



Expedited Deliverability Study 2023-01 Draft Report

**A Report by the
New York Independent System Operator
Interconnection Projects**

January, 2024

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Executive Summary

The Expedited Deliverability Study (EDS) is a study conducted by the ISO or a third party consultant, in accordance with Sections 25.5.9.2.1 and 25.7.1.2 of Attachment S to the NYISO Open Access Transmission Tariff (OATT), to determine the extent to which an existing or proposed facility satisfies the NYISO Deliverability Interconnection Standard (DIS) at its requested CRIS level without the need for System Deliverability Upgrades.

As described in more detail in Section 1 of this Report, the purpose of the EDS 2023-01 is to identify deliverable MW under the DIS. The DIS is designed to ensure that the proposed project (at the requested CRIS MW level) is deliverable throughout the New York Capacity Region where the project is interconnected or will interconnect, and also that the Developer of the project restores the transfer capability of any Other Interfaces degraded by its interconnection, as determined under the DIS.

This report summarizes the results of the EDS 2023-01 to be presented to the Transmission Planning Advisory Subcommittee (TPAS) and the Operating Committee (OC).

Below is a summary of the projects that comprise the EDS 2023-01 (EDS projects) and their respective CRIS requests.

Table 1: Expedited Deliverability Study 2023-01 Projects

PROJECT	Point of Interconnection	Zone	Requested Summer CRIS MW	UNIT TYPE	CTO
Q590 Scipio Solar	Scipio 34.5kV Substation	C	18	Solar	NYSEG
Q592 Niagara Solar	Bennington 34.5kV Substation	B	20	Solar	NYSEG
Q913 SunEast Manchester Solar LLC	Station 127 (RGE) – Elbridge (NG) 115kV Line #7-983	C	20	Solar	NM-NG
Q930 Astoria BES to 27kV North Queens	North Queens Substation 27kV	J	15	ES	ConEd
Q932 Hatchery Solar	Caledonia - Golah 34.5 kV	B	20	Solar	NM-NG
Q935 Augustus Solar	Brothertown - Oriskany Falls 46kV	E	20	Solar	NYSEG
Q945 Niagara Grid I	Huntley to Praxair 115 kV Line #47	A	20	ES	NM-NG
Q1000 SunEast Flat Stone Solar LLC	Oneida - Rome 115kV	E	20	Solar	NM-NG
Q1039 Morris Solar	Battle Hill - Balmat 115kV	E	20	Solar	NM-NG
Q1047 Millers Grove Solar	Porter - Watkins 115kV	E	20	Solar	NM-NG
Q1051 Transit Solar	S.E Batavia - Golah 115kV	B	20	Solar	NM-NG
Q1092 Hampton Corners Solar	Station 128 – Station 7325 115 kV Line #923	B	20	Solar	RGE
Q1098 Kingbird Solar	Dunkirk to Silver Creek Lines 115 kV #141/142	A	20	Solar	NM-NG
Q1212 Roosevelt Solar LLC	Akwesasne Station 825 Substation 34.5kV	D	19.9	CSR (Solar+ ES)	NM-NG
Steel Wind	Existing unit	A	20	Wind	NM-NG
Erie Wind	Existing unit	A	15	Wind	NM-NG

EDS Study Conclusions

Rest of State (ROS) Capacity Regions:

Two EDS 2023-01 Projects located in the ROS Capacity Region are not deliverable at their requested CRIS levels. The remaining EDS 2023-01 Projects in the ROS Capacity Region are deliverable at their requested CRIS levels.

- The “No-Harm” Highway and the Other Interfaces total transfer limit evaluations indicate that all EDS 2023-01 projects pass the tests.
- The Highway Deliverability Study indicates that the EDS 2023-01 projects located in the ROS Capacity Region pass the ROS Capacity Deliverability test.
- The ROS Byway tests indicate that the following EDS 2023-01 projects located in the ROS Capacity Region are not deliverable:
 - Q1039 Morris Solar
 - Q1212 Roosevelt Solar LLC

New York City (NYC) Capacity Region

- The NYC deliverability Byway tests indicated that the following project in the NYC Capacity Region is not deliverable at its requested CRIS level:
 - Q930 Astoria BES to 27kV North Queens

1. Deliverability Study Methodology

This section describes the methodology of the EDS.

1.1 Background

The EDS is performed in accordance with the applicable rules and requirements set forth under Attachments S to the OATT.

The EDS is a study conducted by the ISO or a third party consultant to determine the extent to which an existing or proposed facility satisfies the NYISO Deliverability Interconnection Standard at its requested CRIS level without the identification of System Deliverability Upgrades. In order to become eligible to enter an EDS, a Developer must:

(1) elect to enter the EDS by providing notice to the ISO by the EDS start date;

(2) must have satisfied the data submission requirements set forth in Section 23.4.5.7.3.6 of the ISO Services Tariff required for Class Year Projects requesting CRIS in a Mitigated Capacity Zone and have such data submission deemed complete by the ISO by the EDS start date; and

(3) must be in service or have completed one of the following, as applicable: a Class Year Study for ERIS, a System Impact Study under the Small Generator Interconnection Procedures, or a utility interconnection study if the facility is not subject to the ISO interconnection procedures under Attachments X and Z. A project that satisfies the eligibility requirements for an EDS will become a member of the EDS if it satisfies the requirements of Section 25.5.9.2.2 of this Attachment S as it relates to completion of an Expedited Deliverability Study Agreement, submission of the required deposit, and submission of required technical data.

The main purpose of the EDS is to determine deliverable MW of EDS participants.

1.2 Overview of EDS Deliverability Methodology

As noted above, the EDS evaluates the deliverability of the proposed capacity associated with the EDS Projects. If the EDS determines that any of the proposed capacity is not fully deliverable, the study will determine deliverable MW.

Deliverability is broadly defined in the OATT as the ability to deliver the aggregate of NYCA capacity resources to the aggregate of the NYCA load under summer peak load conditions. This is implemented by evaluating the deliverability of proposed projects within each of the four Capacity Regions in New York State: Rest-of-State (ROS – Zones A through F), Lower Hudson Valley (LHV – Zones G, H, I), New York City

(NYC – Zone J), and Long Island (LI – Zone K).

The EDS 2023-01 uses the base case representation of the 2028 Summer peak system condition, with all CY23 participant projects requesting CRIS modeled in-service (Pre-EDS) and with all EDS 2023-01 projects (Post-EDS). All proposed EDS projects seeking CRIS will be evaluated on an aggregate EDS basis; that is, all EDS 2023-01 projects are evaluated as a group. Deliverability will be determined by simulating generation-to-generation shifts within that Capacity Region and between the adjacent Capacity Regions.

1.3 Tariff Sections Regarding the EDS Test Methodology

The Deliverability test methodology used to determine the deliverability of resources is contained in the NYISO OATT. The specific sections of the OATT defining the modeling of the system and the test methodology applied to the analysis include:

- NYISO OATT, Attachment S, 25.5.5.9.2
- NYISO OATT, Attachment S, 25.7

1.4 Transfer Limits Assessments of Required for Determination of Deliverability

The Pre-EDS base case is based on the 2028 Summer peak system condition, and further conditioned for deliverability study purposes. The base case conditioning steps are described in **Section 2.2**.

The transfer limit calculations are performed on the Pre and Post EDS cases using the linear transfer simulation function of the TARA software. Generation-to-generation shifts are simulated from combinations of zones within the Capacity Region from the “upstream” generation of an interface to the “downstream” generation of that interface. Simulation of power transfer within each Capacity Region determines the ability of the network to deliver capacity from generation in one (or more) surplus zone(s) to another deficient zone(s) within that Capacity Region.

The facilities monitored in the deliverability analyses are consistent with those in the Installed Reserve Margin analyses and the Comprehensive System Planning Process, and the defined Highway¹ and Byway facilities.

In the actual transfer limit assessment, all transmission facilities within the NYISO are monitored. Contingencies tested in the transfer limit assessment include all “emergency transfer criteria” contingencies defined by the applicable Northeast Power Coordinating Council (NPCC) Criteria and New York State Reliability Council (NYSRC) Reliability Rules.

¹ The list of Highway facilities is included as Appendix 1.

The concept of First Contingency Incremental Transfer Capability (FCITC) is used in the determination of deliverable capacity across Highway interfaces within the ROS Capacity Regions. The FCITC measures the amount of generation in the exporting zone that can be increased to load the interface to its transmission limit. It is the additional generation capacity that could be exported from a given zone(s) above the base case dispatch level.

All generators in the exporting zone(s) are uniformly increased (scaled) in proportion to their maximum power limits (P_{max}) while all generators in the importing zone(s) are decreased uniformly in proportion to the difference between their initial generation dispatch level (P_{gen}) and their minimum power limits (P_{min}). The FCITC and Highway transmission constraint(s) for the exporting zone(s) are noted for each export/import combination.

The net generation available² is compared to the FCITC Highway transmission constraint(s) for the exporting zone(s) transfer. If the net generation available upstream is greater than the calculated FCITC, that amount of generation above the FCITC is considered to be constrained or “bottled” capacity and may not be fully deliverable under all conditions.

If the net generation available upstream is less than the FCITC (that is, there is not sufficient available generation upstream to reach the transmission limit), the difference is an indication of the available “transfer capability” to accommodate additional generation resources in the upstream area.

² The “net generation available” in any defined exporting zone is the difference between the sum of the zonal generators’ P_{max} and the sum of the zonal generators’ actual MW output (P_{gen}).

2. Expedited Deliverability Study Case Modeling and Assumptions

This section of the report describes the assumptions and base case conditioning steps of the Pre-EDS case for the EDS.

2.1 Deliverability Study Assumption Matrix

The Deliverability Study baseline case setup utilizes results from extensive NYISO studies and reports. The sources for the parameters used to create Pre-EDS case are summarized in Table 2.

Table 2: Parameters Established in other NYISO Studies and Reports

#	Parameter	Description	Reference
1	Installed Capacity Requirement	NYCA Installed Capacity Requirement to achieve LOLE less than 0.1 days per year, which is based on the Installed Reserve Margin (IRM) identified by the New York State Reliability Council (NYSRC) and accepted by the Commission	2023 NYSRC IRM report (for the 2023-2024 Capability Year)
2	IRM Emergency Transfer Limits	Emergency transfer limits on ROS interfaces corresponding to IRM study	Transfer limit from the 2023 NYSRC IRM report used for the Total East Interface limit
3	Locational Capacity Requirements	The Locational Capacity Requirements (LCR) for the NYC (Zone J) and Long Island (Zone K) Capacity Regions and for the G-J Locality	2023 NYISO LCR report (for the 2023-2024 Capability Year; approved by Operating Committee on January 23, 2023)
Load model			
4	Peak Load Forecast	Study Capability Period peak demand forecast contained in the latest ISO's Load and Capacity Data report (i.e., "Gold Book")	2028 Summer peak load conditions from 2023 Gold Book Table I-3a
5	Impact of Load Forecast Uncertainty	The impact of IRM due to uncertainty relative to forecasting NYCA loads	2023 NYSRC IRM report
Generator model			
6	Existing CRIS generators, and all projects with Unforced Capacity Deliverability Rights	Existing Capacity Resource Interconnection Service ("CRIS") generators and transmission projects in-service on the date of the latest ISO's Load and Capacity Data report	2023 Gold Book Table III-2, IV-1, IV-2, IV-3, IV-4 and IV-5
7	Planned generation projects or Merchant Transmission Facilities	The project that has accepted either (a) Deliverable MW or (b) a System Deliverability Upgrade cost allocation and provided cash or posted required security pursuant to OATT Attachment S	
8	UCAP Derate Factor (UCDF)	Convert ICAP to Unforced Capacity (UCAP) based on derated generator capacity incorporating availability	2023 NYSRC IRM report and 2023 NYISO LCR report
9	Inactive CRIS	CRIS for units with inactive CRIS are modeled unless the CRIS rights will expire prior to the scheduled completion of the applicable Expedited Deliverability Study, or the CRIS is associated with a Retired facility that cannot transfer such rights prior to CRIS expiration.	Generator units deactivated before April 1, 2021 and CRIS that will expire prior to the scheduled completion of the EDS 2023-01 are not modeled as existing CRIS.
Transmission model			
10	Existing transmission facilities	Identified as existing in the ISO's Load and Capacity Data report	2023 Gold Book and updates consistent with CY23 MIS cases
11	Firm plans for changes to transmission facilities by TOs	Planned changes of facilities in the latest ISO's Load and Capacity Data report	
12	System Upgrade Facilities and System Deliverability Upgrades	Facilities associated with planned projects identified in (7) above, except that System Deliverability Upgrades will only be modeled if the construction is triggered	

#	Parameter	Description	Reference
Import/Export model			
13	External System Import/Export	NYCA scheduled imports from HQ/PJM/ISO-NE/IESO	NYISO Tariffs - OATT Section 25, Attachment S

2.2 Developing the Expedited Deliverability Study Base Case

The EDS cases are a five-year look-ahead of the New York Control Area (NYCA) system. The Pre-EDS case is based on the 2028 Summer peak system condition (which originated from the NYISO FERC Form No. 715 2028 Summer case (the FERC Case)) and is then further customized as part of the DIS to meet specific Attachment S requirements for the baseline system.

The case conditioning incorporates the parameters listed in Section 2.1:

- Load modeling: load forecast uncertainty is applied to the MW forecasted load. Details are included in Section 2.2.1.
- Generator modeling: only generators with CRIS rights listed in Table III-2 of the 2023 GB and proposed generators with CRIS that accepted their cost allocation in a prior Class Year are modeled in-service. Details are included in Section 2.2.2.
- Import/Export models: pursuant to Attachment S, Section 25.7.8.2, external imports and exports into NYCA are modeled in the cases. Details are included in Section 2.2.3.

The transmission system model in the Pre-EDS case is the same as that in the ATBA MIS study cases.

Load Modeling

The Load forecast used in the Pre-EDS is the coincident 2028 Summer firm peak load before reductions for emergency demand response programs in the RNA study. Load Forecast Uncertainty (LFU) is applied to each of the 4 (four) Capacity Regions:

ROS	10.62%
LHV	7.80%
NYC	5.60%
LI	8.20%

NYCA CRIS Modeling

The initial CRIS capability and available capacity resources are determined as follows:

- CRIS (MW) capability of existing units, as listed in the 2023 Gold Book, proposed generating

units with CRIS that accepted their cost allocation in a prior Class Year (Class Year 2019) and requested CRIS in Class Year 2023, are modeled in the EDS.

- CRIS Expiration: Units that are CRIS-inactive for more than three years lose their CRIS rights pursuant to Section 25.9.3.1 of Attachment S of the OATT. The CRIS for a facility is modeled in the EDS unless that CRIS will expire prior to the scheduled completion of the EDS, or the CRIS is associated with a Retired facility that cannot transfer such rights prior to CRIS expiration. For EDS, CRIS for CRIS-inactive units that have or are scheduled to lose CRIS during the EDS is thus not modeled in the Deliverability case.
 - CRIS updates include CRIS increases approved by the NYISO after the release of 2023 Gold Book.
- The Pmax data for each respective resource within the Pre-EDS base case and Post-EDS, power flow representation, is the CRIS value derated by the applicable equivalent forced outage rate below. This step incorporates the ICAP/UCAP translation of different generators resources and Capacity Regions.
- Derates for intermittent resources are applied to the specific type of generation resource:

• Small hydro	52.59%
• Large hydro	1.28%
• Land-based Wind	84.46%
• Landfill Gas	30.57%
• Solar	65.61%
• Offshore Wind	65.00%
- Derates for non-intermittent resources, including Energy Storage resources, are applied to the aggregate of all remaining generation (“Uniform Capacity”) within the Capacity Region. These are the ICAP/UCAP translation factors for each Capacity Region consistent with the applicable NYSRC Installed Reserve Margin study:

• Rest of State	3.32%
• Lower Hudson Valley (LHV)	10.77%
• New York City	6.78%
• Long Island	8.15%
- The “derated capacity,” or Pmax, is available to supply load and losses within each Capacity Region and adjacent Capacity Region(s). When power transfers are simulated, all generation in the exporting area is uniformly increased in proportion to its Pmax.

- Table 3 and Table 4 summarize the Resource Capacity and Capacity Derates for the Pre-EDS base case.

Table 3: Pre-EDS – Summary of Capacity by Resource Type

Zone	DC	Landfill Gas	Large Hydro	Offshore Wind	Small Hydro	Solar	Uniform	Wind	Pre-EDS Grand Total CRIS
A	0.0	18.4	2700.0	0.0	3.1	2145.0	967.9	744.0	6578.4
B	0.0	11.2	0.0	0.0	54.8	1065.0	716.8	200.1	2047.9
C	0.0	42.5	0.0	0.0	72.2	2436.2	6098.0	1553.2	10202.1
D	0.0	6.4	856.0	0.0	59.6	855.0	335.9	1434.0	3546.9
E	0.0	11.2	0.0	0.0	398.1	2013.9	296.6	952.2	3672.0
F	0.0	14.1	1165.1	0.0	313.4	1170.5	3037.7	0.0	5700.8
ROS	0.0	103.8	4721.1	0.0	901.2	9685.6	11452.9	4883.5	31748.1
G	0.0	0.0	0.0	0.0	74.0	173.2	5536.4	0.0	5783.6
H	0.0	0.0	0.0	0.0	0.0	0.0	1509.9	0.0	1509.9
I	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	40.0
LHV	0.0	0.0	0.0	0.0	74.0	173.2	7086.3	0.0	7333.5
J	2550.0	0.0	0.0	3616.0	0.0	0.0	11146.5	0.0	17312.5
K	0.0	0.0	0.0	2320.0	0.0	90.4	6744.3	0.0	9154.7
Grand Total	2550.0	103.8	4721.1	5936.0	975.2	9949.2	36430.0	4883.5	65548.9

Total CRIS Capacity represents the CRIS capacity basis for the EDS case.

Uniform Capacity is the CRIS capacity related to any facility that is not in a technology-specific group.

Table 4: Pre-EDS – Summary of Capacity Derates by Resource Type

Zone	DC	Landfill Gas	Large Hydro	Offshore Wind	Small Hydro	Solar	Uniform	Wind	Pre-EDS Grand Total UCAP
A	0.0	12.8	2665.4	0.0	1.5	737.7	935.8	115.6	4468.7
B	0.0	7.8	0.0	0.0	26.0	366.3	693.0	31.1	1124.1
C	0.0	29.5	0.0	0.0	34.2	837.8	5895.5	241.4	7038.5
D	0.0	4.4	845.0	0.0	28.3	294.0	324.7	222.8	1719.4
E	0.0	7.8	0.0	0.0	188.7	692.6	286.8	148.0	1323.8
F	0.0	9.8	1150.2	0.0	148.6	402.5	2936.8	0.0	4647.9
ROS	0.0	72.1	4660.7	0.0	427.3	3330.9	11072.7	758.9	20322.45
G	0.0	0.0	0.0	0.0	35.1	59.6	4940.1	0.0	5034.8
H	0.0	0.0	0.0	0.0	0.0	0.0	1347.3	0.0	1347.3
I	0.0	0.0	0.0	0.0	0.0	0.0	35.7	0.0	35.7
LHV	0.0	0.0	0.0	0.0	35.1	59.6	6323.1	0.0	6417.8
J	2550.0	0.0	0.0	1265.6	0.0	0.0	10390.8	0.0	14206.4
K	0.0	0.0	0.0	812.0	0.0	31.1	6194.6	0.0	7037.7
Grand Total	2550.0	72.1	4660.7	2077.6	462.3	3421.5	33981.2	758.9	47984.3

Each Derate column is the amount of capacity reduction based on the application of the derate factor to the represented capacity.

Uniform Capacity Derate uses the specific ICAP/UCAP translation factor for the Capacity Region; hydro and wind use the technology-specific derate factors.

Total All Capacity Derates is the sum of category derates by zone.

External System Imports Modeling

The initial generation and interchange schedules for the NYCA and the four New York Capacity Regions³ are determined as follows:

External Generation Source

1. Inter-Area external interchange schedules include the following grandfathered long-term firm power transactions for the case year (2028):
 - a. External CRIS Right: Quebec (via Chateauguay) to NY: 1190 MW
 - b. Existing Transmission Capacity for Native Load (ETCNL):
PJM to NYSEG: 1080 MW

³ Schedules representing short-term external ICAP are not modeled in this assessment; deliverability of external ICAP is determined during the annual process of setting import rights.

Generating capacity associated with firm export commitments are represented as follows:

- c. NYPA to AMP-Ohio, PA-RECs 183 MW
- d. NYPA to ISO-NE (Vermont) 84MW

2. External firm capacity import rights:

- a. ISO-NE to NY 0 MW
- b. Ontario (IESO) schedule 0 MW

3. Generator reactive (MVar) capabilities as determined by appropriate NYISO procedures, NPCC Criteria, and NERC Standards requirements.

4. Wheeling contracts:

- a. ROS to NYC via ABC/JK through PJM 0 MW
- b. ROS to NYC via Lake Success/Valley Stream through LIPA 287 MW
- c. ROS to LIPA via Northport Norwalk Cable through ISO-NE 0 MW

The total external generation resources including items 1 to 5, are summarized in Table 5.

Table 5: Summary of External Generation Resources (MW)

Capacity Regions External Regions	ROS Import (A-F)	LHV Import (G-I)	NYC Import (J)	LI Import (K)	NYCA
Ontario	0	0	0	0	0
HQ + EDR	1,190 ⁴	0	0	0	1,190
PJM	491	343	63	0	897 ⁵
ISO NE	-84	0	0	0	-84
Total External Generation Source	1598	0	0	0	2,003

ROS and LHV Direct MW Transfer

Actual base case interchange schedules between New York Capacity Regions are consistent with the Installed Reserve Margin and the Locational Capacity Requirements:

⁴ ROS import from HQ is the sum of External CRIS right 1,110 MW via Chateauguay and 80 MW External-to-ROS Deliverability Rights associated with the Cedar Rapids Transmission Project.

⁵ NYCA import from PJM is the sum of ETCNL 1,080 MW into NYCA and 183 MW NYPA export to AMP-Ohio and PA-RECs (1,080-183 = 897 MW).

- ROS (A-F) supply to New York City through LHV (G-I): 2,831 MW
- ROS (A-F) supply to Long Island through LHV (G-I): 492 MW
(combined with 287 MW wheeling contract)
- LHV (G-I) supply to New York City: 300 MW

Capacity Deliverability Rights (UDR)

The following transmission projects with CRIS are represented at their respective Unforced Capacity Deliverability Rights (UDR) capacity from the external Area into the respective NYISO Zone.

- Linden VFT to New York City 315 MW
- Cross-Sound Cable to Long Island 330 MW
- Neptune HVDC to Long Island 660 MW
- Hudson Transmission Project to New York City 0 MW
- Cedar Rapids Transmission Project 80 MW

The total import of each Capacity Region is summarized in Table 6. As derived from the external resources, Table 7 and Table 8 detail the NY-PJM scheduled flows.

Table 6: Summary of External Resources into Capacity Regions (MW)

From \ To	ROS Import (A-F)	LHV Import (G-I)	NYC Import (J)	LI Import (K)
Total External Source	1598	343	63	0
ROS direct MW transfer	0	608	2,832	779
LHV direct MW transfer	0	0	300	0
Total UDR	0	0	315	990

Table 7: PJM – New York Scheduled Interchange and Wheels

PJM – New York Scheduled Interchange and Wheels	MW
ETCNL (PJM to ROS)	1080
NYPA Exports (from ROS)	-183
ConEd /PSE&G Wheel:	
ROS to PJM via LHV (ROS to LHV, LHV to PJM via the J&K tie-lines)	0
PJM to NYC (via the ABC tie-lines)	0
Wheel for RECO Load:	

PJM – New York Scheduled Interchange and Wheels	MW
PJM to ROS and LHV (20% PJM to ROS, ROS to LHV, 80% PJM to LHV)	394
LHV to PJM (RECO Load)	-394
PJM to NY Net Interchange Schedule via the AC Tie-lines (1080 – 183)	897
PJM to A-I Net Interchange Schedule (1080 - 183)	897

Table 8: PJM – New York Scheduled Flows

PJM – New York Scheduled Flows	MW
PJM to ROS (A – F):	
46% of PJM to NY Net Interchange ($0.46 * 897$)	412
20% of RECO Load ($0.20 * 410$)	78
Total Scheduled Flow to ROS via the Zones A and C tie-lines	490
PJM to LHV (to Zone G):	
32% of PJM to NY Net Interchange via 5018 tie ($0.32 * 897$)	287
80% of RECO Load via the 5018 tie ($0.80 * 410$)	315
Total scheduled flow on the 5018 tie	602
J&K ties (0 MW Wheel and 15% of PJM to NY Net Interchange) ($0.15 * 897$)	134
RECO Load delivered from LHV	-394
Total Scheduled Flow to LHV via the Zone G tie-lines	342
PJM to NYC (to Zone J)	
ABC ties (0 MW Wheel and 7% of PJM to NY Net Interchange, B&C out) ($0.07 * 897$)	62

2.3 Balancing Generation and Load

This step balances the supply of resources and the demand of loads and losses. All CRIS generation within each Capacity Region is placed-in-service and scaled proportional to the ratio of its Pmax to the sum of the Pmax in the respective exporting or importing zone(s) or Capacity Region. The actual generation is proportionally scaled (up or down) to match the demand.⁶

Phase Angle Regulators (PARs) controlling external tie lines are set consistent with NYISO Service Tariff, Attachment M-1, NYISO-PJM Joint Operating Agreement, and applicable operating procedures and

⁶ Demands include load (including load forecast uncertainty), transmission losses, and external schedule commitments

agreements.⁷

The UDRs are converted into proxy generators while the amount of external resources remains the same.

2.4 Creating the EDS Case

All rules apply to the 2028 power flow representation of transmission system, and resource capacity additions in the Pre-EDS base case are also applicable to the Post-EDS base case for the Deliverability Study.

The requested CRIS and resulting UCAP of the EDS 2023-01 projects are included in Table 9.

Table 9: EDS 2023-01 Projects with UCAP

PROJECT	Point of Interconnection	Zone	Requested Summer CRIS MW	UCAP MW	UNIT TYPE	CTO
Q590 Scipio Solar	Scipio 34.5kV Substation	C	18	6.2	Solar	NYSEG
Q592 Niagara Solar	Bennington 34.5kV Substation	B	20	6.9	Solar	NYSEG
Q913 SunEast Manchester Solar LLC	Station 127 (RGE) – Elbridge (NG) 115kV Line #7-983	C	20	6.9	Solar	NM-NG
Q930 Astoria BES to 27kV North Queens	North Queens Substation 27kV	J	15	14.0	ES	ConEd
Q932 Hatchery Solar	Caledonia - Golah 34.5 kV	B	20	6.9	Solar	NM-NG
Q935 Augustus Solar	Brothertown - Oriskany Falls 46kV	E	20	6.9	Solar	NYSEG
Q945 Niagara Grid I	Huntley to Praxair 115 kV Line #47	A	20	19.3	ES	NM-NG
Q1000 SunEast Flat Stone Solar LLC	Oneida - Rome 115kV	E	20	6.9	Solar	NM-NG
Q1039 Morris Solar	Battle Hill - Balmat 115kV	E	20	6.9	Solar	NM-NG
Q1047 Millers Grove Solar	Porter - Watkins 115kV	E	20	6.9	Solar	NM-NG
Q1051 Transit Solar	S.E Batavia - Golah 115kV	B	20	6.9	Solar	NM-NG
Q1092 Hampton Corners Solar	Station 128 – Station 7325 115 kV Line #923	B	20	6.9	Solar	RGE
Q1098 Kingbird Solar	Dunkirk to Silver Creek Lines 115 kV #141/142	A	20	6.9	Solar	NM-NG
Q1212 Roosevelt Solar LLC	Akwesasne Station 825 Substation 34.5kV	D	19.9	8.1	CSR (Solar+ ES)	NM-NG
Steel Wind	Existing unit	A	20	3.1	Wind	NM-NG
Erie Wind	Existing unit	A	15	2.3	Wind	NM-NG

All EDS 2023-01 projects are added to the Pre-EDS case and evaluated in each Capacity Region. The level of CRIS requested is derated to calculate the Pmax (UCAP) by applying ICAP to UCAP translation factors (derates). The Levelized generation dispatch within each of the affected Capacity Regions are

⁷ The MW schedules of the PARs are included in Appendix B.

adjusted to reflect the additional capacity represented by the EDS 2023-01 projects.

In the Post-EDS case, the representational values for existing capacity resources (CRIS, ICAP, UCAP, and Pmax) are the same as for the Pre-EDS case with the EDS 2023-01 projects added.

Table 10 and Table 11 summarize the Resource Capacity and Capacity Derates for the Post-EDS base case.

Table 10: Post-EDS – Summary of Capacity by Resource Type (MW)

Zone	DC	Landfill Gas	Large Hydro	Offshore Wind	Small Hydro	Solar	Uniform	Wind	Post-EDS Grand Total CRIS
A	0.0	18.4	2700.0	0.0	3.1	2165.0	987.9	779.0	6653.4
B	0.0	11.2	0.0	0.0	54.8	1145.0	716.8	200.1	2127.9
C	0.0	42.5	0.0	0.0	72.2	2474.2	6098.0	1553.2	10240.1
D	0.0	6.4	856.0	0.0	59.6	874.9	335.9	1434.0	3566.8
E	0.0	11.2	0.0	0.0	398.1	2093.9	296.6	952.2	3752.0
F	0.0	14.1	1165.1	0.0	313.4	1170.5	3037.7	0.0	5700.8
ROS	0.0	103.8	4721.1	0.0	901.2	9923.5	11472.9	4918.5	32041.0
G	0.0	0.0	0.0	0.0	74.0	173.2	5536.4	0.0	5783.6
H	0.0	0.0	0.0	0.0	0.0	0.0	1509.9	0.0	1509.9
I	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	40.0
LHV	0.0	0.0	0.0	0.0	74.0	173.2	7086.3	0.0	7333.5
J	2550.0	0.0	0.0	3616.0	0.0	0.0	11161.5	0.0	17327.5
K	0.0	0.0	0.0	2320.0	0.0	90.4	6744.3	0.0	9154.7
Grand Total	2550.0	103.8	4721.1	5936.0	975.2	10187.1	36465.0	4918.5	65856.8

Table 11: Post-EDS – Summary of Capacity Derates by Resource Type (MW)

Zone	DC	Landfill Gas	Large Hydro	Offshore Wind	Small Hydro	Solar	Uniform	Wind	Post-EDS Grand Total UCAP
A	0.0	12.8	2665.4	0.0	1.5	744.6	955.1	121.0	4500.3
B	0.0	7.8	0.0	0.0	26.0	393.8	693.0	31.1	1151.6
C	0.0	29.5	0.0	0.0	34.2	850.9	5895.5	241.4	7051.5
D	0.0	4.4	845.0	0.0	28.3	302.1	324.7	222.8	1727.5
E	0.0	7.8	0.0	0.0	188.7	720.1	286.8	148.0	1351.3
F	0.0	9.8	1150.2	0.0	148.6	402.5	2936.8	0.0	4647.9
ROS	0.0	72.1	4660.7	0.0	427.3	3414.0	11092.0	764.3	20430.2
G	0.0	0.0	0.0	0.0	35.1	59.6	4940.1	0.0	5034.8
H	0.0	0.0	0.0	0.0	0.0	0.0	1347.3	0.0	1347.3
I	0.0	0.0	0.0	0.0	0.0	0.0	35.7	0.0	35.7
LHV	0.0	0.0	0.0	0.0	35.1	59.6	6323.1	0.0	6417.8
J	2550.0	0.0	0.0	1265.6	0.0	0.0	10404.8	0.0	14220.4
K	0.0	0.0	0.0	812.0	0.0	31.1	6194.6	0.0	7037.7
Grand Total	2550.0	72.1	4660.7	2077.6	462.3	3504.6	34014.5	764.3	48106.1

3. Expedited Deliverability Study 2023-01 Results

In this EDS 2023-01, the following Deliverability tests were performed to evaluate the impact to the transmission system from the EDS 2023-01 projects:

1. Highway Deliverability Test for ROS:
 - a. Highway Interfaces transfer capability “No Harm” assessment: results are summarized in Section 3.1.
 - b. “Regular” Capacity Deliverability within the ROS Capacity Region assessment: results are summarized in Section 3.2.
2. ROS Byway deliverability assessment: results are summarized in Section 3.3.
3. Other Interfaces transfer capability “No Harm” assessment: results are summarized in Section 3.4.
4. NYC Byway deliverability assessment: results are summarized in Section 3.5.

3.1 Highway Interfaces Transfer Capability “No Harm” Assessment

Transfer capability for the three ROS Highway Interfaces was evaluated from west-to-east and north-to-south by exporting from one (or more) zones in upstate NY to the remaining zone(s) within the ROS Capacity Region.

A summary of these interface transfer limits for the Pre and Post EDS cases are presented in Table 12.

Table 12: Highway Interfaces “No Harm” Study Results

EDS 2023-1 Highway Interfaces “No Harm” Test							
Interface	Exporting Zone	Importing Zone	2% of Pre-EDS Total Transfer Limit	Pre-EDS Total Transfer Limit	Post-EDS Total Transfer Limit	Impact (Post-EDS minus Pre-EDS)	Constraint
West Central	AB	CDEF	27.4	1372	1372.1	0.1	(1)
Dysinger East	A	BCDEF	46.7	2336.8	2332.7	-4.1	(2)
Moses South	D	ABCEF	87.0	4352	4338.2	-13.8	(3)
Volney-East	ABC	DEF	112.4	5624.9	5655.6	30.7	(4)
Total-East	ABCDE	F	178.5	8925.2	8930.2	5	(5)

Notes:

- (1) 146512 Q571POI 115 135861 MORTIMER 115 1 @STE 153 MVA L/O 135874 SWDN-113 115 146512 Q571POI 115 1
- (2) 147834 NIAG 345 345 148770 DYSINGER 345 1 @STE 1685 MVA L/O NIAG - DYSINGER ND2
- (3) 136764 COLTON 115 136771 FLAT RCK 115 1 @STE 154 MVA L/O 147835 ADRON B1 345 147836 ADRON B2 345 1
- (4) 130757 WATRC345 345 130755 OAKDL345 345 1 @STE 717 MVA L/O OAKDLE - CLARKCRNS 345 36
- (5) 137200 EDIC 345 148964 GORDON ROAD 345 1 @Norm 1331 MVA L/O Base Case

Discussions

1. For the West Central interface, the constraint Q571 POI – Mortimer 115 kV ckt 1 for the loss of SWDN-113 – Q571 POI 115 kV ckt 1, is identified in Pre-EDS 2023-01 and Post-EDS 2023-01 cases. Based on the results, there is a 0.1 MW increase on this interface transfer level in post-EDS 2023-1 case. Hence EDS 2023-01 projects pass the Highway Interfaces “no harm” test for Volney East Interface.
2. For the Dysinger East interface, the constraint Niagara – Dysinger 345 kV ckt 1 for the loss of Niagara – Dysinger ND2 line is identified in Pre-EDS 2023-01 and Post-EDS 2023-01 cases. Based on the results, the transfer limit on this interface decreased by 4.1 MW. Since this is within the de-minimus level (the lesser of 25 MW or 2% of the base transfer limit), EDS 2023-01 projects pass the Highway Interfaces “no harm” test for Dysinger East Interface.
3. For the Moses South interface, the constraint Colton - Flat Rock 115 kV ckt 1 for the loss of Adirondack B1 – Adirondack B2 345 kV line is identified in Pre-EDS 2023-01 and Post-EDS 2023-01 cases. Based on the results, the transfer limit on this interface decreased by 13.8 MW. Since this is within the de-minimus level (the lesser of 25 MW or 2% of the base transfer limit), EDS 2023-01 projects pass the Highway Interfaces “no harm” test for Moses South Interface.
4. For the Volney East interface, the constraint Watercure – Oakdale 345 kV ckt 1 for the loss of Oakdale – Clarks Corners 345 kV ckt 1 is identified in Pre-EDS 2023-01 and Post-EDS 2023-01 cases. Applicable system adjustments within NYISO’s normal operating procedures were applied when testing Volney East interface. Based on the results, the transfer limit on this interface increased by 30.7 MW. Hence, EDS 2023-01 projects pass the Highway Interfaces “no harm” test for Volney East Interface.
5. For the Total East interface, the constraint Edic – Gordon Rd 345 kV ckt 1 pre-contingency is identified in Pre-EDS 2023-01 and Post-EDS 2023-01 cases. Based on the results, there is a 5 MW increase on this interface transfer level in post-EDS 2023-1 case, hence EDS 2023-01 projects pass the Highway Interfaces “no harm” test for Total East Interface.

Conclusion – Highway Interface “No Harm” Results

When comparing the Post-EDS limit to the Pre-EDS limit, no transfer limit degradation larger than the de minimus level was observed. All EDS 2023-01 projects in ROS passed the Highway “No Harm” Test.

3.2 Highway Interface Deliverability within the ROS Capacity Region Assessment

The deliverability tests within the ROS Capacity Region were evaluated from west-to-east and north-to-south by exporting from one (or more) zones in upstate NY to the remaining zone(s) within the ROS Capacity Region, similar to the Highway Interface Capability assessment.

Additional Transmission Capacity or Bottled Generation Capacity was calculated by FCITC less the amount of net available capacity. A summary of these interface transfers for the Post-EDS and Pre-EDS cases are presented in Table 13.

Table 13: Highway Interface “Regular” Capacity Deliverability Study Results (MW)

EDS 2023-1 Highways Capacity Deliverability Test							
Capacity Zone	Interface	Exporting Zone(s)	Importing Zone(s)	Net Available Capacity (MW) A	FCITC (export limit) (MW) B	Constraint	Deliverable (+) Generation Capacity C=B-A
Pre EDS							
ROS	West Central	AB	CDEF	713	1980	(1)	1267
	Dysinger East	A	BCDEF	540	1795	(2)	1255
	Moses South	D	ABCEF	212	2492	(3)	2280
	Volney-East	ABC	DEF	1632	2748	(4)	1116
	Total-East	ABCDE	F	1932	5189	(5)	3257
Post EDS							
ROS	West Central	AB	CDEF	743	1952	(1)	1209
	Dysinger East	A	BCDEF	563	1777	(2)	1214
	Moses South	D	ABCEF	221	2479	(3)	2258
	Volney-East	ABC	DEF	1701	2697	(4)	996
	Total-East	ABCDE	F	2014	5166	(5)	3152

Net Available Capacity is the remaining CRIS available after consideration of base generator dispatch, capacity derates, and net capacity exports.

FCITC is the incremental transfer limit corresponding to the most limiting FCTTC in the Highway interface analysis calculated by the TARA software.

Additional Transmission Capacity or Bottled Generation Capacity is the available unused transfer capability (+) or the amount of CRIS that is bottled (-) by the interface transfer limit constraint. It is calculated by FCITC (B) less Net Available Capacity (A).

Notes:

- | | | | | | | | | | | | | | |
|-----|-----------------|-----|--------------------|-----|---|------|------|---------|---------------------|-----|-----------------|-----|---|
| (1) | 146512 Q571POI | 115 | 135861 MORTIMER | 115 | 1 | @STE | 153 | MVA L/O | 135874 SWDN-113 | 115 | 146512 Q571POI | 115 | 1 |
| (2) | 147834 NIAG 345 | 345 | 148770 DYSINGER | 345 | 1 | @STE | 1685 | MVA L/O | NIAG - DYSINGER ND2 | | | | |
| (3) | 136764 COLTON | 115 | 136771 FLAT RCK | 115 | 1 | @STE | 154 | MVA L/O | 147835 ADRON B1 | 345 | 147836 ADRON B2 | 345 | 1 |
| (4) | 130757 WATRC345 | 345 | 130755 OAKDL345 | 345 | 1 | @STE | 717 | MVA L/O | OAKDLE - CLARKCRNS | 345 | 36 | | |
| (5) | 137200 EDIC | 345 | 148964 GORDON ROAD | 345 | 1 | @Nom | 1331 | MVA L/O | Base Case | | | | |

Conclusion – Highway Interface “Regular” Capacity Deliverability within ROS Capacity Region

All EDS 2023-01 projects in the ROS Capacity Region passed the Capacity Deliverability test.

3.3 ROS Byway Deliverability Assessment

The ROS Byway assessment was performed for EDS 2023-01 projects. If the FCITC was greater than the net available capacity at the Point of Interconnection (POI), then the respective project passed the test. Each transfer was from all the generation at each POI into the Capacity Region, where the project is located. Table 14 shows the FCITC resulting from the ROS Byway test.

Table 14: ROS Byway Test Results

EDS 2023-1 ROS Byway Test (Post EDS)					
Capacity Zone	Projects	Net Available Capacity at POI (MW) (A)	Post-EDS FCITC (MW) (B)	Deliverable (+) or Bottled (-) Generation Capacity C=B-A	Constraint
ROS (A-F)	Q590 Scipio Solar	0	211.8	211.8	(1)
	Q592 Niagara Solar	0	5.8	5.8	(2)
	Q913 SunEast Manchester Solar LLC	0	83	83	(3)
	Q932 Hatchery Solar	0	4.9	4.9	(4)
	Q935 Augustus Solar	0	112.9	112.9	(5)
	Q945 Niagara Grid I	0	8.6	8.6	(2)
	Q1000 SunEast Flat Stone Solar LLC	0	46.7	46.7	(6)
	Q1039 Morris Solar	0	-188.4	-188.4	(7)
	Q1047 Millers Grove Solar	0	138	138	(8)
	Q1051 Transit Solar	0	146.6	146.6	(9)
	Q1092 Hampton Corners Solar	0	7.4	7.4	(2)
	Q1098 Kingbird Solar	0	6.2	6.2	(2)
	Q1212 Roosevelt Solar LLC	0	-812.3	-812.3	(7)
	Steel Wind	0	6.9	6.9	(2)
	Erie Wind	0	6.9	6.9	(2)

Notes:

(1)	130927 WRIGHT34	34.5	130882 WRIGH115	115	2	@STE	56	MVA L/O	130927 WRIGHT34	34.5	130882 WRIGH115	115	1
(2)	130836 N.WAV115	115	131018 LOUNS115	115	1	@STE	143	MVA L/O	ST03:L/O WATERCURE-OAKDALE	345	31		
(3)	145284 Q913_POI	115	136194 FARMGTN1	115	1	@STE	109	MVA L/O	136050 FARMNGTN TP2	115	145599 Q1236_POI	115	1
(4)	135858 GOLAH115	115	135978 GOLAH34	34.5	1	@STE	42.5	MVA L/O	135849 E.GOLAH	115	135858 GOLAH115	115	1
(5)	131675 BROTHR46	46.0	130778 BROTH115	115	1	@Norm	44	MVA L/O	Base Case				
(6)	136216 HTHSE HL	115	136218 MALLORY	115	1	@STE	108	MVA L/O	137211 TRNG STN	115	145289 Q1000_POI	115	1
(7)	136807 TAYLORVL	115	136758 BREMEN	115	1	@STE	132	MVA L/O	136807 TAYLORVL	115	146409 Q531_POI	115	1
(8)	145299 Q1047_POI	115	147905 ILION	115	1	@STE	145	MVA L/O	137235 PORTER 1	115	145299 Q1047_POI	115	1

Conclusion – ROS Byway Deliverability Assessment Results

The study results in Table 14 show that Q590 Scipio Solar, Q592 Niagara Solar, Q913 SunEast Manchester Solar LLC, Q932 Hatchery Solar, Q935 Augustus Solar, Q945 Niagara Grid I, Q1000 SunEast Flat Stone Solar LLC, Q1047 Millers Grove Solar, Q1051 Transit Solar projects, Q1092 Hampton Corners Solar, Q1098 Kingbird Solar, Steel Wind, and Erie Wind projects located in the ROS Capacity Region passed the ROS Byway tests and are therefore deliverable. Applicable system adjustments within NYISO’s normal operating procedures were applied when performing ROS byway tests.

Q1039 Morris Solar and Q1212 Roosevelt Solar LLC located in the ROS Capacity Region did not pass ROS byway tests. Due to the bottled capacity MW identified for Q1039 Morris Solar and Q1212 Roosevelt Solar being significantly higher than their requested CRIS and UCAP MW, there are no deliverable MW identified for Q1039 Morris Solar and Q1212 Roosevelt Solar projects.

3.4 Other Interfaces Transfer Capability “No Harm” Assessment

This is the “Other Interfaces No Harm” test to determine the impact of the EDS 2023-01 Projects on the transfer capability and is performed by evaluating UPNY-SENY interface.

- ROS to LHV

The analysis is summarized in Table 15.

Table 15: Other Interface Deliverability Study Results

EDS 2023- Other Interfaces “No Harm” Test								
Interface	Exporting Zone	Importing Zone	2% of Pre-EDS Total Transfer Limit	Pre-EDS Total Transfer Limit	Constraint	Post-EDS Total Transfer Limit	Constraint	Impact (Post-EDS minus Pre-EDS)
UPNY-SENY	ROS	LHV	173	8631	(1)	8636	(1)	5

Notes:

Discussion

For the UPNY SENY interface, the constraint Knickerbocker – Pleasant Valley 345 kV line for loss of Leeds – Van Wagner 345 kV line is identified in Pre-EDS 2023-01, and Post-EDS 2023-01 cases. Based on

the results, there is a 5 MW increase on this interface transfer level in post-EDS 2023-1 case, hence EDS 2023-01 projects pass the Other Interface “no harm” test for UPNY SENY Interface.

Conclusion – Other Interfaces Transfer Capability “No Harm” Results

All EDS 2023-01 projects passed the Other Interface No Harm Tests in the Post-EDS 2023-01 case.

3.5 NYC Byway Deliverability Assessment

The purpose of the NYC Byway Capacity Deliverability Assessment was to identify whether the NYC EDS 2023-1 project can deliver the power throughout the NYC Capacity Region.

Table 16 shows the FCITC resulting from the NYC Byway Capacity Deliverability Assessment. The NYC Byway transfer limit was evaluated by shifting CRIS generation from the sub-zone where the project is interconnected, to the rest of the CRIS generation in NYC Capacity Region.

Table 16: NYC Byway Test Results

EDS2023-1 Project	Exporting zone	Importing zone	Net Available Capacity (MW) a	Post EDS		Pre EDS			Constraint	Byway Test Conclusion
				FCITC (Export Limit) (MW) b	Bottled Generation Capacity (-) (c = b-a)	Net Available Capacity (MW) a1	FCITC (Export Limit) (MW) b1	Bottled Generation Capacity (-) (c1 = b1-a1)		
Q930 Astoria BES to 27kV North Queens	Case 14: Hell Gate, Astoria East, Corona, Jamaica	Rest of NYC	844	787	-56	842	796	-46	(1)	Bottled

Notes:

(1) 126644 FARRAGUT WES 345 126436 FGT_X10 138 1 @Norm 120 MVA L/O Base Case

Conclusion – NYC Byway Test Results

The results in Table 16 show that, for the tested sub-zone (Hell Gate, Astoria East, Corona and Jamaica) in NYC, bottled generation capacity was identified in both Pre-EDS case and Post-EDS case. Hence Q930 Astoria BES to 27kV North Queens did not pass NYC byway test. Since the tested subzone is bottled in the baseline case (pre-EDS case), there are no deliverable MW identified for Q930 Astoria BES to 27kV North Queens.

4. Conclusions

Q590 Scipio Solar, Q592 Niagara Solar, Q913 SunEast Manchester Solar LLC, Q932 Hatchery Solar LLC, Q935 Augustus Solar, Q945 Niagara Grid I, Q1000 SunEast Flat Stone Solar LLC, Q1047 Millers Grove Solar, Q1051 Transit Solar, Q1092 Hampton Corners Solar, Q1098 Kingbird Solar, Steel Wind, and Erie Wind from EDS 2023-01 projects passed the Highway “No Harm” test, the Highway Capacity Deliverability test, the ROS Byway test, and the Other Interfaces “No Harm” test. Therefore, these projects are determined to be fully deliverable at their requested CRIS MW levels.

Q1039 Morris Solar and Q1212 Roosevelt Solar LLC located in the ROS Capacity Region did not pass ROS byway tests and there are no deliverable MW identified.

Q930 Astoria BES to 27kV North Queens did not pass NYC byway test and there are no deliverable MW identified.

Table 17 summarizes the results.

Table 17: EDS 2023-01 Projects with Deliverable MW

PROJECT	Point of Interconnection	Zone	Requested Summer CRIS MW	Summer Deliverable CRIS MW	Winter Calculated Deliverable CRIS MW
Q590 Scipio Solar	Scipio 34.5kV Substation	C	18	18	18
Q592 Niagara Solar	Bennington 34.5kV Substation	B	20	20	20
Q913 SunEast Manchester Solar LLC	Station 127 (RGE) – Elbridge (NG) 115kV Line #7-983	C	20	20	20
Q930 Astoria BES to 27kV North Queens	North Queens Substation 27kV	J	15	0	0
Q932 Hatchery Solar	Caledonia - Golah 34.5 kV	B	20	20	20
Q935 Augustus Solar	Brothertown - Oriskany Falls 46kV	E	20	20	20
Q945 Niagara Grid I	Huntley to Praxair 115 kV Line #47	A	20	20	20
Q1000 SunEast Flat Stone Solar LLC	Oneida - Rome 115kV	E	20	20	20
Q1039 Morris Solar	Battle Hill - Balmat 115kV	E	20	0	0
Q1047 Millers Grove Solar	Porter - Watkins 115kV	E	20	20	20
Q1051 Transit Solar	S.E Batavia - Golah 115kV	B	20	20	20
Q1092 Hampton Corners Solar	Station 128 – Station 7325 115 kV Line #923	B	20	20	20
Q1098 Kingbird Solar	Dunkirk to Silver Creek Lines 115 kV #141/142	A	20	20	20
Q1212 Roosevelt Solar LLC	Akwesasne Station 825 Substation 34.5kV	D	19.9	0	0
Steel Wind	Existing unit	A	20	20	20
Erie Wind	Existing unit	A	15	15	15

Appendix A List of Rest-of-State and Lower Hudson Valley Highway Facilities

** From bus **		** To bus **		CKT
Bus Number	Bus Name	Bus Number	Bus Name	
130754	SOMERSET345 345.00	149000	ROCH 345 345.00	1
130754	SOMERSET345 345.00	149690	NEWROCH345 345.00	1
135452	LOCKPORT 115.00	135851	SHEL-113 115.00	1
135452	LOCKPORT 115.00	135865	NAKR-108 115.00	1
135452	LOCKPORT 115.00	135867	OAKFLDTP 115.00	1
135452	LOCKPORT 115.00	135872	SOUR-111 115.00	1
135452	LOCKPORT 115.00	135875	TELRDTP1 115.00	1
135452	LOCKPORT 115.00	135876	TELRDTP1 115.00	1
147834	NIAG 345 345.00	149000	ROCH 345 345.00	1
147834	NIAG 345 345.00	149690	NEWROCH345 345.00	1
135289	NILE115 115.00	149224	S178 34.500	1
135954	BURT 34.500	136016	PHILIPSR 34.500	1
130767	STOLE230 230.00	130770	SHLDN230 230.00	1
135260	ANDOVER1 115.00	131344	PALMT115 115.00	1
130767	STOLE230 230.00	130770	SHLDN230 230.00	1
135260	ANDOVER1 115.00	131344	PALMT115 115.00	1
135861	MORTIMER 115.00	135860	LAWLER-1 115.00	1
135861	MORTIMER 115.00	136213	LAWLER-2 115.00	1
149001	PANNELL3 345.00	136150	CLAY 345.00	1
149001	PANNELL3 345.00	136150	CLAY 345.00	2
149004	S121 B#2 115.00	131243	SLEIG115 115.00	1
149010	STA 162 115.00	131345	S.PER115 115.00	1
149025	PANNELLI 115.00	136197	FRMGTN-4 115.00	1
149026	QUAKER 115.00	131242	MACDN115 115.00	1
149074	STA127 34.500	136167	HOOKRD 115.00	3
149075	FARMNGTN 34.500	136194	FARMNGTN TP2115.00	2
149118	CLYDE 34 34.500	149005	CLYDE199 115.00	1
149122	C708 LD 34.500	130926	WOLCOT34 34.500	1
149141	FRMNGT2 34.500	136197	FRMGTN-4 115.00	1
149146	S168 12.000	136197	FRMGTN-4 115.00	3
130755	OAKDL345 345.00	130753	FRASR345 345.00	1
130819	KATEL115 115.00	130817	JENN 115 115.00	1

** From bus **		** To bus **		CKT
Bus Number	Bus Name	Bus Number	Bus Name	
130838	OAKDL115 115.00	130794	DELHI115 115.00	1
130863	WILET115 115.00	130796	E.NOR115 115.00	1
131036	CENTERVL 34.500	131842	AFTON CE 34.500	1
136150	CLAY 345.00	137200	EDIC 345.00	1
136150	CLAY 345.00	137200	EDIC 345.00	2
136156	VOLNEY 345.00	147833	MARCY T1 345.00	1
136216	LTHSE HL 115.00	136755	BLACK RV 115.00	1
136216	LTHSE HL 115.00	136768	E WTRTWN 115.00	1
136244	TEALL 115.00	137233	ONEIDA 115.00	1
136250	WHITMAN 115.00	137233	ONEIDA 115.00	1
136529	OMEGAWIR 34.500	137360	CAMDEN 34.500	1
137234	PETRBORO 115.00	137233	ONEIDA 115.00	1
147830	JA FITZP 345.00	137200	EDIC 345.00	1
136751	ALLENS F 115.00	136764	COLTON 115.00	1
136760	BRADY 115.00	136757	N.O-BRG 115.00	1
136767	DENNISON 115.00	136752	ANDRWS-4 115.00	1
136767	DENNISON 115.00	136782	LWRNCE-B 115.00	1
136855	GILPINT 46.000	147946	TUPR LK 46.000	1
147828	MASS 765 765.00	147827	MARCY765 765.00	1
147840	MOSES W 230.00	147835	ADRON B1 230.00	1
147840	MOSES W 230.00	147836	ADRON B2 230.00	1
130753	FRASR345 345.00	147831	GILB 345 345.00	1
130797	E.SPR115 115.00	137886	INGHAM-E 115.00	1
137200	EDIC 345.00	137452	N.SCOT77 345.00	1
137210	PORTER 2 230.00	137730	ROTRDM.2 230.00	1
137210	PORTER 2 230.00	137730	ROTRDM.2 230.00	2
137228	INGMS-CD 115.00	137886	INGHAM-E 115.00	1
147833	MARCY T1 345.00	137453	N.SCOT99 345.00	1
147852	PLAT T#3 115.00	107440	NE_PV20_NY 115.00	1
130750	COOPC345 345.00	148995	DOLSON 345.00	2
130750	COOPC345 345.00	146754	MDTN TAP 345.00	1
130862	W.WDB115 115.00	131560	W.WDBR69 69.000	1
200091	HOPATCONG 500.00	126250	RAMAPO 5 500.00	1
217063	WALDWICK 345.00	146752	SMAHWAH1 345.00	1
217063	WALDWICK 345.00	146753	SMAHWAH2 345.00	1
218300	LINDEN 230.00	126321	GOETHALS 230.00	1
217066	HUDSON1 345.00	126278	B3402 PAR1 345.00	1
217058	MARION 345.00	126278	B3402 PAR1 345.00	1

** From bus **		** To bus **		CKT
Bus Number	Bus Name	Bus Number	Bus Name	
217058	MARION 345.00	126279	C3402 PAR1 345.00	1
218529	LINDEN VFT	126265	LINDEN VFT	1
217178	Q206_INV 345.00	126304	W 49 ST 345.00	1
234603	HCOR138 138.00	146776	WNYA138 138.00	1
234603	HCOR138 138.00	146868	CORPORATEDR 138.00	1
234604	SMAH138 138.00	146752	SMAHWAH1 345.00	1
234604	SMAH138 138.00	146769	RAMP138 138.00	1
234608	HCOR69 69.000	146812	WNYA69 69.000	1
234609	MONTVALE 69.000	146777	BLUHILL 69.000	1
234609	MONTVALE 69.000	146777	BLUHILL 69.000	2
234609	MONTVALE 69.000	146850	L491T 69.000	1
234610	SMAH69 69.000	146790	HILB69 69.000	1
234611	HCOR34 34.500	146826	PEARL34 34.500	1
234614	CRESSKIL 69.000	146807	SPARKILL 69.000	1
128842	NEPTCONV 345.00	128847	NWBRG 345.00	1
130607	Q363INV 260.00	130606	Q363INVXFRM 138.00	1
125002	ROSETON 345.00	126281	E FISHKILL 345.00	1
125022	E FISH I 115.00	126281	E FISHKILL 345.00	1
125022	E FISH I 115.00	126281	E FISHKILL 345.00	2
125026	FISHKILL 115.00	131112	SYLVN115 115.00	1
126290	LADENTWN 345.00	126263	BUCHANAN S 345.00	1
146874	NORTHRCKLD 345.00	126263	BUCHANAN S 345.00	1
126294	PLTVLLEY 345.00	126281	E FISHKILL 345.00	1
126294	PLTVLLEY 345.00	126281	E FISHKILL 345.00	2
126294	PLTVLLEY 345.00	126291	MILLWOOD 345.00	1
126294	PLTVLLEY 345.00	126319	WOOD C 345.00	1
126294	PLTVLLEY 345.00	126306	WOOD B 345.00	1
126297	RAMAPO 345.00	126262	BUCHANAN N 345.00	1

Appendix B Summary of Phase Angle Regulator Schedules in Deliverability Power Flow Cases

External Tie PAR schedules

Circuit #	Controlled Line	Schedule (MW)
ISO-NE to NYCA		
7/K37	Blissville – Whitehall	25
138-1385	Norwalk Harbor – Northport	0
PV-20	Sandbar – Plattsburgh	0
PJM to NYCA		
5018	Hopatcong – Ramapo	602
B-3402	Hudson – Farragut	0
C-3403	Hudson – Farragut	0
A-2253	Linden – Goethals	63
J3410/69	Waldwick – South Mahwah	-1
K3411/70	Waldwick – South Mahwah	-135
IESO to NYCA		
L33P	St. Lawrence – Moses	0
L34P	St. Lawrence – Moses	0

PAR schedules between Capacity Regions (Inter-Capacity)

Circuit #	Controlled Line	Schedule (MW)
LHV to NYC		
99031	Dunwoodie N – Sherman Creek	85
99032	Dunwoodie N – Sherman Creek	85
99153	Dunwoodie S – E. 179th St.	150
M29	Sprain Brook – Sherman Creek	320
X28	Sprain Brook – Tremont	380
LHV to LI		

Circuit #	Controlled Line	Schedule (MW)
Y49	Sprain Brook – E. Garden City	-638 (128822)
NYC to LI		
903	Jamaica – Lake Success	200
901	Jamaica – Valley Stream	87

PAR schedules inside Capacity Regions (Intra-Capacity)

Circuit #	Controlled Line	Schedule (MW)
ROS		
	Inghams	120
NYC		
18001	Corona – Jamaica	20
18002	Corona – Jamaica	20
21191	Fresh Kills (345/138)	195
21192	Fresh Kills (345/138)	195
42231	Gowanus (345/138)	195
42232	Gowanus (345/138)	155
LI		
	Barrett – Freeport	115
	Pilgrim – Hauppauge	115

Appendix C CY23 list included in the Pre-EDS case

Projects Subject to Class Year SUF Study and the Class Year Deliverability Study

QUEUE POS.	PROJECT	ZONE	Point of Interconnection	Requested Summer ERIS MW	Requested Summer CRIS MW	UNIT TYPE	CTO
Q522	NYC Energy	J	Hudson Avenue East 138kV	79.9	79.9	ES	ConEd
Q560	Deer River Wind	E	Black River-Lighthouse Hill 115kV	100	100	W	NM-NG
Q680	Long Island Offshore Wind	K	Ruland Rd. 138kV	1200	N/A	DC	LIPA
Q686	Bull Run Solar Energy Center	D	Patnode - Duley 230 kV Line PND1, Ryan-Plattsburg 230 kV Line RYP2	125	125	S	NYPA
Q700	Robinson Grid	J	Gowanus Substation 345kV	300	300	ES	ConEd
Q716	Moraine Solar Energy Center	C	Moraine Substation 115kV	93.5	93.5	S	NYSEG
Q770	KCE NY 8a	G	South Cairo 13.2kV substation	20	20	ES	CHGE
Q774	Tracy Solar Energy Centre	E	Thousand Island - Lyme 115kV	119	119	S	NM-NG
Q777	White Creek Solar	B	Sta 82 - Sta 128 115kV	135	135	S	RG&E
Q785	Erie-Wyoming County Solar	C	High Sheldon - Stolle Road 230 kV	175	175	CSR	NYSEG
Q800	Rich Road Solar Energy Center	E	Moses - Adirondack 230 kV Line #2 (MA2)	240	240	CSR	NYPA
Q822	Whale Square Energy Storage 1	J	Narrows Barge Feeder 23162	58.2	58.2	ES	ConEd
Q825	Setauket Energy Storage	K	Port Jefferson - Terryville 69kV	65.3	65.3	ES	LIPA
Q834	Lyster Creek Energy Storage 2	J	Astoria West Substation 138kV	79	79	ES	ConEd
Q852	Niagara Dolomite Solar	A	Robinson Rd - Stolle Rd 230kV Line 65	180	180	S	NYSEG
Q857	Columbia Solar Energy Center	E	Edic - Fraser 345kV line	350	350	CSR	NYPA
Q858	Genesee Road Solar Energy Center	A	Stolle Rd - Five Mile Rd 345kV	250	250	S	NYSEG
Q859	Ridge View Solar Energy Center	A	Somerset - Dysinger 345kV	350	350	CSR	NYSEG
Q860	Rosalen Solar Energy Center	B	Clay - Pannell 345kV PC2	200	200	S	NYPA
Q866	North Country Wind	D	Moses - Willis 230 kV (MW1)	306.6	306.6	W	NYPA
Q869	Tabletop Solar	F	Clinton - Clinton Tap 115 kV	80	80	S	NM-NG
Q871	Verona Solar Energy Center I	C	Clay - Edic 345 kV	250	250	S	NYPA
Q878	Pirates Island	A	Huntley - Gardenville 115kV	100	100	ES	NM-NG
Q880	Brookside Solar	D	Chateaugay - Willis 115kV	100	100	S	NYSEG
Q882	Riverside Solar	E	Coffeen - Thousands 115 kV (Lyme tap)	100	100	S	NM-NG
Q912	Intrepid Storage 69	K	Barret - Oil City 34.5 kV line, Barret - Ocean 34.5 kV line	50	50	ES	LIPA
Q918	Intrepid Storage 138	K	Barrett - Valley Stream 138 kV Lines	250	250	ES	LIPA
Q950	Hemlock Ridge Solar	B	Lockport - Mortimer	200	200	S	NM-NG
Q951	Cayuga Grid, LLC	A	New Gardenville 115kV Substation	100	100	ES	NYSEG

QUEUE POS.	PROJECT	ZONE	Point of Interconnection	Requested Summer ERIS MW	Requested Summer CRIS MW	UNIT TYPE	CTO
Q952	Catskill Grid, LLC	G	North Catskill - Milan 115kV line	100	100	ES	CHGE
Q953	Sugar Maple Solar	E	North Carthage - Taylorville #8 and Black River - Taylorville #2 115kV	125	125	S	NM-NG
Q957	Holtsville Energy Storage	K	Holtsville - Patchogue 69kV	76.8	76.8	ES	LIPA
Q967	KCE NY 5	G	Ohioville 115 KV Substation	94	94	ES	CHGE
Q971	East Setauket Energy Storage	K	Holbrook - Miller Place 138kV	125	125	ES	LIPA
Q974	KCE NY 19	G	Sugarloaf - Wisner 69kV	79	79	ES	O&R
Q995	Alabama Solar Park LLC	B	Lockport - Batavia 115kV (Line#112)	130	130	S	NM-NG
Q1007	NYC Energy LLC - Phase 2	J	Hudson Ave 138 kV Substation	220.1	220.1	ES	ConEd
Q1009	Yellow Barn Solar	C	Milliken - Etna 115 kV line #975	160	160	S	NYSEG
Q1012	Suffolk County Storage II	K	Southold 69 kV Substation	76.8	76.8	ES	LIPA
Q1016	EI Steinway 1	J	Mott Haven - Rainey West 345kV, Mott Haven - Rainey East 345kV	1300	1300	OSW	ConEd
Q1017	EI Steinway 2	J	Mott Haven - Rainey West 345kV, Mott Haven - Rainey East 345kV	1300	1300	OSW	ConEd
Q1031	Mill Point Solar Project	E	Marcy - New Scotland 345kV Line #18	250	250	CSR	NM-NG
Q1036	Mainesburg ESS	C	Mainesburg - Watercure 345kV	130	130	ES	NYSEG
Q1038	ELP Rotterdam Solar	F	Maple Ave - Rotterdam 115kV Line #10	20	20	S	NM-NG
Q1042	Fort Edward Solar Farm (NY53)	F	Mohican - Battenkill 115kV Line #15	100	100	S	NM-NG
Q1068	Buchanan Point BESS	H	Buchanan North Substation 345 kV	300	300	ES	ConEd
Q1077	Rutland Center Solar	E	Middle Rd Substation 115 kV	110	110	S	NM-NG
Q1079	Somerset Solar	A	Kintigh 345 kV	125	125	S	NYSEG
Q1080	Mineral Basin Solar Power	C	Homer City- Mainesburg 345kV	401.6	401.6	S	NYSEG
Q1088	Harvest Hills Solar	C	Wright Avenue - Milliken 115 kV line	200	200	CSR	NYSEG
Q1089	Flat Creek Solar	F	Edicto Princetown 345kV Line 352	200	200	S	NYPA
Q1096	Allegany 2 Solar	C	Andover - Palmeto 115 kV, Line 932	120	100	CSR	NYSEG
Q1103	Thousand Island Solar	E	Coffeen Street - Thousand Island 115 KV	110	110	S	NM-NG
Q1115	Flat Creek Solar 2	F	Edicto Princetown 345kV Line 352	100	100	S	NYPA
Q1117	CLIES 70MW	K	Sills Road 138kV substation.	70	70	ES	LIPA
Q1122	East Fishkill	G	Shenandoah 115kV Substation	205	205	ES	CHGE
Q1123	KCE NY 29	K	Kings 138 kV substation	150	150	ES	LIPA
Q1130	Hoffman Falls Wind	C	Fenner - Cortland 115kV Line #3	72	72	W	NM-NG
Q1136	Honey Ridge Solar	E	Black River 115 kV Substation	125	125	CSR	NM-NG
Q1141	Twinleaf Solar	E	Black River-Taylorville 115kV	75	75	S	NM-NG
Q1148	Agricola Wind	C	Milliken - Wright Ave 115 kV line #973	97	97	W	NYSEG

QUEUE POS.	PROJECT	ZONE	Point of Interconnection	Requested Summer ERIS MW	Requested Summer CRIS MW	UNIT TYPE	CTO
Q1150	Moss Ridge Solar Project	E	Corning - Battle Hill 115 kV Line #4	60	60	S	NM-NG
Q1151	York Run Solar	A	Falconer - Warren 115 kV line #171	90	90	S	NM-NG
Q1159	Innisfree Storage	K	Port Jefferson - Mt. Sinai 69 kV transmission line	50	50	ES	LIPA
Q1174	NY48 - Diamond Solar Project	E	Porter - Valley 115kV line #4	60	60	S	NM-NG
Q1178	NY115 - Newport Solar Project	E	Porter - Deerfield 115 kV Line #9	130	130	S	NM-NG
Q1180	BPUS Generation Development	H	Union Valley - Croton Falls 115 kV line #991	116	116	ES	NYSEG
Q1182	NY128 - Foothills Solar	F	Mayfield-Northville 69kV	40	40	S	NM-NG
Q1183	NY125A - Fort Covington Solar	D	Moses-Willis 230kV (MW1)	250	250	S	NYPA
Q1184	NY125B - Two Rivers Solar	D	Moses - Willis 230 kV (MW2)	200	200	S	NYPA
Q1188	North Seneca Solar Project	C	Hooks Road - Elbridge 115kV	105	105	S	NM-NG
Q1194	Crane Brook Solar Project	C	State St - Clinton Corn 115kV Line	130	130	S	NM-NG
Q1199	El Steinway 1.1	J	Mott Haven - Rainey West 345kV, Mott Haven - Rainey East 345kV	200	200	OSW	ConEd
Q1236	Gravel Road Solar	C	Station 127 (Hook Rd) - Elbridge and Mortimer-Elbridge 115 kV lines	128	128	S	NM-NG
Q1254	Barrett Hempstead Battery Storage	K	Barrett to Long Beach 33 kV circuit No 1(33-224)	40	40	ES	LIPA
Q1255	Holtsville Brookhaven Battery Storage	K	Line 69-849 from West Yaphank to North Bellport	79.9	79.9	ES	LIPA
Q1256	Canal Southampton Battery Storage	K	Canal Substation 138kV	100	100	ES	LIPA
Q1257	Edwards Calverton Battery Storage	K	Edwards Avenue Substation at 138 kV	60	60	ES	LIPA
Q1288	CPNY-X	E and I	Fraser 345 kV and Rainey 345 kV substations	1300	1300	DC	NYSEG and ConEd

CRIS-Only Requests – Subject Only to Class Year Deliverability Study

QUEUE POS.	PROJECT	ZONE	Point of Interconnection	Requested Summer ERIS MW	Requested Summer CRIS MW	UNIT TYPE	CTO
Q959	El Oceanside 2	K	Barrett 138kV substation	N/A	1260	OSW	LIPA
Q1059	Jaton	C	South Oswego - Clay 115kV Line #4	N/A	16.2	S	NM-NG
Q1061	Teele	E	Alcoa - North Ogdensburg 115 kV	N/A	19.8	S	NM-NG
Q1113	CLIES 20 MW	K	Sills Road 138 kV substation	N/A	20	ES	LIPA
PAM-2020-77593	West Babylon Energy Storage	K	West Babylon 13 kV	N/A	9.9	ES	LIPA