**i2X DER Interconnection Webinar 1**
**Speed Dating: Faster Connections Between Customer Resources and Utility Grids**
**May 19, 2025**

## Key Takeaways

This webinar discussed solutions for improving distributed energy resource (DER) interconnection processes and associated timelines, including increasing data access and transparency, strategically using automation, and improving hosting capacity analysis to facilitate interconnection applications and studies. Presenters included Ken Habel and Katie Cleary at the Sacramento Municipal Utility District (SMUD) and Hanna Terwilliger and Derek Duran at the Minnesota Public Utilities Commission (PUC).

Stakeholder questions focused on clarifying application types and application and study processes, maintaining grid stability, grid planning for future load and congestion, and improving stakeholder engagement. Both organizations highlighted the benefits of interconnection reform processes and emphasized the importance of stakeholder engagement, software tools, data collection, and data sharing to manage increasing DER volumes and grid challenges.

## I. Evolution Towards Reform and Stakeholder Alignment

- **Reform Process**
  - **SMUD** proactively launched Rapid Results, a 100-day change management process in 2015-2016. This redesign included clarifying expectations, establishing Service Level Agreements, training employees, and improving communication with customers and contractors.
  - **Minnesota PUC** modernized its interconnection procedures in response to increased growth in DERs, particularly community solar following legislation in 2013. This led to the establishment of the Distributed Generation Work Group in 2017 to create modern interconnection standards and processes. In 2019 and 2020, the Commission approved the Minnesota DER Interconnection Process and Technical Interconnection and Interoperability Requirements. The reform of the interconnection process in Minnesota was considered a "huge step forward."
- **Emphasizing Stakeholder Collaboration**
  - **SMUD** stressed the importance of **internal alignment**, with regular reviews of policies and processes to ensure documentation and training are updated and roles are clear. The utility ensures internal teams are connected end-to-end to address impacts across the interconnection process.
  - **Minnesota PUC** established the Distributed Generation (DG) Working Group in 2017, bringing together diverse stakeholders including utilities, rural electric cooperatives, municipal utilities, the DG industry, renewable energy advocates, and other technical experts. This group emphasizes technical expertise, aims for consensus on interconnection issues, and makes recommendations to the Commission. They also prioritize norms of "civility, honesty, and clear communication" within the group.

## II. Adapting to Variable Application Volumes and Grid Congestion

- **Managing Application Influxes**
  - Both SMUD and Minnesota experienced significant spikes in applications due to state policy changes and market shifts responding to changing tariffs for DER compensation. SMUD saw a 3,000-4,000 increase in applications in 2021-2022 due to changes in net energy metering tariffs, moving from retail credit to a lower rate of compensation. Minnesota observed 1.6 GW of distributed solar on the grid with another 1.6 GW of distributed solar applications in the queue, potentially doubling existing capacity – mainly driven by state policy change.
  - **SMUD** implemented interconnection fees (e.g., $475 for residential, $2,500+ for commercial) to ensure that only "true projects" are submitted, thus managing volume and avoiding cross-subsidies.
  - **Minnesota PUC** noted that incentive programs, especially when opening at the start of a year, can cause a "flood of applications" that cause the system to crash and create "lumpiness" in utility workloads, making staffing difficult. Some utilities in Minnesota adapted by moving to lottery systems.
- **Addressing Distribution System Congestion**
  - As DER adoption increases, some areas of the distribution system reach capacity, leading to "skyrocketing" connection times, particularly for large projects.
  - In Minnesota, 76% of interconnection applicants in Xcel Energy's service area over the past year applied for system capacity in areas that are already constrained "and have known to be constrained for many years."
    - "Land availability and the ability to lease that land has […] been a driving factor of where the solar is placed, and oftentimes, at least in Minnesota, that's not where the demand is or where the load is."
  - **Minnesota PUC** is actively exploring two frameworks to address congestion.
    - **Reactive:** This framework involves addressing existing congestion so that multiple projects can share the cost of a necessary upgrade pro-rata, rather than one "cost causer" paying for excess capacity (similar to New York's Cost Sharing 2.0). Cluster studies were an interim reactive measure with "mixed success" due to coordination difficulties among project developers, as well as regulators and utilities requiring that developers causing the need for electricity system upgrades pay for the improvements.
    - **Proactive:** This framework involves forecasting DER growth more granularly and spatially to make distribution system upgrades before customer interest materializes, preventing future interconnection delays. Costs are distributed among multiple beneficiaries, including ratepayers and interconnecting customers.

## III. Operational Specifics and Challenges

- **Interconnection Timelines and Process**
  - **SMUD** aims for a 30-day utility timeline for residential applications and 60-day timeline for commercial, with end-to-end times typically ranging from 90-120

days for residential and about 6 months for commercial, depending on revisions and permitting.
    - **Minnesota PUC** established three study tracks: Simplified (under 20 kW), Fast Track (under 500 kW), and Study Track (over 500 kW), each with defined timelines. They found that the longest step for simplified projects often occurs *after* the interconnection agreement is signed, during construction, witness testing, and meter installation. Following the adoption of the simplified process, interconnection timelines across all utilities decreased by 58%.
- **Workforce Constraints:** Both Minnesota PUC and SMUD noted challenges in staffing specialized technical roles (e.g., senior meter technicians, engineers reviewing complex projects), which are "pinch points" in the interconnection process. Utilities must manage expectations and communicate delays to customers during these times.
- **Role of Data and Transparency**
    - **SMUD** consolidated historical solar PV information into one database for better data quality. They emphasize clear communication with customers at every step, from application receipt to approval or deficiency notifications. They also proactively provide FAQs and documentation to guide customers and contractors.
    - **Minnesota PUC** set up detailed reporting at the outset of their interconnection rules update to make it easier for utilities to track timelines and ensure a common understanding of how data was tracked.
        - Such detailed reporting of data enables the PUC to "take a deeper dive and see what the root cause of the problem is," especially if they can compare performance data such as timelines across utilities.
- **Automation and Software Tools**
    - **SMUD** utilizes API calls and automated notifications for internal process flow and customer communication, reducing errors and increasing visibility. They do not use automation for approvals of residential PV-only applications, relying on contractors to meet published requirements.
- **Electric Vehicle (EV) Interconnections**
    - Both SMUD and Minnesota PUC noted that while EV interconnections increase load, they do not directly resolve distribution grid congestion from excess distributed PV generation due to differences in timing (nighttime EV charging vs. day solar production) and location (urban load centers vs. rural solar sites). Coordinating EV charging with PV solar generation and storage requires intentional program design and planning. "It's not something that's just going to happen organically. You're going to have to really think about it through the distribution planning process, through how you're designing your charging tariffs and everything else."

In summary, the webinar discussion reflected a dynamic and evolving landscape for DER interconnection that addresses the need for improved data, streamlined processes, robust technical solutions for grid stability, effective regulatory oversight, and collaborative stakeholder engagement.