas. To implement the FWPA, the Department promulgated the FWPA rules, N.J.A.C. 7:7A. All four potential substation sites are mapped as having regulated wetlands and transition areas on-site. Any impacts to these resources will require a Freshwater Wetlands permit and compensatory mitigation for impacts to these resources.

3.2.3.4 Flood Hazard Area

The FHA Control Act Rules N.J.A.C. 7:13, adopted on November 5, 2007, implement the New Jersey Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq. Areas designated as FHA are very similar to those areas designated by FEMA as 100-year floodplain with some technical differences between the two designations.

The FHA Control Act Rules require a riparian zone adjacent to the regulated waters. The riparian zone is a buffer that extends 50 feet, 150 feet, or 300 feet from the top of bank along both sides of the regulated water depending on its classification. The removal of vegetation and the placement of impervious surfaces is limited within the riparian zone. Disturbances within either the floodplain or the riparian zone will require a permit from the Division of Land Use Regulation under the FHA Control Act Rules. None of the sites identified as potential locations for a new substation are mapped as including Category One streams that would require a 300 foot riparian zone. Sites 2, 3, and 4 may all be affected by riparian zone requirements as each site either includes mapped streams onsite or within close enough proximity to the site where a riparian zone associated within an offsite stream would fall within the site boundaries. Riparian zone widths at these locations would be determined by NJDEP's review of threatened and endangered species habitat during the permitting process.

Sites containing FHAs must comply with the permit requirements, which include stringent design standards and conditions for disturbances and the placement of structures within the flood hazard area and the riparian zone. Impacts to the FHA (e.g. foundation volume in FHA) and to riparian zones will require additional compensatory mitigation.

3.2.3.5 State Threatened and Endangered Species Review

The state of New Jersey maintains its own list of state species of special concern that must be considered as part of any activities subject to NJDEP regulations. The New Jersey Natural Heritage Program and Division of Land Use Regulation will conduct project specific reviews of special concern habitat as mapped by the state's Landscape Project (v. 3.1). Like federal threatened and endangered species habitat concerns, the state of New Jersey will likely require species-specific field studies to be completed depending on the specific layout of a project. The outcome of these field studies often result in specific permit conditions within the Freshwater Wetlands permits that may require certain best management practices be implemented during construction, timing restrictions be adhered to in specific areas of concern, and/or mitigation measures be taken if a habitat is impacted due to construction. These specific conditions can impact project construction schedules but are not typically insurmountable for projects of this type. Several other recent projects that are similar in scope and extent have been successfully completed recently in New Jersey.

3.2.3.6 New Jersey Historic Preservation Office

The New Jersey Historic Preservation Office (NJ HPO) is the state historic preservation office (SHPO) in New Jersey responsible for implementation of Section 106 of the National Historic Preservation Act. NJ HPO does not provide a permit, however, its findings are considered as part of NJDEP's natural resource permitting process. All four potential new substation sites have historic resources in the vicinity that could require a combination of historic resources studies that consider both aboveground historic structures within the viewshed of the proposed substation. Additionally, if the ground surface at any of the four proposed substation sites has not been previously disturbed, NJ HPO will likely require archaeological studies to take place prior to gaining approval of the FWW permit.

3.2.3.7 New Jersey Pinelands Commission

The New Jersey Pinelands Commission regulates land development and impacts to resources with the Pinelands Management Area under the Comprehensive Management Plan (CMP). The CMP implements, and is an exercise of, the powers granted to the New Jersey Pinelands Commission by the 1979 New Jersey Pinelands Protection Act and the Federal National Parks and Recreation Act of 1978. The regulations and standards it contains are designed to promote orderly development of the Pinelands so as to preserve and protect the significant and unique natural, ecological, agricultural, archaeological, historical, scenic, cultural and recreational resources of the Pinelands. Approval from the New Jersey Pinelands Commission is required for projects that fall within Pinelands Management Area.

3.2.3.8 Green Acres Program

For state, county, and municipal parklands, as well as privately owned parklands that are purchased with public funding, a project must demonstrate compliance with the New Jersey Green Acres Program Rules, N.J.A.C. 7:36. A Green Acres diversion or disposal will be required from NJDEP for project activities and components on Green Acres-encumbered properties that are not authorized by existing easements or agreements. This applies to Green Acres-encumbered properties. The Green Acres process can take several months to several years to complete. The extent of the Green Acres encumbrances on each site should be verified with the Green Acres program, as not all Green Acres data is publicly available.

"Divert" or "diversion" means to use or allow the use or control of parkland for other than recreation and conservation purposes, contrary to the Green Acres restrictions. For example, granting a nonexclusive easement, or leasing or using parkland for other than recreation and conservation purposes, is to divert it.

"Dispose of" means to sell, donate, exchange, grant, convey or transfer permanent possession of any legal interest in parkland, in fee simple or by easement or other legal mechanism, to another person or entity for purpose(s) contrary to the Green Acres restrictions.

3.2.3.9 Planning and Zoning

Local planning and zoning approval would be required for any new substations or expansions to existing substations in New Jersey per the Municipal Land Use Law. This process can be completed concurrently with NJDEP permits once a site plan layout is established. Typically, the site plan review and approval process takes 6 to 9 months to complete if required.

3.2.3.10 Site Specific Permitting Assessment

Site 1

Site 1 contains regulated wetlands, FHAs, and threatened and endangered species habitat that would require permits or approvals from New Jersey regulatory agencies. Based on the provided dimensions of the new substation (970 feet by 755 feet), it is likely that at least some of the proposed footprint will result in impacts to wetlands and transition areas. At minimum, these impacts would require compensatory mitigation and freshwater wetlands permitting. Typically, the freshwater wetlands permitting process takes approximately 6 to 12 months to complete.

Only a small portion of the site includes a regulated FHA. The location and size of the mapped FHA appears to be avoidable given the assumed footprint of the station. Thus, a FHA permit will likely not be required.

The construction of a new substation at Site 1 would also require a local site plan approval from the municipality. This process typically takes three to six months if no variances are required.

Site 2

Site 2 contains regulated wetlands, FHAs, and threatened and endangered species habitat that would require permits or approvals from New Jersey regulatory agencies. Additionally, the site is mapped to include a large Green Acres site (New Brooklyn). Based upon the assumed footprint of the proposed substation, no matter where the station would be located on the site, construction would result in impacts, at minimum, to wetlands and Green Acres, and likely impacts to FHAs. Impacts to wetlands and FHAs would require compensatory mitigation and permits from NJDEP. Typically, the NJDEP permitting process takes approximately 6 to 12 months to complete.

The construction of a new substation at Site 2 would also require a local site plan approval from the municipality. This process typically takes three to six months if no variances are required.

The fact that the site is mapped as being almost completely encumbered by Green Acres will be a significant hurdle to successfully permit development of the site through NJDEP as the state of New Jersey maintains a high standard for granting a diversion or disposal of Green Acres parcels as defined above.

Site 3

Site 3 contains regulated wetlands, FHAs, and threatened and endangered species habitat that would require permits or approvals from New Jersey regulatory agencies. Additionally, the site is mapped to include a large Green Acres site (New Brooklyn). Based upon the assumed footprint of the proposed substation, no matter where the station would be located on the site, construction would result in impacts, at minimum, to wetlands and Green Acres, and likely impacts to FHAs. Impacts to wetlands and FHAs would require compensatory mitigation and permits from NJDEP. Typically, the NJDEP permitting process takes approximately six to 12 months to complete.

The construction of a new substation at Site 3 would also require a local site plan approval from the municipality. This process typically takes three to six months if no variances are required.

The fact that the site is mapped as being almost completely encumbered by Green Acres will be a significant hurdle to successfully permit development of the site through NJDEP as the state of New Jersey maintains a high standard for granting a diversion or disposal of Green Acres parcels as defined above.

In addition, this site falls within the jurisdiction of the New Jersey Pinelands Commission. Any proposed development of this site would also be subject to the approval by the New Jersey Pinelands Commission. Pinelands Commission site plan review typically takes six to nine months.

Site 4

Site 4 contains regulated wetlands, FHAs, and threatened and endangered species habitat that would require permits or approvals from New Jersey regulatory agencies. Additionally, the site is mapped to include a large Green Acres site (New Brooklyn). Based upon the assumed footprint of the proposed substation, no matter where the station would be located on the site, construction would result in impacts, at minimum, to wetlands and Green Acres, and likely impacts to FHAs. Impacts to wetlands and FHAs would require compensatory mitigation and permits from NJDEP. Typically, the NJDEP permitting process takes approximately six to 12 months to complete.

The construction of a new substation at Site 4 would also require a local site plan approval from the municipality. This process typically takes three to six months if no variances are required.

The fact that the site is mapped as being almost completely encumbered by Green Acres will be a significant hurdle to successfully permit development of the site through NJDEP as the state of New Jersey maintains a high standard for granting a diversion or disposal of Green Acres parcels as defined above.

In addition, this site falls within the jurisdiction of the New Jersey Pinelands Commission. Any proposed development of this site would also be subject to the approval by the New Jersey Pinelands Commission. Pinelands Commission site plan review typically takes six to nine months.

SECTION 4

Site Size Analysis

The proposed "Ultimate General Arrangement 500kV SVC Substation" document was reviewed as basis for the comments below regarding the physical space requirements for the SVC substation ("the site"). These comments are to be considered preliminary, subject to a detailed design.

The site as presented is irregular, with stated overall dimensions to the fence line of 970 feet by 755 feet, requiring 13.70 net acres inside the fenceline. This footprint does not include additional space for site specific constructability issues, additional infrastructure for access and stormwater management, or ROW for aboveground transmission. The substation interior is arranged with an access road around the perimeter 10 feet in width, and a horizontal distance of approximately 50 feet between the outside phase conductor and the fence. Interior access roads are included for maintenance access.



SECTION 5

Evaluation of Proposed Double Breaker Installations

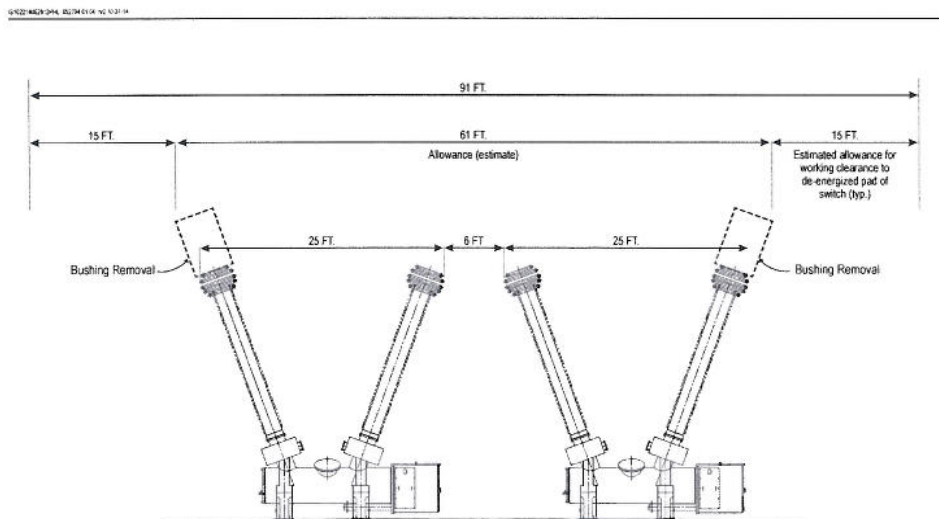
The project proposes installing a total of six additional breakers at four substation sites. The proposed configuration for these substation breakers is to install one additional substation breaker (for a total of two back-to-back breakers) into a bay location that was originally designed for one breaker. In several locations, this appears reasonably feasible. However, in other locations the final installation may not provide normal working clearances or allow maintenance without a more extensive outage than is currently offered by the existing configuration.

5.1 Physical Constraint and Constructability Issues

Figure B reflects a back-to-back breaker installation that portrays a typical breaker dimension of 25 feet between the outside of the breaker terminal corona control hardware. The working clearances between the breaker and the adjoining switch (not shown) are allowed at 15 feet, plus a 2.5-foot allowance on either end for bushing removal, and 6 feet of working space in between the breakers. The total estimated dimension allowed for the installation is 91 feet between the terminal pads of the adjoining switches.

The bushing removal space is that space required for removal of a bushing, should a bushing become damaged or the breaker require replacement. This space must be allowed in installations. In this instance this added bushing removal space requires 2.5 feet for each end bushing, which adds 5 feet overall.

FIGURE B
Typical Dead Tank Breaker Configuration



Not To Scale

FIGURE 1
Space Allowance Estimate Based on
63KA, 1300KV SIL Breakers
PJM Interconnection Artificial Island Project

CH2MHILL

Following are dimensions extracted from Google Earth that reflect the available space in the substation bays noted.

Hope Creek

At Hope Creek, two breakers are proposed for installation at the locations [REDACTED] [REDACTED] proposed to serve the Red Lion and New SVC substations.

Based on PJM analysis, only the upper right breaker is not required.



The dimension as scaled [REDACTED] indicates that 70 feet is available for the proposed back-to-back breaker installation. A breaker installation similar to that [REDACTED] [REDACTED] will prove challenging in the space allowed (typical for two places).

Given the bay dimensions, it will prove challenging to install a back-to-back breaker retrofit.

New Freedom

At New Freedom substation, two breakers are proposed on either side of the terminal serving East Windsor



The dimension as scaled indicates that 71 feet is available for the proposed back-to-back breaker installation

A breaker installation similar to that will prove challenging in the space allowed.



Both substation bays at New Freedom have similar dimensions, and both will prove challenging for a back-to-back breaker retrofit in the space allowed.

East Windsor

At East Windsor substation, two new breakers and switches are proposed on either side of the terminal serving Line 5022 to Deane substation [REDACTED]



The scaled dimension indicates that approximately 95 feet is available between the breaker and the proposed tie-in point [REDACTED]. This should be adequate space for a new 500kV breaker and switch (requiring approximately 25 feet in width).

Red Lion

At Red Lion sub, the proposed installation adds an additional breaker. There appears to be 100 feet of space in the proposed location. This should be adequate space for a new 500 kV breaker.

TABLE 5-1

Summary of Substation Physical Installation Findings

Substation	Space Available (feet)	Space Required (Estimated) (feet)	Appears Adequate for standard installation
Red Lion	100	91	Yes
Hope Creek	70	91	No
New Freedom	71	91	No
East Windsor	96	91	Yes

In summary, the allowed space in two of the installations does not appear to be consistent with typical working clearances for breaker maintenance. In most locations there appears to be available space for expansion of the substation to accommodate the equipment installation. Doing so, requires relocation of existing substation equipment and buswork, and may require moving fencelines, with associated potential land acquisition, permitting, site civil work, etc. This obviously increases the scope & cost of the project.

Alternatives may exist which may reduce the footprint (e.g. two back-to back Gas Insulated Substation type breakers with only two air bushings, or physical movement/relocation of the substation bay), but exploration and development of these concepts are beyond the scope of this review effort.

5.2 Other Physical Constraint Issues

One added area of concern is in respect to the physical arrangement of intercepting the New Freedom – Salem line 5024 and the New Freedom – Hope Creek line 5023. The proposed concept appears to require one or more of these lines to cross existing 500kV lines in order to access the proposed sites. It should be noted that although technically feasible, this would require new taller structures (possibly more than 200 feet). These will require appropriate measures to address guarding the lower 500kV line against a broken conductor falling from the upper line. This has ramifications for PJM reliability criteria, which are a risk item for the project.

One alternative may be to have the Orchard line brought into the new TCSC substation, which would increase the substation footprint, and thus eliminate the 500kV line crossing. Again, exploration and development of this concept is beyond the scope of this review effort.

SECTION 6

Cost Review for Implementation

As directed in the work scope, CH2MHILL's review of costs consists of reviewing and commenting on Dominion's cost estimate.

Dominion's estimate is presented in Appendix D. In addition, Dominion offered a follow up response to PJM comments in a letter dated September 12, 2014. In this, they presented the information in Table 6-1.

TABLE 6-1

Total Projected Project Cost for Project P2013 1-1A as Proposed by Dominion

Component	Dominion High Voltage Cost (Includes 10% Contingency) (millions)	Not to Exceed Provided by Vendor (millions)	Additional Contingency Factor	Maximum Expected Cost (millions)
750/-375 MVAR SVC		\$50.6	N/A	\$50.6
Two TCSCs		\$35.8	N/A	\$35.8
SVC coupling transformers	\$21.8		10%	\$14.1
Engineering labor, construction labor, and other material costs	\$41.4		10%	\$45.5
Real estate and permitting	\$6.2		50%	\$9.3
Incumbent construction – breaker installations at four stations	\$17.1		10%	\$18.8
Total		\$163.9		\$174.1

Table 6-1 represents a summary of the detailed cost estimate, with rationale for contingency.

In any estimate at this stage of development, there are three sources risk that must be considered:

- **Scope Risk:** Is the scope of the project well enough defined to ensure that all cost sources are identified, and the overall project size correctly established to perform the function noted?
- **Quantity Risk:** Are the estimated quantities (e.g., yards of concrete or feet of conductor) for the scope correct? Are the performance requirements of the equipment correctly determined?
- **Estimating Risk:** For the quantities noted, does the estimate reflect appropriate productivity and component costs for the construction approach anticipated? Do the costs reflect appropriate constructability considerations (i.e., schedule constraints and premium time, weather, correct pricing of commodities and engineered equipment, or labor hours per unit)?

The following comments are summarized for the breaker installations noted.

Scope Risk

It is the view of CH2MHILL that this is the single largest risk area of the three risk types noted. Scope risk areas are as follows:

1. **Insufficient Breaker Space:** As noted in section 7.1, the space allowed is a concern for the breaker installation at Hope Creek (one breaker) and New Freedom (one breaker). Should the space allowed for these breakers be insufficient, the scope of the installation will grow, requiring modification or relocation of other substation equipment such as buswork, instrument transformers and switches. The cost impact

of this is beyond the scope of this evaluation to assess with any accuracy, however, it is not unreasonable to expect that this would substantially exceed the 10 percent contingency (\$1.71 million [MM]) applied to the line item cost of \$17 MM.

2. Regional Relay Replacement: This risk is indeterminate, but presents more of a schedule risk than a cost risk, should the scope increase, due to the engineering time and coordination required to implement a relay replacement program.

Quantity Risk

Quantity risk per unit of construction should be relatively low, as the quantities of material required seem to be reasonable apparently drawn from Dominion's database. Because the scope and performance requirements appear to be well established, a 10 percent contingency margin for this scope should be adequate, and likely present a low risk of cost overrun.

Estimating Risk

There are two major areas of Estimating Risk to consider for this project:

1. Validity of costs for the TCSC and SVC; and
2. Validity of the costs for balance of Dominion estimate.

Dominion is relying upon bid proposals received from TCSC and SVC vendors as basis for a significant portion of their estimate (\$86.4MM, or 50 percent of their project cost). This is a good approach, provided scope risk issues are addressed, and no out-of-scope issues are encountered, such as unforeseen schedule delays, subsurface conditions differing from those assumed, international currency fluctuations, local labor costs, or work rules affecting the price.

Of particular note is that labor costs and union work rules in New Jersey may affect labor costs for the installation of the equipment. It is suggested that carrying a contingency against this line item may be prudent.

Cost risk on the project could potentially increase since this is outside Dominion's traditional geographic labor pool.

In conclusion, Dominion's construction cost estimate (exclusive of permitting and real estate costs) is stated as \$164.8 MM, including a \$7.1 MM overall contingency (4.3 percent). It is suggested that Dominions' exposure to cost increases may exceed the contingency allowance, given the stage of development of the project and number of unknowns. A higher contingency may be justified overall, perhaps in the 6 to 7 percent range, plus reconciliation of the cost impact of the scope items noted, which would increase the cost further.

Conclusion

Existing Substation Upgrades - Permitting

CH2M HILL's review of publicly available GIS data indicates that the proposed upgrades to the existing substations are within the existing fence lines in previously disturbed areas; therefore, some limited permitting may be required associated with upgrades. This permitting would include New Jersey Department of Community Affairs Plan Release and Local Building Permits for the New Freedom, Hope Creek, and East Windsor substations, and DNREC – Office of Environmental Protection - Division of Watershed Stewardship, NPDES Sediment and Stormwater Plan Construction Permit, and Local Building Permits for the Red Lion Substation. Should the existing substation upgrades expand outside the exiting fence line, additional environmental permitting would be necessary.

Potential New Substation Locations – Permitting

CH2M HILL's review of publicly available GIS data indicates that it is likely that all four potential new substation sites would likely encounter significant regulatory hurdles if they are to be approved for construction depending upon proposed site layout and associated impacts.

The fact that Sites 2, 3, and 4 are mapped as being almost completely encumbered by Green Acres will be a significant hurdle to successfully permit development of the site through NJDEP as the state of New Jersey maintains a high standard for granting a diversion or disposal of Green Acres parcels as defined above.

Site 1 appears to be the site with the greatest likelihood for gaining necessary regulatory approvals, because it is the only site not mapped as encumbered by Green Acres. However, this site does contain several regulated environmental features including wetlands, FHAs, and T&E habitat. Based on the provided dimensions of the new substation (970 feet by 755 feet), impacts to these regulated areas would be anticipated to construct a new substation. Therefore, permits or approvals from New Jersey regulatory agencies and mitigation would be required for this site which can be time consuming and costly, but are likely attainable. Typically, the Freshwater Wetlands permitting process takes approximately six to 12 months to complete. The construction of a new substation at Site 1 would also require a local site plan approval from the municipality. This process typically takes three to six months, if no variances are required.

Existing Substation Upgrades - Engineering

Based on review of the dimension measured from aerial photography and knowledge of substation equipment, the required distance for installation and maintenance of the equipment proposed at the Hope Creek and New Freedom substations exceeds that which is available, therefore making the expansions difficult to implement.

Based on review of the dimension measured from aerial photography and knowledge of substation equipment, it appears there is adequate space for installation and maintenance of the equipment proposed at the Red Lion and East Windsor substations.

Potential New Substation Locations – Engineering

From an engineering perspective, all sites appear to have similar challenges regarding crossing of transmission lines, so the sites are neutral in this regard. Some geotechnical conditions may vary between sites (due to marsh/wetland type conditions), but investigation of this is beyond the scope of this study.

Proposed Costs

There appear to be some uncertainties related to the physical design of the project, which, if true, may impact and increase the overall project cost. Resolution of these scope questions will reduce the risk of cost increases.

Appendix A
Major Permits, Approvals, and Certifications
Potentially Required Tables

Table A-1 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 1 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Federal					
<p>Endangered Species Act (ESA) Section 7 Consultation</p> <p>Bald and Golden Eagle Protection Act (BGEPA)</p> <p>Migratory Bird Treaty Act (MBTA) of 1918 (Public Law 65-186)</p> <p>Executive Order 13186 - Responsibilities of Federal Agencies To Protect Migratory Birds</p>	<p>United States Fish and Wildlife Service (USFWS)</p>	<ul style="list-style-type: none"> • Desktop review of publicly available data. • Submit letters of concurrence to NMFS for review. 	<p>Typically issued with USACE permits</p>	<p>\$40,000</p>	<p>Desktop review and consultation with agencies may result in additional survey of Threatened and Endangered (T&E) habitat.</p> <p>Review times vary among projects based on species and seasonality of surveys.</p> <p>Specific species studies may be required.</p> <p>Preliminary review of USFWS's IPaC data indicates the potential presence of the northern long-eared bat (<i>Myotis septentrionalis</i>), a federally proposed endangered species.</p> <p>IPaC also identified the potential presence of American chaffseed (<i>Schwalbea americana</i>) – endangered; Knieskern's Beaked-rush (<i>Rhynchospora knieskernii</i>) – threatened; and Swamp pink (<i>Helonias bullata</i>) – threatened.</p> <p>Additionally, 25 birds considered Bird of Conservation Concern per the MBTA were identified by USFWS.</p>
<p>Consultation for Farmland Conversion Impact under the FPPA (7 CFR 658)</p>	<p>USDA Natural Resources Conservation Service (NRCS)</p>	<ul style="list-style-type: none"> • Utilize similar field data and application components as the USACE application to submit for review. 	<p>8 to 12 months</p>	<p>\$10,000</p>	<p>Project traverses active farmland, which requires consultation with USDA.</p>
<p>Filing of Notification of Proposed Construction or Alteration (FAA Form 7460-1)</p>	<p>Federal Aviation Administration</p>	<ul style="list-style-type: none"> • Complete notification online at FAA Website based on equipment height for each structure 	<p>45 days prior to construction</p>	<p>\$4,500</p>	<p>FAA may require markings for tall structures.</p>
State – New Jersey					

Table A-1 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 1 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Freshwater Wetlands (FWW) Individual Permit and Section 401 Water Quality Certification	New Jersey Department of Environmental Protection (NJDEP), Division of Land Use Regulation (DLUR)	<ul style="list-style-type: none"> Field delineation of freshwater wetlands. Prepare and submit Letter of Interpretation and FWW IP Application. 	9 to 12 months	\$75,000	Mitigation is required for permanent impacts to wetlands and transition areas. 17.6 acres of wetlands are mapped at the parcel. Wetlands on-site likely to require 50 ft or 150 ft transition area buffer.
Freshwater Wetlands General Permit 12 (GP-12) – Geotechnical Borings	NJDEP DLUR	<ul style="list-style-type: none"> Field delineation of freshwater wetlands utilized in other permits. Prepare and submit GP-12 Application 	3 to 6 months	\$20,000	Requires locations of geotechnical borings. Timing restrictions and permit conditions may apply.
Archaeological and Historic Consultation Section 106 Review	State Historic Preservation Office (SHPO) – NJDEP	<ul style="list-style-type: none"> Desktop review of publicly available data Submit findings to SHPO for review 	10 to 18 months	\$75,000	SHPO review includes Native American Graves Protection and Repatriation Act (NAGPRA), Historic Structures Viewshed analysis, and Archaeology. Special permit conditions may require extensive additional archaeological studies. Project is proposed adjacent to existing 500kV line, so impacts to viewshed are less likely than a line built on new ROW.
State T&E Consultation (New Jersey Natural Heritage Program)	NJDEP DLUR	<ul style="list-style-type: none"> Desktop review of publicly available data. Submit letters of concurrence to agencies for review. Complete any required T&E field studies 	6 to 12 months	\$40,000	Findings could result in additional field studies and/or construction timing restrictions and permit conditions. NJ Landscape Project data indicates four NJ “Species of Special Concern” (birds) at the site.
Miscellaneous NJ State Permits and Approvals	NJDEP	<ul style="list-style-type: none"> Construction Dewatering Permit Water Allocation/Short Term Water Use Permit-by-rule 5G3 Stormwater Construction Permit Air Quality Permit 	1 to 3 months after FWW/WFD/FHA permit is issued	\$15,000	Permit requirements dependent on construction techniques

Table A-1 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 1 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Plan Release to Local Municipality authorizing Municipal Construction Permit	NJ Department of Community Affairs	<ul style="list-style-type: none"> Submit engineering plans to DCA for review 	3 to 6 months	\$50,000	Required approval prior to building permits
NJ County and Municipal Permits and Approvals					
Soil Erosion and Sediment Control (SESC) Plan Certification	Camden County Soil Conservation District	Preparation of Erosion & Sediment Control Plan and associated stormwater management report.	2 to 4 months	\$10,000	Dependent upon construction techniques.
Site Plan Approval	Municipal Planning and Zoning Board	<ul style="list-style-type: none"> Complete site plan design for substation Prepare and submit site plan application Consultation and public meetings with local planning board 	6 months	\$12,000 - \$18,000	Planning Board approval required.
Local Building and Road Opening Permits	Municipal Building Department	<ul style="list-style-type: none"> Submit engineering plans to municipal building department for review 	3 to 6 months	\$50,000	Required approval for building permits

Table A-2 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 2 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Federal					
<p>Endangered Species Act (ESA) Section 7 Consultation</p> <p>Bald and Golden Eagle Protection Act (BGEPA)</p> <p>Migratory Bird Treaty Act (MBTA) of 1918 (Public Law 65-186)</p> <p>Executive Order 13186 - Responsibilities of Federal Agencies To Protect Migratory Birds</p>	<p>United States Fish and Wildlife Service (USFWS)</p>	<ul style="list-style-type: none"> • Desktop review of publicly available data. • Submit letters of concurrence to NMFS for review. 	<p>Typically issued with USACE permits</p>	<p>\$40,000</p>	<p>Desktop review and consultation with agencies may result in additional survey of Threatened and Endangered (T&E) habitat.</p> <p>Review times vary among projects based on species and seasonality of surveys.</p> <p>Preliminary review of USFWS’s IPaC data indicates the potential presence of the northern long-eared bat (<i>Myotis septentrionalis</i>), a federally proposed endangered species.</p> <p>IPaC also identified the potential presence of American chaffseed (<i>Schwalbea americana</i>) – endangered; Knieskern's Beaked-rush (<i>Rhynchospora knieskernii</i>) – threatened; and Swamp pink (<i>Helonias bullata</i>) – threatened.</p> <p>Additionally, 25 birds considered Bird of Conservation Concern per the MBTA were identified by USFWS.</p>
<p>Filing of Notification of Proposed Construction or Alteration (FAA Form 7460-1)</p>	<p>Federal Aviation Administration</p>	<ul style="list-style-type: none"> • Complete notification online at FAA Website based on equipment height for each structure 	<p>45 days prior to construction</p>	<p>\$4,500</p>	<p>FAA may require markings for tall structures.</p>
State – New Jersey					

Table A-2 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 2 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Freshwater Wetlands (FWW) Individual Permit and Section 401 Water Quality Certification	New Jersey Department of Environmental Protection (NJDEP), Division of Land Use Regulation (DLUR)	<ul style="list-style-type: none"> Field delineation of freshwater wetlands. Prepare and submit Letter of Interpretation and FWW IP Application. 	6 to 9 months	\$100,000	Mitigation is required for permanent impacts to wetlands and transition areas. 53.7 acres of wetlands are mapped at the parcel. Wetlands on-site likely to require 50 ft or 150 ft transition area buffer.
Flood Hazard Area (FHA) Individual Permit	NJDEP DLUR	<ul style="list-style-type: none"> Desktop delineation and calculation of FHA elevations. Preparation of Plans and reports Submit FHA IP Application 	4 to 6 months (typically issued concurrently with FWW/WFD)	\$50,000	31.7 acres of floodplain are mapped are the parcel.
Freshwater Wetlands General Permit 12 (GP-12) – Geotechnical Borings	NJDEP DLUR	<ul style="list-style-type: none"> Field delineation of freshwater wetlands utilized in other permits. Prepare and submit GP-12 Application 	3 to 6 months	\$20,000	Requires locations of geotechnical borings. Timing restrictions and permit conditions may apply.
Archaeological and Historic Consultation Section 106 Review	State Historic Preservation Office (SHPO) – NJDEP	<ul style="list-style-type: none"> Desktop review of publicly available data Submit findings to SHPO for review 	10 to 18 months	\$75,000	SHPO review includes Native American Graves Protection and Repatriation Act (NAGPRA), Historic Structures Viewshed analysis, and Archaeology. Special permit conditions may require extensive additional archaeological studies. Project is proposed adjacent to existing 500kV line, so impacts to viewshed are less likely than a line built on new ROW.
State T&E Consultation (New Jersey Natural Heritage Program)	NJDEP DLUR	<ul style="list-style-type: none"> Desktop review of publicly available data. Submit letters of concurrence to agencies for review. Complete any required T&E field studies 	6 to 12 months	\$40,000	Findings could result in additional field studies and/or construction timing restrictions and permit conditions. NJ Landscape Project data indicates four NJ “Species of Special Concern” (birds) at the site.

Table A-2 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 2 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Miscellaneous NJ State Permits and Approvals	NJDEP	<ul style="list-style-type: none"> Construction Dewatering Permit Water Allocation/Short Term Water Use Permit-by-rule 5G3 Stormwater Construction Permit Air Quality Permit 	1 to 3 months after FWW/WFD/FHA permit is issued	\$15,000	Permit requirements dependent on construction techniques
Plan Release to Local Municipality authorizing Municipal Construction Permit	NJ Department of Community Affairs	<ul style="list-style-type: none"> Submit engineering plans to DCA for review 	3 to 6 months	\$50,000	Required approval prior to building permits
Green Acres Diversion or Disposal	Green Acres Program	<ul style="list-style-type: none"> Green Acres Diversion or Disposal 	24 months	\$150,000+	56.2 acres of the site is covered by the New Brooklyn Green Acres site. Unlikely to gain approval for new substation on Green Acres parcel.
NJ County and Municipal Permits and Approvals					
Soil Erosion and Sediment Control (SESC) Plan Certification	Camden County Soil Conservation District	Preparation of Erosion & Sediment Control Plan and associated stormwater management report.	2 to 4 months	\$10,000	Dependent upon construction techniques.
Site Plan Approval	Municipal Planning Board	<ul style="list-style-type: none"> Complete site plan design for substation Prepare and submit site plan application Consultation and public meetings with local planning board 	6 months	\$12,000 - \$18,000	Planning Board approval required.
Local Building and Road Opening Permits	Municipal Building Department	<ul style="list-style-type: none"> Submit engineering plans to municipal building department for review 	3 to 6 months	\$50,000	Required approval for building permits

Table A-3 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 3 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Federal					
<p>Endangered Species Act (ESA) Section 7 Consultation</p> <p>Bald and Golden Eagle Protection Act (BGEPA)</p> <p>Migratory Bird Treaty Act (MBTA) of 1918 (Public Law 65-186)</p> <p>Executive Order 13186 - Responsibilities of Federal Agencies To Protect Migratory Birds</p>	<p>United States Fish and Wildlife Service (USFWS)</p>	<ul style="list-style-type: none"> • Desktop review of publicly available data. • Submit letters of concurrence to NMFS for review. 	<p>Typically issued with USACE permits</p>	<p>\$40,000</p>	<p>Desktop review and consultation with agencies may result in additional survey of Threatened and Endangered (T&E) habitat.</p> <p>Preliminary review of USFWS's IPaC data indicates the potential presence of the northern long-eared bat (<i>Myotis septentrionalis</i>), a federally proposed endangered species.</p> <p>IPaC also identified the potential presence of American chaffseed (<i>Schwalbea americana</i>) – endangered; Knieskern's Beaked-rush (<i>Rhynchospora knieskernii</i>) – threatened; and Swamp pink (<i>Helonias bullata</i>) – threatened.</p> <p>Additionally, 25 birds considered Bird of Conservation Concern per the MBTA were identified by USFWS.</p>
<p>Filing of Notification of Proposed Construction or Alteration (FAA Form 7460-1)</p>	<p>Federal Aviation Administration</p>	<ul style="list-style-type: none"> • Complete notification online at FAA Website based on equipment height for each structure 	<p>45 days prior to construction</p>	<p>\$4,500</p>	<p>FAA may require markings for tall structures.</p>
State – New Jersey					
<p>Freshwater Wetlands (FWW) Individual Permit and Section 401 Water Quality Certification</p>	<p>New Jersey Department of Environmental Protection (NJDEP), Division of Land Use Regulation (DLUR) and/or New Jersey Pinelands Commission</p>	<ul style="list-style-type: none"> • Field delineation of freshwater wetlands in accordance with NJ Pinelands criteria. • Prepare and submit Letter of Interpretation and FWW IP Application. 	<p>6 to 9 months</p>	<p>\$100,000</p>	<p>Mitigation is required for permanent impacts to wetlands and transition areas. Limited work is proposed in and around New Jersey wetlands. 144.6 acres of wetlands are mapped at the parcel. Wetlands on-site likely to require 50 ft or 150 ft transition area buffer.</p>

Table A-3 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 3 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Flood Hazard Area (FHA) Individual Permit	NJDEP DLUR and/or New Jersey Pinelands Commission	<ul style="list-style-type: none"> Desktop delineation and calculation of FHA elevations. Preparation of Plans and reports Submit FHA IP Application 	4 to 6 months (typically issued concurrently with FWW/WFD)	\$75,000	121.2 acres of floodplain are mapped at the parcel. 10,841 LF of streams are mapped within parcel boundaries.
Freshwater Wetlands General Permit 12 (GP-12) – Geotechnical Borings	NJDEP DLUR	<ul style="list-style-type: none"> Field delineation of freshwater wetlands utilized in other permits. Prepare and submit GP-12 Application 	3 to 6 months	\$20,000	Requires locations of geotechnical borings. Timing restrictions and permit conditions may apply.
Archaeological and Historic Consultation Section 106 Review	State Historic Preservation Office (SHPO) – NJDEP	<ul style="list-style-type: none"> Desktop review of publicly available data Submit findings to SHPO for review 	6 to 9 months	\$75,000	SHPO review includes Native American Graves Protection and Repatriation Act (NAGPRA), Historic Structures Viewshed analysis, and Archaeology. Special permit conditions may require extensive additional archaeological studies. Project is proposed adjacent to existing 500kV line, so impacts to viewshed are less likely than a line built on new ROW.
State T&E Consultation (New Jersey Natural Heritage Program)	NJDEP DLUR	<ul style="list-style-type: none"> Desktop review of publicly available data. Submit letters of concurrence to agencies for review. Complete any required T&E field studies 	6 to 12 months	\$40,000	Findings could result in additional field studies and/or construction timing restrictions and permit conditions. NJ Landscape Project data indicates one state endangered species (bald eagle) and one state special concern species (great blue heron) at the site.
Miscellaneous NJ State Permits and Approvals	NJDEP	<ul style="list-style-type: none"> Construction Dewatering Permit Water Allocation/Short Term Water Use Permit-by-rule 5G3 Stormwater Construction Permit Air Quality Permit 	1 to 3 months after FWW/WFD/FHA permit is issued	\$15,000	Permit requirements dependent on construction techniques

Table A-3 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 3 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Plan Release to Local Municipality authorizing Municipal Construction Permit	NJ Department of Community Affairs	<ul style="list-style-type: none"> Submit engineering plans to DCA for review 	3 to 6 months	\$110,000	Required approval prior to building permits
Green Acres Diversion or Disposal	Green Acres Program	Green Acres Diversion or Disposal	24 months	\$150,000+	56.2 acres of the site is covered by the New Brooklyn Green Acres site. Unlikely to gain approval for new substation on Green Acres parcel.
NJ County and Municipal Permits and Approvals					
Soil Erosion and Sediment Control (SESC) Plan Certification	Camden County Soil Conservation District	Preparation of Erosion & Sediment Control Plan and associated stormwater management report.	2 to 4 months	\$10,000	Dependent upon construction techniques.
Site Plan Approval	Municipal Planning and Zoning Board	<ul style="list-style-type: none"> Complete site plan design for substation Prepare and submit site plan application Consultation and public meetings with local planning board 	6 months	\$25,000	Planning Board approval required.
Local Building and Road Opening Permits	Municipal Building Department	<ul style="list-style-type: none"> Submit engineering plans to municipal building department for review 	3 to 6 months	\$50,000	Required approval for building permits

Table A-4 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 4 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Federal					
<p>Endangered Species Act (ESA) Section 7 Consultation</p> <p>Bald and Golden Eagle Protection Act (BGEPA)</p> <p>Migratory Bird Treaty Act (MBTA) of 1918 (Public Law 65-186)</p> <p>Executive Order 13186 - Responsibilities of Federal Agencies To Protect Migratory Birds</p>	<p>United States Fish and Wildlife Service (USFWS)</p>	<ul style="list-style-type: none"> • Desktop review of publicly available data. • Submit letters of concurrence to NMFS for review. 	<p>Typically issued with USACE permits</p>	<p>\$40,000</p>	<p>Desktop review and consultation with agencies may result in additional survey of Threatened and Endangered (T&E) habitat.</p> <p>Review times vary among projects based on species and seasonality of surveys.</p> <p>Preliminary review of USFWS's IPaC data indicates the potential presence of the northern long-eared bat (<i>Myotis septentrionalis</i>), a federally proposed endangered species.</p> <p>IPaC also identified the potential presence of American chaffseed (<i>Schwalbea americana</i>) – endangered; Knieskern's Beaked-rush (<i>Rhynchospora knieskernii</i>) – threatened; and Swamp pink (<i>Helonias bullata</i>) – threatened.</p> <p>Additionally, 25 birds considered Bird of Conservation Concern per the MBTA were identified by USFWS.</p>
<p>Filing of Notification of Proposed Construction or Alteration (FAA Form 7460-1)</p>	<p>Federal Aviation Administration</p>	<ul style="list-style-type: none"> • Complete notification online at FAA Website based on equipment height for each structure 	<p>45 days prior to construction</p>	<p>\$4,500</p>	<p>FAA may require markings for tall structures or stream crossings.</p>
State – New Jersey					

Table A-4 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 4 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Freshwater Wetlands (FWW) Individual Permit and Section 401 Water Quality Certification	New Jersey Department of Environmental Protection (NJDEP), Division of Land Use Regulation (DLUR) and/or New Jersey Pinelands Commission	<ul style="list-style-type: none"> Field delineation of freshwater wetlands in accordance with NJ Pinelands criteria. Prepare and submit Letter of Interpretation and FWW IP Application. 	6 to 9 months	\$100,000	Mitigation is required for permanent impacts to wetlands and transition areas. 41.5 acres of wetlands are mapped at the parcel. Wetlands on-site likely to require 50 ft or 150 ft transition area buffer.
Flood Hazard Area (FHA) Individual Permit	NJDEP DLUR and/or New Jersey Pinelands Commission	<ul style="list-style-type: none"> Desktop delineation and calculation of FHA elevations. Preparation of Plans and reports Submit FHA IP Application 	4 to 6 months (typically issued concurrently with FWW/WFD)	\$75,000	0.81 acres of floodplain are mapped at the parcel. No streams are mapped at the parcel.
Freshwater Wetlands General Permit 12 (GP-12) – Geotechnical Borings	NJDEP DLUR	<ul style="list-style-type: none"> Field delineation of freshwater wetlands utilized in other permits. Prepare and submit GP-12 Application 	3 to 6 months	\$20,000	Requires locations of geotechnical borings. Timing restrictions and permit conditions may apply.
Archaeological and Historic Consultation Section 106 Review	State Historic Preservation Office (SHPO) – NJDEP	<ul style="list-style-type: none"> Desktop review of publicly available data Submit findings to SHPO for review 	6 to 9 months	\$75,000	SHPO review includes Native American Graves Protection and Repatriation Act (NAGPRA), Historic Structures Viewshed analysis, and Archaeology. Special permit conditions may require extensive additional archaeological studies. Project is proposed adjacent to existing 500kV line, so impacts to viewshed are less likely than a line built on new ROW.
State T&E Consultation (New Jersey Natural Heritage Program)	NJDEP DLUR	<ul style="list-style-type: none"> Desktop review of publicly available data. Submit letters of concurrence to agencies for review. Complete any required T&E field studies 	6 to 12 months	\$40,000	Findings could result in additional field studies and/or construction timing restrictions and permit conditions. NJ Landscape Project data indicates one state endangered species (bald eagle), one state threatened (barred owl), and one state special concern species (great blue heron) at the site

Table A-4 Major Permits, Approvals, and Certifications Potentially Required for the PJM Site 4 Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Miscellaneous NJ State Permits and Approvals	NJDEP	<ul style="list-style-type: none"> Construction Dewatering Permit Water Allocation/Short Term Water Use Permit-by-rule 5G3 Stormwater Construction Permit Air Quality Permit 	1 to 3 months after FWW/WFD/FHA permit is issued	\$15,000	Permit requirements dependent on construction techniques
Plan Release to Local Municipality authorizing Municipal Construction Permit	NJ Department of Community Affairs	<ul style="list-style-type: none"> Submit engineering plans to DCA for review 	3 to 6 months	\$40,000	Required approval prior to building permits
Green Acres Diversion or Disposal	Green Acres Program	<ul style="list-style-type: none"> Green Acres Diversion or Disposal 	24 months	\$150,000+	56.2 acres of the site is covered by the New Brooklyn Green Acres site. Unlikely to gain approval for new substation on Green Acres parcel.
NJ County and Municipal Permits and Approvals					
Soil Erosion and Sediment Control (SESC) Plan Certification	Camden County Soil Conservation District	Preparation of Erosion & Sediment Control Plan and associated stormwater management report.	2 to 4 months	\$10,000	Dependent upon construction techniques.
Site Plan Approval	Municipal Planning Board	<ul style="list-style-type: none"> Complete site plan design for substation Prepare and submit site plan application Consultation and public meetings with local planning board 	6 months	\$25,000	Planning Board approval required.
Local Building and Road Opening Permits	Municipal Building Department	<ul style="list-style-type: none"> Submit engineering plans to municipal building department for review 	3 to 6 months	\$50,000	Required approval for building permits

Table A-5 Major Permits, Approvals, and Certifications Potentially Required for the PJM New Freedom Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Federal					
N/A assuming proposed construction is within the existing fence line	N/A	N/A	N/A	N/A	N/A
State – New Jersey					
Freshwater Wetlands (FWW) Individual Permit and Section 401 Water Quality Certification	New Jersey Department of Environmental Protection (NJDEP), Division of Land Use Regulation (DLUR)	<ul style="list-style-type: none"> Field delineation of freshwater wetlands. Prepare and submit Letter of Interpretation. 	9 to 12 months	\$20,000	<p>Mitigation is required for permanent impacts to wetlands and transition areas. 78.6 acres of wetlands are mapped at the parcel.</p> <p>Wetlands on-site likely to require 50 ft or 150 ft transition area buffer. Buffers within the existing fence line is exempt from requiring a FWW permit.</p> <p>Expansion of existing station footprint outside the fence line would likely require additional permits.</p>
Flood Hazard Area (FHA) Individual Permit	NJDEP DLUR	<ul style="list-style-type: none"> Desktop delineation and calculation of FHA elevations. Preparation of Plans and reports Submit FHA IP Application 	4 to 6 months (typically issued concurrently with FWW)	\$10,000	<p>26.8 acres of parcel is mapped as floodplain, including part of existing station. Permit may be required if expansion is within delineated FHA</p> <p>276 LF of stream are mapped at the parcel.</p> <p>Improvements or expansion of the existing station footprint outside the fence line may require permit.</p>
State T&E Consultation (New Jersey Natural Heritage Program)	NJDEP DLUR	<ul style="list-style-type: none"> Desktop review of publicly available data. Submit letters of concurrence to agencies for review. Complete any required T&E field studies 	6 to 12 months	\$25,000	<p>Findings could result in additional field studies and/or construction timing restrictions and permit conditions.</p> <p>NJ Landscape Project data indicates one NJ state endangered species (bald eagle) and four NJ “Species of Special Concern” (birds) mapped at the parcel.</p> <p>Improvements or expansion of the existing station footprint outside the fence line may require permit.</p>

Table A-5 Major Permits, Approvals, and Certifications Potentially Required for the PJM New Freedom Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Miscellaneous NJ State Permits and Approvals	NJDEP	<ul style="list-style-type: none"> Construction Dewatering Permit Water Allocation/Short Term Water Use Permit-by-rule Air Quality Permit 	1 to 3 months after FWW/WFD/FHA permit is issued	\$7,500	Permit requirements dependent on construction techniques.
Plan Release to Local Municipality authorizing Municipal Construction Permit	NJ Department of Community Affairs	<ul style="list-style-type: none"> Submit engineering plans to DCA for review 	3 to 6 months	\$20,000	Required approval prior to building permits
NJ County and Municipal Permits and Approvals					
Soil Erosion and Sediment Control (SESC) Plan Certification	Camden County Soil Conservation District	Preparation of Erosion & Sediment Control Plan and associated stormwater management report.	2 to 4 months	\$10,000	Dependent upon construction techniques and disturbance if disturbance is over 5,000 sf
Local Building and Road Opening Permits	Municipal Building Department	<ul style="list-style-type: none"> Submit engineering plans to municipal building department for review 	3 to 6 months	\$20,000	Required approval for building permits

Table A-6 Major Permits, Approvals, and Certifications Potentially Required for the PJM Red Lion Substation Upgrade Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Federal					
N/A assuming proposed construction is within the existing fence line	N/A	<ul style="list-style-type: none"> N/A 	N/A	N/A	N/A
State – Delaware					
Wetlands and Subaqueous Lands Permit Application and Section 401 Water Quality Certification	DE Department of Natural Resources and Environmental Control (DNREC) – Office of Environmental Protection - Division of Water	<ul style="list-style-type: none"> Field delineation of wetlands. Prepare and submit permit application. 	9 to 12 months	\$20,000	<p>Mitigation is required for permanent impacts to wetlands. 152.9 acres of wetlands are mapped at the parcel. Buffers within the existing fence line is exempt from requiring a FWW permit.</p> <p>Expansion of existing station footprint outside the fence line would likely require additional permits.</p>
Coastal Zone Management Federal Consistency	DNREC - Delaware Coastal Zone Management Program (DCMP)	<ul style="list-style-type: none"> Prepare and submit application package 	9 to 12 months	\$5,000 - \$10,000	Reviewed as part of Wetlands and Subaqueous Lands permit application.
Miscellaneous DE State Permits and Approvals	DNREC	<ul style="list-style-type: none"> Air Permits NPDES General Permit for Storm Water Discharges Associated With Industrial Activity Water Allocation Permit 	1 to 3 months	\$10,000	Dependent upon construction techniques.
National Pollutant Discharge Elimination System (NPDES) Sediment and Stormwater Plan Construction Permit	DNREC – Office of Environmental Protection - Division of Watershed Stewardship	<ul style="list-style-type: none"> Preparation of Erosion & Sediment Control Plan and associated stormwater management report. 	2 to 4 months	\$10,000	Dependent upon construction techniques.

Table A-6 Major Permits, Approvals, and Certifications Potentially Required for the PJM Red Lion Substation Upgrade Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Environmental Review for Species of Special Concern	Wildlife Species Conservation & Research Program Division of Fish and Wildlife	<ul style="list-style-type: none"> • Desktop review of publicly available data. • Submit letters of concurrence to agencies for review. • Complete any required T&E field studies 	6 to 12 months	\$25,000	Findings could result in additional field studies and/or construction timing restrictions and permit conditions.
DE County and Municipal Permits and Approvals					
Erosion & Sediment Control Plan Approval	New Castle Conservation District	<ul style="list-style-type: none"> • Preparation of Erosion & Sediment Control Plan and associated stormwater management report. 	2 to 4 months	\$10,000	Dependent upon construction techniques.
Local Building Permits	Municipal Building Department	<ul style="list-style-type: none"> • Submit engineering plans to municipal building department for review 	3 to 6 months	\$20,000	Required approval for building permits

Table A-7 Major Permits, Approvals, and Certifications Potentially Required for the PJM East Windsor Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Federal					
N/A assuming proposed construction is within the existing fence line	N/A	N/A	N/A	N/A	N/A
State – New Jersey					
Freshwater Wetlands (FWW) Individual Permit and Section 401 Water Quality Certification	New Jersey Department of Environmental Protection (NJDEP), Division of Land Use Regulation (DLUR)	<ul style="list-style-type: none"> Field delineation of freshwater wetlands. Prepare and submit Letter of Interpretation. 	9 to 12 months	\$20,000	<p>Mitigation is required for permanent impacts to wetlands and transition areas. 31.2 acres of wetlands are mapped at the parcel.</p> <p>Wetlands on the parcel likely to require 50 ft or 150 ft transition area buffer. Buffers within the existing fence line is exempt from requiring a FWW permit.</p> <p>Expansion of existing station footprint outside the fence line would likely require additional permits.</p>
Flood Hazard Area (FHA) Individual Permit	NJDEP DLUR	<ul style="list-style-type: none"> Desktop delineation and calculation of FHA elevations. Preparation of Plans and reports Submit FHA IP Application 	4 to 6 months (typically issued concurrently with FWW)	\$10,000	<p>11.6 acres of the parcel are mapped as floodplain, but this does not include the existing station..</p> <p>3,088 LF of streams are mapped at the parcel and would likely require a 150 ft or 300 ft riparian zone.</p> <p>Improvements or expansion of the existing station footprint outside the fence line may require permit.</p>
State T&E Consultation (New Jersey Natural Heritage Program)	NJDEP DLUR	<ul style="list-style-type: none"> Desktop review of publicly available data. Submit letters of concurrence to agencies for review. Complete any required T&E field studies 	6 to 12 months	\$25,000	<p>Findings could result in additional field studies and/or construction timing restrictions and permit conditions.</p> <p>NJ Landscape Project data indicates one NJ state threatened species (boblink) at the site.</p> <p>Improvements or expansion of the existing station footprint outside the fence line may require permit.</p>

Table A-7 Major Permits, Approvals, and Certifications Potentially Required for the PJM East Windsor Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Miscellaneous NJ State Permits and Approvals	NJDEP	<ul style="list-style-type: none"> Construction Dewatering Permit Water Allocation/Short Term Water Use Permit-by-rule 5G3 Stormwater Construction Permit Air Quality Permit 	1 to 3 months after FWW/WFD/FHA permit is issued	\$7,500	Permit requirements dependent on construction techniques
Plan Release to Local Municipality authorizing Municipal Construction Permit	NJ Department of Community Affairs	<ul style="list-style-type: none"> Submit engineering plans to DCA for review 	3 to 6 months	\$20,000	Required approval prior to building permits
Green Acres Diversion or Disposal	Green Acres Program	<ul style="list-style-type: none"> Green Acres Diversion or Disposal 	24 months	\$150,000+	<p>Parcel includes a Green Acres tract and a Pinelands Easement Purchase.</p> <p>158.7 acres of the parcel are mapped as protected lands.</p> <p>Improvements or expansion of the existing station footprint outside the fence line may require permit.</p>
NJ County and Municipal Permits and Approvals					
Soil Erosion and Sediment Control (SESC) Plan Certification	Mercer County Soil Conservation District	Preparation of Erosion & Sediment Control Plan and associated stormwater management report.	2 to 4 months	\$17,000 - \$25,000	Dependent upon construction techniques and disturbance if disturbance is over 5,000 sf.
Local Building and Road Opening Permits	Municipal Building Department	<ul style="list-style-type: none"> Submit engineering plans to municipal building department for review 	3 to 6 months	\$110,000	Required approval for building permits

Table A-8 Major Permits, Approvals, and Certifications Potentially Required for the PJM Hope Creek Substation Project

Permit/Approval	Administering Agency	Component Tasks	Review Time	Approximate Cost	Risk/Comment
Federal					
N/A assuming proposed construction is within the existing fence line	N/A	<ul style="list-style-type: none"> N/A 	N/A	N/A	N/A
State – New Jersey					
Freshwater Wetlands (FWW) Individual Permit and Section 401 Water Quality Certification	New Jersey Department of Environmental Protection (NJDEP), Division of Land Use Regulation (DLUR)	<ul style="list-style-type: none"> Field delineation of freshwater wetlands. Prepare and submit Letter of Interpretation. 	9 to 12 months	\$20,000	<p>Mitigation is required for permanent impacts to wetlands and transition areas. 258.2 acres of wetlands are mapped at the parcel.</p> <p>Wetlands on-site likely to require 50 ft or 150 ft transition area buffer. Buffers within the existing fence line is exempt from requiring a FWW permit.</p> <p>Expansion of existing station footprint outside the fence line would likely require additional permits.</p>
Miscellaneous NJ State Permits and Approvals	NJDEP	<ul style="list-style-type: none"> Construction Dewatering Permit Water Allocation/Short Term Water Use Permit-by-rule Air Quality Permit 	1 to 3 months after FWW/WFD/FHA permit is issued	\$7,500	Permit requirements dependent on construction techniques
Plan Release to Local Municipality authorizing Municipal Construction Permit	NJ Department of Community Affairs	<ul style="list-style-type: none"> Submit engineering plans to DCA for review 	3 to 6 months	\$20,000	Required approval prior to building permits
NJ County and Municipal Permits and Approvals					
District Soil Erosion and Sediment Control (SESC) Plan Certification	Cumberland-Salem Conservation District	Preparation of Erosion & Sediment Control Plan and associated stormwater management report.	2 to 4 months	\$10,000	Permit requirements dependent on construction techniques and if disturbance is over 5,000 sf
Local Building and Road Opening Permits	Municipal Building Department	<ul style="list-style-type: none"> Submit engineering plans to municipal building department for review 	3 to 6 months	\$20,000	Required approval for building permits

