For

Interconnection Customer: [Name of Customer]

Applicant: [Applicant Name]

[DER size] kW [Generation Type] Generator System

[[DER size] kW [Storage Type] Storage System]

[Site Address]

Interconnection to [Name of Utility here]

NY [Division]

[Region Location Region (as applicable for each Utility)]

[District Location District (as applicable for each Utility)]

[Substation Name] Substation

[voltage] kV Feeder [xxxxx]

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1.0 INTRODUCTION

This report presents the analysis results of the [Name of Utility here] ("[Name of Utility here]" or the "Company") interconnection study based on the proposed interconnection and design submittal from the Interconnection Customer in accordance with the Company [Company standards here]. 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 [put total estimate amount here].

[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, the Company reserves the right to disengage the facility.

Comment [HA1]: From Liz Grisaru - Consider whether standard IA is enough to address this point.

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 the requirements of the NYSSIR~~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	[Station Name]
Transformer Name (list multiple where normally tied to common bus)	[TBX, TRX]
Transformer Peak Load (kW)	[XXXX]
Contingency Condition Load, N-1 Criteria (kW) (as applicable)	[XXXX]
[Daytime, 24 hour] Light Load (kW)	[XXXX]
Generation: Total, Connected, Queued Ahead (kW)	[XXX], [XXX], [XXX]
Contingency Condition Generation: Total, Connected, Queued Ahead (kW)	[XXX], [XXX], [XXX]
Supply Voltage (kV)	[XXX]
Transformer Maximum Nameplate Rating (kVA)	[XXX]

Comment [NG2]: This addition is to handle where multiple banks are connected via a normally closed low side tie

Distribution Bus Voltage Regulation	[yes/no]
Transmission GFOV Status	[n/a, installed, not installed]
Bus Tie	[closed, open, none]
Number of Feeders Served from this Bus	[XXX]

Connecting Feeder/Line	**[XXXXX]**
Peak Load on feeder (kW)	[XXXXX]
[Daytime, 24 hour] Light Load on Feeder (kW)	[XXXXX]
Feeder Primary Voltage at POI (kV~~W~~)	[XXX]
Line Phasing at POI	[1, 2, 3]
Circuit d~~D~~istance from POI to substation	[XX] mile(s)
Distance from POI to nearest 3-phase, (if applicable)	[XX] mile(s) or [n/a]
Line Regulation	[Y/N]
Line/Source Grounding Configuration at POI	[effective, non-effective]
Other Generation: Total, Connected, Queued Ahead (kW)	[XXX], [XXX], [XXX]

System Fault Characteristics without Interconnection Customer DG at POI with System Upgrades described in Section 6	
Interconnection Customer POI Location	Pole, Street
I 3-phase (3LLL)	[xxxx] Amps
I Line to Ground (3I0)	[xxxx] Amps
Z1 (100 MVA base)	[R+jX] [PU~~, Ohms~~]
Z0 (100 MVA base)	[R+jX] [PU~~, Ohms~~]

4.0 INTERCONNECTION CUSTOMER SITE

The Interconnection Customer is proposing [a [new, existing] detail out the service connection here, i.e. primary, secondary] service connection [[with Account No. XXXXX] OR [connection to existing service at Account No.]].

[This location is presently served via [explain the existing EPS service to site here]].

The proposed generating system consists of:

- [Describe the level of detail as appropriate to the study]

5.0 SYSTEM IMPACT ANALYSIS

Category	Criteria	Limit	Result
Voltage	Overvoltage	< 105% (ANSI C84.1)	Pass/Fail

With the addition of the subject generator the maximum voltage as modeled on the Feeder is [X]% of nominal.			
Voltage	Undervoltage	> 95% (ANSI C84.1)	Pass/Fail
With the addition of the subject generator the minimum voltage as modeled on the Feeder is [X]% of nominal.			
Voltage	Substation Regulation for Reverse Power	<[XX]% minimum load criteria	Pass/Fail
The total generation on Feeders [XXXXX, XXXXX, XXXXX] is [X] MW. The total minimum load on these Feeders is [X] MW. Therefore, the generation to load ratio is [X]%.			
Voltage	Feeder Regulation for Reverse Power	<[XX]% Minimum load to generation ratio	Pass/Fail
The total generation downstream of voltage regulator [XXXX] is [X] MW. The minimum load downstream of the voltage regulator is [X] MW. Therefore, the generation to load ratio is [X]%.			
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.[1]	Pass/Fail

[1] ~~O&R is currently reviewing this line item and finalizing its position.~~

The greatest voltage fluctuation on the feeder occurs at [location] and substation bus occurs at [location]. The resulting fluctuation at the feeder location is [X]% due to the proposed generation and [X]% on the substation bus due to the aggregate generation. [Add additional details for voltage regulators as needed.]			
Voltage	Flicker	Screen H Flicker	Pass/Fail
The Pst for the location with the greatest voltage fluctuation is [x] and the emissions limit is [y].			
Equipment Ratings	Thermal (continuous current)	< XX% thermal limits	Pass/Fail
The subject generator's full output current is [X] A. The total full output current of all DER downstream of [Equipment test failed for] is [X] A. [Equipment test failed for] thermal capabilities are [X]A.			
Equipment Ratings	Withstand (fault current)	<90% withstand limits	Pass/Fail
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	Pass/Fail
The subject generator is a [X] MW [PV, Sync, etc.] generation system. [List what part of JU Islanding guidelines project failed for]			
Protection	Protective device coordination	Company Guidelines	Pass/Fail
[List what protective devices/Company requirements the subject project impacts]			
Protection	Fault Sensitivity	Rated capabilities of EPS equipment	Pass/Fail
[List which equipment is impacted by significant fault current contribution. Also list how these are outside company Guidelines.]			
Protection	Ground Fault Detection	Reduction of reach > x% (by Utility)	Pass/Fail
The Interconnection Customer has proposed a [grounding bank, zig-zag transformer, neutral reactor] with an impedance of [x][ohms, PU, %] and X/R ratio of [X]. To be within Company guidelines the [grounding bank, zig-zag transformer, neutral reactor] shall have an impedance of [X][ohms, PU, %]. The Interconnection Customer will contribute approximately [XX] A of 3I0 current to remote bolted line to ground faults and [XX] A to faults at the PCC.			
Protection	Overvoltage - Transmission System Fault	Company 3V0 criteria	Pass/Fail
The generation to load ratio on the serving distribution system has failed the Company's planning threshold in which transmission ground fault overvoltage become an electrical hazard due to the distribution source contribution. An evaluation of the existing EPS has been performed and it has been determined that protection mitigation methods are required.			

Protection	Overvoltage - Distribution System Fault	< xxx~~13825~~ % voltage rise	Pass/Fail
With subject generator interconnected the modeled voltage rise on the unfaulted phases of the system is [XXX%].			
Protection	Effective Grounding	[individual utility specifications]	Pass/Fail
With subject generator interconnected the modeled R0/X1 is [X] PU and the X0/X1 is [X] PU			
SCADA	Required EMS Visibility for Generation Sources	Monitoring & Control Requirements	~~Pass/Fail~~Yes/No
The [X] MW subject generator triggers the requirement for SCADA reporting to the Utility.			
Other			Fail
[List any unique or other interconnection problems here]			

Comment [NG3]: Change to a needed/not needed type status

6.0 MITIGATIONS FOR SYSTEM IMPACT ANALYSIS FAILURES

Detail below is 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. This includes any required EPS equipment upgrades. 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 – [name]	Option 2+ [name] (if applicable)	Failures Addressed
describe upgrade needed to alleviate condition	Cost, or n/a	Cost, or n/a	identify what analysis failure(s) this upgrade addresses
repeat as necessary	Cost, or n/a	Cost, or n/a	repeat as necessary

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

Option 1: [repeat for Option 2, if there are alternatives, including a supplemental time-series analysis study for voltage[2]]

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

- [Detail scope out for each part of the project segment. This detail should agree with the detail estimate, screen fails]

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

- [provide scoping here to describe the materials and scope associated with the scope of work]

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

[2] National Grid is currently evaluating this position.

with the most recent version of the New York State Standardized Interconnection Requirements ("SIR").

Planning Grade Estimate

[Utility inserts detailed cost estimate and eligibility to cost sharing here]

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,
   - overall project sales tax,
   - 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.

8.0 REVISION HISTORY

Version	Date	Description of Revision
1.0	06/6/2016xx/xx/xxxx	Initial document?