

South Jersey Grid Upgrade (SJGU) Proposal

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Submitted by:

Public Service Electric and Gas Company

Submitted to:

PJM/New Jersey Board of Public Utilities (BPU)

In Response to:

The Request for Proposals issued by PJM and the BPU Supplemental Information Request in Support of Offshore Wind Transmission Projects to be developed under the 2021 State Agreement Approach

Proposing Entity Name	PSE&G
Company ID:	SJGU
Project Title	South Jersey Grid Upgrade
PJM Proposal ID	2021-NJOSW-894



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1. PROJECT SUMMARY/EXECUTIVE OVERVIEW

Public Service Electric and Gas (PSE&G) proposes to construct, own, operate, and maintain the “South Jersey Grid Upgrade Project” (“SJGU” or the “Project”) located in New Jersey and Delaware 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.

The Project should be evaluated as a whole, inclusive 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
- The proposed project cost is approximately \$71.9 million in present value dollars with R&C included.
- The overall estimated project duration for the proposed solution is four (4) years with in-service date of 2027.

1.1 NARRATIVE DESCRIPTION OF PROPOSED PROJECT(S)

PSE&G presents the SJGU technical solution to resolve reliability criteria violations on PJM facilities in response to the 2021 SAA Proposal Window. This proposal will support integration of the NJ SAA Option 1a for the buildout of up to 7500MW of offshore renewable wind generation. PSE&G proposes to address reliability violations 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 Project plans to install an additional 230-kV underground cable just south of the existing underground portion of Hope Creek-Silver Run 230-kV circuit running below the Delaware River. The existing 230-kV transmission line between Hope Creek and Silver Run Substation consists of a combined 5.6 miles of overhead and underground installation. The Project includes installing a new 230-kV underground section will be approximately 2.6 miles in length beneath the Delaware River. The proposed riser structures at the landing points on both ends of the Delaware River will connect to the existing overhead transmission lines.

The existing Hope Creek-Silver Run 230-kV circuit will be upgraded to achieve a total winter normal rating of at least 1300 MVA and a total winter emergency rating of at least 1500 MVA with the additional underground (UG) cable per phase under the Delaware River.



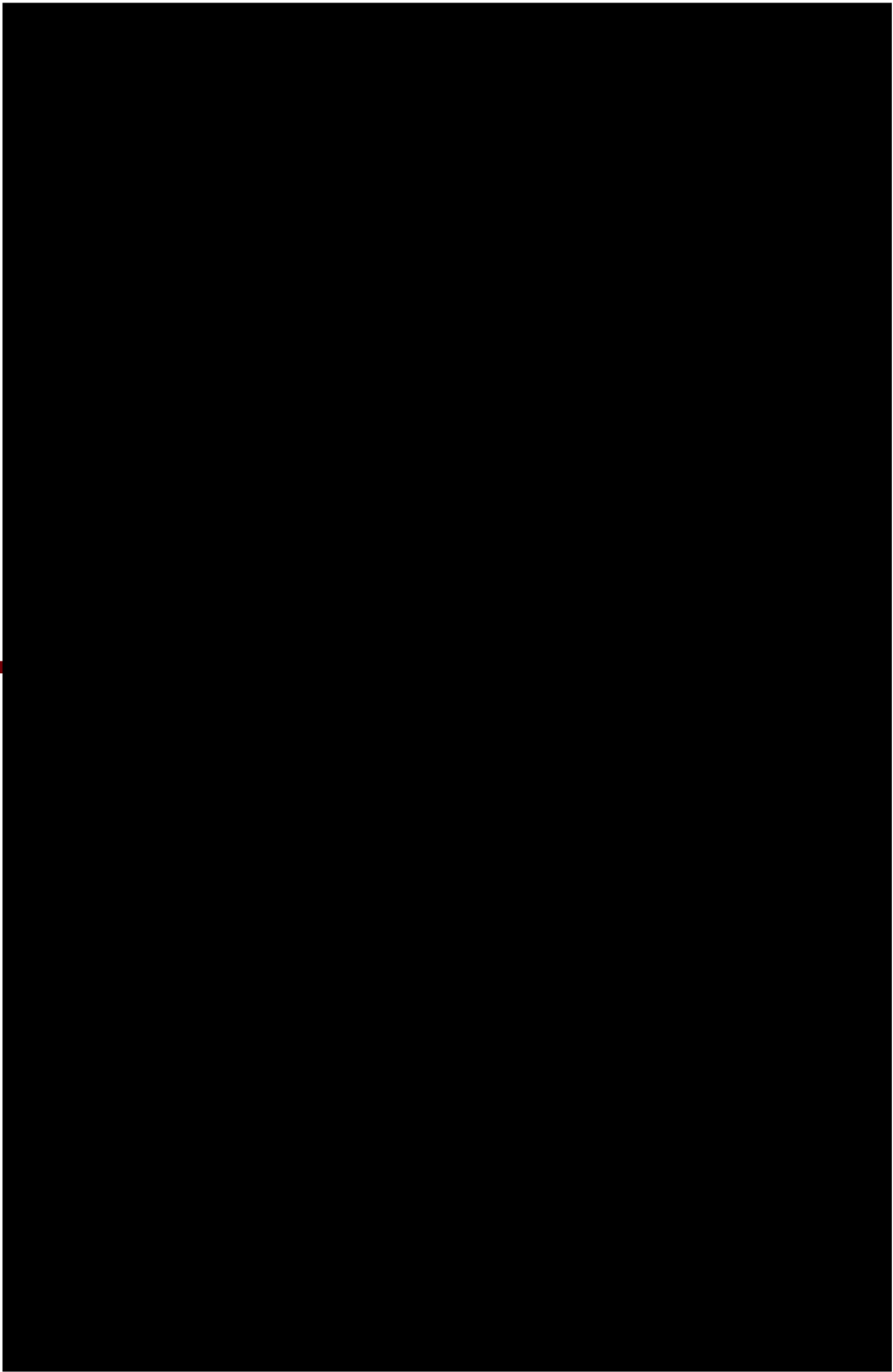
In addition, an underground section will be added to the existing 230-kV Hope Creek-Silver Run transmission line to resolve the PJM’s identified overload. For connecting the new underground section to the existing overhead section of the circuit, two new riser structures will be installed (one on each side of

the Delaware River). Two double circuit structures will also be installed after the new riser poles for circuit pairing transition.

Figure 1 shows the proposed new UG route along the Delaware River in the red line. At each end of the river is a short span of new proposed overhead to tie into the existing overhead Hope Creek to Silver Run circuit. The blue line is the existing route between Hope Creek and Silver Run. The red line is the additional circuit underneath the Delaware as well as onshore tie into the existing overhead as part of the scope of work of this proposal.

Additional technical details are provided in Section 3.





The overall estimated project duration for the proposed solution is 4 years.

PSE&G's latest pre-qualification recertification application document is on record, submitted August 2019 under PJM ID# 13-07.

1.2 ABOUT PSE&G

Headquartered in Newark, New Jersey, PSE&G is one of the largest combined electric and gas companies in the United States and is New Jersey's oldest and largest publicly owned utility, serving approximately 2.6 million customers, nearly three-quarters of the state's population. PSE&G is the largest subsidiary of Public Service Enterprise Group (PSEG). Since 2007, PSE&G has built over 400 miles of high-voltage transmission circuits (138-kV and above) to eliminate 200 NERC reliability violations identified by PJM. In addition, PSE&G owns and maintains 834 miles of transmission right-of-way with 1,579 miles of transmission lines over 100-kV and 484 miles of 500-kV transmission lines.

As an infrastructure company located in the most densely populated state in the United States, PSE&G has a record of consistently delivering complex linear transmission projects on time and on budget. PSE&G's experience building overhead, underground, and station facilities—often in environmentally sensitive areas uniquely equips PSE&G to execute the proposed SJGU project.

During the period 201 -2018, PSE&G invested \$ 13.8 billion in new transmission projects. Some examples of the non-traditional construction methods we have recently deployed include:

- The utilization of alternative construction techniques (helicopter, wetland matting, etc.) to minimize the environmental impact of our projects and to optimize construction sequencing
- The siting, permitting, and construction of numerous projects—including GIS stations, in concentrated, urban areas across northern and central New Jersey
- The utilization of horizontal directional drilling (HDD) under the Newark Bay to accommodate two underground circuits in the Bergen-Linden Corridor Upgrade Project, the longest such crossing of a 345-kV
- The successful creation of a temporary routing of the Appalachian Trail to minimize the length of the trail through the right-of-way (ROW) of the Susquehanna Roseland project; the initiative minimized the negative visual impacts of the project and ensured that hikers were separate from the habitats of key endangered species in the area.

1.2.1 PSE&G PROJECTS

Below is a list of representative projects that PSE&G has constructed, owns, and operates.

Project	Circuit Miles	Voltage (kV)	Cost	Scope	In-Service Dates
Metuchen-Trenton-Burlington 230kV Conversion Project	54	230	Up to \$739M	Upgrade overhead transmission lines to 230kV; 12 station upgrades	2022 Target Completion
Bergen-Linden Corridor Upgrade Project	30	345	\$1.2B	1 new station; 9 station upgrades, new overhead and underground lines	2019
Sewaren-Metuchen 230kV Conversion Project	14	230	\$125M	Convert existing lines to 230kV; 4 station upgrades	August 2016
Northeast Grid Reliability Project	69	138/230	\$975M	11 stations, upgrade overhead transmission line (50 miles) and underground transmission lines (19 miles)	July 2016
Mickleton-Gloucester-Camden	16	230	\$435M	Two new 230kV overhead lines; three new 230kV underground lines, upgrade 5 stations	2015
Susquehanna-Roseland	45	500	\$790M (PSE&G portion)	New 500kV overhead lines, construct new 500kV GIS station and expand an existing station	2014 (PSE&G portion); Energized 2015
Burlington-Camden Network Reinforcement Project	37	230	\$399M	Reconfigure overhead transmission lines and upgrade	2014
Bayonne 3 rd Source	5.5	230	\$123M	New underground transmission line from Bayonne to Marion stations	2013

Notable Underground Transmission Projects with River Crossings:

- 1) **BLC line:** The major installation that occurred on this project was a crossing of Newark Bay of (2) new 345-kV XPLE circuits. This was accomplished by performing two (2) horizontal directional drills, each large enough to install 36-inch casing from Bayonne to Elizabeth, the length of each installation was over 6,100 feet, and at the time was the longest such installation in the US. The installation was completed by intersecting drill method. The installation was successful and both circuits are in service this day.
- 2) **Burlington-Camden Conversion/Southern Reinforcement:** This project, which involved the construction of three (3) new underground, high pressure fluid filled (HPFF) circuits, in the Camden area, required three (3) major crossings of roads/streams and was accomplished by performing three (3) microtunnels. Each microtunnel was between 350 feet and 600 feet long and installed a 48-inch casing. The work was successfully completed, and the circuits are in service this day.
- 3) **HTP Athenia-Bergen/A-2332 Line Athenia-Bergen:** This was part of the Northeast Grid project and involved building four (4) new HPFF circuits to various stations in Bergen/Hudson Counties. Included in this work was four major crossings of rivers and the New Jersey Turnpike (NJTP). These were accomplished by three (3) long microtunnels along with a horizontal directional drill. The HDD crossed the Hackensack River and was over 1,700' in length installed into a 36-inch casing. The three (3) microtunnels involved crossing the Hackensack River, the Overpeck Creek,

and the NJTP. The installations were approximately 600 feet, 800 feet, and over 900 feet in length and a 48-inch casing was installed in all three. All four installations are still in-service as of today.

- 4) **Cedar Grove-Jackson Road:** In the past year we replaced a HPFF circuit with a new XLPE circuit, the existing being the L-2238 and the new circuit being named the S-2350. To accomplish this, the team had to cross the Peckman River in Cedar Grove very close to the Cedar Grove Switchyard. This was accomplished using an HDD installation, but without a casing. The conduits (high density polyethylene—HDPE) were used to install the cable/conductors as well as communication fibers, and were pulled into the drill hole without a casing, known as a “free bore.” This installation was completed at just over 1,200 feet in length.
- 5) **Artificial Island:** These facilities consist of the Hope Creek and Salem Switchyards, which are operated and maintained by PSE&G on behalf of the Lower Delaware Valley Transmission System (LDV) owners. The LDV is comprised of several utilities that own bulk electric transmission and substation facilities connected to several nuclear plants. PSE&G co-owns the Hope Creek Switching Station with Atlantic City Electric and co-owns the Salem Switching Station with Exelon companies, comprised of Philadelphia Electric, Atlantic City Electric, and Delmarva Power & Light (DP&L). As part of its responsibilities to operate and maintain for the LDV, PSE&G develops new projects at these stations for various reasons including end of life replacements, reliability requirements, and PJM-directed upgrades. The projects are presented by PSE&G and approved by the LDV technical and administrative committees, which are made up of the utility members.

Over the last five years, on behalf of the LDV owners, PSE&G has performed North American Electric Reliability Corporation; Critical Infrastructure Protection (NERC CIP) security upgrades, replaced aging station light and power equipment, improved line relaying reliability by removing power line carrier systems and making use of fiber communications, and has relocated LDV equipment out of the AI nuclear plant control rooms into the switchyards for ease of operations/maintenance (O&M). In addition to these projects for existing LDV-owned equipment, PJM assigned PSE&G with a project to connect the Hope Creek 500-kV Switching Station to a new 230-kV substation in Delaware. Expansion was required in order to accept a new 230-kV line from Silver Run Substation for the purpose of increasing reliability of Artificial Island. This project is 100% PSE&G-owned and consists of expanding the existing 500-kV switchyard with a new three-breaker bay, adding 500/230-kV step-down transformers, and adding a 230-kV breaker station. The expansion connects to the new Silver Run Electric 230-kV line that runs overhead and underground across the Delaware River. PSE&G worked closely with PJM and Silver Run Electric to interface for this important expansion including monthly meetings, technical collaboration, and joint presentations to PJM committees and a new interconnection agreement. The project was challenging to execute in an environment that is tied to the operation of nuclear plant facilities; however, it was successfully executed on time, on scope, and within budget.

1.2.2 PSE&G’S EXPERIENCE

PSE&G’s ability to manage projects effectively and deliver consistent, high-quality services lies in its standardized practices and procedures. PSE&G’s extensive experience building transmission projects has led to a set of standardized practices and procedures to guide the execution of our work. Our standards can stand alone or be integrated with other Transmission Owner Interconnection Requirements as needed.

Additionally, because of the impact that our transmission projects may have on residents, PSE&G maintains a communication and outreach team to interface with local communities, siting boards, residents, and other key stakeholders in the communities affected by our operations. PSE&G also has a demonstrated commitment to preserving the safety and well-being of its employees and the employees of its contractors.

This commitment is evidenced by our corporate vision, which is based on our desire to be a leader for providing safe, reliable, economic, and green energy.

PSE&G maintains a very sophisticated and highly skilled Projects & Construction organization, comprised of more than 1,000 employees, which includes a project management team; in-house engineering/design experts; a Project Management Office (PMO), robust Project Management Procedures; a contract management function; a QA/QC function, etc. This team also includes a Mobile Construction Workforce responsible for the construction of PSE&G's 69-kV network and a Transmission Construction and Maintenance team responsible for maintaining the company's network of high voltage circuits. In recent years, these teams have also participated in the construction of new high voltage circuits.

We also have extensive experience in land acquisition and negotiations associated with all types of utility projects including Transmission. PSE&G has an internal Corporate Properties staff responsible for the oversight and management of the corporation's real estate assets, including the purchase and sale of property rights, leasing or licensing company-owned property to or from third parties, and handling day-to-day property maintenance issues that may arise.

PSE&G also has an in-house Environmental Projects and Services group dedicated to gaining approvals and ensuring environmental compliance for PSE&G's electric transmission and distribution projects. This group is also responsible for gaining appropriate approvals and land rights for conducting work on State and Federal lands, typically including new State land diversions and easement rights.

1.3 PROJECT OPTIONALITY, FLEXIBILITY AND MODULARITY

PSE&G performed a comprehensive analysis of station headroom and network upgrades in order to identify optimal transmission upgrades and offer cost effective projects to ensure reliability and alignment with the State's public policy goals.

The proposed solution accommodates future increases in offshore wind generation above current plans by increasing the capacity of the 230-kV connection between Artificial Island (Southern New Jersey) and the Delaware 230-kV backbone via the Hope Creek-Silver Run circuit. The project will upgrade the existing Hope Creek-Silver Run cables such that cables will no longer be the limiting thermal component for additional wind injection in New Jersey. Thermal analysis conducted by PSE&G shows that the SJGU 7.5 GW of offshore wind could be injected at Cardiff 230-kV POI without overloading the Hope Creek to Silver Run cables.

In order for the Project to optimally align with the planned schedule of offshore wind generation procurements, the Project's schedule takes into consideration Commercial Operations Date (COD) for the NJBPU's 3rd solicitation planned schedule of offshore wind generation procurements.

It is acknowledged that the SJGU execution schedule could be extended—or phased—to accommodate deferred offshore wind injection rates if modified by PJM.

1.4 INTERDEPENDENCY OF OPTIONS

PSE&G states there are no known interdependencies of SJGU with any other proposals submitted by PSE&G. SJGU will only address one flowgate associated with reliability violations between Hope Creek and Silver Run.

PSE&G proposes that SJGU be constructed as a single unaltered scope to assure safe and reliable transmission system operations under the 2028 model conditions for POI injections.

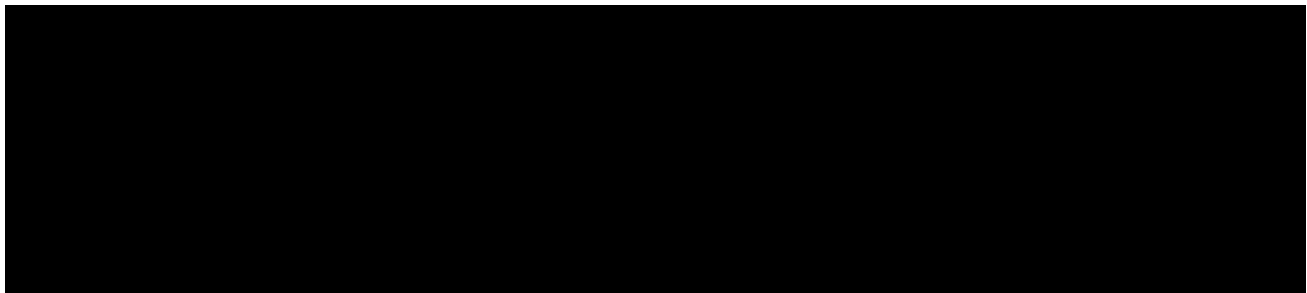
1.5 OVERVIEW OF PROJECT BENEFITS

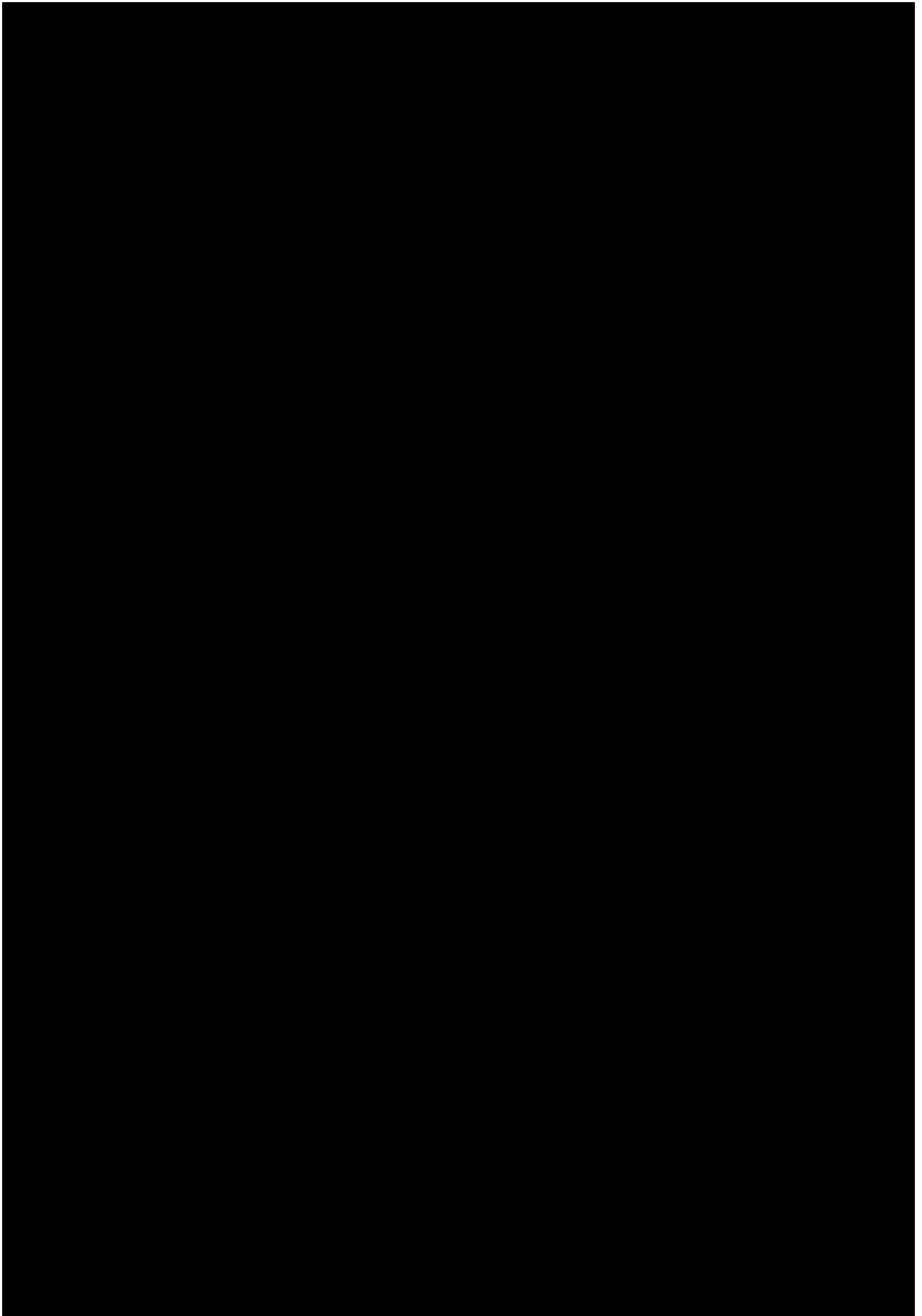
SJGU will support the objectives of the 2019 Energy Master Plan by enabling the buildout of up to 7500 MW of offshore wind generation by 2035. This project will solve the above identified overload condition modeled by PJM which results from the injection of the renewable generation.

- 1) **Reliability Analysis:** PSE&G performed an extensive reliability assessment on the Project as directed by PJM and the New Jersey Board of Public Utilities (NJBPU). Using the 2028 Summer, Winter and Light Load RTEP base cases provided by PJM, PSE&G tested the projects by performing Generation Deliverability, N-1 and N-1-1 (thermal and voltage violation analysis), Load Deliverability and Long Term Deliverability tests using PSS®E and TARA. All tests followed PJM Manual 14B procedures. PSE&G also performed additional analysis according to PSE&G's FERC 715 criteria. PSE&G found that SJGU addresses the identified violations per Section 1.1 of this document without causing any additional violations.
- 2) **Stability Analysis:** It is PSE&G's stance that without a full OSW dynamic model, the true quantitative impact of dynamic stability cannot be measured. It is known that SJGU will only improve system stability at Artificial Island and the surrounding system.
- 3) **Market Efficiency Economic Study:** PSE&G completed an extensive production cost analysis in PROMOD software utilizing the supplied PJM 2028 Market Efficiency base case. Offshore wind units were modeled at each of the PJM recommended proposed POIs using existing OSW models as a guide. SJGU was then added to the model. The analysis was primarily focused on demonstrating a reduction in New Jersey's 2028 Gross Load payments by evaluating the Project in conjunction with the 7500 MWs of NJBPU selected wind generation. Secondary benefits to New Jersey such as environmental benefits due to emissions reductions have also been captured. PJM wide energy market value has also been calculated, along with PJM production cost reductions due to the combination of this 7500 MW of wind in addition to SJGU.

SJGU is a cost competitive solution that utilizes existing electrical infrastructure to the greatest extent possible. The existing overhead 230-kV line on either side of the Delaware River, from Hope Creek to Silver Run, was determined to be capable of meeting the rating of 1300 MVA winter normal and 1500 MVA winter emergency at 230-kV. However, the Delaware submarine crossing was determined to be the limiting factor, requiring a third 230-kV line to be installed.

- 4) **Environmental Due Diligence:** PSE&G is well-versed in navigating both agency and stakeholder concerns to produce solutions that accommodate avoidance of sensitive receptors or mitigation and best management practices. Our in-house staff includes public outreach professionals, wildlife biologists, and seasoned construction managers. We have found that a collaborative environment allows us to implement best management practices that will minimize environmental and construction impacts to the area. Please see Section 6 for more.





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1.7 OVERVIEW OF PROJECT COSTS, COST CONTAINMENT PROVISIONS, AND COST RECOVERY PROPOSALS

PSE&G is providing a good faith, educated cost estimate for this Project, subject to the unknown conditions and assumptions identified in this document. The estimate is based on PSE&G’s current assessment of the risks associated with constructing this Project. Costs and cost containment are further discussed in Section 9.

2. PROPOSAL BENEFITS

2.1. RELIABILITY BENEFITS

PSE&G verified that SJGU resolves identified flowgates and does not drive secondary overloads by performing generation deliverability, with N-1 and N-1-1 (thermal and voltage violation analysis), Load Deliverability, Long Term Deliverability tests using PSS®E and TARA. All tests followed PJM Manual 14B procedures. PSE&G also performed additional analysis according to PSE&G’s FERC 715 criteria. PSE&G found the Project addresses the identified violations per Section 1.1 of this document without causing any additional violations.

The third cable between Hope Creek and Silver Run will increase stability margins at Hope Creek and Salem generating stations.

A full analysis of the SJGU project on the EMAAC Locational Deliverability Area (LDA) was performed. PSE&G identified that the project does not significantly impact the Capacity Emergency Transfer Limits (CETL) of the EMAAC zone.

The SJGU solution was chosen due to the following factors:

- Resolves overloads on UG Hope Creek to Silver Run 230-kV circuit
- Improves stability margin at Hope Creek and Salem generating stations.
- Improves transfer capability between Artificial Island (Southern New Jersey) and the Delmarva Peninsula. This project can reduce any off-cost/curtailment of low cost generation thereby reducing the congestion on the aforementioned facilities.

SJGU 2028 Primary Overloads	Highest Loading Pre-Upgrade	Highest Loading Post-Upgrade
Hope Creek to Silver Run Cable #1 230kV (LSP)	104%	63%
Hope Creek to Silver Run Cable #2 230kV (LSP)	104%	63%
Hope Creek to Silver Run OH 230kV (LSP)*	<100%	<100%

*Per FERC Form 1, the circuit is constructed with bundle 1033 ACS

2.2. PUBLIC POLICY BENEFITS

SJGU recommends the upgrade of the overloaded facilities between Hope Creek and Silver Run 230-kV caused by the injection of 7500 MW of offshore wind in New Jersey. By addressing the overloads caused by the offshore wind, the project prepares the bulk electric system for the added generation in New Jersey. This creates a situation that lessens New Jersey dependency on importing power, which can potentially decrease future congestion costs.

Facilitation of OSW aligns with Federal and State climate change resiliency. At the Federal level, transmission and substation planning is key to accomplishing President Biden’s target of achieving 30 GW of OSW by 2030 and New Jersey state’s goal of achieving 7.5 GW of offshore wind by 2035. Investment in renewable energy will ensure the State’s progress toward NJ’s statewide greenhouse gas emissions reduction targets. PSEG announced in June 2021 its goal to have net-zero carbon emissions by 2030. PSEG will meet its net-zero ambitions by launching a three-pronged 2030 climate vision that extends across its business—a climate vision that is one of the most aggressive in the country by a large utility and power generator.

2.3. MARKET EFFICIENCY BENEFITS

PSE&G has completed extensive modeling efforts to evaluate the economic merits of the proposed project. The economic study included PROMOD software simulations using the 2028 Market Efficiency base cases. In order to establish a baseline against which Project benefits would be calculated, PSE&G ran the base case without any wind or projects included. After completing the base case runs, PSE&G modified the modeled 7648 MW of OSW consistent with other OSW models in the PJM base case. PSE&G then modeled the SJGU project.

2.3.1 MARKET EFFICIENCY ECONOMIC STUDY

1) Potential Ratepayer Cost Savings

- The combination of 7500 MW of OSW and the South Jersey project substantially reduce the price of electricity in New Jersey. The table below illustrates a reduction in the Locational Marginal Price (LMP) of electricity (in \$/MWh) of the different load serving entities inside NJ.

NJ LMPs (\$/MWH)			
LOAD SERVING ENTITY	BASECASE	OSW+SJGU PROJECT	REDUCTION
AECO	\$ 34.31	\$ 32.36	\$ 1.94
JCPL	\$ 34.56	\$ 32.78	\$ 1.78
PSEG	\$ 34.19	\$ 32.73	\$ 1.47
RECO	\$ 34.42	\$ 34.25	\$ 0.17

- This combined reduction in LMPs leads to a **\$131M** cost savings in gross load payments for New Jersey (observed in year 2028 alone).
- The combined reduction of load payments across all of PJM entities is reported to be **\$508M** (observed in year 2028 alone).

2) **B. Maximizing the value of OSW:** The Production Cost modeling tool has not identified any congested OSW generation near the SJGU project. Therefore there is no congestion to resolve.

3) **Environmental benefits**

- The 7500 MW of offshore wind generation and the Central Jersey project provide a large reduction of emissions in state of NJ. This reduction is due to the OSW generators displacing onshore fossil-based thermal resources.

Total Reduction (LBS)	SO2	458,085
	CO2	1,931,282,617
	NOX	252,459

4) **Energy Market Benefits**

- The energy market value of the 7500MW of offshore wind generation and the central jersey project total **\$906M** (year 2028).
- The 7500MW of offshore wind generation and the central jersey project reduce PJM wide production costs by **\$636M** (year 2028).
- The Project has not modeled what incremental rights will be generated by this specific solution, but should such rights be created, the project will develop a pass-thru mechanism to return these benefits directly to ratepayers.

5) **Transfer Capability:** As part of the Load Deliverability analysis, the CETL was recalculated with SJGU and no significant increase to the EMAAC CETL was identified.

3. CONSTRUCTABILITY INFORMATION

The Project plans to install an additional 230-kV underground cable, just south of the existing underground portion of Hope Creek–Silver Run 230-kV circuit running below the Delaware River. The existing 230-kV transmission line between Hope Creek and Silver Run Substation consists of a combined 5.6 miles of overhead and underground installation. The Project includes installing a new underground section, approximately 2.6 miles in length beneath the Delaware River, connecting the proposed Delaware Riser structure, subsequently tying into the existing overhead transmission lines at the landing points on both ends.

For connecting the new underground section to the existing overhead section of the circuit, two new riser structures will be installed (one on each side of the Delaware River). Two double circuit structures will also be installed after the new riser poles for circuit pairing. The preliminary line layout consists of two 145-foot double circuit tubular steel structures as well as two (2) 100-foot single circuit tubular riser structures.

3.1 PROJECT SCOPE

1) Overhead/Underground Structures: The Project proposes to install two new riser towers, one in-water on the Delaware side, and one on land at the Hope Creek Station, both adjacent to the existing riser towers to accommodate the new submarine cable connection to the existing overhead circuit. in Delaware. Two double circuit structures will also be installed on the Delaware side inland of the in-water riser towers for circuit paring.

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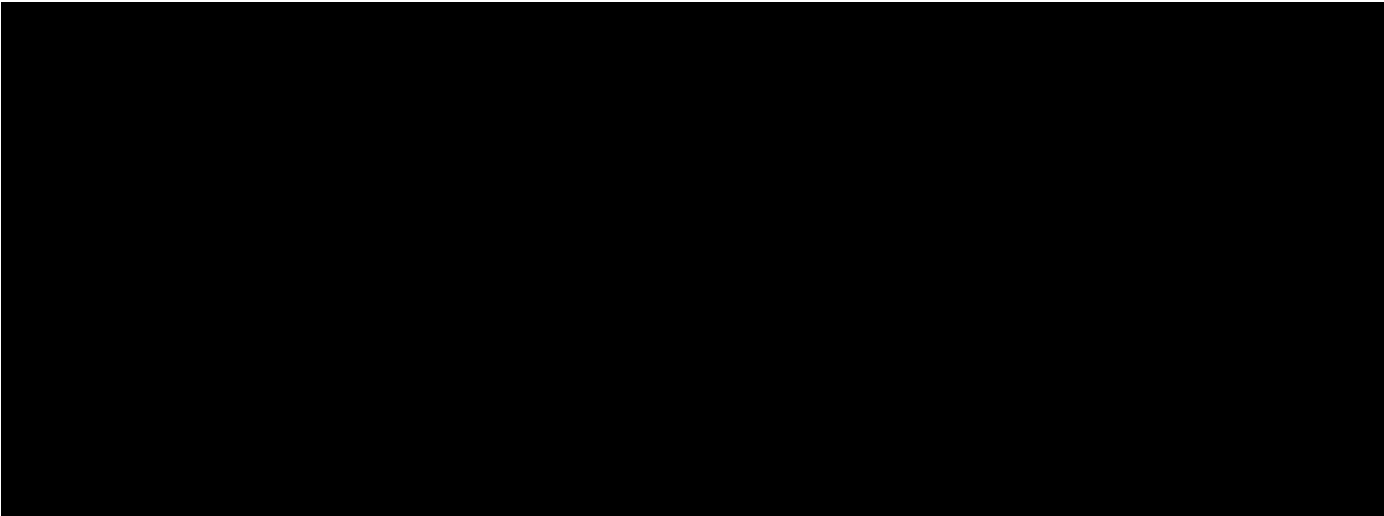
2) Submarine Cable: The Project proposes to install three (3) additional 230-kV submarine cables (one cable per phase) on a newly proposed new 100-foot-wide ROW that will parallel the existing portion of Hope Creek to Silver Run 230-kV circuit alignment/ROW below the Delaware River.

[REDACTED]

[REDACTED]

3) Cable System: A new 230-kV, 2500 kcmil, non-coated, copper conductor XLPE marine cable system was selected for this project.

[REDACTED]



The cable will be installed via vertical injector for the federal navigation channel and via jet plow in the shallow waters outside the federal navigation channel.

- 4) **Fiber Installation:** It is assumed the existing data cable is adequate for the protection and commendation of the new XPLE circuit and therefore no new fiber optic cables are needed.
- 5) **Trench Design:** The underground submarine cable shall be direct buried utilizing barge-mounted vertical injector technology at a minimum burial depth of 25 feet within the federal navigation channel. Beyond the boundaries of the federal channel the burial depths will range from 10 feet to 15 feet.

4. OPERATIONS/MAINTENANCE

As New Jersey's largest electric and gas utility, PSE&G is uniquely qualified to operate and maintain the proposed Project. PSE&G has extensive experience in constructing, operating, and maintaining major transmission facilities in accordance with Good Utility Practice. This experience has enabled PSE&G to develop a comprehensive set of policies and procedures that govern preventative and predictive maintenance of transmission lines and substations. Our staff of experienced professionals and highly skilled craft workers are located throughout our New Jersey service territory and can efficiently mobilize in response to routine or emergent conditions. This flexibility is supported through our negotiated contracts with our labor workforce. In the case of the project our staff is adept to mobilizing to the projects geographical area to maintain existing facilities covered in the LDV Agreement.

4.1 OVERVIEW

PSE&G follows standard operations and maintenance procedures and practices that satisfy regulatory and industry standards. The purpose of these procedures and practices is to implement the necessary activities that ensure the safe, reliable, and cost-effective operation of the bulk electric system. PSE&G utilizes standard time- and condition-based practices, along with constant focus on safety, customer service, and cost control, to optimize the utilization and minimize the downtime of equipment that is critical to the delivery of electric power. PSE&G monitors equipment condition and applies resources to improve the condition and extend the useful life of its electric equipment, thereby maximizing the value of its investment in these facilities. Our preventative maintenance process is founded on Reliability Centered Maintenance, where the maintenance intervals to the manufacturer's recommendations are incorporated to optimize cost, improve safety, and to perform effective maintenance tasks to safeguard the reliable operation of the electrical equipment. PSE&G was recognized by PA Consulting as the recipient of the 2020 Outstanding

Customer Engagement Award. PSE&G was also named as the recipient of the ReliabilityOne® Award for Outstanding Reliability Performance in the Mid-Atlantic Metropolitan Service Area for the 19th year in a row.

4.1.1 PREVIOUS EXPERIENCE

PSE&G owns and maintains 834 miles of transmission ROW with 1,579 miles of transmission lines over 100-kV and 484 miles of 500-kV transmission lines. PSE&G also owns, operates, and maintains 81 substations and switching stations in its transmission network, which includes eight (8) 500-kV stations and four (4) 345-kV stations.

PSE&G's internal Transmission Construction and Maintenance organization is responsible for the planning and execution of all required Corrective Maintenance (CM) and Preventative Maintenance (PM) on PSE&G overhead and underground transmission facilities greater than 100-kV. The specific work performed by this organization includes:

- Overhead maintenance
- Underground maintenance
- Live line work
- Inspections (visual, infrared, foundation, ROW)

The group is responsible for:

- Inventorying existing transmission assets and assessing maintenance needs
 - Maintaining a database of all transmission assets
 - Ensuring that all transmission assets are scheduled for periodic maintenance according to the correct schedule
 - Assessing the condition of existing assets
 - Identifying the CM and PM requirements for current maintenance period
- Prioritizing the CM and PM maintenance work for the current period
- Identifying and securing required resources (e.g., labor, materials, funding)
- Developing a detailed work plan and assigning resources required to accomplish all CM and PM
- Scheduling the CM and PM work to be performed and coordinate with labor, equipment, material, vendor, outages, and support services availability
- Preparing labor work orders, material, outside services, purchase orders, and arranging outages, if required
- Performing and completing all scheduled CM and PM work in accordance with the work plan and established standard practices and procedures

PSE&G's internal Substation Maintenance Organization is responsible for the planning and execution of all required Corrective Maintenance CM and PM on PSE&G substation/switching station transmission facilities in coordination with PSE&G's Asset Management & Centralized Services Organization. Detailed manuals on transmission standards and practices for design, construction, operation, and maintenance are managed by our Asset Management Organization. Qualified internal resources supported by a robust Materials Management & Logistics Organization support our routine PM schedules as well as our emergency response to affect a timely restoration of equipment related interruptions.

Vegetation maintenance is performed to reduce the occurrence of tree-related interruptions on overhead transmission and distribution facilities. Clearance guidelines are established based on voltage, type of construction, a tree's location relative to the wires, and its rate of growth (species).

The Vegetation Management team manages distribution and transmission utility line clearance programs, and grounds maintenance efforts that ensure safe, reliable electric service to our customers, while meeting regulatory and governmental requirements and commitments. Utility line clearance efforts include tree trimming, tree removals, mowing, and herbicide applications and are managed utilizing a project management approach to ensure that quality, cost, scope, and schedule goals/commitments are achieved within budget.

5. REAL ESTATE PLAN

The Project’s route in support of the onshore transmission system will be located in portions of New Jersey and Delaware. The Project Team will work with impacted stakeholders, municipalities, and local authorities to obtain the necessary property rights to construct and maintain its facilities as detailed in Section 6.

PSE&G is committed to a transparent, timely, and efficient land rights acquisition process for any site control required outside of PSE&G land and ROW. PSE&G intends to utilize the same land acquisition professionals from start to finish, ensuring landowners have the same team assigned to their negotiations throughout the process.

PSE&G will coordinate all outreach, real estate-related requests, and efforts to identify environmental and non-environmental conditions affecting the properties along the proposed Project route. Working collaboratively with our internal Outreach Team, PSE&G will coordinate stakeholder engagement and public outreach with land acquisition planning. This level of collaboration will help to ensure proactive and cohesive stakeholder communications in order to better serve landowners and impacted individuals and entities.

PSE&G contemplates the need for access roads and areas, as part of any lands to be acquired. As part of its facilities construction, PSE&G also contemplates the need for temporary staging areas and laydown sites to help facilitate construction. PSE&G has extensive experience coordinating complex construction projects and will work to leverage that experience to execute this Project efficiently from a cost, impact, and timing perspective.

5.1 ROUTING CRITERIA

The Project Team evaluated the routes and sites from an engineering and technical perspective while prioritizing environmental constraints and stakeholder impacts while simultaneously reviewing preliminary environmental and topographical data. For each route, and to the extent possible, the Project Team has designed the underground and overhead routing to fall primarily within public ROW and outside of encumbered lands.

1) Criteria for Hope Creek to Silver Run

- 100-foot-wide overhead ROW for UG to OH transitions on both ends
- 100-foot-wide underground easement crossing underneath the Delaware River

In addition to the initial criteria above, the Project Team analyzed the route based on engineering and technical requirements as detailed in Section 3 and Appendix A.1 of this bid. The Project Team also conducted reviews of environmental constraints and stakeholder impacts in Section. Detailed engineering of the final route and site control plan may require:

- Alignment of the underground cable routes based on further engineering/design studies to define other subsurface utilities
- Consultation with the federal, State, and local agencies and authorities with jurisdiction over the sites, which will be initiated in connection with the permitting of the Project

2) **Proposed Routes:** The proposed route will consist of overhead facilities landward of the Delaware River within Delaware and New Jersey, and underground crossing beneath the Delaware River.

For mapping, see Appendix A.5.

5.2 RIGHT-OF-WAY AND PROPERTY ACQUISITION EXPERIENCE

The Project Team has significant experience building underground and overhead transmissions in New Jersey and has built, and currently operates, hundreds of miles of underground and overhead transmissions throughout the State. The Project’s new infrastructure will be primarily on private property, public ROW and/or on public, unencumbered lands.

PSE&G has hundreds of miles of rights-of-way, some of which are owned in fee and others in the form of easements. In addition, PSE&G, as an electric public utility regulated by the NJBPU, has the right to build in public rights-of-way within the State of New Jersey and also has the right of condemnation under applicable New Jersey law. Further, PSE&G has fostered relationships with neighboring states over its long history and will seek to leverage those existing relationships in the event the route(s) chosen impact those neighboring states.

PSE&G has years of experience in undertaking the various processes necessary to secure certificates of public necessity and in acquiring the necessary ROW needed to site facilities, including the legal ability/authority under NJSA Title 48 to exercise eminent domain authority if necessary, and actual experience in doing so.

PSE&G also has extensive experience in land acquisition and negotiations associated with all types of utility projects, including transmission. PSE&G has an internal Corporate Real Estate group responsible for the oversight and management of the corporation’s real estate assets, including the purchase and sale of property rights, leasing or licensing company-owned property to or from third parties, and handling day-to-day property maintenance issues that may arise. PSE&G has acquired, installed, and/or upgraded numerous substations and other large facilities necessary for the reliable transmission and distribution of electric service. As such, PSE&G has the expertise to acquire the necessary parcels and manage the myriad issues and complexities associated with the Project.

In addition, PSE&G has broad in-house expertise to handle acquisition of property for large transmission projects. PSE&G has extensive experience working with federal, State, local authorities, and private entities to properly plan and develop community-focused solutions with minimal impact to private properties of surrounding areas. PSE&G also hires the services of outside vendors including several Member of Appraisal Institute- (“MAI”) designated appraisers who routinely prepare market analyses for additional rights that PSE&G may need to acquire. PSE&G also engages the services of experienced land acquisition and engineering firms to make contact with current property owners from whom PSE&G needs additional easement rights and to begin negotiations for those additional rights using the appraisals as the basis of compensation.

Finally, PSE&G has in-house Environmental Projects and Licensing & Permitting groups dedicated to obtaining any requisite approvals and dealing with environmental issues for electric transmission and distribution projects. The Project Team will work with impacted stakeholders, municipalities, and local

authorities to obtain the necessary property rights to construct and maintain its facilities as detailed in Section 6.

6. ENVIRONMENTAL IMPACTS AND PERMITTING

6.1 ENVIRONMENTAL PROTECTION PLAN

The PSE&G Team assessed anticipated permits associated with the Hope Creek to Silver Run Transmission line route and have supported the evaluation of routing and development scenarios throughout the Project development process. The permitting and environmental assessments have included a review of Federal, regional, State, and local regulatory considerations that will likely impact each of the individual project scenarios to be granted regulatory approvals to begin construction. These assessments are based on an analysis of the proposed Project plan reviewed with available GIS data, a detailed understanding of applicable regulations, and significant professional experience with projects of similar scope in this same locality.

As part of this Project analysis, the Team participated in routing discussions with a myriad group of experienced planning, engineering, and construction professionals to find a competitive route that minimized environmental and built environment concerns. For the underground cable routing across the Delaware River, the Team reviewed available GIS data for the presence of marine mammals, fishing and shipping lanes, benthic habitat, anchorage areas, known obstructions, existing cables, and bathymetry.

The Project Team is confident in its ability to deliver the required permits and approvals on schedule and without controversy. The Team has unmatched experience and a proven record of responsibly working with the appropriate Federal, State, and local regulatory authorities to obtain required permits for this Project. The PSE&G Team is well poised to effectively work with the various regulatory agencies and stakeholders for a successful project implementation. A detailed Project environmental protection plan, a Project permitting matrix highlighting major permits and approvals, and a permitting narrative for obtaining these permits and approvals, with anticipated timeframes and issues associated with Project risks, are provided below. Resource studies

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

6.2 ENVIRONMENTAL BENEFITS NARRATIVE

- How does the project reduce environmental impacts to fisheries, habitat, and sensitive resources in comparison to radial lines? N/A
- What is the reduction in impacts (approximate area) compared to radial lines, temporary and permanent? N/A
- A description of whether and how the project infrastructure, including offshore platforms, could provide direct ocean and ecological observations throughout the water column: N/A
- Fisheries Protection Plan: N/A.
- Environmental and Fisheries Stakeholders Discussion: N/A

6.3 PROJECT PERMITTING NARRATIVE AND PLAN

6.3.1 FEDERAL PERMIT OVERVIEW

- 1) **USACE:** Pursuant to USACE Delegation of Authority, the State of New Jersey promulgated a program under the Freshwater Wetlands Protection Act (FWPA), N.J.S.A. 13:9B that established the FWPA Rules under N.J.A.C. 7:7A for the review of activities in freshwater wetlands as well as wetland transition/buffers areas. This is discussed in more detail in the state permitting section below (6.3.2).

Notwithstanding the above, the USACE retains jurisdiction over tidally influenced waters, including wetlands as well as waters/wetlands, within 1,000 feet of tidally influenced waters. These areas are known as non-delegable waters wherein both Federal (USACE: Section 404 of the Clean Water Act and potentially Section 10 of the Rivers and Harbors Act) and State (NJDEP: Coastal Zone Management Rules at N.J.A.C. 7:7) requirements apply. Note that the USACE's jurisdiction includes only wetlands and waters—they do not regulate transition/buffer areas. Non-delegable waters in New Jersey are overseen by both the New York and Philadelphia Districts.

Depending on the magnitude of impacts, the USACE has two permit options available for the installation of electrical transmission lines: Individual Permits, which would potentially be necessary for larger impacts, and Nationwide Permits (NWP) #57—Electric Utility Line and

Telecommunication Activities. Note that NWP#57 requires a formal PCN that must also address the 2017 NWP General Conditions as well as the 2017 NWP Regional Permit Conditions for New Jersey.

For this Project, the USACE Philadelphia District would have jurisdiction over the Hope Creek-Silver Run 230-kV Overhead/Underground Route. It is likely that offshore to shoreline work will require an Individual Permit.

- 2) **U.S. Coast Guard—Private Aids to Navigation within the Waters of the United States:** As part of the ISACE process, the Team will work with the US Coast Guard for a Notice to Mariners. Additionally, during construction, support vessels will be positioned upstream and downstream to alert mariners of construction.
- 3) **U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) Threatened & Endangered (T&E) Species Consultation:** A preliminary desktop review of the general Project areas indicates that there may be essential fish habitat supporting 7 species. These species include the black sea bass (*Centropristis striata*), bluefish (*Pomatomus saltatrix*), longfin inshore squid (*Loligo pealeii*), Scup (*Stenotomus chrysops*), summer flounder (*Paralichthys dentatus*), shortnose sturgeon (*Acipenser brevirostrum*), and Atlantic sturgeon (*Acipenser oxyrinchus*). The presence of essential fish habitat within a project area does not necessarily exclude project activities, rather the project proponent is required to demonstrate that they have avoided, minimized, and mitigated potential impacts to the extent practicable. Examples of these strategies include siting around potentially sensitive habitats to avoid direct impacts, constructing only during approved construction windows to minimize impacts to sensitive life stages, and mitigating potential impacts using modified construction techniques or adaptive mitigation.

The submarine crossing of the Delaware River will require consultation with USFWS and NMFS. Submarine cable installation technologies typically result in short term and temporary impacts to benthic habitat, it is not anticipated that the presence of essential fish habitat within the generic Project areas will result in significant permitting risk. However, NMFS and other Federal review entities will closely scrutinize proposed construction techniques to determine potential permanent and temporary impacts. The Team will consult with NMFS and will develop mitigation plans to address potential impacts.

- 4) **Federal Aviation Administration (FAA):** All structures that exceed 200 feet above ground level are considered obstructions and, therefore, the FAA is obligated to study them to determine their effect on the navigable airspace. Structures above 200 feet are not planned as part of the Project.

To initiate the FAA review process, the team will file FAA Form 7460–1, Notice of Proposed Construction or Alteration for the stations but no lighting and/or aviation obstruction concerns are anticipated. The team regularly files for the highest anticipated assets on a site to ensure safety and compliance with the FAA.

See Appendix A.8 Federal Permit Table for a summary of permits and notice requirements.

6.3.2 INTERSTATE APPROVALS

- 1) **Delaware River Basin Commission:** The Delaware River Basin Commission (DRBC) is an interstate agency responsible for the conservation and management of water resources for the 12,500-square-mile Delaware River watershed that includes parts of New Jersey, New York, Pennsylvania, and Delaware. All public and private projects proposed within the Basin that will

substantially affect water resources (e.g., water withdrawal from surface water, groundwater, effluent, and floodplain development) must obtain DRBC approval. The DRBC has also established minimum restrictions for floodplain development along non-tidal streams in the four-state basin.

The DRBC must issue approvals for ground or surface water withdrawals that exceed 100,000 gallons per day averaged over a 30-day period; liquid petroleum product pipelines operating at pressures greater than 150 psi; or projects which may have substantial effect on the water resources of the basin. Applications are reviewed at DRBC meetings which are held five times a year and typically include a public hearing.

The construction of either submarine foundations for transmission structures or submarine cable trenches may require DRBC review. Proposed construction techniques will ultimately determine the level of scrutiny conducted by DRBC with the submarine cable project scenario presenting the greatest likelihood of close and extended DRBC review.

See Appendix A.8 for Federal Permit Table for a summary of permits and notice requirements

6.3.3 STATE OF DELAWARE PERMITS AND APPROVALS

Below is a summary of major State of Delaware permit approvals required for the Project.

- 1) Delaware Public Service Commission:** PSE&G will apply to the Delaware Public Service Commission (Commission) for a Certificate of Public Convenience and Necessity (CPCN), which is similar to the CPCN the Commission granted to Silver Run Electric, LLC in 2019 for the construction of the Silver Run Station and the 230-kV transmission line under the Delaware River connecting to the Hope Creek Station. PJM determined that the transmission system improvements proposed by Silver Run Electric, LLC were necessary to assure the reliability and stability of the regional electrical grid and that the project would benefit system reliability, as well as Delaware's public health, safety, and welfare, and is consistent with state and federal mandates. Echoing the benefits and justification for the Silver Run Station and first 230-kV circuit, PSE&G will demonstrate to the Commission that this project will also provide significant health, safety, and welfare benefits to the general public. This project will also continue to resolve grid congestion and provide another redundant transmission connection to Delaware.

This project route interconnects areas subject to Department of Natural Resources and Environmental Control (DNREC) regulations. Therefore, the underground cable route, new riser structure, and foundation will likely require all the approvals described in this section to proceed with construction. As the proposed route parallels the existing ROW, potential impacts to regulated resources in Delaware are anticipated to be minimal and not result in a complex Delaware Department of Natural Resources and Environmental Control (DNREC) review for the landfall component of the project route in Delaware.

- 2) Coastal Zone Act Program (Title 7):** The Coastal Zone Act (CZA) Program regulates new and existing manufacturing and heavy industrial activities in Delaware's Coastal Zone, which generally runs the length of the state along the Delaware River, the Delaware Bay, the Inland Bays, and the Atlantic Ocean.

The in-water riser tower and submarine cables are located within the Delaware Coastal Zone. However, Section 5 of the Delaware Administrative Code defines the project as a non-regulated activity. Facilities used in transmitting, distributing, transforming, switching, and otherwise transporting and converting electrical energy are not regulated under Title 7 of the CZA Program. Therefore, demonstrating compliance with Delaware CZA is not required.

- 3) **Wetlands and Subaqueous Lands Permit:** Freshwater wetlands in Delaware are regulated by the USACE pursuant to Section 404 of the Clean Water Act. Waters of the United States are regulated by the USACE subject to Section 10 of the Rivers and Harbors Act. Tidal wetlands and subaqueous lands associated with Waters of the U.S. are regulated by (DNREC).

Authorization from the Wetlands and Subaqueous Lands Section (WSLS) is required for activities in tidal wetlands as well as tidal and non-tidal waters of the State of Delaware. DNREC is not a delegated authority for the Federal 404, but DNREC will still conduct a concurrent review of potential impacts.

- 4) **Subaqueous Land Lease:** A lease is required for the placement of any structure, including pipelines, in underwater channel landward of the mean low-water line. Projects that involve fill below the mean low-water line are also subject to an annual lease fee. All tidal underwater land within the State of Delaware below the mean low-water line, except those underwater lands specifically granted by the State to a private owner, are Public Subaqueous Lands held in trust by the State of Delaware for all Delaware citizens. Impacts to the FHA (e.g., foundation volume in FHA) and to riparian zones will require additional compensatory mitigation.
- 5) **Water Qualification Certification:** A State Water Quality Certification is required for activities requiring a USACE Section 404 permit. The WSLS issued by DNREC serves as this certification. The certification and wetlands and subaqueous lands permit are concurrently obtained.
- 6) **Threatened and Endangered Species:** The Wildlife Species Conservation and Research Program (WSCRCP) maintains information on rare plant and animal species in Delaware. Upon request, the WSCRCP provides applicable information on listed species through its Environmental Review Process.
- 7) **Stormwater and Sediment Management Plan Approval:** Under Delaware Law, if a project exceeds 5,000 square feet of land disturbance, an approved Sediment and Stormwater Management Plan is required.
- 8) **Delaware Department of State:** In Delaware, the State Historic Preservation Office (SHPO) pursuant to the National Historic Preservation Act of 1966 (NHPA) is part of the Department of State's Division of Historical and Cultural Affairs. The location of the new structures in the viewshed of the Delaware Bayshore Scenic Byway will be reviewed by the Delaware SHPO.

See Appendix A.8 Delaware Permit Table for a summary of permits and notice requirements.

6.3.4 STATE OF NEW JERSEY PERMITS AND APPROVALS:

Below is a summary of major State of Delaware permit approvals required for the proposed Project.

- 1) **Coastal Zone Management Rules (N.J.A.C. 7:7):** New Jersey's Coastal Zone is geographically defined as being comprised of the following areas:
- The Coastal Area Facility Review Act (CAFRA) area;
 - Coastal waters, which are any tidal waters of the State and all lands lying thereunder. Coastal waters of the State of New Jersey extend from the mean high-water line out to the three-geographical-mile limit of the New Jersey territorial sea, and elsewhere to the interstate boundaries of the States of New York, and Delaware and the Commonwealth of Pennsylvania;
 - All lands outside of the CAFRA area extending from the mean high-water line of a tidal water body to the first paved public road, railroad, or surveyable property line

existing on September 26, 1980, generally parallel to the waterway, provided that the landward boundary of the upland area shall be no less than 100 feet and no more than 500 feet from the mean high-water line;

- All areas containing tidal wetlands; and
- The Hackensack Meadowlands District as defined by N.J.S.A. 13:17-4.

The Coastal Zone Management Rules establishes the rules for the use and development of coastal resources within New Jersey's coastal zone and sets forth the application procedures and standards for the review of coastal permit applications under CAFRA, the Wetlands Act of 1970, and Waterfront Development Law as well as the standards for reviewing Federal Consistency Determinations under the Federal Coastal Zone Management Act and Water Quality Certificates in coastal areas under Section 401 of the Federal Clean Water Act.

It should be noted that there is a significant amount of overlap in jurisdictional areas. For instance, within the CAFRA Zone all work located above mean high water (MHW) line will require a CAFRA Permit, and all work located below MHW line will require a Waterfront Development Permit (WFD). Outside the CAFRA Zone but within tidally influenced areas, work above the MHW line will require an Upland WFD Permit and work below the MHW line will require an In-water WFD Permit.

In addition, if Coastal Wetlands mapped as promulgated under the Wetlands Act of 1970 are present, impacts to those, as well as their associated buffer, will require a permit. Finally, prior to issuance of a Coastal Permit, the applicable license, lease, or grant must be obtained, as applicable, from the Bureau of Tidelands Management, overseen by the Tidelands Resource Council. Tidelands, also known as riparian lands, are all lands that are currently or were formerly flowed by the mean high tide of a natural waterway. The State of New Jersey claims ownership of these tidelands and holds them in trust for the people of the state.

Application for impact to coastal zone areas/coastal zone resources can be applied for via a Permit-by-Rule, General Permit-by-Certification, General Permit, or Individual Permit. The first three are reserved for relatively specific and minor impacts. Individual Permits are required for larger impacts and for impacts not specifically authorized by a Permit-by-Rule, General Permit-by-Certification, and/or a General Permit. If a prospective Applicant determines that an activity does not impact a coastal area/resource and has the need to have that verified by the NJDEP, an application for a Coastal Applicability Determination can be prepared and submitted to the NJDEP.

The Hope Creek to Silver Run route is located within the CAFRA Zone and will likely require CAFRA, WFD, and Coastal Wetland Individual permits. Confirmation engineering details regarding the design of structures, foundations, and their area of disturbance will determine the required permits.

- 2) **Freshwater Wetlands (N.J.A.C. 7:7A):** As noted above, via N.J.S.A. 13:9B the FWPA Rules (N.J.A.C. 7:7A) the New Jersey Department of Environmental Protection assumed jurisdiction of the regulation of wetlands located throughout the State of New Jersey from the USACE, with the USACE retaining jurisdiction over non-delegable waters, as referenced above.

Direct impact to freshwater wetlands (all wetlands not mapped under the Wetlands Act of 1970) as well as their associated transition areas/buffer are regulated by the NJDEP Division of Land Resource Protection.

The absence, presence, and limits of wetlands are investigated/delineated via the three-parameter approach, as outlined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, 1989. NJDEP will verify delineated boundaries via the Letter of Interpretation (LOI) process. While obtaining an LOI provides written NJDEP verification of the locations of wetlands as well as their associated Resource Value Classification (determines the width of the associated transition area), it can be a time-consuming process and is not absolutely required by NJDEP. A prospective Applicant can go straight to the permitting process, assuming that delineated boundaries are accurate as well as assuming the width of the transition area for purpose of calculating impacts to each.

Further to the discussion of Resource Value Classification and transition area width, the NJDEP categorizes wetlands into three separate categories (based on associated surface water classifications and absence/presence of rare (threatened or endangered) species), as follows:

- Exceptional Resource Value: 150-foot-wide transition area
- Intermediate Resource Value: 50-foot-wide transition area
- Ordinary Resource Value: No transition area

Application for impacts to freshwater wetlands/transition areas can be applied for via a General or Individual Permit. Like the Coastal Zone permitting process, General Permits are relegated for relatively specific and minor impacts. Individual Permits are required for larger impacts and for impacts not specifically authorized by a General Permit.

There is documented marsh and estuarine wetlands located adjacent to the Delaware River. The route, which includes the two proposed riser towers (one in-water, one on land), has the potential to directly impact wetlands, transition areas, and thus requires a general permit.

- 3) Floodplains/Flood Hazard Areas (NJCA 7:13):** The Flood Hazard Area (FHA) Control Act Rules (N.J.A.C. 7:13) implement the New Jersey Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et. seq. and regulate work within floodways, flood hazard areas, flood fringes, and riparian zones.

Regulation within the floodway and FHA is generally more concerned with fill and the displacement of flood storage volumes and regulation within the riparian zone is generally more concerned with natural resource issues (i.e., vegetation impact/rare species impact).

Floodways, FHAs, and riparian zones are generally associated with surface water resources that drain more than 50 acres. However, there are several nuances where a water may have no floodway/FHA but still have an associated riparian buffer. In addition, tidal versus fluvial floodways/FHAs are regulated slightly differently, with work located within tidal flood areas less difficult to obtain approvals for.

The width of a riparian zone measured along the top-of-bank of a regulated water can extend 50, 150, or 300 feet perpendicularly away from the top-of-bank, based on the surface water resource classification (non-trout, trout-maintenance, trout-production), the absence/presence of rare species, or the classification of a water as Category One (requires the 300-foot-wide riparian zone).

Comparable to the Coastal Zone Management Rules, application for impact to regulated waters can be applied for via a Permit-by-Rule, General Permit-by-Certification, General Permit, or Individual Permit. The first three are reserved for relatively specific and minor impacts. Individual Permits

are required for larger impacts and for impacts not specifically authorized by a Permit-by-Rule, General Permit-by-Certification, and/or a General Permit, none of which are applicable to the project. If a prospective Applicant determines that an activity does not impact a regulated water and has the need to have that verified by the NJDEP, an application for an FHA Applicability Determination can be prepared and submitted to the NJDEP.

Note that regulated waters exist throughout the State of New Jersey, both within and outside of the Coastal Zone Management Area. Impacts to regulated waters located within the Coastal Zone are incorporated into the applicable Coastal permit wherein all requirements set forth at N.J.A.C. 7:13 are included and addressed—a separate FHA application is not required. Impacts to regulated waters located outside the Coastal Zone require a separate, stand-alone FHA Permit.

The proposed cable route is primarily located within tidally-influenced areas, located below-grade, impacts to regulated waters, including FHAs and riparian zones under the Flood Hazard Area Control Act Rules (FHACAR—N.J.A.C. 7:13) appear to be covered by the following Permits-by-Rules:

- 7:13-7.9 Permit-by-Rule 9: General Construction Activities in a Tidal Flood Hazard Area
- 7:13-7.10 Permit-by-Rule 10: General Construction Activities Located Outside a Flood Hazard Area in a Riparian Zone
- 7:13-7.36 Permit-by-Rule 36: Placement of an Underground Utility Line Using Directional Drilling or Jacking
- 7:13-7.37 Permit-by-Rule 37: Placement of an Underground Utility Line Beneath Existing Pavement
- 7:13-7.38 Permit-by-Rule 38: Attachment of a Utility Line to a Lawfully Existing Roadway or Railroad That Crosses a Regulated Water
- 7:13-7.39 Permit-by-Rule 39: Placement of an Underground Utility Line That Does Not Cross a Regulated Water

All the above would be applicable to the project for any work proposed to be located at-grade (i.e., jack and bore pits) if the pits were located more than 25 feet from the top of bank of any regulated water. Activities covered under an FHA Permit-by-Rule do not require formal application to the NJDEP. Use of any of the above in conjunction with work proposed within the Coastal Zone Management Area would merely mention those applicable to the project within the CAFRA/WFD IP. Work within regulated waters outside the Coastal Zone Management Area could proceed without prior NJDEP approval, in accordance with N.J.A.C. 7:13-6.3.

The Hope Creek-Silver Run route is located within and adjacent to areas that are designated VE and AE zones. The proposed construction of a new in-riser tower and its foundations in a regulated floodway is subject to the FHACAR—N.J.A.C. 7:13. A statement demonstrating compliance with the applicable FHA rules will be incorporated with the overall NJDEP multi-permit application. Flood Hazard Permits are included as part of the Coastal Zone rules within CAFRA jurisdiction.

- 4) Federal and State Rare Species Review:** Rare (threatened and/or endangered) species and potential impact to same are regulated at the Federal level by the US Fish and Wildlife Service and National Marine Fisheries Service and at the State level by the NJDEP Endangered and Non-game Species Program (ENSP) as well as by the Division of Land Resource Protection.

Note that the process of dealing with rare species is generally made part of application for any one or combination of the permits outlined above. In addition, it is not common for either the USFWS

or the NJDEP to require an actual on-site rare species survey. Rather, protection of present, or potentially present, suitable habitat is handled as part of permit conditions of approval, generally in the form of a construction timing restriction and/or the contracting of qualified environmental monitors during construction.

- 5) **NJDEP Threatened and Endangered Species Landscape Project Map:** The New Jersey Landscape Project was used to determine presence/absence of documented threatened and endangered (T&E) species and the limits of their associated habitat. A preliminary desktop review was conducted to assess the general project area and injector technology construction landfall location, which is within the Delaware Bay Landscape Project region.

At the State level, investigation regarding the presence of rare species within any given project area/project corridor starts with obtaining Natural Heritage Program/Landscape Project data. At the Hope Creek Station, the following documented T&E species in the vicinity are mapped through the Landscape Project datasets: foraging and nesting habitat for osprey (*Pandion haliaetus*) and bald eagle (*Haliaeetus leucocephalus*).

At the State and Federal levels, the landfall trench construction location has documented foraging and nesting habitat for osprey (*Pandion haliaetus*) and bald eagle (*Haliaeetus leucocephalus*), occupied habitat for Atlantic green turtle (*Chelonia mydas*), Atlantic loggerhead (*Carretta carretta*), and Kemp's or Atlantic ridley (*Lepidochelys kempii*), including migration corridor for shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*Acipenser oxyrinchus*).

- 6) **New Jersey State Historic Preservation Office:** The SHPO in New Jersey is responsible for implementation of Section 106 of the National Historic Preservation Act. SHPO does not provide a permit; however, its findings are considered as part of NJDEP's natural resource permitting process. The proposed Project is likely to require a combination of historic resources studies that consider both aboveground historic structures within the viewshed of the proposed alignment/substation as well as potential impacts to belowground archaeological resources potentially impacted by structure foundations or other land disturbing activities. SHPO typically will review initial field study data and work with the applicant to agree on a protocol for protecting historic resources, projects are typically allowed to proceed if following special conditions that are issued as part of the NJDEP permits.

Currently, the New Jersey portion of the route is not located in a historic district zone or adjacent areas documented with historic resources on the list of New Jersey and National Registers of Historic Places. If archaeological resources are identified during construction, SHPO will work with the applicant to identify and catalogue any relevant artifacts before continuing construction.

See Appendix A.8 for New Jersey Permit Table for a summary of permits and approval requirements.

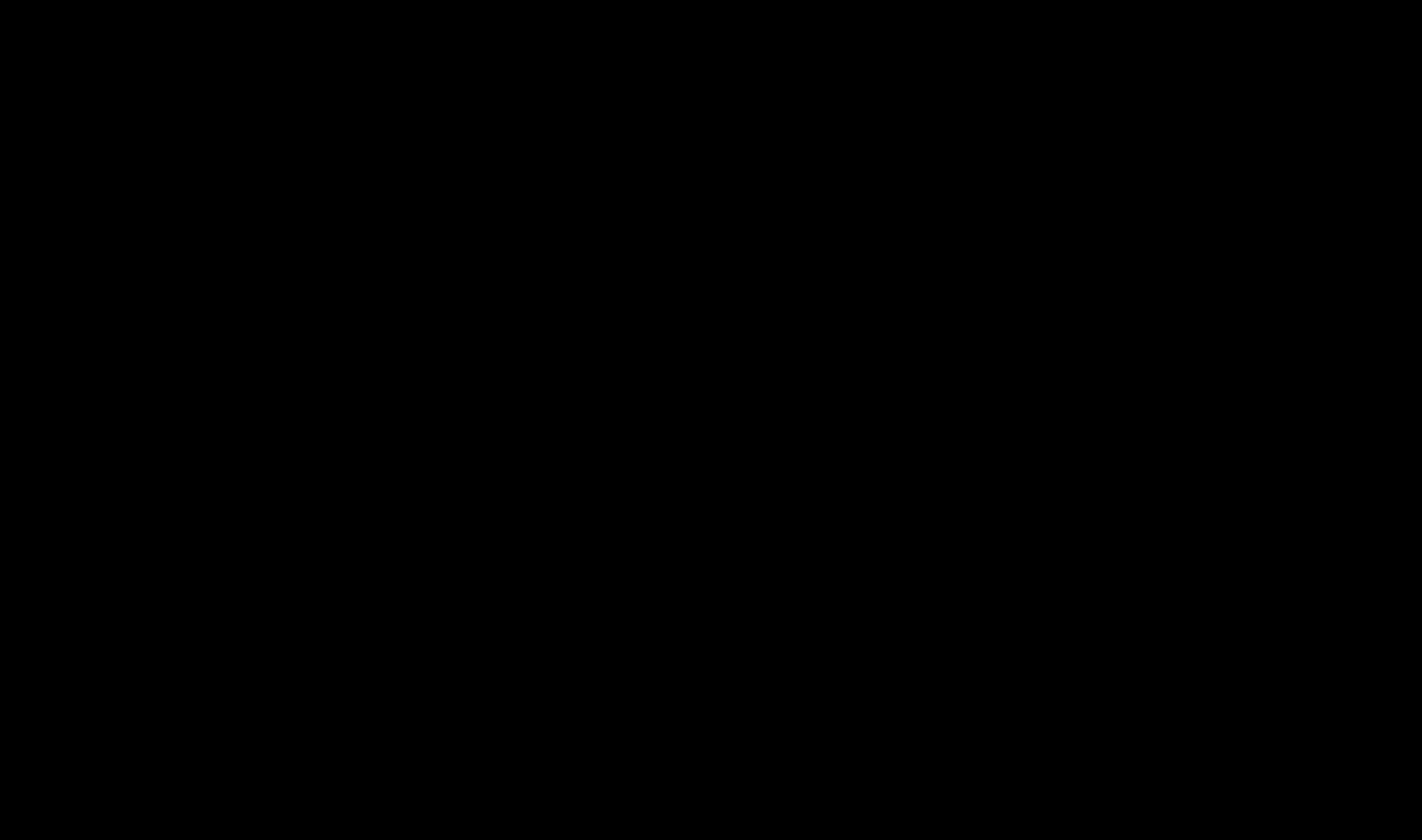
6.3.5 SITE SPECIFIC AND MUNICIPAL INFORMATION AND REQUIRED PERMITS

Hope Creek 230-kV Substation

- Location: Block 26 Lot 4 & 5
0 Alloways Creek Neck Road (Local Road)
Lower Alloway Creek Township, Salem County, NJ

Property Owner: PSE&G
Property Area: 739.67 acres

The existing Hope Creek substation is located within the existing Hope Creek power generation facility, located between Alloway Creek Neck Road and the Delaware River in Lower Alloway Creek Township. The Hope Creek 230-kV station expansion will be located within pre-existing disturbed areas. The Hope Creek 230-kV circuit will connect to the proposed transition structures outside station via overhead transmission lines to the in-water NJ riser tower. The submarine cable will be parallel with the existing ROW and routed within the proposed 100-foot ROW from the NJ riser tower direct-embedded beneath the riverbed across the Delaware to the new in-water DE riser tower on the west side of the Delaware River. The submarine cable will tie into the existing transition structure in Delaware. The existing Hope Creek-Silver Run transmission ROW will be used to transmit power to the Silver Run Station in Middletown, New Castle County, Delaware.



See Appendix A.8 New Jersey Permit Table for a summary of permits and approval requirements

6.4 NJDEP CHECKLIST

Please see Appendix 7 for NJDEP Checklist.

6.5 NJDEP PRESUBMISSION MEETING

The Project Team met with multiple departments within the NJDEP, led by the office of Permitting & Project Navigation, to review the potential Project solutions in response to the BPU/PJM Bid.

6.6 ADDRESSING IDENTIFIED IMPACTS AND INNOVATIVE MEASURES

This project scope parallels existing utility infrastructure and therefore minimizes new environmental impacts. The technology that has been proposed for the Delaware River submarine cable minimizes impacts to the seabed and threatened and endangered species. In addition, the assumed cable depth minimizes impacts to vessel traffic.

6.7 OVERBURDENED COMMUNITIES/ENVIRONMENTAL JUSTICE

Since the release of PSEG’s 2020 Climate Report, we have developed an Environmental Justice Commitment in support of the communities we serve across the state. We believe such a commitment should convey the importance of centering around Environmental Justice considerations across our organization so that all our customers, especially those in disadvantaged communities, can benefit from the coming changes of a decarbonized future. Our commitment to Environmental Justice is embedded in everything we do, from infrastructure, planning, and investment, to the way we design customer-facing programs such as energy efficiency, to the day-to-day operation of our business.

As a national sustainability leader, our commitment to Environmental Justice is guided by the following principles:

- 1) **Engagement:** PSE&G engages in active listening which further promotes a two-way dialogue with the communities and stakeholders we impact.
- 2) **Understanding:** Through ongoing and project-specific engagement, PSE&G builds a better understanding of the needs of our communities, including the needs of communities and customers of color, and those that face disproportionate burdens from the impacts of climate change and yet are least able to afford the transition to a clean energy future.
- 3) **Win-Win Solutions and Shared Value:** With this deeper understanding, PSE&G strives to develop win-win solutions that not only address the needs of overburdened communities and customers, but also achieve environmental goals to preserve our planet and allow PSE&G to continue providing safe, reliable, economic, and greener energy and infrastructure.
- 4) **Long-Term Sustainability:** PSE&G has served New Jersey customers and communities for more than 100 years. Putting environmental justice considerations at the forefront is part of PSE&G’s broader commitment to Diversity, Equity and Inclusion (DEI) in all aspects of our business. As we work to build a business that will survive well into the next century, we recognize that our own long-term sustainability demands that we include customers and communities in decisions that affect them; that we work to bring all our customers along with us in the journey toward a clean energy future; and that we harness the power of diversity to forge the best path forward.

6.8 SHAPE FILES

Cable Route Widths	
Width of individual cable routes or shared power corridors	100’-wide ROW along the route in the River
Cable Installation Methods	
Descriptions of cable installation methods with locations identified	<ul style="list-style-type: none"> • Vertical injector in the federal navigation channel • Jet plow in the shallow waters outside the federal navigation channel

General Footprint, HDD Boreholes & Landings	
General footprint and extent of HDD boreholes and cable landings	20'-wide across Delaware River for each phase
Pole Height	
	<ul style="list-style-type: none"> • 1-145-ft Riser pole on NJ side • 1-145-ft Riser pole on DE side • 2-100-ft monopole

7. COMMUNITY ENGAGEMENT

7.1 COMMUNITY OUTREACH PLAN

PSE&G has a longstanding history of managing, maintaining, and upgrading the electrical transmission grid within the state of New Jersey and the communities it serves. PSE&G has been managing the electrical grid in the Garden State for more than 100 years, has an understanding of the landscape, and has developed valuable relationships with public stakeholders. Successfully managing and maintaining the grid is an essential part of not only the infrastructure, but also for further growth development. Since the Northeast blackout in 2003, PSE&G has established and implemented various initiatives to upgrade the transmission grid to sufficiently handle the evolving demand for electricity and strengthen the system's resiliency and reliability. Continuing to provide safe and reliable energy is not simply a job, but a fundamental responsibility of PSE&G. A critical component of PSE&G's approach revolves around its community engagement and outreach. PSE&G values the diverse communities it serves and understands the importance of corporate citizenship. PSE&G would be unable to achieve the level of success it has without community engagement or responsible communication.

PSE&G has developed a comprehensive communication process for all transmission projects to adequately keep stakeholders engaged at all levels, including public officials, municipal officials, environmental organizations, business customers, residents, etc. This process ensures constant and detailed communication efforts throughout all phases of a project, including pre-, mid-, and post-construction activities. This outreach process is a critical part of PSE&G's ability to successfully manage the transmission grid to achieve exceptional electric reliability. Throughout its history of effective communications with stakeholders, PSE&G has been able to gain a thorough understanding of the various concerns typically raised by either directly impacted or peripheral parties, such as disruptions during construction, concerns around electromagnetic fields (EMF), property value, traffic impacts, and other potential matters. However, more importantly, PSE&G has been able to identify solutions for each potential concern and has strong insight on how to mitigate construction impacts and public apprehension.

PSE&G has developed a specific outreach plan (detailed below) tailored towards Project that will be implemented to foster success.

7.2 PROJECT OUTREACH & COMMUNICATIONS PLAN

The purpose of this plan is to develop and align strategies to support the overall Project Bid submission for the SAA RFP.

7.2.1 OBJECTIVES/DESIRED OUTCOMES

- In order to align with Governor Murphy’s NJ Clean Energy Goals, PSE&G will develop a project and work in conjunction with local, state, and regional stakeholders to meet the goals of New Jersey’s Energy Master Plan.
- Provide clear, consistent, and timely information to municipalities, local stakeholders, property owners, environmental groups, fisheries organizations, and all other potential stakeholders while being responsive to their input
- Generate a positive image for the project and its agents so that PSE&G is perceived as a credible source of information and a cooperative community partner
- Continue to strengthen PSE&G’s image as a leader in electric reliability and foster an environment that supports economic development in New Jersey by creating clean energy jobs
- Strategically provide outreach to key stakeholders post-bid submission in order to support the project’s objectives and gain public input

7.2.2 ROLES AND RESPONSIBILITIES

Overall, the Bid Outreach Team consisting of Federal/State Governmental Affairs and Environmental Policy/Permitting is responsible for:

- Facilitating all communications internally and externally between the project team and key stakeholders
- Coordinating with various internal groups such as Permitting, Environmental, Real Estate, Engineering, Project Management, and other cross-functional teams to ensure strategic and tactical alignment with the planning and execution of the project, ultimately engaging stakeholders with a well-coordinated plan
- Working closely with Project Management to implement a communication strategy developed using publicly available messaging and information. As more project-specific details become available and are approved by the Project Team, PSE&G’s Public Affairs Team will communicate those specifics with its various stakeholders.
- Developing specific communication methods with the public, municipalities, and other stakeholders directly impacted by the project
- Managing any potential public affairs or outreach issues arising from day-to-day activities
- Integrating the policies developed in anticipation of issues/concerns likely to be raised during the construction period into the outreach and communications
- Participate in weekly meetings to report updates on outreach activities
- Leverage and cultivate relationships with applicable officials to foster success of the bid/project

7.2.3 PRELIMINARY OUTREACH PLAN

PSE&G’s strategy outreach plan uses multiple and concurrent communication methods to reach, inform, and address diverse audiences and knowledge levels. A variety of communication tactics will be used, tailored to each stakeholder audience and its particular communication style and preference.

Messages and actions will be customized for each stakeholder group. Communications will be designed to provide adequate information to stakeholders. All timings of these communications will be aligned with the project’s schedule post-bid submission.

1) Identify Key Stakeholders

- Identify stakeholders—town, legislative, community and environmental groups, local advocates, etc.
- As the development of the project advances, PSE&G Public Affairs will actively identify key local stakeholders, both in and out of PSE&G’s service territory. These stakeholders will consist of local and state officials, community organizations, advocates, businesses, environmental groups, commercial/recreational fisheries, local workforce, etc. that could potentially impact the project, whether positively or negatively. PSE&G will identify each key stakeholder and develop a communication plan that is specifically tailored for them. Stakeholders and the timing of their engagement will be tracked in a Stakeholder Registry.
- **Stakeholder Registry:** PSE&G has identified the following stakeholders who will be essential when coordinating project details and mitigating public concerns:
 - Lower Alloways Creek, New Jersey
 - County of Salem, New Jersey
 - New Castle County, Delaware
 - State of New Jersey Public Government Officials (Governor, Senate, etc.)
 - State of Delaware Public Government Officials (Governor, Senate, etc.)
 - The Coalition for the Delaware River Watershed
 - Delaware Riverkeeper Network
 - Delaware River Basin Commission
 - University of Delaware Department of Coastal and Ocean Studies
 - NJDEP
 - DNREC
 - USACE Philadelphia District

2) Outreach Within PSE&G Service Territory: Outreach will be primarily aimed at informing municipal officials of PSE&G’s plans to support the NJ Energy Master Plan, also keeping them up to date on the current status of the project. Initial communications with municipalities will begin with those that are geographically within PSE&G’s service territory and are municipalities PSE&G actively works with to maintain positive relationships. Early conversations will be held at a high level with municipalities in proximity to the project’s scope of work. Additionally, early conversations will provide a proactive approach to properly engage municipalities, answer their questions, and gain an understanding of potential concerns of conflict. As more information regarding the potential project is released, PSE&G will continue to communicate and coordinate with the appropriate municipalities. These conversations will be conducted via phone call, and Zoom meetings or in-person, if applicable.

3) Outreach Outside of PSE&G Service Territory:

- Once a variety of potential transmission routes are defined, PSE&G will conduct a high-level evaluation of each route. Route Profiles will be developed for each potential route which analyzes the route, by identifying municipalities and their local officials, stakeholders, and community/environmental groups, as well as providing a detailed

analysis of the community. Specifics of each route analysis can be located within the routing appendices. Please Appendix A.1.

- As routes are being defined, PSE&G will take a similar approach to how it engaged potentially impacted municipalities that are currently within its service territory. When the details are available, PSE&G will engage the municipalities' local/county officials. High-level conversations will occur to properly engage these municipalities, to inform them about the project, address questions/concerns, and to demonstrate PSE&G's commitment to put its best foot forward for the communities of New Jersey.
- In addition, PSE&G will investigate and identify potential community organizations that could either support or oppose the project. This may include environmental groups and local fisheries, and other associations.

- 4) **Federal Outreach:** PSE&G views federal agencies as highly valuable stakeholders. Adequate communication with federal agencies, such as USACE, will be required to achieve a successful bid.

7.2.4 STATE & LOCAL OUTREACH

As details are finalized, PSE&G will create a stronger focus to establish and maintain positive relationships with local and county officials. Communication methods and tools will be utilized similar to those of the standard transmission and other utility projects.

1) Communication Methods

- Communication with Municipal/Local/County Officials
 - Communications between PSE&G and local government officials will be conducted to facilitate the project's success. These communications efforts will mainly be conducted via phone calls, zoom meetings, emails, and in-person meetings.
- Development and Creation of Local Content
 - Provide detailed educational materials about the project to stakeholders
- Use of Local Subs/Contractors
 - Identify local contractors in impacted legislative districts who could support PSE&G and help engage key stakeholders
- Municipal and County Relations
 - Leverage and cultivate relationships to work with local elected officials and administrators, to address any conflicts that may arise throughout the project
- Community Relations (for contractors)
 - Update and present community relations presentation to all employees and contractors working on the project to reiterate PSE&G's commitment to being a good neighbor and to help manage a positive PSE&G brand image
- Public/Community Workshop
 - PSE&G will conduct public workshops for the community, municipalities, and other local stakeholders where information about the project can be provided. A public workshop offers an informal and informational session for the community to learn about project need, schedule, future plans, and other project-specific

questions they may have. Questions can be addressed on a one-to-one basis with company experts. This also allows stakeholders to have input on the project.

- Virtual Public/Community Workshops
 - In light of today's virtual working environment, PSE&G has developed a valuable method to successfully conduct Public and Community Workshops via Zoom and other platforms. These virtual workshops provide a more accessible method for stakeholders and members of the community to learn about projects, provide input, and ask project experts questions. PSE&G has found these meetings to be very valuable and informative to the community and other key stakeholders.
- Responding to Public Inquiries
 - From the inception of the project and throughout construction and restoration, the Outreach team will field and respond to any inquiries from the public. Generally, prior to, and during construction, the most frequent inquiries from customers involve the construction schedule, noise, aesthetics/landscaping, and potential traffic concerns.
- Door Hangers/Construction Updates
 - Door hangers will be used by the Public Affairs & Outreach Representatives to provide timely notification to the community that construction is about to occur on or near their property. Placed on doors or other prominent fixtures where they are intended to be easily observed, these door hangers will offer a brief description of the project and the construction activities. In addition, it notifies the property owner that a construction activity is about to occur, and directs customers to the Project website and hotline if there are any questions or concerns. A resident letter may be used in addition to the door hanger, to provide additional explanation of the work and the community benefits of the work. Door hanger and letter notifications will generally occur within two weeks prior to the start of the construction event. Responsibility: Hangers are developed and distributed by the Project Outreach Team.
- Project Hotline
 - A dedicated phone line for the general public to ask questions or voice concerns about the Project. To facilitate responses, the Outreach representative will request direct contact information from caller (street address/email/phone number). The Project commitment is to provide the first response within 24 hours or the next business day if received on a weekend or holiday.
- Email Updates
 - Updates will be emailed on an as-needed basis to town officials, police, fire, ambulance, bus companies and any stakeholder expressing interest. The update will consist of a status report and projection for the next activity.
- Website
 - A dedicated webpage that provides an overview of the Project; interactive map of the route; construction schedule; frequently asked questions; contact information; and other information regarding the Project. A link to the Project's website will be available to each affected town's official website.

- Contact Handouts
 - If needed, business card-sized project information/contact cards may be carried by survey and testing personnel and other workers performing duties on site. They will serve as Project briefs to interested parties encountered by workers.
- News Releases/Media Relations
 - If needed, news releases will be issued as various Project announcements are made and milestones are met. Coordination will also be required if there is a need to respond to media inquiries regarding the project. All releases will be posted on the Project website.

7.3 COMMUNITY ENGAGEMENT QUESTIONS

PSE&G finds extreme value in proactively engaging stakeholders early in the communication process. In order to demonstrate partnership and collaboration with stakeholders, PSE&G will work with local groups to inform them of the potential project, gather feedback, answer questions, and coordinate project details. This will serve as a critical method to ultimately mitigate any potential concerns from stakeholders. PSE&G believes there is a greater risk in not engaging stakeholders, which is why there will be active and open communication with such groups. Building and maintaining relationships with stakeholders is an essential part of PSE&G's current and future success with all projects.

1) What community groups and stakeholders have you identified that may be interested in or impacted by this project?

- PSE&G took deep consideration into the various stakeholders and groups that could potentially have a greater interest or concern for the project, and through internal discussions created a key stakeholder registry which highlights the various stakeholders that will be engaged. This registry identifies federal, state, municipal, environmental, aquatic, and other stakeholders which will play an essential role in the project.

2) How have you or will you engage community and stakeholders in this project?

- Through using the referenced stakeholder registry, PSE&G developed a communication plan to engage each group that was identified as an essential stakeholder.
- Various meetings and strong communication efforts will be coordinated with stakeholders once the bid is awarded if ultimately selected.
- PSE&G plans to coordinate and communicate with the various key stakeholders, while also continuing to identify new stakeholders which will be imperative towards the project.

3) What are the potential impacts of this project on the community?

- Through the history and experience of managing transmission projects, PSE&G has gained an understanding of various potential concerns that may arise from a typical transmission project such as disruptions during construction, concerns around EMF, Pproperty value, traffic impacts, etc.

- While conducting outreach to the various stakeholders, it is essential that PSE&G gains an understanding of the specific impacts stakeholders are concerned about so they can be address prior, during, and following the project.

4) What are the community concerns or potential concerns about this project?

- PSE&G understands there may be a handful of concerns on the behalf of the community and other stakeholders, such as impacts both offshore and onshore.
- Going forward PSE&G will identify public concern through coordination with key stakeholders and will work with stakeholders to ensure each concern is mitigated and addressed properly.

5) How do you intend to address these concerns?

- Most importantly PSE&G needs to listen and understand the specific concerns in order to address them. Through proper communication and coordination with stakeholders, PSE&G will develop solutions to address stakeholder's specific concerns.
- PSE&G will utilize its experience with transmission projects and lessons learned to implement methods that will ultimately reduce impacts to communities and other stakeholders.
- PSE&G will ensure coordination and partnerships with stakeholders to not only identify concerns, but also to address them in a satisfactory manner for all parties involved.
- Coordination and communication regarding potential concerns will commence post-bid submission and will be a main area of focus until key stakeholders feel comfortable and accepting of PSE&G's project plans going forward.

6) As part of this project, do you plan to perform any environmental improvements in this community? If yes, describe.

- PSE&G absolutely expects to perform environmental improvements throughout the communities that this project will serve. Through working with municipalities, environmental organizations, and other stakeholders, PSE&G will develop new concepts which will ultimately contribute towards environmental improvements within various communities.
- In PSE&G's previous history and experience navigating through transmission projects there have been numerous environmental improvements implemented. Previously, methods PSE&G has used are building green walls and eco-friendly substations, partnered with academic institutes and other environmental groups, developed detailed vegetation replacement programs, and have allocated funds and resources towards environmental improvements.
- PSE&G is open to exploring all options to ensure the Project contributes towards environmental improvements within the community.

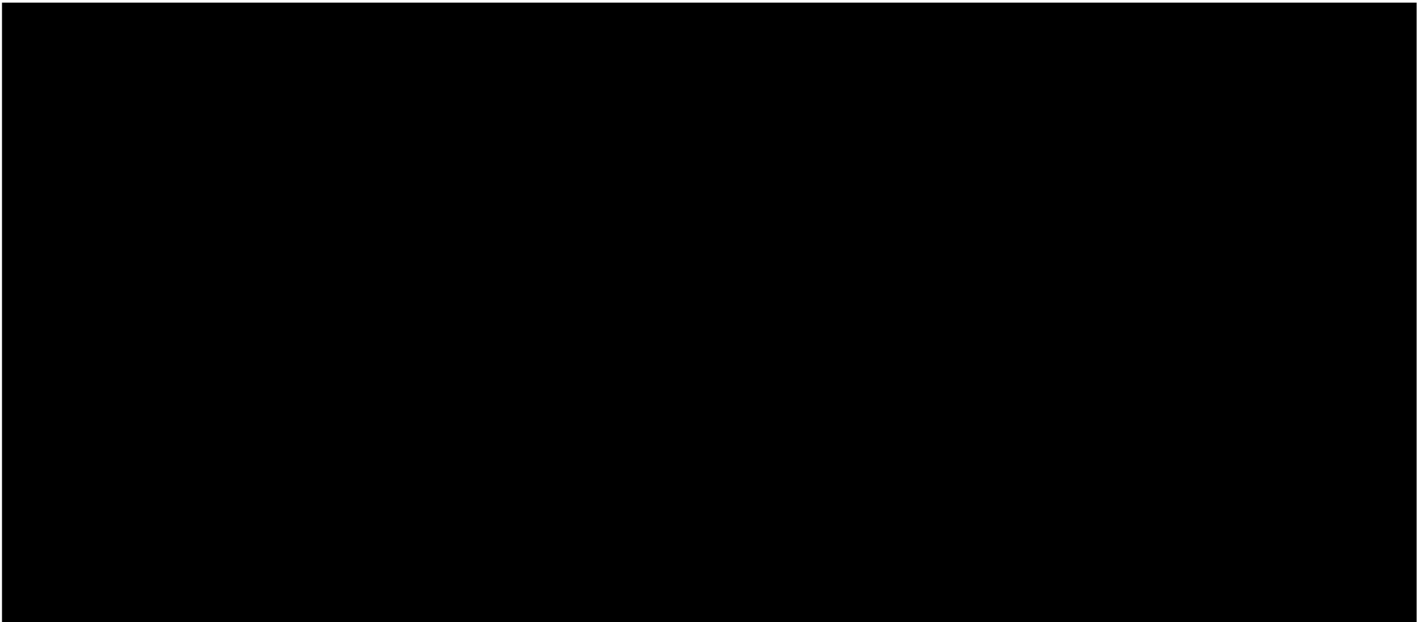
8. SCHEDULE

The Project has an estimated schedule duration of 55 months. Risks that could affect the Project duration may include public opposition, organized opposition groups, state siting approval, NEPA constraints, permits, environmental conditions, construction issues, material procurement, and mitigation requirements, as well as other unknown conditions and assumptions identified in this document. The longest lead time item critical to this project would be the procurement of the submarine cable. Additionally, securing the required equipment (i.e., vertical injector) with associated skilled installers can have significant impact to the overall project schedule.

Schedule can be found in Appendix A.4.

9. PROJECT COSTS AND COST CONTAINMENT

9.1 OVERVIEW OF PROJECT COSTS



9.2 ASSUMPTIONS

- This Project proposal was prepared based on a data/information review, technical analyses, and cost estimates that could reasonably be completed within the PJM RTEP Reliability Window.
- Detailed field surveys, soil surveys, environmental studies and investigations, wetlands mapping, investigation of subsurface conditions and title searches and reviews, were not conducted for the Project proposal.
- The public has not been involved, and feedback has not been obtained from the public, in the evaluation of this Project.
- Due to the confidential nature of the Project, no contacts were made with any federal, state, or local agencies or with transmission owners, etc. to acquire data or information in support of the Project. As such, their input has not been incorporated into this proposal.
- Purchase of right-of-way, easements, or other acquisitions will be completed in a timely manner.

9.2.1 GENERAL ASSUMPTIONS AND QUALIFICATIONS

- The underground Outside Plant portion of this estimate is based on best available online information. References include HDD vs Jet Plow White Paper and a preliminary estimate for submarine cable installation for Nova Scotia Power.
- Overhead Outside Plant portion based on Bill of Materials (BOM) provided in Appendix A.2. Assumptions include:
 - No new ROW required
 - Vibratory caissons can be installed (for riser poles)
 - 150 timber mats included for work pads/access on NJ side
 - 450 timber mats included for work pads/access on DE side. Based on available information, access looks to be more difficult on DE side. Additional matting may be required and should be considered in risk.
 - Labor is included to move the mats once and pick them up
 - Silt fence is included for work and access area
 - Assumed full length casing for foundations
- Contingency not required
- All material and equipment costs are present day
- Sales tax is included (NJ 2021)
- Labor rates (2021) are based on a 50-hour work week by all trades
- All equipment will be received when needed and no temporary accommodations will be required
- Outages will be available
- Permits will be available
- Resources will be available
- Engineering/Design is included
- Project Management is included based on standard percentage
- Construction Management is included based on standard percentage

9.2.2. PERMITTING

- Environmental remediation has not been included in the base cost of this project.
- Permits can be acquired to construct the required transmission line.
- Permits can be acquired in environmentally sensitive and other required areas.
- A limited assessment of endangered or threatened species was conducted. More detailed assessments and the potential impacts of such conditions to Project activities to be determined after the Project has been awarded to PSE&G.
- Contaminated soil mitigation has not been identified nor included in the Project execution.

9.2.3 PROJECT DURATION

- The estimated Project schedule is a conservative, high-level estimate of the Project duration from kickoff to energization.
- Permitting schedule tasks were developed in coordination with staff familiar with projects of similar scope and nature to SJGU.
- It is assumed that construction resources will be available; lack of available construction resources could delay construction of the Project.

- It is assumed that outages will be available; lack of available outages could adversely impact Project durations.
- The incumbent transmission owner schedule for related and necessary upgrades will align with PSE&G's schedule for the Project's projected in-service date.

9.2.4 COST

- A high-level cost estimate was developed for the components of the Project that the incumbent transmission owner will be responsible for constructing, owning, operating, and maintaining such Project components. Costs may vary if the incumbent's scope differs from that included in this proposal.
- It is assumed there are adequate electrical clearances for electrical distribution lines or other facilities crossing or parallel to the proposed route. This estimate does not include the cost for relocating existing distribution lines or other facilities.
- It is assumed there are adequate electrical clearances at the existing transmission line crossings. This estimate does not include the cost for relocating existing transmission facilities.
- Outages will be available in order to support the construction and energization.
- Material and equipment will be available to meet the Project schedule.
- Costs associated with potential public opposition to the Project are not included in the Project estimate.
- Litigation is not anticipated, and associated costs are not included in the proposed Project estimate.
- The detailed breakdown of cost includes risk and contingency. Unforeseen issues and force majeure may exceed planned risk and contingency.
- Proposed project detailed breakdown of cost is based on 2021 labor rates, equipment, and material costs. Labor per diem not included.
- The estimated Project costs do not include any work associated with removal of contaminated materials and hazardous waste that may be encountered, including handling, removal, and disposal of such materials, or other environmental remediation activities.
- Excavated material is assumed suitable for backfill.

9.2.5 ENGINEERING

- The preliminary line layout consists of two 145-foot double circuit tubular steel structures as well as two 100-foot single circuit tubular riser structures.
- All steel pole/structures will be hot dipped galvanizing steel.
- The placements of the new 145-foot double circuit structures will be on the existing ROW, which is not available for this feasibility study. The locations of the two structures will be finalized during the detailed design stage.
- Conductors are sized to meet the thermal (470 MVA (WNR)/576 MVA (WER)) and mechanical loading requirements, as well as the standard industry practices in regards to electrical affects, such as EMF, audible noise, corona loss that are typical of a high voltage transmission line.
- The spans from the new riser structures to the double circuit structures will consist of three (3) phases with one (1) 1033 kcmil ACSS "Curlew" per phase. Minimum ground clearance is 30 feet under the conductors' maximum sag at 392°F. Information of the back span structures that the new double circuit structures will connect to is not available. Hence the heights of the two new structures will be finalized during the detailed design stage.
- Two 0.646 inch diameter OPGW cables (48 fibers each) are utilized for lightning protection and fault current mitigation for the new spans.
- Steel pole weights and anchor bolt weights are based on PLS-Pole weights with adders to account for base plates, slip joints, ground lugs, and hardware attachment vangs etc. No contingency in steel

weight is included the BOM included here. All structure markers and stencils are not included in the BOM.

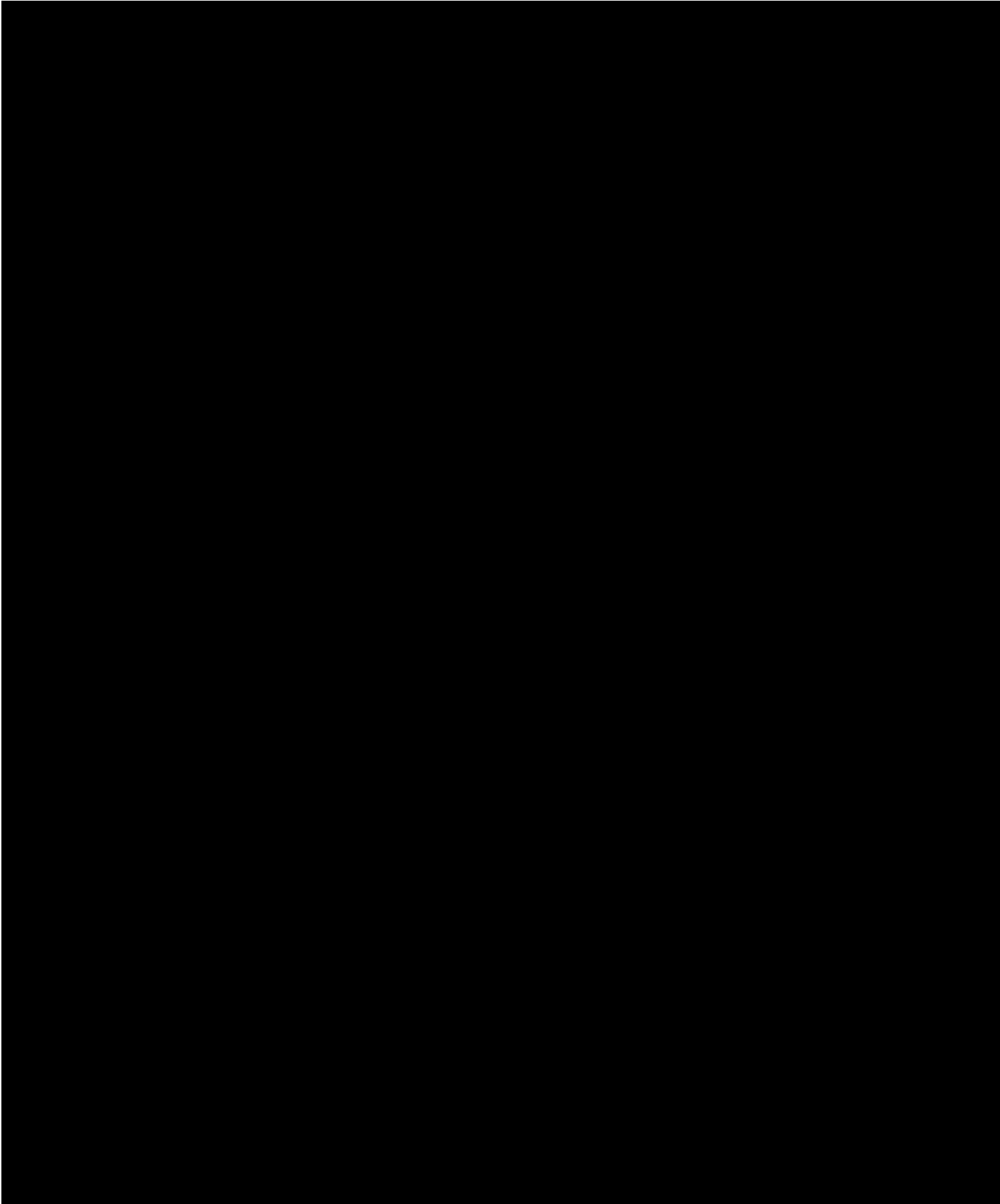
- Site specific borings were not performed prior to this estimate. The subsurface conditions were assumed from publicly available data and geotechnical reports performed for PSE&G including but not limited to Hope Creek. Steel poles supported on concrete caissons or vibratory steel caisson foundations are assumed for the project. Due to the installation method associated with steel vibratory caissons there is inherent risk associated with this proposed foundation without site specific borings and a drivability analysis. The risk is higher on the Delaware side as no borings are currently available. Proposed foundations shall be updated during the detailed design stage based on final pole vendor loading and any final additional site specific geotechnical data
- Line design is based on publicly available LiDAR topography survey with 10 feet contours and the selected centerline as shown on the plan and profile drawing. Existing power line and structure and utility crossing elevation information is not available. The proposed alignment is subject to changes based upon future detailed utility mapping, potential regulatory/municipal requirements, licensing and permitting requirements, and property agreements/needs. Any changes that will introduce more angles due to ROW/property/environmental issues will increase the total cost accordingly.
- No FAA lighting is included in this estimate.
- It is assumed all the existing distribution lines crossing or paralleling to the new line, if any, will be relocated.
- Costs associated with such relocations are not included in the BOM.
- Costs associated with any underground utility obstruction surveys and potential removals/relocations are not included in the BOM.
- Costs associated with temporary materials needed for construction work, such as mats, silk socks etc. are not included in the BOM.

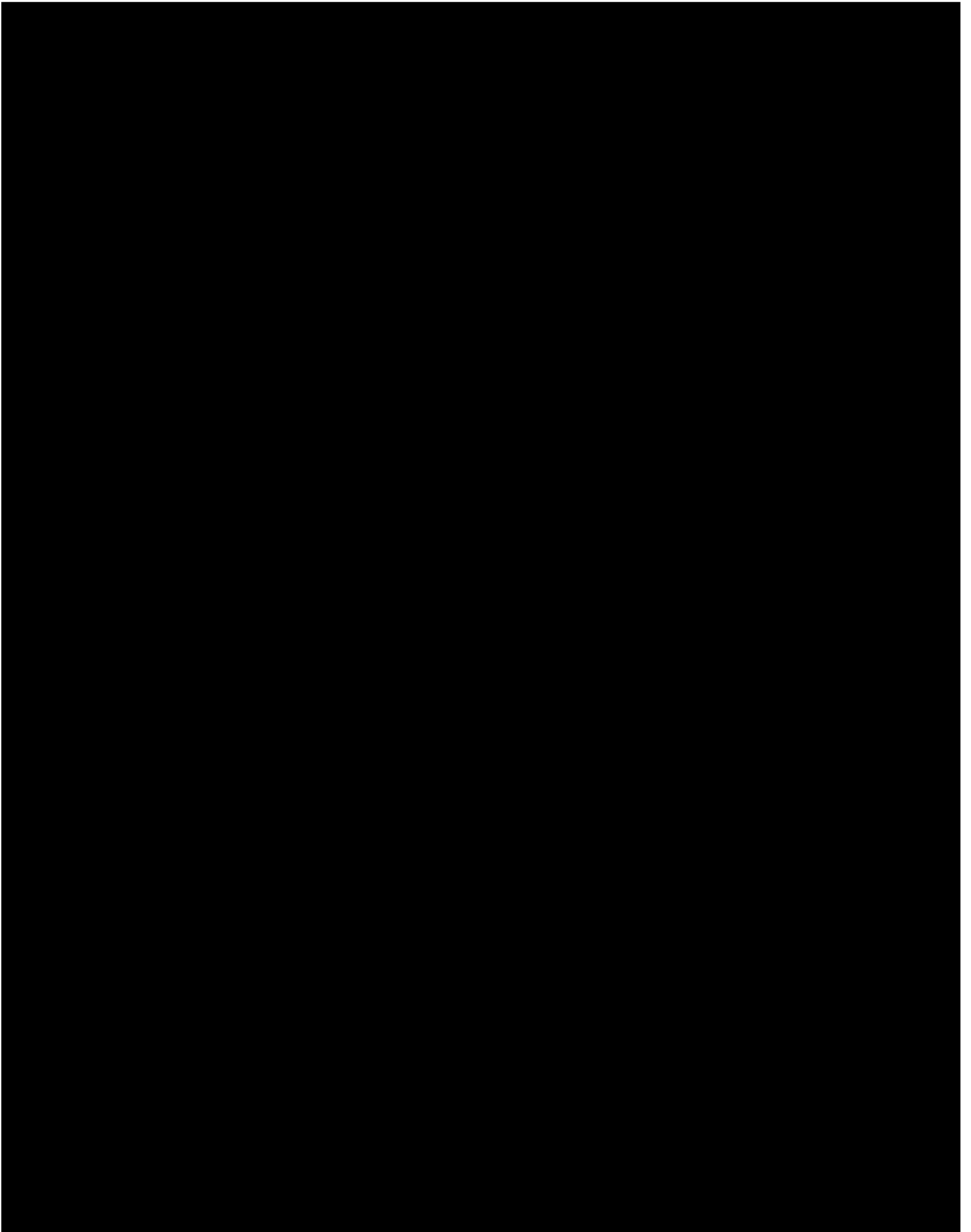
Please note that the cost estimates provided herein are dependent upon the various underlying assumptions, inclusions, and exclusions utilized in developing them. Actual project costs will differ and can be significantly affected by factors such as changes in the external environment, the manner in which the Project is implemented, and other factors which impact the cost basis or otherwise affect the Project. Estimate accuracy ranges are only projections based upon cost estimating methods and are not a guarantee of actual Project costs.

9.3 ADDITIONAL COST INFORMATION AND CONTAINMENT PROVISIONS

Additional Cost Information	NA
Cost Estimate Classification	Class 4 Estimate for a feasibility study to develop estimates for the purpose of selecting preferred project options
Estimated Energy Losses	NA
Physical or Economic Life	PSEG expects this project to have an economic life of 42 years in-line with other PSE&G transmission assets. However, this may change over time.
Description of Each Cost Structure	NA—all costs will be incorporated into PSE&G’s formula rate
Fixed Revenue Requirement	NA
Project Cost Impacts	If portions of the project are selected, the project’s capex will change.
Additional Cost Control Mechanisms	NA

10. PROJECT RISKS AND MITIGATION STRATEGY







10.1 SCHEDULE GUARANTEE

PSE&G is providing a good faith, educated cost and schedule estimate for this Project, subject to the unknown conditions and assumptions identified in this document. Based on PSE&G's current assessment of the risks associated with constructing this Project, PSE&G will not be submitting an accompanying schedule guarantee although PSE&G is highly confident based upon its extensive experience with transmission development, river crossings, and knowledge of the Hope Creek Station that the project can be placed in service well in advance of the interconnection of the BPU's Phase 3 OSW project.

APPENDIX