

**NOTICE OF COMMENT PERIOD ON DRAFT  
INTEGRATED DISTRIBUTION PLANNING (IDP) REQUIREMENTS**

Issued: June 12, 2018

**In the Matter of the Distribution System Planning for Minnesota Power**  
**PUC Docket Number(s): E015/CI-18-254**

**Comment Period:** Initial comment period closes August 3, 2018 at 4:30pm  
Reply comment period closes August 17, 2018 at 4:30pm

The Commission requires that Minnesota Power provide, as early as possible, but by the close of the initial comment period, a narrative on the Company's proposed distributed energy resource penetration scenarios for the 2018 Integrated Distribution Plan (IDP). The scenarios in the narrative should thoroughly detail the inputs and assumptions made.

**Topic(s) Open for Comment:**

1. Should the attached draft IDP requirements be modified? If so, provide specific edits with rationale and indicate the intent of the proposed change.
2. Are there specific scenarios, inputs, or assumptions that Minnesota Power should consider in its initial filing? What are reasonable medium and high scenarios (C2)?
3. Please address the following areas (in reference to the attached draft IDP requirements):
  - a) Are the annual or biennial filing requirements reasonable?
  - b) Are there additional parameters or requirements that should be part of 2. Stakeholder Meetings?
  - c) Should the categories under Financial Data (A19) be modified? Are there consistent categories across utilities that could be utilized?
  - d) Should the Long-Term Distribution System Plan components (Section D) be on a 10-year (shorter term) outlook or a 15-year outlook (to correspond with Integrated Resource Plan timing)?
4. Are there other issues or concerns related to this matter?

**Background:** The Commission has investigated grid modernization options and distribution system planning over the past several years; including, most recently in Docket No. E999/CI-15-556. At the April 19, 2018 agenda meeting, the Commission reviewed staff proposed draft IDP filing requirements and heard party comments. The proposed requirements direct utilities to file plans addressing: long-term distribution system modifications and investments, considerations used in related planning processes, and long-term distribution system future outlooks, among other requirements. The Commission authorized staff to meet with the rate-regulated utilities on the

proposed reporting requirements to clarify the draft language, make modifications as appropriate, and then to release the proposals for public comment.

**Filing Requirements:** Utilities, telecommunications carriers, official parties, and state agencies are **required** to file documents using the Commission’s electronic filing system (eFiling). All parties, participants and interested persons are encouraged to use eFiling: [mn.gov/puc](http://mn.gov/puc), select *eFiling*, and follow the prompts.

**Submit Public Comments:** Visit [mn.gov/puc](http://mn.gov/puc), select *Speak Up!* to find this docket, and add your comments to the discussion or email your comments to [publicadvisor.puc@state.mn.us](mailto:publicadvisor.puc@state.mn.us).

**Full Case Record:** See all documents filed in this docket via the Commission’s website at [mn.gov/puc](http://mn.gov/puc), select *Search eDockets*, enter the year (18) and the docket number (254), select *Search*. Additional background information can be found in the Commission’s Grid Modernization docket E999/CI-15-556.

**Subscribe** to receive email notification when new documents are filed in this docket at [mn.gov/puc](http://mn.gov/puc), select *Subscribe*, or click [HERE](#) and follow the prompts.

**Questions about this docket or Commission process and procedure?** Contact Commission staff, Tricia DeBleeckere, at [tricia.debleeckere@state.mn.us](mailto:tricia.debleeckere@state.mn.us) or 651-201-2254 or Michelle Rosier, at (651) 201-2212, [michelle.rosier@state.mn.us](mailto:michelle.rosier@state.mn.us).

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**DRAFT - MINNESOTA INTEGRATED DISTRIBUTION PLANNING REQUIREMENTS**  
**For Minnesota Power**  
**Docket E015/CI-18-254**

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

- 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;
- Enable greater customer engagement, empowerment, and options for energy services;
- 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,
- Ensure optimized utilization of electricity grid assets and resources to minimize total system costs.

Commission review of annual distribution system plans are not meant to preclude flexibility for Minnesota Power Company (Minnesota Power) to respond to dynamic changes and on-going necessary system improvements to the distribution system; nor is it a prudence determination of any proposed system modifications or investments.

**Distribution System Plan Process**

- 1. Filing Date:** Require Minnesota Power to file biennially with the Commission beginning on November 1, 2019 an Integrated Distribution Plan (MN-IDP or IDP) for the 15-year period following the submittal. The Commission will either accept or reject a distribution system plan by June 1 (to the extent practicable) of the following year based upon the plan content and conformance with the filing requirements and Planning Objectives listed above.
- 2. Stakeholder Meeting(s):** Minnesota Power should hold at least one stakeholder meeting prior to the November 1 filing of the Company’s MN-IDP to obtain input from the public. The stakeholder meeting should occur in a manner timely enough to ensure input can be incorporated into the November 1 MN-IDP filing as deemed appropriate by the utility.

At a minimum, Minnesota Power should seek to solicit input from stakeholders on the following MN-IDP topics: (1) the load and distributed energy resources (DER) forecasts; (2) proposed 5-year distribution system investments, (3) anticipated capabilities of system investments and customer benefits derived from proposed actions in the next 5-years; including, consistency with the Commission’s Planning Objectives (see above), and (4) any other relevant areas proposed in the MN-IDP.

Following the November 1 filing, the Commission will issue a notice of comment period. If deemed appropriate by staff, an additional stakeholder meeting may be held in combination with the comment period to solicit input.

- 3. Filing Requirements:** For purposes of these requirements, 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.”<sup>1</sup> This definition for this filing may include, but is not limited to: distributed generation, energy storage, electric vehicles (EV), demand side management, and energy efficiency (EE).<sup>2</sup>

**A. Baseline Distribution System and Financial Data:**

*System Data*

1. Modeling software currently used and planned software deployments
2. Percentage of substations and feeders with monitoring and control capabilities, planned additions
3. A summary of existing system visibility and measurement (feeder-level and time) interval and planned visibility improvements; include information on percentage of the system with each level of visibility (ex. max/min, daytime/nighttime, monthly/daily reads, automated/manual)
4. Number of customer meters with AMI/smart meters and those without, planned AMI-investments, and overview of functionality available
5. Discussion of how the distribution system planning is coordinated with the integrated resource plan (including how it informs and is informed by the IRP), and planned modifications or planned changes to the existing process to improve coordination and integration between the two plans
6. Discussion of how DER is considered in load forecasting and any expected changes in load forecasting methodology
7. Discussion if and how IEEE Std. 1547-2018<sup>3</sup> impacts distribution system planning considerations (e.g. opportunities and constraints related to interoperability)
8. Distribution system annual loss percentage for the prior year (average of 12 monthly loss percentages)
9. The maximum hourly coincident load (kW) for the distribution system as measured at the interface between the transmission and distribution system. This may be calculated using SCADA data or interval metered data or other non-billing metering / monitoring systems.
10. Total distribution substation capacity in kVA
11. Total distribution transformer capacity in kVA
12. Total miles of overhead distribution wire
13. Total miles of underground distribution wire
14. Total number of distribution customers
15. Total costs spent on DER generation installation in the prior year (including application review, responding to inquiries, metering, testing, make ready, etc).

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<sup>1</sup> See *Minnesota Staff Grid Modernization Report, March 2016*.

<sup>2</sup> ICF Report, *Integrated Distribution Planning, August 2016*, prepared for Minnesota Public Utilities Commission, Docket No. E999/CI-15-556, available online: [See eDockets ID: 20169-124836-01](#).

<sup>3</sup> IEEE Standard 1547-2018, published April 6, 2018.

16. Total charges to customers/member installers for DER generation installations, in the prior year (including application, fees, metering, make ready, etc.)
17. Total nameplate kW of DER generation system which completed interconnection to the system in the prior year
18. Total number of DER generation systems which completed interconnection to the system in the prior year

*Financial Data*

19. Historical distribution system spending for the past 5-years, in each category:
  - a. Age-Related Replacements and Asset Renewal
  - b. System Expansion or Upgrades for Capacity
  - c. System Expansion or Upgrades for Reliability and Power Quality
  - d. New Customer Projects and New Revenue
  - e. Grid Modernization and Pilot Projects
  - f. Government Mandates
  - g. Metering
  - h. Other
20. Projected distribution system spending for 5-years into the future for the categories listed above, itemizing any non-traditional distribution projects
21. Planned distribution capital projects, including drivers for the project (e.g. see list in 19), timeline for improvement, summary of anticipated changes in historic spending
22. Provide any available cost benefit analysis in which the company evaluated a non-traditional distribution system solution to either a capital or operating upgrade or replacement

*DER Deployment*

23. Current DER deployment by type, size, and geographic dispersion (as useful for planning purposes; such as, by planning areas, service/work center areas, cities, etc.)
24. Information on areas of existing or forecasted high DER penetration. Include definition and rationale for what the Company considers “high” DER penetration.
25. Information on areas with existing or forecasted abnormal voltage or frequency issues that may benefit from the utilization of advanced inverter technology; provide information describing experiences where DER installations have caused operational challenges: such as, power quality, voltage or system overload issues.

**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)

**C. Distributed Energy Resource Scenario Analysis**

1. In order to understand the potential impacts of faster-than-anticipated DER adoption, define and develop conceptual base-case, medium, and high scenarios regarding increased DER deployment on the distribution system. Scenarios should reflect a reasonable mix of

individual DER adoption and aggregated or bundled DER service types, dispersed geographically across the Minnesota Power distribution system in the locations Minnesota Power would reasonably anticipate seeing DER growth take place first.

2. Include information on methodologies used to develop the low, medium, and high scenarios, including the DER adoption rates (if different from the minimum 10% and 25% levels), geographic deployment assumptions, expected DER load profiles (for both individual and bundled installations), and any other relevant assumptions factored into the scenario discussion. Indicate whether or not these methodologies and inputs are consistent with Integrated Resource Plan inputs.
3. Provide a discussion of the processes and tools that would be necessary to accommodate the specified levels of DER adoption, including whether existing processes and tools would be sufficient. Provide a discussion of the system impacts that may arise from increased DER adoption, potential barriers to DER integration, and the types of system upgrades that may be necessary to accommodate the DER at the listed penetration levels.
4. Include information on anticipated impacts from FERC Order 841<sup>4</sup> (Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators) and a discussion of potential impacts from the related FERC Docket RM-18-9-000 (Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators)

#### **D. Long-Term Distribution System Modernization and Infrastructure Investment Plan**

1. Minnesota Power shall provide a 5-year Action Plan as part of a 15-year long-term plan for distribution system developments and investments in grid modernization based on internal business plans and considering the insights gained from the DER futures analysis as appropriate. The 5-year Action Plan should include a detailed discussion of the underlying assumptions (including load growth assumptions) and the costs of distribution system investments planned for the next 5-years (expanding on A19 and A20, above). Minnesota Power should include specifics of the 5-year Action Plan investments. Topics that should be discussed, as appropriate, at a minimum:
  - Overview of investment plan: scope, timing, and cost recovery mechanism
  - Grid Architecture: Description of steps planned to modernize the utility's grid and tools to help understand the complex interactions that exist in the present and possible future grid scenarios and what utility and customer benefits that could or will arise.<sup>5</sup>

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<sup>4</sup> *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 162 FERC ¶61,127 (February 28, 2018)

<sup>5</sup> <https://gridarchitecture.pnnl.gov/>

- Alternatives analysis of investment proposal: objectives intended with a project, general grid modernization investments considered, alternative cost and functionality analysis (both for the utility and the customer), implementation order options, and considerations made in pursuit of short-term investments (e.g. IVVO vs. FLISR). The analysis should be sufficient enough to justify and explain the investment.
  - System interoperability and communications strategy
  - Costs and plans associated with obtaining system data (EE load shapes, photovoltaic output profiles with and without battery storage, capacity impacts of demand response combined with EE, EV charging profiles, etc.)
  - Interplay of investment with other utility programs (effects on existing utility programs such as demand response, efficiency projects, etc.)
  - Customer anticipated benefit and cost
  - Customer data and grid data management plan (how it is planned to be used and/or shared with customers and/or third parties)
  - Plans to manage rate or bill impacts, if any
  - Impacts to net present value of system costs (in net present value revenue requirements/megawatt/hour or megawatt)
2. In addition to the 5-year Action Plan, Minnesota Power shall provide a discussion of its vision for the planning, development, and use of the distribution system over the next 15 years. The 15-year Long-Term Plan discussion should address long-term assumptions (including load growth assumptions), the long-term impact of the 5-year Action Plan investments, what changes are necessary to incorporate DER into future planning processes based on the DER futures analysis, and any other types of changes that may need to take place in the tools and processes Minnesota Power is currently using.

#### **E. Non-Wires Alternatives Analysis**

1. Minnesota Power shall 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 five million dollars. For any forthcoming project or project in the filing year, which cost five million dollars or more, provide an analysis on how non-wires alternatives compare in terms of viability, price, and long-term value.
2. Minnesota Power shall provide information on the following:
  - Project types that would lend themselves to non-traditional solutions (i.e. load relief or reliability)
  - A timeline that is needed to consider alternatives to any project types that would lend themselves to non-traditional solutions (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