

## Staff Briefing Papers

Meeting Date June 9, 2022 Agenda Item 2\*\*

Company Minnesota Investor-Owned Electric Utilities

Docket No. **E999/CI-20-800**  
**E002/M-19-685**

**In the Matter of a Commission Investigation on Grid and Customer Security Issues Related to Public Display or Access to Electric Distribution Grid Data**

Issues What, if any, action by the Commission is needed to address electric distribution grid and customer security issues related to public display or access to grid data; including, but not limited to, distribution grid mapping, aggregated load data, and critical infrastructure?

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### Relevant Documents

**Date**

***Initial Comments***

Dakota Electric Association	Jan. 29, 2021
Otter Tail Power Company	Jan. 29, 2021
Xcel Energy	Jan. 29, 2021
Minnesota Power	Jan. 29, 2021
Great River Energy	Apr. 28, 2021
Department of Commerce	Apr. 30, 2021
City of Minneapolis	Apr. 30, 2021
MNSEIA	Apr. 30, 2021
IREC, Inc	Apr. 30, 2021
Xcel Energy	Apr. 30, 2021

***Reply Comments***

IREC	May 10, 2021
Impact Power Solutions	May 10, 2021
Fresh Energy	May 11, 2021
Department of Commerce	Jun. 7, 2021
Xcel Energy	Jun. 30, 2021
Minnesota Power	Jun. 30, 2021

Otter Tail Power	Jun. 30, 2021
Dakota Electric Association	Jun. 30, 2021

***Public Comments***

US Solar Corp., MN DER Developers	May 3, 2021
City of Eagan	Jun. 25, 2021
St. Paul Area Chamber	Jun. 28, 2021
Minneapolis Regional Chamber	Jun. 30, 2021
Minnesota Chamber of Commerce	Jul. 1, 2021
School District 196 (Received Outside of Comment Period)	Jul. 9, 2021

***Workshops and Reports***

Department of Commerce Workshop Summary	Mar. 25, 2021
Department of Commerce Workshop Summary 2	Apr. 8, 2021
Department of Commerce Report	Sept. 30, 2021

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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.

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## Statement of the Issue

What, if any, action by the Commission is needed to address electric distribution grid and customer security issues related to public display or access to grid data; including, but not limited to, distribution grid mapping, aggregated load data, and critical infrastructure?

- What are the electric distribution grid and customer security issues related to public display or access to grid data?
- What framework should the Commission use to evaluate the risks, costs and benefits of providing access to electric distribution grid data publicly?
- What models should the Commission look to for appropriately balancing access to electric distribution grid data with grid and customer security concerns?
- Should the Commission host a workshop or facilitated discussion on this topic?

## Background

The Commission's July 31, 2020, Order on Xcel Energy's 2019 Hosting Capacity Analysis (HCA) Report directed the Executive Secretary to seek further discussion of grid and customer security issues related to public display or access to grid data which includes, but is not limited to, distribution grid mapping, aggregated load data, and critical infrastructure. The Commission anticipated consideration of the record and comments within 12 months of the order. Further, the Commission requested the Department of Commerce secure specialty services to provide a recommendation on privacy and security in the next hosting capacity report proceeding and to participate in related analysis and stakeholder engagement.<sup>1</sup>

On October 30, 2020, the Commission issued its Notice of Comment beginning the Commission's Investigation on Grid and Customer Security Issues Related to Public Display or Access to Electric Distribution Grid Data (current docket); including an attachment with specific data for public or protected status and public interest rationale.<sup>2</sup> Attachment 1 to these staff briefing papers is a compilation of responses received by specific data points.

By April 30, 2021, initial comments were filed by Dakota Electric Association (Dakota Electric), Otter Tail Power (Otter Tail), Xcel Energy (Xcel), Minnesota Power, Great River Energy,

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<sup>1</sup> ORDER ACCEPTING REPORT AND SETTING FURTHER REQUIREMENTS (July 31, 2020), Docket No. E002/M-19-685, Ordering Paragraph 19 and 20, p. 15

<sup>2</sup> This docket focuses on electric distribution grid and customer security. Changes to customer privacy policies are not in scope. Privacy and data access issues are addressed in Docket Nos. E,G999/M-19-505 and E,G999/CI-12-1344. Gas distribution grid and customer security is also not in scope.

Department of Commerce – Division of Energy Resources (Department), City of Minneapolis, Minnesota Solar Energy Industries Association (MNSEIA), and Interstate Renewable Energy Council LLC (IREC).

By June 30, 2021, reply comments were filed by IREC, Impact Power Solutions, Fresh Energy, Department, Xcel, Minnesota Power, Otter Tail, Dakota Electric.

Between March 25 – September 30, 2021, the Department filed two stakeholder workshop summaries and issued a report with Synapse Energy Economics, the specialty services secured to help provide a recommendation on privacy and security in the HCA and the current docket.

Between May 3 – July 9, 2021, the Commission received comments from MN DER Developers<sup>3</sup>, City of Eagan, B. Kyle (Saint Paul Area Chamber of Commerce President and CEO), Minneapolis Regional Chamber of Commerce, Minnesota Chamber of Commerce, and School District 196.

## **Staff Overview**

Staff notes there appears to be consensus that data is non-public if accurately identified as critical electric infrastructure information (CEII), critical infrastructure, or classified consistent with the Commission’s customer privacy and open data access standards. However, there is disagreement about what specifically should be considered CEII and critical infrastructure or critical customer groups. In the Parties Alignment Matrix section of these briefing papers, staff summarize party positions related to specific data as requested by the Commission’s Notice and compiled in Attachment 1 of the briefing papers.

Most parties agree additional stakeholder work led by the Commission would be useful, especially with engagement from stakeholders with grid security and critical infrastructure experience. Staff note a few areas parties highlight for additional work: 1) risk- and cost-benefit assessment of providing grid data publicly; and 2) appropriately protective data access protocols (e.g. registration, two factor authentication, disclaimers, etc.) – with strongest disputes around the use of non-disclosure agreements. Staff offer decision options related to a Commission-led stakeholder workshop; as well as potential Commission guidance for scope and starting points for that effort. Staff also offer decisions options on data classification and data

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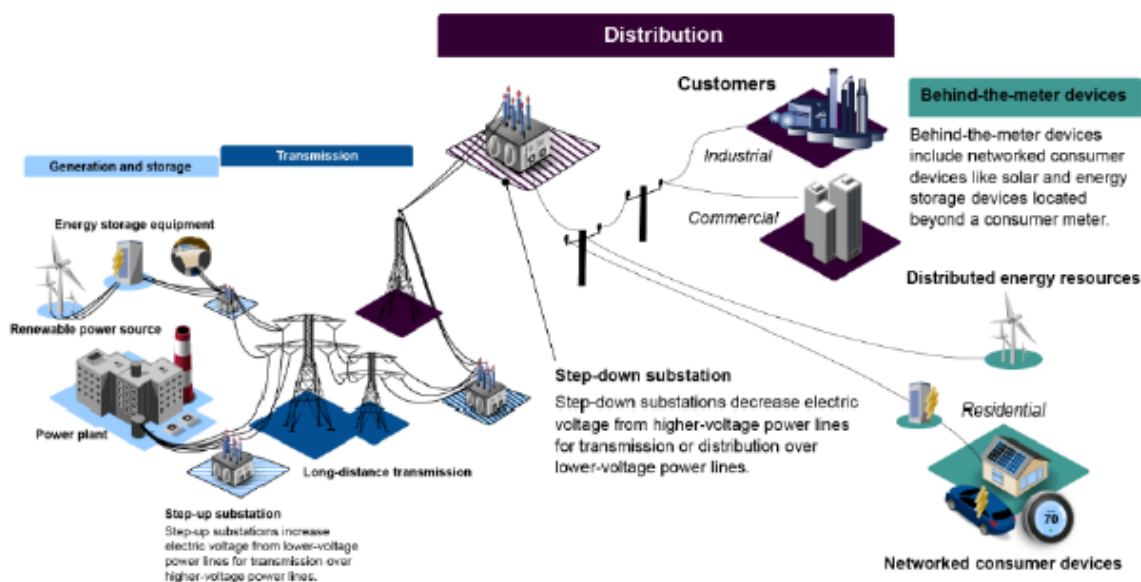
<sup>3</sup> MN DER Developers include US Solar Corporation, Nokomis Energy, Novel Energy Solutions, and Impact Power Solutions.

access protocols recommended by parties if the Commission wishes to make determinations at this point in the investigation.

Lastly, several recommendations pertain specifically to Xcel Energy’s hosting capacity analysis (HCA) map and data. Staff offer a decision option related to data classification and access for Xcel Energy’s Hosting Capacity Analysis, but did not include options related to new data or frequency of updates since that is not in scope of this proceeding. Xcel’s 2021 Hosting Capacity Analysis (Docket No. E002/M-21-767) is anticipated to be before the Commission in late Summer.

### Staff Summary of Key Concepts

Synapse included a helpful diagram of the electric grid:<sup>4</sup>



Source: U.S. Government Accountability Office (GAO), *Electric Grid Cybersecurity, DOE Needs to Ensure its Plans Fully Address Risks to Distribution Systems*, March 2021, p.6. <https://www.gao.gov/assets/gao-21-81.pdf>.

The Federal Energy Regulatory Commission (FERC) defines **Critical Energy/Electric Infrastructure** as “a system or asset of the bulk power system (physical or virtual), the incapacity or destruction of which would negatively affect national security, economic security, public health or safety, or any combination of such matters.” The North American Electric

<sup>4</sup> DOC, Docket 20-800, Initial – Report, p. 25

Reliability Corporation (NERC) has several **Critical Infrastructure Protection (CIP) standards** that apply to the **bulk electric system** (far left of diagram above). To date, similar standards have not been adopted for the **bulk power system** (middle of diagram) or **distribution systems** (middle to right of diagram); however, other **reliability risk mitigation tools** (e.g. advisories, planning events, guidance, etc.) are used.

**Critical Electric Infrastructure Information (CEII)** is “related to, or proposed to, critical electric infrastructure generated or provided to [FERC] or [an]other Federal agency other than classified national security information that is designated as CEII by [FERC] or the Secretary of the Department of Energy pursuant to section 215A(d) of the Federal Power Act. Further, FERC describes:

CEII is specific engineering, vulnerability, or detailed design information about proposed or existing critical infrastructure (physical or virtual) that:

1. Relates details about the production, generation, transmission, or distribution of energy;
2. Could be useful to a person planning an attack on critical infrastructure;
3. Is exempt from mandatory disclosure under the Freedom of Information Act; and
4. Gives strategic information beyond the location of the critical infrastructure.

The Presidential Policy Directive 21: Critical Infrastructure Security and Resilience advances a national policy to strengthen and maintain secure, functioning, and resilient critical infrastructure. This includes sixteen **critical infrastructure** sectors whose assets, systems, and networks, whether physical or virtual, are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof.<sup>5</sup> The Minnesota Department of Public Safety maintains a division of Homeland Security and Energy Management (HSEM) which operates a critical infrastructure protection program that assesses and prioritizes **critical infrastructure and key resources** across the state focused on safety and security; food, water, and sheltering; health and medical; energy (power and fuel); communications; transportation; hazardous material; and mass gatherings.<sup>6</sup> Xcel Energy has identified **critical customer** categories: Critical Energy Infrastructure (similar to DHS Energy Sector); Critical Hospitals – Level 1 or 2 Trauma Centers (similar to DHS Healthcare and Public Health sector); Critical Data Centers (similar to DHS Communications and Information

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<sup>5</sup> Sectors include: Chemical; Commercial Facilities; Communications; Critical Manufacturing; Dams; Defense Industrial Bases; Emergency Services; Energy; Financial Services; Food and Agriculture; Government Facilities; Healthcare and Public Health; Information Technology; Nuclear Reactors, Materials, and Waste; Transportation Systems; and Water and Wastewater Systems. See Cybersecurity & Infrastructure Security Agency, <https://www.cisa.gov/critical-infrastructure-sectors>

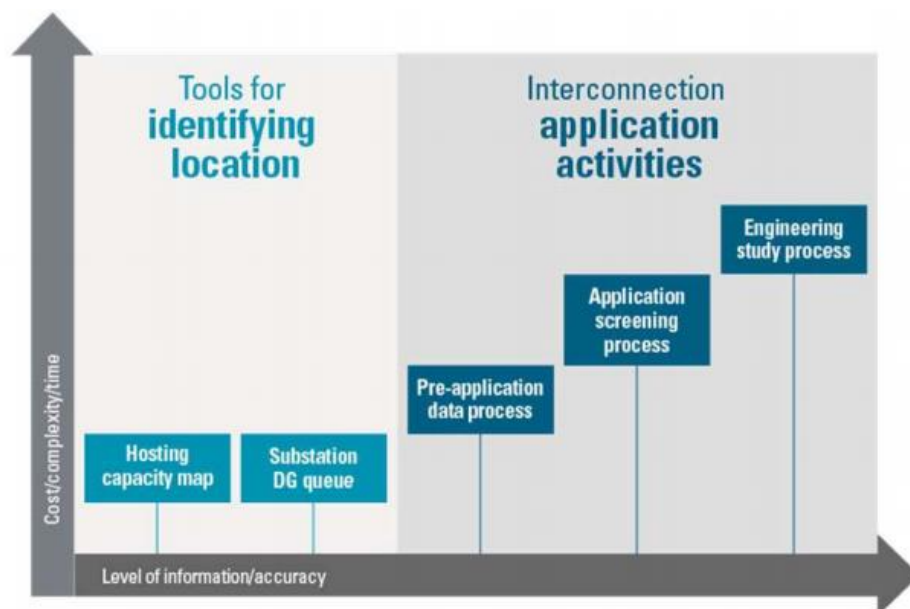
<sup>6</sup> MN DPS HSEM Critical Infrastructure Protection Program webpage: <https://dps.mn.gov/divisions/hsem/homeland-security/Pages/critical-infrastructure-protection.aspx>

Technology sectors); Critical Public Gathering Centers (similar to DHS Commercial Facilities sector); and other categories of critical, grid-dependent customers.<sup>7</sup>

Separately and outside the scope of this proceeding, the Commission has adopted privacy and open access data standards related to **Customer Energy Use Data (CEUD)** which is “data collected from the utility customer meters that reflects the quantity, quality, or timing of customers’ natural gas or electric usage or electricity production” which requires aggregation, anonymization, or consent to release the data to third parties (see Docket Nos. E999/CI-12-1344 and E999/CI-19-505.) Xcel Energy uses a **15/15 Standard** requiring a CEUD data set to include at least 15 premises, and no one premise can represent 15 percent or more of the total energy consumption. The Commission has also directed utilities not to provide third party access, without customer authorization, to any **personally identifiable information (PII)** for a customer.

### Data Available for DER

Xcel Energy created the following visual to summarize the various resources available for interconnection customers to identify locations suitable for DER considering cost/complexity/time and level of information/accuracy available:



### Hosting Capacity Analysis

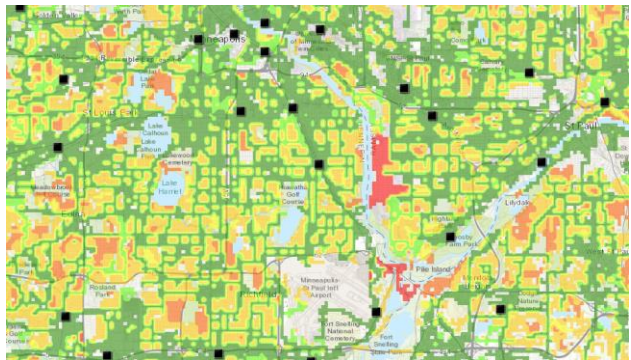
<sup>7</sup> DOC, Docket 20-800, Initial – Report, p. iii



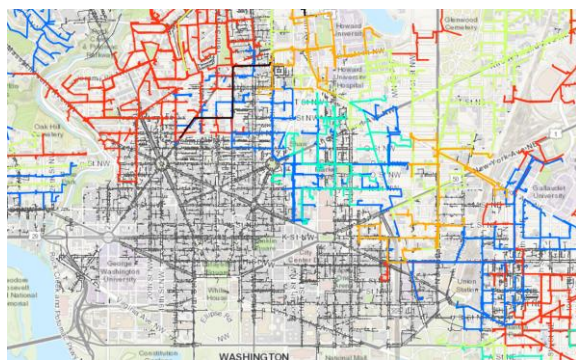
A **hosting capacity analysis (HCA)** evaluates a utility’s distribution system to find locations where DER may interconnect, as well as mitigation measures that might enhance the distribution system’s capacity to accommodate interconnection. Xcel Energy is currently the only Minnesota utility providing this analysis<sup>8</sup> and utilizes the Electric Power Research Institute’s (EPRI) Distributed Resource Integration and Value Estimation (DRIVE) to calculate minimum and maximum hosting capacity values for areas of the grid. The Commission’s July 31, 2020 Order describes Xcel’s current privacy and security practice for the HCA:<sup>9</sup>

Xcel explained that it was not publicly disclosing certain data that could compromise system security or customer privacy. Feeders serving certain critical infrastructure categories or serving fewer than 15 premises were included on the tabular spreadsheet but excluded from the heat map. Xcel explained that the 15-premises threshold was the same that the Company applied to requests for aggregated customer energy use data (CEUD) and reasoned that feeders with few customers may provide insights into customer locations, potentially compromising confidentiality or security for those customers. Overall, Xcel excluded 115 feeders from the public heat map out of a total of 1,050 feeders included in the 2019 HCA.

In addition to excluding feeders for privacy or security concerns, Xcel Energy’s hosting capacity map provides a **heat map** (below left) compared to a **map of feeders** (Pepco Holdings’ HCA for Washington DC shown below right).



Xcel Energy Hosting Capacity Map, Minneapolis<sup>10</sup>



Pepco Hosting Capacity Map, Washington DC<sup>11</sup>

<sup>8</sup> Staff Note: Other rate-regulated utilities provide “preliminary hosting capacity data” in biennial Integrated Distribution Plans (IDP) per the Commission’s IDP filing requirement: “B. Preliminary Hosting Capacity Data 1. Provide an excel spreadsheet (or other equivalent format) by feeder of either daytime minimum load (daily, if available) or, if daytime minimum load is not available, peak load (time granularity should be specified)”

<sup>9</sup> ORDER ACCEPTING REPORT AND SETTING FURTHER REQUIREMENTS (July 31, 2020), Docket No. E002/M-19-685, p. 4

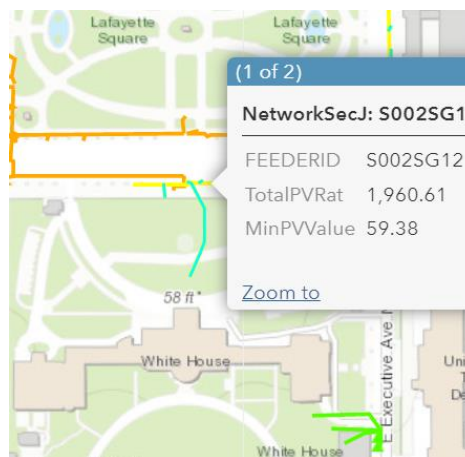
<sup>10</sup> Xcel Energy, Hosting Capacity Map available at: [https://www.xcelenergy.com/hosting\\_capacity\\_map](https://www.xcelenergy.com/hosting_capacity_map) Staff Note: black squares represent substations.

<sup>11</sup> Pepco Hosting Capacity Map available at:

HCA maps may also have **popup windows** offering additional detail, such as equipment ratings, existing DER generation, minimum and maximum hosting capacity, etc.



Xcel Energy Pop Up, State Capitol<sup>12</sup>



Pepco Pop Up, White House<sup>13</sup>

Additionally, Xcel Energy provides **tabular spreadsheets** with hosting capacity analysis data at a sub-feeder (or node) level on their website. In addition to the 115 feeders Xcel excludes citing security and privacy concerns, the only other data redacted is substation transformer and feeder **forecasted peak load**.

### Other Public Data for DER Development

The MN DIP requires utilities with 40 interconnection applications or more in a year to publish **public interconnection queue** details on a website. This data is often displayed in a separate tabular spreadsheet with an application id number, feeder and substation identification, capacity, status, etc. Xcel Energy has added details such as capacity-constrained feeders and substations and estimated time for interconnection for these locations. The MN DIP also requires utilities to offer **pre-application data reports** upon request, under confidentiality provisions, and for a fee. Synapse offers a comparison of pre-application data points with data HCA map and tabular formats.<sup>14</sup>

## Frameworks

<https://pepco.maps.arcgis.com/apps/dashboards/940e65bfff6294b589f5832ab1521c93f> Staff Note: Pepco also provides a separate network feeder map with transformer level data.

<sup>12</sup> IBID

<sup>13</sup> IBID

<sup>14</sup> DOC, Docket 20-800, Initial – Report, Appendix A, p. 100

### Tiered Access Framework

Xcel Energy, along with the input of Dr. Paul Stockton, proposed a tiered framework approach to determining if information should be released and to whom. They used a stoplight coloring approach (red, yellow, green) to signify which types of data, based on their grid security risk level and the benefit the data presents to the public, should be completely public, have some security, or be restricted.<sup>15</sup>

**Table 1: Tiered Access Framework**

<b>Benefit of Public Access:</b> 0 = lowest, least benefit 1 = moderate benefit 2 = significant benefit 3 = essential	3	P	NP-1	NP-2
	2	P	NP-2	NP-3
	1	P	NP-3	NP-4
	0	P	NP-4	NP-4
		U	CI	CRI
<b>Grid Security Risk Level:</b> U = Unrestricted CI = Confidential Information CRI = Confidential Restricted Information				

Definitions – Tiered Level of Access:

- P = Public
- NP-1 = Non-public, verified web log-in under NDA terms
- NP-2 = Non-public, NDA needed, use encrypted email
- NP-3 = Non-public, NDA with in-office on in-person viewing only
- NP-4 = Non-public, not provided

With this approach, third parties could “walk up” or down the tiers. For example, Non-Public 1 (NP-1) access is determined for a specific data item, the parties come together agreeing to provide access to the protected data via encrypted email, if the data correlated to NP-2 or NP3 levels, in-office viewing may be required to better protect the data and avoid transfer via non-encrypted devices.<sup>16</sup>

Xcel supported this tiered access approach to data to maintain principles outlined in other dockets<sup>17</sup> which ensure third party access furthers the public interest while maintaining accountability, minimizing access to only those necessary, and maintaining Commission control over the associated data through the utilities.<sup>18</sup>

<sup>15</sup> Xcel Energy, Docket 20-800 Initial Comment, p. 12

<sup>16</sup> Xcel Energy, Docket 20-800, Initial Comment, p. 12

<sup>17</sup> Dockets 19-505 and 12-1344

<sup>18</sup> Xcel Energy, Docket 20-800, Initial Comment, p. 9

## Party Viewpoints

### Department of Commerce

The Department of Commerce worked with Synapse Energy Economics, Inc (Synapse) to provide a report regarding this topic. Below represents a summary of Synapse’s report and recommendations on behalf of the Department. In addition, the Department hosted two stakeholder workshops in March 2021 with robust Minnesota utility participation, limited DER developer engagement, and over 50 people attending each.<sup>19</sup>

#### **Security and Public Benefit**

Synapse outlines physical and cyber security vulnerabilities and threats. On the transmission system, large power/high-voltage transformers account for fewer than 3% of the transformers in U.S. substations but carry 60-70% of the nation’s electricity – outages could disrupt electricity services over a wide area of the country with higher risk because of a lack of alternative delivery paths or spare transformers. As a result, high-voltage transformers are vulnerable, high-risk assets. Physical attacks on distribution grid assets could impact electricity supply to a smaller subset of customers; including critical customers like hospitals.<sup>20</sup>

While transmission substations are subject to NERC CIP standards, cyberattack vulnerabilities of industrial control systems (ICS) from other equipment with increased reliance on internet or network connections for physical operation, protection of equipment, and communication and monitoring (e.g. supervisory control and data acquisition or SCADA.) This is heightened by ICS connection business networks and remote access.<sup>21</sup>

A U.S. Government Accountability Office (GAO) report for the Department of Energy notes that U.S. distribution systems are increasingly at risk from cyberattacks. Threat actors can use multiple techniques to access and potentially disrupt distribution systems; however, the scale of such disruption is unclear. The GAO report states that none of the cybersecurity incidents reported in the U.S. have disrupted reliability or availability of the distribution grids.<sup>22</sup> In 2015, Ukraine experienced the first, confirmed cyberattack on a distribution grid where attackers used an email phishing campaign to target utility staff with malware that allowed the attackers to hijack SCADA distribution management system causing issues with the distribution system and simultaneously preventing customer calls on outages from reaching the utility. This attack resulted in 3- to 6-hour outages impacting 230,000 customers. Like ICS (e.g. SCADA), distributed

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<sup>19</sup> DOC, Docket 20-800, Initial – Report, p. 3 and Workshop Summaries

<sup>20</sup> DOC, Docket 20-800, Initial – Report, pp. 25-26

<sup>21</sup> DOC, Docket 20-800, Initial – Report, p. 27

<sup>22</sup> DOC, Docket 20-800, Initial – Report, pp. iii-iv

energy resources equipped with digital communication and control interfaces increase vulnerability to cyberattacks.<sup>23</sup>

Synapse also highlights grid resilience efforts to address cyberattack, physical attack and extreme weather events; including Xcel Energy efforts.<sup>24</sup>

Synapse notes a growing trend toward access of large amounts of data and innovation, smart decision-making, economic growth, and the public good, and highlights:<sup>25</sup>

Access to distribution grid data for energy developers and other third parties is in the public's interest because it can increase the transparency of the utility's provision of electrical services, assist in the identification of potential DER interconnection sites, and help enable developers to accelerate progress towards decarbonizing Minnesota's grid through the efficient deployment of DERs.

Synapse also suggests data access and efficient, effective DER deployment helps make the grid more reliable and resilient to threats (e.g. natural disasters) while advancing clean energy policy goals. Data access also reduces information asymmetry under utility monopoly control and can result in more informed competition which strengthens the local economy. Synapse highlights benefits to various stakeholders; including a chart of hosting capacity map elements and their benefit to DER developers.<sup>26</sup>

Hosting capacity maps are useful information-sharing tools for different stakeholders that need access to distribution grid data. Public access to grid data, such as hosting capacity analysis, has three primary applications: 1) support market driven DER deployment by identifying interconnection locations; 2) assist with streamlining DER interconnection technical screening or review; and 3) enable robust distribution system planning by providing visibility into how much DER the grid can host in future years by identifying constraints and proactive upgrades.<sup>27</sup>

Synapse argues undefined threats are not adequate justification to redact HCA grid information given the public interest that information has for supporting DER integration, and made short

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<sup>23</sup> DOC, Docket 20-800, Initial – Report, pp. 28-30

<sup>24</sup> DOC, Docket 20-800, Initial – Report, pp. 30-33

<sup>25</sup> DOC, Docket 20-800, Initial – Report, p. 34

<sup>26</sup> DOC, Docket 20-800, Initial – Report, pp. 34-36

<sup>27</sup> DOC, Docket 20-800, Initial – Report, p. ii. See also Ch. 2 for more on HCA at pp. 4-17.

term and long-term recommendations.<sup>28</sup> Synapse summarizes the recommendation specific to Xcel Energy’s current justifications for treatment of HCA data:<sup>29</sup>

Xcel Energy Justification	Synapse Recommendation
Publicly disclosing feeders which violate the 15/15 standard could compromise customer confidentiality.	Only load information should be redacted from the feeder when the 15/15 standard is violated.
Load is security information. Publishing this information could aid bad actors in planning a serious attack. It could also compromise the privacy or confidentiality interests of large or critical infrastructure customers.	<ul style="list-style-type: none"> <li>• Apply a Risk-Benefit Framework (discussed below).</li> <li>• Provide a more detailed rationale, beyond “security concerns”, for not publishing feeder and substation capacities</li> <li>• Use tiered access approach for access non-public grid data</li> </ul>
Feeders are not shown on HCA Map to align with protecting critical infrastructure sectors.	<ul style="list-style-type: none"> <li>• Explicitly define which customers fall into “Other categories of critical, grid-dependent customer.”</li> <li>• Create a transparent process on how third parties can access CEII.</li> <li>• Only redact feeders if they are connected to a dedicated customer, are connected to critical infrastructure, or serve a critical consumer</li> </ul>
An unblurred HCA map would make the grid unnecessarily vulnerable to attack and would jeopardize customer security and confidentiality.	Xcel should unblur its HCA map to show distribution feeders behind a verified web login portal that is open to the public (does not require an NDA).

In addition, Synapse recommended the Commission require Xcel to estimate the level of effort and cost to incorporate each specific piece of data in the pre-application report that is currently not in the HCA map, where technology requirements, not security concerns are the limiting factor.

Synapse offers a summary and chart comparing hosting capacity map system data points across advanced utilities in CA, DC, HI, MN, NV, and NY.<sup>30</sup> Notably, Synapse highlights:

- MN and HI are only utilities to use heat maps instead of subfeeder or line-segment detail (NV, CA, NY), or primary and secondary feeder locations (DC).

<sup>28</sup> DOC, Docket 20-800, Initial Comment, p. 8, 98

<sup>29</sup> DOC, Docket 20-800, Initial Comment, pp. iv-vi and p. 98

<sup>30</sup> DOC, Docket 20-800, Initial – Report, Table 3, pp. 15-17



- MN, CA, and NY provide existing and queued distributed generation; whereas NV displays only existing and DC maintains a separate heat map of this data.
- CA and NV provide feeder load profiles for minimum and peak loads; NY only provides substation peak load. Xcel provides daytime and absolute minimum loads for feeders and substations but not peak load.

Synapse also provides a summary of customer privacy standards, including the 15/15 standard, and the Commission’s Open Data Access Standards docket (Docket No. E999/CI-19-505.)<sup>31</sup>

### **Risk- and Cost-Benefit Frameworks**

Synapse offers risk- and cost- benefit frameworks as a starting point for stakeholder discussion to strike the balance between grid security and access to grid data in the public interest, and notes without such frameworks the burden of proof regarding increased risk of an attack on the distribution grid from publishing HCA data should fall on the utility. If the utility can prove revealing specific data results in an increased risk of a grid attack, then a tiered access process protecting the data is appropriate.<sup>32</sup>

Synapse describes a risk-benefit framework using a DHS risk-based performance standard: *Risk = Threat x Vulnerability x Consequence*. The standard can also include *Resilience* as another factor. Synapse suggests this framework can compute expected risk for each attack type, on each critical asset, and then be used to determine overall risk in various scenarios.<sup>33</sup> DHS’s RAMCAP is an all-hazard risk and resilience framework for critical infrastructure with six steps: 1) critical asset characterization; 2) threat characterization; 3) threat assessment; 4) vulnerability assessment; 5) resilience analysis; and 6) consequence analysis. Synapse offers an overview of what could be considered in each step. After the above determines risks, the second part of Synapse’s risk-benefit framework estimates the public benefit of revealing sensitive-grid data using a survey to rank benefits of various data points. The result of this analysis is a visual like Xcel’s tiered access proposal.<sup>34</sup>

A second proposed framework was a cost-benefit framework to compare the incremental costs and benefits to the public or ratepayers for revealing specific types of grid data. Incremental cost examples include enhanced security for critical assets, additional grid resilience measures,

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<sup>31</sup> DOC, Docket 20-800, Initial – Report, pp. 17-21

<sup>32</sup> DOC, Docket 20-800, Reply, p. 3

<sup>33</sup> DOC, Docket 20-800, Initial – Report, pp. 59-61

<sup>34</sup> DOC, Docket 20-800, Initial – Report, pp. 61 – 71. Staff Note: Despite Figure 18 (p. 71) displaying “consequence of data misuse” it is unclear to staff that this framework factors in the likelihood, or magnitude, of public access to grid data resulting in the identified threats or vulnerabilities.

cost from risk of attack, utility costs to provide the data. Incremental public/ratepayer benefit examples include pollution reduction, streamlined and lower cost interconnection, increased grid resilience and reliability, and innovation. Synapse proposes a survey of relevant stakeholders (e.g. developers, entrepreneurs, policymakers, etc.) to assess benefits. Synapse also suggests comparing DER deployment in Xcel’s service territory to other utilities that provide the data could be used as a proxy but cautions other factors may be at play. Another option would be to look at the impact of California utilities temporarily removing public grid data in 2018. To assess costs, Synapse suggests focusing on incremental costs to the utility of providing the information and the marginal cost of defending against a better-informed attack. These costs would include hosting capacity information improvements, increased protection of distribution infrastructure (e.g. hardening substations, undergrounding lines, upgrading cybersecurity defense, etc), costs of electric power interruption, and the risk values from the risk-benefit framework. Synapse includes an example of using this framework.<sup>35</sup>

Synapse responds to IREC’s critique that the assessments proposed are “impossible to perform” and “appear to assign ad hoc values to various factors, leading to meaningless comparisons and questionable results” by noting grid security expertise is required and examples exist from the water sector.<sup>36</sup> Synapse highlights using a variety of security intelligence, economic, demographic, and other relevant data can inform threat assessments specific for utility distribution systems and publicly releasing sensitive grid information.<sup>37</sup>

Synapse notes Xcel and IREC conflict on the public benefit of providing grid data and recommends a benefit assessment using surveys with a representative sample size to provide qualitative, potentially quantitative, data. Synapse also acknowledges Dakota Electric’s concern with the cost/benefit example offered, and notes the threat assessment, cost/benefit numbers, and survey results provided in the Synapse report were meant to be illustrative only and should be refined by stakeholders. One example may be, as Dakota Electric suggests, to expand the framework from considering just DER developer benefits to include the costs and benefits to ratepayers and the community as a whole.<sup>38</sup>

## **Tiered Access**

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<sup>35</sup> DOC, Docket 20-800, Initial – Report, pp. 71-77. Lawrence Berkeley National Laboratory’s Interruption Cost Estimate (ICE) calculator could be a tool used.

<sup>36</sup> DOC, Docket 20-800, Reply, p. 6 citing DHS Risk Analysis and Management of Critical Asset Protection (RAMCAP) methodology used by American Water Works Association and approved by American National Standard Institute.

<sup>37</sup> DOC, Docket 20-800, Reply, p. 6

<sup>38</sup> DOC, Docket 20-800, Reply, pp.7-8



Synapse proposes two recommendations on guiding principles for tiered access. First, the Commission should consider a risk-based, tiered access approach to sharing data with transparent criteria for evaluation informed by a diverse group of stakeholders. Second, the Commission should consider approaches that expedite access to data.

Aligned with these principles, Synapse supports a tiered-access approach but recommends a simple web-portal login with user authentication rather than signing an NDA.<sup>39</sup> Synapse agrees with IREC that “focusing on strengthening the grid’s physical and cybersecurity defenses is more effective at deterring attackers and protecting the distribution system than concealing information.”<sup>40</sup> Synapse clarifies an NDA should only be required to access CEII data as defined by FERC and “critical customer groups” as identified by Xcel.<sup>41</sup>

## Models

Synapse summarizes several examples of data sharing principles, data classifications (including the Minnesota Government Data Practices Act), and accessing energy data (e.g. directly connected to utility, centralized data warehouse, secondary access platform or portal, public platform, or secure portal or platform like Green Button Connect.) Synapse also summarizes data-sharing models in Minnesota related to both CEUD privacy and MN DIP interconnection information which both use a tiered access approach; as well as data sharing models from NY, CA and NH.<sup>42</sup> Synapse offers this overview of energy access platforms by state:<sup>43</sup>

State	Standardized Data	Single Access Platform	Tiered Access
Minnesota	Established in the November 2020 Order	No	Tiered access to customer data based on customer consent and MN DIP process with increased security for CEII information.
New York IEDR	Data will be standardized in the IEDR	Yes	Proposed data-access framework uses a matrix to determine what level of information is shared with a requesting party.
California	Utilities use or model their data standards like Green Button Connect	No, each utility has a website	Increased security for CEII information and segmented aggregation screens for customer information.
New Hampshire (Proposed)	Data will be standardized	Yes	The platform intends to incorporate a tiered-access system.

<sup>39</sup> DOC, Docket 20-800, Reply, p. 2

<sup>40</sup> DOC, Docket 20-800, Reply, p. 8

<sup>41</sup> DOC, Docket 20-800, Reply, p. 9

<sup>42</sup> DOC, Docket 20-800, Initial-Report, pp. 77-96

<sup>43</sup> DOC, Docket 20-800, Initial-Report, Table 23, p. 97

Synapse summarizes Xcel Energy’s HCA iterations in Minnesota; including Xcel’s ongoing rationale for heat maps, redacted peak substation transformer and feeder load data, and critical infrastructure.<sup>44</sup> In comparison, Synapse highlights a 2018 review of California’s publicly available grid data maps; including that after utilities removed the maps citing security concerns an Administrative Law Judge ruled the maps, related analyses, and data not considered confidential under the 15/15 standard or CEII had to be publicly available through a web portal accessible to third parties through user registration but without an NDA. Synapse also summarizes CA PUC’s rulemaking establishing uniform criteria for redaction of CEII data at the distribution level and the process to access the CEII data with a signed NDA.<sup>45</sup>

Synapse recommends Xcel provide access to its HCA map behind a web login registration portal like NV Energy (Nevada) and Pacific Gas & Electric (PG&E) (California) who offer feeder load profiles Xcel currently restricts.<sup>46</sup> Synapse notes the utilities highlighted do not require an NDA, but do use multifactor authentication or other verification.<sup>47</sup> Lastly, Synapse suggests electric utilities should not be held liable for potential data misuse and update disclaimer statements to state: “in no event shall [Utility] be responsible for the consequences associated with use of this information” and include language regarding privacy and usage policies that a user must agree to before accessing the HCA map.<sup>48</sup>

Synapse recognizes hosting capacity maps have been the primary topic but may not make sense for all utilities. Synapse recommends a case-by-case examination of how utilities share grid interconnection data (e.g. pre-application reports, engineer consultations) based on size of service territory and number of DER interconnection applications annually.<sup>49</sup>

## **Workshop**

To balance security risks with public benefits with information on the nature of the security risks facing utilities and the risk of publishing the desired HCA grid data, Synapse recommends further stakeholder discussion. Synapse recommends the Commission engage stakeholders including, but not limited to, DER developers, clean energy entrepreneurs, electric utilities and their customers, consumer advocates, local government and non-governmental organizations, and grid security experts such as local and national authorities charged with protecting critical

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<sup>44</sup> DOC, Docket 20-800, Initial – Report, p. 40-43

<sup>45</sup> DOC, Docket 20-800, Initial – Report, p. 38-40

<sup>46</sup> DOC, Docket 20-800, Reply, p. 8

<sup>47</sup> DOC, Docket 20-800, Reply, pp. 8-9

<sup>48</sup> DOC, Docket 20-800, Reply, pp. 9-10

<sup>49</sup> DOC, Docket 20-800, Reply, p. 4

infrastructure (e.g. DHS' CISA). If initial discussions do produce sufficient information on how to treat data, stakeholders could use components of the risk-benefit framework (e.g. vulnerability assessment, consequence analysis, and benefit analysis) with information provided by grid security experts.<sup>50</sup>

Synapse acknowledges valid concerns raised by IREC about robust stakeholder participation and the limited resources for developers and other stakeholders to participate.<sup>51</sup>

## Xcel Energy

### Security and Public Benefit

With regards to critical infrastructure, Xcel Energy offered two examinations.<sup>52</sup> They suggested basing critical infrastructure on Presidential Policy Directive 21 which established 16 critical infrastructure sectors<sup>53</sup> as well as FERC definitions for Critical Energy/Electric Infrastructure Information (CEII) pursuant to FERC regulation 18 C.F.R § 388.133. CEII is specific engineering, vulnerability, or detailed design information about proposed or existing critical infrastructure that produces, generates, transmits, or distributes energy, could be useful in planning attacks on this infrastructure, is exempt from Freedom of Information Act requests, and gives strategic information beyond the location of the critical infrastructure. CEII exploitation would negatively impact national security, economic security, and/or public health or safety.<sup>54</sup>

Xcel also highlighted existing Commission Tiered Access Frameworks used with regards to CEUD and related to the MN DIP. They specifically noted Docket No. E,G999/CI-12-1344 which established a framework allowing for the release of sensitive information (e.g. CEUD) with protections: the customer must authorize the release of their information or the utility must ensure anonymity. In the MN DIP, Xcel highlighted section 5.9 which governs the provision of, access to, and protection of information that is designated as “confidential” by parties to the process. Section 5.9.2.2 states:

*Critical infrastructure information or information that is deemed or otherwise designated by a Party as Critical Energy/Electric Infrastructure Information (CEII) pursuant to FERC regulation, 18 C.F.R. § 388.133, as may be amended from time to time, may be subject to further protections for disclosure as*

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<sup>50</sup> DOC, Docket 20-800, Reply p. 5

<sup>51</sup> DOC, Docket 20-800, Reply, p. 5

*required by FERC or FERC regulations or orders and the disclosing Party's CEII policies.*

Protection of this confidential information is most often governed by non-disclosure agreements (NDAs) between parties.<sup>55</sup>

When it came to their reply comments, Xcel specifically highlighted their disagreement with MNSEIA's request for a single tier certification system.<sup>56</sup> They proposed to continue the current heat map with the option for parties with a legitimate need to request access for more detailed information through registration and an NDA process.<sup>57</sup> They also planned to require users to change passwords regularly and annually re-sign an NDA.

Xcel also pushed back on the possibility of eliminating the NDA step and rather embedding the necessary terms and conditions of use of the secure portal data in the portal registration process, similar to how developers are provided with pre-application reports. Xcel felt there is an important difference between these processes and therefore disagree with this suggestion. They felt the difference between the portal registration process and what they outline was the fee of \$300 which they are not proposing in this case. They also find that a pre-application report is for specific points on the grid, while the data provided through the secure hosting portal would be broader, for the entire Minnesota system. Xcel feels the need to verify the secure portal requestors' identities and need for access to detailed grid information, which they feel would not be feasible using a simple portal registration process. They are analyzing the suggestion to determine if it could sufficiently meet their security objections and improve user experience.<sup>58</sup>

Xcel Energy also worked with Dr. Paul Stockton to provide a report in the record entitled "Secure Sharing of Electric Distribution System Data". They felt the Commission should build on existing criteria to identify CEII and modify current criteria to meet the circumstances and goals specific to Minnesota.<sup>59</sup> Dr. Stockton noted that Xcel Energy has categories of critical customers and associated feeders that Xcel uses as a basis for limiting the public release of grid data. This includes Critical Energy Infrastructure, Critical Hospitals (Level 1 or 2 Trauma Centers), Critical Data Centers, and Critical Public Gathering Centers.<sup>60</sup>

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<sup>55</sup> Xcel, Docket 20-800, Initial Comment, pp. 17-19

<sup>56</sup> Xcel, Docket 20-800, Reply Comment, p. 14

<sup>57</sup> Xcel, Docket 20-800, Reply Comment, p. 16

<sup>58</sup> Xcel, Docket 20-800, Reply Comment, p. 22

<sup>59</sup> Xcel, Docket 20-800, Initial Comment, p. 25

<sup>60</sup> Xcel, Docket 20-800, Initial Comment, p. 39

Dr. Stockton believed a narrowly focused, threat-informed approach to be necessary when trying to strike a balance between DER developers and securing information from bad actors. Like Synapse, Dr. Stockton proposed using the formula, *risk = threat x vulnerability x consequences*, in order to maintain access for those who need to know and protect the data that needs to be protected.<sup>61</sup>

Xcel noted that the Department of Energy is working to examine their cybersecurity strategies for the distribution system, as well as the bulk system, per the recommendations of the U.S. GAO in a recent report released in March of 2021.<sup>62</sup> Xcel provided the GAO report recommending that the Department of Energy look for ways to more fully address risks to the grid's distribution systems with the intent to help states and industry improve distribution systems' cybersecurity, and not just the bulk grid's systems.<sup>63</sup>

## Frameworks

As described above, Xcel supported a tiered access approach to the provision of distribution grid data, based on its necessity and value to achieving a defined and specific public purpose, risk assessment, costs, and benefits of providing the data. They believed this structure would enable the appropriate access to relevant information while taking steps to reasonably maintain the security of the distribution grid.<sup>64</sup> They believed the evaluation should begin with the Commission setting forth goals, outcomes, and guiding principles for third-party access to potentially sensitive grid information, similar to its approach in the Performance Based Rates proceeding in Docket No. E002/CI-17-401. Xcel believed a starting point for the guiding principles could be the list they outlined in Section I.B. Xcel felt this approach will facilitate important and fundamental questions. As part of their HCA process, Xcel has worked collaboratively with stakeholders to provide increasing amounts of data to the public but note, even with protections, there are risks associated with access to certain data. Xcel noted these risks are addressed in Section II of Dr. Stockton's paper. After assessing the risks of providing specific information necessary to achieving the public interest goals and outcomes, Xcel believed it would be necessary to consider whether the information can be readily produced or if there are additional costs related to the provision of the information. They noted that in some cases, the utility may not be able to provide or facilitate data access if the cost is extremely high.<sup>65</sup>

Xcel also noted that the Commission considered key aspects of a cost benefit framework when the Commission approved open data access standards for a small subset of CEUD. This has been a multi-phase-in process that initially focused on data that was deemed to provide the

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<sup>61</sup> Xcel, Docket 20-800, Initial Comment, p. 42

<sup>62</sup> Xcel, Docket 20-800, Reply Comment, p. 4

<sup>63</sup> Xcel, Docket 20-800, Reply Comment, p. 43

<sup>64</sup> Xcel, Docket 20-800, Initial Comment, p. 6

<sup>65</sup> Xcel, Docket 20-800, Initial Comment, p. 12

most benefit in advancing the state’s energy goals. The State has taken a measured approach, incrementally applying the standards to maintain balance between customer privacy and access to CEUD. The Commission approved access to the whole -building aggregated CEUD for specific entities for a specific public purpose—benchmarking—as well as determined that use of the data by these entities posed little risk to customer privacy. The standards the Commission adopted in its Order also allowed the utility to charge a requester a fee to prepare and supply the data.

With regards to the tiered access approach, Xcel noted the Commission recognized the unique privacy concerns of large industrial facilities and exempted commercial and industrial (C&I) customers with peak demands greater than 5 MW from the open access standards. Xcel noted the Commission also recognized the extensive stakeholder work that had already been done in this area starting back in 2013. Therefore, Xcel felt the Commission in these cases weighed the public benefit of providing the information, the potential harms to customers, the costs that would be incurred, and whether models in other states were applicable to Minnesota at the time.<sup>66</sup>

Xcel noted in their reply comment that the Synapse report suggested that utilities could use power outage duration in a risk/cost benefit framework as a proxy for community impacts of disruption of the distribution system, and that there was no existing model that would adequately capture the devastating impacts an outage may have on human life.<sup>67</sup>

Xcel noted that both Dr. Stockton’s and Synapse’s reports identified risk-benefit and cost-benefit analysis frameworks for the Commission’s consideration. In Xcel’s view, the tiered access framework identified by the Department is like what Xcel proposed. However, in their Comments, Xcel noted the Department “did not necessarily recommend” the Company’s proposed framework due to it being overly restrictive in the Departments’ eye due to the use of NDAs for certain data. However, Xcel noted that the Department does understand the importance of having protections in place for highly sensitive information. Xcel stated they believe they have done this.<sup>68</sup> That said, Xcel said they would be willing to engage in further stakeholder processes and support expanding the Department’s recommended framework assessments to include all costs and impacts to customers.<sup>69</sup> Dr. Stockton also noted that for highly sensitive data requestors would need to provide sufficient identity validity, the reason for requesting access, their use case, demonstrated ability to protect the data, and then ultimately be able to sign an NDA before accessing the data.<sup>70</sup>

## Models

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<sup>66</sup> Xcel, Docket 20-800, Initial Comment, pp. 17-18

<sup>67</sup> Xcel, Docket 20-800, Reply Comment, p. 7

<sup>68</sup> Xcel, Docket 20-800, Reply Comment, p. 11

<sup>69</sup> Xcel, Docket 20-800, Reply Comment, p. 31

<sup>70</sup> Xcel Energy, Docket 20-800, Initial Comment, p. 51

Xcel highlighted a few models and organizations that are, or have been, working on similar issues. They noted DHS's Traffic Light Protocol system that is employed by many organizations including the Electricity Information Sharing and Analysis Center (E-ISAC). This protocol establishes a set of designations used to ensure that sensitive information is shared with the appropriate audience and is representative of a stop light (red is confidential data, yellow is protected, green is open and public). Xcel further highlighted the NARUC reports and surveys that assess models that are being developed by other states and associations as well as the National Conference of State Legislators (NCSL) and the National Governors Association (NGA) as they are working on these topics while adhering to open governance policies and laws. Xcel also highlighted NERC's standard on Information Protection providing entities with the flexibility to create classification levels for sensitive information as part of their programs.<sup>71</sup>

Xcel also suggested the Commission could look to the Bulk Power System's CEII criteria and other existing data security models in order to categorize sensitive information and serve Minnesota needs.<sup>72</sup>

Xcel also highlighted the criteria from DHS's definition of critical infrastructure information pursuant of the Critical Infrastructure Information Act of 2002 and the Department's Protected Critical Information Program as a way to protect documents, records, and communication networks.<sup>73</sup>

Xcel noted Colorado has a two-tiered classification system their PUC uses to differentiate between "confidential" and "highly confidential" information.<sup>74</sup>

Xcel expanded upon the work the NCSL and NGA have been doing regarding sharing of sensitive information. They cited NERC's CIP-011-2 standard on Information Protection as a way for entities to create classification levels for sensitive information, suggesting further workshops may be needed for expansion on the details of what this would look like in Minnesota.

They also referenced the Public Service Commission of the District of Columbia and their Power Path DC order from June 2020. That order directed Pepco to execute NDAs with third parties for assurances on security and privacy standards, but it did not accept the recommendation that the DC Commission audit third party systems to ensure compliance with Pepco's cybersecurity standards. Xcel noted that the NDAs did not absolve Pepco of responsibility in the case of a breach.<sup>75</sup>

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<sup>71</sup> Xcel, Docket 20-800, Initial Comment, p. 16

<sup>72</sup> Xcel, Docket 20-800, Initial Comment, p. 25

<sup>73</sup> Xcel, Docket 20-800, Initial Comment p.39

<sup>74</sup> Xcel Initial Comment, p. 48

<sup>75</sup> Xcel Initial Comment, p. 49



They also noted the California Energy Systems for the 21<sup>st</sup> Century which focused on hosting capacity related data and the Green Button Connect My Data Standard which enables easy access to and secure sharing of utility-customer energy and water usage data.<sup>76</sup>

## **Workshops**

Xcel fully supported a Commission-hosted stakeholder workshop to facilitate further discussion and build consensus on these issues. Xcel supported Dr. Stockton's workshop recommendations in Section VII of his report. Xcel noted the importance of Dr. Stockton's concern regarding protection of sensitive data during these meetings to the extent possible. Xcel offered that Dr. Stockton could be a presenter, panelist, or be available to facilitate questions and that they would like to see large or critical infrastructure utility customers, representatives from agencies with emergency management charges, emergency responders, the Minnesota National Guard, and the Federal Bureau of Investigations.<sup>77</sup>

## **Interstate Renewable Energy Council, Inc.**

### **Security and Public Benefit**

IREC's primary argument is that while the threats and consequences of attacks on the grid are real and potentially severe, the link to published grid data is not clear. IREC considers preventing access to grid data altogether or requiring NDAs as utilities have proposed as drastic measures. IREC argues "the publication of the data at issue here presents minimal incremental risk that such a catastrophic event will take place" and therefore mitigation measures to those risks should be tailored accordingly.

IREC claims publishing data does not increase risk for three reasons: 1) much of the data is already publicly available; 2) widespread attacks on distribution grids are harder to achieve compared to transmission because of redundant and resilient restoration plans; and 3) adversaries capable of carrying out widespread attacks likely have the capability to compromise utility ICS vulnerabilities. IREC points to both DHS's transmission and substation public maps and Minnesota's Geospatial Information Office website with public GIS maps including the state's infrastructure and electric systems including the location of major generating resources, natural gas pipelines, transmission and substations, water systems and more.<sup>78</sup>

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<sup>76</sup>Xcel Initial Comment, p 50

<sup>77</sup> Xcel initial comment, p. 20

<sup>78</sup> IREC, Docket 20-800, Initial Comment, p. 10 citing Dep't of Homeland Sec., Homeland Infrastructure Foundation Level Data—Electric Power Transmission Lines,



In contrast to the potential risks, IREC claims public grid data via HCA help modernize the distribution grid, transition to clean energy, help target DER interconnection, and enable more robust and granular distribution system planning especially with beneficial electrification and intelligent devices. IREC posits such benefits will be hindered if third parties and the Commission cannot access data. As interconnection of net-metered DER and community solar garden become more difficult, HCA information helps identify locations with remaining hosting capacity and design generation profiles better targeted to system needs and constraints.<sup>79</sup>

IREC cautions not to conflate security and privacy concerns and acknowledges grid data will be subject to privacy rules. In IREC's reply comments, they bring up discussion from other parties including access to CEII through the 15/15 rule, the proposed frameworks, the frequency of data updates, barriers to entry created by accessing this data and more.

Starting with CEII, IREC responded to other parties by stating they are comfortable with protecting load data when it qualifies as CEII. However, they questioned whether redacting feeders through standards like the 15/15 rule is the right approach. They noted that Synapse's report concluded that the physical location of feeders can be identified through various other means and thus, removing those feeders from the map would only seem to highlight the fact that that infrastructure is critical or sensitive in nature.<sup>80</sup>

IREC moved on to examine the topics and issues brought up by MNSEIA in their party comments. They agreed with MNSEIA that the HCA maps and data should be updated on at least a monthly basis for the information to be timely and useful to developers.<sup>81</sup> However, IREC disagreed with MNSEIA's assessment of privacy access, believing that the 15/15 standard already protects and addresses privacy concerns. MNSEIA proposed that the Department could create a single-tier certification system for bona fide developers. IREC disagreed with MNSEIA's assessment and believed that standard authentication and authorization controls alone would be functional and sufficient to allow for access for others and not just developers.<sup>82</sup> IREC also

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<https://hifldgeoplatform.opendata.arcgis.com/maps/edit?content=geoplatform%3A%3Aelectric-power-transmissionlines> (accessed on Apr. 8, 2021); Dep't of Homeland Sec., Homeland Infrastructure Foundation Level Data—Electric Substations, <https://hifldgeoplatform.opendata.arcgis.com/maps/edit?content=geoplatform%3A%3Aelectric-substations> (accessed on Apr. 8, 2021); and Minnesota IT Services, Geospatial Information Office, Public Utilities Infrastructure Information for Minnesota, <https://www.mngeo.state.mn.us/chouse/utilities.html>

<sup>79</sup> IREC, Docket 20-800, Initial Comment, pp. 2–4; pp. 9-19

<sup>80</sup> IREC, Docket 20-800, Reply Comment, p. 5

<sup>81</sup> IREC, Docket 20-800, Reply Comment, p. 16

<sup>82</sup> IREC, Docket 20-800, Reply Comment, p. 17

specifically asked the Commission to cease Minnesota utilities' practice of unnecessarily hindering the pre-application report with additional NDAs and confidentiality agreements, instead, requiring them to comply with the MN DIP arguing the MN DIP does not authorize utilities to require broad NDAs for pre-approval reports.<sup>83</sup> IREC claims the practices of Minnesota utilities is out of step with other states and FERC on this topic and asks the Commission to clearly state that pre-application reports are not confidential and only allow the use of confidential treatment where facilities have been designated CEII under FERC regulations.<sup>84</sup>

IREC recommends the Commission consider a threshold question: will publication of grid data included in the chart attached to the initial public notice lead to increased risk of attack to the distribution system? IREC found that based on a report by Grid Subject Matter Experts (GridSME), the answer is no. Therefore, the data should be published, and no further evaluation by the proposed frameworks in this proceeding is needed.<sup>85</sup>

IREC agrees with many of the Synapse report's conclusions but does not support the proposed risk- and cost- benefit frameworks.<sup>86</sup> If the Commission allows classification beyond the 15/15 standard to critical infrastructure, IREC recommends the Commission require utilities to identify the facilities designated under the critical customer or infrastructure categories and provide the Commission an explanation and justification filed under seal but reviewed to ensure designations are appropriate. If the Commission considers a tiered access approach, IREC recommends the Commission: 1) define specific access rules and procedures; 2) require confidential information be clearly designated rather than covered by broad NDA; and 3) review the terms of any NDA or confidentiality provision.<sup>87</sup>

## **Frameworks**

IREC cautions against utility recommendations to apply FERC's CEII framework to the distribution grid while noting CEII generally does not protect location data. A CEII framework requires NDAs, which IREC opposes as discussed below, and has significant implementation costs including making case-by-case determinations on specific CEII data requests. IREC argues such costs may make sense for transmission assets and FERC, but not for distribution grids and

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<sup>83</sup> IREC, Docket 20-800, Reply Comment, pp. 23, 26

<sup>84</sup> IREC, Docket 20-800, Reply Comment, p. 26

<sup>85</sup> IREC, Docket 20-800, Initial Comment, pp.20-21 citing GridSME, Physical and Cybersecurity Threat Mitigation for the Distribution System ("GridSME Report"), pp. 3-4 (Apr. 30, 2021). Found in Attachment 1 of IREC's Initial Comments of Docket 20-800

<sup>86</sup> IREC, Docket 20-800, Reply Comment, pp. 3-14

<sup>87</sup> IREC, Docket 20-800, Reply Comment, pp. 4-5

state commissions especially given the higher number of requests for interconnection data at the distribution level.<sup>88</sup>

IREC notes Minnesota Power, Xcel Energy and Dr. Stockton's recommendation to adapt NERC CIP standards to the distribution grid apply mainly to best practices for ICS and critical infrastructure, not data classification. CIP-011 is the only standard that deals with data security but not HCA, load, or grid data; rather, it applies to data that could be used to gain unauthorized access or pose a security threat to bulk electric system cyber systems – information like internet protocol network addresses or network topology of internal computer systems.<sup>89</sup>

IREC argues that the Department's proposed risk-benefit and cost-benefit frameworks improperly presume that publication of grid data is a problem, and that classification is the solution.<sup>90</sup> IREC is concerned that the Department or another party calculating monetary costs and benefits of each individual variable to determine if it should be open to the public is administratively burdensome and subject to dispute which would be costly and difficult.<sup>91</sup> IREC expressed concern that surveys, monetary calculations, and excessive data analysis would not accurately capture the benefits, presenting a fundamental impediment to implementation of the suggested frameworks.<sup>92</sup>

## **Models**

IREC highlights the Commission' past decisions on what data should be made publicly available in Xcel's HCA, and notes Xcel does not provide all the data required. IREC points to utilities in 11 states that provide location of distribution system lines and, in most cases, substations. Further, utilities in CA, MA, NY, NV, RI provide peak load data. Many more utilities offer the data in pre-application reports without requiring an NDA. Load data provides benefits for reviewing utility investment plans, IDPs, demand response or demand side management programs, or locational pricing programs for DER.<sup>93</sup>

However, if the Commission wished to protect the data in question in this docket, IREC argues NDAs would impair the Commission's own ability to publicly make decisions about the distribution system and would not enhance security of the grid. IREC also does not support

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<sup>88</sup> IREC, Docket 20-800, Initial Comment, pp. 29-30

<sup>89</sup> IREC, Docket 20-800, Initial Comment, pp. 30-31

<sup>90</sup> IREC, Docket 20-800, Reply Comment, p. 8

<sup>91</sup> IREC, Docket 20-800, Reply Comment, p. 15

<sup>92</sup> IREC, Docket 20-800, Reply Comment, p. 13

<sup>93</sup> IREC, Docket 20-800, Initial Comment, pp. 5-8

MNSEIA's proposal to create a certification of *bona fide* developers noting it is not necessary, adds complexity and implementation costs and time. If the Commission moves in this direction, IREC notes data access should be available for free and to more stakeholders than just developers.<sup>94</sup> Rather, IREC thought that standard authentication and authorization protocols such as login-based access to HCA data (for example, two-factor authentication<sup>95</sup>) and separating it from the distribution system's ICS, also known as air gapping, would allow for sufficient auditing and controlled access to protect against any incremental risk of publishing the data.<sup>96</sup>

IREC opposes NDAs and other mechanisms designed to curtail collaboration and limit transparency. IREC thought an NDA of the type suggested by the utilities will serve two purposes: preventing stakeholders who do not sign an NDA from being able to access or utilize HCA data and provide a legal hook for utilities to indemnify themselves in the unlikely event the data is exploited for an attack. IREC contends an NDA will not prevent an actor with malicious intent from accessing the data or sharing it with others but instead prevent good actors without utility-level security practices (e.g. DER developers, stakeholders and the Commission) from sharing data. IREC maintains over-classifying HCA data prevents third parties from data sharing that helps identify vulnerabilities, design solutions, and identify cost savings. As an example, the California Energy Commission uses HCA data with air quality, travel demand, and equity data to develop a model for local EV charging infrastructure solutions.<sup>97</sup>

Ultimately, IREC found that most of the data can be protected simply with two-factor authentication and identity management infrastructure where one is required to register and log in to access the information. IREC pointed to this type of solution already existing for utilities in California and Nevada and believed that these security measures alone are the most that the Commission should consider.<sup>98</sup>

## Workshops

IREC cautions stakeholder workshop discussions focused on fleshing out various frameworks proposed in this proceeding will not resolve matters in a timely manner and could be unfruitful – like it was in California in IREC's opinion. IREC suggests rather than start stakeholder discussions with the presumption a complicated classification framework is needed, the Commission should focus on discerning whether the risks of publishing data requires more than industry-standard practices for authenticated and authorized access to data.<sup>99</sup>

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<sup>94</sup> IREC, Docket 20-800, Reply Comment, pp. 15-16

<sup>95</sup> IREC, Docket 20-800, Initial Comment, p 28

<sup>96</sup> IREC, Docket 20-800, Initial Comment, p. 8

<sup>97</sup> IREC, Docket 20-800, Initial Comment, pp. 22- 28

<sup>98</sup> IREC, Docket 20-800, Initial Comment, p 36

<sup>99</sup> IREC, Docket 20-800, Initial Comment, p. 32

## Dakota Electric

### Security and Public Benefit

Dakota Electric highlights “distribution of energy” is included in FERC’s CEII definition, and notes that just because an attack of a utility electric distribution system has not happened does not mean the risk is insignificant. Dakota sought member and local community feedback which expressed concern about the risks of publicly releasing sensitive data.<sup>100</sup>

Dakota Electric underscores one of the Commission’s integrated distribution planning goals is “understanding how the utilities are protecting and maintaining grid security [which] is important for the reliable flow of energy.” Dakota Electric views providing distribution system connectivity and location information (distinguished from load or usage data) to the public as fundamentally opposed to this goal. Dakota Electric cautions this data can be used to target specific customer types or sever large areas of the distribution system. Further, Dakota Electric questions the public benefit of this geographic data on a public map for DER, noting limited value of this data without additional detail (e.g. voltage regulation methods, protection settings, etc.) which can vary by area and equipment. Dakota Electric acknowledges some form of aggregated load or usage data publicly available is beneficial but maintains individual customer loads must be confidential due to competitive advantage and other potential harms and finds the 15/15 standard reasonable but not necessarily practical for all utilities.<sup>101</sup> Dakota Electric asks for more information on how aggregated substation or feeder data, including historic load patterns, is useful to DER applicants, and supports consideration of the benefit-cost of providing this information.<sup>102</sup>

Dakota Electric thought that distribution system equipment and connectivity information should have more security controls than aggregated load or usage data.<sup>103</sup> They recommended the Commission place a heavy weight upon security risks associated with releasing connectivity and locational information. Dakota Electric ruminated on changing the pre-application process by providing a higher priced (currently \$300) and more involved option for DER applicants to obtain interconnection information about specific areas of the system via consultation with a Dakota Electric engineer. They believed this idea to be more secure with the potential for DER applicants to receive more timely, detailed information than a less detailed global release of data covering the entire Dakota Electric distribution system to the public.<sup>104</sup>

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<sup>100</sup> Dakota Electric, Docket 20-800, Initial Comment, p. 4; Reply Comment, pp. 16-17

<sup>101</sup> Dakota Electric, Docket 20-800, Initial Comment, pp. 2-7; Reply Comments, p. 39

<sup>102</sup> Dakota Electric, Docket 20-800, Initial Comment, p. 8

<sup>103</sup> Dakota Electric, Docket 20-800, Initial Comment, p. 3

<sup>104</sup> Dakota Electric, Docket 20-800, Initial Comment, p. 5

Dakota Electric notes there is less of an issue with providing aggregated load usage information if aggregated at a high enough level such as the substation or feeder level, but had concern with aggregation by customer (or usage) type (e.g. grocery stores, data centers, etc.).<sup>105</sup> Dakota Electric also offers feedback on interpreting the terms of specific data points (i.e. secondary, node or subsection of a feeder, and hosting capacity analysis) listed in Attachment 1 to these briefing papers.<sup>106</sup>

Dakota Electric reiterates opposition to a publicly available, online map of the distribution system and concerns with the value of hosting capacity analysis.<sup>107</sup> Dakota Electric suggests it is a false choice between grid security and information to support DER deployment, and proposes an alternative to publicly available data and maps:<sup>108</sup>

... [I]n addition to an in-house report, a new process could be created, for developers, where instead of using Pre-Application report requests for each individual interconnection location, Dakota Electric's engineering staff could meet directly with a potential developer or members to answer any technical questions and go over any other relevant information related to a proposed project.

In reply, Dakota Electric acknowledged using comments from MNSEIA and DER developers about what data and update frequency is most useful to further inform their alternative proposal. Initially, Dakota Electric proposes to use a "very detailed report ... provid[ing] available capacity for an individual location" to inform engineering review of interconnection applications; and, over time, plans to offer the report to members for their Dakota Electric service via a secure portal or another method. Dakota Electric notes the report will not include detailed distribution system connectivity or energy use data for the site. Dakota Electric summarizes what information, pulled in real time from its Geographic Information System (GIS), would be provided in the report. Dakota Electric reiterates the alternative proposal is superior to publicly available HCA information.<sup>109</sup>

Dakota Electric mentions requesting comments from some of the area's largest venues to gather opinions on the trade-off between electric security and making it easier to design DER for their site. In reply, Dakota Electric includes letters from local businesses, an area school

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<sup>105</sup> Dakota Electric, Docket 20-800, Initial Comment, p. 6

<sup>106</sup> Dakota Electric, Docket 20-800, Initial Comment, pp. 10-13

<sup>107</sup> Dakota Electric, Docket 20-800, Reply Comment, pp. 18-21

<sup>108</sup> Dakota Electric, Docket 20-800, Reply Comment, p. 3; Initial Comments, p. 5

<sup>109</sup> Dakota Electric, Docket 20-800, Reply Comment, pp. 10-12, 38. Staff note: This proposal does not appear to provide information to third parties who are not a Dakota Electric customer at a specific site.

district, and city leaders and staff acknowledging the need to balance DER development and grid security. Thomson Reuters specifically support Dakota Electric's proposal to offer developers private, monitored access to information on a need-to-know basis; whereas, Apple Valley, Burnsville, Eagan, Lakeville, Rosemount, Collins Aerospace, Northern Tool & Equipment, Databank, Skyline Displays, Farmington Area Schools' District Office each advise the Commission to "take a thoughtful and deliberate approach in the investigation because once critical infrastructure data or customer information is publicly available it remains public."<sup>110</sup>

Dakota Electric disagrees with IREC's assertion public grid data is necessary for Commission oversight of DER development and hosting capacity issues and points to Minn. Stat. 216B.12; Subd. 1 which authorizes the Commission and Department to examine, test, and inspect public utilities. Further, parties can access non-public information under a protective agreement in a proceeding.<sup>111</sup>

Dakota Electric further disagrees that the burden of proof should be on utilities in this proceeding, and suggests the burden is shared by all parties and should be focused on public interest and general ratepayers' interest.

## Frameworks

In a cost-benefit framework, Dakota Electric suggests accounting for the utility cost to provide and publish information that has been vetted for specific use cases to make sure the data is useful. Dakota Electric provides examples of seasonal variation in substation peak demand which is obscured if only annual peak demand is provided and other variations noting the entire distribution system is never in a normal state.<sup>112</sup> Dakota Electric suggests modifying the cost-benefit framework offered by Synapse (and the Department) to focus on ratepayer not solely the developer perspective, and cautions the survey results provided are unreliable because of the DER developer focus and small sample size (10 responses). Further, Dakota Electric suggests Synapse underestimates risk and costs by focusing on grid equipment replacement costs and not the monetary impact on the customer, and over-estimates benefits with less specific cost estimates.<sup>113</sup>

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<sup>110</sup> Dakota Electric, Docket 20-800, Reply Comment, Att. 3, pp. 1-20 (pdf pp. 47-66)

<sup>111</sup> Dakota Electric, Docket 20-800, Reply Comment, pp. 13-14

<sup>112</sup> Dakota Electric, Docket 20-800, Initial Comment, p. 10

<sup>113</sup> Dakota Electric, Docket 20-800, Reply Comment, pp. 24-26



In addition, Dakota Electric highlights a framework of five general regulatory principles the Commission should follow. First, Minn. Stat. §216B.04 requires utilities to furnish safe, adequate, efficient, and reasonable service which Dakota Electric notes requires secure operation of the electric grid. Second, maintenance of regulatory oversight calls into question arguments that providing data supports competition and introduces liability and regulatory concern because DER developers and others that access publicly available data are not regulated as public utilities or large energy facilities. Third, coordination with a variety of regulatory oversight is needed and as DER becomes more prevalent the distinction between transmission and distribution systems becomes less apparent. Fourth, a robust record is needed and to-date only utilities, DER developers, and grid data access advocates have participated. Dakota Electric proposes the Commission create a proceeding that allows meaningful input from all interested parties, including business, government, and general ratepayers. Fifth and finally, adherence to previous Commission decisions and policies on data and customer privacy dealt, in part, with security consideration and remain relevant in this proceeding. Dakota Electric requests the Commission ensure decisions in this proceeding conform with policies and protocols in previous dockets and the Commission retain regulatory authority over data and recognize use of data may change over time.<sup>114</sup>

## **Models**

Responding to IREC's example of map detail provided by Pepco for the White House, Dakota Electric offers an investigation of the map concluding information has been modified, redacted, or is an incomplete representation of Pepco's distribution system to prevent threats from bad actors.<sup>115</sup>

Dakota Electric does not support the use of web access portals and suggests more time and guidance will be needed to flesh out set up and protection of such portals if required by the Commission; including whether the portal is administered by each utility or a state agency. Dakota Electric also asks who is liable and pays for a secure portal.<sup>116</sup>

Dakota Electric takes issue with arguments that utilities should provide distribution system maps because the information is already publicly accessible (e.g. google street view, DHS Homeland Infrastructure Foundation-Level Data, Kevala Analytics, Facebook, NASA satellite imagery) noting a visual or predictive model of infrastructure is not the same as having

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<sup>114</sup> Dakota Electric, Docket 20-800, Reply Comment, pp. 7-10

<sup>115</sup> Dakota Electric, Docket 20-800, Reply Comment, pp. 21-24

<sup>116</sup> Dakota Electric, Docket 20-800, Reply Comment, pp. 26-27



additional details about the equipment and usage and that HCA provides a missing link that can allow a bad actor to exploit publicly available data; especially when infrastructure is undergrounded and less visible (72% of Dakota Electric’s system). Similarly, Dakota argues IREC’s claim that bad actors can hack utilities to access grid data for an attack is not an argument for “giving up” on securing grid data by not releasing it publicly. Dakota disagrees with IREC’s presumption attacks are similar to weather events and utilities have replacement stock, and points to the prolonged outages during Storm Uri in Texas (February 2021) and current supply chain constraints and pressure on electric affordability of relying on equipment replacement over security.<sup>117</sup>

Overall, Dakota Electric recommends the Commission recognize unique circumstances of utilities in making policy decisions in this proceeding.

## **Workshops**

Dakota Electric suggests a workshop or discussion with stakeholders screened for security and the results treated as not public could be used to discuss how distribution connectivity and location information could be misused. Additionally, Dakota Electric supports further discussion about how aggregated substation and circuit (feeder) information would be used and what pieces of information are most beneficial to a DER applicant.<sup>118</sup>

Dakota Electric perceived Synapse as not a neutral facilitator, but rather as driving the Department’s initial workshops to a pre-determined solution and workshop summaries did not adequately summarize utility discussion, especially utilities other than Xcel Energy.<sup>119</sup>

## **Minnesota Solar Energy Industries Association**

### **Security and Public Benefit**

MNSEIA cautions against allowing security concerns to render the HCA entirely moot. Access to HCA and load pattern data helps DER interconnect at lower cost and higher value to the grid. Without the data, DER siting may be suboptimal, increase project risk, and delay interconnection. MNSEIA agreed with comments made by the IREC and Fresh Energy that the current flow of information from the HCA is inadequate for the rapid changes that are occurring

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<sup>117</sup> Dakota Electric, Docket 20-800, Reply Comment, pp. 27-35

<sup>118</sup> Dakota Electric, Docket 20-800, Initial Comment, p. 9

<sup>119</sup> Dakota Electric, Docket 20-800, Reply Comment, p. 37

on Minnesota's electric grid. MNSEIA agreed with IREC that the HCA should have monthly updates and MNSEIA believed that the Commission should establish guidelines regarding adequate response times and the relevancy of data requests from utilities to ensure developers are receiving accurate and relevant information.<sup>120</sup>

MNSEIA believes grid security issues flagged by Xcel and Dakota Electric can be managed or mitigated by measures other than not providing the data publicly.

MNSEIA notes currently public data from Xcel should remain public, and notes categories of information that are highly relevant to future DER development under FERC Order 2222 but are not currently provided under developer request:

- Forecasted Annual Peak Load at the substation, feeder, and subsection levels
- Actual Annual Peak Load at substation, feeder, and subsection levels
- Load shapes (seasonal and hourly) at substation and feeder levels
- Hosting Capacity Criteria Violations at the substation and feeder levels

MNSEIA asked that the Commission direct utilities to make each of these categories available via the HCA report or upon request to a certified bona fide developer (described further below).<sup>121</sup>

## Frameworks

### Tiered Access

MNSEIA felt a multi-tiered structure for accessing data would over-complicate the process of obtaining DER-relevant data with the possibility of becoming a "pay-to-play" system that could be exploited to prevent smaller or new developers from accessing data through burdensome fees and arbitrary certifications. There was concern this would increase barriers to entry for new and small developers. MNSEIA felt that the utility should only be able to require a signed NDA for data requests that are specific (for example at the secondary level) to risk potential disclosure of load data that could be linked to an individual customer. MNSEIA suggested that the Department of Commerce or Department of Labor and Industry could certify *bona fide* DER developers that have an established and determined need to know hosting capacity data. They felt that the Department is the best body to ensure fairness and equality in a certification process of this nature because of its neutral position in representing the public interest. MNSEIA believed that in addition to these rules, a required annual HCA security update and

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<sup>120</sup> MNSEIA, Docket 20-800, Initial Comment, p. 2-3

<sup>121</sup> MNSEIA, Docket 20-800, Initial Comment, p. 4

training session hosted by the Department would ensure that developers and utilities productively discuss these issues.<sup>122</sup>

MNSEIA noted that if the Commission believed that a tiered access system is the best solution to security concerns that the approach should only be implemented for data with higher security concerns and that it should not be based on financial resources available, the size of the developer or professional certification. MNSEIA felt that creating a multi-tiered system for accessing information left too much room for system abuse and the creation of market barriers.<sup>123</sup>

## Otter Tail

### Security and Public Benefit

Otter Tail felt that comments in the docket had expressed that utilities seek to restrict access to information about the distribution grid. Otter Tail found that vetting and requiring NDAs may slow the release of information, but it also maintains proper controls over sensitive data. Otter Tail would like to see more timely and effective coordination but does not agree the public is best served by uncontrolled disclosure of grid data. Therefore, they felt the Commission should exercise restraint.<sup>124</sup>

### Frameworks

Otter Tail felt the Commission should consider employing a framework that maintains the following:<sup>125</sup>

- whether the utility can reasonably collect and maintain the information.
- the cost of making the information public.
- the sensitivity of the information.
- the public policy goals supported by the release of information.
- whether the level of disclosure is necessary to promote public policy goals and if so, what is the minimum amount of disclosure necessary to promote the goals.
- whether alternatives to disclosure are available.
- the availability and applicability of safeguards such as anonymization and aggregation of data and the enforceability of non-disclosure agreements and administrative practices to prevent unauthorized disclosure.

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<sup>122</sup> MNSEIA, Docket 20-800, Initial Comment, p. 5

<sup>123</sup> MNSEIA, Docket 20-800, Initial Comment, p. 6

<sup>124</sup> Otter Tail, Docket 20-800, Reply Comment, pp. 2-3

<sup>125</sup> Otter Tail, Docket 20-800, Initial Comment, p. 4

- whether making the information public or otherwise releasing the information is consistent with the Commission's orders in the following dockets:
  - *In the Matter of a Petition by Citizens Utility Board of Minnesota to Adopt Open Data Access Standards*, Docket No. E,G-999/M-19-505
  - *In the Matter of a Commission Inquiry into Privacy Policies of Rate-Regulated Energy Utilities*, Docket No. E,G-999/CI-12-1344

## Models

When employing these approaches, Otter Tail landed upon using a risk-based approach with the goal of establishing the value of a single loss expectancy and assumed annual rate of occurrence. They felt the model should account for the economic impact of possible service interruptions, damage to equipment at the customer and utility facilities level, as well as the possibility for upstream transmission impacts.<sup>126</sup>

## Workshops

Otter Tail felt a workshop may be valuable to gain broader perspective on ways to facilitate access to sensitive grid data while ensuring protections. They believe input from grid security experts would be beneficial.<sup>127</sup>

## Minnesota Power

### Security and Public Benefit

Minnesota Power noted that they consider distribution grid maps, access to aggregated data by node, and access to aggregated data by secondary as critical infrastructure data that needs to be protected for security and customer privacy reasons. Access to aggregated data by substation they considered to be public with a few exceptions.<sup>128</sup> MP employed the NERC Critical Infrastructure Protection (CIP) Standards as best practices guidelines for internal evaluation regarding these topics.<sup>129</sup> MP felt generally that feeder level and substation level aggregation should be public but mapping, nodal levels, and secondary aggregation should be

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<sup>126</sup> Otter Tail, Docket 20-800, Initial Comment, p. 5

<sup>127</sup> Otter Tail, Docket 20-800, Initial Comment, p. 5

<sup>128</sup> Minnesota Power, Docket 20-800, Initial Comment, p. 4

<sup>129</sup> Minnesota Power, Docket 20-800, Initial Comment, pp. 3-4

protected. In their reply comments they noted that their current system seems to work well for them since they have low DER penetration compared to other utilities in the state.<sup>130</sup>

### **Frameworks**

Minnesota Power felt that the frameworks proposed by Synapse and others are not the only possibilities for frameworks and that the Commission should maintain ultimate jurisdiction regarding how important data such as this should be shared and secured.<sup>131</sup>

### **Models**

Minnesota Power felt there is not currently a model sufficient to address the concerns listed in the Commission's Notice. While other states are further along (New York, California), Minnesota Power noted a set of concrete standards for security on the distribution system had yet to be developed.<sup>132</sup> Minnesota Power felt that the Department hosted stakeholder workshops organized by Synapse will need to be expanded upon by creating a more inclusive Commission-led stakeholder process.<sup>133</sup>

### **Workshops**

Minnesota Power felt the Commission should host multiple workshops or facilitated discussion including perspectives of consumer advocates, customer representatives, law enforcement, the Department of Homeland Security, and third-party developers along with utilities.<sup>134</sup>

## **Great River Energy**

### **Security and Public Benefit**

Great River Energy's felt CEII should be limited from public access to guard against cyber and physical attacks and handling of CEII should be done under NDAs. They strongly supported Dakota Electric's comments and felt that the Commission should evaluate financial penalties for misuse of data.<sup>135</sup>

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<sup>130</sup> Minnesota Power, Docket 20-800, Reply Comment, p. 4

<sup>131</sup> Minnesota Power, Docket 20-800, Reply Comment, P. 3

<sup>132</sup> Minnesota Power, Docket 20-800, Initial Comment, p. 5

<sup>133</sup> Minnesota Power, Docket 20-800, Reply Comment, p. 3

<sup>134</sup> Minnesota Power, Docket 20-800, Initial Comment, p. 5

<sup>135</sup> Great River Energy, Docket 20-800, Initial Comment, pp. 2-3

## Frameworks

Great River Energy felt that any framework used by the Commission to evaluate risks, costs, and benefits of providing access to the electric distribution grid publicly needs to balance those factors along with the risk associated with increased dissemination of information. They felt the Commission should consider what minimum levels of information is required to promote the related policy goals and not require utilities to disclose more than is necessary as once critical information is released, it is easily accessible always.<sup>136</sup>

## Models

Great River Energy was not aware of any models regarding this topic.<sup>137</sup>

## Workshops

Great River Energy felt a Commission hosted workshop would be helpful but should remain private to allow for frank discussions.<sup>138</sup>

## City of Minneapolis

### Security and Public Benefit

The City of Minneapolis (City) recognized and realized grid security as a high priority and specifically did not advocate for public availability of sensitive data in a manner that led to undue risk. However, the City also recognized the benefits of accommodating reasonable access to grid data as necessary to improve grid flexibility, reliability, and affordability. The City felt third party access to data is critical to allow the market to address the escalating risks associated with climate change.<sup>139</sup>

The City felt it was reasonable to make data available by requiring registration to view grid data with added security measures, rather than NDAs, as a condition of data sharing. They also felt that the existing 15/15 anonymized data privacy rule offered additional layers of protection already and therefore sheltering more data, such as peak load that does not meet the 15/15 threshold, was unnecessary.

The City felt the following data should be provided to registered users:<sup>140</sup>

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<sup>136</sup> Great River Energy, Docket 20-800, Initial Comment p. 3

<sup>137</sup> Great River Energy, Docket 20-800, Initial Comment, p. 3

<sup>138</sup> Great River Energy, Docket 20-800, Initial Comment, p. 3

<sup>139</sup> City of Minneapolis, Docket 20-800, Initial Comment, p. 1

<sup>140</sup> City of Minneapolis, Docket 20-800, Initial Comment, p. 2

- Distribution grid mapping with critical infrastructure and /or line locations at primary, secondary and meter level
- At the substation, feeder, and nodal level
  - Forecasted peak load
  - Actual peak load
  - Actual daytime minimum load
  - Load shapes (seasonal and hourly)
  - Hosting capacity results (minimum and maximum)
  - Hosting capacity criteria violations
  - Distributed generation and storage (kW), in operation and in queue
  - Demand response and other demand-side DER (kW) such as EV chargers, energy efficiency, and more

The City specifically saw use cases for this information for them regarding topics such as resiliency projects in the city, energy storage, beneficial electrification, solar, non-wire solutions and other demand response programs that the City may implement as they combat climate change at a local level. The City noted that they recommend applying the 15/15 data sharing rule for maps and at the substation, feeder, and nodal level.

### **Frameworks**

No comment on frameworks.

### **Models**

No comment on models.

### **Workshops**

No comment on workshops.

## **Fresh Energy**

### **Security and Public Benefit**

Fresh Energy identified four questions that should be asked of the Commission in this proceeding:<sup>141</sup>

1. How does the data in question increase security risks?
2. How does the data in question further the public interest?

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<sup>141</sup> Fresh Energy, Docket 20-800, Initial Comment, p. 2

3. If there is an increased security risk from disclosure, is it an acceptable risk given the public interest benefits?
4. If it is an unacceptable risk, what measures are appropriate to properly balance data access and security?

Fresh Energy requested that the Commission direct utilities to make all data in question public available when disclosing it, except where the 15/15 rule applies for customer privacy reasons. They did not support proposals to require NDAs for accessing HCA data, including peak loads. Fresh Energy also felt that if the Commission directs utilities to establish a registration process, that the process be open to stakeholders like themselves, and not just developers.<sup>142</sup> Fresh Energy also agreed with Department and IREC that the HCA should be more frequently updated on a monthly or at least quarterly basis.<sup>143</sup>

### **Frameworks**

No comment on frameworks.

### **Models**

No comment on models.

### **Workshops**

No comment on workshops.

## **US Solar Corp., MN DER Developers**

### **Security and Public Benefit**

The US Solar Corp. and MN DER Developers requested that any approved confidentiality mechanisms be narrowly tailored to legitimate and specifically identified security concerns and be designed to allow bona fide DER developers and stakeholders access to DER-relevant grid data.<sup>144</sup> They expressed concern that information currently published by Xcel Energy becomes stale because it is only updated once per year while other information isn't available at all.<sup>145</sup>

### **Frameworks**

No comment on frameworks.

### **Models**

No comment on models.

### **Workshops**

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<sup>142</sup> Fresh Energy, Docket 20-800, Initial Comment, p. 4

<sup>143</sup> Fresh Energy, Docket 20-800, Initial Comment, pp. 1-2

<sup>144</sup> US Solar Corp., MN DER Developers, Docket 20-800, Initial Comment, p. 4

<sup>145</sup> US Solar Corp., MN DER Developers, Docket 20-800, Initial Comment, p. 3



No comment on workshops.

### Impact Power Solutions

#### **Security and Public Benefit**

Impact Power Solutions let the Commission know that they do not support the use of multi-tiered data access systems as proposed by Xcel Energy or the requirement to sign an NDA. They hoped that any confidentiality mechanism implemented by the Commission not position Xcel Energy or other utilities as the gatekeepers of data access while also keeping in mind potential barriers to the market for DER developers.<sup>146</sup>

#### **Frameworks**

No comment on frameworks.

#### **Models**

No comment on models.

#### **Workshops**

No comment on workshops.

### Chambers of Commerce

The St Paul Area Chamber of Commerce, the Minneapolis Regional Chamber of Commerce and the Minnesota Chamber of Commerce all submitted letters supporting responsible and thoughtful data sharing protocols with the St Paul Chamber specifically supporting Xcel's tiered access approach.

### Parties Alignment Matrix

Staff compiled a spreadsheet of party responses to specific grid data information in Attachment 1 to these briefing papers. Green equates to recommendations the data be made public or non-restricted; whereas, red means the data should be restricted or non-public. White means the information was incomplete or not provided.

Attachment 1 shows no consensus among parties; however, omitting Otter Tail Power's suggestion all data be restricted, there appears to be agreement among the remaining parties that the following data be considered public if overarching protections for CEII, critical infrastructure or privacy do not apply:

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<sup>146</sup> Impact Power Solutions, Docket 20-800, Initial Comment, p. 3

At the feeder and substation level,

- Distributed generation and storage capacity, in operation
- Distributed generation and storage capacity, in queue
- Demand response or other demand-side DER (e.g. EVs)
- Hosting capacity results, min and max

Utilities are in agreement that the following should be restricted:

- Any level of distribution system map detail
- Aggregated data at the secondary or node/subsection of a feeder level. Xcel makes an exception for the data in the publicly available list above.

MNSEIA was the only non-utility party to recognize some of the data may require restrictions:

- Distribution system map detail related to CEII, critical infrastructure, or customer meters
- Load shapes (seasonal and hourly) by feeder, node, or secondary
- Aggregated data at the secondary
- The following aggregated data at the node:
  - Forecasted or actual annual peak load
  - Actual daytime minimum load
  - DER capacity (distributed generation, storage, demand response or other demand-side DER)

IREC was the only party to argue all data at the secondary level should be public. Xcel and IREC agree on the following:

- Hosting capacity results, min and max
- Demand response and other demand-side DER

## Staff Analysis

### Security and Public Benefits

The record in this Commission Investigation identifies many opportunities to maintain data security, maintain secure utility distribution grids, and aid in data transparency for DERs seeking locations to interconnect with the utility grid. While potentially tangential, Staff distinguishes public accessibility to some distribution-level grid data from both: 1) broader cybersecurity threats to utility distribution grids and 2) bulk system grid data.

Staff notes the GAO/DOE's report submitted by Xcel and the differentiation it makes regarding the bulk and distribution power systems. Both are important and need protection, but, while interconnected, are not the same thing. Therefore, certain regulatory policies may not be applicable to both. The distribution grid is a public resource, under utilities' care, that connects to customers' homes, businesses, and communities.<sup>147</sup> The DER developers, Minneapolis, Fresh Energy, IREC, and Synapse on behalf of the Department highlight the public has a right to know and employ data regarding their electric grid, to learn about issues in their communities, and help determine where and when to interconnect DERs. This information, highlighted by the City of Minneapolis, can be a powerful tool for localities in helping them partner with their utilities in combating climate change through non-wire solutions, demand response, and other pilot projects.

On the other hand, utilities highlight security concerns with making distribution grid maps and data available; especially for CEII and critical infrastructure. Staff appreciates Dakota Electric's inclusion of the FERC definition of CEII and highlighting that "distribution of energy" is included:

... CEII is specific engineering, vulnerability, or detailed design information about proposed or existing critical infrastructure (physical or virtual) that:

1. Relates details about the production, generation, transmission, or **distribution of energy (emphasis added)** ...

Parties in the record disagree whether distribution grid maps and aggregated grid data, not including data specific to DER capacity and hosting capacity min and max results at the substation or feeder level, meet this definition or otherwise warrant restricted access.

Ultimately, staff believes a tiered access framework as proposed by numerous parties can provide current, and potentially more, grid data to the public. This includes access to sensitive data to parties who need it while maintaining the security of data. Individuals accessing the data can be vetted through user agreements, two-factor authentication, and other standardized data access protocols. As highlighted by IREC, NDAs can create barriers and unnecessarily limit data accessibility. Staff suggests NDAs should be limited in scope and application only to data that requires the highest level of restricted access with clear NDA use cases.

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<sup>147</sup> MN Statute 216B.01 states "It is hereby declared to be in the public interest that public utilities be regulated as hereinafter provided in order to provide the retail consumers of natural gas and electric service in this state with adequate and reliable services at reasonable rates, consistent with the financial and economic requirements of public utilities and their need to construct facilities to provide such services or to otherwise obtain energy supplies, to avoid unnecessary duplication of facilities which increase the cost of service to the consumer and to minimize disputes between public utilities which may result in inconvenience or diminish efficiency in service to the consumers."

Staff highlights parties' discussion of the importance of timely updating of data. Recommendations related specifically to timely updating of Xcel Energy's Hosting Capacity Analysis map and data have been referred to Docket No. E002/M-21-767 (Agenda Meeting anticipated in August). Dakota Electric offers alternative proposals such as a real-time detailed report of hosting capacity without grid equipment, connectivity, or load data pulled from GIS and/or utility engineering consulting; however, other parties did not address feasibility, security, or usefulness of these alternatives that would include more updated information than currently available publicly.

### **Frameworks**

Staff would like to thank the many parties that provided information regarding the multiple frameworks that they felt the Commission should consider. There is robust discussion in the docket regarding how these frameworks can help parties and the Commission come to a resolution regarding this topic. Staff believes a tiered access approach to be a beneficial starting point for workshop discussion moving forward with the other frameworks such as cost benefit analysis to be beneficial when parties are not seeing eye to eye on a specific security level for a specific data type. Clearly analysis paralysis can happen with frameworks like these where there is always more information to learn and industry standards can change from year to year, decade to decade, or from new technology to new technology. Staff feels that completing cost benefit analysis by a neutral party such as the DOC, PUC, or others at this time may be overly burdensome and expensive but if workshop participants feel this information would be beneficial in helping them come to conclusions regarding specific safety standards for their tiered level of access or what tier a specific data type should fall under, the parties are welcome to provide that analysis so the workshop can better come to a unanimous decision.

There is continued disagreement between parties on what should be public, private, or somewhere in between, as can be seen by attachment 1, the data protection matrix. While parties and the Commission need to continue to work towards a resolution on these issues, staff found that when reviewing party positions, that even some of the seemingly most stringent positioned parties believed a tiered access approach could be applicable in this situation (IREC, Ottetail Power, MNSEIA, and more). This agreement dissipated when considering what protocols should be in place at what levels and what individual data points should be in each protocol bin.

With current disputes regarding protocols for each bin, we can look to the Synopsis report. Figure 21 of the report gives 4 example bins or security levels that include:

1. Publicly Available – Data is published by the utility's website
2. Limited Restriction – Parties must register to access data
3. Moderate Restriction – Parties must register online and sign an NDA to access data
4. Information that is Never Available – Data is not available under any circumstances.

This example is very similar to Xcel's which five bins instead of four. When applying this tiered access approach that all parties agree upon using to the data protection matrix below, we can get a clearer picture of how the parties are coming to agreement. Based upon the privacy matrices submitted by parties, there would be 4 total bins: completely restricted through in person meetings only or NDAs, available only to consumers connected to the specific line section<sup>148</sup>, confidential information behind a security requirement (current requirement not fully agreed upon by the parties), and completely public information that conforms to current Commission precedent regarding individual consumer information.

What security controls each of these bins or levels should have is not agreed upon even though the overall framework is. However, it seems to be understood that the two extremes should be fully public and either fully secured (no one can access or accessed only under an NDA and other protective data access protocols). Parties also disagree what data access protocols, or security measures, moderate level bins should contain. What makes staff hopeful, however, is that parties have many exciting proposals on this topic now that there seems to be agreement over using a tiered access framework.

#### Statewide MN DER Interconnection Process (MN DIP)

Staff interprets the following as a recognition in the MN DIP that, at a minimum, data directly pertaining to critical infrastructure and CEII requires some level of restricted access though what level may vary (MN DIP 5.9.2.2). Data related to the design, operating specifications and metering data of an Interconnection Customer is not directly included in this proceeding but may also be deemed confidential (MN DIP 5.9.1). Under the MN DIP, confidential information does not include information previously in the public domain with proper authorization, required to be publicly submitted by Governmental Authorities, or necessary to enforce the MN DIP (5.9.2). The MN DIP at 5.9 describes confidentiality provisions, states in part:

Confidential Information shall mean any confidential and/or proprietary information provided by one Party to the other Party that is clearly marked or otherwise designated "Confidential." ... design, operating specifications, and metering data provided by the Interconnection Customer may be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such. (MN DIP 5.9.1)

...

Confidential Information does not include information previously in the public domain with proper authorization, required to be publicly submitted or divulged by Governmental Authorities (after notice to the other Party and after exhausting any

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<sup>148</sup> Suggested by Dakota

opportunity to oppose such publication or release), or necessary to be publicly divulged in an action to enforce these procedures. (MN DIP 5.9.2)

...

Critical infrastructure information or information that is deemed or otherwise designated by a Party as Critical Energy/Electric Infrastructure Information (CEII) pursuant to FERC regulation, 18 C.F.R. §388.133, as may be amended from time to time, may be subject to further protections for disclosure as required by FERC or FERC regulations or orders and the disclosing Party's CEII policies. (MN DIP 5.9.2.2)

## **Workshops**

Staff acknowledges that many of the parties in this docket would like to see more workshops on this topic to help bring about resolutions to data security concerns. Parties recommended the Commission work to bring specific stakeholders that were not participants in this record to the table. They include not just the clean energy groups, utilities, der developers, local government and others that participated but many that did not. The ones that have not yet participated in this conversation include those charged with protecting critical infrastructure included the Department of Homeland Security's CISA, local and state law enforcement, the Minnesota National Guard, the Federal Bureau of Investigations, emergency responders, and emergency managers. Staff recognizes the importance of including these organizations' perspectives on this topic and feel the Commission will need to make sure the PUC engages with these perspectives in future workshops and before engaging in significant changes to the current system.

Staff recommend that the Commission consider more workshops regarding what the levels of tiered access would look like in specificity. Staff suggests the Commission take comments regarding the neutrality of the DOC into consideration when determining who should lead these workshops. Staff recommends that the workshops determine the number of tiers, create a specific list of protections that will be required under each tier as well as a specific list of data types that should fall under each of the tiers with the newly decided upon security protocols. Staff recommends that these should be presented to the Commission with unanimous consent of the parties in the workshop. If unanimous consent cannot be reached on any of the items in front of the workshop at all, majority rule should take precedent.

Staff recommends to the Commission that they respect parties' needs for privacy in these workshops. However, Staff recognize parties made the decision to keep specific vulnerabilities and concerns out of the public record, and parties will need to prove legitimate and specific concern regarding privacy and security if asking to not abide by open record and government transparency standards during these workshops. Staff recognizes a non-public format may be best to build upon the work that has already been completed to this point but that excluding participants should be avoided.

## Models

Staff feel future workshops applying tiered access and cost benefit frameworks should look towards models such as Pepco's, Colorado's tiered classification system, Minnesota's DIP, New York's IEDR, and California's Green Button Connect as suggested by the parties to help them come together to determine what tiers should have what protections and what data types should fall under each tier. A decision option is offered to add this educational opportunity to the stakeholder workshops.

## Decision Options

### Stakeholder Workshops

1. Delegate authority to the Executive Secretary to issue Notice(s), set schedules, and designate comment periods. The Executive Secretary will convene a work group of appropriate size and composition, and may select a facilitator, to develop the record more fully. It is anticipated that the Commission will consider the record and comments within 24 months of this order. The record will make recommendations, where appropriate, and clearly describe remaining disagreement with rationale on a tiered-access framework including what specific distribution grid-related data and access protocols align with each tier. *(Staff interpretation of multiple parties' recommendation for Commission-led stakeholder workgroup)*

[If the Commission selects decision option 1, it may also select any or all of the following additional details:]

- a. Designate Commissioner [*INSERT NAME*] as lead commissioner pursuant to Minn. Stat. 216A.03; subd. 9, with authority to help develop the record necessary for resolution of the issues, and to develop recommendations to the Commission in this docket. *(Staff)*
- b. The Commission requests that the Commissioner of Commerce seek authority from the Commissioner of Management and Budget to incur costs for specialty services to provide a recommendation on privacy and security in the Commission Investigation on grid data and security and to participate in related analysis and stakeholder engagement, and subsequently bill those expenses to Xcel pursuant to Minn. Stat. § 216B.62, subd. 8. *(Staff)*

- c. Delegate to the Executive Secretary to request participation from relevant state agencies, security stakeholders and others not currently engaged in the record.
  - i. Invite DER developers, clean energy entrepreneurs, utilities, customer representatives, consumer advocates, local government, non-governmental organizations, grid security experts and local or national authorities charged with protecting critical infrastructure (*Synapse*)
  - ii. Invite Law enforcement and Minnesota Department of Homeland Security (*Minnesota Power*)
- d. Closed sessions will be used to allow stakeholders with appropriate authorization to discuss sensitive, nonpublic considerations. (*GRE*)
- e. Hold informational sessions looking at models from other states and utilities (e.g. Pepco's, Colorado's tiered classification system, Minnesota's DIP, New York's IEDR, and California's Green Button Connect (*Staff*))

#### Further Scope or Starting Point Guidance

*If the Commission adopts decision option 1, these options would offer guidance on the scope or starting point for the stakeholder workshops.*

- 2. Direct stakeholders, as part of stakeholder workshops, to establish goals, outcomes, and guiding principles for access to potentially sensitive grid information (*Xcel Energy*)
  - a. Risk-based, tiered access with transparent criteria and expedited access to data (*Synapse*)
- 3. Acknowledge that, during stakeholder workshops, stakeholders should recognize unique circumstances for each utility (*Dakota Electric*)
  - a. Examine case-by-case with utilities what grid interconnection data is shared based on utility size, service territory, and number of interconnection applications received in a year. (*Synapse*)
- 4. Direct stakeholders, as part of stakeholder workshops, to address the following questions (*Otter Tail Power*):
  - a. whether the utility can reasonably collect and maintain the information.
  - b. the cost of making the information public.
  - c. the sensitivity of the information.
  - d. the public policy goals supported by the release of information.
  - e. whether the level of disclosure is necessary to promote public policy goals and if so, what is the minimum amount of disclosure necessary to promote the goals.



- f. Whether alternatives to disclosure are available.
  - g. The availability and applicability of safeguards such as anonymization and aggregation of data and the enforceability of non-disclosure agreements and administrative practices to prevent unauthorized disclosure.
  - h. Whether making the information public or otherwise releasing the information is consistent with the Commission's orders in the following dockets:
    - i. In the Matter of a Petition by Citizens Utility Board of Minnesota to Adopt Open Data Access Standards, Docket No. E,G-999/M-19-505
    - j. In the Matter of a Commission Inquiry into Privacy Policies of Rate-Regulated Energy Utilities, Docket No. E,G-999/CI-12-1344
5. Direct stakeholders, as part of stakeholder workshops, to use a risk-benefit framework to evaluate specific data points based on Risk = Threat x Vulnerability x Consequence (*Synapse, Dr. Stockton*)
- a. Include resilience considerations in the framework (*Synapse*)
6. Direct stakeholders, as part of stakeholder workshops, to use a cost-benefit framework to evaluate specific data points based on surveys (*Synapse*)
7. Direct stakeholders, as part of stakeholder workshops, to include consideration of all customers and society as part of risk- and cost- benefit frameworks. (*Dakota Electric*)
8. Direct stakeholders to use the tiered access bins and related data access protocols recommended by Xcel Energy as a starting point for the workshops: (*Xcel*)
- a. Public = Data is openly available; published on utility website
  - b. Non-public-1 = requires verified web log-in under NDA terms
  - c. Non-public-2 = NDA needed; use encrypted email
  - d. Non-public-3 = NDA with in-office or in-person viewing only
  - e. Non-public-4 = Non-public, not provided

[OR]

9. Direct stakeholders to use the tiered access bins and related data access protocols recommended by Synapse as a starting point for the workshops: (*Synapse*)
- a. Publicly Available – Data is published by the utility's website
  - b. Limited Restriction – Parties must register to access data
  - c. Moderate Restriction – Parties must register and sign an NDA to access data

- d. Information that is Never Available –Data is not available under any circumstances
10. Direct stakeholders, as part of stakeholder workshops, to explain how publicly available aggregated substation and feeder data, including historic load patterns, is useful (*Dakota Electric*)
  11. Direct stakeholders, as part of stakeholder workshops, to address whether risk of published data requires more than industry-standard practice of authentication and authorization to access (i.e. two factor identification and identity management rather than requiring a non-disclosure agreement.) (*IREC, Synapse*)
  12. The Commission requests further record development include: 1) defining specific access rules and procedures; 2) how to require confidential information be clearly designated rather than covered broadly if an NDA is required; and 3) a process to review the terms of any NDA or confidentiality provision. (*IREC-alternative modified by staff*)
  13. Direct stakeholders, as part of stakeholder workshops, to evaluate financial penalty for misuse of data (*GRE*)
  14. Direct stakeholders, as part of stakeholder workshops, to consider whether a utility data web portal should be utility specific or administered by a state agency (*Dakota Electric*)
  15. Direct stakeholders, as part of stakeholder workshops, to discuss alternative of providing a detailed report of hosting capacity which does not include equipment, connectivity, or load information pulled in real-time from a utility's information system (e.g. GIS). (*Dakota Electric*)
  16. Direct stakeholders, as part of stakeholder workshops, to discuss audit and controlled access strategies to ensure public data access is separate and does not risk access to a utility's internal control systems (*IREC*)

#### Data Classification

17. Adopt [*specific party's*] data classifications based on security considerations from Attachment 1 of staff briefing papers. The Commission's open data access standards and privacy standards apply as established in Docket Nos. E,G999/CI-19-505 and E,G999/CI-12-1344 respectively.

[OR]

18. Determine [*specific rows*] of data should be classified [*public or nonpublic*] from Attachment 1 of staff briefing papers. The Commission’s open data access standards and privacy standards apply as established in Docket Nos. E,G999/M-19-505 and E,G999/CI-12-1344 respectively.

[OR]

19. Require the following modifications to Xcel Energy’s Hosting Capacity Analysis map and related data spreadsheets for the 2022 Hosting Capacity Analysis Report (*Synapse with staff modification to add a deadline. Corresponds to table on p. 13*):
  - a. Only load information should be redacted from the feeder when the 15/15 standard is violated.
  - b. Apply a Risk-Benefit Framework and use a tiered access approach for access to non-public load-related data.
  - c. Provide a more detailed rationale, beyond “security concerns”, for not publishing feeder and substation capacities.
  - d. Explicitly define which customers fall into “Other categories of critical, grid-dependent customer.”
  - e. Create a transparent process on how third parties can access CEII.
  - f. Only redact feeders if they are connected to a dedicated customer, are connected to critical infrastructure, or serve a critical consumer.
  - g. Xcel should unblur its HCA map to show distribution feeders behind a verified web login portal that is open to the public (does not require an NDA).
20. Find data is non-public if directly pertaining to Critical Energy Infrastructure Information (CEII) as defined by FERC, or is personally identifiable information (PII) or customer energy usage data (CEUD) consistent with the Commission’s open data access standards and privacy standards as established in Docket Nos. E,G999/M-19-505 and E,G999/CI-12-1344 respectively. (*Staff believe all parties agree*)
  - a. Including critical infrastructure in the 16 sectors defined by the Presidential Policy Directive 21 (*utilities*)

[OR]

21. Take no action on data classification at this time.

Data Access Protocols

22. Carve out access for small DER developers to maintain low barriers to entry (utilities cannot charge for data access to those DERs with less than 50 FTE) (*MNSEIA modified by staff*)
23. Request [*Department of Commerce or Department of Labor and Industry*] implement a bona fide developer certification program. Direct utilities to make each of the below categories available upon request to a certified bona fide developer (*MNSEIA alternative if not publicly available*)
  - a. Forecasted Annual Peak Load at the substation, feeder, and subsection levels
  - b. Actual Annual Peak Load at substation, feeder, and subsection levels
  - c. Load shapes (seasonal and hourly) at substation and feeder levels
  - d. Hosting Capacity Criteria Violations at the substation and feeder levels

[OR]

24. Require that data access that requires registration, or another protocol, be available to all stakeholders and not just developers (*Fresh Energy*)
25. Limit non-disclosure agreements to data directly pertaining to CEII, critical infrastructure, or critical customer groups (*Synapse*)

[OR]

26. Require non-disclosure agreements for more detailed hosting capacity analysis, grid data, and map details than provided publicly by Xcel Energy's heat maps in Docket No. E002/M-21-767. (*Xcel Energy*)
27. Require utilities to cease the NDA requirement for pre-application report data described in MN DIP Section 1.4. (*IREC*)

Attachment 1

Level	Data Type	Xcel	DE	OTF	MIP	MNSEA	REC	City of Minneapolis
1 Public	Distribution grid map with critical energy infrastructure	0	0	0	0	0.5	1	1
2 Public	Distribution grid map with critical infrastructure	0	0	0	0	0.5	1	1
3 Public	Distribution grid map at feeder level	0	0	0	0	1	1	1
4 Public	Distribution grid map at secondary level	0	0	0	0	1	1	1
5 Public	Distribution grid map at customer meter level	0	0	0	0	0.5	1	1
6 Public	Aggregated Data by Substation (see Sec. B)[1]	0	1	0	1	1	1	1
7 Public	Aggregated Data by Feeder (see Sec. C)	0	1	0	0	1	1	1
8 Public	Aggregated Data by Node/Subsection of Feeder (see Sec. D)	0	0	0	0	1	1	1
9 Public	Aggregated Data by Secondary (See Sec. E)	0	0	0	0	0.5	1	1
10 Aggregated Data By Substation	Forecasted Annual Peak Load	0	0	1	0	1	1	1
11 Aggregated Data By Substation	Actual Annual Peak Load	0	0	1	1	1	1	1
12 Aggregated Data By Substation	Actual Daytime Minimum Load	0.5	0	0	0	1	1	1
13 Aggregated Data By Substation	Load shapes (seasonal)	0	0	1	0	1	1	1
14 Aggregated Data By Substation	Load shapes (hourly)	0	0	1	0	1	1	1
15 Aggregated Data By Substation	Hosting Capacity Results (min. and max)	0	1	0	0	1	1	1
16 Aggregated Data By Substation	Hosting Capacity Criteria Violations	0.5	1	0	0	1	1	1
17 Aggregated Data By Substation	Distributed Generation and Storage (KW), in operation	1	1	0	1	1	1	1
18 Aggregated Data By Substation	Distributed Generation and Storage (KW), in queue	1	1	0	1	1	1	1
19 Aggregated Data By Substation	Demand Response or other demand-side DER (KW) (EV chargers, EE, etc.)	1	1	0	1	1	1	1
20 Aggregated Data By Feeder	Forecasted Annual Peak Load	0	0	1	1	1	1	1
21 Aggregated Data By Feeder	Actual Annual Peak Load	0	0	1	1	1	1	1
22 Aggregated Data By Feeder	Actual Daytime Minimum Load	0	0	1	0	1	1	1
23 Aggregated Data By Feeder	Load shapes (seasonal)	0	0	1	0	0.5	1	1
24 Aggregated Data By Feeder	Load shapes (hourly)	0	1	0	0	0.5	1	1
25 Aggregated Data By Feeder	Hosting Capacity Results (min. and max)	1	1	0	1	1	1	1
26 Aggregated Data By Feeder	Hosting Capacity Criteria Violations	0.5	1	0	0	1	1	1
27 Aggregated Data By Feeder	Distributed Generation and Storage (KW), in operation	1	1	0	1	1	1	1
28 Aggregated Data By Feeder	Distributed Generation and Storage (KW), in queue	1	1	0	1	1	1	1
29 Aggregated Data By Feeder	Demand Response or other demand-side DER (KW) (EV chargers, EE, etc.)	1	1	0	1	1	1	1
30 Aggregated Data By Node	Forecasted Annual Peak Load	0	0.75	0	0	0.5	1	1
31 Aggregated Data By Node	Actual Annual Peak Load	0	0	0.75	0	0.5	1	1
32 Aggregated Data By Node	Actual Daytime Minimum Load	0	0	0.75	0	0.5	1	1
33 Aggregated Data By Node	Load shapes (seasonal)	0	0	0.75	0	0.5	1	1
34 Aggregated Data By Node	Load shapes (hourly)	0	0	0.75	0	0.5	1	1
35 Aggregated Data By Node	Hosting Capacity Results (min. and max)	0.5	1	0.25	0	1	1	1
36 Aggregated Data By Node	Hosting Capacity Criteria Violations	0.5	1	0	0	0.5	1	1
37 Aggregated Data By Node	Distributed Generation and Storage (KW), in operation	0.5	0	0	0	0.5	1	1
38 Aggregated Data By Node	Distributed Generation and Storage (KW), in queue	0.5	0	0	0	0.5	1	1
39 Aggregated Data By Node	Demand Response or other demand-side DER (KW) (EV chargers, EE, etc.)	1	0	0	0	0.5	1	1
40 Aggregated Data By Secondary	Forecasted Annual Peak Load	0	0	0	0	0.5	1	1
41 Aggregated Data By Secondary	Actual Annual Peak Load	0	0	0	0	0.5	1	1
42 Aggregated Data By Secondary	Actual Daytime Minimum Load	0.5	0	0	0	0.5	1	1
43 Aggregated Data By Secondary	Load shapes (seasonal)	0	0	0	0	0.5	1	1
44 Aggregated Data By Secondary	Load shapes (hourly)	0	0	0	0	0.5	1	1
45 Aggregated Data By Secondary	Hosting Capacity Results (min. and max)	1	0	0	0	0.5	1	1
46 Aggregated Data By Secondary	Hosting Capacity Criteria Violations	0.5	0	0	0	0.5	1	1
47 Aggregated Data By Secondary	Distributed Generation and Storage (KW), in operation	0.5	0	0	0	0.5	1	1
48 Aggregated Data By Secondary	Distributed Generation and Storage (KW), in queue	0.5	0	0	0	0.5	1	1
49 Aggregated Data By Secondary	Demand Response or other demand-side DER (KW) (EV chargers, EE, etc.)	1	0	0	0	0.5	1	1

**NOTE:**

- 0 is considered completely restricted information, 1 is considered completely public information within the confines of Commission precedent.
- Blank (white) sections signify there was incomplete information on the part of the party to draw significant conclusions on how they felt regarding this individual data point.
- Xcel considers .5 to be confidential information, creating some risk but not as high as 1, their confidential restricted information
- MNSEIA considers .5 to mean behind some sort of security certification requirement, not fully public or protected.
- Dakota considers .75 to be available but must maintain protections for individual customers, while .25 should be available only to consumers connected to that line section

**Alternative:**

Level	Data Type	Xcel	DE	OTP	MP	MNSEIA	IREC	City of Minneapolis
1 Public	Distribution grid map with <b>critical energy infrastructure</b>	Red	Red	Red	Red	Red	Green	Green
2 Public	Distribution grid map with <b>critical infrastructure</b>	Red	Red	Red	Red	Red	Green	Green
3 Public	Distribution grid map at <b>feeder level</b>	Red	Red	Red	Red	Red	Green	Green
4 Public	Distribution grid map at <b>secondary level</b>	Red	Red	Red	Red	Red	Green	Green
5 Public	Distribution grid map at <b>customer meter level</b>	Red	Red	Red	Red	Red	Green	Green
6 Public	Aggregated Data <b>by Substation</b> (see Sec. B)[1]	Red	Green	Red	Green	Red	Green	Green
7 Public	Aggregated Data <b>by Feeder</b> (see Sec. C)	Red	Green	Red	Green	Red	Green	Green
8 Public	Aggregated Data <b>by Node/Subsection of Feeder</b> (see Sec. D)	Red	Green	Red	Green	Red	Green	Green
9 Public	Aggregated Data <b>by Secondary</b> (See Sec. E)	Red	Green	Red	Green	Red	Green	Green
10 Aggregated Data By Substation	Forecasted Annual Peak Load	Red	Green	Red	Green	Red	Green	Green
11 Aggregated Data By Substation	Actual Annual Peak Load	Red	Green	Red	Green	Red	Green	Green
12 Aggregated Data By Substation	Actual Daytime Minimum Load	Red	Green	Red	Green	Red	Green	Green
13 Aggregated Data By Substation	Load shapes (seasonal)	Red	Green	Red	Green	Red	Green	Green
14 Aggregated Data By Substation	Load shapes (hourly)	Red	Green	Red	Green	Red	Green	Green
15 Aggregated Data By Substation	Hosting Capacity Results (min. and max)	Red	Green	Red	Green	Red	Green	Green
16 Aggregated Data By Substation	Hosting Capacity Criteria Violations	Red	Green	Red	Green	Red	Green	Green
17 Aggregated Data By Substation	Distributed Generation and Storage (kW), in operation	Red	Green	Red	Green	Red	Green	Green
18 Aggregated Data By Substation	Distributed Generation and Storage (kW), in queue	Red	Green	Red	Green	Red	Green	Green
19 Aggregated Data By Substation	Demand Response or other demand-side DER (kW) (EV chargers, EE, etc.)	Red	Green	Red	Green	Red	Green	Green
20 Aggregated Data By Feeder	Forecasted Annual Peak Load	Red	Green	Red	Green	Red	Green	Green
21 Aggregated Data By Feeder	Actual Annual Peak Load	Red	Green	Red	Green	Red	Green	Green
22 Aggregated Data By Feeder	Actual Daytime Minimum Load	Red	Green	Red	Green	Red	Green	Green
23 Aggregated Data By Feeder	Load shapes (seasonal)	Red	Green	Red	Green	Red	Green	Green
24 Aggregated Data By Feeder	Load shapes (hourly)	Red	Green	Red	Green	Red	Green	Green
25 Aggregated Data By Feeder	Hosting Capacity Results (min. and max)	Red	Green	Red	Green	Red	Green	Green
26 Aggregated Data By Feeder	Hosting Capacity Criteria Violations	Red	Green	Red	Green	Red	Green	Green
27 Aggregated Data By Feeder	Distributed Generation and Storage (kW), in operation	Red	Green	Red	Green	Red	Green	Green
28 Aggregated Data By Feeder	Distributed Generation and Storage (kW), in queue	Red	Green	Red	Green	Red	Green	Green
29 Aggregated Data By Feeder	Demand Response or other demand-side DER (kW) (EV chargers, EE, etc.)	Red	Green	Red	Green	Red	Green	Green
30 Aggregated Data By Node	Forecasted Annual Peak Load	Red	Green	Red	Green	Red	Green	Green
31 Aggregated Data By Node	Actual Annual Peak Load	Red	Green	Red	Green	Red	Green	Green
32 Aggregated Data By Node	Actual Daytime Minimum Load	Red	Green	Red	Green	Red	Green	Green
33 Aggregated Data By Node	Load shapes (seasonal)	Red	Green	Red	Green	Red	Green	Green
34 Aggregated Data By Node	Load shapes (hourly)	Red	Green	Red	Green	Red	Green	Green
35 Aggregated Data By Node	Hosting Capacity Results (min. and max)	Red	Green	Red	Green	Red	Green	Green
36 Aggregated Data By Node	Hosting Capacity Criteria Violations	Red	Green	Red	Green	Red	Green	Green
37 Aggregated Data By Node	Distributed Generation and Storage (kW), in operation	Red	Green	Red	Green	Red	Green	Green
38 Aggregated Data By Node	Distributed Generation and Storage (kW), in queue	Red	Green	Red	Green	Red	Green	Green
39 Aggregated Data By Node	Demand Response or other demand-side DER (kW) (EV chargers, EE, etc.)	Red	Green	Red	Green	Red	Green	Green
40 Aggregated Data By Secondary	Forecasted Annual Peak Load	Red	Green	Red	Green	Red	Green	Green
41 Aggregated Data By Secondary	Actual Annual Peak Load	Red	Green	Red	Green	Red	Green	Green
42 Aggregated Data By Secondary	Actual Daytime Minimum Load	Red	Green	Red	Green	Red	Green	Green
43 Aggregated Data By Secondary	Load shapes (seasonal)	Red	Green	Red	Green	Red	Green	Green
44 Aggregated Data By Secondary	Load shapes (hourly)	Red	Green	Red	Green	Red	Green	Green
45 Aggregated Data By Secondary	Hosting Capacity Results (min. and max)	Red	Green	Red	Green	Red	Green	Green
46 Aggregated Data By Secondary	Hosting Capacity Criteria Violations	Red	Green	Red	Green	Red	Green	Green
47 Aggregated Data By Secondary	Distributed Generation and Storage (kW), in operation	Red	Green	Red	Green	Red	Green	Green
48 Aggregated Data By Secondary	Distributed Generation and Storage (kW), in queue	Red	Green	Red	Green	Red	Green	Green
49 Aggregated Data By Secondary	Demand Response or other demand-side DER (kW) (EV chargers, EE, etc.)	Red	Green	Red	Green	Red	Green	Green