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October 28, 2026

VIA ELECTRONIC FILING

Hon. Michelle Phillips
Secretary
New York State Department of Public Service
Three Empire Plaza, 14th Floor
Albany, NY 12223-1350

Re: Case No. 25-E-0504 – Verified Petition of Bridgewater Solar, LLC and Bridgewater Solar 2, LLC for a Declaratory Ruling Regarding the Standardized Interconnection Requirements for New Distributed Generators and/or Energy Storage Systems 5 MW or Less **– Renewed Request for a Declaratory Ruling**

Dear Secretary Phillips:

Bridgewater Solar, LLC and Bridgewater Solar 2, LLC (collectively, "Petitioners") submit this letter renewing their August 12, 2025 request that the New York State Public Service Commission ("Commission") issue a declaratory ruling in this proceeding.[1] Petitioners submit this supplemental filing because National Grid's September 10, 2026 issuance of a fourth CESIR for the Bridgewater Solar and Bridgewater Solar 2 projects (the "Projects") confirms the need for prompt Commission action.

Specifically, the fourth CESIRs demonstrate that National Grid still has no viable path to interconnecting the Projects before the early 2030s – at least 10 years after the original CESIRs were issued – and continues to identify material new upgrades that were omitted from the original CESIRs and disclosed only after Petitioners paid nearly $1 million in interconnection deposits and proceeded in reliance on those studies.

Petitioners renew their request that the Commission issue a declaratory ruling that consistent with Commission precedent, National Grid may not impose costs on Petitioners for

[1] Petitioners filed a *Verified Petition for a Declaratory Ruling* on August 12, 2025, in the above-referenced proceeding ("Petition"). National Grid filed a response on September 5, 2025 and the Petitioners replied on September 16, 2025. Subsequently, Petitioners filed a Supplement to the Petition on April 1, 2026.

upgrades required for the interconnection of the Projects beyond those identified in the original CESIRs, conducted by National Grid and agreed to by Petitioners.[2]

Petitioners also request that, consistent with Commission precedent and New York State's clean energy objectives, the Commission direct National Grid to complete all actions necessary to interconnect the Projects by 2028, as identified in the Second CESIRs issued by National Grid in 2024.[3]

Reliable and accurate interconnection studies are the foundation of renewable energy development. The Commission must reject National Grid's attempt to revise the CESIRs, post-execution of interconnection agreements, demand substantial additional costs from Petitioners, and create lengthy and unpredictable delays before the Projects can interconnect. To avoid the continued harmful impact on both the Projects and overall renewable development in New York, the Commission should promptly issue the requested declaratory ruling without delay. Any further delay in resolving this matter threatens the viability of the Projects and exacerbates the significant harm already suffered by Petitioners.

National Grid's Fourth CESIRs Confirm Its Continued Effort to Rewrite Final Interconnection Requirements Years After Executing Interconnection Agreements

In the Petition, Petitioners requested that the Commission declare that National Grid may not impose costs on Petitioners for upgrades beyond those identified in the original CESIRs conducted for the Projects and accepted by Petitioners in 2023, including Petitioners' payment of $441,266 for Bridgewater Solar and $451,266 for Bridgewater Solar 2. Petitioners further requested that the Commission direct National Grid to interconnect the Projects without delay and, in any event, no later than 2027.

On November 20, 2025, National Grid issued revised CESIRs for the Projects. These revised CESIRs were performed by National Grid on its own accord – unprompted by Petitioners and not driven by any changes to Project design.

For the first time, National Grid identified approximately $8.9 million in transmission upgrades and an additional $7.4 million in distribution upgrades and attempted to assign responsibility for those costs to Petitioners. National Grid also asserted that the Projects allegedly "worsen" existing system conditions and therefore could not interconnect until completion of

[2] In the interest of resolving these issues, if the Projects are interconnected by 2028, Petitioners are willing to be responsible for the interconnection costs identified in the second CESIRs in 2024 – $547,553 for each Project – an increase of $202,574 from the Original CESIRs.

[3] 2024 CESIR for Bridgewater Solar at 4, 10; 2024 CESIR for Bridgewater Solar 2 at 4, 10. The 2024 CESIRs were included as Exhibits E and F to the Petition.

utility system modifications. Yet National Grid provided no meaningful explanation for why these upgrades had not been identified in prior CESIRs despite having already accepted Petitioners' deposits and executed Interconnection Agreements.[4]

On September 10, 2026, National Grid issued a fourth CESIR for each Project, representing its third effort to revise the interconnection requirements applicable to the Projects after Petitioners paid the upgrade costs identified in the original CESIRs and executed Interconnection Agreements. The fourth CESIRs are attached as Attachments 1 and 2.

National Grid's latest revision again substantially alters the upgrades and interconnection timetable applicable to the Projects. National Grid now proposes a collection of transmission, distribution, and substation upgrades and assigns approximately $6.966 million in costs to the Projects. Except for approximately $18,000 associated with documentation review, field verification, and witness testing, none of these upgrades appeared in the original CESIRs. Rather, they represent entirely new categories of costs identified years after Petitioners relied upon the original CESIRs, paid the required deposits, and advanced the Projects.

National Grid also states that it must complete a capital project upgrade on its system before the Projects can interconnect, but confirms that it has not started design work on this upgrade and completion will take at least five years following the start of design. The protracted and ambiguous timeline casts doubt upon the reliability of the latest estimated cost to interconnect the Projects set forth in the September 2026 CESIRs.

The Commission Should Direct National Grid to Prioritize the Necessary Upgrades and Interconnect the Projects

In the fourth CESIRs, National Grid states that it identified existing issues on the local sub-transmission system and initiated a capital project to address those issues. National Grid further asserts that the Projects will not be permitted to interconnect until those modifications are completed.

At the same time, however, National Grid has advised that the purportedly necessary capital project remains in its early stages and that completion may take five years or more. National Grid has identified no specific construction schedule, no committed completion date, and no meaningful path toward timely interconnection of the Projects.

Such an open-ended and effectively indefinite timeline is inconsistent with Commission precedent, the Standardized Interconnection Requirements ("SIRs"), and New York's clean energy

[4] The November 2025 CESIRs were included as Attachments 1 and 2 to Petitioners' April 1, 2026 Supplement.

objectives.[5] Under National Grid's position, the Projects could remain unable to interconnect nearly ten years after execution of their Interconnection Agreements. The Commission has already rejected precisely this outcome.

In the Queue Management Order, the Commission expressly held that the SIRs do not permit a utility to defer interconnection pending completion of future capital projects. Instead, the Commission explained that utilities must determine what is necessary to facilitate interconnection in the near term and, where needed, reprioritize capital work accordingly. The Commission further recognized that where delays threaten project viability or the ability of projects to qualify for federal incentives, the proper remedy is to expedite the required utility work rather than indefinitely delay interconnection.[6]

The same result is warranted here and prompt Commission intervention is necessary to mitigate the harm caused by the utility's handling of the Projects. National Grid should be directed to prioritize and expedite all upgrades necessary to interconnect the Projects and to complete those upgrades in a manner that permits interconnection by 2028 in a manner consistent with the 2024 CESIRs and executed Interconnection Agreements.

National Grid Cannot Modify Final CESIR Results and Shift Additional Costs onto Petitioners Due to Its Own Admitted Errors

National Grid does not contend that Petitioners failed to satisfy any interconnection requirement or otherwise contributed to the circumstances giving rise to the newly identified upgrades. Nor does National Grid dispute that Petitioners paid the costs identified in the original CESIRs and proceeded in reliance upon those studies. Instead, National Grid expressly acknowledges that it erred in its treatment of the Projects. Having admitted its own mistake, National Grid cannot shift the consequences of that mistake to Petitioners through years of additional delay and millions of dollars in newly assigned upgrade costs.[7]

In its latest CESIRs, National Grid assigns to Petitioners responsibility for approximately $6.966 million in newly identified distribution and substation upgrades. National Grid's attempt

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[5] See Case 24-E-0621, *In the Matter of Modifications to the New York State Standardized Interconnection Requirements and Application Process for New Distributed Generators and/or Energy Storage Systems 5 MW or Less Connected in Parallel with Utility Distribution Systems*, "Order on Interconnection Queue Management" (issued January 23, 2026) ("Queue Management Order").

[6] *Id.* at 16.

[7] National Grid acknowledges that it should have treated the Projects differently ("[T]he Company was remiss in not requiring that the Bridgewater Projects be placed in a formal Capital Project Queue hold."). (National Grid Response at 7.)

to revise the original CESIRs and impose previously undisclosed costs on Petitioners is contrary to Commission precedent and must be rejected.

The Commission has made clear that the CESIR process is the mechanism through which utilities identify the modifications necessary to safely interconnect distributed energy resource projects. The Commission further held that the SIRs contain no language permitting a utility to impose costs for upgrades other than those identified in the CESIR and accepted by the applicant.[8]

The upgrades identified in the fourth CESIRs differ materially from those identified in two prior CESIRs. Most notably, the original CESIRs did not identify any of the distribution or substation upgrades now assigned to the Projects. Even the costs reflected in the fourth CESIRs differ substantially from those assigned in National Grid's prior revised studies. These continuing revisions call into question the reliability of National Grid's analyses and further demonstrate the unfairness of imposing the resulting costs on Petitioners.

Accordingly, National Grid's latest attempt to revise the original CESIRs must be rejected. Any incremental costs associated with upgrades beyond those identified in the original CESIRs are attributable solely to National Grid's failure to properly identify and process interconnection requirements at the time those studies were performed. The Commission should therefore direct National Grid to prioritize and complete any required upgrades while holding National Grid responsible for costs exceeding those identified in the second CESIRs issued in 2024.

The Commission Must Hold National Grid Accountable for Its Failures

Petitioners have suffered substantial and continuing harm as a direct result of National Grid's actions. For nearly four years, Petitioners have maintained site control, incurred development expenditures, advanced permitting and financing efforts, and committed significant capital to the Projects in reliance upon National Grid's CESIRs and Interconnection Agreements. National Grid's repeated efforts to revise the Projects' interconnection requirements have frustrated those investments and placed the Projects' viability at risk.

It is undisputed that National Grid committed a material error that has caused significant harm to Petitioners. Petitioners invested millions of dollars in the Projects in rightful reliance on the original CESIRs and on National Grid's obligation to pursue and complete the upgrades identified therein. Due to interconnection delays, Petitioners have been forced to invest hundreds

[8] Case 23-E-0730, *Petition of Niagara Mohawk Power Corporation d/b/a National Grid for a Declaratory Ruling and Certain Limited Relief Regarding Standardized Interconnection Requirements and Application Process for New Distributed Generators and/or Energy Storage Systems 5 MW or Less Connected in Parallel with Utility Distribution Systems,* "Order Denying Petition and Making Findings" (issued July 23, 2024).

of thousands of additional capital to keep the Projects viable. The Commission should expressly acknowledge National Grid's failures and the harm those failures have caused to Petitioners.

As discussed in the Petition, a transparent and reliable interconnection process is fundamental to New York's clean energy transition. Developers rely upon CESIR studies to evaluate project feasibility, assess upgrade obligations, and make substantial investment decisions. For the Projects, the CESIRs provided critical information regarding anticipated costs and project viability. Petitioners and their investors reasonably relied upon the finality and accuracy of those studies when committing substantial capital to the Projects.

Any further delay in the Projects interconnection timeline beyond 2028 or imposition of upgrade obligations more than the amounts set forth in the second CESIRs will render the projects financially unviable and result in millions of dollars of losses to the Petitioners. More broadly, permitting utilities to impose uncapped upgrade costs years after issuance of CESIRs would undermine confidence in New York's interconnection framework and hinder achievement of the State's renewable energy goals.

In general, financiers invest capital in distributed energy resources, such as the Projects, after CESIRs are complete and interconnection costs and timelines are established. Failure by the Commission to hold National Grid accountable to executed interconnection agreements will undermine industry confidence in New York's interconnection process and likely result in reduced access to private capital for renewable development. The outcome will be increased development costs and a corresponding decline in overall renewable development in the State.

Four years after issuing the original CESIRs, accepting Petitioners' deposits, and executing Interconnection Agreements, National Grid continues to alter the requirements applicable to the Projects while offering no meaningful timeline for completion of the work it now claims is necessary. The Commission's recent precedent leaves little doubt that such an outcome is inconsistent with the SIRs and the orderly administration of New York's interconnection process. Petitioners therefore respectfully request that the Commission issue the requested declaratory ruling without further delay.

Respectfully submitted,

COUCH WHITE, LLP

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Counsel to Petitioners

Attachments
cc: Active Parties (via email)

ATTACHMENT 1

BRIDGEWATER SOLAR
SEPTEMBER 10, 2026 CESIR

For
Bridgewater Solar
True Green Capital Management LLC
5,000 kWAC Photovoltaic Generator System
6A Brookwood Road
Waterford, NY 12188

Interconnection to National Grid
NY East
Capital Region
Troy District
34.5 kV Mechanicville – School Street #1

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1.0 INTRODUCTION

This report presents the analysis results of the National Grid or the "Company") interconnection study based on the proposed interconnection and design submittal from the Interconnection Customer in accordance with the Company ESB. The intent of this report is to assess this project's feasibility, determine its impact to the existing electric power system (EPS), determine interconnection scope and installation requirements, and determine costs associated with interconnecting the Interconnection Customer's generation to the Company's Electric Power System (EPS). This Coordinated Electric System Impact Review (CESIR) study; according to the NYSSIR Section I.C Step 6; identifies the scope, schedule, and costs specific to this Interconnection Customer's installation requirements.

2.0 EXECUTIVE SUMMARY

The total estimated planning grade cost of the work associated with the interconnection of the Interconnection Customer is **$8,580,169** for Option 1A and **$5,754,163** for Option 2A should the customer choose to downsize the full project system size to 1,500 kW.

Alternatively, the Interconnection Customer may elect to participate in the Self-Performance Program for select upgrades identified in Section 6.0. Should the Customer proceed with the Self-Performance build, the total estimated planning grade cost associated with the remaining upgrades and self-performance verifications completed by National Grid is **$8,223,327** for Option 1B and **$5,397,321** for Option 2B.

The interconnection was found to be feasible with modifications to the existing Company EPS and operating conditions, which are described in detail in the body of this Study.

The ability to generate is contingent on this facility being served by the interconnecting circuit during normal Utility operating conditions. Therefore, if the interconnecting circuit is out of service, or if abnormal Utility operating conditions of the area EPS are in effect National Grid reserves the right to disengage the facility.

No future increase in generation output beyond that which specified herein for this interconnection has been studied. Any increase in system size and/or design change is subject to a new study and costs associated shall be borne by the Interconnection Customer. An increase in system size may also forfeit the Interconnection Customer's existing queue position.

3.0 COMPANY EPS PARAMETERS

Substation	Battenkill	Ballston	Hoosick	Maplewood	N. Troy
Transformer Name	TB1	TB2	TB1	TB2	TB1/TB2
Transformer Peak Load (kW)	14,354	4,391	12,142	6,141	13,530 / 16,731
Contingency Condition Load, N-1 Criteria (as applicable) (kW)	N/A	N/A	N/A	N/A	N/A
Daytime Light Load (kW)	-13,270	-17,056	-19,517	-22,912	-17,494 / -20,930
Generation: Total[1], Connected, Queued Ahead (kW)	155,633; 132,258; 18,375				
Contingency Condition Generation: Total[1], Connected, Queued Ahead (kW)	N/A	N/A	N/A	N/A	N/A
Supply Voltage (kV)	115				
Transformer Summer Normal Rating (kVA)	39,300	57,900	61,800	61,300	58,800 / 44,100
Distribution Bus Voltage Regulation	Yes; Fixed Tap	Yes	No	No	Yes; Fixed Tap
Transmission GFOV Status	Not Needed				
Bus Tie	No	Yes	No	Yes	Yes
Number of 34.5 kV Lines Served from this Bus	2	5	2	6	5

Connecting Feeder/Line	Mechanicville – School Street #1	
Peak Load on feeder (kW)	7,869	
Daytime Light Load on Feeder (kW)	-13,839	
Feeder Primary Voltage at POI (kV)	34.5	
Line Phasing at POI	3	
Circuit Distance from POI to Substation	Mechanicville	School Street
	3.74 miles	4.29 miles
Distance to nearest 3-phase (if applicable)	N/A	
Line Regulation	No	
Line/Source Grounding Configuration at POI	Uni-grounded Wye	
Generation: Total Connected, Queued Ahead(kW)	24,700; 14,700; 5,000	

System Fault Characteristics without Interconnection Customer DG at POI	
Interconnection Customer POI Location	Mechanicville – School Street #1 Line
I 3-phase (3LLL)	7,712 Amps
I Line to Ground (3I0)	4,898 Amps
Z1 (100 MVA base)	0.07217 + j 0.21876 pu
Z0 (100 MVA base)	0.11413 + j 0.59636 pu

4.0 INTERCONNECTION CUSTOMER SITE

The Interconnection Customer is proposing a new primary service connection with Account No. [redacted].

The requested point of interconnection (POI) location will be served via the 34.5 kV sub-transmission line Mechanicville – School Street #1. The site will be served via a new midspan pole between structures 82 and 83.

This project requires that the planned rebuild of Hoosick substation (C053132 & C081115) be completed prior to the project interconnecting. These projects are in construction at the time of the issuance of this CESIR, and with an anticipated completion date of Winter 2026.

Additionally, during the course of the study, National Grid identified existing issues on the 34.5 kV sub-transmission system in this area, and has initiated a capital project to address these violations. The subject generator will not be permitted to interconnect until these system modifications are complete, since the subject generator worsens these existing conditions. This subject generator was studied under the assumption that these modifications were in place.

National Grid will keep the applicant apprised of progress towards completion of these planned upgrades.

The proposed generating system consists of:

- A PV system consisting of nine thousand one hundred and twenty-eight (9,128) Q. Peak Duo ML-G12S 675W (675W), for a total DC system size of 6,161.40 kW.
- Twenty (20) Solectria XGI 1500-250, 250KW inverters for a total AC system size of 5,000 kVA.
- Two (2) 34.5 kV delta primary to 600 V wye-grounded secondary step-up transformers. One with a rating of 2,250 kVA and an unspecified impedance and X/R, the second with a rating of 2,750 kVA with an unspecified impedance and X/R.
- One (1) customer owned riser pole, pole #9, with a 35 kV rated, pole mounted, gang operated, load break switch (600Amp rated), and 24.4 kV MCOV lightning arrestors.
- One (1) customer owned pole, pole #8, with a customer-owned meter.
- One (1) customer owned pole, pole #7, with utility-owned revenue meter.
- One (1) customer owned pole, pole #6, with pole-mounted G&W Viper-S 35 kV recloser, SEL-651R recloser controller, control power transformer, and 29 kV MCOV lightning arresters.
- One (1) customer owned pole, pole #5, with one (1) 35 kV rated, gang-operated, load break switch (600Amp rated), and 24.4 kV MCOV lightning arrestors.

5.0 SYSTEM IMPACT ANALYSIS

Category	Criteria	Limit	Result
Voltage	Overvoltage	< 105% (ANSI C84.1)	**Fail**
With the addition of the subject generator the maximum voltage as modeled on the circuit is outside of acceptable limits. **The project shall operate with a custom volt-VAR mode enabled in order to keep the voltage within acceptable limits. See Smart Inverter Analysis section for further details.**			
Voltage	Undervoltage	> 95% (ANSI C84.1)	Pass
With the addition of the subject generator the minimum voltage as modeled on the circuit is within acceptable limits. **The project shall operate with a custom volt-VAR mode enabled in order to keep the voltage within acceptable limits. See Smart Inverter Analysis section for further details.**			
Voltage	Substation Regulation for Reverse Power	<100% minimum load criteria	Pass
The total generation on the Mechanicville – School Street #1 sub-transmission line is 24.7 MW, which includes the subject generator. While the Mechanicville – School Street #1 line is fed from the Mechanicville and School Street substations, the 34.5 kV network is sourced from five 115 kV substations: Ballston, Battenkill, Maplewood, North Troy, and Hoosick. The total generation on the system including the subject generator is 155.6 MW. The only 115/34.5 kV substation with the LTC set to automatic regulation is Ballston Substation; however, the LTC controller at Ballston substation is already configured to allow for reverse power flow, so no further upgrades are needed.			
Voltage	Feeder Regulation for Reverse Power	<100% Minimum load to generation ratio	Pass
There are no line regulators between the POI and substations.			
Voltage	Fluctuation	<3% steady state from proposed generation on feeder, <5% steady state from aggregate DER on substation bus, Regulator tap movement exceeds 1 position.	Pass
The greatest voltage fluctuation on the sub-transmission line occurs on the subject generators POI. The resulting fluctuation at the sub-transmission line location is 0.70% due to the proposed generation. **This project is required to operate with a custom volt-VAR enabled, as identified in the overvoltage section. See Smart Inverter Analysis section for further details.**			

Category	Criteria	Limit	Result
Voltage	Flicker	Screen H Flicker	Pass
The Pst for the location with the greatest voltage fluctuation is 0.1104 and the emissions limit is 0.35.			
Equipment Ratings	Thermal (continuous current)	< 100% thermal limits	**Fail**

The subject generator's full output current is 84 Amps at 34.5 kV. The total full output current of all DER on the Mechanicville – School Street #1 line is 414 Amps, including the subject generator. The limiting element of this line is 4/0 CU 7STR conductor, with thermal capabilities under normal conditions 584 Amps (and 607 Amps under contingency). With the interconnection of the subject generator, the maximum power flow through the limiting element is 536 amps, **therefore the following system modifications are required:**

- **Reconductor approximately 0.88 miles of the Mechanicville – School Street #1 line from 336.4 MCM ACSR 18/1 to 477 ACSR 26/7, from School Street R1 to approximately Structure 155.** **Note 1, 2**
- **Replace station disconnect switches #199 and #188 at School Street substation with 1200 Amp rated station disconnect switches.** **Note 1**
- **Replace one (1) 34.5 kV line switch #113 on pole 156 with a 1200 Amp disconnect switch on the Mechanicville – School Street #1.** **Note 1**

Additionally, while the Mechanicville – School Street #1 line terminates at Mechanicville and School Street substations, these substations have additional supply lines leading to five 115 kV sourced substations: Ballston, Battenkill, Maplewood, North Troy, and Hoosick. The subject generator contributes to power flows on each of the lines back to these other substation as part of a networked system. With the interconnection of the subject generator, no new thermal violations were seen on the remainder of the system.

Additionally, the following upgrades were triggered by prior in-queue projects on the sub-transmission system. Should the prior in-queue projects withdraw, this project will become responsible for the following upgrades. Due to the networked nature of the sub-transmission system in this area, re-analysis may be required to determine final upgrade responsibility based on the prior project(s) that withdraw.

- **Due to thermal overload under light load N-1 conditions, approximately 3,275 feet of underground 34.5 kV cable on the North Troy - Lansingburg #1 line will be reconductored to 500 MCM compact copper cable, between Riser Pole 53 and Lansingburg SW#188.**

In addition, National Grid has existing capital project to address other N-0 and N-1 loading concerns in this area, which were identified to be required prior to the interconnection of the subject generator. These upgrades will need to be completed prior to the connection of the subject generator.

[Note 1] Should the Interconnection Customer choose to downsize the total system size to 1,500 kW, the following upgrades will no longer be required.

[Note 2] There is one or more river / canal crossing(s) associated with this upgrade. The cost estimate provided may not include the additional complexities associated with these crossings, as a full review will be required in final design.

Category	Criteria	Limit	Result
Equipment Ratings	Withstand (fault current)	<90% withstand limits	Pass
The additional fault current contribution from the generation does not contribute to interrupting ratings in excess of existing EPS equipment.			
Protection	Unintentional Islanding	Unintentional Islanding Document & Company Guidelines	**Fail**
The subject generator is a **5,000 kW** PV generation system. The proposed generation system exceeds the Company's criteria for islanding a distributed resource, and **will require a National Grid protection and control package**. See the "Protective Device Coordination" screen for further details.			
Protection	Protective device coordination	Company Guidelines	**Fail**
The DG Interconnection Customer proposed a G&W Viper-S Recloser with an SEL-651R relay. The proposed recloser has a 35 kV nominal voltage rating and 150 kV BIL, which is adequate for 34.5 kV application. The DG Interconnection Customer shall use a breaker or recloser with a utility-grade microprocessor relay as primary service protection. This protective device should be shown in the proper location on their submitted line diagrams. **Both phase and residual ground instantaneous and time curve overcurrent settings (50, 50N, 51, 51N) will need to be provided in these relays or recloser. Zero-Sequence Overvoltage (59N) and other standard ESB-756B required power quality functions (27/59/81) will also be required in this protective device.** The DG Interconnection Customer shall submit formal specifications, curves, and/or relay settings for review and approval by National Grid to ensure proper coordination, correct function types, etc. if the project moves forward. Relay/Recloser files will be required in their native format (SEL AcSELerator, Cooper Proview, etc.) when submitted.			

Category	Criteria	Limit	Result
Protection	Fault Sensitivity	Rated capabilities of EPS equipment	**Fail**

Of the currently active protectives devices (line reclosers, Station breaker relays, etc.) on this portion of the system, some station relays were impacted to the extent of mis-operation or mis-coordination due to the contribution from this and previous DG interconnections.

The addition of the subject generator will require the following system upgrades:

- ***Installation of a local breaker backup scheme at Mechanicville substation for Line #1 and Line #6.***
  - ***Mechanicville R1 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays.***
  - ***Mechanicville R6 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays.***
  - ***Installation of new lockout relays for breaker failure at Mechanicville substation.***
- ***Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street Line #19.***
- ***Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street Line #19.***
- ***Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2.***
- ***Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1.****
- ***Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.***

*** This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.**

Cost sharing will apply for the above relay upgrades, see Section 6.0 for details.

Protection	Ground Fault Detection	Reduction of reach > 0%	Pass

The Interconnection Customer is proposing a connection to a National Grid Sub-Transmission circuit with a 3-wire configuration that is grounded only at the source 115-34.5 kV substations. As such, the Interconnection Customer is not required to provide a source of effective grounding for this proposed Distributed Generation but will be required to provide a suitably configured GSU with a delta (Δ) primary connection. Ground fault detection on this circuit is provided through the combination of the 67N devices on the line and the 59N setting in the Customer Relays or Recloser.

Category	Criteria	Limit	Result
Protection	Overvoltage - Transmission System Fault	Company 3V0 criteria	Pass
The interconnection of distributed generation facilities to National Grid distribution substations can result in conditions where line-to-ground faults on the transmission system could go undetected. This scenario was analyzed for the proposed interconnection to determine if the addition of the subject generator meets the Company's criteria for requiring transmission system line-to-ground fault protection. The existing station protection schemes were reviewed and analysis performed, and it has been determined that the required transmission system ground fault protection is already installed.			
Protection	Overvoltage - Distribution System Fault	< 125 % voltage rise	Pass
The Interconnection Customer is required to connect to the Sub-Transmission system with an ungrounded primary transformer connection, removing the requirement to limit voltage rise.			
Protection	Effective Grounding	R0/X1< 1 & X0/X1 <3	Pass
The Interconnection Customer is required to connect to the Sub-Transmission system with an ungrounded primary transformer connection, removing the requirement to maintain effective grounding.			
SCADA	Required EMS Visibility for Generation Sources	Monitoring & Control Requirements	**Fail**
The 5,000 kW subject generator triggers the requirement for SCADA reporting to the Utility. **This requirement is covered by the National Grid Protection and Control package (e.g., the PCC Recloser).**			

Category	Criteria	Limit	Result
Other	Smart Inverter Analysis	Volt-Var Response	**Fail**

The smart inverter analysis did not result in any unanticipated outputs, and the inverter VAR response performed as intended.

However, as identified in the overvoltage analysis, the project shall be required to operate using a modified Volt-VAR curve rather than the default ESB 756B settings.

The modified curve adjusts the reactive power deadband to provide a small amount of reactive power absorption under nominal voltage conditions to mitigate the overvoltage conditions identified during the study.

Volt Var Settings		
Required Parameter	**Default Settings Setpoint**	**Required Settings Setpoint**
Performance Category	B	B
Bref	Vn	Vn
V1	0.93 per unit of nomimal voltage	0.93 per unit of nomimal voltage
Q1	44% of Inverter Reactive Capability	44% of Inverter Reactive Capability
V2	0.97 per unit of nomimal voltage	0.97 per unit of nomimal voltage
Q2	0% of Inverter Reactive Capability	**-38%** of Inverter Reactive Capability
V3	1.03 per unit of nomimal voltage	1.03 per unit of nomimal voltage
Q3	0% of Inverter Reactive Capability	**-38%** of Inverter Reactive Capability
V4	1.07 per unit of nomimal voltage	1.07 per unit of nomimal voltage
Q4	-44% of Inverter Reactive Capability	-44% of Inverter Reactive Capability
Open Loop response Time	5s	5s
Autonomous Vref Enablement	OFF	OFF

See ESB756 Appendix B Table 7.8.2-2: for details on default Settings

Category	Criteria	Limit	Result
Other	Environmental Regulatory Obligations	Environmental Requirements	

The Customer will be responsible for the following environmental requirements:

- To the extent possible, facilities should be proposed on sites that are free of preexisting environmental conditions and/or environmental regulatory obligations. Regardless of whether the Customer is able to secure such a site, the Customer is responsible, at its sole cost and expense, for providing an area for National Grid's facilities such that intrusive work performed during installation and long-term maintenance will not result in potential contact with, or spreading or exacerbation of, any site contamination and will not interfere with institutional or engineering controls, if applicable (i.e., a clean corridor). The aerial extent, depth, and location of the clean corridor required for National Grid's facilities shall comply with National Grid's Overhead and/or Underground Construction Standards, as applicable. When National Grid's work is complete, the Customer may be responsible for stabilizing and properly restoring all disturbed areas.
- The Customer is responsible for providing to National Grid any and all information regarding site conditions, the nature and extent of any site contamination, copies of any institutional controls, design information for any engineering controls (including plans and drawings), an up-to-date copy of the Site Management Plan, if applicable, and copies of all environmental permits, notices, and plans immediately upon acceptance of this proposal (or upon issuance or preparation, to the extent such document does not exist at the time the proposal is accepted). A full list of required documentation is available upon request. The Customer shall continue, on an ongoing basis, to provide such information to National Grid to the extent new environmental information is identified or generated. The fact that the Customer has provided a clean corridor will not relieve the Customer of the obligation to provide environmental documentation.
- The Customer is responsible for all obligations imposed by, and coordination with, federal, state, and local governmental authorities, including but not limited to permits (e.g., stormwater, wetlands, wildlife, invasive species); notifications regarding modifications to institutional or engineering controls (if applicable); the preparation and implementation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan, Stormwater Pollution Prevention Plan (SWPPP), and wetlands mitigation plan (if applicable); any required monitoring and/or reporting obligations (e.g., air monitoring); and the resolution of any violations (including payment of any fines or penalties) caused by the work, except to the extent caused directly by National Grid's gross negligence or willful misconduct. National Grid retains the right, but not obligation, to review and comment on all permit applications pertaining to National Grid's work.

Category	Criteria	Limit	Result
Other	Environmental Regulatory Obligations Cont'd	Environmental Requirements	

- The Customer shall be responsible for the containerization, characterization, storage, handling, management, transportation, and disposal of any site-related wastes (e.g., soil, groundwater) generated as a result of National Grid's work, including obtaining an EPA hazardous waste generator identification number (if needed). The Customer shall be designated as the generator, and shall sign all manifests and disposal documents for all such disposal materials.
- The Customer shall be solely responsible for obtaining access to (including ingress to and egress from) National Grid's work area. To the extent the Customer does not own the site where National Grid will be performing work, the Customer shall be solely responsible for coordinating with the property owner regarding any required notifications, work hours, insurance requirements, and any other access-related considerations.

Other	Right of Way Obligations and Requirements		

The Interconnection Customer will be responsible for the following real property/right-of-way requirements:

- The Interconnection Customer shall acquire, on behalf of the Company and in the Company's name, such real property interests that, in the Company's judgment, are necessary for the construction, reconstruction, relocation, operation, repair, maintenance, replacement and removal, including vegetation management, of the Company's electric facilities required (1) to connect the Interconnection Customer's Generator System [Storage System] to the Company's EPS and (2) to extend, improve and/or upgrade the Company's existing EPS as may be necessary to support Interconnection Customer's Generator System [Storage System].
- Such interests shall include such access/egress rights as necessary for the foregoing. The Company will determine specific access requirements on a case-by-case basis, but (where direct access to/from a public way is not available) the Company requires permanent easements for access drives/roads, which roads must be constructed to the Company's satisfaction with respect to dimensions, configuration, and vehicle load (to be determined on a case-by-case basis). Unless otherwise agreed to, such access drives/roads shall be dedicated for the Company's exclusive use.
- As a general rule, the Interconnection Customer shall acquire fully assignable/transferable permanent easements for all parcels upon which any electric facilities will be located to support the Interconnection Customer's project. The Interconnection Customer is therefore strongly encouraged to avoid locations where such interests may be difficult or impossible to obtain. The Company recognizes, however, that it may be reasonable and appropriate to deviate from the general rule in specific, limited instances. By way of example only, where the electric facilities must cross a public highway, the public agency or authority having jurisdiction over such highway may be authorized to issue a license or permit, but not a permanent easement. The Interconnection Customer shall consult with the Company as soon as it determines that it may be necessary to deviate from the general rule, and the Company reserves the right to determine in its sole discretion whether it shall accept anything less than permanent easement rights at any location.

Category	Criteria	Limit	Result
Other	Right of Way Obligations and Requirements Cont'd		

- The Interconnection Customer shall use Company-approved forms for obtaining and recording property interests. Proposed changes to such forms shall be discussed with and agreed upon with the assigned Company Right-of-Way representative and/or attorney.
- The Company conducts a thorough acquisition due diligence exercise to ensure that its transfer and acceptance standards are met, and the Interconnection Customer is expected to cooperate and coordinate with the Company to ensure the successful completion of due diligence, the scope of which shall be determined by the Company on a case-by-case basis.
- The Interconnection Customer shall pay and be solely responsible for paying all costs and expenses incurred by the Interconnection Customer and/or the Company that relate to the acquisition of property interests necessary to construct, reconstruct, relocate, operate, repair, maintain, replace and remove, as applicable, the electric facilities identified herein. The Interconnection Customer also shall pay and be solely responsible for paying costs and expenses associated with submitting permit applications and obtaining permits and/or licenses for placement of facilities on and/or crossings that may be required from public or private agencies or authorities on public roadways, railroads and/or waterways.
- Unless otherwise agreed to, assets/facilities owned by the Interconnection Customer shall not be sited on any parcels or electric or gas corridors in which the Company has a fee-ownership or permanent easement interest.
- The Interconnection Customer may submit a request, in writing, for the temporary use or occupancy of the Company's fee-owned or easement parcel including electric or gas corridor (if any) in connection with Interconnection Customer's Generator System [Storage System] project. The Company's review of any temporary use or occupancy shall occur to assure compliance with applicable state and federal clearance and safety standards in accordance with the Company's third-party property use process.

Other	Self-Performance Exclusions		

Conditions under which Projects will no longer be eligible to participate in the Self-Performance Program include, but may not be limited to, those identified in the list below. Conditions may be identified before or during the site visit for the Project where such post-CESIR issues may warrant a change in status as to Program eligibility.

- Railroad crossings
- State land crossings
- Tribal land crossings
- Designs requiring NYS Canal Corporation permits

6.0 MITIGATIONS FOR SYSTEM IMPACT ANALYSIS FAILURES

Details below are intended to provide sufficient information and clarity to give the Interconnection Customer an understanding to the relationship of costs and scope associated with the DER interconnection and the system modifications due to the DER impact. Where scope items are identified, associated labor, equipment rentals and indirect project support functions (such as engineering and project management) are intended and implied.

Option 1: As Applied

Upgrade Required	Option 1A – As Applied 5,000 kW	Option 1B - Self-Performance Option	Failures Addressed
34.5 kV National Grid Protection and Control Package (Recloser, Switches, Meter and Poles) Note 1	$361,246	Self-Build	Unintentional Islanding
Reconductor the Mechanicville – School Street #1 line from 336.4 MCM ACSR 18/1 to 477 ACSR 26/7 for approximately 0.88 miles, from School Street R1 to approximately Structure 155. Note 2, 3	$2,160,904	$2,160,904	Thermal Overload
Replace one (1) 34.5 kV line switch #113 on pole 156 with a 1200 Amp disconnect switch on the Mechanicville – School Street #1. Note 2	$75,093	$75,093	Thermal Overload
Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line to 500 MCM compact CU cable. Note 2, 4, 5	$2,671,939	$2,671,939	Thermal Overload
Replace station disconnect switches #199 and #188 at School Street substation with 1200 Amp rated station disconnect switches. Note 6	$380,675	$380,675	Thermal Overload
Mechanicville R1 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$452,349	$452,349	Fault Sensitivity
Mechanicville R6 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$452,349	$452,349	Fault Sensitivity

Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19. Note 6	$452,349	$452,349	Fault Sensitivity
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street #19. Note 6	$452,349	$452,349	Fault Sensitivity
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2. Note 6	$452,349	$452,349	Fault Sensitivity
Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.	$5,000	$5,000	Fault Sensitivity
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1. Note 7	$-	$-	Fault Sensitivity

[Note 1] The Subject Upgrade may be eligible for Self-Performance Program. Shall the customer proceed with the associated self-performance upgrades, The Customer hereby waives any cost-sharing obligations or participation rights and assumes full responsibility for all costs incurred as part of the self-performance option where upgrades may be considered applicable under DG/ESS Encumbered Lines.

[Note 2] The Subject Generator shall incur costs classified as a Triggering/Sharing Project under Distribution/Sub-Transmission line Qualifying Upgrades. This qualifying upgrade may be classified as a DG/ESS Encumbered line, for which the Subject Generator shall be liable for either the entirety of the upgrade costs or a pro rata share thereof. For inquiries regarding potential cost implications, please contact your CEI case manager.

[Note 3] There is one or more river / canal crossing(s) associated with this upgrade. The cost estimate provided may not include the additional complexities associated with these crossings, as a full review will be required in final design.

[Note 4] This upgrade was triggered by a prior in queue project. Should the prior in queue project(s) withdraw, this customer will become responsible for these upgrades. Given the networked nature of the sub-transmission system, a re-analysis would be required in order to determine if this project would be responsible for these upgrades, based on which project(s) withdraw.

[Note 5] The cost estimate and scope are based on available system records and documented cable routing information. Final scope and cost shall be determined following field verification and detailed engineering review. Any discrepancies identified between documented cable routing and actual field conditions may result in revisions to the scope, quantities, and associated cost estimate.

[Note 6] This project is subject to cost sharing for major substation upgrades based on the DER queue for this station as of the revision date of this report. Please contact your CEI job owner to discuss potential cost impacts of cost sharing, which may include a lower initial cost or the potential for future refunds.

[Note 7] This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.

Additional details on the scope of each option can be found below:

Option 1A: As Applied 5,000 kW

The Substation upgrades required to facilitate the proposed installation include the following:

- Replace station disconnect switches #199 and #188 at School Street substation with 1200 Amp rated station disconnect switches.
- Installation of a local breaker backup scheme at Mechanicville substation for Line #1 and Line #6.
    - Mechanicville R1 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays.
    - Mechanicville R6 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays.
    - Installation of new lockout relays for breaker failure at Mechanicville substation.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of School Street R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1.
- Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.

The Distribution upgrades required to facilitate the proposed installation include the following:

- National Grid Protection and Control Package (34.5 kV Recloser, external power transformer, switches, poles and associated hardware). Reference ESB-756B Figure 5B for overview of expected National Grid and customer equipment sequence.
- Reconductor the Mechanicville – School Street #1 line from 336.4 MCM ACSR 18/1 to 477 ACSR 26/7 for approximately 0.88 miles, from School Street R1 to approximately Structure 155.
- Replace one (1) 34.5 kV line switch #113 on pole 156 with a 1200 Amp disconnect switch on the Mechanicville – School Street #1.
- Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line, between Riser Pole 53 and Lansingburg SW#188, to 500 MCM compact CU cable.

Option 1B: Option 1A with Self-Performance Upgrades

The Substation upgrades required to facilitate the proposed installation include the following:

- Replace station disconnect switches #199 and #188 at School Street substation with 1200 Amp rated station disconnect switches.
- Installation of a local breaker backup scheme at Mechanicville substation for Line #1 and Line #6.
    - Mechanicville R1 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays.
    - Mechanicville R6 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays.
    - Installation of new lockout relays for breaker failure at Mechanicville substation.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of School Street R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1.*
- Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.

The Distribution Self Performance Upgrades Required

- National Grid Protection and Control Package (34.5 kV Recloser, external power transformer, switches, poles and associated hardware). Reference ESB-756B Figure 5B for overview of expected National Grid and customer equipment sequence.

The Distribution upgrades required to facilitate the proposed installation include the following:

- Reconductor the Mechanicville – School Street #1 line from 336.4 MCM ACSR 18/1 to 477 ACSR 26/7 for approximately 0.88 miles, from School Street R1 to approximately Structure 155.
- Replace one (1) 34.5 kV line switch #113 on pole 156 with a 1200 Amp disconnect switch on the Mechanicville – School Street #1.
- Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line, between Riser Pole 53 and Lansingburg SW#188, to 500 MCM compact CU cable.

Option 2: Downsized to 1,500 kW

Upgrade Required	Option 2A – Downsized to 1,500 kW	Option 2B - Self-Performance Option	Failures Addressed
34.5 kV National Grid Protection and Control Package (Recloser, Switches, Meter and Poles) Note 1	$361,246	Self-Build	Unintentional Islanding
Reconductor the Mechanicville – School Street #1 line from 336.4 MCM ACSR 18/1 to 477 ACSR 26/7 for approximately 0.88 miles, from School Street R1 to approximately Structure 155. Note 2, 3	$0	$0	Thermal Overload
Replace one (1) 34.5 kV line switch #113 on pole 156 with a 1200 Amp disconnect switch on the Mechanicville – School Street #1. Note 2	$0	$0	Thermal Overload
Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line to 500 MCM compact CU cable. Note 2, 4, 5	$2,671,939	$2,671,939	Thermal Overload
Replace station disconnect switches #199 and #188 at School Street substation with 1200 Amp rated station disconnect switches. Note 6	$0	$0	Thermal Overload
Mechanicville R1 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$452,349	$452,349	Fault Sensitivity
Mechanicville R6 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$452,349	$452,349	Fault Sensitivity

Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19. Note 6	$452,349	$452,349	Fault Sensitivity
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street #19. Note 6	$452,349	$452,349	Fault Sensitivity
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2. Note 6	$452,349	$452,349	Fault Sensitivity
Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.	$5,000	$5,000	Fault Sensitivity
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1. Note 7	$-	$-	Fault Sensitivity

[Note 1] The Subject Upgrade may be eligible for Self-Performance Program. Shall the customer proceed with the associated self-performance upgrades, The Customer hereby waives any cost-sharing obligations or participation rights and assumes full responsibility for all costs incurred as part of the self-performance option where upgrades may be considered applicable under DG/ESS Encumbered Lines.

[Note 2] The Subject Generator shall incur costs classified as a Triggering/Sharing Project under Distribution/Sub-Transmission line Qualifying Upgrades. This qualifying upgrade may be classified as a DG/ESS Encumbered line, for which the Subject Generator shall be liable for either the entirety of the upgrade costs or a pro rata share thereof. For inquiries regarding potential cost implications, please contact your CEI case manager.

[Note 3] There is one or more river / canal crossing(s) associated with this upgrade. The cost estimate provided may not include the additional complexities associated with these crossings, as a full review will be required in final design.

[Note 4] This upgrade was triggered by a prior in queue project. Should the prior in queue project(s) withdraw, this customer will become responsible for these upgrades. Given the networked nature of the sub-transmission system, a re-analysis would be required in order to determine if this project would be responsible for these upgrades, based on which project(s) withdraw.

[Note 5] The cost estimate and scope are based on available system records and documented cable routing information. Final scope and cost shall be determined following field verification and detailed engineering review. Any discrepancies identified between documented cable routing and actual field conditions may result in revisions to the scope, quantities, and associated cost estimate.

[Note 6] This project is subject to cost sharing for major substation upgrades based on the DER queue for this station as of the revision date of this report. Please contact your CEI job owner to discuss potential cost impacts of cost sharing, which may include a lower initial cost or the potential for future refunds.

[Note 7] This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.

Additional details on the scope of each option can be found below:

Option 2A: Downsized to 1,500 kW

The Substation upgrades required to facilitate the proposed installation include the following:

- Installation of a local breaker backup scheme at Mechanicville substation for Line #1 and Line #6.
    - Mechanicville R1 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays.
    - Mechanicville R6 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays.
    - Installation of new lockout relays for breaker failure at Mechanicville substation.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of School Street R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1.
- Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.

The Distribution upgrades required to facilitate the proposed installation include the following:

- National Grid Protection and Control Package (34.5 kV Recloser, external power transformer, switches, poles and associated hardware). Reference ESB-756B Figure 5B for overview of expected National Grid and customer equipment sequence.
- Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line, between Riser Pole 53 and Lansingburg SW#188, to 500 MCM compact CU cable.

Option 2B: Option 2A with Self-Performance Upgrades

The Substation upgrades required to facilitate the proposed installation include the following:

- Installation of a local breaker backup scheme at Mechanicville substation for Line #1 and Line #6.
    - Mechanicville R1 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays.
    - Mechanicville R6 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays.
    - Installation of new lockout relays for breaker failure at Mechanicville substation.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of School Street R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1.
- Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.

The Distribution Self Performance Upgrades Required

- National Grid Protection and Control Package (34.5 kV Recloser, external power transformer, switches, poles and associated hardware). Reference ESB-756B Figure 5B for overview of expected National Grid and customer equipment sequence.

The Distribution upgrades required to facilitate the proposed installation include the following:

- Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line, between Riser Pole 53 and Lansingburg SW#188, to 500 MCM compact CU cable.

7.0 CONCEPTUAL COST ESTIMATE

The following items are a good faith estimate for the scope and work required to interconnect the project estimated under rates and schedules in effect at the time of this study in accordance with the most recent version of the New York State Standardized Interconnection Requirements ("SIR").

Option 1A: As Applied

Planning Grade Estimate

National Grid Work Segment	Planning Grade Cost Estimate not including Tax Liability				Capital portion for calculating tax liability	Tax Liability Applied to Capital	Customer Cost Total
Distribution Modifications	**Material**	**Labor**	**Overheads**	**Pre-Tax Total $**	**Capital Costs**	**Rate**	**Total $**
Distribution System Modifications						13.91%	
34.5kV National Grid Protection and Control Package (Recloser, Switches, Meter and Poles) Note 1	$ 121,840	$ 89,454	$ 110,246	$ 321,539	$ 285,457	$ 39,707	$ 361,246
Reconductor the Mechanicville – School Street #1 line from 336.4 MCM ACSR 18/1 to 477 ACSR 26/7 for approximately 0.88 miles, from School Street R1 to approximately Structure 155. Note 2, 3	$ 80,325	$ 1,183,590	$ 659,469	$ 1,923,384	$ 1,707,549	$ 237,520	$ 2,160,904
Replace one (1) 34.5 kV line switch #113 on pole 156 with a 1200 Amp disconnect switch on the Mechanicville – School Street #1. Note 2	$ 36,441	$ 15,744	$ 14,655	$ 66,839	$ 59,339	$ 8,254	$ 75,093
Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line to 500 MCM compact CU cable. Note 2, 4, 5	$ 242,853	$ 1,319,967	$ 815,427	$ 2,378,248	$ 2,111,370	$ 293,692	$ 2,671,939
Non-System Costs						13.91%	
Customer Documentation Review, Field Verification and Witness Testing	$ -	$ 12,000	$ 6,000	$ 18,000	$ -	$ -	$ 18,000
CEI Project Management	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
ROW Project Assessment	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
Substation Modifications						13.91%	
Replace station disconnect switches #199 and #188 at School Street substation with 1200 Amp rated station disconnect switches. Note 6	$ 77,785	$ 172,789	$ 88,258	$ 338,833	$ 300,810	$ 41,843	$ 380,675
Mechanicville R1 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #1 to School St. substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Mechanicville R6 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street #19. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.	$ -	$ 5,000	$ -	$ 5,000	$ -	$ -	$ 5,000
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1. Note 7	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Distribution Summary	**$ 481,459**	**$ 2,627,754**	**$ 1,608,796**	**$ 4,718,010**	**$ 4,163,716**	**$579,173**	**$ 5,297,183**
Station Summary	**$ 412,392**	**$ 1,172,968**	**$ 771,611**	**$ 2,356,971**	**$ 2,088,043**	**$290,447**	**$ 2,647,418**
SubTotal	**$ 893,851**	**$ 3,800,723**	**$ 2,380,407**	**$ 7,074,981**	**$ 6,251,759**	**$869,620**	**$ 7,944,601**
Estimated Sales Tax (8%)							**$ 635,568**
Total							**$ 8,580,169**

[Note 1] The Subject Upgrade may be eligible for Self-Performance Program. Shall the customer proceed with the associated self-performance upgrades, The Customer hereby waives any cost-sharing obligations or participation rights and assumes full

responsibility for all costs incurred as part of the self-performance option where upgrades may be considered applicable under DG/ESS Encumbered Lines.

[Note 2] The Subject Generator shall incur costs classified as a Triggering/Sharing Project under Distribution/Sub-Transmission line Qualifying Upgrades. This qualifying upgrade may be classified as a DG/ESS Encumbered line, for which the Subject Generator shall be liable for either the entirety of the upgrade costs or a pro rata share thereof. For inquiries regarding potential cost implications, please contact your CEI case manager.

[Note 3] There is one or more river / canal crossing(s) associated with this upgrade. The cost estimate provided may not include the additional complexities associated with these crossings, as a full review will be required in final design.

[Note 4] This upgrade was triggered by a prior in queue project. Should the prior in queue project(s) withdraw, this customer will become responsible for these upgrades. Given the networked nature of the sub-transmission system, a re-analysis would be required in order to determine if this project would be responsible for these upgrades, based on which project(s) withdraw.

[Note 5] The cost estimate and scope are based on available system records and documented cable routing information. Final scope and cost shall be determined following field verification and detailed engineering review. Any discrepancies identified between documented cable routing and actual field conditions may result in revisions to the scope, quantities, and associated cost estimate.

[Note 6] This project is subject to cost sharing for major substation upgrades based on the DER queue for this station as of the revision date of this report. Please contact your CEI job owner to discuss potential cost impacts of cost sharing, which may include a lower initial cost or the potential for future refunds.

[Note 7] This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.

Option 1B: Option 1A with Self Performance Upgrades

Planning Grade Estimate

National Grid Work Segment	Planning Grade Cost Estimate not including Tax Liability				Capital portion for calculating tax liability	Tax Liability Applied to Capital	Customer Cost Total
Distribution Modifications	**Material**	**Labor**	**Overheads**	**Pre-Tax Total $**	**Capital Costs**	**Rate**	**Total $**
Distribution System Modifications						13.91%	
34.5kV National Grid Protection and Control Package (Recloser, Switches, Meter and Poles) Note 1	$ 121,840	$ 89,454	$ 110,246	$ -	$ -	$ -	Self Build
Reconductor the Mechanicville – School Street #1 line from 336.4 MCM ACSR 18/1 to 477 ACSR 26/7 for approximately 0.88 miles, from School Street R1 to approximately Structure 155. Note 2, 3	$ 80,325	$ 1,183,590	$ 659,469	$ 1,923,384	$ 1,707,549	$ 237,520	$ 2,160,904
Replace one (1) 34.5 kV line switch #113 on pole 156 with a 1200 Amp disconnect switch on the Mechanicville – School Street #1. Note 2	$ 36,441	$ 15,744	$ 14,655	$ 66,839	$ 59,339	$ 8,254	$ 75,093
Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line to 500 MCM compact CU cable. Note 2, 4, 5	$ 242,853	$ 1,319,967	$ 815,427	$ 2,378,248	$ 2,111,370	$ 293,692	$ 2,671,939
Non-System Costs						13.91%	
Customer Documentation Review, Field Verification and Witness Testing	$ -	$ 12,000	$ 6,000	$ 18,000	$ -	$ -	$ 18,000
Self Performance Upgrade Design Review and Verificaiton	$ -	$ 15,376	$ 15,462	$ 30,837	$ -	$ -	$ 30,837
CEI Project Management	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
ROW Project Assessment	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
Substation Modifications						13.91%	
Replace station disconnect switches #199 and #188 at School Street substation with 1200 Amp rated station disconnect switches. Note 6	$ 77,785	$ 172,789	$ 88,258	$ 338,833	$ 300,810	$ 41,843	$ 380,675
Mechanicville R1 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #1 to School St. substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Mechanicville R6 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street #19. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.	$ -	$ 5,000	$ -	$ 5,000	$ -	$ -	$ 5,000
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1. Note 7	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Distribution Summary	**$ 359,619**	**$2,553,677**	**$1,514,012**	**$ 4,427,308**	**$ 3,878,259**	**$539,466**	**$ 4,966,774**
Station Summary	**$ 412,392**	**$1,172,968**	**$ 771,611**	**$ 2,356,971**	**$ 2,088,043**	**$290,447**	**$ 2,647,418**
SubTotal	**$ 772,011**	**$3,726,645**	**$2,285,623**	**$ 6,784,279**	**$ 5,966,301**	**$829,913**	**$ 7,614,192**
Estimated Sales Tax (8%)							**$ 609,135**
Total							**$ 8,223,327**

[Note 1] The Subject Upgrade may be eligible for Self-Performance Program. Shall the customer proceed with the associated self-performance upgrades, The Customer hereby waives any cost-sharing obligations or participation rights and assumes full responsibility for all costs incurred as part of the self-performance option where upgrades may be considered applicable under DG/ESS Encumbered Lines.

[Note 2] The Subject Generator shall incur costs classified as a Triggering/Sharing Project under Distribution/Sub-Transmission line Qualifying Upgrades. This qualifying upgrade may be classified as a DG/ESS Encumbered line, for which the Subject Generator shall be liable for either the entirety of the upgrade costs or a pro rata share thereof. For inquiries regarding potential cost implications, please contact your CEI case manager.

[Note 3] There is one or more river / canal crossing(s) associated with this upgrade. The cost estimate provided may not include the additional complexities associated with these crossings, as a full review will be required in final design.

[Note 4] This upgrade was triggered by a prior in queue project. Should the prior in queue project(s) withdraw, this customer will become responsible for these upgrades. Given the networked nature of the sub-transmission system, a re-analysis would be required in order to determine if this project would be responsible for these upgrades, based on which project(s) withdraw.
[Note 5] The cost estimate and scope are based on available system records and documented cable routing information. Final scope and cost shall be determined following field verification and detailed engineering review. Any discrepancies identified between documented cable routing and actual field conditions may result in revisions to the scope, quantities, and associated cost estimate.
[Note 6] This project is subject to cost sharing for major substation upgrades based on the DER queue for this station as of the revision date of this report. Please contact your CEI job owner to discuss potential cost impacts of cost sharing, which may include a lower initial cost or the potential for future refunds.
[Note 7] This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.

Option 2A: Downsized to 1,500 kW

Planning Grade Estimate

National Grid Work Segment	Planning Grade Cost Estimate not including Tax Liability				Capital portion for calculating tax liability	Tax Liability Applied to Capital	Customer Cost Total
Distribution Modifications	**Material**	**Labor**	**Overheads**	**Pre-Tax Total $**	**Capital Costs**	**Rate**	**Total $**
Distribution System Modifications						13.91%	
34.5kV National Grid Protection and Control Package (Recloser, Switches, Meter and Poles) Note 1	$ 121,840	$ 89,454	$ 110,246	$ 321,539	$ 285,457	$ 39,707	$ 361,246
Reconductor the Mechanicville – School Street #1 line from 336.4 MCM ACSR 18/1 to 477 ACSR 26/7 for approximately 0.88 miles, from School Street R1 to approximately Structure 155. Note 2, 3	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Replace one (1) 34.5 kV line switch #113 on pole 156 with a 1200 Amp disconnect switch on the Mechanicville – School Street #1. Note 2	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line to 500 MCM compact CU cable. Note 2, 4, 5	$ 242,853	$ 1,319,967	$ 815,427	$ 2,378,248	$ 2,111,370	$ 293,692	$ 2,671,939
Non-System Costs						13.91%	
Customer Documentation Review, Field Verification and Witness Testing	$ -	$ 12,000	$ 6,000	$ 18,000	$ -	$ -	$ 18,000
CEI Project Management	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
ROW Project Assessment	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
Substation Modifications						13.91%	
Replace station disconnect switches #199 and #188 at School Street substation with 1200 Amp rated station disconnect switches. Note 6	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanicville R1 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #1 to School St. substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Mechanicville R6 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street #19. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.	$ -	$ 5,000	$ -	$ 5,000	$ -	$ -	$ 5,000
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1. Note 7	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Distribution Summary	**$ 364,693**	**$ 1,428,420**	**$ 934,673**	**$ 2,727,787**	**$ 2,396,828**	**$333,399**	**$ 3,061,186**
Station Summary	**$ 334,607**	**$ 1,000,179**	**$ 683,353**	**$ 2,018,139**	**$ 1,787,233**	**$248,604**	**$ 2,266,743**
SubTotal	**$ 699,301**	**$ 2,428,599**	**$1,618,026**	**$ 4,745,926**	**$ 4,184,060**	**$582,003**	**$ 5,327,928**
Estimated Sales Tax (8%)							**$ 426,234**
Total							**$ 5,754,163**

[Note 1] The Subject Upgrade may be eligible for Self-Performance Program. Shall the customer proceed with the associated self-performance upgrades, The Customer hereby waives any cost-sharing obligations or participation rights and assumes full responsibility for all costs incurred as part of the self-performance option where upgrades may be considered applicable under DG/ESS Encumbered Lines.

[Note 2] The Subject Generator shall incur costs classified as a Triggering/Sharing Project under Distribution/Sub-Transmission line Qualifying Upgrades. This qualifying upgrade may be classified as a DG/ESS Encumbered line, for which the Subject Generator shall be liable for either the entirety of the upgrade costs or a pro rata share thereof. For inquiries regarding potential cost implications, please contact your CEI case manager.

[Note 3] There is one or more river / canal crossing(s) associated with this upgrade. The cost estimate provided may not include the additional complexities associated with these crossings, as a full review will be required in final design.

[Note 4] This upgrade was triggered by a prior in queue project. Should the prior in queue project(s) withdraw, this customer will become responsible for these upgrades. Given the networked nature of the sub-transmission system, a re-analysis would be required in order to determine if this project would be responsible for these upgrades, based on which project(s) withdraw.
[Note 5] The cost estimate and scope are based on available system records and documented cable routing information. Final scope and cost shall be determined following field verification and detailed engineering review. Any discrepancies identified between documented cable routing and actual field conditions may result in revisions to the scope, quantities, and associated cost estimate.
[Note 6] This project is subject to cost sharing for major substation upgrades based on the DER queue for this station as of the revision date of this report. Please contact your CEI job owner to discuss potential cost impacts of cost sharing, which may include a lower initial cost or the potential for future refunds.
[Note 7] This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.

Option 2B: Option 2A with Self Performance Upgrades

Planning Grade Estimate

National Grid Work Segment	Planning Grade Cost Estimate not including Tax Liability				Capital portion for calculating tax liability	Tax Liability Applied to Capital	Customer Cost Total
Distribution Modifications	**Material**	**Labor**	**Overheads**	**Pre-Tax Total $**	**Capital Costs**	**Rate**	**Total $**
Distribution System Modifications						13.91%	
34.5kV National Grid Protection and Control Package (Recloser, Switches, Meter and Poles) Note 1	$ 121,840	$ 89,454	$ 110,246	$ -	$ -	$ -	Self Build
Reconductor the Mechanicville – School Street #1 line from 336.4 MCM ACSR 18/1 to 477 ACSR 26/7 for approximately 0.88 miles, from School Street R1 to approximately Structure 155. Note 2, 3	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Replace one (1) 34.5 kV line switch #113 on pole 156 with a 1200 Amp disconnect switch on the Mechanicville – School Street #1. Note 2	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line to 500 MCM compact CU cable. Note 2, 4, 5	$ 242,853	$ 1,319,967	$ 815,427	$ 2,378,248	$ 2,111,370	$ 293,692	$ 2,671,939
Non-System Costs						13.91%	
Customer Documentation Review, Field Verification and Witness Testing	$ -	$ 12,000	$ 6,000	$ 18,000	$ -	$ -	$ 18,000
Self Performance Upgrade Design Review and Verificaiton	$ -	$ 15,376	$ 15,462	$ 30,837	$ -	$ -	$ 30,837
CEI Project Management	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
ROW Project Assessment	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
Substation Modifications						13.91%	
Replace station disconnect switches #199 and #188 at School Street substation with 1200 Amp rated station disconnect switches. Note 6	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mechanicville R1 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #1 to School St. substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Mechanicville R6 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street #19. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2. Note 6	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.	$ -	$ 5,000	$ -	$ 5,000	$ -	$ -	$ 5,000
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1. Note 7	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Distribution Summary	**$ 242,853**	**$1,354,342**	**$ 839,889**	**$ 2,437,085**	**$ 2,111,370**	**$293,692**	**$ 2,730,777**
Station Summary	**$ 334,607**	**$1,000,179**	**$ 683,353**	**$ 2,018,139**	**$ 1,787,233**	**$248,604**	**$ 2,266,743**
SubTotal	**$ 577,461**	**$2,354,521**	**$1,523,242**	**$ 4,455,224**	**$ 3,898,603**	**$542,296**	**$ 4,997,519**
Estimated Sales Tax (8%)							**$ 399,802**
Total							**$ 5,397,321**

[Note 1] The Subject Upgrade may be eligible for Self-Performance Program. Shall the customer proceed with the associated self-performance upgrades, The Customer hereby waives any cost-sharing obligations or participation rights and assumes full responsibility for all costs incurred as part of the self-performance option where upgrades may be considered applicable under DG/ESS Encumbered Lines.

[Note 2] The Subject Generator shall incur costs classified as a Triggering/Sharing Project under Distribution/Sub-Transmission line Qualifying Upgrades. This qualifying upgrade may be classified as a DG/ESS Encumbered line, for which the Subject Generator shall be liable for either the entirety of the upgrade costs or a pro rata share thereof. For inquiries regarding potential cost implications, please contact your CEI case manager.

[Note 3] There is one or more river / canal crossing(s) associated with this upgrade. The cost estimate provided may not include the additional complexities associated with these crossings, as a full review will be required in final design.
[Note 4] This upgrade was triggered by a prior in queue project. Should the prior in queue project(s) withdraw, this customer will become responsible for these upgrades. Given the networked nature of the sub-transmission system, a re-analysis would be required in order to determine if this project would be responsible for these upgrades, based on which project(s) withdraw.
[Note 5] The cost estimate and scope are based on available system records and documented cable routing information. Final scope and cost shall be determined following field verification and detailed engineering review. Any discrepancies identified between documented cable routing and actual field conditions may result in revisions to the scope, quantities, and associated cost estimate.
[Note 6] This project is subject to cost sharing for major substation upgrades based on the DER queue for this station as of the revision date of this report. Please contact your CEI job owner to discuss potential cost impacts of cost sharing, which may include a lower initial cost or the potential for future refunds.
[Note 7] This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.

Notes:

1. These estimated costs are based upon the results of this study and are subject to change. All costs anticipated to be incurred by the Company are listed.
2. The Company will reconcile actual charges upon project completion and the Interconnection Customer will be responsible for all final charges, which may be higher or lower than estimated according to the SIR I.C step 11.
3. This estimate does not include the following:
   - additional interconnection study costs, or study rework
   - additional application fees,
   - applicable surcharges,
   - property taxes,
   - future operation and maintenance costs,
   - adverse field conditions such as weather and Interconnection Customer equipment obstructions,
   - extended construction hours to minimize outage time or Company's public duty to serve,
   - the cost of any temporary construction service, or
   - any required permits.
4. Cost adders estimated for overtime would be based on 1.5 and 2 times labor rates if required for work beyond normal business hours. Per Diems are also extra costs potentially incurred for overtime labor.
5. Sales tax of The Company's upgrades are estimated at 8% and shall be paid if the Interconnection Customer does not provide acceptable tax exemption documentation.

8.0 REVISION HISTORY

Version	Date	Description of Revision
1.0	12/18/2024	Delivery of original CESIR study
2.0	11/22/2022	CESIR updated to reflect a change in Customer POI configuration due to guying issues
3.0	11/20/2025	CESIR Revision following Capital Queue Change.
4.0	09/10/2026	CESIR Revision following Prior in queue project withdrawal.

ATTACHMENT 2

BRIDGEWATER SOLAR 2
SEPTEMBER 10, 2026 CESIR

For
Bridgewater Solar 2
True Green Capital Management LLC
5,000 kWAC Photovoltaic Generator System
4A Brookwood Road
Waterford, NY 12188

Interconnection to National Grid
NY East
Capital Region
Troy District
34.5 kV Mechanicville – School Street #1

THIS DOCUMENT AND ANY ATTACHMENTS HERETO ("DOCUMENT") IS MADE AVAILABLE BY NATIONAL GRIDUPON AND SUBJECT TO THE EXPRESS UNDERSTANDING THAT: (A) NEITHER NATIONAL GRIDNOR ANY OF ITS OFFICERS, DIRECTORS, AFFILIATES, AGENTS, OR EMPLOYEES MAKES ANY WARRANTY, ASSURANCE, GUARANTY, OR REPRESENTATION WITH RESPECT TO THE CONTENTS OF THE DOCUMENT OR THE ACCURACY OR COMPLETENESS OF THE INFORMATION CONTAINED OR REFERENCED IN THE DOCUMENT, AND (B) NATIONAL GRID, ITS OFFICERS, DIRECTORS, AFFILIATES, AGENTS, AND EMPLOYEES SHALL NOT HAVE ANY LIABILITY OR RESPONSIBILITY FOR INACCURACIES, ERRORS, OR OMISSIONS IN, OR ANY BUSINESS OR POLICY DECISIONS MADE BY ANY DIRECT OR INDIRECT RECIPIENT IN RELIANCE ON, THIS DOCUMENT OR THE INFORMATION CONTAINED OR REFERENCED THEREIN; ALL SUCH LIABILITY IS EXPRESSLY DISCLAIMED.

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1.0 INTRODUCTION

This report presents the analysis results of the National Grid or the "Company") interconnection study based on the proposed interconnection and design submittal from the Interconnection Customer in accordance with the Company ESB. The intent of this report is to assess this project's feasibility, determine its impact to the existing electric power system (EPS), determine interconnection scope and installation requirements, and determine costs associated with interconnecting the Interconnection Customer's generation to the Company's Electric Power System (EPS). This Coordinated Electric System Impact Review (CESIR) study; according to the NYSSIR Section I.C Step 6; identifies the scope, schedule, and costs specific to this Interconnection Customer's installation requirements.

2.0 EXECUTIVE SUMMARY

The total estimated planning grade cost of the work associated with the interconnection of the Interconnection Customer is **$5,754,163** for Option 1.

Alternatively, the Interconnection Customer may elect to participate in Self-Performance Program for select upgrades identified in Section 6.0. Should the customer proceed with the Self-Performance build, the total estimated planning grade cost associated with the remaining upgrades and self-performance verifications completed by National grid is **$5,397,321** for Option 2.

The interconnection was found to be feasible with modifications to the existing Company EPS and operating conditions, which are described in detail in the body of this Study.

The ability to generate is contingent on this facility being served by the interconnecting circuit during normal Utility operating conditions. Therefore, if the interconnecting circuit is out of service, or if abnormal Utility operating conditions of the area EPS are in effect National Grid reserves the right to disengage the facility.

No future increase in generation output beyond that which specified herein for this interconnection has been studied. Any increase in system size and/or design change is subject to a new study and costs associated shall be borne by the Interconnection Customer. An increase in system size may also forfeit the Interconnection Customer's existing queue position.

3.0 COMPANY EPS PARAMETERS

Substation	Battenkill	Ballston	Hoosick	Maplewood	N. Troy
Transformer Name	TB1	TB2	TB1	TB2	TB1/TB2
Transformer Peak Load (kW)	14,354	4,391	12,142	6,141	13,530 / 16,731
Contingency Condition Load, N-1 Criteria (as applicable) (kW)	N/A	N/A	N/A	N/A	N/A
Daytime Light Load (kW)	-13,270	-17,056	-19,517	-22,912	-17,494 / -20,930
Generation: Total[1], Connected, Queued Ahead (kW)	150,633; 132,258; 13,375				
Contingency Condition Generation: Total[1], Connected, Queued Ahead (kW)	N/A	N/A	N/A	N/A	N/A
Supply Voltage (kV)	115				
Transformer Summer Normal Rating (kVA)	39,300	57,900	61,800	61,300	58,800 / 44,100
Distribution Bus Voltage Regulation	Yes; Fixed Tap	Yes	No	No	Yes; Fixed Tap
Transmission GFOV Status	Not Needed				
Bus Tie	No	Yes	No	Yes	Yes
Number of 34.5kV Lines Served from this Bus	2	5	2	6	5

Connecting Feeder/Line	Mechanicville – School Street #1	
Peak Load on feeder (kW)	7,869	
Daytime Light Load on Feeder (kW)	-13,839	
Feeder Primary Voltage at POI (kV)	34.5	
Line Phasing at POI	3	
Circuit Distance from POI to Substation	Mechanicville	School Street
	3.74 miles	4.29 miles
Distance to nearest 3-phase (if applicable)	N/A	
Line Regulation	No	
Line/Source Grounding Configuration at POI	Uni-grounded Wye	
Generation: Total, Connected, Queued Ahead(kW)	19,700; 14,700; 0	

System Fault Characteristics without Interconnection Customer DG at POI	
Interconnection Customer POI Location	Mechanicville – School Street #1 Line
I 3-phase (3LLL)	7,613 Amps
I Line to Ground (3I0)	4,883 Amps
Z1 (100 MVA base)	0.07210 + j 0.21865 pu
Z0 (100 MVA base)	0.11380 + j 0.59555 pu

4.0 INTERCONNECTION CUSTOMER SITE

The Interconnection Customer is proposing a new primary service connection with Account No. [redacted].

The requested point of interconnection (POI) location will be served via the 34.5 kV sub-transmission line Mechanicville – School Street #1. The site will be served via a new midspan pole between structures 82 and 83.

This project requires that the planned rebuild of Hoosick substation (C053132 & C081115) be completed prior to the project interconnecting. These projects are in construction at the time of the issuance of this CESIR, and with an anticipated completion date of Winter 2026.

Additionally, during the course of the study, National Grid identified existing issues on the 34.5 kV sub-transmission system in this area, and has initiated a capital project to address these violations. The subject generator will not be permitted to interconnect until these system modifications are complete, since the subject generator worsens these existing conditions. This subject generator was studied under the assumption that these modifications were in place.

National Grid will keep the applicant apprised of progress towards completion of these planned upgrades.

The proposed generating system consists of:

- A PV system consisting of nine thousand one hundred and eighty-four (9,184) Q. Peak Duo ML-G12S 675W (675W), for a total DC system size of 6,199.20 kW.
- Twenty (20) Solectria XGI 1500-250, 250KW inverters for a total AC system size of 5,000 kVA.
- Two (2) 2,500 kVA, 34.5 kV delta primary to 600 V wye-grounded secondary step-up transformers with unknown impedance and X/R ratio.
- One (1) customer owned riser pole, pole #9, with a 35kV rated, pole mounted, gang operated, load break switch (600Amp rated), and 24.4kV MCOV lightning arrestors.
- One (1) customer owned pole, pole #8, with a customer-owned meter.
- One (1) customer owned pole, pole #7, with utility-owned revenue meter.
- One (1) customer owned pole, pole #6, with pole-mounted G&W Viper-S 35kV recloser, SEL-651R recloser controller, control power transformer, and 29kV MCOV lightning arresters.
- One (1) customer owned pole, pole #5, with one (1) 35kV rated, gang-operated, load break switch (600Amp rated), and 24.4kV MCOV lightning arrestors.

5.0 SYSTEM IMPACT ANALYSIS

Category	Criteria	Limit	Result
Voltage	Overvoltage	< 105% (ANSI C84.1)	**Fail**
With the addition of the subject generator the maximum voltage as modeled on the circuit is outside of acceptable limits. **The project shall operate with a custom volt-VAR mode enabled in order to keep the voltage within acceptable limits. See Smart Inverter Analysis section for further details.**			
Voltage	Undervoltage	> 95% (ANSI C84.1)	Pass
With the addition of the subject generator the minimum voltage as modeled on the circuit is within acceptable limits. **The project shall operate with a custom volt-VAR mode enabled in order to keep the voltage within acceptable limits. See Smart Inverter Analysis section for further details.**			
Voltage	Substation Regulation for Reverse Power	<100% minimum load criteria	Pass
The total generation on the Mechanicville – School Street #1 sub-transmission line is 19.7 MW, which includes the subject generator. While the Mechanicville – School Street #1 line is fed from the Mechanicville and School Street substations, the 34.5 kV network is sourced from five 115 kV substations: Ballston, Battenkill, Maplewood, North Troy, and Hoosick. The total generation on the system including the subject generator is 150.6 MW. The only 115/34.5 kV substation with the LTC set to automatic regulation is Ballston Substation; however, the LTC controller at Ballston substation is already configured to allow for reverse power flow, so no further upgrades are needed.			
Voltage	Feeder Regulation for Reverse Power	<100% Minimum load to generation ratio	N/A
There are no line regulators between the POI and substations.			
Voltage	Fluctuation	<3% steady state from proposed generation on feeder, <5% steady state from aggregate DER on substation bus, Regulator tap movement exceeds 1 position.	Pass
The greatest voltage fluctuation on the sub-transmission line occurs on the subject generators POI. The resulting fluctuation at the sub-transmission line location is 0.62% due to the proposed generation. **This project is required to operate with a custom volt-VAR enabled, as identified in the overvoltage section. See Smart Inverter Analysis section for further details.**			

Category	Criteria	Limit	Result
Voltage	Flicker	Screen H Flicker	Pass
The Pst for the location with the greatest voltage fluctuation is 0.1104 and the emissions limit is 0.35.			
Equipment Ratings	Thermal (continuous current)	< 100% thermal limits	**Fail**

The subject generator's full output current is 84 Amps at 34.5 kV. The total full output current of all DER on the Mechanicville – School Street #1 line is 330 Amps, including the subject generator. The limiting element of this line is 4/0 CU 7STR conductor, with thermal capabilities under normal conditions 584 Amps (and 607 Amps under contingency). With the interconnection of the subject generator, no thermal violations were seen on the Mechanicville – School Street #1.

Additionally, while the Mechanicville – School Street #1 line terminates at Mechanicville and School Street substations, these substations have additional supply lines leading to five 115 kV sourced substations: Ballston, Battenkill, Maplewood, North Troy, and Hoosick. The subject generator contributes to power flows on each of the lines back to these other substation as part of a networked system. With the interconnection of the subject generator, several thermal violations were seen on the remainder of the system.

- The limiting element of the Lansingburg – North Troy #1 line is 350 MCM CU cable rated at 18.2 MVA (305 Amps at 34.5 kV). The maximum power flow through the limiting element after the connection of the subject generator is 370 Amps.
    - **Due to thermal overload under light load N-1 conditions, approximately 3,275 feet of underground 34.5 kV cable on the North Troy - Lansingburg #1 line will be reconductored to 500 MCM compact copper cable, between Riser Pole 53 and Lansingburg SW#188.**

In addition, National Grid has existing capital project to address other N-0 and N-1 loading concerns in this area, which were identified to be required prior to the interconnection of the subject generator. These upgrades will need to be completed prior to the connection of the subject generator.

Equipment Ratings	Withstand (fault current)	<90% withstand limits	Pass
The additional fault current contribution from the generation contributes to interrupting ratings in excess of existing EPS equipment.			
Protection	Unintentional Islanding	Unintentional Islanding Document & Company Guidelines	**Fail**

The subject generator is a **5,000 kW** PV generation system.

The proposed generation system exceeds the Company's criteria for islanding a distributed resource, and **will require a National Grid protection and control package**. See the "Protective Device Coordination" screen for further details.

Category	Criteria	Limit	Result
Protection	Protective device coordination	Company Guidelines	**Fail**

The DG Interconnection Customer proposed a G&W Viper-S Recloser with an SEL-651R relay. The proposed recloser has a 35kV nominal voltage rating and 150KV BIL, which is adequate for 34.5kV application.

The DG Interconnection Customer shall use a breaker or recloser with a utility-grade microprocessor relay as primary service protection. This protective device should be shown in the proper location on their submitted line diagrams.

Both phase and residual ground instantaneous and time curve overcurrent settings (50, 50N, 51, 51N) will need to be provided in these relays or recloser. Zero-Sequence Overvoltage (59N) and other standard ESB-756B required power quality functions (27/59/81) will also be required in this protective device.

The DG Interconnection Customer shall submit formal specifications, curves, and/or relay settings for review and approval by National Grid to ensure proper coordination, correct function types, etc. if the project moves forward. Relay/Recloser files will be required in their native format (SEL AcSELerator, Cooper Proview, etc.) when submitted.

Category	Criteria	Limit	Result
Protection	Fault Sensitivity	Rated capabilities of EPS equipment	**Fail**

Of the currently active protectives devices (line reclosers, Station breaker relays, etc.) on this portion of the system, some station relays were impacted to the extent of mis-operation or mis-coordination due to the contribution from this and previous DG interconnections.

The addition of the subject generator will require the following system upgrades:

- ***Installation of a local breaker backup scheme at Mechanicville substation for Line #1 and Line #6.***
  - ***Mechanicville R1 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays.***
  - ***Mechanicville R6 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays.***
  - ***Installation of new lockout relays for breaker failure at Mechanicville substation.***
- ***Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street Line #19.***
- ***Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street Line #19.***
- ***Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2.***
- ***Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1.****
- ***Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.***

*** This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.**

Cost sharing will apply for the above relay upgrades, see Section 6.0 for details.

Protection	Ground Fault Detection	Reduction of reach > 0%	Pass

The Interconnection Customer is proposing a connection to a National Grid Sub-Transmission circuit with a 3-wire configuration that is grounded only at the source 115-34.5kV substations. As such, the Interconnection Customer is not required to provide a source of effective grounding for this proposed Distributed Generation but will be required to provide a suitably configured GSU with a delta (Δ) primary connection. Ground fault detection on this circuit is provided through the combination of the 67N devices on the line and the 59N setting in the Customer Relays or Recloser.

Category	Criteria	Limit	Result
Protection	Overvoltage - Transmission System Fault	Company 3V0 criteria	Pass
The interconnection of distributed generation facilities to National Grid distribution substations can result in conditions where line-to-ground faults on the transmission system could go undetected. This scenario was analyzed for the proposed interconnection to determine if the addition of the subject generator meets the Company's criteria for requiring transmission system line-to-ground fault protection. The existing station protection schemes were reviewed and analysis performed, and it has been determined that the required transmission system ground fault protection is already installed.			
Protection	Overvoltage - Distribution System Fault	< 125 % voltage rise	Pass
The Interconnection Customer is required to connect to the Sub-Transmission system with an ungrounded primary transformer connection, removing the requirement to limit voltage rise.			
Protection	Effective Grounding	R0/X1< 1 & X0/X1 <3	Pass
The Interconnection Customer is required to connect to the Sub-Transmission system with an ungrounded primary transformer connection, removing the requirement to maintain effective grounding.			
SCADA	Required EMS Visibility for Generation Sources	Monitoring & Control Requirements	**Fail**
The 5,000 kW subject generator triggers the requirement for SCADA reporting to the Utility. **This requirement is covered by the National Grid Protection and Control package (e.g., the PCC Recloser).**			

Category	Criteria	Limit	Result
Other	Smart Inverter Analysis	Volt-Var Response	**Fail**

The smart inverter analysis did not result in any unanticipated outputs, and the inverter VAR response performed as intended.

However, as identified in the overvoltage analysis, the project shall be required to operate using a modified Volt-VAR curve rather than the default ESB 756B settings.

The modified curve adjusts the reactive power deadband to provide a small amount of reactive power absorption under nominal voltage conditions to mitigate the overvoltage conditions identified during the study.

Volt Var Settings		
Required Parameter	**Default Settings Setpoint**	**Required Settings Setpoint**
Performance Category	B	B
Bref	Vn	Vn
V1	0.93 per unit of nomimal voltage	0.93 per unit of nomimal voltage
Q1	44% of Inverter Reactive Capability	44% of Inverter Reactive Capability
V2	0.97 per unit of nomimal voltage	0.97 per unit of nomimal voltage
Q2	0% of Inverter Reactive Capability	**-38%** of Inverter Reactive Capability
V3	1.03 per unit of nomimal voltage	1.03 per unit of nomimal voltage
Q3	0% of Inverter Reactive Capability	**-38%** of Inverter Reactive Capability
V4	1.07 per unit of nomimal voltage	1.07 per unit of nomimal voltage
Q4	-44% of Inverter Reactive Capability	-44% of Inverter Reactive Capability
Open Loop response Time	5s	5s
Autonomous Vref Enablement	OFF	OFF

See ESB756 Appendix B Table 7.8.2-2: for details on default Settings

Category	Criteria	Limit	Result
Other	Environmental Regulatory Obligations	Environmental Requirements	

The Customer will be responsible for the following environmental requirements:

- To the extent possible, facilities should be proposed on sites that are free of preexisting environmental conditions and/or environmental regulatory obligations. Regardless of whether the Customer is able to secure such a site, the Customer is responsible, at its sole cost and expense, for providing an area for National Grid's facilities such that intrusive work performed during installation and long-term maintenance will not result in potential contact with, or spreading or exacerbation of, any site contamination and will not interfere with institutional or engineering controls, if applicable (i.e., a clean corridor). The aerial extent, depth, and location of the clean corridor required for National Grid's facilities shall comply with National Grid's Overhead and/or Underground Construction Standards, as applicable. When National Grid's work is complete, the Customer may be responsible for stabilizing and properly restoring all disturbed areas.
- The Customer is responsible for providing to National Grid any and all information regarding site conditions, the nature and extent of any site contamination, copies of any institutional controls, design information for any engineering controls (including plans and drawings), an up-to-date copy of the Site Management Plan, if applicable, and copies of all environmental permits, notices, and plans immediately upon acceptance of this proposal (or upon issuance or preparation, to the extent such document does not exist at the time the proposal is accepted). A full list of required documentation is available upon request. The Customer shall continue, on an ongoing basis, to provide such information to National Grid to the extent new environmental information is identified or generated. The fact that the Customer has provided a clean corridor will not relieve the Customer of the obligation to provide environmental documentation.
- The Customer is responsible for all obligations imposed by, and coordination with, federal, state, and local governmental authorities, including but not limited to permits (e.g., stormwater, wetlands, wildlife, invasive species); notifications regarding modifications to institutional or engineering controls (if applicable); the preparation and implementation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan, Stormwater Pollution Prevention Plan (SWPPP), and wetlands mitigation plan (if applicable); any required monitoring and/or reporting obligations (e.g., air monitoring); and the resolution of any violations (including payment of any fines or penalties) caused by the work, except to the extent caused directly by National Grid's gross negligence or willful misconduct. National Grid retains the right, but not obligation, to review and comment on all permit applications pertaining to National Grid's work.

Category	Criteria	Limit	Result
Other	Environmental Regulatory Obligations Cont'd	Environmental Requirements	

- The Customer shall be responsible for the containerization, characterization, storage, handling, management, transportation, and disposal of any site-related wastes (e.g., soil, groundwater) generated as a result of National Grid's work, including obtaining an EPA hazardous waste generator identification number (if needed). The Customer shall be designated as the generator, and shall sign all manifests and disposal documents for all such disposal materials.
- The Customer shall be solely responsible for obtaining access to (including ingress to and egress from) National Grid's work area. To the extent the Customer does not own the site where National Grid will be performing work, the Customer shall be solely responsible for coordinating with the property owner regarding any required notifications, work hours, insurance requirements, and any other access-related considerations.

Other	Right of Way Obligations and Requirements		

The Interconnection Customer will be responsible for the following real property/right-of-way requirements:

- The Interconnection Customer shall acquire, on behalf of the Company and in the Company's name, such real property interests that, in the Company's judgment, are necessary for the construction, reconstruction, relocation, operation, repair, maintenance, replacement and removal, including vegetation management, of the Company's electric facilities required (1) to connect the Interconnection Customer's Generator System [Storage System] to the Company's EPS and (2) to extend, improve and/or upgrade the Company's existing EPS as may be necessary to support Interconnection Customer's Generator System [Storage System].
- Such interests shall include such access/egress rights as necessary for the foregoing. The Company will determine specific access requirements on a case-by-case basis, but (where direct access to/from a public way is not available) the Company requires permanent easements for access drives/roads, which roads must be constructed to the Company's satisfaction with respect to dimensions, configuration, and vehicle load (to be determined on a case-by-case basis). Unless otherwise agreed to, such access drives/roads shall be dedicated for the Company's exclusive use.
- As a general rule, the Interconnection Customer shall acquire fully assignable/transferable permanent easements for all parcels upon which any electric facilities will be located to support the Interconnection Customer's project. The Interconnection Customer is therefore strongly encouraged to avoid locations where such interests may be difficult or impossible to obtain. The Company recognizes, however, that it may be reasonable and appropriate to deviate from the general rule in specific, limited instances. By way of example only, where the electric facilities must cross a public highway, the public agency or authority having jurisdiction over such highway may be authorized to issue a license or permit, but not a permanent easement. The Interconnection Customer shall consult with the Company as soon as it determines that it may be necessary to deviate from the general rule, and the Company reserves the right to determine in its sole discretion whether it shall accept anything less than permanent easement rights at any location.

Category	Criteria	Limit	Result
Other	Right of Way Obligations and Requirements Cont'd		

- The Interconnection Customer shall use Company-approved forms for obtaining and recording property interests. Proposed changes to such forms shall be discussed with and agreed upon with the assigned Company Right-of-Way representative and/or attorney.
- The Company conducts a thorough acquisition due diligence exercise to ensure that its transfer and acceptance standards are met, and the Interconnection Customer is expected to cooperate and coordinate with the Company to ensure the successful completion of due diligence, the scope of which shall be determined by the Company on a case-by-case basis.
- The Interconnection Customer shall pay and be solely responsible for paying all costs and expenses incurred by the Interconnection Customer and/or the Company that relate to the acquisition of property interests necessary to construct, reconstruct, relocate, operate, repair, maintain, replace and remove, as applicable, the electric facilities identified herein. The Interconnection Customer also shall pay and be solely responsible for paying costs and expenses associated with submitting permit applications and obtaining permits and/or licenses for placement of facilities on and/or crossings that may be required from public or private agencies or authorities on public roadways, railroads and/or waterways.
- Unless otherwise agreed to, assets/facilities owned by the Interconnection Customer shall not be sited on any parcels or electric or gas corridors in which the Company has a fee-ownership or permanent easement interest.
- The Interconnection Customer may submit a request, in writing, for the temporary use or occupancy of the Company's fee-owned or easement parcel including electric or gas corridor (if any) in connection with Interconnection Customer's Generator System [Storage System] project. The Company's review of any temporary use or occupancy shall occur to assure compliance with applicable state and federal clearance and safety standards in accordance with the Company's third-party property use process.

Other	Self-Performance Exclusions		

Conditions under which Projects will no longer be eligible to participate in the Self-Performance Program include, but may not be limited to, those identified in the list below. Conditions may be identified before or during the site visit for the Project where such post-CESIR issues may warrant a change in status as to Program eligibility.

- Railroad crossings
- State land crossings
- Tribal land crossings
- Designs requiring NYS Canal Corporation permits

6.0 MITIGATIONS FOR SYSTEM IMPACT ANALYSIS FAILURES

Details below are intended to provide sufficient information and clarity to give the Interconnection Customer an understanding to the relationship of costs and scope associated with the DER interconnection and the system modifications due to the DER impact. Where scope items are identified, associated labor, equipment rentals and indirect project support functions (such as engineering and project management) are intended and implied.

Upgrade Required	Option 1 – As Applied 5,000 kW	Option 2 - Self-Performance Option	Failures Addressed
34.5kV National Grid Protection and Control Package (Recloser, Switches, Meter and Poles) Note 1	$361,246	Self-Build	Unintentional Islanding
Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line to 500 MCM compact CU cable. Note 2, 3	$2,671,939	$2,671,939	Thermal Overload
Mechanicville R1 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays. Note 4	$452,349	$452,349	Fault Sensitivity
Mechanicville R6 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays. Note 4	$452,349	$452,349	Fault Sensitivity
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19. Note 4	$452,349	$452,349	Fault Sensitivity
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street #19. Note 4	$452,349	$452,349	Fault Sensitivity

Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2. Note 4	$452,349	$452,349	Fault Sensitivity
Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.	$5,000	$5,000	Fault Sensitivity
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1. Note 5	$-	$-	Fault Sensitivity

[Note 1] The Subject Upgrade may be eligible for Self-Performance Program. Shall the customer proceed with the associated self-performance upgrades, The Customer hereby waives any cost-sharing obligations or participation rights and assumes full responsibility for all costs incurred as part of the self-performance option where upgrades may be considered applicable under DG/ESS Encumbered Lines.

[Note 2] The Subject Generator shall incur costs classified as a Triggering/Sharing Project under Distribution/Sub-Transmission line Qualifying Upgrades. This qualifying upgrade may be classified as a DG/ESS Encumbered line, for which the Subject Generator shall be liable for either the entirety of the upgrade costs or a pro rata share thereof. For inquiries regarding potential cost implications, please contact your CEI case manager.

[Note 3] The cost estimate and scope are based on available system records and documented cable routing information. Final scope and cost shall be determined following field verification and detailed engineering review. Any discrepancies identified between documented cable routing and actual field conditions may result in revisions to the scope, quantities, and associated cost estimate.

[Note 4] This project is subject to cost sharing for major substation upgrades based on the DER queue for this station as of the revision date of this report. Please contact your CEI job owner to discuss potential cost impacts of cost sharing, which may include a lower initial cost or the potential for future refunds.

[Note 5] This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.

Additional details on the scope of each option can be found below:

Option 1: As Applied 5,000 kW

The Substation upgrades required to facilitate the proposed installation include the following:

- Installation of a local breaker backup scheme at Mechanicville substation for Line #1 and Line #6.
    - Mechanicville R1 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays.
    - Mechanicville R6 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays.
    - Installation of new lockout relays for breaker failure at Mechanicville substation.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of School Street R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1.
- Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.

The Distribution upgrades required to facilitate the proposed installation include the following:

- National Grid Protection and Control Package (34.5 kV Recloser, external power transformer, switches, poles and associated hardware). Reference ESB-756B Figure 5B for overview of expected National Grid and customer equipment sequence.
- Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line, between Riser Pole 53 and Lansingburg SW#188, to 500 MCM compact CU cable.

Option 2: Option 1 with Self-Performance Upgrades

The Substation upgrades required to facilitate the proposed installation include the following:

- Installation of a local breaker backup scheme at Mechanicville substation for Line #1 and Line #6.
    - Mechanicville R1 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #1 to School Street substation. Breaker failure logic will be included in the new microprocessor relays.
    - Mechanicville R6 will be upgraded to “A” and “B” package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays.
    - Installation of new lockout relays for breaker failure at Mechanicville substation.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical relays with “A” and “B” package step-distance schemes for protection of School Street R19 for North Troy – School Street #19.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2.
- Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1.
- Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.

The Distribution Self Performance Upgrades Required

- National Grid Protection and Control Package (34.5 kV Recloser, external power transformer, switches, poles and associated hardware). Reference ESB-756B Figure 5B for overview of expected National Grid and customer equipment sequence.

The Distribution upgrades required to facilitate the proposed installation include the following:

- Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line, between Riser Pole 53 and Lansingburg SW#188, to 500 MCM compact CU cable.

7.0 CONCEPTUAL COST ESTIMATE

The following items are a good faith estimate for the scope and work required to interconnect the project estimated under rates and schedules in effect at the time of this study in accordance with the most recent version of the New York State Standardized Interconnection Requirements ("SIR").

Option 1: As – Applied

Planning Grade Estimate

National Grid Work Segment	Planning Grade Cost Estimate not including Tax Liability				Capital portion for calculating tax liability	Tax Liability Applied to Capital	Customer Cost Total
Distribution Modifications	**Material**	**Labor**	**Overheads**	**Pre-Tax Total $**	**Capital Costs**	**Rate**	**Total $**
Distribution System Modifications						13.91%	
34.5kV National Grid Protection and Control Package (Recloser, Switches, Meter and Poles) Note 1	$ 121,840	$ 89,454	$ 110,246	$ 321,539	$ 285,457	$ 39,707	$ 361,246
Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line to 500 MCM compact CU cable. Note 2, 3	$ 242,853	$ 1,319,967	$ 815,427	$ 2,378,248	$ 2,111,370	$ 293,692	$ 2,671,939
Non-System Costs						13.91%	
Customer Documentation Review, Field Verification and Witness Testing	$ -	$ 12,000	$ 6,000	$ 18,000	$ -	$ -	$ 18,000
CEI Project Management	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
ROW Project Assessment	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
Substation Modifications						13.91%	
Mechanicville R1 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #1 to School St. substation. Breaker failure logic will be included in the new microprocessor relays. Note 4	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Mechanicville R6 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays. Note 4	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19. Note 4	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street #19. Note 4	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2. Note 4	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.	$ -	$ 5,000	$ -	$ 5,000	$ -	$ -	$ 5,000
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1. Note 5	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Distribution Summary	**$ 364,693**	**$ 1,428,420**	**$ 934,673**	**$ 2,727,787**	**$ 2,396,828**	**$333,399**	**$ 3,061,186**
Station Summary	**$ 334,607**	**$ 1,000,179**	**$ 683,353**	**$ 2,018,139**	**$ 1,787,233**	**$248,604**	**$ 2,266,743**
SubTotal	**$ 699,301**	**$ 2,428,599**	**$ 1,618,026**	**$ 4,745,926**	**$ 4,184,060**	**$582,003**	**$ 5,327,928**
Estimated Sales Tax (8%)							**$ 426,234**
Total							**$ 5,754,163**

[Note 1] The Subject Upgrade may be eligible for Self-Performance Program. Shall the customer proceed with the associated self-performance upgrades, The Customer hereby waives any cost-sharing obligations or participation rights and assumes full responsibility for all costs incurred as part of the self-performance option where upgrades may be considered applicable under DG/ESS Encumbered Lines.

[Note 2] The Subject Generator shall incur costs classified as a Triggering/Sharing Project under Distribution/Sub-Transmission line Qualifying Upgrades. This qualifying upgrade may be classified as a DG/ESS Encumbered line, for which the Subject Generator

shall be liable for either the entirety of the upgrade costs or a pro rata share thereof. For inquiries regarding potential cost implications, please contact your CEI case manager.

[Note 3] The cost estimate and scope are based on available system records and documented cable routing information. Final scope and cost shall be determined following field verification and detailed engineering review. Any discrepancies identified between documented cable routing and actual field conditions may result in revisions to the scope, quantities, and associated cost estimate.

[Note 4] This project is subject to cost sharing for major substation upgrades based on the DER queue for this station as of the revision date of this report. Please contact your CEI job owner to discuss potential cost impacts of cost sharing, which may include a lower initial cost or the potential for future refunds.

[Note 5] This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.

Option 2: Option 1 with Self Performance Upgrades

Planning Grade Estimate

National Grid Work Segment	Planning Grade Cost Estimate not including Tax Liability				Capital portion for calculating tax liability	Tax Liability Applied to Capital	Customer Cost Total
Distribution Modifications	**Material**	**Labor**	**Overheads**	**Pre-Tax Total $**	**Capital Costs**	**Rate**	**Total $**
Distribution System Modifications						13.91%	
34.5kV National Grid Protection and Control Package (Recloser, Switches, Meter and Poles) Note 1	$ 121,840	$ 89,454	$ 110,246	$ -	$ -	$ -	Self Build
Reconductor approximately 3,275 feet of UG cable on the North Troy - Lansingburg #1 line to 500 MCM compact CU cable. Note 2, 3	$ 242,853	$ 1,319,967	$ 815,427	$ 2,378,248	$ 2,111,370	$ 293,692	$ 2,671,939
Non-System Costs						13.91%	
Customer Documentation Review, Field Verification and Witness Testing	$ -	$ 12,000	$ 6,000	$ 18,000	$ -	$ -	$ 18,000
Self Performance Upgrade Design Review and Verificaiton	$ -	$ 15,376	$ 15,462	$ 30,837	$ -	$ -	$ 30,837
CEI Project Management	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
ROW Project Assessment	$ -	$ 3,500	$ 1,500	$ 5,000	$ -	$ -	$ 5,000
Substation Modifications						13.91%	
Mechanicville R1 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #1 to School St. substation. Breaker failure logic will be included in the new microprocessor relays. Note 4	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Mechanicville R6 will be upgraded to "A" and "B" package step-distance schemes for protection of Line #6 to Ballston substation. Breaker failure logic will be included in the new microprocessor relays. Note 4	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of North Troy R19 for North Troy – School Street #19. Note 4	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical relays with "A" and "B" package step-distance schemes for protection of School Street R19 for North Troy – School Street #19. Note 4	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Ballston TB#2. Note 4	$ 66,921	$ 199,036	$ 136,671	$ 402,628	$ 357,447	$ 49,721	$ 452,349
Settings changes/verification to the existing microprocessor-based SEL 351-6 relays for Battenkill TB#1 to enable load blocking.	$ -	$ 5,000	$ -	$ 5,000	$ -	$ -	$ 5,000
Replacement of the existing electromechanical directional phase overcurrent (67) relays with microprocessor-based SEL 351-6 relays for Hoosick TB#1. Note 5	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Distribution Summary	**$ 242,853**	**$1,354,342**	**$ 839,889**	**$ 2,437,085**	**$ 2,111,370**	**$293,692**	**$ 2,730,777**
Station Summary	**$ 334,607**	**$1,000,179**	**$ 683,353**	**$ 2,018,139**	**$ 1,787,233**	**$248,604**	**$ 2,266,743**
SubTotal	**$ 577,461**	**$2,354,521**	**$1,523,242**	**$ 4,455,224**	**$ 3,898,603**	**$542,296**	**$ 4,997,519**
Estimated Sales Tax (8%)							**$ 399,802**
Total							**$ 5,397,321**

[Note 1] The Subject Upgrade may be eligible for Self-Performance Program. Shall the customer proceed with the associated self-performance upgrades, The Customer hereby waives any cost-sharing obligations or participation rights and assumes full responsibility for all costs incurred as part of the self-performance option where upgrades may be considered applicable under DG/ESS Encumbered Lines.

[Note 2] The Subject Generator shall incur costs classified as a Triggering/Sharing Project under Distribution/Sub-Transmission line Qualifying Upgrades. This qualifying upgrade may be classified as a DG/ESS Encumbered line, for which the Subject Generator shall be liable for either the entirety of the upgrade costs or a pro rata share thereof. For inquiries regarding potential cost implications, please contact your CEI case manager.

[Note 3] The cost estimate and scope are based on available system records and documented cable routing information. Final scope and cost shall be determined following field verification and detailed engineering review. Any discrepancies identified between documented cable routing and actual field conditions may result in revisions to the scope, quantities, and associated cost estimate.

[Note 4] This project is subject to cost sharing for major substation upgrades based on the DER queue for this station as of the revision date of this report. Please contact your CEI job owner to discuss potential cost impacts of cost sharing, which may include a lower initial cost or the potential for future refunds.

[Note 5] This upgrade is included in the rebuild of the Hoosick substation as identified in Section 4.0. The customer will not be responsible for this upgrade; however, the customer may not connect until the rebuild of Hoosick substation is complete. National Grid will keep the applicant apprised of progress towards completion of these upgrades.

Notes:

1. These estimated costs are based upon the results of this study and are subject to change. All costs anticipated to be incurred by the Company are listed.
2. The Company will reconcile actual charges upon project completion and the Interconnection Customer will be responsible for all final charges, which may be higher or lower than estimated according to the SIR I.C step 11.
3. This estimate does not include the following:
   - additional interconnection study costs, or study rework
   - additional application fees,
   - applicable surcharges,
   - property taxes,
   - future operation and maintenance costs,
   - adverse field conditions such as weather and Interconnection Customer equipment obstructions,
   - extended construction hours to minimize outage time or Company's public duty to serve,
   - the cost of any temporary construction service, or
   - any required permits.
4. Cost adders estimated for overtime would be based on 1.5 and 2 times labor rates if required for work beyond normal business hours. Per Diems are also extra costs potentially incurred for overtime labor.
5. Sales tax of The Company's upgrades are estimated at 8% and shall be paid if the Interconnection Customer does not provide acceptable tax exemption documentation.

8.0 REVISION HISTORY

Version	Date	Description of Revision
1.0	12/18/2024	Delivery of original CESIR study
2.0	11/22/2022	CESIR updated to reflect a change in Customer POI configuration due to guying issues
3.0	11/20/2025	CESIR Revision following Capital Queue Change.
4.0	09/10/2026	CESIR Revision following Prior in queue project withdrawal.