PSEGLI Hosting Capacity Map (HCM), Post Launch Industry Feedback & Questions

Prepared by Industry for PSEGLI-IWG meeting 11 Feb 2021.
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1. Preface & Key Reference Info

- The PSEGLI HCM was launched in January 2021 at version 2.0.
- What was launched is considered to be equivalent to the JU defined Stage 2.0.
- JU history and presentations regarding HCM launch and requirements at each stage can be found on the JU website. https://jointutilitiesofny.org/utility-specific-pages/hosting-capacity
- Blue text below represents the desired PSEGLI action items and all are numbered independently
- The "PSEG Long Island's Smart Grid Small Generator Interconnection Technical Requirements and Screening Criteria for Operating in Parallel with LIPA's Distribution System" is referred to as the "**Interconnection Technical Requirements**" or "**ITR document**" herein.

2. Primary "Solar Industry Use-Case" for HCM

1. Identify a site where solar can be installed and/or potential client is interested in installing a solar system.
2. Go to the specified site/feeder and retrieve information.
3. **Interpret HCM data to derive an __estimated PSEGLI (a) interconnection/operations & (b) ongoing operations (ex DTT/SCADA) Cost__ (not developer cost) at given a desired solar system size.**
4. Incorporate estimate in a proposal to the potential customer.
5. Iterate system size, as needed, to arrive at an estimated cost that is within a risk tolerance to the potential client, financier/developer & contractor.
6. Invest necessary design work to prepare an interconnection application, knowing that the project may or may not be financially feasible depending on CESIR results.
7. Submit interconnection application. Wait 60 work days for CESIR to be performed and receive the actual estimate of PSEGLI costs.

Please know that the best way that PSEGLI can help the industry make the best of this map and information is to assist in facilitating the above process, and estimate potential PSEGLI interconnection costs and operating requirements. It is our humble request that PSEGLI continue working with us, as outlined herein, to help develop and improve methods, tools, etc, to achieve these ends.
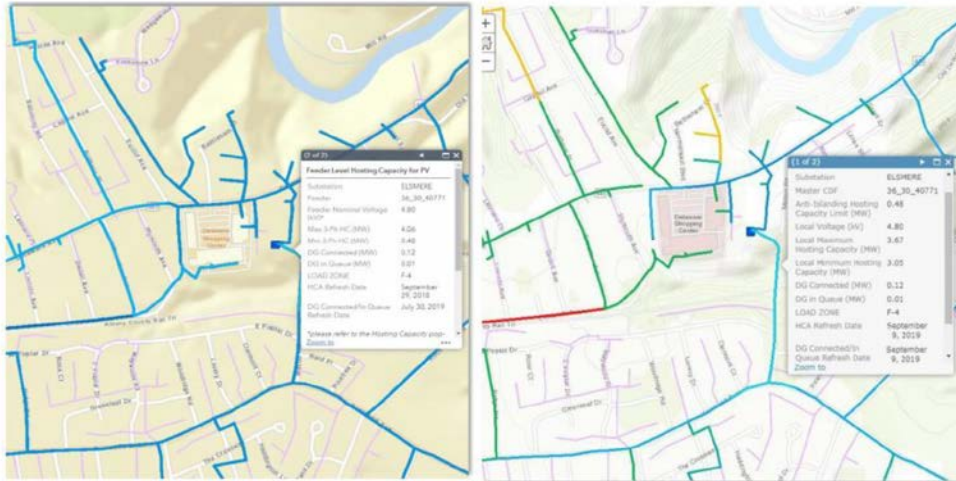
3. HCM Stage 3.0 Development

- Please know that the industry has observed the description of what is to be included in Stage 3 HCM in the Utility 2.0 document (pg 88 to 94), however humbly requests additional information.

Utility 2.0 Long Range Plan

Chapter 4: Evolve into a Customer-Centric DSP

Figure 4-1. Comparison of Stage 2 (Left) and Stage 3 (Right) Hosting Capacity Maps

- Industry requests that PSEGLI provide an explicit list of what exact upgrades plan to be included in the 3.1 version.
- Once provided, Industry shall review and if applicable provide feedback on each item, and relative importance. And provide suggestions for other items that may or may not be included.
- Please provide an updated timeline on when the 3.1 version will be launched and whether it can be accelerated.

4. Industry HCM Questions/Requests

A. Alternative, Simplified Interpretation of Min/Max HC Values

Below is an alternative and simplified statement that represents how many in the industry interpret the Min/Max HC calculations and their relationship to potential PSEGLI required interconnection costs. Please correct the following bolded statement if/as necessary.

Based on your geographic location on the circuit, the Min/Max hosting capacity represents the <u>estimated</u> additional amount of DG capacity that could be connected with minimal to no PSEGLI system upgrades. Any interconnection greater than the Max/Min HC will likely incur nonzero interconnection costs or requirements, subject to the results of a CESIR.

B. Clarifications & Questions Regarding 70% Penetration Ratio Limit

In the HCM "Values Guidance Document" or "Field Definitions" it says:

The maximum MW is the approximate magnitude of DER injection that can be accommodated at the most favorable location on the three-phase feeder without exceeding 70% penetration ratio on that feeder. Note that we observe that this corresponds with Screen P9 in the ITR document.

Please confirm whether the same 70% penetration ratio limit is applied to the "Min HC" values as well. If not, what is the reasoning?

Based on our understanding of penetration ratio, as read and interpreted in Appendix A of the ITR document, if a feeder were to limit penetration ratio to 70%, power would never backfeed to the substation bus on that circuit. Therefore, even though penetration rations of greater than 70% may be allowed, contingent upon a CESIR analysis and potential system/circuit/substation upgrades, the hosting capacity map itself does NOT assume any backfeeding in its estimated HC calculations.

Please confirm or correct the above bolded statement if incorrect.

C. *Request for Additional Information on how Min/Max HC is Calculated*

In the HCM "Values Guidance Document" or "Field Definitions" it says:
[Max/Min HC] ...is calculated by utilizing the thermal/voltage violations and by considering the penetration ratio on the feeder. PSEGLI hosting capacity maps utilizes the EPRI DRIVE tool in conjunction with CYME software to assess the circuits for thermal/voltage violations. The values from EPRI DRIVE are further refined by the headroom to 70% penetration ratio [as defined in Appendix A of the ITR document].

As outlined in this, and related presentations, the Industry humbly requests the actual assumptions, CYME model inputs, methods, calculations, etc, be clearly outlined and shared with the industry.

Please know that we understand and respect that this request will involve a notable amount of technical explanation; know that this same "deep dive" is taking place as part of ITWG initiatives as well.

For example, one question of many has been how/whether daily, seasonal and annual variations are taken into account when calculating HC values.

D. *Explicit Definition of the term "Headroom"*

The term "headroom" is used frequently in these contexts and related documents. Based on the language "***are further refined by the headroom to 70% penetration ratio***", it does not appear that "headroom" is synonymous with Max/Min HC calculations.

Please provide an explicit technical definition of the term "headroom" and how system upgrades are or are not considered in the calculation of "headroom"?

E. *Determining Likelihood & Estimated Costs of Potential Upgrades*

We understand that there are a series of upgrades that are performed on the feeder and substation that vary from small to large costs.

Industry requests that PSEGLI assist the industry in identifying a very rough likelihood of when each of the upgrades or restrictions may be required, given a desired system size, given the data on the HCM.

For example, by knowing (a) the current connected DG, and (b) a proposed additional system size to be connected, then (c) we can calculate the MW size OVER the current Max/Min HC. this value may be roughly proportional to potential PSEGLI interconnection costs.

Please note that one rough method of achieving these ends would be to view the CESIR results of installed systems across the network and view the frequency and cost of required upgrades. Ideally we would also know the available HC at the time of each CESIR analysis as well.

Some additional examples:
- Can we derive a rough likelihood of when "reclose delay" could be utilized?
- Can we derive a rough likelihood of when DTT/SCADA will be required?
- Can we determine if the capacity on the substation bus could be increased to add capacity to a feeder?
- At what point are we confident that an express feeder would be necessary to the substation?
- Etc.

F. Substation Location

We acknowledge that the pop-up window says that we should contact PSEGLI via email regarding substation information. However, being able to identify substation locations ourselves would greatly improve functionality, including but not limited to estimating express feeder routing, leased lines distances, et cetera. Moreover,

(a) Industry humbly requests, as quickly as possible (not contingent upon stage 3), that the satellite view basemap be made available as an option so the feeder substation location can be identified by the users. Note that we observe that this functionality is clearly readily available as seen under the "Scene" tab when you first login to the https://lipa.maps.arcgis.com/ site as an "Imagery" or "Imagery Hybrid" Basemap option.

(b) And/or, industry requests that a dot or other indication of substation location.

G. Review of Pre-Application (cost of $750) vs HCM Data, & Value of Pre-Application

Below are the observed differences and questions related to a pre-application report as specified in Appendix D and the current HCM.

Pre-App Report Data	HCM Data & Related Comments/Questions
Operating Voltage of closest distribution line	Available on HCM.
Phasing at site	1) Please clarify in the "Hosting Capacity Values Guidance Document" whether the circuits shown are only 3 phase or

	whether it includes other than 3 phase circuits. 2) Please clarify whether non 3 phase circuits will be clearly identified in Stage 3 version of the map.
Approximate distance to 3-Phase (if only 1 or 2 phases nearby)	Depending on the answer to the "Phasing at site" question above, this data would be relatively easily retrievable from looking at the HCM.
Circuit capacity (MW)	It is not clear what "Circuit capacity" means. 1) If this value is a geographic specific estimate of hosting capacity at the site specified, and re-evaluated at the time of the pre-application (and not simply a reiteration of information on the HCM) then there would be some value to paying for a Pre-App. 2) If this information is essentially the same as the "Max HC" and "Min HC" values, and not an updated calculation, then there is no additional value of submitting a pre-app. Please respond to each of the questions implied by the comments above.
Fault current availability, if readily obtained	Not available on HCM. However, also unsure of "if readily obtained" and likelihood of getting this information if a pre-app is purchased.
Circuit peak load for the previous calendar year	Not available on HCM. But also may not be particularly useful to achieve the primary "Solar Industry Use Case" outlined above. Requires advanced analysis to be useful to developer.
Circuit maximum load for the previous calendar year	Not available on HCM. But also may not be particularly useful to achieve the primary "Solar Industry Use Case" outlined above. Requires advanced analysis to be useful to developer.
Approximate distance (miles) between serving substation and project site	It is our request (also outlined herein) that PSEGLI: 1) Enable satellite imagery underlay so the HCM user can search and locate the substation 2) Include a dot or some other indication of where the substation is located on the circuit
Number of substation banks	Not available on HCM. But also may not be particularly useful to achieve the primary "Solar Industry Use Case" outlined above. Requires advanced analysis to be useful to developer.
Total substation bank capacity (MW)	Available on HCM.
Total substation peak load (MW)	Please clarify whether this is the same as "Bank Peak Load"? If so, this is available on the HCM.
Aggregate existing distributed generation on the circuit (kW)	Please clarify whether this is the same as "Bus DG Connected"? If so, this is available on the HCM.

Aggregate queued distributed generation on the circuit (kW)	Please clarify whether this is the same as "Bus DG Queue"? If so, this is available on the HCM.

Industry observations:
1. The information provided in a pre-application is very similar to the HCM
2. PSEGLI responses to the questions above will help clarify the relative value of performing a pre-application vs using HCM data
3. A key question to highlight is the relative frequency of updating the HCM vs whether the data from a pre-application is more up to date than HCM data.

Please know that the industry feels that PSEGLI resources should be dedicated to improving the HCM, which may ultimately result in the need for repurposing, improving or phasing out the pre-application in the future.

H. HCM Updating Frequency

Industry observes that the Utility 2.0 plan specifies that the maps will be updated on a quarterly basis (Page 91, 92).

Under the "Field Definitions" tab in the "HC Values Guidance Doc" we request that this frequency be included in the "Data Refresh Dates" section for each of the three dates listed.

I. Color Coding

On the "Legend" tab under the "Circuits" heading please specify whether the color coding is based on the "Max HC" or "Min HC".

J. DG Connected Definition

Please confirm (a) whether feeder & substation "DG Connected" values mean COD has been completed, or if it means something else and (b) that all of the calculations are for "Connected" DG, and not in construction or queue phase.

We observe that there can be a notable duration of time between when a project begins construction phase and when it actually receives COD. Note that it would be helpful to know what the MW value of jobs are in the construction phase as well.

K. Canceled Jobs

Please confirm:
1. PSEGLI properly follows guidelines for removing projects from the queue per the SGIP
2. And when they are removed the only values that would be adjusted are the feeder "DG Queue" and Substation "Bus DG Queue" values.

L. Filter, List View & Export Ability

We acknowledge that the current version currently states:
*** Exporting This Data In Anyway Is a Violation of Terms of Use - DO NOT EXPORT ***

We hereby request to begin whatever process is necessary to enable the following in the the next version:
1. Filtering
2. List view
3. Export ability

As shown below in a screenshot for other JU HCM's, this is an available functionality.

Feeder	Local Voltage (kV)	Local Maximum Hosting Capacity (MW)	Local Minimum Hosting Capacity (MW)	Anti-Islanding Hosting Capacity Limit (MW)	Feeder DG Connected (MW)	Feeder DG in Queue (MW)	Feeder DG Connected Since Last HCA Refresh Date (MW	Load Zone	DG Connected/In Queue Refresh Date	HCA Refresh Date	Notes:
36_14_29951	13.20	4.10	4.10	0.572	0.05	0.00	0.00	C-2	November 29, 2020	September 30, 2020	None
36_16_32451	4.80	0.30	0.30	1.5053	0.15	7.00	0.00	C-2	November 29, 2020	September 30, 2020	None
36_16_32451	13.20	0.35	0.35	1.5053	0.15	7.00	0.00	C-2	November 29, 2020	September 30, 2020	None

254 features 0 selected