JOINT UTILITIES
OF NEW YORK

Hosting Capacity Stakeholder Webinar

(November 2, 2022)

Engagement Group Ground Rules*

- All stakeholder engagement (Advisory Group and Engagement Group) meetings, webinars and information exchange are designed **solely** to provide an open forum or means for the expression of various points of view **in compliance with antitrust laws**.
- **Under no circumstances** shall stakeholder engagement activities be used as a means for competing companies to reach any understanding, expressed or implied, which tends to restrict competition, or in any way, to impair the ability of participating members to exercise independent business judgment regarding matters affecting competition or regulatory positions.
- Proprietary information **shall not be disclosed by any participant** during any stakeholder engagement meeting or its subgroups. In addition, no information of a secret or proprietary nature shall be made available to stakeholder engagement members.
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- AG & EG discussions will be **open forums without attribution** and no public documents by the AG or EG will be produced unless publication is agreed upon by the group.

**Ground Rules adapted from the JU Advisory Group*

Agenda

1. Introduction and Meeting Goal
2. Current Map Overview & Capabilities
3. Overview Roadmap
4. Collaboration with ITWG
5. Nodal Constraints (Criteria Violations)
6. Cost Share 2.0
7. DG Connected Since Last HCA Refresh

Introduction & Meeting Goals

Meeting Goals

The JU has two goals for this stakeholder session.

Share Vision

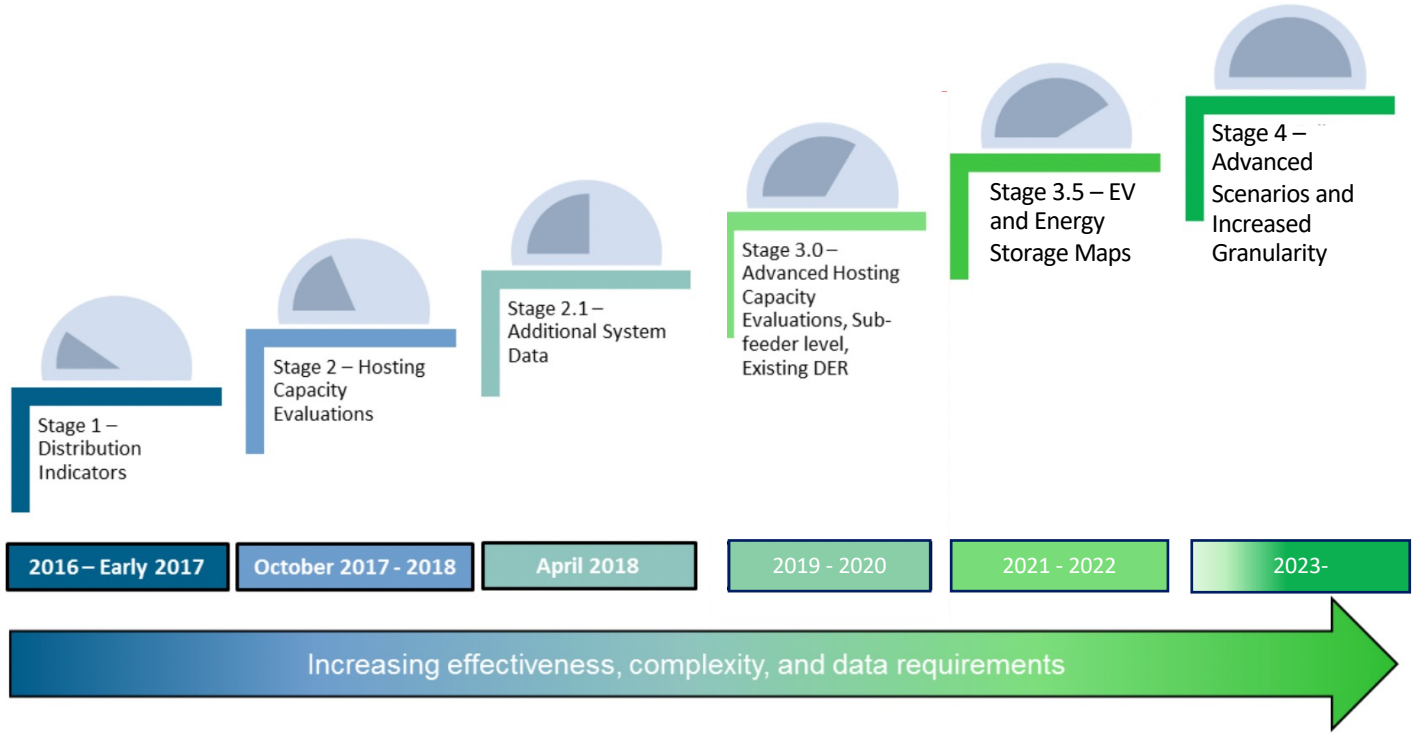
Share current map capabilities. Provide current thinking on next steps and the long term-vision.

Solicit Feedback

Garner thoughts and suggestions on the roadmap. Take questions on the stage 1 storage hosting capacity map.

Evolution of the Roadmap

The Joint Utilities, with guidance from stakeholders developed a four staged Hosting Capacity implementation roadmap. This was incorporated into New York Utility filings.

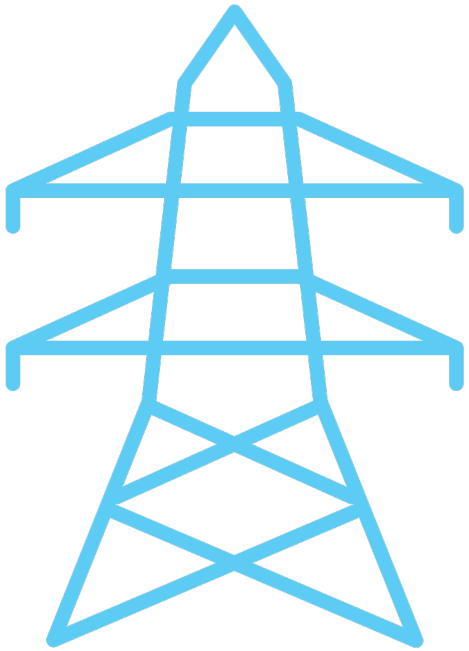


Overview: Current Battery Storage HC Maps

Current Battery Storage HC Maps Show…

1. Feeder-Level Hosting Capacity (min/max)
2. Additional System Data
3. Downloadable Feeder-Level Summary Data
4. Existing DER in Circuit Load Curves and Allocations
5. Sub-transmission circuits available to host distributed generation
6. Daytime minimum load and peak load
7. Separate Displays for Load and Generation HC
8. Color-coded Breakpoints
9. Pop-ups with additional information
10. Some utilities provide Cost Share 2.0 information. (All will have it by April 2023).

Daytime Minimum Load and Peak Load



The JU have discussed the use of one or two input load files tied to:

- Daytime minimum load
- Peak load

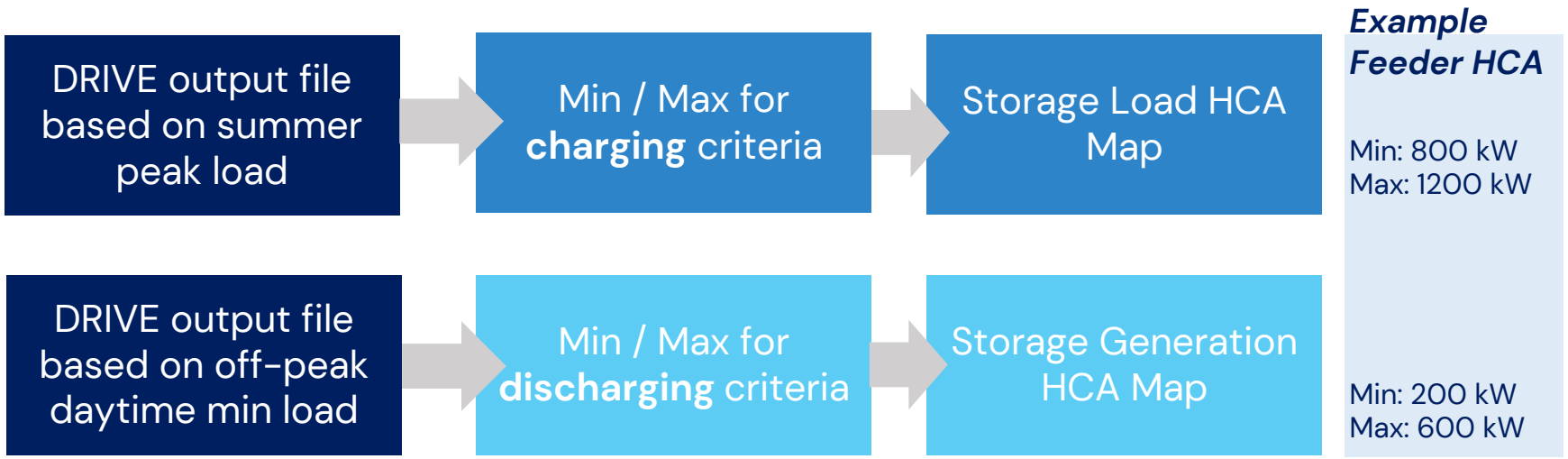
The JU shares the following outputs:

- From the storage run in DRIVE, an output file providing charging constraints (from peak load analysis) and discharging constraints (from daytime minimum load analysis)

Separate Displays for Load and Generation HC

The JU provides separate displays for load and generation hosting capacity.

- Color is based on the min of the maxes, but min of min will also appear on pop-up with more information.



Note: The min/max generation criteria is specific to storage and not solar PV. This includes changes in fault current contribution and potential voltage changes.

Breakpoints and Color

Breakpoints	Discharging	Charging
> 5.00 MW		
3.00 – 4.99 MW		
2.00 – 2.99 MW		
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		

Breakpoints are the same as the PV maps.

Pop-up Items

All Utilities

Date.

Local Hosting Capacity (MW).
Depending on the map view. The popup shows either the min/max hosting capacity for charging or the min/max hosting capacity for discharging.

Substation/Bank Name. The substation that the selected feeder is connected to.

Feeder. The selected circuit's name/number.

Substation/Bank Rating (MW).
The substation / transformer bank design rating in MW.

Feeder Voltage (kV). Voltage level of the selected feeder.

Most Utilities

Anti—Islanding HC Limit (MW).
National Grid includes it in the HC analysis. All utilities include this in the pop-up.

Moving Forward

Overview: Roadmap

Immediate | Interim Step | Next Steps

April 1, 2023

- Sub Feeder Level for Storage HC Map
- Nodal Constraints (Criteria Violations) on PV and Storage HC Maps
- Six-month Update for Circuits that Increase in DG > 500kW
- Cost Share 2.0 Items
- DG Connected Since Last HCA Refresh

Late 2023-2024

- Additional 'scenarios' based on Interconnection WG Collaboration with Stakeholders

TBD

- Continued granularity

April 2023 – More Granular Storage Map

- Nodal will be displayed by color range for daytime minimum load and for peak.
- Consistent with the PV map, color will be shown as the minimum value. The nodal pop-up will provide a more detailed breakdown of criteria violations.
- Several sections of the feeder circuit will be shown as a common color if those minimum values fall within a common range.

ITWG Collaboration

To maximize the value of the HC portal, the data shared on the portal should have some linkage to the CESIR & SIR.

- Investment in the HC maps should provide that the maps are sharing information developers can use.

The Integrated Planning WG updates HC maps but does not have purview over interconnection. Going forward…

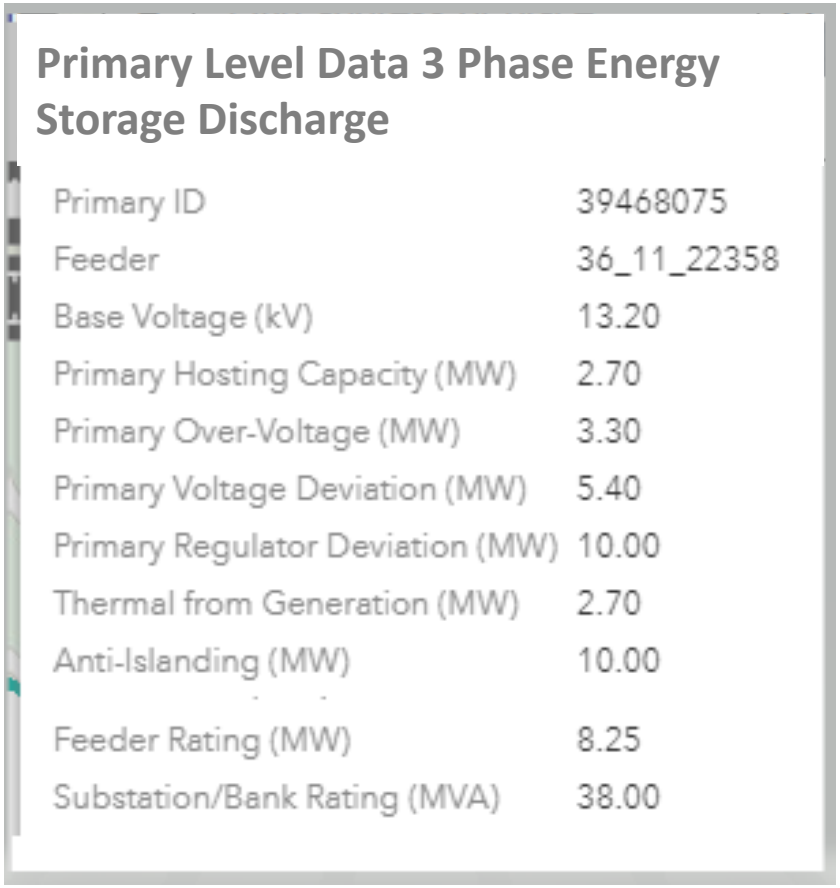
- The Interconnection Technical Working Group (ITWG) discuss use-cases with developers
- The HC maps to be updated upon ITWG alignment

Nodal Constraints (Criteria Violations)

Utilities agreed to share nodal constraints (criteria violations) on the PV and Storage HC maps by April 2023.

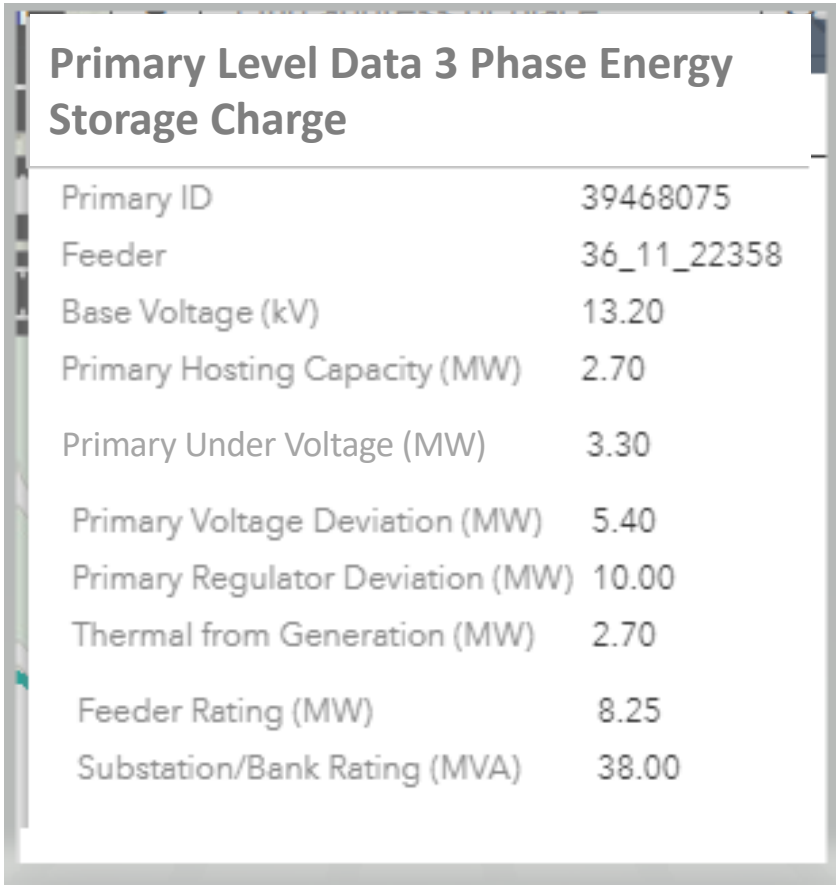
Nodal Level
▪ Section ID
▪ Feeder
▪ Base Voltage (kVLL)
▪ Section Hosting Capacity (MW)
▪ Bank Rating (MW)
▪ Feeder Rating (MVA)
▪ Flicker Value (MW)
▪ Primary Over-Voltage Deviation (MW)
▪ Primary Voltage Deviation (MW)
▪ Regulator Deviation (MW)
▪ Thermal from Generation (MW)
▪ Anti-Islanding

Nodal Constraints (Criteria Violation) Example Utilizing Energy Storage



Primary Level Data 3 Phase Energy Storage Discharge

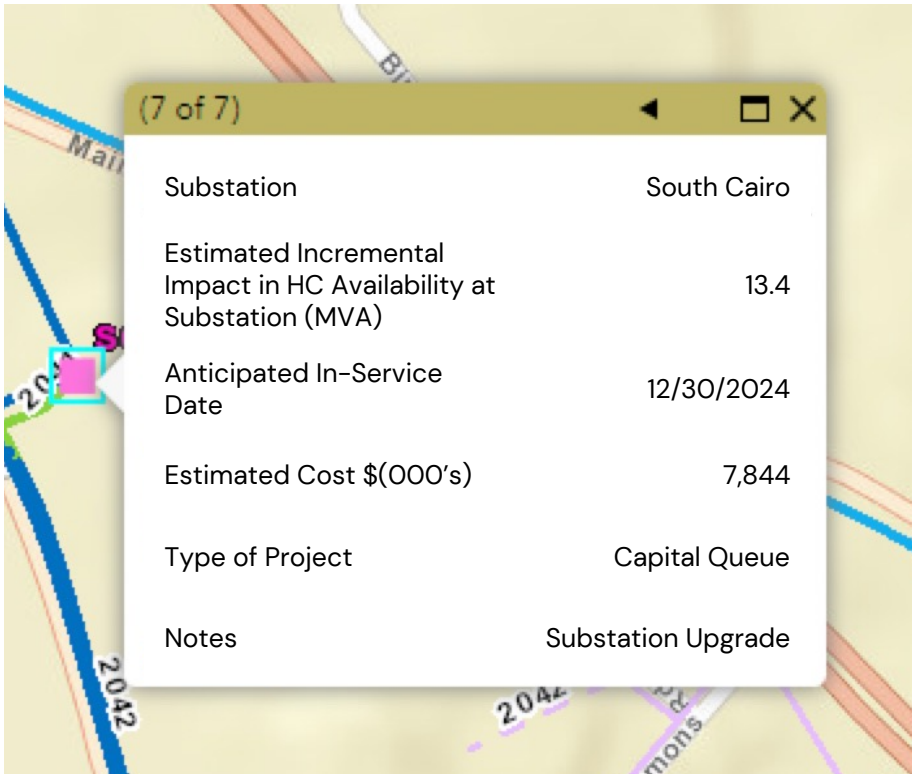
Primary ID	39468075
Feeder	36_11_22358
Base Voltage (kV)	13.20
Primary Hosting Capacity (MW)	2.70
Primary Over-Voltage (MW)	3.30
Primary Voltage Deviation (MW)	5.40
Primary Regulator Deviation (MW)	10.00
Thermal from Generation (MW)	2.70
Anti-Islanding (MW)	10.00
Feeder Rating (MW)	8.25
Substation/Bank Rating (MVA)	38.00



Primary Level Data 3 Phase Energy Storage Charge

Primary ID	39468075
Feeder	36_11_22358
Base Voltage (kV)	13.20
Primary Hosting Capacity (MW)	2.70
Primary Under Voltage (MW)	3.30
Primary Voltage Deviation (MW)	5.40
Primary Regulator Deviation (MW)	10.00
Thermal from Generation (MW)	2.70
Feeder Rating (MW)	8.25
Substation/Bank Rating (MVA)	38.00

Cost Share 2.0



Hex	Red	Green	Blue
#ff73de	255	115	223

- **Threshold:** Substation/Feeder Level
- **Incremental Change:** Nameplate rating change
- **Pop-up Header:** Cost-Sharing 2.0 Project
- **Pop-Up Items**
  - Substation
  - Estimated Incremental Impact in Hosting Capacity Availability at Substation (MVA)
  - Anticipated In-Service Date
  - Estimated cost: $(000's)
  - Type of Project: Capital Queue or Cost Share 2.0
  - Notes

DG Connected Since Last HCA Refresh (MW)

Each company will provide DG Connected Since Last HCA Refresh (MW) by April 2023; some companies already provide this information.

- This is provided in collaboration with the IEDR process
- Monthly updated expected

Data Field	Description
Feeder DG Connected Since Last HCA Refresh (MW)	The aggregated DG that has been connected on the selected feeder since the listed Hosting Capacity Analysis (HCA) refresh date
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

Conclusion

Immediate	Interim Step	Next Steps
April 1, 2023	**Late 2023-2024**	**TBD**
▪ Sub Feeder Level for Storage HC Map ▪ Nodal Constraints (Criteria Violations) on PV and Storage HC Maps ▪ Six-month Update for Circuits that Increase in DG > 500kW ▪ Cost Share 2.0 Items ▪ DG Connected Since Last HCA Refresh	▪ Additional 'scenarios' based on Interconnection WG Collaboration with Stakeholders	▪ Continued granularity

Q&A and Follow-Up

Q&A

1	**Question:** Regarding slide 10, min/max generation for storage "Is this different from PV or different from an estimation of a typical standard? What goes into the full estimation for these maps?"
	Answer: There are different HC values for charge and discharge and there is a min/max generation for each case.
2	**Question:** How is flicker calculated
	Answer: The utilities do not input flicker contributions for the Hosting Capacity Maps. This is considered during interconnection applications.
3	**Question:** What are the assumptions for the ramp rate of storage for the HC maps?
	Answer: Ramp rate is not analyzed for the hosting capacity maps. The range of voltage variation is considered during full discharge to full charge, or vice-versa.

Follow-Up Items

Topic	Question	Answer
Nodal Analysis	When will nodal analysis be made available?	April 2023
Update Cycle Timing	Will the maps show monthly updates incorporating model and load changes.	No, however, the JU shows additional DER connected on a monthly basis.
Cost Sharing	Will the utilities provide a note for DG encumberment line data stating when equipment may be subject the cost sharing?	The Policy WG will follow-up. Currently, utilities share links to market driven projects through their websites.

Follow-Up Items

Topic	Question	Answer
8760 data	Can the utilities provide stakeholders with each utility's link to the 8760 data?	Yes, please see slide 28.
8760 data	Can utilities link the raw 8760 data to the HC maps?	See the links above.
User Accessibility	Can the utilities provide a user-guidance document sharing assumptions and definitions?	Yes, the JU will update the user-reference materials per the request from stakeholders.

Follow-Up Items

Topic	Question	Answer
Case studies and time series analysis	Can utilities provide… ▪ Analysis that goes beyond full-charge to full-discharge, or; ▪ 576-hour analysis so that developers can know the seasons/hours causing constraints?	The Interconnection Technical Working Group (ITWG), open to stakeholders, will be responsible for these decisions for the following reasons. ▪ To maximize the value of the HC portal, the data shared on the portal should have some linkage to the CESIR & SIR. ▪ Investment in the HC maps should provide that the maps are sharing information developers can use. ▪ The Integrated Planning WG updates HC maps but does not have purview over interconnection.

Follow-Up Items

Topic	Question	Answer
Data Access	Will the storage HC data be made available via the API?	Yes

8760 Data

Con Edison

- Con Edison provides 8760 data in a hyperlink from their Data Box inside the HC portal. Data is data is typically updated with the DSIP filing and is a 3-year forecast.

O&R

- 8760 data is available on the HC map via a pop-up when you click on the circuit.

Central Hudson

- Hourly Load Data (cenhud.com) – Direct Link to System Data Portal
- Can also get to it from our DG website Solar Energy & Distributed Generation (cenhud.com)

National Grid

- Both historical 8760 loading data at the feeder level and 5 years of forecasted 8760 loading data at the feeder level is available on our NY System Data Portal, specifically on the Distribution Assets Overview tab via a link in both the feeder popup and attributes table. National Grid is currently investigating migrating these links onto the popups on the PV and ESS Hosting Capacity maps.

Avangrid

- NYSEG and RG&E's load forecasts are available through emailed request to **NYRegAdmin@avangrid.com**.