

## DSDA WG Conversation on Capacity Maps/ Analysis with the MPSC, Utilities, Stakeholders, and NREL

11.18.22

### Attendance:

- **MPSC:** Commissioner Phillips, Mike Byrne, Julie Baldwin, Cathy Cole, Cole Bearden, Paul Proudfoot, Joy Wang, Kayla Gibbs, Al Freeman; **NREL:** Shibani Ghosh, Michael Ingram, David Narang; **Consumers Energy:** Kyle Desser, Sam Geller, Josh Hall, Brian Rich, Johanna Bleckman, Jeff Myrom, Ken Selander, Nick Tenney; Merideth Hadala, Matt Henry; **DTE:** Marco Bruzzano, Sharon Pfeuffer, Richard Mueller, Jamie Brunnell, Joe Jacunski, Jamie Kryscynski; **I&M:** Kirk Eisert, Dan Coleman; **Flo:** Cory Bullis, Matthieu Loos; **SunRun:** Amy Heart; **SunPower:** John Albers, Alex Sherman; Rivenoak Law; **Ford:** Valerie Jackson, Valerie Brader

### Guiding Topics and Questions:

1. What is the clearly stated value proposition/ propositions for ratepayers that would justify the additional cost and investment to develop and maintain more robust utility-provided capacity maps and data?
2. Noting the potential tension among the additional costs necessary to further develop and improve upon existing capacity maps, the wants and needs from stakeholders, and the ultimate cost and benefits to ratepayers, can we reach consensus on what the appropriate foundational or minimum standards should be adopted in regards to the following:
  - a. **Granularity of Data** - At what level of data granularity (single-phase v. three phase, transformer level v. substation level, etc.) provides the best balance among third-party expectations and needs, utility data availability, and ratepayer benefits/ costs.
  - b. **Data Refresh Rates** - How often should the data be updated/ refreshed (once a quarter, once a year, bimonthly, etc.) given third-party expectations and needs, utility capabilities and costs, and ratepayer benefits/ costs.
  - c. **Temporal Data** - Should utilities strive to make available capacity data that is temporal as well as spatial, thereby allowing third-parties to know where and when there is excess hosting / load capacity? What are the limitations (data availability, costs, etc.) for being able to produce such data? At what level of granularity should this temporal data be offered (on-peak v. off-peak, seasonal, etc.)?
  - d. **Exportability/ Usability of Data** - How should this data best be made available and exportable (CSV file, Shapefile, etc.) so to allow for further analysis and data integration by third parties independent of the utilities website or platform?
  - e. **Need for Integration Between Hosting Capacity and Load Capacity Maps** - What are the benefits of integrating hosting capacity and load capacity maps and data when compared to the ultimate costs and feasibility of this integration? What additional analysis can be performed from the integration of hosting and load capacity data?

- f. **Additional Information or Data** - Are there any additional data or information that is currently not being made available via the existing hosting capacity maps or that has not yet been discussed, but should be made available during the next iteration of these resources?

## NOTES:

Commissioner Phillips provided introductory remarks and background of DSDA meetings that have taken place so far. Everyone attending briefly introduced themselves. Launched into the questions below.

1. *What is the clearly stated value proposition/ propositions for ratepayers that would justify the additional cost and investment to develop and maintain more robust utility-provided capacity maps and data?*
  - Cory Bullis (Flo) – helps with more proactive planning and targeted planning with customers. If they can see where there is capacity and where there is not, it will better guide Flo in planning with customers and prevents them from getting further down the line and then stumbling upon some massive grid upgrade costs. Steers customers to sites that are more accessible and allows them to communicate up front about the potential for higher costs of certain sites. (EV customers) Flo sells chargers to the site host, but Flo is also looking into an owner/operator model. It will be more acute for owner/operator. Critical implementation detail for implementation without incurring more time and costs.
  - Alex Sherman (SunPower)– 2 angles for SunPower. Up front info is useful in making sales to customers. SunPower sells solar and batteries to customers. Upgrades that customers need to pay for is important to know up front versus further down the line. Visibility lets them spot it up front. Understand macro customer intentions and relaying to T/D utility to understand demand to upgrade grid. To the ratepayers plural benefit to do as much for grid and neighborhood as well as customer, need to understand how to transact the energy with the utilities; looking for data to be available to both install as well as transact. Makes system more active benefitting ratepayers. In their self interest to advocate for this however doing so will help encourage deployment of these resources more broadly making the grid more flexible.
  - John Albers (SunPower) – ripple effect. Customers less likely to pursue DG installation if their neighbor(s) have a bad experience. Good experiences leads to greater adoption.
  - Marco (DTE)– observation – when it comes to available capacity – it goes beyond EV charging. Discussed a new development in Ann Arbor that wants to pursue all electric heating; capacity availability/ constraints changes the calculations of developers of where to site the new buildings. Seeking info earlier on in planning process. Changed processes to engage earlier in the process. Appreciate the need. Takes time to get systems pulled together.
  - Amy Heart (SunRun) – Main goal is to make sure that residential customers aren't experiencing barriers to DER installation; they want solutions like home solar and

batteries. Different solutions to think about making customers happy – deeper conversation about making customers happy regardless of where they are might be good.

**2. *Noting the potential tension among the additional costs necessary to further develop and improve upon existing capacity maps, the wants and needs from stakeholders, and the ultimate cost and benefits to ratepayers, can we reach consensus on what the appropriate foundational or minimum standards should be adopted in regards to the following:***

**a. *Granularity of Data - At what level of data granularity (single-phase v. three phase, transformer level v. substation level, etc.) provides the best balance among third-party expectations and needs, utility data availability, and ratepayer benefits/ costs.***

- Alex Sherman – Reviewed data mapping done by the utilities – seems like a good start.
- Matthieu Loos (Flo) – on single phase vs 3 phase: 3 phase for DCFC, looks at single phase in urban areas for convenience charge. Differences are important. Important to know when to incentivize customers to use charging during the evening versus during the day.
- Richard Mueller (DTE) – challenges for modeling; the more granular the model is, the more analysis needs to be done and more likely that it would be wrong in the statistics. Transformer has capacity that it can support but loading coming on and off that system have a much more significant impact on that transformer analysis than would be there at a circuit level. Drives towards transformer level answers being wrong. Seems like a big piece needs to be planning correctly up front. Probably makes sense to understand where 3-phase versus single phase exists. That would help inform where grid upgrades would be most expensive – like if 3-phase needs to be extended. Could move existing circuit backbone map overtime to become more granular, but transformer level is too granular to get the right answers. High level look with most likely sites should be helpful without getting so granular (transformer level).
- (See also notes on temporal data as this discussion moved between granularity and the temporal data discussion.)

**b. *Data Refresh Rates - How often should the data be updated/ refreshed (once a quarter, once a year, bimonthly, etc.) given third-party expectations and needs, utility capabilities and costs, and ratepayer benefits/ costs.***

- Alex - We would be happy with something more than annual, but don't need to be extremely demanding. A regular cadence would be reasonable.
- Matthieu Loos – If seasonality or growth in certain areas, see rapid changes monthly on the usage for fast chargers.

- Richard Mueller – core data is updated on a yearly basis; however updating when projects happen, being done more asynchronously, probably closer to quarterly basis. For loading maps, yearly update because tied to annual planning cycle.
  - Dan Coleman – plan is to start with annual. The source data that is ingested by the tool requires them to build distribution models each time. Tied to annual load forecasting process. Probably less than annual right now. Engineering intervention required to update models. Another tool looking at that process to automate which would allow them to increase the frequency.
  - Joe Jacunski – manual process currently. Hoping to automate more.
  - Kyle Desser – some automations but still a lot of manual work.
  - David Narang – Does anybody have a sense of the growth rate for EVs or PV systems where growth rate justifies a more frequent update? Do you know if annual process is sufficient to deal with the growth rate?
    1. Joe Jacunski – the upgrades needed for circuits tends to be in the year + range; upgrading a distribution transformer can be turned around more quickly. Overall work to get done fits well with an annual process.
    2. Paul Proudfoot – similar to MISO queue process – can't seem to get out in front of the interconnections. Need to get ahead of it. Establish capacity available for each customer versus upgrades here and there. Advanced planning may be helpful.
    3. John Albers – Will an annual update be sufficient? PJM and out east slowing down interconnections because lack of capacity. Will this slow down interconnection in MI?
    4. Amy Heart – NJ and New Mexico have closed circuits; regardless of how frequently maps updated could miss interconnections. Hawaii used 166% of transformer rating for screen – back in 2017 partnered with NREL to test – customers on saturated cell can elect to use smart inverter to not overload circuit without upgrades which allows a customer friendly approach. Avoids lengthy studies and saying no to customers. What else besides HCA can we do?
      1. Paul P: The area of inverter specifications is another area it would be great to get out in front of.
      2. Richard: Find a way to communicate restrictions in particular zones.
- c. **Temporal Data** - Should utilities strive to make available capacity data that is temporal as well as spatial, thereby allowing third-parties to know where and when there is excess hosting / load capacity? What are the limitations (data availability, costs, etc.) for being

*able to produce such data? At what level of granularity should this temporal data be offered (on-peak v. off-peak, seasonal, etc.)?*

- Shibani (NREL) – Wants to re-emphasis on temporal granularity – when looking at dynamic hosting capacity – in morning vs evening – if seasonal or daily variations would be more costly?
  1. Joe Jacunski (DTE) – Operating and maintenance concerns – move customers around to deal with storm and trouble outages and getting in to do maintenance – lots of changes day to day in temporal data; If we go to strategies like this, how do we incorporate grid operations into the analysis? Is average OK? Take into consideration that curtailing might need to happen for maintenance or storms if we try to utilize that capacity.
  2. Richard Mueller – Grid is designed to certain capacity – if there is a time that capacity is not being utilized, then great – added efficiency. When new service is added – it’s sized to meet expectations – can’t go over that capacity because leads to equipment degradation and failure.
  3. Alex Sherman – Understand that the answer might be that whether there is enough capacity at a certain location at a certain time might be that it depends. Need middle ground. Need more transparency earlier. Possibly flag neighborhoods where grid upgrades might be triggered – delay installation; bundle installations to dilute the costs among several customers; that’s the extra data they are looking for right now.
  4. Dan Coleman – Lots of variables is a challenge; hosting capacity maps could provide high level look
  5. Amy Heart – Need data on where curtailments happen instead of being in guessing mode. Need to get to deep red parts of the grid
  6. Valerie Brader – most of work she has seen on EV side – transformers are the biggest risk for degradation. Did she hear correctly that we can’t get down to transformer level data?
    1. Richard – When modeling you are making assumptions – which types of loads come on; every scenario has a cost to analyze; multiplies the amount of effort, data quality. At a certain point, there needs to be a specific request so that accurate info can be provided. Mitigate as much risk as possible but need handoff from HCA to specific project.
    2. Ken Selander – only a handful of customers per transformer. Need to worry about data privacy for small group of customers.
    3. Valerie – should we be using these maps for residential at all? Maybe for fleets. Don’t want a map showing a red zone where

customers think they can't buy an EV. Wonder if we're trying to make these maps do something that they can't do? Don't want to chill fleet customers either. Ford has concerns about maps that have red that would chill.

4. Jeff Myrom – wonders if some is addressed by design standards for residential? Included new standard of 50 amps per house – would charge 2 EVs per household. If you stick with that level, then costs socialized; above that then costs would be assigned to the customer.
5. Paul Proudfoot – Two separate questions – HCA for small solar – usually need 3 phase is different from trying to find out if transformer on single phase has enough capacity. Two different questions – two different maps.
6. Dan Coleman – agree with Paul. Not sure if residential EV hosting is appropriate for these maps.

d. **Exportability/ Usability of Data** - How should this data best be made available and exportable (CSV file, Shapefile, etc.) so to allow for further analysis and data integration by third parties independent of the utilities website or platform?

- Alex Sherman – goal would be to use the data for a programmatic solution. Without a software team.
- Matthieu – the more granularity we have, the more options available – API's is usually preference; CSVs possible.
- Brian Rich – not exportable and don't have any current plans for that.
- Joe Jacunski – not exportable now. Looked at CSV option. Still working through security aspects and also if useful.
- John Albers (chat) - Re IX cost sharing - the Minnesota PUC recently approved a proposed cost sharing program for customers of Xcel. Starting on January 3, customers with projects up to 40 kW will pay a \$200 interconnection fee that will cover all upgrade costs up to \$15,000 per project. Low-income customers, as designated by Xcel, are exempt from paying this fee.
  1. Julie Baldwin is familiar with the Xcel cost sharing above. My understanding was that all customers the \$200 whether they had a interconnection upgrade or not.



Baldwin, Julie (LARA) 4:59 PM



## Minnesota's New Cost Sharing Approach

Under the new cost sharing method approved by the Commission, all interconnecting projects under 40kW will now pay a flat fee. That fee will contribute to a pool of funds that will be used to pay for the necessary grid upgrades for projects in that category.

Clip from a Solar Power World Article: Today, most small solar projects connecting to Xcel's system do not require grid upgrades, but in the case upgrades are required, the average cost per project is about \$3,600. The newly approved Cost Share Program, for which customers will be eligible starting January 3, 2023, will require customers with projects up to 40 kW to pay a single fee of \$200, which will cover all upgrade costs up to \$15,000 per project. Additionally, under-resourced or "low-income" customers as designated by the utility, will be explicitly exempted from paying this fee.

2.

e. ***Need for Integration Between Hosting Capacity and Load Capacity Maps*** - *What are the benefits of integrating hosting capacity and load capacity maps and data when compared to the ultimate costs and feasibility of this integration? What additional analysis can be performed from the integration of hosting and load capacity data?*

- Paul: We are talking about 2 different things: generation maps and load host capacity maps.
  1. Comm. Phillips - Two different use cases for capacity maps. There have been questions/thoughts on integrating into one mapping tool/resource and feasibility. Or are these just two separate maps. Dan Coleman –I&M could have both generation and load built into the same tool but on two different layers. That is what I&M is planning.
- Dan Coleman – Working now on putting them both in the same tool, but in two different layers.
- Joe Jacunski agrees – two separate maps.
- Shibani - Since they are similar and having them work in different layers would be useful. From a user perspective it is good to have that separation. We have been thinking how to put all in one map, but these are two separate tools. So creating a distinction is important and stated clearly to the user. No particular thoughts on if they should be two separate maps, or layers, etc. As long as they are accessible. For methodology discussion we don't have such preference on combining into one.

f. ***Additional Information or Data*** - *Are there any additional data or information that is currently not being made available via the existing hosting capacity maps or that has not yet been discussed, but should be made available during the next iteration of these resources?*

- Valerie Brader – use the term *constrained* instead of red areas on the maps to avoid misunderstanding of data on maps.
  1. Commissioner Phillips – probably need to revise “go no-go” language as well.
  2. Marco – with time and investment all areas would be able to support electrification. Might want to know when expanded capacity would be available instead of customer thinking they would be responsible for a massive upgrade. Use dark orange, yellow, green. Not red.
  3. Cory Flo – thinks Val’s suggestion on colors is a great idea. Look at [Southern Cal Edison’s map](#) – it is visually intuitive. Click on lines and different levels of data pop up. Best example.
- David Narang asked if there are privacy standards or guidelines that the utilities could point them to.
  1. Johanna Bleckman – Commission order 1515 rule – no customer group can represent fewer than 15 customers and no customer can represent more than 15%.
  2. Ken Selander – It’s docket [U-20959](#) 9/8/22 order
    1. Com Phillips – rehearing request on that order
- David Narang – physical security standards as well?
  1. Joe Jacunski – Ex: Edwards Airforce Base – utility service mapped out there – would be useful info for bad actors. Need to work their way down from transmission level protection to the distribution system. Trying to work through it.

**NEXT STEPS:**

1. Learnings concerning capacity maps/ analysis from this discussion and the previous listening sessions will be incorporated into the [Grid Integration Study](#) and recommendations, which will be completed in Q2/Q3 of 2023.
2. As part of the Grid Integration Study, there will be further opportunities for interested parties to discuss policy, technological, or other barriers to integrating DERs and EVs. More information will be made available through the Distribution System Data Access listserv and [webpage](#).
3. Notes will be distributed following the meeting.
4. Send additional best practices, case studies, white papers, presentations or other thoughts/ recommendations to [Cole Bearden](#).