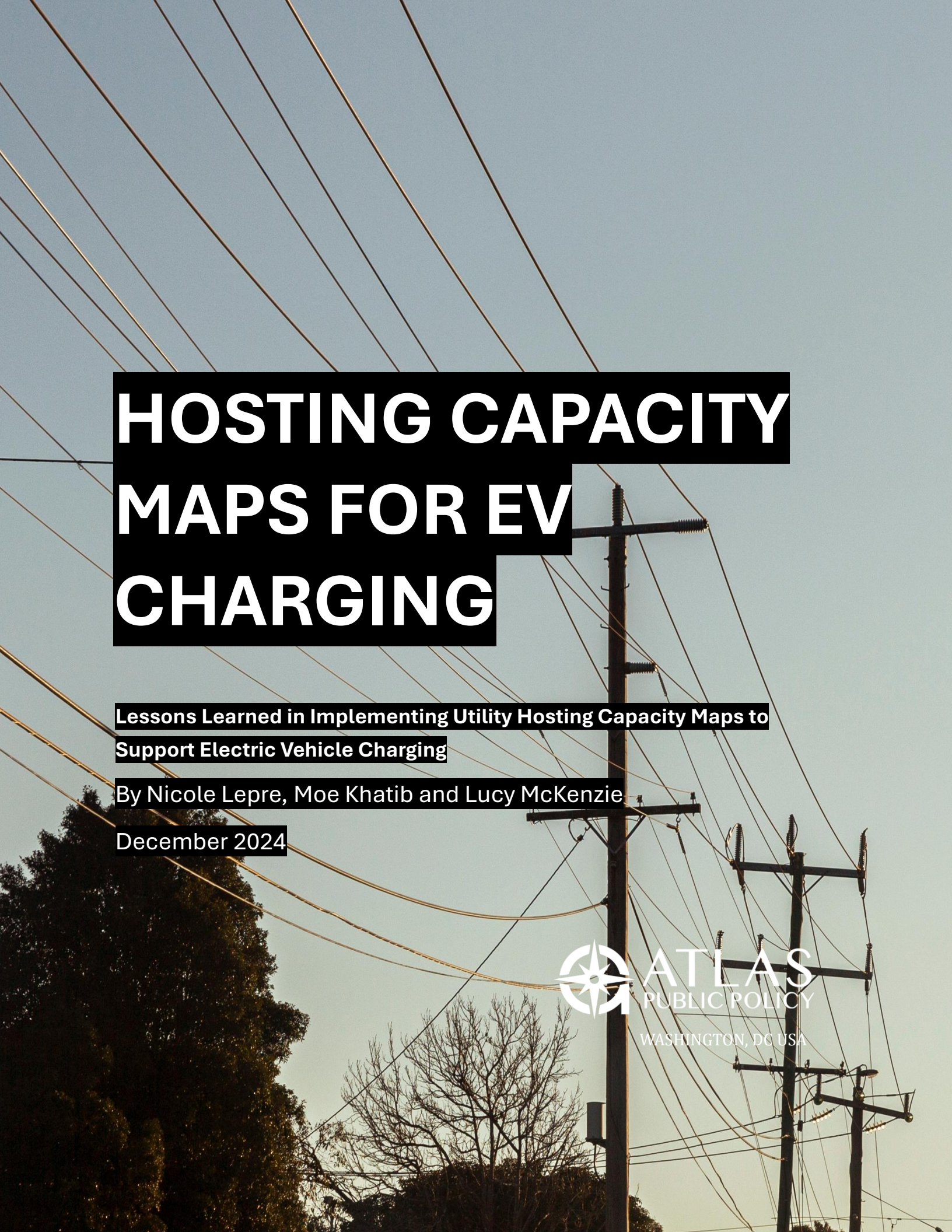


HOSTING CAPACITY MAPS FOR EV CHARGING

Lessons Learned in Implementing Utility Hosting Capacity Maps to Support Electric Vehicle Charging

By Nicole Lepre, Moe Khatib and Lucy McKenzie

December 2024

ATLAS PUBLIC POLICY
WASHINGTON, DC USA

Contents

Acknowledgements

Atlas Public Policy thanks the Natural Resources Defense Council for their support of this work. Atlas also thanks each of the interviewees listed in Figure 1 for their time and insights. The conclusions contained herein are Atlas Public Policy's alone.

Executive Summary

Hosting capacity maps are an essential tool for electric vehicle (EV) charging developers and utilities alike. These maps provide a geographic representation of existing distribution grid assets, highlighting areas with available electrical capacity and potential constraints [1]. They can enable developers to make informed decisions about whether and where to pursue EV charging projects, reducing the cost of infrastructure rollout and significantly shortening project timelines.

Recognizing these maps as critical to enabling EV charging, utility commissions and state legislatures around the country have compelled utilities to provide them, often specifying required update frequency, data granularity, accessibility, and user features. Other utilities have developed them of their own volition. Though utilities have encountered challenges in developing, maintaining and sharing the required data, many have overcome them: 58 utilities in 26 states now provide some form of hosting capacity map. Still, with approximately 3,000 distribution utility companies in the United States, the majority of the country remains without this resource [2].

Atlas Public Policy (Atlas) interviewed a range of EV charging developers and utilities that rely on or develop these maps to understand how they are currently being used and how utilities can make them as useful as possible. Our interviews revealed that hosting capacity maps are indeed saving EV charging developers and utilities significant time and costs by reducing the number of load study requests needed in areas with capacity constraints. Importantly, while maps with granular data are the most useful, even simpler maps that provide minimum data fields deliver significant value over having no map at all.

Figure ES-1 provides a summary of key data elements that these maps should include. Minimum “essential” data for a hosting capacity map to be useful include location, voltage, and available capacity of existing distribution circuits/feeders/lines. This data should be updated at least quarterly, with a clear indication of when the last update occurred. Data that can significantly enhance the value of hosting capacity maps include forward-looking forecasts of available capacity, substation data, data on transmission constraints, and on- and off-peak capacity information.

Hosting capacity maps are critical to enabling the cost-effective buildout of EV charging on existing distribution grids. They can also show where upgrades may be needed. Meeting customer demand, state goals, and equity outcomes will ultimately require building additional grid infrastructure. States and utility commissions should therefore also consider policies that can proactively support needed grid buildout. Atlas has developed a broader

summary of all available grid-enabling policies, with examples of each, in our September 2024 issue brief *"Supporting the EV Charging Network of the Future."*[1]

Figure ES-1: Key Data Elements to Include in Hosting Capacity Maps for EV Charging

Essential

- Most ideal: location and voltage of distribution circuit/feeder/line
  - Less ideal but still valuable: Highlight regions of map based on ranges of available capacity
- Available capacity of distribution circuit/feeder/line
- Clearly indicate date of last update
- Data updated at least every quarter

Better

- Available capacity of substations
- Location of substations
- Location of sub-transmission systems
- Include interconnection queue in available capacity data
- Provide forecasted available capacity
- Planned upgrades

Better

- Available capacity of sub-transmission systems
- Available capacity for on- vs. off-peak demand periods

[1] Available at https://atlaspolicy.com/charginggrid-ev/

Background

Utilities across the country are increasingly publishing hosting capacity maps to improve planning for distributed energy resource (DER) integration. According to the U.S. Department of Energy (DOE), as of May 2024, 58 utilities and state agencies have released these maps in 26 states, Washington D.C., and Puerto Rico [3]. The increasing availability of hosting capacity maps helps utilities, developers, and other stakeholders make strategic decisions about the placement of new energy projects that are critical for advancing the clean energy transition.

There are two main types of hosting capacity maps:

1) Generating hosting capacity maps focus on the grid's ability to accommodate new energy generation, such as from solar panels, wind turbines, or other generating resources. These maps are designed to ensure that new generation can be added without harming the grid, and enable utilities and developers to strategically select optimal clean energy sites.
2) Maps that provide information about the system's ability to host new loads, such as EV charging.

This report focuses on hosting capacity maps for new loads. For this work, Atlas interviewed a range of EV charging developers and utilities that rely on or develop these maps to understand how they're currently being used and how utilities can make them as useful as possible. Figure 1 lists the organizations who participated in interviews. These interviewees serve a mix of light-, medium- and heavy-duty electric vehicles.

Figure 1: Organizations Interviewed for this Report

Charging Developers

- AmpUp
- EVgo
- Forum Mobility
- Greenlane
- Terawatt Infrastructure
- Tesla
- Voltera Power

Utilities

- Dominion Energy
- Hawaiian Electric
- Los Angeles Department of Water and Power
- Pepco Holdings

This work builds on the following existing resources:

- **Data Validation for Hosting Capacity Analyses by NREL and IREC:** The National Renewable Energy Laboratory (NREL) and the Interstate Renewable Energy Council (IREC) have published a detailed paper providing technical recommendations for utilities on validating data in hosting capacity maps [4].
- **U.S. Atlas of Electric Distribution System Hosting Capacity Maps:** The U.S. DOE has aggregated a list of publicly-available hosting capacity maps, organized by state, utility, and type of capacity (generation or load) [3].
- **EPRI's eRoadmap:** The Electric Power Research Institute (EPRI) in 2023 published "eRoadmap," an interactive online tool designed to assist electric power companies and stakeholders in planning the infrastructure required for electric vehicles. The eRoadmap enables users to model the energy required to support EV demand, down to the individual feeder level. EPRI continues to add features to the tool, such as overlaying energy needs with existing distribution capacity, which is made possible by ongoing partnerships with utilities who provide data [5].
- **NARUC's Grid Data Sharing Playbook**: The National Association of Regulatory Utility Commissioners (NARUC) published a report in 2023 to advise states on how

to share grid data effectively. The report summarizes findings from NARUC's Grid Sharing Collaborative initiative, during which the association worked with public utility commissions, utilities, non-governmental organizations, energy service companies, and DOE to collect insights and recommendations relating to grid data sharing, including hosting capacity maps [6].

The Case for Hosting Capacity Maps

Interviewed EV charging developers and utilities alike said hosting capacity maps are valuable to their operations. Though hosting capacity maps cannot fully replace the need for load studies,[2] they can help EV charging developers avoid siting chargers in areas that have known capacity constraints when possible. This saves time and money, and ultimately enables the installation of more EV charging at a lower cost and faster pace. One developer described hosting capacity maps as "gold" to their company. Others echoed this sentiment, with one developer explaining that they use available maps "pretty religiously." Only one developer interviewed expressed skepticism about the value of hosting capacity maps, and that skepticism was based on the concern that the data is not always accurate. Other developers also acknowledged that hosting capacity maps often have shortcomings, but said the maps were still very useful. One developer explained that, while hosting capacity maps can always be better, they are the most useful tool available right now to help developers choose sites that are most likely to have available capacity. In addition to providing data directly to individual charging providers and fleets, these maps can also support researchers and others that provide platforms and tools to states, cities and policymakers in determining where and how EV charging should be built out.[3]

These sentiments are in line with a 2024 survey commissioned by the Natural Resources Defense Council that targeted California fleets and charging developers to understand challenges in the EV charging installation process. Survey respondents emphasized the need to accelerate energization timelines, with hosting capacity maps identified as valuable tools for doing so: 90 percent of respondents supported a requirement for utilities to provide and update these maps or similar tools on an ongoing basis [7].

While many utilities with hosting capacity maps were compelled by their regulator to provide them, some have chosen to provide them even without any requirement, in order to

[2] A load study is an analysis of electrical demand on the grid to assess current and future capacity needs, ensuring reliable service and enabling planning for infrastructure upgrades. Generally, EV charging providers must request load studies by their utility for a specific site before moving forward with a large charging installation.
[3] For example, see the EPRI eRoadmap tool, and UC Berkeley's EV Equity Roadmap tool.

reduce the number of load study requests they receive for areas where there is no capacity. Box 1 discusses Dominion Energy's decision to provide a hosting capacity map ahead of the first round of applications for the federal National Electric Vehicle Infrastructure (NEVI)[4] program in order to avoid an influx of load requests in areas with insufficient capacity. One other utility said that publishing their map has freed up engineering resources by allowing customers to access some information on their own.

Box 1. Dominion Energy EV Hosting Capacity Map and NEVI

The Federal NEVI program was a key driver for Dominion Energy to create an EV hosting capacity map. Virginia's NEVI phase 1 application required applicants to engage with their utility in order to apply for funds. In anticipation of this influx of load study requests, Dominion Energy chose to provide an EV hosting capacity map to try to reduce the number of requests they would receive for areas with inadequate capacity. While it is challenging to determine the exact number of inquiries the utility would have received via email or other communication channels regarding capacity for potential NEVI sites, all 75 NEVI-related applications submitted to the utility were for areas with adequate capacity.

Although Dominion Energy's map started from NEVI, the utility saw that this map had great value for all its customers to find site specific locations within its service territory that would be suitable for fast charging.

Finally, we note that hosting capacity maps are just one of a suite of policy interventions available to states and utility commissions seeking to enable EV charging demand. Hosting capacity maps are critical to enabling the cost-effective buildout of EV charging on existing distribution grids. They can also show where upgrades may be needed. Meeting customer demand, state goals, and equity outcomes will ultimately require building additional grid infrastructure. States and utility commissions should therefore also consider policies that can proactively support needed grid buildout. Atlas published a summary of the full range of available grid- enabling policies, with examples of each, in our September 2024 issue brief ***"****Supporting the EV Charging Network of the Future."*[5]

[4] The National Electric Vehicle Infrastructure program is a five-year, $5 billion formula grant program that provides funding to states to strategically deploy EV charging infrastructure along highway corridors.
[5] Available at https://atlaspolicy.com/charginggrid-ev/

Policy and Regulatory Actions to Spur Hosting Capacity Maps

As hosting capacity maps become increasingly crucial for the planning and integration of growing energy demand, state policymakers are taking legislative and regulatory actions to require their development. These efforts go beyond simply mandating the creation of maps: in some cases, legislation and regulatory orders require detailed improvements to map content, data accessibility, and utility processes.

One notable example is the Minnesota Public Utilities Commission's decision to direct Xcel Energy, the state's largest utility, to enhance its 2020 Hosting Capacity Analysis [8]. The Commission's order called for incorporating more detailed distribution system data and making it easily accessible to stakeholders. Xcel Energy was required to provide downloadable data for each distribution line segment, identify the locations of system lines, and develop a data validation plan with input from key stakeholders.

Another development was Nevada’s Senate Bill 146, passed in 2017. This legislation was designed to support the integration of DERs, with an emphasis on accommodating the growing number of EV charging stations in the state [9]. The Nevada Public Utilities Commission subsequently directed NV Energy to develop a comprehensive distribution resource planning framework that included hosting capacity maps.

The New Jersey Board of Public Utilities’ (NJ BPU) interconnection rules also require electric distribution companies to provide hosting capacity maps. In November 2022, the NJ BPU ordered changes to the rules based on recommendations in a report from Guidehouse, Inc. about how to improve interconnection processes to facilitate grid modernization [10]. The recommendations included improvements to the accuracy and usability of hosting capacity maps, and in June 2024 the NJ BPU proposed new rules based on these recommendations.

Six charging developer interviewees pointed to California when asked about policy and regulatory activities related to hosting capacity maps. California's role in this area is frequently referenced by stakeholders, and the state’s experiences offer valuable insights into how to improve these maps for broader use across the United States. Box 2 describes key initiatives related to hosting capacity maps in California.

Other states are also pursuing similar policies to require or improve utility hosting capacity maps, including load-focused hosting capacity maps. NARUC in 2023 published a “Brief Summary of Current State Practices” that lists and describes policies in several other states [11].

Box 2. California's Regulatory Actions on Hosting Capacity Maps

Two key regulatory processes in California —the California Public Utilities Commission's (CPUC) High DER proceeding [12] and the California Energy Commission's (CEC) Integrated Energy Policy Report (IEPR) [13]—are central to the state's efforts to enhance hosting capacity maps and enable faster, lower cost EV charging rollout.

The CPUC's High DER Proceeding (Rulemaking 21-06-017) aims to improve hosting capacity maps provided by investor-owned utilities by enhancing data accuracy, accessibility, and transparency. It focuses on making maps more precise in reflecting real-time grid capacity for DERs, including EV loads, and emphasizes the need for regular, dynamic updates to capture changes from DER integration, infrastructure upgrades, and new load patterns. On October 17, 2024, the Commission issued a decision to improve hosting capacity maps in the state, directing utilities to add details on the cause of low or zero capacity (e.g. thermal or voltage issues). The decision also removes customer registration requirements for portal access, mandates quarterly hosting capacity analysis reports and public workshops, establishes a dedicated contact email, and requires other data portal improvements by December 2026. Additionally, utilities must apply the 15/15 Rule for data redaction: data sets must contain at least 15 customers, with no single customer representing over 15 percent of the load at the circuit and line section level [12].

California's IEPR, required in Senate Bill 1389, mandates that the CEC conduct ongoing assessments and forecasts across all aspects of the energy industry, including supply, demand, prices, and grid capacity. In its 2023 IEPR, the CEC discussed the role of hosting capacity maps in increasing the transparency of processes for connecting new loads to the grid, particularly for EV charging infrastructure. One of the IEPR's key recommendations was for the CPUC to order utilities to improve hosting capacity maps by providing more granular data and ensuring data is updated in a timely manner. The report also emphasized the need for expanded publicly-available datasets on grid capacity, with appropriate security measures in place to protect sensitive information. In stakeholder comments submitted to the docket, EV charging developers and others expressed concerns about whether hosting capacity maps was up to date.

What Makes a Good Hosting Capacity Map?

Hosting capacity maps vary in terms of their usefulness to EV charging developers. To understand what makes a hosting capacity map effective, it is important to understand the different parts of the electric system, particularly the distribution system. Figure 2 provides an overview of the key components of the electric distribution system. Hosting capacity maps vary in terms of which components are included and what information is provided for different components.

Figure 2: Components of the Utility Distribution System

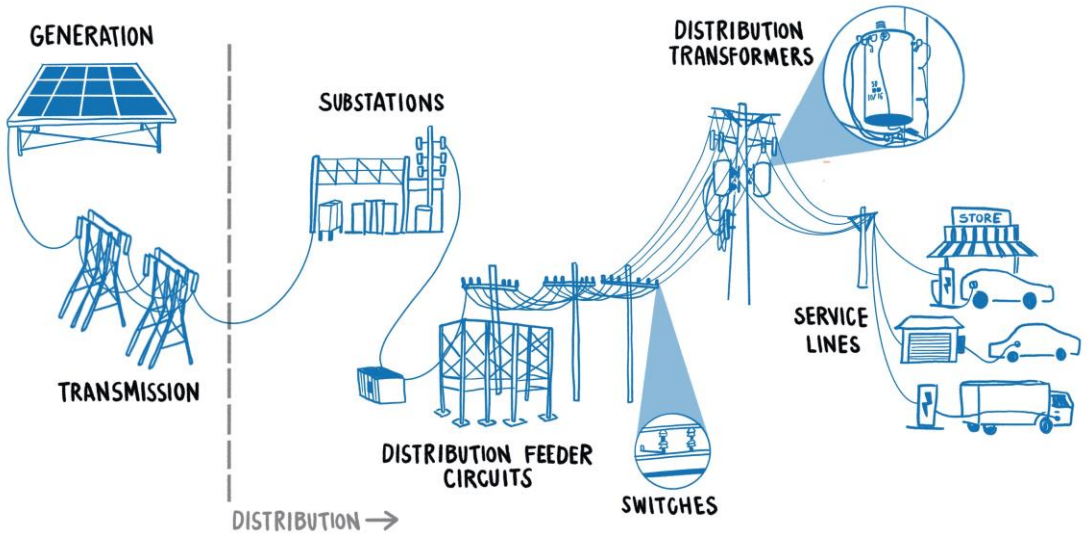


Illustration Source: Jessica Russo [14]

Figure 3 describes the data elements that are “essential,” “better,” and “best” according to charging developer interviewees. These categories are not meant to replace each other but rather add to each other. In other words, the “best” hosting capacity map would include all data elements listed in the “essential” and “better” categories as well. While medium- and heavy-duty (MDHD) EV charging developers may have slightly different needs than light-duty EV charging developers, this report seeks to provide recommendations to make capacity maps as useful as possible across vehicle classes. Given that utilities will likely not provide separate hosting capacity maps for different vehicle classes, it is important to try to incorporate key features that serve all vehicle classes in any map.

While certain features and data make some maps much more valuable than others, a key takeaway from the interviews was that the gap between no map and a map that meets the "essential" criteria is large. As one charging developer explained, "The worst map is one that doesn't exist." Another developer echoed this sentiment, advising, "Don't let the perfect be the enemy of the good." A third developer explained that, as long as the user of the map is aware of the map's shortfalls, "something is better than nothing."

Figure 3: Key Data Elements to Include in Hosting Capacity Maps for EV Charging

Essential

- Most ideal: location and voltage of distribution circuit/feeder/line
  - Less ideal but still valuable: Highlight regions of map based on ranges of available capacity
- Available capacity of distribution circuit/feeder/line
- Clearly indicate date of last update
- Data updated at least every quarter

Better

- Available capacity of substations
- Location of substations
- Location of sub-transmission systems
- Include interconnection queue in available capacity data
- Provide forecasted available capacity
- Planned upgrades

Best

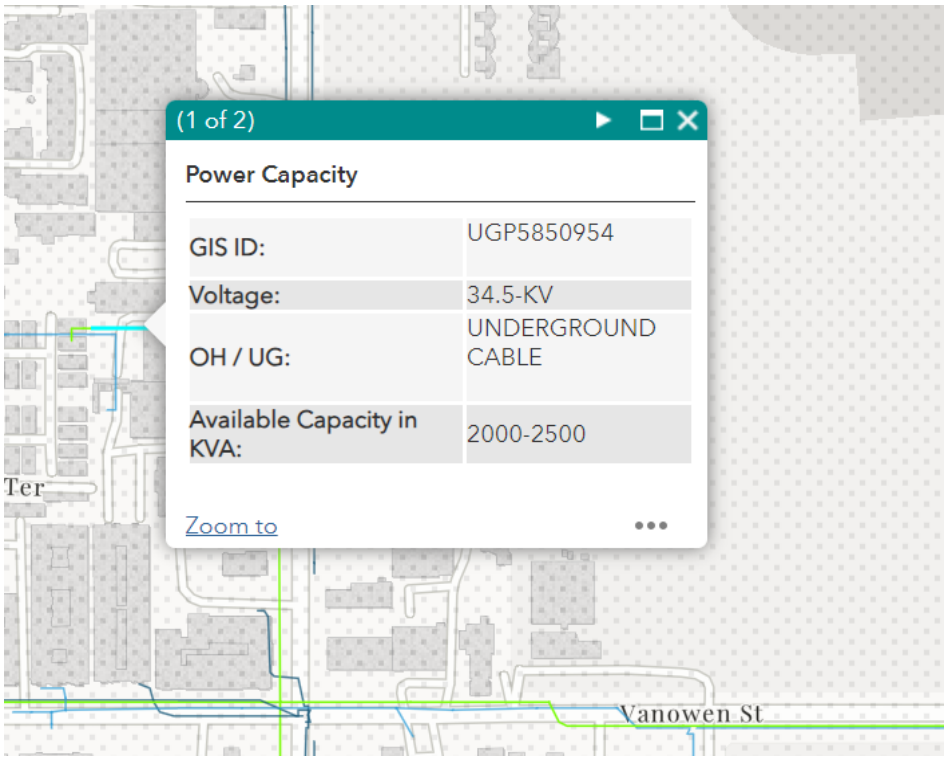
- Available capacity of sub-transmission systems
- Available capacity for on- vs. off-peak demand periods

"Essential" Data Elements

Many interviewees emphasized that, while hosting capacity maps vary widely in terms of granularity of data, a map that provides even just the minimum essential data and is updated regularly with correct data can be extremely useful and is much preferred to no

map at all. When asked what the essential data are for a map to be useful, many interviewees mentioned the location, voltage, and available capacity of distribution circuits/feeders/lines. The Los Angeles Department of Water and Power's (LADWP) map is a good example of how valuable these "essential" data points can be: while LADWP's map only meets these minimum criteria, two EV charging developers mentioned it when asked for examples of good hosting capacity maps. Figure 4 shows a screenshot from LADWP's hosting capacity map, showing "essential" voltage and location data for distribution circuits/feeders/lines.

Figure 4: Screenshot from LADWP's Hosting Capacity Map



While LADWP only shows voltage and available capacity for distribution circuit/feeder/line, their hosting capacity map was cited as an example of a good map by two interviewees, supporting the notion that maps with even basic information can be valuable.

Source: ArcGIS [15]

Some utilities do not show individual distribution circuits/feeders/lines and instead color-code regions of the map to indicate a range of available capacity. Three of the utilities interviewed provide this kind of map. While EV charging developers said they would prefer to see individual circuits, maps that show ranges of available capacity can still be valuable and preferable to no map at all. One utility explained that they chose this method because it

helped to assuage security concerns. The utility explained, however, that a downside of this type of map can be the difficulty in updating them, since a process needs to be developed to sort different regions of the map into various ranges of available capacity and then color-code accordingly: showing the individual distribution circuits/feeders/lines requires less processing.

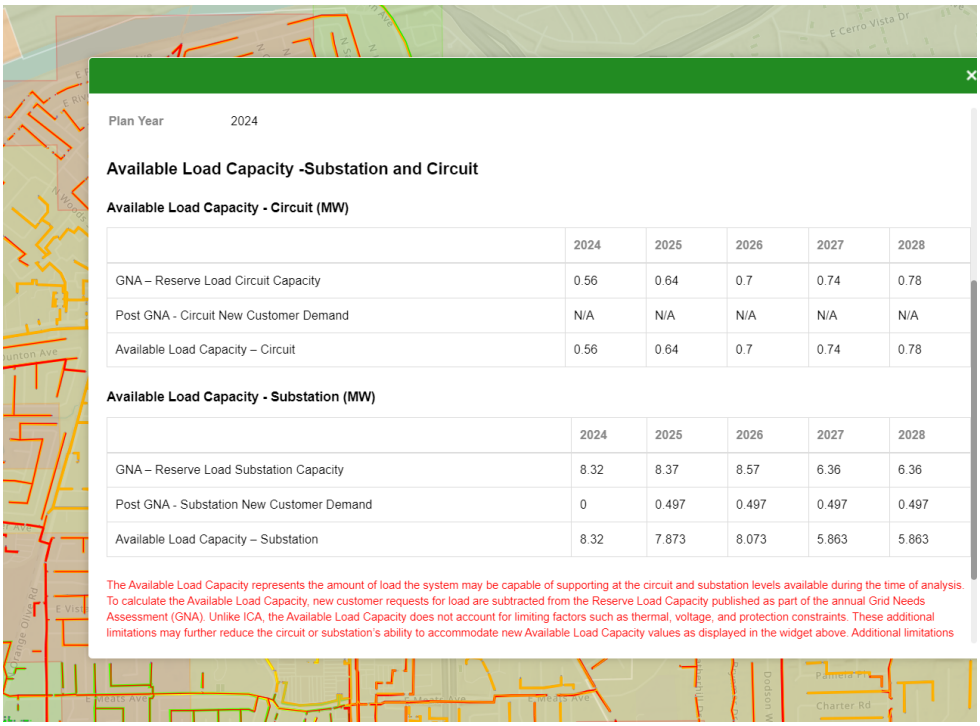
Interviewees emphasized the importance of regularly updating hosting capacity maps and being transparent about when a map was last updated. While interviewees agreed that more frequent updates are better, there was variation in what interviewees said the minimum frequency for updates should be. Two charging developers said approximately quarterly was the minimum. One charging developer said six months to a year could potentially be good enough. Another developer said that weekly would be ideal. Part of the reason for the variation is that the amount of development activity varies in different utility territories. As one EV charging developer explained, for utilities whose territories experience a lot of development from projects that require hosting capacity, they need to update their maps more frequently for the maps to remain accurate and useful. Hosting capacity maps for areas that do not see as much activity may not need to be updated as frequently. The same charging developer explained that it is challenging for developers to know how accurate a hosting capacity map is because only the utility can really know how quickly the data represented in the map is changing. These responses suggest that quarterly updates could be useful as a starting point for minimum frequency, though more frequent updates may be appropriate depending on the region. NARUC also recommends at least quarterly updates in their Grid Data Sharing Paybook [6]. Regardless of frequency, interviewees emphasized that utilities should be sure to clearly indicate when their map was last updated.

“Better” Data Elements

In addition to asking interviewees to identify essential data for a hosting capacity map to be useful, Atlas asked interviewees what data could elevate the value of a map. Four interviewees discussed the value of data on substation location and available capacity. One EV charging developer explained that substation data is what makes Sothern California Edison’s (SCE) hosting capacity the “gold standard” of hosting capacity maps. In fact, when asked for examples of good hosting capacity maps, five interviewees specifically identified SCE’s. Many of the utilities interviewed as well as some of the EV charging developers explained that providing substation data can raise security challenges for some utilities. The *Overcoming Challenges section* discusses this challenge further and describes how some utilities have overcome it.

Interviewees also identified as particularly valuable data that forecasts available capacity based on expected loads and interconnection queues. Figure 5 shows a screenshot from SCE's hosting capacity map, which displays available circuit and substation capacity forecasted out to 2028. One EV charging developer suggested that forecasts that also account for planned distribution system upgrades would be even more useful. As an example, they explained that if a site does not have excess capacity now, but likely will in two to five years because of a planned upgrade, that would be good to know. This could be especially useful for very high-powered charging sites, such as those for MDHD vehicles or major public DC fast charging hubs. Atlas asked two utilities what they thought about the request to include forecasts in hosting capacity maps, and both agreed it could be useful, with one even suggesting it could potentially make sense as a "essential."

Figure 5: Screenshot from SCE's Hosting Capacity Map (the DRPEP Tool)



Uniquely, SCE's hosting capacity map (called the Distributed Resources Plan External Portal or "DRPEP" tool) shows forecasted available capacity, as opposed to only current available capacity, a feature several interviewees highlighted as extremely valuable.

Source: Distributed Resource Plan External Portal [16]

"Best" Data Elements

When asked what data would make hosting capacity maps the most useful they could be, many interviewees mentioned sub-transmission-level data. Interviewees explained that there can be situations where an area looks like it has available hosting capacity, but then a load study reveals that, due to sub-transmission level constraints, adding load would actually require costly and years-long upgrades. As an example, three interviewees explained that there is a section of SCE's hosting capacity map that shows available capacity where load cannot actually be added in the near future because of sub-transmission constraints. One charging provider explained that there is a section of SCE's map that they choose not to look at because they know there are sub-transmission constraints that are not shown. Currently most, if not all, utilities exclude sub-transmission-level capacity information in their hosting capacity maps. In fact, many of the hosting capacity maps that Atlas reviewed specifically state that they do not account for transmission-level constraints.

Two EV charging developers discussed how valuable it would be to see available capacity data for different times of day, such as during overnight or off-peak hours. They explained that some charging projects could adhere to an off-peak charging schedule, which could open opportunities to develop in areas that current hosting capacity maps (which are usually based on peak demand) show as having no available hosting capacity. Consolidated Edison's hosting capacity map does something somewhat similar to this in that it shows available capacity during different seasons [17]. Atlas asked one utility what they thought of the idea of providing on- and off-peak capacity data on a map. They agreed there could be value and did not feel it was an unreasonable or infeasible request.

User Features

In addition to the actual data available in a hosting capacity map, user features can have a significant impact on a map's usefulness. Several interviewees explained that it can be challenging to figure out exactly what a hosting capacity map is showing. Providing a good user guide is therefore essential. Some interviewees even felt that, in some cases, "less is more" visually and that providing too much detail on initial map layers can make maps difficult to use. SCE's hosting capacity map, which was specifically identified as an example of a good map by five charging developers, provides a lot of detailed information, but the utility also provides a thorough user guide [16]. Other features interviewees mentioned as important for making hosting capacity maps useful include being able to search by address, as opposed to simply providing for example a PDF format map in which the user has to

scroll around to find the area they are interested in. Interviewees also said it is valuable to be able to export data.

Overcoming Challenges

Utilities may face certain challenges in developing and maintaining hosting capacity maps. Several interviewees discussed security concerns, explaining that providing information to the public about utility assets, especially their location, could create risk of cyber or physical attack on the distribution system. Utilities explained that one way to help overcome security concerns is to identify sensitive areas or infrastructure to exclude from the map. For example, two utilities described that they identify high-sensitivity circuits as well as buffer areas around certain federal buildings, and exclude data for these areas in their map.

Resource availability or team restructuring may also be challenging to varying degrees for different utilities. While one of the goals of providing a hosting capacity map is to free up utility resources by reducing the number of load studies requested by developers in areas with capacity constraints, utility staff doing the load studies may not be the same as the staff who would produce and maintain a map. In addition, hosting capacity maps may require specific resources, such as a geographic internal system (GIS) team, that some utilities do not have. In a report from NREL and IREC about best practices to ensure data accuracy and reliability in hosting capacity maps, one of three key recommendations is ensuring utilities have an adequately resourced team working on maintaining hosting capacity maps [4]. One interviewed utility echoed this recommendation, highlighting that that their internal GIS team and internal planning group were a big part of why they were able to produce a hosting capacity map. The cost of developing this capacity could be a challenge for some utilities, especially if they hire third parties to support map development and upkeep. One utility noted that they have sufficient internal resources to provide and maintain their current hosting capacity map, but that they are considering hiring an external vendor to make upgrades and improvements and seeking cost recovery in their rate base.

The NREL and IREC report also highlights the importance of having a well-documented and repeatable process for developing and maintaining host capacity maps [4]. As an example, one utility interviewed explained that in developing their hosting capacity map for EV charging, it was helpful that they had already developed capacity maps for solar projects. They explained that while the data is different, having already built these other maps meant they had a process in place that they could replicate.

Some utilities may face challenges with aging technology and be limited in their ability to provide detailed data in hosting capacity maps. For example, one utility explained that they could not provide capacity information at certain levels of granularity, for example at the transformer level or at certain line segments, because they do not have metering at that level. A second utility also discussed this potential challenge for utilities, noting that some utilities still use technology from the early 90s.

Many utilities that provide hosting capacity maps include data limitation notices or terms and conditions that users are required to acknowledge before they can access the map. These notices often disclaim that data inaccuracies may exist and specify certain data points or factors that are not included, such as upstream or downstream grid equipment, other loads in the queue, or planned upgrades. In addition, these notices often advise users that the hosting capacity maps are not intended to fully replace the need for utility load studies.

Conclusion

Where available, hosting capacity maps are already an essential tool for EV charging developers, and their value will only increase as the demand for EV charging grows. These maps can save significant resources by reducing the number of time-consuming and costly load studies that are undertaken for areas without sufficient capacity. While hosting capacity maps with granular data provide the most value, even a simple map that is updated regularly can significantly benefit both EV charging developers and utilities. To further enhance their usefulness, maps could include additional data such as capacity forecasts, substation information, sub-transmission constraints, and on- and off-peak capacity information.

Moving forward, the successful implementation of these maps will be vital to meeting the speed and scale of the EV transition. State legislatures and utility commissions can compel the development of these maps to enable faster rollout of needed charging infrastructure, and several states are already paving the way. Though utilities may encounter challenges and require additional resources, many have already overcome these issues and can provide blueprints for success.

References

[1] Atlas Public Policy, "Energize Solutions: Charging & Grid Infrastructure Policies to Electrify Transportation," September 2024. [Online]. Available: https://atlaspolicy.com/charginggrid-ev/. [Accessed 26 September 2024].

[2] Statista, "Electric utilities in the U.S. - statistics & facts," 1 July 2024. [Online]. Available: https://www.statista.com/topics/2597/electric-utilities/#topicOverview. [Accessed 16 October 2024].

[3] U.S. Office of Energy Efficiency & Renewable Energy, "U.S. Atlas of Electric Distribution System Hosting Capacity Maps," [Online]. Available: https://www.energy.gov/eere/us-atlas-electric-distribution-system-hosting-capacity-maps. [Accessed 7 October 2024].

[4] NREL, IREC, "Data Validation for Hosting Capacity Analysis," April 2022. [Online]. Available: https://www.nrel.gov/docs/fy22osti/81811.pdf.

[5] EPRI, "eRoadMAP," [Online]. Available: https://eroadmap.epri.com/.

[6] National Association of Regulatory Utility Commissioners (NARUC), "NARUC Grid Data Sharing Playbook," 2023. [Online]. Available: https://pubs.naruc.org/pub/E2E50FD7-CD1B-62D5-1071-8D8362AD1E6D?_gl=1*1pnhkce*_ga*NzI0Njg5OTI1LjE3MjYxODczMTY.*_ga_QLH1N3Q1NF*MTcyODY5MDcyMC41LjAuMTcyODY5MDcyMC4wLjAuMA...

[7] California Public Utilities Commission, "Reply Comments Of Environmental Defense Fund And Natural Resources Defense Council On Staff Proposal To Improve The Distribution Planning And Execution Process," 18 June 2024. [Online]. Available: https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M534/K105/534105888.PDF. [Accessed 13 November 2024].

[8] IREC, "Minnesota PUC Requires Hosting Capacity Analysis Improvements," 20 August 2020. [Online]. Available: https://irecusa.org/blog/regulatory-engagement/minnesota-puc-requires-hosting-capacity-analysis-improvements/. [Accessed 4 October 2024].

[9] IREC, "Nevada’s Latest Step for Consumer-Driven Clean Energy: Distribution Resource Planning Reforms," 19 September 2019. [Online]. Available: https://irecusa.org/blog/regulatory-engagement/nevadas-latest-step-for-consumer-driven-clean-energy-distribution-resource-planning-reforms/. [Accessed 4 October 2024].

[10] State of New Jersey Board of Public Utilities, "In the Matter of Modernizing New Jersey's Interconnection Rules, Processes, and Metrics," [Online]. Available: https://publicaccess.bpu.state.nj.us/CaseSummary.aspx?case_id=2109704. [Accessed October 2024].

[11] National Association of Regulatory Commissioners (NARUC), "Grid Data Sharing: Brief Summary of Current State Practices," 2023. [Online]. Available: https://pubs.naruc.org/pub/145ECC5C-1866-DAAC-99FB-A33438978E95.

[12] California Public Utilities Commission, "High DER Future Grid Proceeding," [Online]. Available: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/distribution-planning.

[13] California Energy Commission, "Integrated Energy Policy Report - IEPR," [Online]. Available: https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report.

[14] Jessica Russo, December 2024. [Online]. Available: https://www.jessicaannarusso.com/.

[15] Los Angeles Department of Water and Power, "Los Angeles Department of Water and Power: Power Capacity," [Online]. Available: https://www.arcgis.com/apps/webappviewer/index.html?id=290be9aa52694ef39bf3088940079f62. [Accessed October 2024].

[16] Southern California Edison, "Distributed Resource Plan External Portal (DRPEP) Interactive User Guide," [Online]. Available: https://drpep.sce.com/drpep/drpep-interactive-user-guide/#/. [Accessed September 2024].

[17] Consolidated Edison, "Hosting Capacity," [Online]. Available: https://www.coned.com/en/business-partners/hosting-capacity. [Accessed September 2024].

ATLAS
PUBLIC POLICY
WWW.ATLASPOLICY.COM