Distributed Energy and Distribution Network Impacts
NYU Center for Policy Integrity
March 4, 2022
The ideas expressed are the views of the presenter, and not the Minnesota Public Utilities Commission. The Commission speaks through its Orders.
State Commissions

• State Regulatory Framework and Commissions vary.
  • Vertically integrated and restructured (Generation, Transmission, and Distribution)
  • Appointed and elected Commissioners
  • Staff structure (advisors and advocates)
  • Economic regulation, industries regulated, and state laws

• Commissions are quasi-judicial
  • Decisions are based on a docket’s record and relevant statute, rules, etc.
  • Orders speak for the Commission (subject to appeal)
  • Ex-parte rules may apply

• State and Federal Jurisdiction requires shared responsibilities, collaboration & coordination
Four Major Processes at the MN PUC
(Recreated from 2014 DOC Presentation)
2016 Report Recommendation
Hosting Capacity Analysis – Public Map and Pop-Up Details

Public Interconnection Queue and Substation/Feeder Information
Thank You!

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Defining DER

Distributed Energy Resources (DER) is defined as “supply and demand side resources that can be used throughout an electric distribution system to meet energy and reliability needs of customers; can be installed on either the customer or utility side of the electric meter.” This definition for this filing may include, but is not limited to: distributed generation, energy storage, electric vehicles, demand side management, and energy efficiency.

11,377 DER = 1,194 MW (as of 2020)

*Other includes biogas, biomass, hydro, methane, municipal solid waste, storage, and natural gas
Cumulative Interconnected Systems

- Annual Interconnections
- Cumulative Interconnections

Year | Annual Interconnections | Cumulative Interconnections
-----|--------------------------|-------------------------------
2011 | 264                      | 264                           
2012 | 352                      | 616                           
2013 | 327                      | 943                           
2014 | 455                      | 1498                          
2015 | 818                      | 2316                          
2016 | 971                      | 3287                          
2017 | 1479                     | 4766                          
2018 | 1654                     | 6420                          
2019 | 1713                     | 8133                          
2020 | 2441                     | 11377                         

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https://mn.gov/puc
Data information (2020 Data)

- Under Minn. Stat. 216B.1611 Minnesota utilities submit an annual report on distributed generation interconnected with the utility’s distribution system.
- Utilities should report systems that are:
  - Interconnected with the distribution system
  - Less than 10 MW in size
  - Operate in parallel with the utility
- These reports are filed annual in dockets ending in -10 (ex, 20-10, 21-10). Data here reflects reports filed in Docket 21-10
- This data includes all systems through Dec. 31, 2020 as reported by all Minnesota utilities
- There may be unreported systems if a utility did not file a report in a given year
- For additional information, including details on data specifics and a raw dataset, please refer to the DER Data Webpage: mn.gov/puc/energy/distributed-energy/data/
- Contact: Hanna Terwilliger, Hanna.Terwilliger@state.mn.us
Resources for Interconnection Customers

Tools for identifying location

- Hosting capacity map
- Substation DG queue

Interconnection application activities

- Pre-application data process
- Application screening process
- Engineering study process

Cost/complexity/time

Level of information/accuracy

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Initial Review Screens for Simplified and Fast Track Applications

Supplemental Review when Application fails Initial Review screens

System Impact Study for Applications that fail Supplemental Review or do not qualify or choose Fast Track Review

Affected System Study or Transmission Impact Study if potential impacts extend beyond utility’s distribution grid

Facilities Study may also be conducted.
Bulk Power System reliability topics

- DER Data Collection
- MISO & NERC SPIDER
- Cybersecurity
- Modeling & studies