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# Overview

Each of the New York Joint Utilities (JU) currently shares a Photovoltaic (PV) Hosting Capacity (HC) Map and Energy Storage System (ESS) HC Map. Each utility also shares an Electric Vehicle (EV) Load Serving Map. The data presented through the maps is for informational purposes only and is not meant to replace established interconnection processes.

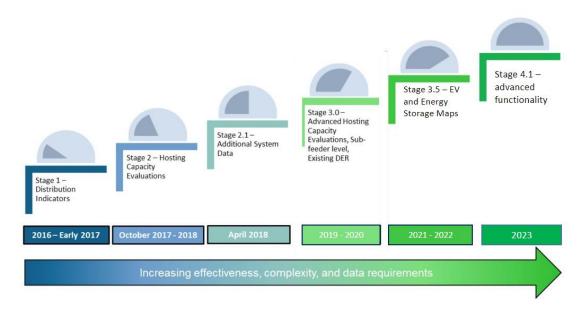
• Hosting Capacity is an estimate of the amount of Distributed Energy Resources (DER) that may be accommodated without adversely impacting power quality or reliability under current electric power system configurations and without requiring infrastructure upgrades.

The mapping products in support of HC for DER include:

- Hosting capacity for PV is the ability to handle distributed generation.
- Hosting capacity for energy storage is an estimate of the amount of charging and discharging that may be accommodated without adversely impacting power quality or reliability under current configurations and without requiring infrastructure upgrades. The EV Load Serving Maps share an estimate of the remaining circuit load

capacity to help guide electric vehicle charging developers to areas where direct current fast charging (DCFC) electric vehicle supply equipment (EVSE) may interconnect with minimal needs for system reinforcement.

The purpose of this document is to provide updated guidance related to hosting capacity analysis criteria and assumptions. As part of the HC roadmap, the JU have published the second iteration of the ESS HC roadmap. Guidance specific to this iteration of the ESS HC maps and more information about other recent advancements can be found in the section titled Continuous Progress.



Inputs to derive HC results associated with the analysis of power flows are listed below;

- Digital map of electrical system by circuit/asset derived from geographic information systems (GIS)
- Load representations for a peak load case and a daytime minimum load case represented by feeder circuits and by asset
- equipment rating files (electrical equipment rating data for utility assets)
- DER generation data by circuit (existing DER generation connected distribution and sub-transmission grids where appropriate)
- Only existing assets interconnected to a utility system are used in the HC analysis (future utility construction or potential/in-queue assets are not included in the analysis)

# **Basic Set of Assumptions**

I. Energy Storage HC Maps

The ESS Hosting Capacity data that is being provided is for information purposes only and is not intended to be a substitute for the established interconnection process.

The analyses presented in displays provide the nodal level energy storage hosting capacity for the distribution circuits evaluated. Hosting capacity for energy storage is an estimate of the amount of charging and discharging that may be accommodated without adversely impacting power quality or reliability under current configurations and without requiring infrastructure upgrades.

The nodes on the HC maps are color-coded by the minimum HC value at that node and labeled as Section Hosting Capacity as shown in the chart below. This HC value is indicative of the violation criteria that is most constrained at that specific location. The violation criteria considered in the analysis include: Primary Over/Under Voltage, Primary Voltage Deviation, Primary Regulator Deviation, Thermal for Charging/Discharging, and Flicker for Discharging.

Please note that this analysis was conducted under current configurations, and prior to infrastructure upgrades, such as installing a recloser or remote terminal unit at the point of common coupling, replacing a voltage regulating device or controller to allow for reverse flow, substation-related upgrades including 3V0 protection, or other protection-related upgrades.

For the Stage 2 ESS HC displays, each circuit's hosting capacity is determined by evaluating the potential power system criteria violations because of charging and discharging systems. The analyses represent the nodal level hosting capacity, and do not account for all factors that could impact interconnection costs. Please note that issues related to circuit protection require further analysis to make a definitive determination of hosting capacity. Additional displays with tabulated data have been included in the form of data pop-ups.

### II. EV Load Service Capacity

The analysis provides the remaining available load capacity for the distribution circuits evaluated. The maps are an estimate of the remaining circuit load capacity to help guide electric vehicle charging developers to areas where direct current fast charging (DCFC) electric vehicle supply equipment (EVSE) may interconnect. The analysis was conducted under current configurations prior to any planned infrastructure upgrades, such as reconductoring.

The maps represent the remaining feeder capacity only and do not account for all factors. The maps account for the most limited rating at the feeder head and not for any smaller equipment downstream of the feeder head (i.e., step-down transformers or smaller conductors). The data is provided for informational purposes only and is not intended to be a substitute for the established customer application process.

### III. Solar PV HC

The analyses presented in these displays provide the nodal level hosting capacity for the distribution circuits evaluated. Please note that this analysis was conducted under current configurations, and prior to infrastructure upgrades such as: installing a recloser or remote terminal unit at the point of common coupling; replacing a voltage regulating device or controller to allow for reverse power flow; substation-related upgrades including ground fault (or zero-sequence) overvoltage ("3V0") protection; or other protection-related upgrades.

For the Stage 4.1 displays, each circuit's hosting capacity is determined by evaluating the potential power system criteria violations as a result of large solar PV systems with an AC nameplate rating starting at and gradually increasing from 300 kW interconnecting to three-phase distribution lines. The analyses represent the sub-feeder level hosting capacity only and do not account for all factors that could impact interconnection costs (including substation constraints). The Stage 4.1 hosting capacity maps are displayed at the sub-feeder level, according to the heat mapping breakpoints noted in the map legends. Stage 4.1 hosting capacity efforts also incorporates the impacts of installed DER into the analysis.

Please note that issues related to circuit protection require further analysis to make a definitive determination of hosting capacity. This data is being provided for informational purposes only and is not intended to be a substitute for the established interconnection application process. Additional displays with tabulated data have been included in the form of data pop-up displays to indicate the hosting capacity value for each violation criteria, at a specific node. For example, anti-islanding concerns may limit the overall circuit hosting capacity. For this reason, anti-islanding criteria were calculated as part of the analysis, but not included in the heat mapping criteria. This was intended to avoid potentially conveying misleading information about the circuit's sub-feeder level hosting capacity, as anti-islanding solutions are typically considered a significant interconnection upgrade cost. The estimated hosting capacity value corresponding to the anti-islanding criteria has been included in the data pop-up displays as a separate item for this reason.

Stage 4.1 heat mapping is based on the minimum hosting capacity value at a node along the feeder. The minimum hosting capacity is labeled as Section Hosting Capacity and is the minimum value of the following five violation criteria: Flicker, Primary Over-Voltage, Primary Voltage Deviation, Regulator Deviation, and Thermal from Generation.

Existing installed solar PV DER is considered in this stage of the hosting capacity analysis. However, as additional DER systems will continue to be installed after this

hosting capacity analysis has been performed and queued DER systems are not considered in the hosting capacity analysis, the data popups are intended to provide additional context to the displays. For these reasons, the installed and queued DER values as well as the DER installed since the last hosting capacity refresh are included in the data pop-ups and will be updated monthly.

# **Reference Materials**

### I. Relevant Links

- <u>Previous stakeholder engagement presentation slides and information on</u> <u>upcoming engagement sessions</u>
- <u>Central Hudson Hosting Capacity Maps</u> PV and Energy Storage Maps
- <u>Central Hudson EV Load Service Capacity Map</u>
- <u>Central Hudson System Data Portal</u> Hourly Load Data and Forecasts
- <u>Con Edison Data Portal</u>
- National Grid Data Portal
- NYSEG RGE Data
  - o <u>PV Map</u>
  - o <u>ESS Map</u>
  - o <u>EV Map</u>
- O&R Data Portal

### II. Contact Information

For additional information, please email info@jointutilitiesofny.org, or reach out to the utility-specific contacts below.

- Central Hudson: Distributed Generation Group, dg@cenhud.com, 845-486-5215
- Con Edison: dgexpert@coned.com
- National Grid: IMAP@nationalgrid.com, use subject line NY System Data Portal
- NYSEG RG&E: distributedgenerationadmin@avangrid.com
- Orange and Rockland: ORHostingCapacityMap@ORU.com

# **Pop-Up Definitions**

### I. EV Load Serving Capacity Definitions

**EV Load Capacity Headroom/Remaining Capacity**: The remaining feeder capacity at peak loading for the circuit is based on 100% of the minimum of circuit's feeder head or substation design rating, depending on whichever is the most limiting.

**Substation Rating (MW):** The substation/transformer's top thermal rating under normal operating conditions in MW.

**Feeder Rating (MW):** The circuit design rating used to calculate the remaining circuit capacity presented in the load capacity map in MW.

**Feeder Voltage (kV):** The nominal operating voltage of the feeder. This is the voltage at the feeder head, directly outside of the substation.

2022 Peak Load (MW): The prior year's peak load recorded at each feeder in MW.

### II. Hosting Capacity Definitions

**Substation/Bank Name**: The name of the substation/bank that the selected feeder is connected to, a unique utility-provided name for every substation within the utility's service territory

Feeder: The ID / number that the utility uses to identify the selected feeder

**Local Maximum Hosting Capacity (MW)**: the maximum hosting capacity that can be accommodated within the selected grouping

**Local Minimum Hosting Capacity (MW)**: the minimum hosting capacity that can be accommodated within the selected grouping

**Planned Upgrade's Location:** location of utility plans for scheduled service or capacity, upgrades at the substation

**Anticipated Impact on Hosting Capacity (MW)**: the amount of additional hosting capacity (MW) that will be added to the substation as a result of the utility upgrade

Upgrade In-Service Date: anticipated in-service date of upgrade (YYYYMMDD)

**Known or Estimated Costs of Capacity Upgrade**: Estimated cost of the utility upgrade or known cost depending on the status of the utility upgrade project

**NYISO Load Zone**: Load zones are comprised of sub-zones. The sub-zones are sub territories of the NYISO load zones which are geographical areas located within the New York Control Area that are bound by one or more of the fourteen New York State transmission interface.

**Estimated 3V0 Protection Threshold (MW)**: For stations without substation backfeed protection installed or pending, this is the estimated amount of distributed generation that could be interconnected before 3V0 protection is required. A value of zero means that 3V0

has been triggered by projects in the queue but has not reached a planned construction stage.

**Substation Backfeed Protection**: This value represents the status of DG protection at the substation.

**Yes** - An interconnection study and the required upgrades (i.e.: 3V0) have been completed or the station is constructed such that 3V0 or additional protection upgrades are not needed

**Pending** - An interconnection study has been completed and the required upgrades are scheduled for construction

**No** – Covers a range of conditions. In some cases it means 3v0 protection is needed but is not installed nor pending install.

**N/A** – Substation Backfeed Protection is not applicable (i.e. substation transformer configuration is wye-grounded, wye-grounded)

**Local Voltage (kV):** The nominal voltage of the selected grouping. Note that there may be transformers along the feeder that step-up or step-down the voltage in certain areas so the local voltage may not be representative of the nominal voltage at the substation

**Feeder DG Connected (MW):** The aggregated Distributed Generation (DG) that is currently interconnected on the selected feeder

**Feeder DG Connected Since Last HCA Refresh (MW)**: The aggregated DG that has been interconnected on the selected feeder since the listed Hosting Capacity Analysis (HCA) refresh date

**Feeder DG in Queue (MW):** The aggregated DG that is currently in the interconnection process on the selected feeder

Feeder DG Connected/In Queue Refresh Date: Date of last DG data refresh

**Substation / Bank Queued DG (MW):** The aggregated DG that is currently in the interconnection process at the selected substation/ bank level

**Total Substation/Bank Installed and Queued DG (MW):** The total installed and queued DG capacity at the selected substation / bank level

**Substation / Bank DG Connected since last HCA refresh (MW):** The aggregated DG that has been connected at the selected substation / bank level since the listed HCA refresh date

**Substation/Bank Peak (MW):** The most recent planning cycle's substation/bank peak loading.

**HCA Refresh Date:** the date the most recent hosting capacity analysis was conducted, and results were posted to the portal

**Substation/Bank Thermal Capacity (MW):** The substation / transformer's thermal rating under normal operating conditions

**Anti-Islanding Hosting Capacity Limit (MW):** Feeder hosting capacity limit according to the anti-islanding criteria used (67% of the light load recorded at the feeder head)

**Substation Refresh Date:** the date the most recent substation data were posted to the portal

Operating Company: operating company for circuit

**Notes:** Pop up notes section on hosting capacity maps to alert developers to unique situations and potentially significant upgrades

### III. Nodal Constraints Definitions (Criteria Violations)

Base Voltage (kV): The voltage of the line segment in kilo-volts on maps

Primary ID: The unique identifier for that line segment on maps

Section Voltage (kV): The voltage of the line segment in kilo-volts on maps

Section ID: The unique identifier for that line segment on maps

**Primary Hosting Capacity (MW):** The Hosting Capacity of the selected line segment. (Minimum of all criteria violations below).

**Primary Overvoltage (MW):** The amount of generation that can be interconnected before the overvoltage limit is reached.

**Primary Undervoltage (MW):** The amount of load that can be interconnected before the undervoltage limit is reached.

**Primary Voltage Deviation (MW):** The amount of generation/load that can be interconnected before the voltage deviation limit is reached.

**Primary Voltage Regulator Deviation (MW):** The amount of generation/load that can be interconnected before voltage regulation equipment can wear out due to excessive operation.

**Thermal from Generation (MW):** The amount of generation that can be interconnected before thermal violations occur on the feeder

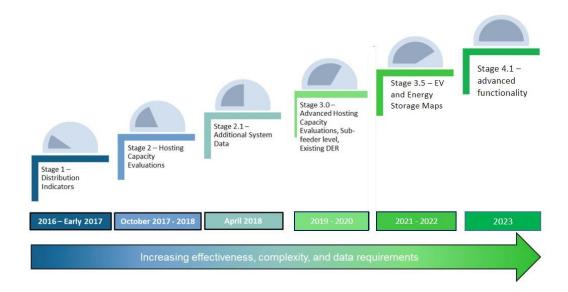
**Thermal from Load (MW):** The amount of load that can be interconnected before thermal violations occur on the feeder

**Anti-Islanding (MW):** The amount of generation that can be interconnected before islanding is a concern for operations safety.

**Flicker Value (MW):** The amount of generation that can be interconnected before flicker can cause adverse impacts on a feeder.

# **Continuous Progress**

Over the past six years, the Joint Utilities have consistently worked with stakeholders to identify which hosting capacity features are most important to them and deliver progress on high priority enhancements. The JU is currently on stage 4.1 of the HC roadmap, shown below.



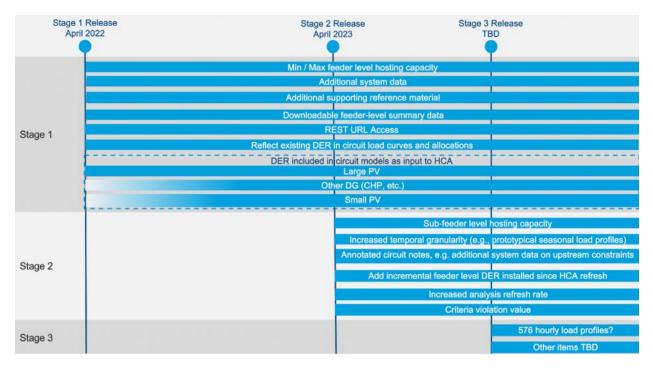
Since the start of 2022, the JU has provided:

- Iterations 1 & 2 of the Storage HC Maps
- Nodal constraints (criteria violations) on PV and Storage HC maps
- Cost Share Order 2.0 Items on PV and Storage HC Maps

- Sub-transmission lines on the Solar PV HC Maps
- Updated Rest URL access
- Six-month Update for Circuits that increase in DG > 500kW for PV maps
- Updated DG connected since last HCA refresh

### I. Storage HC Maps

The following graphic provides an overview of progress made towards enhancing the functionality of the Storage HC Maps.



Stage 1 of Storage Hosting Capacity Maps shows:

- Feeder-Level Hosting Capacity (min/max)
- Additional System Data
- Downloadable Feeder-Level Summary Data
- Existing DER in Circuit Load Curves and Allocations
- Sub-transmission circuits available to host distributed generation
- Separate Displays for Load and Generation HC
- Color-coded Breakpoints
- Pop-ups with additional information

Stage 2 of the Hosting Capacity Maps additionally shows:

- Sub Feeder Level HC
- Nodal Constraints (Criteria Violations) on PV and Storage HC Maps
- Six-month Update for Circuits that Increase in DG > 500kW

• DG Connected Since Last HCA Refresh

In stage 1 and 2, sub-feeder level HC is displayed by color range for daytime minimum load and for peak. Consistent with the PV map, color is shown as the minimum value. In stage 2, the sub-feeder level pop-up provides a more detailed breakdown of criteria violations.

For the Storage HC maps, the Joint Utilities use two input load files tied to daytime minimum load and peak load. From the storage run in DRIVE, the maps share an output file providing charging constraints (from peak load analysis) and discharging constraints (from daytime load minimum load analysis).

The Storage HC Maps have separate displays for load (charging) and generation (discharging) HC. Color is based on the minimum of the violation criteria.



# **Breakpoints and Color**

Breakpoints	Discharging	Charging	
> 5.00 MW			Breakpoints
3.00 – 4.99 MW			are the same as the
2.00 - 2.99 MW			PV maps.
1.50 – 1.99 MW			
1.00 – 1.49 MW			
0.50 - 0.99 MW			
0.30 - 0.49 MW			
0.00 – 0.29 MW			
ESRI Base Layer			

### II. Nodal Constraints

In April 2023, the JU shared nodal constraints on the PV and Storage Hosting Capacity Maps.

- Base Voltage (kVLL)
- Section HC (MW)
- Bank Rating (MW) (most utilities provide)
- Feeder Rating (MVA)
  (most utilities provide)
  Flicker Value (MW)
- Primary Over/Under-

Voltage Deviation (MW)

• Primary Voltage Deviation (MW)

- Regulator Deviation (MW)
- Thermal from Generation/Load (MW)
- Anti-Islanding (MW)

### III. Rest URL Access

The Joint Utilities of New York also provides REST API via a REST URL for the PV and Storage Hosting Capacity Maps. This enables stakeholders to overlay hosting capacity data and complete queries and filtering within their own GIS platforms. The REST URL approach provides benefits such as:

- Provides similar level of access to other utilities with REST API access
- Does not require significant changes from a resources and data access perspective
- Addresses utility concerns with security, accuracy and downloadability
- Allows for a potentially significant value add to stakeholders when combined with the downloadable .csv attribute table summary files

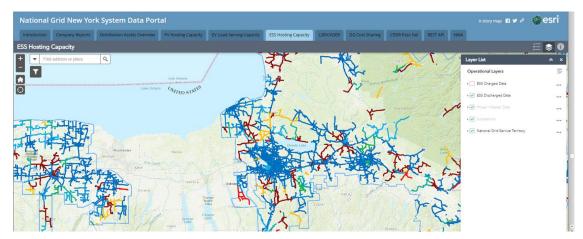
### IV. Cost Share Items

In accordance with the Cost Share 2.0 Order, the hosting capacity maps now also share the following information.

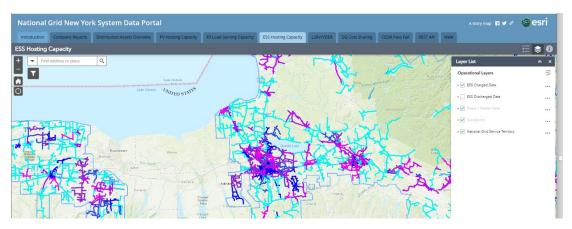
- Substation: A planned upgrade's location
- Hosting Capacity Upgrade: Anticipated impact of project in terms of capacity availability
- Anticipated Service Date: The in-service date of the upgrade
- Estimated Cost: Known or estimated costs of that capacity

# **Visual Representations**

### I. Layer 1: Discharging

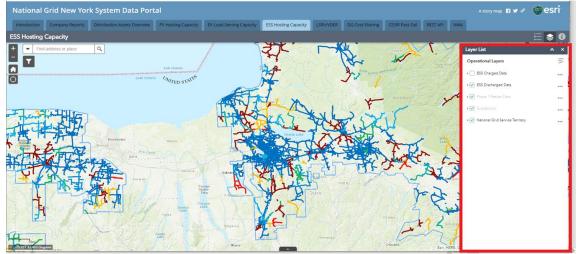


### II. Layer 2: Charging

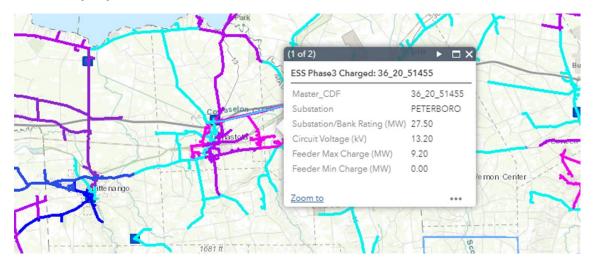


### III. To Toggle Between Displays

Go to the layer list and select which mode you wish to view charge or discharge.

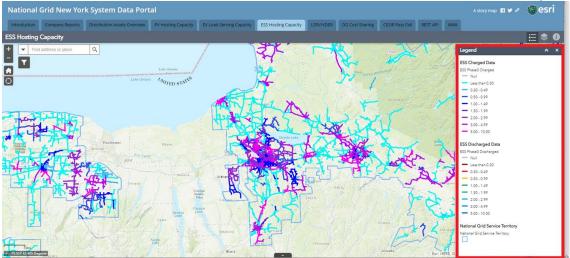


IV. Pop-Up Data



#### V. **Color Schemes**

Different color schemes were selected to differentiate between the modes of operation.



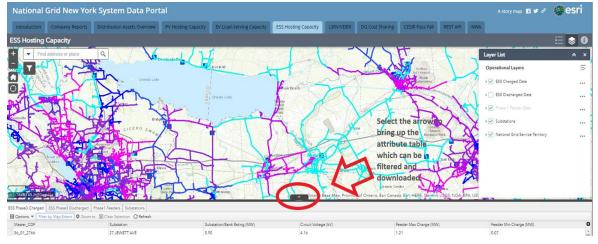
#### **Accessing Attribute Table** VI.



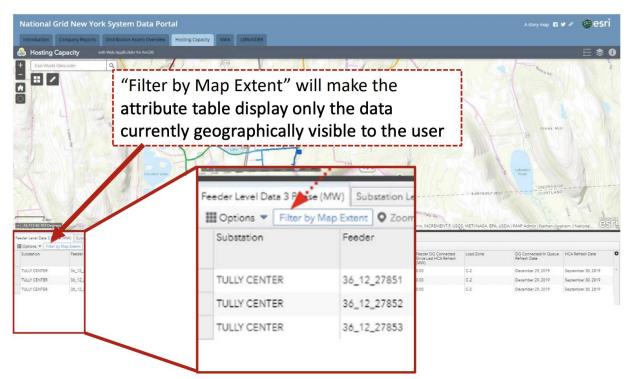
### **FUTILITIES**

#### **Downloading Data** VII.

The data can be downloaded as a CSV from the attribute table and filtered.



### VIII. Filtering Map Extent



## **Drive Criteria Settings and Assumptions**

### I. Storage Hosting Capacity Maps: Charging

DRIVE Tool Settings by Utility with Recommended EPRI Threshold Settings							
Category	Criteria	Central Hudson	Con Edison	National Grid	NYSEG & RG&E	Orange and Rockland	Hosting Capacity Threshold
	Primary Over-Voltage	No	No	No	No	No	1.05 Vpu voltage magnitude
Voltage	Primary Under-Voltage	Yes	Yes	Yes	Yes	Yes	0.95 Vpu voltage magnitude
	Primary Voltage Deviation	Yes	Yes	Yes	Yes	Yes	3% voltage change
	Regulator Voltage Deviation	Yes	No	Yes	Yes	Yes	50% of bandwidth at regulators
	Thermal for Charging (Demand)	Yes	Yes	Yes	Yes	Yes	100% normal rating
Loading	Thermal for Discharging (Generation)	No	No	No	No	No	100% normal rating
Protection	Unintentional Islanding*	No	No	No	No	No	67% minimum loading

DRIVE Tool Settings by Utility with Recommended EPRI Threshold Settings							
Category	Criteria	Central Hudson	Con Edison	National Grid	NYSEG & RG&E	Orange and Rockland	Hosting Capacity Threshold
Voltage	Primary Over-Voltage	Yes	Yes	Yes	Yes	Yes	1.05 Vpu voltage magnitude
	Primary Under-Voltage	No	No	No	No	No	0.95 Vpu voltage magnitude
	Primary Voltage Deviation	Yes	Yes	Yes	Yes	Yes	3% voltage change
	Regulator Voltage Deviation	Yes	No	Yes	Yes	Yes	50% of bandwidth at regulators
	Thermal for Charging (Demand)	No	No	No	No	No	100% normal rating
Loading	Thermal for Discharging (Generation)	Yes	Yes	Yes	Yes	Yes	100% normal rating
Protection	Unintentional Islanding*	Yes	Yes	Yes	Yes	Yes	67% minimum loading

#### **Storage Hosting Capacity Maps: Discharging** II.

#### **Solar PV Hosting Capacity Maps** III.

DRIVE Tool Settings by Utility with Recommended EPRI Threshold Settings							
Category	Criteria	Central Hudson	Con Edison	National Grid	NYSEG & RG&E	Orange and Rockland	Hosting Capacity Threshold
Voltage	Primary Over-Voltage	Yes	Yes	Yes	Yes	Yes	1.05 Vpu voltage magnitude
	Primary Under-Voltage	No	No	No	No	No	0.95 Vpu voltage magnitude
	Primary Voltage Deviation	Yes	Yes	Yes	Yes	Yes	3% voltage change
	Regulator Voltage Deviation	Yes	No	Yes	Yes	Yes	50% of bandwidth at regulators
	Thermal for Charging (Demand)	No	No	No	No	No	100% normal rating
Loading	Thermal for Discharging (Generation)	Yes	Yes	Yes	Yes	Yes	100% normal rating
Protection	Unintentional Islanding*	Yes	Yes	Yes	Yes	Yes	67% minimum loading

# **DRIVE Analysis Criteria Definitions**

IV.

### **Voltage Evaluation Criteria Settings and Thresholds**

Primary Over-Voltage: Used to identify potential over-voltage conditions during light load conditions as a result of excess distributed generation. Feeder voltage limit at any node to

be evaluated at the recommended threshold consistent with the ANSI C84.1 limits for overvoltage violations (1.05 Vpu voltage magnitude).

**Primary Under-Voltage:** Used to identify potential under-voltage conditions during peak load conditions as result of DER increasing the distribution load. Feeder voltage limit to be evaluated at the recommended threshold consistent with the ANSI limits for under-voltage violations (0.95 voltage magnitude).

**Primary Voltage Deviation:** Used to identify power system criteria violations as a result of fluctuating DER generation or demand. Change in voltage from no DER to full DER at any node to be evaluated with the recommended allowable fluctuation of 3% voltage change.

**Regulator Voltage Deviation:** Used to identify power system criteria violations as a result of fluctuating DER generation or demand in conjunction with the operation of voltage regulation equipment. Change in voltage from no DER to full DER at a regulated node to be evaluated on voltage fluctuation within 50% of the set bandwidth at regulators.

### Thermal Evaluation Criteria Settings and Thresholds

**Thermal for Charging (Demand):** Used to identify thermal violations as a result of an increase in loading from DER. The remaining capacity at peak loading for any element should be evaluated at the recommended threshold of not to exceed 100% of the normal rating.

**Thermal for Discharging (Generation):** Used to identify thermal violations as a result of an increase in generation from DER. The minimum loading any element plus the additional generation should be evaluated at the recommended threshold of not to exceed 100% of the normal rating.

### **Protection Evaluation Criteria Settings and Thresholds**

**Unintentional Islanding\*:** Used to identify protection violations caused by DER sustaining an island on the distribution system in the event of a service interruption. This criteria provides a more conservative approach to minimum daytime loading than the reverse power flow criterion. The element minimum loading should be evaluated in relation to DER size to not exceed 67% of minimum loading as a proxy for the Sandia screens in the SIR. This criteria is only to be evaluated at the feeder head, and only to be applied in the minimum hosting capacity value calculations.

# FAQs

### What is hosting capacity and how can I use the displays in that context?

Hosting capacity is an estimate of the amount of DER that may be accommodated without adversely impacting power quality or reliability under current configurations and without

requiring infrastructure upgrades. The analyses presented in these displays provide nodal hosting capacity for the distribution circuits evaluated. The displays can be used to help solar PV or energy storage project development by giving an indication of each circuit's hosting capacity and its relevant characteristics.

### Is the hosting capacity analysis performed for both radial and network feeders?

The feeders represented in the hosting capacity maps for NYSEG/RG&E, National Grid, Orange and Rockland, and Central Hudson are for radial feeders only. Con Edison provides hosting capacity maps for both radial and network feeders.

### Which DER types are included in the analysis?

All connected generation is included in the analysis, inclusive of synchronous or other inverter-based systems.

# How can I determine how much DER has been interconnected after the analysis has been performed and thus is not included?

Within the pop-up, the line item "DG Installed Since Last HCA Refresh" provides the megawatt value of DG installed since the hosting capacity was conducted.

### What is meant by Section Hosting Capacity?

The section hosting capacity is a local value meant to represent the HC at that location.

### How often is the data refreshed?

Data on the installed and queued DER located in the pop-ups is refreshed on a monthly basis. The hosting capacity analysis and corresponding maximum and minimum hosting capacity values are currently refreshed on an annual basis. For the PV maps, circuits where at least 500kW of additional DG has been interconnected since the last annual update will have their hosting capacity recalculated, taking into account the newly connected DG, at the six-month interval. The corresponding refresh date for each of the aforementioned items is included in the data pop-ups for reference.

### What is meant by Load Zone within the pop-up display?

This represents the load zone for the NYISO. A map of the NYISO's load zones can be found by clicking here. Depending on the utility, the geographic areas may be further broken apart by sub-zone which are sub-territories of the NYISO load zones.

### What granularity are the maps displayed at?

The circuit's (or feeder's) hosting capacity is being displayed at a nodal level.

# Why does the section voltage not match with the reported substation distribution voltage?

It can be common to have step-down banks on distribution feeders that decrease the voltage from one-line section to another. For example, the voltage at the substation and initial run of the circuit may be 12 kV whereas after the step-down bank the circuit operates at 4 kV. The local voltage was added to help provide that additional clarity when circuit

characteristics change along a feeder.

### What is anti-islanding hosting capacity?

The circuit hosting capacity according to the anti-islanding hosting capacity criteria used which represents 67% of the light load recorded at the feeder head. This criterion is used in the analysis but is ultimately not used in the heat mapping displays, hence its inclusion as a separate item in the data pop-ups.

### How can I identify the attribute table in the displays?

The attribute table can be accessed by clicking on the tab at the bottom of the display. Once the attribute table is open, the user can export the results as a .csv for the entire system or only for those locations currently being displayed. Screenshots are included in the following slides to help provide additional context.