MINNESOTA
PUBLIC UTILITIES COMMISSION

Demand Flexibility in Distribution System Planning

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The ideas expressed are the views of the presenter, and not the Minnesota Public Utilities Commission.

IDP Development Timeline

Date	Step
March 2015	Launch of Grid Modernization Investigation
Sept.-Nov. 2015	Workshops and Comments Periods on Minnesota's distributions systems, national efforts, and recommended next steps
March 2016	Staff Report on Grid Modernization and Next Steps
April 2016	Authorization to Initiate Distribution System Planning
August 2016	DOE/ICF Report on Distribution System Planning in Minnesota
Apr-Sept. 2017	Questionnaire to Utility and Stakeholders
April 2018	Release of Draft IDP Requirements for Comment
3-4Q 2018	Approval of Utility Specific IDP Requirements
2019	Acceptance of Rate-regulated Utilities' Inaugural IDPs
2020	Acceptance of Rate-regulated utilities second IDPs
November 2021	Utilities file 3rd IDPs
June 1, 2022	Decision on Xcel IDP/Certification request

Minnesota Distribution Planning Objectives

The Commission is facilitating comprehensive, coordinated, transparent, integrated distribution plans to:

1. Maintain and enhance the safety, security, reliability, and resilience of the electricity grid, at fair and reasonable costs, consistent with the state's energy policies;
2. Enable greater customer engagement, empowerment, and options for energy services;
3. Move toward the creation of efficient, cost-effective, accessible grid platforms for new products, new services, and opportunities for adoption of new distributed technologies; and,
4. Ensure optimized utilization of electricity grid assets and resources to minimize total system costs.
5. Provide the Commission with the information necessary to understand Xcel's short-term and long-term distribution system plans, the costs and benefits of specific investments, and a comprehensive analysis of ratepayer cost and value.

Commission review of distribution system plans are not meant to preclude flexibility for utilities to respond to dynamic changes and on-going necessary system improvements to the distribution system; nor is it a prudency determination of any proposed system modifications or investments.

(Source: IDP Filing Requirements as adopted in 2018)

Integrated Distribution Plan Filing Requirements

IDP Requirements

1. **Timing**
2. **Stakeholder Process**
3. **Filing Requirements**

Each IDP is tailored and specific to each utility and expected to diverge further over time.

A. Baseline Data
   - System
   - Financial
   - DER

B. Hosting Capacity and Interconnection

C. DER Futures Analysis (Scenario Planning)

D. Long-Term Distribution System Investment Plan *(5 & 10 year)*

E. Non-Wires Alternatives Analysis

Integrated Distribution Plan (IDP) Requirements

Timing and Frequency

- Biennial
- Filing Date: November 1 odd numbered years
- Timeframe (10-year or 15-year Plan)
- Utilities must hold at least 1 stakeholder meeting prior to filing, covering DER Forecasts, 5-Year Investment Plan, and System Capabilities (at minimum)

Non-Wires Alternatives (NWA) in IDP

E. Non-Wires (Non-Traditional) Alternatives Analysis *(modified to fit slide)*

provide a detailed discussion of all distribution system projects in the filing year and the subsequent 5 years that are anticipated to have a total cost of greater than two million dollars… provide an analysis on how non-wires alternatives compare in terms of viability, price, and long-term value. Include the following:

- Project types that work for non-traditional solutions (i.e. load relief or reliability)
- A timeline that is needed to consider alternatives … (allowing time for potential request for proposal, response, review, contracting and implementation)
- Cost threshold of any project type that would need to be met to have a non-traditional solution reviewed
- A discussion of a proposed screening process to be used internally to determine that non-traditional alternatives are considered prior to distribution system investments are made.

Minnesota NWA Challenges

- No identified NWA projects from utilities
- Only specific distribution project types are good fits for NWA
- Utilities are still gaining familiarity with conducting NWA and adapting methodologies
- Not enough potential from load management to full offset growth needed to defer projects
- Long lead times for DER equipment, especially storage
  - Some NWA projects maybe be considered “too small” by vendors
- Solar + storage at substation level more expensive than “traditional” solutions
- Stakeholders don’t necessarily understand definition of NWA

Opportunities

- MN utilities are taking NWA analysis seriously – refining analysis and value stacks
- Gaining experience with NWA technologies (DERs, EE, DR) even if not applied via NWA project
- Future NWA analysis may identify projects
- Existing load management and energy efficiency programs defer/eliminate distribution upgrade needs before they occur

Xcel Non-Wires Alternatives Methodology Update

Aspect/ Component	Old Method	Updated Method
Timeframe	Full NWA lifetime	10-year deferral period
Ownership Model	Utility ownership	Utility ownership or third-party load reduction contract
Load Reduction Requirement	Exact MWh of load at risk on peak day	Peak output for the duration of the risk
Stacked Values	No stacked values included	Additional stacked values included
Prorated Values	No pro-rating; full values included	Values prorated for just the load reduction period (ARR split)
Solar Performance	PVWatts TMY simulation for one location in Minnesota	PVWatts TMY simulation for multiple locations in Minnesota

MN Demand Flexibility Action

Minn. Stat

- Energy Conservation and Optimization (ECO) act passage and implementation
  - Updates Minnesota's Conservation Improvement Program (CIP), the state's energy efficiency program
    - Allows load shifting in utility demand side management (DSM) programs
    - Previously all programs had to result in kWh reductions
  - Still in implementation – updating cost effectiveness methodologies

MN Demand Flexibility Action

Docket 21-101

- Xcel Load (Demand) Flexibility Pilots
  - Approved:
    - Peak Flex Credit Rider, including option for 3rd party aggregator participation
    - Commercial Thermal Storage Pilot
    - EV Optimization Pilot
  - Denied:
    - Residential HVAC Optimization Pilot
    - Demand Response Incentive Mechanism

MN Demand Flexibility Action

Docket 17-401

- Performance Metrics for Xcel Energy – Cost effective alignment of generation and load
  - Demand response, including (1) capacity available (MW & MWh) and (2) amount called (MW, MWh per year)
  - Integration of customer loads with utility supply - Amount of demand response that SHAPES customer load profiles through price response, time varying rates, or behavior campaigns.
  - Integration of customer loads with utility supply - Amount of demand response that SHIFTS energy consumptions from times of high demand to times when there is a surplus of renewable generation.
  - Integration of customer loads with utility supply - Amount of demand response that SHEDS loads that can be curtailed to provide peak capacity and supports the system in contingency events - for Available Load
  - Amount of demand response that SHEDS loads that can be curtailed to provide peak capacity and supports the system in contingency events - for Actual Load Reduction Achieved

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Thank you!

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