"State of DER Dashboard" Industry Initiative

Ver 2021-05-26 PSEG Long Island Interconnection Working Group Meeting on 27 May 2021.

Adapted from Overview presentation by Industry & NYSEIA for the 13 May 2021 JU Hosting Capacity Working Group Meeting

Note: This presentation was adapted from a presentation provided to the Joint Utilities on May 13, 2021. Not all the statements in this presentation necessarily apply to the LIPA interconnection process or reflect actual LIPA system characteristics.

A. Industry Position Summary

1. It is becoming increasingly challenging to connect DER to the grid, which will only increase at an increasing rate. Evidenced by many feeders which have zero hosting capcity, and in other non PSEGLI locations substations closed to additional DER connections.
2. Industry is concerned that we are going to effectively run out of hosting capacity far sooner than any meaningful upgrades can be made via the CLCPA processes, putting thousands of jobs and hundreds of companies at risk.
3. Baseline public metrics are essential to understanding the fundamental state of affairs and making informed decisions. Presently no NYS regional/global benchmarks are available.
4. Presently there is no ability to assess the rate of change or trending over time; we cannot even predict if/when we will run out of hosting capacity. Using rates and trending we can create a timeline and estimates for when we expect major issues to arise, and can respond accordingly.
5. We request a collaborative joint effort to produce a "State of DER Dashboard" as soon as possible. Industry requests data collection the start of Q4, 1 October 2021, published on 1 November 2021.
6. The dashboard will provide critical data to inform all stakeholders of key areas of concern, trends, rates of change, and indications whether current or planned efforts are having any objective positive benefits.

B. Industry Perspective Analogy: The current state of affairs is like a business without metrics

Imagine we are a large manufacturing company.

Management has a goal of increasing new widget production

There are many locations

And yet general management is blind to the general state of their equipment.

1. There is no public location to go to see total production across all factories
2. While you zoom in on each individual piece of equipment, of which there are literally thousands, there may be some additional capacity on each, but there is no way to know how much overall additional capacity may exist at a factory or regional level
3. Each piece of equipment is slowly losing its ability to produce widgets, but nobody is tracking how long it will be until widget production goes to zero
4. Some equipment is already shut down(!); it is unclear how many are shutdown and why
5. We are considering investment in upgrading equipment, but we cannot really tell what are the common trends
6. Existing activity is reactive, and not in a preventive/proactive

C. Key Dashboard Characteristics

1. Contains critical DER & grid metrics and benchmarks focused on hosting capacity.
2. Does not require login, allowing for ease of access for all types of stakeholders.
3. Provides "snapshots" of metrics recorded on exact dates with same interval between dates, thus allowing for tracking over time.
4. By ensuring detailed feeder/substation level data is downloadable from each utility's hosting capacity map
    a. Values can be independently verified by 3rd parties, and
    b. Advanced numerical analysis can be performed by stakeholders.
    c. (Note that this only shows current information, not trending over time, hence the need for snapshot data.)

D. Sample "State of DER Dashboard" Website

Following is a sample webpage, hosted at a central location (ex the JU or DPS website), with the following data.
Note that blue text below is explanation text and would not be on the actual webpage.

Introduction, Narrative, Definitions

- [Mathematical definition of penetration ratio]
- [Simple/clear definition of "hosting capacity" & links to same for how it is calculated]
- [Simple/clear definition of what it means to have a "closed" feeder or substation]
- [Link to definition of of standard deviation (aka “SD”)]
- [etc.]

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Summarized, Quarterly, Snapshot Data

DER State of the Grid as of 1 October 2021

(a new table is produced based on data as of the first day of every quarter)

(Note this is not real data)

(Continue table with other metrics as listed on the next pages)

Category	Metric	NYS Avg or Total	[Utility / Region 1]	[Utility / Region #...]
Feeder Data	Quantity of feeders	16,384	256	1,024
	Average feeder penetration ratio [& SD]	25% [9%]	13% [10%]	47% [5%]
	Average feeder hoisting capacity [& SD]	150 MW [21 MW]	108 MW [5 MW]	250 MW [13 MW]
	Percentage of feeders with PR > 90%	7%	3%	15%
	Quantity of feeders with special "closed" to DER conditions	5	0	3
	...etc	...	...	...
Substation Data	Quantity of substations	...	...	...
	...etc	...	...	...
Aggregate Data	Total Hosting Capacity	560 GW	450 GW	600 GW
	Total Solar Connected	11024 GW	160 GW	240 GW

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Pending next steps, exact mathematical defintions of all values below will be defined in separate documentation.

Feeder Data

- Quantity of feeders
- Average penetration ratio & SD
- Average hosting capacity & SD
- Percentage of feeders with PR > 90%
- Quantity of feeders that don't have any hosting capcity. (new)
- Quantity of feeders with special "closed to DER" conditions

Substation Data

- Quantity of substations
- Average penetration ratio & SD
- Average hosting capacity & SD
- Percentage of substations with PR > 90%
- Quantity of substations that don't have any hosting capcity. (new)
- Quantity of substations with special "closed" to DER conditions

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Aggregate
- Total Hosting Capacity Avail
- Total Solar Connected

Solar by Bucket
- 0kW to 50kW
- >50kW to 5MW
- >5MW to 10MW
- >10 MW

Non-Solar
- Total Non-Solar
- ESS, Wind, Etc

Note: This is a related inititiave which could be included in regular dashboard updates.

IA & frequency of pre-screen or CESIR analysis constraints
(Outside of PSEGLI this includes CESIR analysis fail data as shown in the CESIR template)

Solar or Solar+ESS
- Quantity of new applications in quarter
- Quantity of CESIR complete in quarter
- CESIR Analysis Failure Percentage for each

Select app data for other
- ESS only
- Wind
- etc.

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Utility/Region Narrative (if submitted)

Utility / Region 1 Notes & Commentary

(If submitted, utility would provide the latest commentary to help describe any key metrics, reasons for substations closed to new DER connection, or anything else that would provide meaningful insight to their data.)

Utility / Region # Notes & Commentary

(same)

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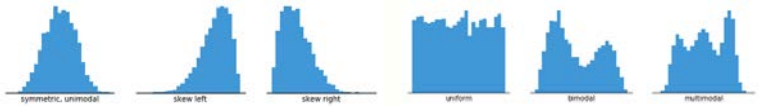
Detailed Data (available from queue & HCM's)

Please proceed to the hosting capacity map (HCM) for each utility to download complete feeder or substation data. Much of this data can be used to reproduce various metrics above using spreadsheet analytical methods. Links to each utility HCM can be found here:
https://www3.dps.ny.gov/W/PSCWeb.nsf/All/6143542BD0775DEC85257FF10056479C?OpenDocument

Additionally, master interconnection queue data can be downloaded from the DPS website here:
https://www3.dps.ny.gov/W/PSCWeb.nsf/All/286D2C179E9A5A8385257FBF003F1F7E?OpenDocument

(Ideally all of the feeder and substation data can be reproduced by downloading the full dataset from each utility's hosting capacity map. Beyond averages and standard devion, developers and others can produce advanced population analysis. Ex.)

(Note that just providing access to this data is not the same as the snapshot summarized data. Among other reasons, this data will only provide information based on the last HCM refresh, and does not show trending over time.)



E. Additional & Focus Group Documentation Development

More information on the below topics is available from industry. These, and other topics, would be reiviewed within a dedicated focus/development group.

1. Additional "use case" information
2. Comparison of this initiative with the NYSERDA IEDR initiative, and why they should be pursued separately.
3. Discussion about why it may be good to incorporate CESIR Analysis Fail Data, and other items, that are not directly derived from hosting capacity map data.
4. Reference information on existing/currently "Closed Substations“, which is a generic term meaning that the substation is no longer accepting DER connections.
5. Sample/Reference analysis already completed by industry from another prominent utility following a download of other feeder information.

F. Implementation & Requested "Next Steps"

1. **Start date** - Industry requests a 1 November 2021 launching of the website, using 1 October 2021 data.
2. **Focus Group** - Start a focus group as soon as possible that meets every other week to make decisions and track progress.
3. **Hosting location** - What is the preferred location to host the dashboard? Note that queue data is already published on the DPS website. What entity will take responsibility for (a) collection, (b) webmaster services.
4. **Frequency** - Industry believes quarterly is the appropriate frequency for this information.
5. **Metrics review** - Detailed discussion about each of the individual metrics, how they would be calculated, and which will be in this initial launch, vs rolled out at future dates.
6. etc.