MINNESOTA
PUBLIC UTILITIES COMMISSION

Staff Briefing Papers

Meeting Date	May 30, 2019		Agenda Item **2
Company	Xcel Energy		
Docket No.	**E002/CI-18-251**		
	In the Matter of Xcel Energy's 2018 Integrated Distribution Plan		
Issues	Should the Commission accept Xcel's 2018 Integrated Distribution Plan? Should it take any other action?		
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✓ **Relevant Documents**	**Date**
Commission - Order Approving Integrated Distribution Planning Filing Requirements for Xcel Energy	August 30, 2018
Xcel Energy – Integrated Distribution Plan	November 1, 2018
Fresh Energy – Initial Comments	February 22, 2019
Suburban Rate Authority – Initial Comments	February 22, 2019
CGA, MCEA, SC, and UCS – Initial Comments	February 22, 2019
DOC DER – Initial Comments	February 22, 2019
Clean Energy Economy Minnesota – Initial Comments	February 22, 2019
Center for Energy and Environment – Initial Comments	February 22, 2019

✓ **Relevant Documents**	**Date**
OAG-RUD – Initial Comments (Corrected)	February 25, 2019
OAG-RUD – Exhibits	February 25, 2019
City of Minneapolis	February 25, 2019
Fresh Energy - Reply Comments	March 22, 2019
Xcel Energy - Reply Comments	March 29, 2019
DOC DER - Reply Comments	March 29, 2019
Center for Energy and the Environment - Reply Comments	March 29, 2019
Citizens Utility Board of Minnesota - Reply Comments	March 29, 2019
Xcel Energy – Letter: Stakeholder Plan	April 8, 2019
Xcel Energy – April 10, 2019 Workshop Presentation	April 17, 2019

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1. Statement of the Issues

Should the Commission accept Xcel's 2018 Integrated Distribution Plan, or take some other action?

2. Background

As a result of on-going utility filings for recovery of grid modernization costs (e.g. rate cases, cost recovery riders, and miscellaneous filings) and a comprehensive Commission investigation process[1], it became apparent to the Commission (in 2017) that distribution system planning was necessary to understand the need, cost, and benefits of forthcoming distribution system investments. These investments have a significant cost and long term implications for the power system. The Commission determined that these investments should be a discussed in a proactive, transparent, comprehensive forum, rather than on an isolated basis in a stand-alone utility filing.

With parties' general agreement, the Commission's August 30, 2018 Order[2] directed Xcel Energy (Xcel or the Company) to file an Integrated Distribution Plan (IDP) which was intended to ensure distribution system investments are being made to maintain safe, reliable and affordable service for customers.[3] The IDP process required Xcel to hold at least one stakeholder meeting prior to filing the report and file information on: A) baseline distribution system financial, system, and distributed energy resource (DER or DG) deployment data; B) hosting capacity information; C) DER forecasting and scenario analysis, D) distribution system modernization and infrastructure investment plans, and E) non-wire (non-traditional alternatives analysis.[4]

The Commission's 2018 Order noted that distribution system planning should be guided by the following principles and objectives:

- 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.

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[1] Docket No. E999/CI-15-556

[2] MN PUC, Order Approving Integrated Distribution Planning Filing Requirements for Xcel Energy (August 30, 2018), Docket No. E002/CI-18-251. (2018 IDP Filing Requirements Order, or 2018 Order)

[3] *Id.* Pg. 3. The Commission also required other rate-regulated utilities to file IDPs, specific to their utility circumstances and designed with a process to allow the plans and planning requirements to evolve over-time with the evolution of each utilities' system modernization efforts, see Dockets 18-253, -254, -255.

[4] *Id*., Minnesota Integrated Distribution Planning Requirements for Xcel Energy. Attached at p.6 (pp.1-7)

- Move toward the creation of efficient, cost-effective, accessible grid platforms for new products and services, with opportunities for adoption of new distributed technologies.
- Ensure optimized use of electricity grid assets and resources to minimize total system costs.
- 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.

On November 1, 2018, Xcel Energy filed its first IDP (and the first IDP in the state).

On November 19, 2018, the Commission issued a notice seeking on comment on whether it should accept or reject Xcel's 2018 IDP, whether the plan achieved the planning objectives outlined in the filing requirements, if any adjustments should be made to future filing requirements; and whether there were any other issues or concerns.

By February 22, 2019, initial comments were received by:

- Center for Energy and the Environment (CEE)
- Citizens Utility Board of Minnesota (CUB)
- City of Minneapolis[5]
- Clean Energy Economy Minnesota (CEEM)
- Clean Energy Grid Alliance, Minnesota Center for Environmental Advocacy, Sierra Club, and the Union of Concerned Scientists (jointly, the Clean Energy Organizations, or CEOs)
- Department of Commerce – Division of Energy Resources (Department)
- Fresh Energy
- Interstate Renewable Energy Council (IREC)
- Kandiyo Consulting, LLC (Kandiyo)
- Office of the Attorney General, Residential Utilities Division (OAG)
- Suburban Rate Authority (SRA)
- Xcel

By March 29, 2019, reply comments were received by:

- CUB
- Department
- Fresh Energy
- Xcel

[5] City of Minneapolis comments were received by eDockets on February 25, 2019.

3. Overview of Issues and Paper Structure

A. Staff Framing of Issues

On November 1, 2018, Xcel filed its first IDP. This IDP was the first distribution system plan filed in Minnesota and one of the first plans of this comprehensive of a scope filed nationally (outside of Hawaii, California, and New York).

Xcel's IDP covered a broad range of topics, touching on, or fulfilling the requirements outlined by the Commission.[6] In areas in which the report fell short, or were Xcel was unable to provide the information, it provided reasons why.[7] Xcel had a compressed timeframe to file this IDP, and did so without examples or past practice to guide them. Staff is appreciative of both Xcel's willingness to provide the report on this timeframe and of its comprehensive nature.

While parties raise issues with areas of the report that could be improved upon, expanded upon, or modified in several ways, staff believes that what Xcel has filed is a notable first IDP. Most all parties outright recommend the Commission 'accept' the IDP (and have positive comments relating to this endeavor). No parties recommend rejection and many have suggestions for improvements or areas in which it believes additional information would be beneficial.

Staff, the Commission generally, and stakeholders, now have a broader understanding of the larger picture of Xcel's grid modernization strategy and long-term plans. Staff believes the IDP has foundationally advanced understanding and planning in two areas: 1) grid modernization implementation plans and 2) creation of the framework for on-going distribution system planning.

First, in the short term, stakeholders have a better understanding of how and when Xcel intends to modernize its distribution system, in what order, and a high-level understanding of Xcel's reasoning. Second, for the longer-term, the information filed provides the Company's insights on future work around distribution system planning, on how to value system and third-party resources, and on when and how to consider alternatives. All of which help to break down the information asymmetries between the utility and stakeholders. Staff also believes the IDP has done so largely consistent with the Commission's distribution system guiding principles.

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[6] Xcel 2018 IDP, Attachment A (pp. 1-4) provides an index of the Commission's IDP filing requirements and where to find Xcel's response in the IDP document.

[7] "For filing requirements which Xcel claims is not yet practicable or is currently cost-prohibitive to provide, Xcel shall indicate for each requirement: 1. Why the Company has claimed the information is not yet practicable or is currently cost-prohibitive; 2. How the information could be obtained, at what estimated cost, and timeframe; 3. What the benefits or limitations of filing the data in future reports as related to achieving the planning objectives; 4. If the information cannot be provided in future reports, what information in the alternative could be provided and how it would achieve the planning objectives."

The OAG explained:[8]

> The IDP does not, on its own, achieve any of [the IDP Principles]. What the IDP *does* do is provide the Commission and other parties with information that is necessary to move forward on those goals.
>
> It is sometimes difficult to see what specific use the IDP information can be put to, but at the very least it provides benefit by increasing the level of information shared between the utility, the Commission, and other parties. For example, the IDP filing has helped OAG staff familiarize themselves with more aspects of how Xcel develops budgets and plans distribution investments. The IDP similarly provides information about Xcel's plans to expand distributed resource forecasting, and develop new grid technologies and software solutions. This information may be of specific use in future proceedings, but even if it is not, the regulatory system benefits by increasing the knowledge base of those who participate. As the electric industry becomes more complex and interconnected, it will be necessary for regulators and parties, like the OAG, to keep pace by deepening their understanding of the utility. The IDP is a tool that can be put towards that objective.

CUB noted:

> CUB places high value in the plans required of utilities by the Commission. These plans provide insight into the direction of utility decision making and allow organizations like CUB, the ability to target limited resources to create a robust and informed record for the Commission. Within these plans and the processes surrounding them, are the basis for consumer protections. The associated analysis, and their integrated and comprehensive nature, create a framework in which consumer benefit is best understood and supported.[9]

As noted, and intended through creation of the IDP Requirements by order, it is anticipated that use of the data, the filing requirements, and other facets of the IDP process will change. Parties' comments, including Xcel's, identify requests for modified filing requirements (e.g. frequency, due dates, content requirements) discussed later in this paper. Last, staff is appreciative of all stakeholder time spent on reviewing and providing comments on this IDP.

B. Paper Structure

Staff has outlined this briefing paper in two parts: first, a summary of the IDP, structured using the Commission's five main filing requirement categories, and second, a discussion of areas of interest by parties, under '*Areas of Interest and Staff Discussion*'. The five topic areas are noted below in the order they exist in the Commission's requirements, however, for the overview section, staff discusses 'Long-Term Distribution System Modernization and Infrastructure

[8] OAG Initial, p. 2
[9] CUB Reply, p. 5

Investment Plans, first. This section discusses two Xcel-proposed initiatives that provide a foundational understanding for the rest of the IDP.

The five categories of the IDP:

- Baseline Data (System, Financial and DER)
- Hosting Capacity/Interconnection
- DER Scenario Analysis
- Long-Term Distribution System Modernization and Infrastructure Investment Plans
- Non-Wires (Non-Traditional) Alternatives

4. IDP Filing Requirements and Plan Overview

A. Long-Term Distribution System Modernization and Infrastructure Investment Plans

Prior to reviewing individual sections of the IDP, staff believes there are two foundational initiatives discussed in the IDP that provide a baseline understanding of the future system envisioned by Xcel and the IDP:

- Advanced Grid Intelligence and Security
- Incremental Customer Investment

Both of these initiatives relate to significant changes to Xcel's system and are of a significant cost. Combined, staff understands capital costs of these investments to have an estimated cost of $766-916 million dollars throughout Xcel Energy's 5 year Action Plan.[10] Xcel's Advanced Grid Intelligence and Security (AGIS) Initiative includes:

- Advanced Distribution Management System (ADMS)[11]
- Advanced Metering Infrastructure (AMI)
- Field Area Network (FAN)
- Fault Location, Isolation, and Service Restoration (FLISR)

Parties raised concerns related to the AGIS Initiative regarding the (level of) cost benefit analysis provided in this IDP, the timing and utilization of customer facing benefits of the investments

[10] AGIS costs between $632-822 million: AMI and FAN $450-600m ($100m+ for O&M), FLISR $66m, ADMS $69.1m, and the spending classified under ICI or System Expansion, Upgrades for Reliability and Power Quality are increases of roughly $90 million for the years 2021 and 2022, and increases thereafter of differing amounts. See Xcel Response to OAG Information Request, 67, Exhibit 1 of OAG initial comments.

[11] Xcel IDP, p. 117. Cost recovery for portions of ADMS is being discussed in Docket No. E002/M-17-776 and M-17-797. As described in that docket, ADMS is designed to monitor and operate the entire electric distribution network efficiently and reliably. ADMS core functions and application will provide an integrated operating and decision support system to assist control center operators, field personnel, and engineers. Core software functions: distributed network modeling, supervisory control and data acquisition (SCADA) monitoring and control, and unbalanced load flow and network topology processing.

(versus utility facing), and questions surrounding facets of the sub-investments (e.g. AMI, FAN, FLISR). This issue is discussed in more detail below.

i. Incremental Customer Investment Initiative

Xcel noted in its filing that it has developed an Incremental Customer Investment (ICI) Initiative, which includes 1) expansion of existing Xcel programs and 2) new Xcel programs. Xcel notes its ICI initiative is necessary to continue to meet the needs of its customers - needs of enhancing safety, reliability, and resiliency of the system that enables customer choice and adoption of DER (such as electric vehicles).[12] In response to OAG Information Requests (IRs), it appears that the ICI costs are an incremental addition of $80-90 million in each year, 2021 and 2022, and a $30 million increase in 2023 - costs over and above the historic annual distribution spend in this category.[13] This is discussed in more detail later in this paper.

B. IDP Filing Requirement Overview – Baseline Data (System, Financial, DER)

i. Baseline System Data

The baseline system data section provided information on Xcel's distribution system as it exists today.[14] This information aides in the understanding of Xcel's distribution system, first - fundamentally – since the Commission has had little to any information on the distribution system historically, and second, as a baseline, prior to advanced grid technology modifications.

Information included percentage of substations and feeders with monitoring and control capabilities (61 percent of substations serving 90 percent of customers), existing system visibility and measurement (varies by location), total distribution substation capacity in kVA (14,873 MVA)[15], total miles of overhead and underground distribution lines (14,968 miles overhead and 11,297 miles underground)[16], total system DER (617 MW operational, 398 MW queued)[17], among many other system details that will help understand changes overtime.[18]

ii. Baseline Financial Data

The baseline financial section provided information on historic distribution system spending, 5-year future spend projections, planned distribution capital projects, among other items. Xcel provided baseline financial data on current distribution spend, budgets, and the internal process used for developing the budgets.[19]

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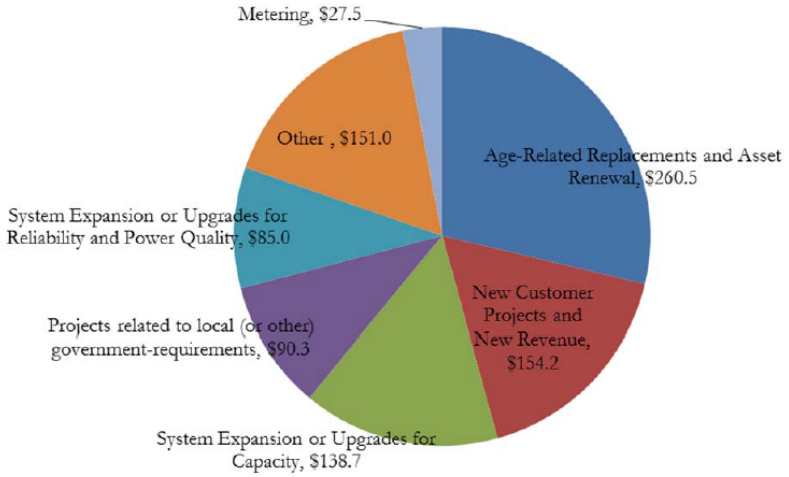
[12] Xcel 2018 IDP, p. 92
[13] OAG Initial, p. 7
[14] Xcel 2018 IDP, pp. 28-38
[15] Xcel 2018 IDP, p. 37
[16] Xcel 2018 IDP, p. 38
[17] Xcel 2018 IDP, p. 183; Data as of September 2018.
[18] Xcel 2018 IDP, pp. 32-38; 182-187
[19] Xcel 2018 IDP, p. 56

Figure 22: Annual Distribution Planning Process – Mitigation Plans

Below are figures from the Financial Data section of the IDP (again, among many other details) that outline a five-year Historical Distribution System Capital Profile ($907.2 million) and a five-year Budgeted Distribution System Capital Profile (future) of ($1.568 billion). Xcel noted that the estimated future capital and operations and maintenance (O&M) budgets do not include costs associated with Xcel's Advanced Grid Intelligence and Security Initiative (AGIS) (as those cost are presented separately as a holistic initiative), nor does it include future AMI investment under the metering category, or contributions in aid of construction (CAIC).[20] However, as noted above, the projected budget *does* includes the ICI Initiative.

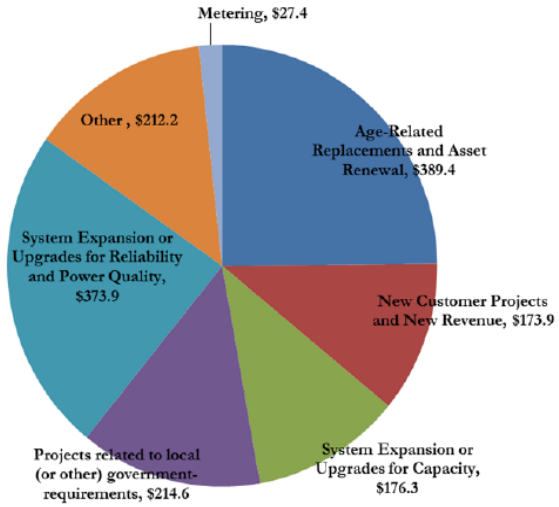
[20] Xcel 2018 IDP, pp. 17-79

Figure 3: Actual Historic Distribution Capital Profile by IDP Category
State of Minnesota – Electric Jurisdiction (2013-2017)
(millions)



Note: excludes non-investment amounts.

Figure 4: Budgeted Distribution Capital Profile by IDP Category
State of Minnesota – Electric Jurisdiction (2018-2023)
(millions)



Note: excludes non-investment/CLAC amounts.

iii. Baseline DER Data

Xcel was required to provide baseline information on current DER deployment by type, size, and geographic dispersion, areas of existing or high DER penetration, among other general information on DER adoption in its service territory.

Generally, Xcel noted that DER penetration is still low and was anticipated to remain relatively stable in the near-term.[21] Xcel noted it has time to integrate various forecast levels of DER and it is evaluating enhanced planning tools to do so, however, Xcel again cautioned that adequate forecasting tools have not reached full commercial deployment. Xcel noted it believes that forecasting is a function that serves the basis of the distribution system planning and must be more fully developed to enable to enable more advanced planning and decision making.[22]

Total DER on Xcel's distribution system as of September 2018:[23]

Table 20: Distribution-Connected Distributed Energy Resources – State of Minnesota
(as of September 2018)[62]

	Completed Projects		Queued Projects	
	MW/AC	# of Projects	MW/AC	# of Projects
Solar PV				
Rooftop Solar	44	3,696	23	934
Community Solar[63]	445	145	372	275
RDF Projects	13	30	3	12
Grid Scale (Aurora)	103	19	0	0
Wind	12	60	<1	7
Storage/Batteries[64]	N/A	6	N/A	34
Energy Efficiency	1,012	N/A	N/A	N/A
Demand Response	658	668,314	N/A	N/A
Electric Vehicles	N/A	5,693[65]	N/A	N/A

Note: Energy Efficiency and Demand Response are portrayed in Gen MW; Energy efficiency is cumulative since 2005.

In Section XI.C of the IDP, Xcel discusses the state of the state of distribution system forecasting, noting that, "[Xcel's] initial steps to enhance [its] forecasting capabilities are to include DER into bulk system forecasts, move to forecast the intrinsic (i.e., not utility program-driven) market adoptions of solar PV, and evaluate and implement tools to identify more granular inputs of DER on load forecasts."[24] Additional DER forecasting is discussed in the DER Scenario Analysis section below.

C. IDP Filing Requirement - Hosting Capacity and Interconnection Requirements

The IDP hosting capacity filing requirements for Xcel differs from other utilities. Xcel is required to file a Hosting Capacity Analysis (HCA) Report by statute, Minn. Stat. 216B.2425, Subd. 8, which is filed annually by Xcel.

[21] Xcel 2018 IDP, p. 177
[22] *Id.*
[23] Xcel 2018 IDP, p. 183
[24] Xcel 2018 IDP, p. 189

The 2018 HCA Report was filed on November 1, 2018 in Docket No. E002/M-18-684. In the 2018 IDP, Xcel provided a high level overview of the HCA report and how it relates to its system interconnection process.[25] Staff does not discuss this section further in this paper as the same topic will be covered at the Commission's May 30 Agenda Meeting.

D. IDP Filing Requirement - DER Scenario Analysis

The IDP filing requirements asked that Xcel define and develop conceptual base-case, medium and high DER penetration scenarios on its system. The requirements asked that: 1) Xcel consider a reasonable mix of individual DER adoption and aggregated or bundled DER service types, 2) that Xcel explain the methodologies, processes, and tools used to come to those forecasts, and 3) what future processes or tools may be needed to accommodate DER at the projected penetration levels.

Staff notes this was a difficult task to complete and appreciates the information Xcel has provided. Staff acknowledges that DER forecasting tools are under development (in the industry generally) and many entities (e.g. states, utilities, regional transmission operators, etc.) are all working to find reasonable and reliable methods to forecast DER adoption. DER forecasting is an emerging industry topic and is likely to achieve steep gains in coming years.

Xcel noted that it believes it has provided information "to the best of its ability" and notes that some information, such as studies to inform additional scenarios, are outstanding.[26] At pages 190-206, Xcel presented its forecasts by DER type and summarized its methodologies used to arrive at those forecasts. Xcel forecasted future distributed solar PV, distributed wind, distributed energy storage, energy efficiency, demand response, and electric vehicles.

At the levels forecasted, Xcel does not believe that there will be system impacts that it cannot manage today, even considering its medium and high distributed solar PV forecasts. Xcel does note that the high PV future may have increased impacts in 2028+ (one example being reverse power flow) that Xcel believes would be mitigated by the advanced grid features Xcel anticipated having on its system by those years.[27]

This topic area, DER scenario forecasting, was an area of interest for many parties, many of which believed that additional work was needed and assumptions made by Xcel would need improvement. This is discussed in further detail below.

[25] Xcel 2018 IDP, pp. 208-211
[26] Xcel 2018 IDP, p. 190
[27] Xcel 2018 IDP, p. 202

E. IDP Filing Requirement - Non-Wires or Non-Traditional Alternatives

The IDP filing requirements asked that Xcel provide a detailed discussion of forthcoming distribution system projects that are anticipated to have a total cost of greater than two million dollars. For those projects, Xcel was to provide an analysis on how non-traditional (or non-wire) alternatives compare in terms of viability, price and long-term value. Additionally, Xcel was to provide information on: 1) project types that would lend themselves to non-traditional solutions (or non-wires alternatives or NWAs – staff uses these terms interchangeably), 2) the timeline needed to be able to consider NWAs, 3) the cost threshold where a NWA would be considered, and 4) a discussion of a screening process, to be used internally, to allow for NWA consideration.

Xcel provided the requested information at pages 76-88 of the 2018 IDP. Xcel noted that NWA-solutions were a nascent concept only a few years ago, and there has been a rise in the level of projects implemented across the United States.[28] Xcel noted that while its internal analysis has found NWAs not to be a cost-competitive solution, with advances in technology, they have the ability to quickly become a cost competitive option. [29] Staff notes that for this reason, it requested through the IDP filing requirements, information on how Xcel can create an internal screening process for NWA solutions.

Xcel provided its overview of:

- View on why capacity projects, not mandated or asset health projects, lend themselves to NWA solutions[30]
- project lead time needed to conduct an NWA review would be three years (which it notes would likely shrink over time),[31]
- screening criteria applied to consider projects for 2018 IDP discussion (e.g. project type, cost, timeline and risk),[32]
- one NWA analysis on the Viking Feeder Substation.[33]

Overall, this section on NWAs, as well as the level of information Xcel provided on its forthcoming distribution system project was an area of 'high' interest for many stakeholders for multiple reasons. This is discussed in detail below.

[28] Xcel 2018 IDP, p. 77
[29] *Id.*
[30] Xcel 2018 IDP, p. 78-80
[31] Xcel 2018 IDP, p. 83
[32] Xcel 2018 IDP, p. 84
[33] Xcel 2018 IDP, p. 86-88

5. Areas of Interest and Staff Discussion

Common themes emerged from the filing and comments. Some of the topics address IDP content that was not summarized above. For each of the topic area below, staff provides discussion of the issue, positions by stakeholders, and outlines potential options for the Commission to consider. Common themes emerged around the following:

Common themes or issues that arose:

A. Recommendations of Parties
B. Varying Expectations of the IDP in Year 1
C. Xcel's Initiatives and Cost Benefit Analyses
    i. Advanced Grid Intelligence and Security Initiative
    ii. Incremental Customer Investment
D. Forecasting Assumptions
E. Non-Wires/Non-Traditional Evaluations
    i. Xcel's 2018 IDP – Non-Wires or Non-Traditional
    ii. Locational Net Benefits
    iii. Geotargeting CEE Pilot
    iv. Minneapolis Mandates and NWAs
F. Distribution System Data
    i. Distribution System Risk Ranking
    ii. Long-Range Area Studies
G. Customer and System Data Privacy Plan Development
H. Modification to Filing Requirements (Annual vs. Biennial, Due Date, Others)

A. Recommendations to Accept Xcel's 2018 IDP

Nearly all of the commenting parties recommended the Commission accept Xcel's 2018 IDP.[34] No commenters objected. Despite related language already in the IDP filing requirements and Xcel's acknowledgement[35], several commenters specifically requested the Commission's acceptance be clarified as not a determination of prudence or reasonableness.[36] Additionally, some of the recommendations made additional requests for this or future filings:

Commenter	Recommendations
Xcel Energy[37]	• accept the IDP[38] • require our next IDP be submitted November 1, 2019, then biennially thereafter • modify the relevant IDP requirement[39] as follows: "For filing requirements which Xcel claims is not ~~yet~~ practicable or is currently cost-prohibitive to provide, Xcel shall indicate for each requirement: 1. Why the Company has claimed the information is not ~~yet~~ practicable or is currently cost-prohibitive…"
Fresh Energy	• require the Company to make the development of enhanced load and DER forecasting capabilities, as well as, tracking and updating of actual feeder daytime minimum loads, a high priority in 2019 and include a detailed description of its progress in the Company's next IDP[40] • incorporate NWA best practices in next IDP and prioritize improving evaluation and deployment of NWA[41]

[34] Xcel Energy, Fresh Energy, Suburban Rate Authority, City of Minneapolis, Office of Attorney General, Department of Commerce, Center for Energy and the Environment, Citizens Utility Board, Clean Energy Economy of Minnesota. CGA et al. did not make a recommendation but noted "Xcel's first IDP is a step in the right direction, but could be amended to increase the uptake of non-wires alternatives and to bring more meaningful information to its Integrated Resource Plan."
Plan ("IRP").
[35] Xcel Initial, p. 2
[36] OAG Initial, p. 26; CUB, p. 1; CEEM, p. 3
[37] Xcel Reply, p. 5
[38] Xcel Reply, p.
[39] MN IDP Requirements for Xcel, p. 1
[40] Fresh Energy, p. 3, 10, 11. P. 10 includes related questions Fresh Energy wants Commission to ask Xcel to answer.
[41] Id, p. 4, 7. "… reflect the impact of existing and future DER in planning processes…development of enhanced load and DER forecasting capabilities, particularly for electric vehicles… tracking and updating of actual feeder daytime minimum loads."

	• provide all supporting data, analysis, and assumptions supporting the 0.70-1.10 benefit-cost ratio for AMI, FAN and FLISR; and IVVO and CVR cost-benefit analysis as part of its 2019 IDP filing or other future filings[42] • adjust the required IDP filing date such that the Company can incorporate its most current information (Q4) in the IDP.[43] • recommends adjustments to enable easier comparisons of past and future Company expenditures[44]
SRA	• Re-evaluate Xcel service quality standards or levels in light of the promising new technologies when approved and implemented.
City of Mpls	• Outline opportunities for enhancements in future plans: expanded discussion of the ICI, opportunities for cost-effective Distribution Deferral (NWAs), integration of electrification and distribution level improvements (e.g. solar and EV charging)
OAG[45]	• Order Xcel to provide more information about the increase to System Expansion or Upgrade for Reliability and Power Quality beginning in 2021, when its plans are more developed; • Order Xcel to provide the results of its annual distribution investment risk-ranking, and a description of the risk ranking methodology, in future IDPs[46]; • Order Xcel to provide information on forecasted net demand, capacity, forecasted percent load, risk score, planned investment spending, and investment summary information for all feeders and substation transformers, in future IDPs;[47] • Order Xcel to file any long-range distribution studies it had conducted in the past year[48]; • Order Xcel to provide a cost-benefit analysis for each grid modernization project in its 5 year action plan, based on the best information it has at the

[42] Id., pp. 5-6. 12
[43] Id. p. 6
[44] *Id*, p. 6. "Fresh Energy recommends that the Company provide historic spending information in the same format and level of detail as IDP Attachment B… provide historic and forecasted work volumes or units of work (e.g., number of new services, miles of line extended, number of new street lights installed, etc.) for each expenditure category… provide this detailed level of historic/future expenditures and work volumes in a spreadsheet format with all links and formulas intact."
[45] OAG Initial, pp. 26-27
[46] Department also recommends, Reply, p. 7
[47] Fresh Energy in Reply at pp. 1-3 supports this OAG recommendation and provides additional detail. Department also recommends, Reply, p. 7
[48] Department also recommends, Reply, p. 9

	time and including a discussion of non-quantifiable benefits, and including all supporting information; and, • Order Xcel to combine the IDP and distribution grid modernization report required by Minnesota Statutes section 216B.2425 in future filings during odd-numbered years.
Department [49]	• Require Xcel to discuss in future filings how the IDP meets the Commission's Planning Objectives, including: 1) an analysis of how the information presented in the IDP related to each Planning Objective, 2) the location in the IDP Report, 3) analysis of efforts taken by the Company to improve upon the fulfillment of the Planning Objectives, and 4) suggestions as to any refinements to the IDP filing requirements that would enhance Xcel's ability to meet the Planning Objectives. [50] • Amend IDP Requirement 3.D.2 as follows: For each grid modernization project in its 5-year Action Plan, Xcel should provide a cost-benefit analysis, <u>based on the best information it has at the time and including a discussion of non-quantifiable benefits and all supporting information.</u>
CEE	• Parties and regulators turn focus to how Xcel Energy's next IDP filing can be refined, streamlined and improved. Examples:[51] ○ Background sections (System Overview, System Planning, Asset Health and Reliability Management) reported every 3-5 years. ○ Additional analysis or description was requested by commenters in Grid Modernization, Non-Wires Alternatives Analysis, and DER sections.
CEEM	• consider not only compliance with filing requirements, but other outcomes of IDP processes and create communities of practice[52] • Utilize the outputs from the IDP to inform other Commission processes. Example: DERs Scenarios should connect with other planning, including a requirement to "Indicate whether or not these methodologies and inputs are consistent with Integrated Resource Plan inputs." (IDP filing requirements, at page 5)[53]

[49] Department Reply, p.
[50] Department Initial, p. 14
[51] CEE Reply, p. 2
[52] CEEM, pp. 6-7
[53] Id., p. 3

	• convene stakeholders or encourage Xcel to acquire resources to define objectives of DER adoption forecast tools and methodologies[54] • Future IDP should encompass more creative thinking around future applications of electricity (e.g. transportation electrification and opportunities to use localized demand flexibility)[55] • Future IDPs should provide more data and transparency on customer benefits and more explicit information on cost/benefit methodologies and calculations[56]
CUB	• Request Xcel file additional cost-benefit and consumer focused supplemental information for the 2018 IDP and future filings[57] ○ How will projected financial benefits be passed on to customers in a timely manner (given multi-year rate case structure)? ○ Will the Company guarantee benefits to levels and timeframes that they project? ○ Will carrying costs be included in refined projections? ○ Will the cost of assets removed from service be included in cost-benefit projections? ○ Will the Company cover the costs of overruns based on their projections? ○ Besides the Company's preferred plan, will the Company run additional scenarios to balance customer direct-benefits?
CEOs	• Lower the $2m threshold for the NWA for future IDPs to $.5m or $1m[58] • Consider utilizing criteria developed in NY and CA NWA analysis[59] • Improve storage and solar adoption forecast in IDP and IRP[60]

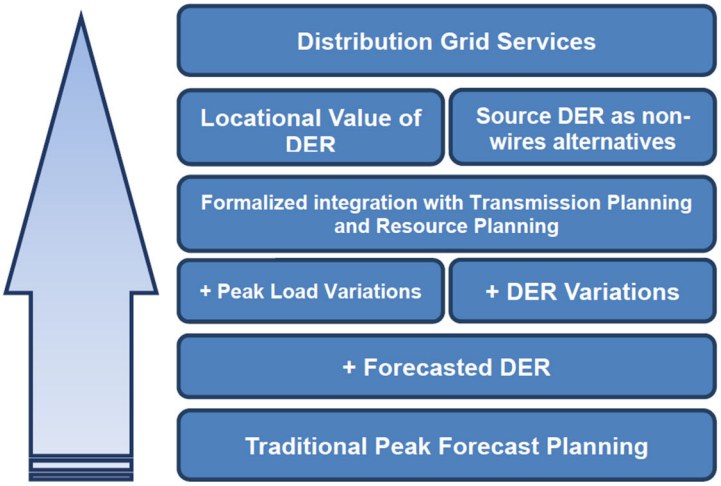
As highlighted by CEE, the two primary areas where commenters' expectations seemed to differ from Xcel Energy's IDP detail were: 1) detail and integration of distribution planning with transmission and integrated resource planning (e.g. non-wires alternative analysis and DER forecasting); and 2) cost-benefit analysis of grid modernization and enhanced planning tools investments.

[54] Id. p. 4
[55] Id, p. 5
[56] IBID
[57] CUB, p. 3.
[58] CGA et al, p. 2
[59] CGA et al, pp. 6-7
[60] Id. pp. 8-9

B. Varying Expectations of the IDP in Year 1

Xcel Energy's IDP describes foundational (Stage 1) investments and include helpful visuals addressing the staged approach to enhanced planning analyses[61], the evolution of the distribution system[62], and the timing and pace considerations.[63] Ultimately, the Company suggests the following "potential progression in planning practices" driven by customer value, utility readiness and supporting regulatory frameworks[64]:

Figure 73: Potential Evolution in Planning Practices



Xcel provided:

> …before a greater integration of distribution planning, transmission planning, and IRP can occur, distribution planning will need to become even more granular than it is today to address the challenges – and harness the benefits – of DER.[65]

[61] Xcel IDP, Figure 55, p. 179. Source: ICF White Paper, The Value in Distributed Energy: It's all About Location, Location, Location by Steve Fine, Paul DeMartini, Samir Succar, and Matt Robison. See https://www.icf.com/resources/white-papers/2015/value-in-distributedenergy

[62] Xcel IDP, Figure 56, p. 180. Source: See Modern Distribution Grid, Volume III: Decision Guide, Page 15, U.S. Department of Energy Office of Electricity Delivery and Energy Reliability (June 2017). https://gridarchitecture.pnnl.gov/media/Modern-Distribution-Grid-Volume-III.pdf

[63] Xcel IDP, Figure 57, p. 181. Source: Considerations for a Modern Distribution Grid, Pacific Coast Inter-Staff Collaboration Summit by DOE Office of Electricity Delivery & Energy Reliability (May 24, 2017). See U.S. DOE DSPx presentation - More Than Smart

[64] Xcel IDP, Figure 73 pp. 241-242

[65] Xcel 2018 IDP, p. 3

In Reply, Xcel Energy responds to a number of the commenters' recommendations for further improvements in future IDPs; as well as, requests for additional information commenters made to the Company directly. Xcel asks the Commission to[66]:

> … consider parties' comments and requests in the context of the planning landscape and expert agreement as to the state of the industry, the need to focus on foundational capabilities, and the importance of a deliberate, staged approach to increased sophistication in planning analyses.

Xcel further notes[67]:

> Collectively, we are building the foundation of integrated distribution system planning in Minnesota, like occurred in the past with integrated resource planning. Evolving distribution planning processes to be more like resource planning will need to be thoughtful and planful, and will take time – yet parties' Comments appear to expect that IDPs should already be "routine" like an Integrated Resource Plan (IRP).

Commenters appear to understand and agree that the IDP "is a first step in the right direction"[68] and "fulfills a foundational purpose in educating regulators and stakeholders."[69] It is the speed of evolution of the staged approach where differences begin to emerge: "… the growth in CSGs, plummeting cost of DER technology, and the rapid transition to beneficial electrification require more urgency by the Company in developing new IDP tools and capabilities."[70]

The Department reviewed the IDP in relation to each of the Commission's guiding principles and evaluated whether it believes each had been met by the filing, while not repeated here – and staff notes the analysis is in-depth and thorough – the Department concluded that Xcel's 2018 IDP largely met the criteria.[71]

Depatment review of other commenters' recommendations focused on whether such modifications: (1) are reasonably likely to result in a benefit for ratepayers and the public interest; and (2) can be reasonably incorporated into other utilities' IDP requirements.

With this understanding of the differing point of views, the Commission will need to consider whether to make additional clarifications or filing requirements for Xcel's 2019 IDP. Prior to filing their next IDP, Xcel intends to add stakeholder-only meetings to specifically discuss NWAs and

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[66] Xcel Reply, p. 13
[67] Id., p. 2
[68] CEOs et al, p. 1
[69] CEE, p. 3
[70] Fresh Energy Initial, p. 7
[71] Department Initial, p. 4-11

cost benefit analysis issues raised in party comments. The stakeholder-only meetings are in addition to their Commission-required 2019 IDP meeting.[72]

Another foundational issue raised by the OAG: what should be done if the Commission disagrees with the plans put forth by Xcel in the IDP?[73]

At this stage, staff does not believe the Commission needs to take action on the OAG's question. As articulated in the filing requirements, the Commission's acceptance of the IDP does not constitute prudency in any way. As Xcel argued, the plans put forth in the IDP are 'high-level' planning in nature and "false precision will not make preliminary plans more closely mirror final plans".[74] Xcel, also noted, "the level of information we provide should be commensurate with where we are in terms of our strategy, investment certainty, and in relation to other regulatory processes intended to assess prudency, reasonableness, and cost recovery."[75]

Due to the preliminary scope of the IDP, if the Commission has concerns or would like additional information, it could discuss its concerns with Xcel or ask Xcel for more information either as a supplement to the current IDP, or, as information the Commission would seek to be filed when Xcel seeks cost recovery of investments.

Additionally, staff views two separate issues – first, how much and fast does Xcel need to invest in grid modernization technologies - and for what purpose and use, and second how it will utilize future technology in distribution system planning (valuation, NWAs, etc.) The answer to the OAGs question may vary in each of these scenarios, and the answer may evolve over time and with IDP iterations.

[72] Xcel Reply, pp. 5, 10
[73] OAG Initial, pp. 3-4
[74] Xcel Reply, p. 8
[75] Xcel Reply, p. 9

C. Xcel Initiatives and Cost Benefit Analyses

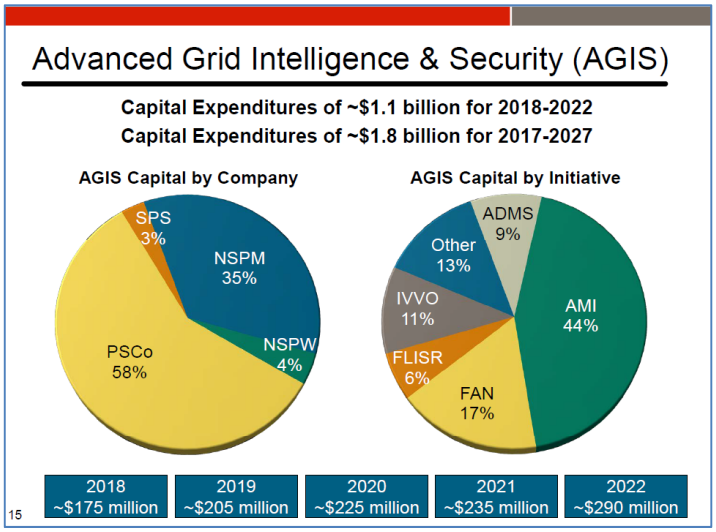
i. Advanced Grid Intelligence and Security Initiative

In response to changing customer demands and technological advances, Xcel developed the AGIS initiative to implement a series of foundational distribution system communication and metering systems, software platform(s), and various system hardware components. The foundational investments to be implemented in the near term (through 2023), as described in Xcel's previous 2015 and 2017 Grid Modernization reports and in the IDP, include ADMS, AMI, FAN and FLISR.[76] The AGIS foundational elements lay the groundwork for future advanced capabilities, such as those shown below. Xcel discusses potential advanced systems and future operational management beginning at page 150 of the IDP, detailing preliminary customer, operational and planning data strategies and security. At page 156, Xcel provides its 'View Into the Future for Customers' section providing an overview of proposed home area network (HAN) connections to Xcel's AMI and FAN, and a proposed Demand Response Management System (DRMS) to enable new capabilities for demand response. Additionally, Xcel outlines other future programs relating to IVVO and data analytics generally (including data management and warehousing).

AGIS Costs

Xcel provides a detailed description of the AMI, FAN, and FLISR proposals that offer a high-level look at potential future benefits these investments could unlock, but assigns no concrete value or analysis.[77,78] AMI and FAN combined is anticipated to have capital costs of $450-600 million (additional O&M costs of $110-150 million) and be rolled out by 2023-2024. FLISR is anticipated to cost an additional $66 million and rolled out between 2019-2027.

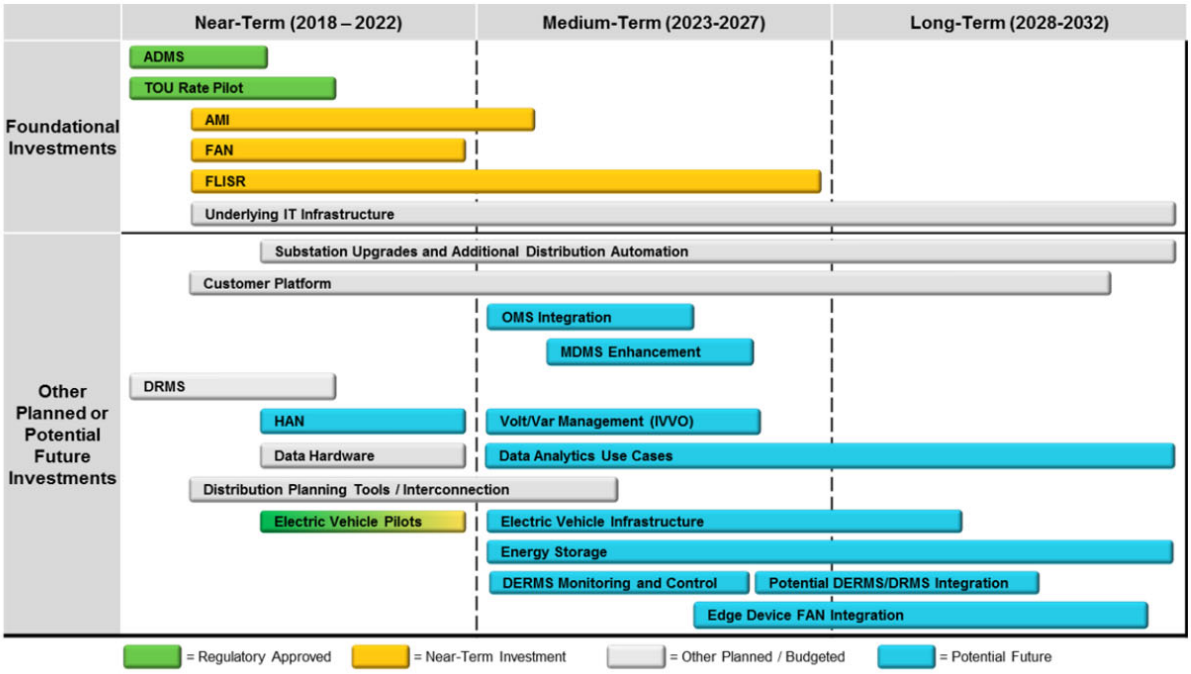
Xcel's AGIS Capital Expenditures – 17-797 OAG Exhibit 1



[76] Xcel 2018, IDP, p. 113
[77] Xcel 2018 IDP, p. 124-146
[78] Xcel 2018 IDP, p. 124-146

Xcel notes that final costs will depend on the final customer and data management strategy and related investment decision points, which are currently pending.[79] Later in the report, Xcel provides a 15-year view of AGIS investments with anticipated roll-out timeframes, including EV infrastructure, outage management system (OMS) integration, implementation of a distributed energy resource management system (DERMS), meter data management system (MDMS), among other infrastructure and initiatives.[80]

Figure 68: Advanced Grid Initiatives 15-Year View



Xcel provided:

> As we deploy infrastructure and advanced technologies we expect three, primary outcomes:
>
> (1) a transformed customer experience,
> (2) improved core operations, and
> (3) facilitation of future capabilities.
>
> Other customer choice programs enabled or enhanced by AGIS initiatives may include smart thermostats, home area networks, rooftop solar, community solar gardens, optimized EV charging, and other DER offerings.[81]

[79] Xcel 2018 IDP, p. 127 and 146
[80] Xcel 2018 IDP, p. 234
[81] Xcel 2018 IDP, pg. 113-114

Xcel noted that the full customer strategy details and investment decision points are still being determined, and that Xcel is not yet seeking Commission certification or cost recovery of these investments. Xcel:

> … [in the IDP] we provide a detailed discussion of our current internal plans, budgets, and considerations in the interest of transparency into our AGIS initiative and grid modernization strategy. All costs contained herein are intended to be directional and used as a point of context and are thus subject to change as we continue to refine our strategy and investment plans. We will bring the costs associated with these projects to the Commission for approval through a future certification request in the grid modernization/ IDP filings or through a general rate case. [82]

The level of information included in Xcel's preliminary cost benefit analyses of the AGIS components was contested by parties on this record as being insufficient to understand customer value. Discussed further below in this section.

Lack of Detail on AGIS Components (IVVO-CVR, FAN)

Parties had general concerns or questions relating to some of the functionalities outlined by Xcel on components of its AGIS investment – largely utilization of customer facing components of certain investments.

First, Fresh Energy and the OAG noted that Xcel appears to minimize use of the Integrated Volt/Var Optimization (IVVO), specifically, use of a core component - conservation voltage reduction (CVR).[83] The OAG has concerns that the improvements realized by IVVO would be beneficial for ratepayers, but conflict with the utility's financial incentives (by reducing peak demand).

In response to an OAG information request soliciting additional on IVVO and CVR, Xcel noted that "IVVO may produce superior results" and the OAG concluded that Xcel's concerns over the performance of CVR in Minnesota being inferior to use in Colorado may not be founded. OAG's concerns were so strong that it suggested the Commission consider selecting a third party engineer to provide an unbiased opinion about the potential benefits of IVVO in Minnesota.[84]

Xcel replied that third party engineer review was not needed, and that the focus should remain on "foundational grid capabilities."[85] Xcel noted that it had already purchased the IVVO module

[82] Xcel 2018 IDP, p. 119. Staff notes that Xcel is currently seeking recovery for costs associated with the ADMS project through the Transmission Cost Recovery Rider, Commission Docket 17-797. This matter is to be considered on May 23, 2019.
[83] Fresh Energy Initial, p. 11-12, OAG Initial, 17-19
[84] OAG Initial, p. 19
[85] Xcel Reply, p. 12

in ADMS, and would test it as part of the ADMS initial deployment. Xcel noted it was willing to talk about the operating modes of IVVO in more detail in its next IDP, including lessons learned from its Colorado territory implementation.

Last, in light of IEEE 1547-2018 interoperability requirements, Fresh Energy raised questions and requested more detail on whether the FAN can and will function as a DER communications network, and if not, what modifications would be required to the Company's FAN deployment to serve such a function.[86] Xcel noted in reply that it depends on the needed data and the timeframe of the needed data exchange. Xcel noted it committed to working with Fresh Energy and it would provide additional detail regarding the FAN's data exchange capabilities in its next IDP.

ii. Incremental Customer Investment

In addition to the AGIS initiative described above, Xcel has developed an Incremental Customer Investment (ICI) initiative, which includes 1) expansion of existing programs and 2) new programs. Xcel notes its ICI initiative is necessary to continue to meet the needs of its customers - needs of enhancing safety, reliability, and resiliency of the system that enables customer choice and adoption of DER (such as electric vehicles).[87] As noted above, it appears that the ICI costs are an incremental addition of $80-90 million in each year, 2021 and 2022, and a $30 million increase in 2023 - costs over and above the historic annual distribution spend in the System Expansion or Upgrades for Reliability and Power Quality category.[88]

Xcel's *expansion* of existing programs focuses on improved system reliability and mitigation of common causes of outages (such as cable failures and pole fires). Xcel's proposed *new* programs target expanding investments closer to the customer, on taps and secondary systems. For example: replacing older infrastructure, reducing O&M, improving reliability and increasing adoptions of DER (including EVs). Xcel noted that this portion of the system - close to customer homes - is more susceptible to weather-related outages and "its performance is a major contributor to the customer experience."[89] Specifically, current components of the initiative Xcel anticipates are targeted deployment of reclosers (to reduce impact from temporary faults), rebuilding and renewing areas, and targeted undergrounding.[90] Xcel:[91]

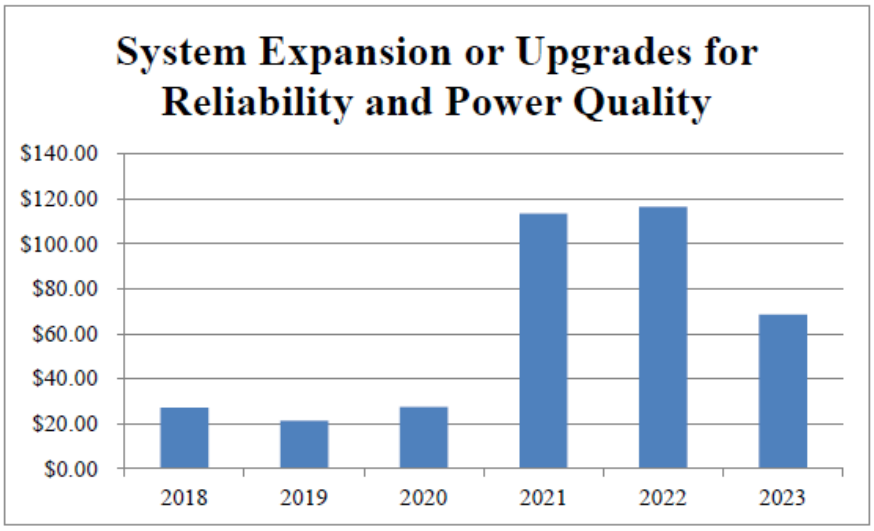
> We will identify and prioritize areas based on reliability history, age and condition, storm-related outages and total restoration time, numbers of customers, potential for O&M cost savings, and DER adoption potential; our primary goal will be to create multiple benefits for customers that includes a more reliable, safe, cost-effective and resilient system that

[86] Fresh Energy Initial, p. 12
[87] Xcel 2018 IDP, p. 92
[88] OAG Initial, p. 7
[89] Xcel 2018 IDP, p. 92
[90] Xcel 2018 IDP, pp. 92-93
[91] Xcel 2018 IDP, p. 93

> enables integration of DER. While we have been able to deliver excellent results for customers, as the industry changes and customer expectations change, shifting funding closer to the customer will be critical to continuing to meet the needs of our customers.

The OAG noted ICI expenses were included in Xcel's System Expansion or Upgrades for Reliability and Power Quality category of its projected distribution system budget. See OAG's Figure 1, below.[92] Xcel noted that this increase in spending was largely due to the ICI and that Xcel "is in the process of designing programs for this initiative. As our plans become more specific, we will provide more information in subsequent IDP filings."[93]

Figure 1[3]



(in millions of dollars)

The OAG, SRA, City of Minneapolis, and others, highlighted this initiative. Some supported it in concept (SRA and City of Minneapolis) and a number of parties had multiple questions about details of the ICI. City of Minneapolis supported the ICI Initiative as it would improve system resiliency, however, the City requested Xcel provide additional information in future filings.[94] The OAG recommended that the Commission order Xcel to provide more information about the increase to the System Expansion or Upgrades for Reliability and Power Quality beginning in 2021.[95]

Staff Discussion

There is little information in the IDP about the ICI and the incremental increases in cost for the budget category System Expansion or Upgrade for Reliability and Power Quality beginning in

[92] OAG Initial, p. 5, data from Xcel's 2018 IDP, p. 14-15
[93] OAG Initial, Exhibit 1.
[94] City of Minneapolis Initial, p. 1-2
[95] OAG Iniital, p. 6

2021. Xcel noted (in response to the OAG inquiries) it would provide additional information on this initiative in the next IDP. Staff believes this is reasonable, and important for Xcel to include in its next IDP due to the level of interest by stakeholders (and their requests for additional detail). Staff also believes it would be useful to understand when and how Xcel will seek recovery of these additional distribution system expenses (likely in a rate case, but additional clarity would be beneficial for Commission staff).

iii. Cost Benefit Analyses

The cost and benefits, including delineation and optimization of customer versus utility facing benefits of Xcel's near and long-term planned investments is a recurring area of interest by almost all parties. Parties and Xcel seem to fundamentally disagree on when and to what level of detail a cost benefit analysis should be provided in the IDP. Xcel provided a preliminary cost benefit analysis of AMI, FAN and FLISR on pages 148-150 of their 2018 IDP. The preliminary cost benefit analysis conducted by Xcel noted a total package (AGIS) of .70-1.10, AMI (including FAN) of .05-.08, and 2.5-3.0 for FLISR; Xcel noted these analyses only consider quantifiable benefits.

Xcel and other stakeholders generally look to the walk-jog-run model of grid modernization, noting that Xcel is laying the foundational investments needed to advance to a more integrated and digitalized system. However, what and when customer benefits will be realized at each stage is an active area of interest. The OAG noted that "cost benefit analyses are very important for grid modernization proposals since the costs can be significant" and "[t]he benefits can be difficult to measure because they depend, in part, on whether utilities operate advanced grid investments efficiently."[96] Xcel argued that the focus should be first on implementing foundational technologies [e.g. ADMS, FAN, FLISR, AMI] that will later enable customer benefits.

Level of Cost Benefit Analysis Included in the 2018 IDP

Stakeholders question whether the level of information Xcel has provided in the 2018 IDP is sufficient to meet the Commission's fifth guiding principle:[97]

> 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.

CEE noted that the IDP, and the section on grid modernization, will become "especially informative as Xcel Energy's investments in grid modernization ramp up and as the costs and benefits of those technologies become more apparent and measureable."[98]

[96] OAG Initial, p. 11
[97] Fresh Initial, p. 5, CUB Initial, 2-3
[98] CEE Initial, pg. 5

The OAG, quoting a recent publication:

> "[i]nvestments in smart equipment do not directly create value; the amount of value customers receive is determined by how well a utility uses the data and capabilities the equipment makes available."[99]

This is also consistent with a general Department argument that expecting Xcel to optimize customer benefits after approval of the initial investment removes the incentive to maximize ratepayer value.[100]

CUB noted it believes that in-depth information on a cost benefit analysis, at this stage, is "an essential tool in determining the customer benefits of a plan."[101] The OAG noted:[102]

> It does not make sense for Xcel [to] expend its rate-payer-funded resources developing projects that will not produce more benefits to ratepayers, even if non-quantifiable, than costs. Xcel should be prepared to demonstrate that it is considering costs and benefits throughout the entire life of a project, and not creating a new analysis only where it requests cost recovery.

Through IRs, the OAG obtained more detail on the cost benefit analyses Xcel provided. Additionally the OAG asked through IRs whether Xcel intended to file additional details in future IDPs - Xcel noted that it did not.[103]

Xcel's reply comments argued that the Commission's IDP filing requirements: 1) did not specify a level of detail that should be provided in its IDP-cost benefit analysis, and 2) are not a determination of prudency or reasonableness. Xcel notes CBAs are but one method to evaluate potential investments (e.g. another is the least-cost, best-fit approach), and false precision at this stage will not make these preliminary plans more closely mirror Xcel's final customer strategies.[104] Xcel has outstanding strategy questions which, it notes, may have a significant impact on the Company's actual proposal. As a result, the ranges provided in the IDP account for a level of uncertainty in the investment plan."[105]

Xcel expressed concern that presenting "more granular information than they have now, would imply a false level of precision that would carry a notable risk that a utility may be later expected

[99] OAG Initial, p. 11
[100] See DOC Initial Comments 3/25/19, Docket M-18-777, p. 11-12
[101] CUB Reply, p. 1
[102] OAG Initial, p. 17
[103] OAG Initial, Exhibit 9
[104] Xcel Reply, p. 7-9
[105] Xcel Reply, p. 9

to reconcile preliminary, directional analyses to the ultimate proposal – or worse, the utility may be inappropriately and unreasonable held to it for cost recovery purposes."[106]

CUB agreed with the OAG that since additional cost-benefit information was obtained through OAG information requests - the Company already has the information in-house for formalizing plans for the AGIS (and other) investments, and therefore requested that the Commission require Xcel to file supplemental detail on the 2018 IDP; as well as, clarify for Xcel that this additional information should be filed in future IDPs. CUB is concerned Xcel's reliance on the Company's experience in Colorado to inform projections of costs, or quantifiable benefits, is biased and reflects best possible outcomes which as presented border on cost-effective.[107]

CUB argued that nationally it has been their view that the projected benefits of grid-modernization are often aggressive and represent the best possible outcomes (led by a utility's capital-bias). When those outcomes are presented and accepted by a Commission, burden shifts to customers; therefore CUB argued that these investments require greater oversight by Commissions.[108] CEEM argued that the Commission should take this a step farther and require explicit calculations tied to the Commission's guiding principles.[109]

Customer vs. Utility Facing Investments

Many parties commented on the need to ensure that customer benefit is at the forefront of Xcel's decisions. CEEM argued customer-facing benefits should be prioritized alongside the operational experience Xcel will develop as the grid modernizes.[110] CUB and Fresh Energy both requested Xcel better articulate a timeline to ensure customers receive benefit from these investments; and as acknowledged by Xcel, most initial investments by Xcel in the early years of the AGI and ICI are utility-facing and not customer-facing.[111] Fresh Energy argued it was important that the Commission require accelerated customer-facing investments. CUB's view of the Commission's guiding principles, is that they balance customer and utility facing investments and therefore, Xcel's current articulation of its plan falls short, "the plan is long on indirect benefits, and short to realize direct benefits for consumers until the tail end of the planning period."[112]

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[106] Xcel Reply, p. 8
[107] Cub Initial, pp. 2-3
[108] Xcel Reply, p. 2
[109] CEEM Initial p. 5
[110] CEEM Initial, p. 5
[111] Staff notes that no party or stakeholder provided definitions for utility/grid facing or customer facing benefits, but staff loosely defines those as grid-facing investments are benefits that enable or benefit the grid (that could be passed back to utility shareholders or ratepayers, depending on the structure or agreements on the investments) and customer-facing benefits are benefits that allow for customer flexibility, choice, environmental, and potentially customer bill savings.
[112] CUB Reply, p. 4

CUB suggested focus should be placed on demand side management, effective distributed energy resource integration, customer data, and time varying rates. CEEM noted it was supportive of the general walk-jog-run approach outlined by Xcel, but that Xcel's system plans should generally reflect a commitment to prioritizing customer benefits in initial and early investments (e.g. customer data access plans) similar to what Xcel has achieved in regard to energy efficiency.[113]

Xcel in reply, asked that the focus remain first on implementing the foundational technologies that will later enable customer benefits. This is contrary to the position of CUB who noted a clear and successful implementation plan for customer benefits (e.g. time-varying rates) is necessary to ensure that foundational infrastructure investments will be able to be approved as prudent.[114] CEOs argued that "we strongly recommend that these [AGIS] investments should be cost-effective, with measurable, positive benefits for ratepayers and that to the extent that Xcel intends to develop future demand-side management programs as a result of these investments that those programs should be proposed simultaneously with a petition for rate recovery rather than those programs being promised at some future date."[115]

Last, Xcel noted in reply that this issue was clearly an area of concern for parties, and Xcel intended to hold a stakeholder meeting on this topic prior to filing its 2019 IDP.[116]

Staff Discussion

Xcel and the parties fundamentally disagree on the level of cost benefit analysis that should be included in the IDP. While staff notes that Xcel has indicated it would include detailed information when it seeks cost recovery, it may be useful for the Commission to provide guidance or input on what level of detail it would like to see either at the IDP stage or generally in the IDP.

Staff notes that upon consideration of this IDP is on May 30, the Commission will have considered Xcel's Transmission Cost Recovery (TCR) Rider petition on May 23; the TCR Rider petition includes the request for ADMS cost recovery, and therefore the Commission or Xcel may have shed more light on this issue.[117]

It may be reasonable for the Commission to clarify what type of cost-effectiveness framework is appropriate for different types of grid modernization investments, and at what stage in the Commission review they should be provided. Parties largely refer to a cost-benefit analysis generally; whereas, Xcel suggests foundational investments may require a least-cost, best-fit approach. While there are no industry 'best-practices' established on this issue, there are lessons

[113] CEEM Initial, p. 4-5
[114] CUB Reply, p. 5
[115] CEOs Initial, pg. 8
[116] Xcel Reply, p. 5
[117] See Docket E002/M-17-797

that can be learned from energy efficiency cost-benefit analyses, as well as other utility proposals and plans for similar grid modernization efforts.[118] Further, more understanding of how utility-facing benefits accrue or do not accrue to the customers who pay for the related investments may be needed.[119]

Xcel has committed to hosting a stakeholder meeting on the topic of CBA prior to filing its next IDP in 2019. Staff believes this meeting may further bridge the gap between Xcel and stakeholders' position. This issue can be re-evaluated during review of the 2019 IDP filing and if additional work or guidance is necessary, it can be provided. Staff believes allowing Xcel an additional year to work on this issue is reasonable.

D. Forecasting Assumptions

Xcel provided information on DERs, how they are considered in its load forecasting (both corporate and distribution level), current DER penetration levels (storage, EV, energy efficiency, demand response, considerations on distribution level load and DER forecasting, and its projected forecasts on pages 175 to 207 of its IDP.

As noted above, staff is appreciative of Xcel work to compile initial forecasts, understanding that distribution level forecasting is an emerging topic. Xcel explained that not only is distribution and DER forecasting with limited tools and experience difficult, attempting to conduct these forecasts with certainty on emerging technologies, and following, then understanding the potential risk on any given circuit, further increases the difficultly. Xcel:

> In the industry, there are limited tools and experience predicting customer behavior and other key drivers of DER adoption at a system level. DER penetration analysis and forecasting at a granular *feeder* level for purposes of informing distribution planning is much more complex that doing so at a system level, and is becoming an emergent industry issue. As we have discussed, system planning involves forecasting each feeder and each substation transformer, which for our system in Minnesota equates to approximately 1,700 individual forecasts. DER must be forecasted by type, because each type has different characteristics and impacts on the system. This exponentially complicates an already complex feeder-level planning process.[120]
>
> …
>
> Our initial steps to enhance our forecasting capabilities are to include DER into bulk system forecasts, move to forecast the intrinsic (i.e., not utility program-driven) market

[118] PGS&E Petition of Approval for Energy Strong II, Business Case Filing, June 8, 2018, p. 423, 456-463; DTE Testimony on ADMS CBA, pdf p. 323; Unitil Grid Modernization Plan, August 19, 2019, p.52
[119] Staff notes this is an active industry topic, both within utilities and Commission and national labs, see Benefit-Cost Analysis for Utility-Facing Grid Modernization Investments, Tim Woolf, March 7-8, 2019; Benefit-Cost Frameworks for Utility-Facing Investment in Distribution, Tim Woolf, November 11, 2018.
[120] Xcel 2018 IDP, p. 188

> adoption of solar PV, and evaluate and implement tools to identify more granular inputs of DER on load forecasts. Efforts to enhance forecasting capabilities may extend beyond more granular inputs to include new approaches such as scenario analysis and probabilistic planning.[121]

Staff provides a high-level overview of the distributed generation forecasts below – and does not summarize forecasts that were corporate or system wide forecasts (energy efficiency or demand response). Notably, Xcel assumed a '0' value for all energy storage scenarios (while acknowledging that it had 40-storage interconnection applications in 2017-2018) since it believed it could not credibly forecast energy storage for the 2018 IDP due to the early stages of storage in the Xcel footprint. Xcel intends to provide an update on energy storage in its 2019 IDP.[122] Last, Xcel noted it only had 12 MW of distributed wind on its system that it is likely to remain stable and it is assumed that most if not all distributed generation will likely be solar PV or storage.[123]

Distributed Solar PV Forecasts

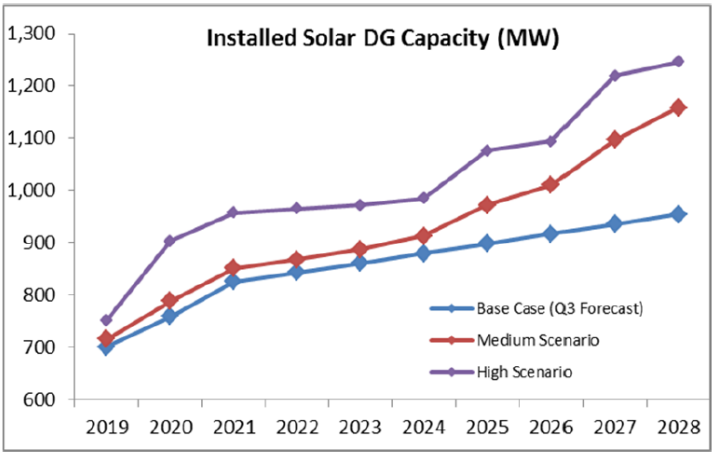
Xcel's solar PV forecast was the most thorough of the distributed forecasts. Xcel explained its assumptions into its reference case regarding 2017 legislative outcomes (changes to Solar*Rewards and Made in Minnesota and potential effects on net-metered customer demand) tax credits, and assumptions based on historic attrition and lag rates of past projects.[124]

Reference Case – Per-Year Distributed Solar Additions (MW/AC)[125]

Year	Solar* Rewards	Made in MN	Made in MN Bonus	Net-metering	S*R Community
<=2017	10.2	11.5	4.9	11.1	246.0
2018	9.4	2.1	0.0	5.8	259.1
2019	8.1	0.0	0.0	8.1	124.5
2020	4.5	0.0	0.0	9.3	43.7
2021	3.1	0.0	0.0	9.3	54.1
2022	1.2	0.0	0.0	10.4	6.2
2023	0.2	0.0	0.0	11.7	6.2
2024	0.0	0.0	0.0	12.4	6.2
2025	0.0	0.0	0.0	12.4	6.2
2026	0.0	0.0	0.0	12.4	6.2
2027	0.0	0.0	0.0	12.4	6.2
2028	0.0	0.0	0.0	12.4	6.2
Total	**36.7**	**13.6**	**4.9**	**127.7**	**770.8**

[121] Xcel 2018 IDP, p. 189
[122] Xcel 2018 IDP, p. 194
[123] Xcel 2018 IDP, p. 193
[124] Xcel 2018 IDP, p. 191
[125] Xcel 2018 IDP, p. 192

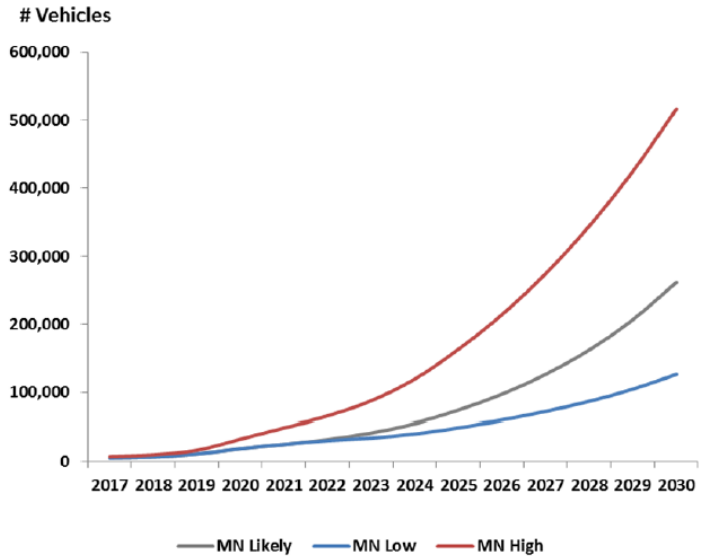
Distributed Solar PV Forecast[126]



EV Forecast

Xcel provided the EV forecast it has provided in previous Commission filings, noting the light-duty passenger EV adoption scenarios are based on gasoline prices to derive adoption estimates. Xcel noted that its 'likely' forecast would equate to the reference case, and the high forecast is Xcel's expected 'high' scenario for EVs, Xcel did not provide a medium-scenario. Xcel noted it has continued its work on electric vehicle adoption scenarios in support of its 2019 Integrated Resource Plan.

Forecast of EV counts under Low, High, and Likely EV Penetration Scenarios[127]



Source: Xcel Energy January 11, 2018 Response to MPUC-7 in Docket No. E002/M-17-777.

[126] Xcel 2018 IDP, p. 193
[127] Xcel 2018 IDP, p. 198

2019 Integrated Resource Plan, 2019 IDP and beyond

In summary, Xcel noted that forecasts in this area are very sensitive to externalities (like policy changes, technology changes, geopolitical issues, availability of raw materials) and inputs could produce significant swings in the model outputs. Xcel noted it would use the various foundational technologies and tools it had otherwise explained in the IDP [ADMS, FAN, AMI, etc.] to perform more robust planning and scenario analysis of DER penetration at the feeder level. Xcel:

> In addition to continuing the work we are doing around electrification to support our upcoming IRP, we intend to perform a benchmarking study in 2019 to validate our internal forecasting models and assumptions. We clarify that the forecast we use in the IRP will likely differ from this forecast due to the work that we are doing to update our internal forecast models, and efforts we have underway to support various aspects of our IRP analysis – including electrification.[128]

In response to these forecasts, CEOs noted concern with Xcel's storage and solar forecasts, first, that Xcel forecasted storage at zero, however it had 40 storage interconnection applications through October 2018. CEOs recommended Xcel should consider a non-zero number for the 2019 IDP.[129] Second, consistent with Fresh Energy's concerns, CEOs noted that Xcel's base and high levels of distributed solar adoption differ by only 292.6 MW in the final year of the forecast. CEOs think that Xcel should use a more meaningful high band forecast (in both the IDP and IRP) to simulate rates of adoption significant enough to have a meaningful impact on Xcel's remaining load obligation – changing the seasonal magnitude of load as well as overall total load such that resource acquisition and retirement decisions are impacted.[130]

The City of Minneapolis highlighted the general lack of distribution deferral options and heavy electrification scenarios, and noted it resulted in missed opportunities for Xcel to address cost effectiveness and fairness.[131] The City of Minneapolis also encouraged Xcel to incorporate the City of Minneapolis' goals (such as 10 percent local energy).[132]

Fresh Energy indicated it had concern with Xcel's base peak load forecast being artificially high combined with a conservative planning criteria for feeder loading (75 percent utilization targets of rated capacity) and limited consideration of non-wires alternatives will equate to unnecessary capital spending on the distribution system.[133]

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[128] Xcel 2018 IDP, p. 198
[129] CEOs Initial, p. 8
[130] CEO Initial, p. 9
[131] City of Minneapolis, Initial p. 2
[132] Id., staff notes that the City of Minneapolis encouraged the consideration of additional goals and outputs that relate to the Smarter Grid: Pathways to a Clean, Reliable, and Affordable Transportation and Energy Future, like installing 1,000 MW of storage and 1,000 MW of rooftop solar by 2030.
[133] Fresh Energy, p. 8-9

Xcel responded:

> … [I]t is within this context that we used our present tools and methodologies to inform the forecasts we provided in the IDP and discussed the initial steps we are taking to enhance our forecasting capabilities – namely:
>
> - Include DER into bulk system forecasts,
> - Move to forecast the intrinsic (i.e., not utility-program-driven) market adoption for solar PV, and
> - Evaluate methodologies to better integrate DER forecasts into our load forecasts.
>
> We also noted that our efforts to enhance forecasting capabilities may include new approaches, such as scenario analysis and probabilistic planning. With the nascent state of DER forecasting and levels of DER in Minnesota compared to other leading states, we believe taking a measured approach will allow us to learn from early adopters and in turn, reduce long-run implementation and integration costs. That said, we are committed to advancing our capabilities and will provide an update on where we are in this process in our next IDP. Finally, we note that we are updating our forecasts for our upcoming IRP, and expect to use those same forecasts in our next IDP.[134]

Staff Discussion

Forecasting at the distribution system level is, and will continue to be, an evolving process. Most all parties request that Xcel improve their DER and load forecasting capabilities; however, Xcel noted this is not a simple task. Xcel is learning from other utilities across the nation, as well as monitoring the advances in software and planning tools, as is Commission staff. Through iterations in the IDP, both stakeholders and Xcel will be able to evaluate whether Xcel is using the most advanced tools available and whether its assumptions are reasonable, both projected and in how they compare with actual DER adoption. Again here, like many other sections of the IDP, staff believes it is reasonable for Xcel to consider party comments made in the 2018 IDP for its 2019 IDP, as well as solicit additional information and input on forecasting scenarios during Xcel's 2019 pre-filing stakeholder meeting. The Commission's IDP Filing Requirements highlight that the pre-filing stakeholder meetings must discuss forecasting as part of the meeting to obtain stakeholder input.[135]

[134] Xcel Reply, p. 9-10
[135] See IDP Filing Requirement 2.

E. Non-Wires/Non-Traditional Evaluations[136]

As summarized earlier in this paper, Xcel noted that NWA-solutions were a nascent concept only a few years ago, and there has been a rise in the level of projects implemented across the United States.[137] Xcel noted that while its internal analysis has found NWAs not to be a cost-competitive solution at this time, with advances in technology, they have the ability to quickly become a cost-competitive option. [138]

i. Xcel's 2018 IDP – Non-Wires or Non-Traditional Analysis

In the IDP Section on NWAs, Xcel provided an overview of:

- considerations on why capacity projects, not mandated or asset health projects, lend themselves to NWA solutions,[139]
- project lead time needed to conduct an NWA review would be three years (which it notes would likely shrink overtime),[140]
- screening criteria applied to projects for 2018 IDP discussion (e.g. project type, cost, timeline and risk),[141] and,
- a comprehensive NWA analysis of one distribution system project, the Viking Feeder Substation.[142]

Unlike traditional solutions, Xcel noted that NWAs typically have operating characteristics based on their location or the time of day in which they are used [e.g. meeting peak daytime load, for a few hours or minutes] and therefore there are various steps (beyond those used for traditional distribution solutions) implemented to select the best fit.[143] Steps include: 1) developing criteria that the solution must meet, 2) mechanisms to evaluate the costs and benefits, 3) procurement processes, and 4) standards to ensure equitable reliability and performance. [144] Xcel noted: "NWA solutions require a disparate set of systems to separately operate the different elements of equipment that would comprise an NWA portfolio solutions."[145] Xcel noted that as the NWA concept evolves, the right approach to identify candidate projects will involve more than a financial threshold[146] (the IDP filing requirements currently use a $2 million threshold). Parties agree and suggest different criteria be applied in the next IDP as discussed further below.

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[136] Staff has used NWA and Non-Traditional Alternatives terms interchangeably in this section.
[137] Xcel 2018 IDP, p. 77
[138] *Id.*
[139] Xcel 2018 IDP, p. 78-80
[140] Xcel 2018 IDP, p. 83
[141] Xcel 2018 IDP, p. 84
[142] Xcel 2018 IDP, p. 86-88
[143] *Id.*
[144] *Id.*
[145] Xcel 2018 IDP, p. 77
[146] Xcel2018 IDP, p. 84

A common theme discussed in IDP comments (and other grid modernization filings) has been the 'accommodation' of DERs (or tolerance of) versus an integration of DER in a forward-looking planned and systematic way.[147] Staff notes that evaluation of NWAs (in combination with hosting capacity analyses and long-term planning) are potential methods to achieve forward-looking integration. The City of Minneapolis offers: "To the extent that the IDP process can anticipate customer DER investments and include opportunities for distribution deferral (non-wires alternatives), the City believes that the barriers described by Xcel can be satisfactorily addressed in a way that benefits all customers."[148]

Project Types

Xcel noted that capacity projects (those due to new load or new construction) lend themselves to non-traditional solutions.[149] Xcel noted that asset health projects (those due to aging equipment or failures) often do not have an easy DER-type solution at this time nor do mandate projects, which are typically due to road relocations, in which Xcel often has short lead time from host-cities.[150] CEE agreed with this assessment and noted that new high EV penetration or new construction may be a key time for Xcel to geo-target energy efficiency and demand response to avoid new infrastructure upgrades and may be a reasonable NWA analysis for Xcel to conduct in future IDPs.[151]

Screening Process

Xcel provided an overview of the screening process it developed to evaluate potential distribution system projects for NWAs. Filters included: 1) project types (capacity, asset health, mandates), 2) costs (below $2 million), 3) timeline (projects occurring between 2021-2023), and 4) risk assessment (N-0 and N-1 contingency risks). Xcel's criteria reduced the potential projects down from 38 projects to 11. Of those 11 projects, Xcel noted that, due to time constraints, it was only able to evaluate one project for the 2018 IDP, the Vikings Feeder Project against NWAs.[152]

Vikings Feeder Project

Xcel outlined two potential NWA solutions: a solar plus battery project and demand response (DR). The Company only provided cost analysis of the solar plus battery. Xcel's cost comparison resulted in $2.5 million for the traditional solution versus $22 million for the solar plus battery solution.[153] The Company recognized DR potential, but cautioned typical DR is applied to system-wide load reduction and is already considered in the load forecast. Further, DR

[147] CEE Initial, p. 2
[148] City of Minneapolis, p. 4
[149] Xcel 2018 IDP, p. 78
[150] Xcel 2018 IDP, p. 78-80.
[151] CEE Initial, p. 4
[152] Xcel 2018 IDP, p. 86
[153] Xcel 2018 IDP, p. 87-88

programs deployed on a smaller scale would need to be integrated with devices controlling DER; as well as, the load management system.[154]

This section of the IDP was of high interest to stakeholders for many reasons. The Suburban Rate Authority flagged this section as being of importance to them as these solutions may result in local-based projects which could "introduce additional ROW and zoning challenges for cities to the extent new structures and facility locations are introduced or increased."[155]

Issues raised by stakeholders:

- the assumptions made about types of NWA solutions considered and what is included in cost-benefit analysis[156]
- the financial threshold established in the Commission's IDP filing requirements and Xcel's additional screening criteria may be overly restrictive (costs less than $2 million, projects ruled out based on N-0 and N-1 risks, and limited time horizon to project occurring in 2021 to 2023)[157]
- whether Xcel could open up NWA-solutions for third party bidding[158]
- whether Xcel properly evaluated the importance or potential for NWAs in a high-EV future (to address capacity needs at fair and reasonable costs to ratepayers)[159]

Additionally, stakeholders and Xcel agree with CEO's observations that "… while some of the tools and processes that would be ideal for this purpose have not yet been formulated - that shouldn't mean that Xcel can't undertake NWAs for projects that meet reasonable screening criteria…"[160]

Stakeholder recommendations included:

- Requiring Xcel to incorporate the best practices found in the Rocky Mountain Institute's *The Non-Wires Solutions Implementation Playbook: A Practical Guide for Regulators, Utilities, and Developers* to make the evaluation and deployment of NWAs less burdensome[161]
- Commission reevaluation of the thresholds and metrics used to determine which projects are reviewed for alternatives[162]
- Consider future need for NWAs, and not a one-off basis (EV penetration solutions)[163]
- Consideration of multiple solutions (or creation of a portfolio of solutions)[164]

[154] Xcel 2018 IDP, p. 87
[155] SRA Initial, p. 1
[156] OAG Initial, p. 20
[157] CEOs Initial, p. 2
[158] OAG Initial, p. 20
[159] Fresh Energy Initial, p. 4
[160] CEOs Initial, p. 10
[161] Fresh Energy Initial, pp. 3-5
[162] CEOs Initial, p. 2-3, Fresh Energy, p. 3-5
[163] Fresh Energy, CUB, CEE, various
[164] *Id.*

- Reclassification of project type that needed work (from mandated, asset health, capacity project – to add risk reduction)

In reply, Xcel provided that as anticipated from pre-filing stakeholder engagement (for the 2018 IDP) - NWA issues were an area of high interest for stakeholders. Therefore, since filing the 2018 IDP, Xcel noted it has been evaluating its screening criteria, reviewing viable project types, and metrics used for evaluation. Xcel also responded that NWA analyses are in the early stages, and as they mature, consideration of additional benefits (noted by the CEOs) may be considered (e.g. tangible as well as intangible benefits of NWA: such as, reduction of greenhouse gas emissions and improved reliability). In regard to request for third-party bidding, Xcel noted that there are multiple issues that would need to be resolved to integrate third-party NWAs with Xcel's system (e.g. equipment, software platforms, communication and cybersecurity protocols, etc.).

Xcel noted it intended to hold an early stakeholder meeting on NWAs in preparation for the filing its 2019 IDP.[165] Xcel noted it would consider parties' input, discuss its updated NWA approach and screening criteria in its next IDP.

ii. Locational Net Benefits

The OAG noted that the IDP fling requirements do not require any form of Location Net Benefits Assessment (LBNA) or steps toward clearly determining one.[166] The OAG requested Xcel discuss in reply what tools would be necessary to conduct such an analysis. Xcel responded that it had not taken any action to broadly explore LBNA in any Xcel jurisdiction (other than work conducted in Minnesota's Value of Solar docket), and noted that it did not believe any state had comprehensively found a way to solve this question (despite years-long efforts to do so).[167] Xcel noted that LBNA, if pursued by the Commission, should be conducted in a manner that include all utilities, and if implemented, would require advanced planning tools on Xcel's system and potentially modified regulatory constructs.

iii. Geotargeting CEE Pilot

Xcel provided an overview of a CEE Geotargeting Pilot that is currently underway, the purpose of the pilot is to conduct planning for distributed energy projects in two communities in Minnesota to test the viability of providing alternatives to traditional capacity upgrades using energy efficiency and demand response.[168] CEE's Geotargeting Pilot learning objectives relate to NWA consideration and are noted below.[169] Additionally, CEE is using similar metrics to Xcel's NWA screening criteria to review potential projects or areas (e.g. capacity driven, three years in the future, and sufficient customer base).[170] CEE's metrics:

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[165] Xcel Reply, p. 11
[166] A LNBA is an analysis of location-specific DER benefits and DER deployment costs. See page vii of the ICF Integrated Distribution Planning Report, August 2016.
[167] Xcel Reply, p. 10
[168] Xcel 2018 IDP, p. 88
[169] CEE Reply, p. 1
[170] *Id.*

- What types of distribution system needs offer the best opportunity for distributed energy resources?
- To what extent can location-specific targeting with additional customer incentives lead to increased distributed energy resources?
- What customer end-use characteristics make for the best opportunities? Can the distributed energy resources screening process be automated?
- What is the statewide potential for distributed energy resources geotargeting to defer distribution upgrades?
- What type of program and policy changes are needed to support geotargeting in Minnesota?

iv. Minneapolis Mandates and NWAs

The IDP mentions $50 million for "Minneapolis mandates"[171] beyond specific road projects and Southwest Light Rail Transit over the upcoming 5 year period. This is also in addition to Minnesota service territory wide investments of $213 million between 2021 - 2023 for Xcel's ICI Initiative.[172] The City of Minneapolis filed comments supportive of opportunities for cost-effective distribution deferral (or NWA) and noted "… including these strategies as part of standard decision-making for infrastructure solutions increases fairness and allows for cost-effective customer participation that can save all customers money."[173]

Staff notes that it is unclear from the IDP and City of Minneapolis comments how much coordination is happening between the Company and City as it relates to infrastructure planning related to the IDP. It appears there is significant opportunity for coordination like what was seen between the Company, City of Minneapolis and others related to the development of the Green Line Light Rail Transit which included an "Energy Innovation Corridor."[174] With the Company's proposed carbon reduction plan which includes additional fossil fuel plant retirements[175], there is likely reliability considerations for the grid that serves the metropolitan area (and beyond), which further suggests coordination between these entities could result in better solutions and cost savings for all customers.

F. Distribution System Data

First, staff notes that while parties advocated for additional information to be provided in the 2019 IDP (as discussed below), Xcel asks that the Commission not add any information to be provided in the 2019 IDP until near-term priorities are determined, areas of focus are articulated for the IDP and privacy concerns are more developed (see section below).[176] Xcel

[171] Xcel IDP, Att. B
[172] Id, Att. B, p. 5.
[173] City of Minneapolis, p. 2
[174] https://www.xcelenergy.com/community/energy_innovation_corridor
[175] https://www.xcelenergy.com/staticfiles/xe/PDF/Xcel%20Energy%20Carbon%20Report%20-%20Feb%202019.pdf
[176] Xcel Reply, p. 17

notes providing additional information may result in the Company needing more time to complete the 2019 report.[177]

i. Distribution System Risk Ranking

Xcel noted that it designs its distribution system to optimally load to 75 percent of maximum capacity in order to provide a reserve capacity that can be used to carry load of adjacent feeders during an N-1 event.[178] However, Xcel noted that while 75 percent is ideal, feeder utilization in Minnesota is on average 66 percent, and 38 percent of feeders are currently above 75 percent utilization.[179]

Xcel noted that substation transformer utilization rates below 75 percent are indicative of a robust distribution system that has multiple restoration options in the event of equipment failure or required maintenance or construction.[180]

Xcel creates a distribution system project ranking based on feeders and substations for which a normal overload (N-0) is a concern and project rankings for N-1 contingencies, where loss of one feeder could cause overloads on another.[181]

In review of Xcel's risk ranking process, the OAG sought additional information from Xcel:how the Company develops the risk-ranking scores and ultimately, and selects projects to pursue in the next year's budget cycle. The OAG noted that the information Xcel provided via responses to the OAG information request was useful, and the Commission should order Xcel to provide the information in future IDP filings. The OAG noted that the information, when combined with other information, like which projects have work coming in the planning period, would be useful to track and understand Xcel's planning process.[182] The OAG suggested requiring information in the following format:

Table X: OAG's Suggested Distribution System Data

Feeder	Forecasted Net Demand	Capacity	Forecasted Percent of Load	Forecasted Load at Risk	Risk Score	$ Investment	Description of Investment
A							
B							
C							

OAG argued that the information would work toward several goals of the IDP process, by allowing for:

[177] Xcel Reply, p. 15
[178] Xcel 2018 IDP, p. 43
[179] Xcel 2018 IDP, p. 45
[180] Xcel 2018 IDP, p. 50
[181] Xcel 2018 IDP, pp. 54-55 Xcel noted that "A normal, or N-0, overload means that the feeder has more demand than its maximum capacity under normal conditions."
[182] OAG Initial, p. 6-8

1) an understanding of how Xcel identifies risks on its system
2) tracking of the utility's performance overtime
3) better understanding of how its investment decisions are related to current capacity risks and growing distribution system resource needs
4) an evaluation of how Xcel is making investment decisions in relation to advanced grid capabilities[183]

The OAG requested that the Commission:

- Order Xcel to provide the results of its annual distribution investment risk-ranking, and a description of the risk ranking methodology, in future IDPs[184];
- Order Xcel to provide information on forecasted net demand, capacity, forecasted percent load, risk score, planned investment spending, and investment summary information for all feeders and substation transformers, in future IDPs;[185]

Fresh Energy and the Department both agreed with the recommendations of the OAG. The Department provided:[186]

> Taken together, OAG recommendations 1 and 2 are aimed at requiring Xcel to provide more information related to how Xcel identifies and responds to risks in its distribution system. Consequently, it follows that investment decisions are impacted based on this risk analysis. These investment decisions are important to understand given the significant amount of capital expenditures that they can implicate. This risk analysis can also be useful in understanding the costs and benefits of other potential risk mitigation options, especially if a non-wires alternative (NWA) can be employed in mitigating the risk that Xcel identifies.
>
> Given that Xcel performs this analysis on an annual basis, and that providing this information could aid in the understanding of both capital expenditures and consideration of NWAs as potential options for risk mitigation, the Department concludes that OAG recommendations 1 and 2 are reasonably likely to result in a benefit for ratepayers and the public interest.

Fresh Energy noted it agreed with the OAG, and that the additional information should be filed with the next IDP, and Fresh Energy requested that the following additional information be provide: [187]

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[183] OAG Initial, 8-9; OAG also suggested that in the future this information could be combined with hosting capacity information and information about estimated growth of DERs, allowing for assessment of how Xcel is responding to concerns surrounding DER penetration.
[184] Department Reply, p. 6-8.
[185] Fresh Energy in Reply at pp. 1-3 supports this OAG recommendation and provides additional detail. Department also recommends, Reply, p. 7.
[186] Id.
[187] Fresh Energy Reply, p. 2-3

- Feeder hosting capacity analysis results
- Feeder daytime minimum loads
- Details on grid needs and distribution deferral opportunities similar to those in CA and NV:
    - 5-year forecasted demand and 10-year forecasted DER growth.
    - The primary driver of each grid need (e.g., capacity deficiency, voltage fluctuations, aging equipment, etc.).
    - The distribution service required (e.g., capacity, voltage support, reliability or resiliency).
    - Equipment ratings and forecasted deficiency through the next 5 years.
    - Equipment involved in the conventional solution (e.g., reconductoring, transformer bank replacement, voltage regulators, etc.).
    - The anticipated upgrade in-service date.
    - Months of need (e.g., Jul-Sep), duration of need (e.g., 3pm-7pm), and number of need events per year.
    - The cost of the conventional solution.

Xcel responded that the OAG's recommendation:[188]

> … that a more detailed spreadsheet would allow the Commission and parties to understand how the Company identifies and responds to risks on its system and performance overtime is not realistic. ….distribution systems are utilities' point of connection for customers, and while there is some redundancy in the system, the types of issues addressed by distribution system planning require the focus to remain on the immediacy of customer reliability. As such, plans and budgets are subject to change in response to emergent circumstances to prudently ensure customer reliability and the long-term health of the distribution system; projects that were previously approved may be delayed. Expecting that we will reconcile perhaps thousands of projects from year to year given this reality is not realistic or practicable. Finally, as we have discussed in past grid modernization and IDP-related filings, we believe publically providing actual or forecasted load information – and/or disclosure of risks on our system – at a granular level as is suggested here, implicates grid security and customer privacy and security.
>
> …we ask the Commission to refrain from adding any requirements for detailed substation, feeder, or transformer level information … before determining near-term priorities and areas of focus for the IDP – and until associated privacy and security concerns are properly considered.

[188] Xcel Reply, p. 17

Staff Discussion

For additional discussion on the Fresh Energy's request for Xcel to provide minimum daytime loading levels, staff refers Commissioners to the briefing paper on the same agenda, for Xcel's 2018 Hosting Capacity Analysis (HCA) Report.[189]

In regards to the OAG request for additional information on risk-ranking, staff believes this additional information would be useful, as OAG advocates, to understand how Xcel ranks and prioritizes distribution system projects. In light of Xcel's Incremental Customer Investment initiative, it would be useful to better understand how Xcel evaluates and ranks projects for its system. Staff believes this information will become increasingly important in the future as additional DER is added to the system, especially as additional load (e.g. EVs) is added to the system in certain and targeted areas. This data would be the baseline information needed to further evaluation of NWAs. To understand Xcel's ranking of projects and considerations, consistent with the Department's recommendation, staff would suggest the Commission consider, at a minimum, adding the information sought by the OAG. If privacy issues remain or continue unresolved, then Xcel can file the information as redacted, or trade secret, as necessary.

ii. Long-Range Area Studies

The OAG recommended that the Commission order Xcel to file in future IDPs any long-range distribution studies it had conducted in the past year in future IDPs.[190]

Staff Discussion

No party opposed this recommendation and staff finds this recommendation reasonable. These plans provide the insight into how Xcel is evaluating complicated distribution system projects and understanding options considered and how Xcel studies and compares the economics and reliability of potential alternatives.

G. Customer and System Data Privacy Plan Development

A theme emerged surrounding customer and system data privacy and security issues. While some parties sought additional information on this record (and in the related-docket, Xcel's 2018 Hosting Capacity Analysis), Xcel expressed concerns about providing certain feeder level data due to privacy and security concerns.[191] Xcel's general argument was phrased well in the 2018 HCA filing:

> From a security perspective, we believe providing actual load data would provide a bad actor with the information necessary to target an attack on the grid where it would have maximum impact. In terms of customer privacy and confidentiality, we have looked to the Commission's decisions on customer Personally Identifiable Information (PII) and

[189] See Docket E002/M-18-684.
[190] OAG Initial, p. 10
[191] Xcel Reply, p. 15, 17

> Customer Energy Usage Data (CEUD), and believe we have a responsibility to protect customer anonymity. While grid and customer connection details are not directly implicated in that proceeding, the Commission directed utilities to look to NIST principles for guidance with regard to collection and protection of customer PII4 – and required utilities to refrain from disclosing CEUD without customer consent unless the utility has adequately protected the customer's anonymity.[192]

CUB noted Xcel has developed a strong plan for future looking approaches to customer data, operational data, planning data, and data security, however CUB had concern that there were two unexplored questions: first, questions relating to third-party access to aggregated and anonymized data sets (to ensure customer indirect and direct benefits aren't overlooked) and second, a question about development of information on Xcel's policy of sale, or exchange, of collected customer data by the utility.[193] CUB requested that Xcel commit in future IDPs to keep energy data for the customer benefit.

CEEM noted that Xcel's overall plan should enable customer and market-driven solutions earlier than proposed (discussed above, the timing of customer-facing investments). CEEM provided an example was to allow access to customer energy data where use of that data directly advances customer engagement and choice. CEEM requested that customer access should be timely, actionable, and enable the customers to self-manage or engage third-parties to meet their energy use objectives.[194]

CEE highlighted the discussion on Xcel's intent for use of customer and grid operational data[195] and noted the fact that with the deployment of additional grid modernization technology, the customer and grid operational data to which Xcel Energy and its customers will have access will increase dramatically. CEE argued that data collection and analysis should be driven by opportunities to obtain insights and drive action and therefore, CEE argued that Xcel must develop approaches to simplify and standardize data collection, determine its uses for customer and grid data, and ensure that the data collected will be used. CEE:[196]

> A key benefit of grid modernization is that the new troves of collected data will be managed and used to produce customer benefits and lower system costs. Data governance, analysis, access, and sharing are a central opportunities and challenges for utilities across the country. We hope Xcel Energy's next IDP will provide more specific details about Xcel Energy's comprehensive plans to manage and use data in a way that maximizes benefits to customers. The opportunity to use data to the benefit of customers and the system also requires that the Commission provide direction on matters of data governance, access, privacy, and other matters. Absent regulatory guidance, the management and use of data by the utility and its customers may be constrained or limited.

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[192] Docket E002/M-18-684, Xcel Reply, p. 5 Footnote omitted.
[193] CUB Reply, p. 5
[194] CEEM Initial, p. 4-5
[195] Xcel 2018 IDP, p. 150
[196] CEE Initial, p. 6

Staff Discussion

As discussed in the corollary docket up on at the same agenda meeting (Xcel's 2018 HCA Report) there are open questions related to the management and use of, and the appropriate level of restrictions surrounding, customer and grid data. Staff believes this is an issue that will need further development, and the party disagreement largely surrounds 'when' this should occur. Several parties argue that the development of the operational and customer data policies should be developed in tandem with the articulation of system investment benefits; whereas, Xcel argues that it is important to focus on implementing the foundational technologies first, then determining the appropriate uses and options for data may be. Xcel:[197]

> We believe there can and should be balance between advancing distribution system planning and capabilities, and the practicalities of the current state of the underlying regulatory framework and industry in general. That said, we ask the Commission to refrain from adding any requirements for detailed substation, feeder, or transformer-level information as has been suggested before determining near-term priorities and areas of focus for the IDP – and until associated privacy and security concerns are properly considered.

This is largely a policy issue and one the Commission will need to determine whether additional information or policy development is needed now, whether it is best left to Xcel to further in its 2019 IDP, or whether other action should be taken.

H. Modification to Filing Requirements (Annual vs. Biennial, Due Date, Other)

Parties found Xcel's 2018 IDP useful, several provided specific comments seeking generally to refine the reporting requirements or make modifications.

i. Streamlining of Filing Requirements

Many stakeholders discussed the potential to streamline or reduce filing requirements of the IDP (independent of the request to expand some areas, as noted elsewhere). The Department noted that not all parties provided concrete or clear recommendations for modifications to the filing requirements; the Department recommended in future years that commenters provide clear requests for changes and their basis.[198] CEE noted in reply that it too believes some areas of the report could be streamlined, and recommended that (following acceptance of the 2018 IDP) parties and regulators turn their focus to how Xcel's next IDP can be filed and improved in order to provide the most value to stakeholders and regulators.[199] CEE suggested asking stakeholders if each section of the report is complete, valuable, and useful; CEE noted that Xcel's stakeholder process is likely the best forum for these discussions.[200]

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[197] Xcel Reply, p. 17
[198] Department Reply, p. 4-5
[199] CEE Reply, pg. 2
[200] Id.

As Xcel's IDP requirements were the first comprehensive set of requirements issued in Minnesota (and to some degree nationally), much has been learned through the filing of Xcel's first IDP. Staff agrees that refinement and review of the IDP filing requirement would be a useful, however, another year of data, in the current filing requirement form is likely useful to 1) ascertain changes overtime and 2) gain additional stakeholder input on the usefulness of the data. While staff sought input from stakeholders through the comment period on whether the filing requirements should be modified[201], stakeholders generally did not argue that any of the information was unnecessary.[202] Staff believes it would be reasonable to leave the requirements 'as-is' for the 2019 requirements (notwithstanding changes discussed elsewhere), allow for stakeholder input to Xcel prior to the 2019 filing (as CEE suggested), and upon the next comment period, the Commission can seek additional (specific) input on the filing requirements.

Staff believes that stakeholders may have a better sense of information that may not need to be repeated or may not be an area of interest with another cycle of IDP reporting.

Additionally, staff notes it may be useful for Xcel to not refile information it has previously filed in either the 2018 IDP or previous grid modernization filings and instead incorporate that information by reference wherever possible. Staff does not believe this needs to be called out as a discrete filing requirement or order point.

ii. Timing of Filing (Cadence and Due Date)

Following from the comments above, both Fresh Energy and Xcel provided comments noting that it may be useful to reduce the reporting requirements to a biennial cycle following the November 2019 IDP filing. Xcel:

> …the current annual filing requirement does not allow sufficient time to fully engage with stakeholders toward achieving the Commission's planning objectives, nor to engage meaningfully on important issues such as planning for DER, a comprehensive approach to NWA, or our advanced grid plans; it also does not allow the Company to make meaningful progress on its objectives. We specifically request the Commission require our next IDP be submitted November 1, 2019, then biennially thereafter.[203]

Staff agrees. While it was useful to receive a 2018 IDP from Xcel in order to get an initial plan in front of the Commission and stakeholders, the 2019 IDP to be filed in November will fall back in sync with the statutorily required distribution modernization plan, which is biennial.[204]

The OAG recommended that the Commission *require* Xcel to combine the IDP and the Biennial Distribution System Plan in future years. Staff believe this is reasonable and recommends doing so. While the previous language noted 'may'[205] - if the Commission moves to a biennial filing

[201] Notice of Comment Period on Xcel's IDP, November 19, 2018, Doc. ID: 201811-147892-02
[202] This could be because the information was so unworthwhile it didn't prompt stakeholders to make note.
[203] Xcel Reply, p. 4
[204] August 30, 2018 Order Approving Filing Requirements, pg. 6
[205] May was used because in some years an IDP would have been filed when a Biennial Distribution Plan was not required – like 2018.

cadence - it seems clear that the two filings would be made jointly. Staff recommends modifying the filing requirement as follows:

> **Filing Date:** Require Xcel to file biennually ~~annually~~ with the Commission beginning on November 1, 2019 ~~2018~~ an Integrated Distribution Plan (MN-IDP or IDP) for the 10-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. The plan will be reviewed and shall ~~may~~ be combined with the Biennial Distribution System Plan required by Minn. Stat. 216B.2425 and associated certification requests~~, as authorized in that docket (E002/M-17-776)~~.

Staff has included this language as a decision option below.

Fresh Energy also requested that the Commission consider modifying the due date from a November timing to one that allows Xcel to incorporate its current year planning process (as Xcel included used Q4 2017 planning process data for its November 2018 IDP).

Planning Process – Key Dates and Timeframes

Planning Step	Timing	Data Available
5-year Load Forecast (2020-2024)	Q4 2018	Jan 1, 2019
5-year Budgets Complete	Mid-2019	Aug 1, 2019

Xcel provided that several parties have suggested it provide additional information and in some cases more detailed information. Xcel noted that it needs at least the amount of time afforded between when budgets are complete and the November 1 filing date to complete its analysis, and if additional information is required, it may need additional time. Xcel requested that the filing date not be moved.

Staff believes that the IDP requirements should continue on the November 1 filing date, at least for the time being; as currently there is value in aligning with the Distribution Modernization Report required by Minn. Stat. 216B.2425, Subd. 8, which is due biennially on November 1. Staff believes that if the IDP evolves into more of a 'distribution planning' report and less of a joint grid modernization investment plan *and* distribution plan, it may become reasonable to adjust the filing date.

iii. Modification to the "Explanation Requirement"

The IDP Filing requirements include a provision that allows for Xcel to explain why any individual information requirement may not 'yet' be practicable or could be cost-prohibitive to provide. The Department noted that Xcel may not be fully in compliance with the IDP requirements in instances where Xcel could not provide information due to the compressed timeframe for filing its first IDP.[206] Therefore, Xcel would like the Commission to modify the filing requirement to remove the word, 'yet'.

[206] Department Initial, p. 16

> "For filing requirements which Xcel claims is not ~~yet~~ practicable or is currently cost-prohibitive to provide, Xcel shall indicate for each requirement:
>
> 1. Why the Company has claimed the information is not ~~yet~~ practicable or is currently cost-prohibitive…"

Staff recalls during the drafting of the filing requirements, there was internal discussion (and interest) on retaining the word 'yet' in the filing requirements. Staff now sees how this has caused concern for the Department in evaluation of whether Xcel has met the IDP requirements. Xcel noted in reply, that there are some items in the IDP that may never be practicable to file or may later become not practicable to address.

However, staff believes Xcel has sufficiently met the intent of the filing requirement and has explained in each instance it could not provide information (included valid reasons due to the compressed timeframe of the 2018 IDP). If the Commission would like to modify the filing requirement, it can, and it is included as a decision option below.

iv. Merging of 3.D.1 and 3.D.2

Xcel suggested the Commission consider the consolidation of reporting requirements 3.D.1 (into) 3.D.2 for the 2019 filing requirements.

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

1. Xcel shall provide a 5-year Action Plan as part of a 10-year long-term plan for distribution system developments and investments in grid modernization based on internal business plans and the DER future scenarios.
2. Xcel shall provide a 5-year Action 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, hosting capacity analysis, and non-wires alternatives analysis. 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 topics and categories listed above). Xcel should include specifics of the 5-year Action Plan investments. Topics that should be discussed, as appropriate, include at a minimum: *(see filing requirements)*

Staff believes if 3D2 is modified to add the language from 3D1 regarding the requirements for the 5-year plan to be part of a 10-year long-term plan, would allow for consolidation of this filing requirement. This language is included as a staff proposed decision option, below.

> Xcel shall provide a 5-year Action Plan <u>(as part of a 10-year long-term plan)</u> for distribution system developments and investments in grid modernization based on internal business plans and considering the insights gained from the DER futures analysis, hosting capacity analysis, and non-wires alternatives analysis. 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 topics and categories listed above). Xcel should include specifics of the 5-year Action Plan investments. Topics that should be discussed, as appropriate, include at a minimum: *(no change to topic list)*

6. Commission Decision Options

Accept or Reject the 2018 IDP

1. Accept Xcel's 2018 Integrated Distribution Plan (Xcel, all Stakeholders)

Changes to Filing Requirements

2. Require Xcel's next IDP be submitted November 1, 2019, then biennially thereafter (Xcel)

   Filing Date: Require Xcel to file biennially ~~annually~~ with the Commission beginning on November 1, 2019 ~~2018~~ an Integrated Distribution Plan (MN-IDP or IDP) for the 10-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. The plan will be reviewed and shall ~~may~~ be combined with the Biennial Distribution System Plan required by Minn. Stat. 216B.2425 and associated certification requests~~, as authorized in that docket (E002/M-17-776)~~.

3. Adjust the required IDP filing date such that the Company can incorporate its most current information (Q4) in the IDP (Fresh Energy)

4. Modify the relevant IDP requirement as follows:

   "For filing requirements which Xcel claims is not ~~yet~~ practicable or is currently cost-prohibitive to provide, Xcel shall indicate for each requirement:

   1. Why the Company has claimed the information is not ~~yet~~ practicable or is currently cost-prohibitive…"

5. Amend IDP Requirement 3.D.2 as follows: For each grid modernization project in its 5-year Action Plan, Xcel should provide a cost-benefit analysis, based on the best information it has at the time and including a discussion of non-quantifiable benefits and all supporting information. (DOC)

6. Amend 3.D.2 to merge 3.D.1 into 3.D.2. (Staff, Xcel supported)

   Xcel shall provide a 5-year Action Plan (as part of a 10-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, hosting capacity analysis, and non-wires alternatives analysis. 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 topics and categories listed above). Xcel should include specifics of the 5-year Action Plan

investments. Topics that should be discussed, as appropriate, include at a minimum: *(no change to topic list)*

Additional Requirements or Clarifications (General)

7. Order Xcel to combine the IDP and distribution grid modernization report required by Minnesota Statutes section 216B.2425 in future filings during odd-numbered years. (OAG)

8. Require Xcel to discuss in future filings how the IDP meets the Commission's Planning Objectives, including:
    1. an analysis of how the information presented in the IDP related to each Planning Objective,
    2. the location in the IDP Report,
    3. analysis of efforts taken by the Company to improve upon the fulfillment of the Planning Objectives, and
    4. suggestions as to any refinements to the IDP filing requirements that would enhance Xcel's ability to meet the Planning Objectives. (DOC)

Additional Requirements or Clarifications (Topic Specific)

Incremental Customer Investment Initiative

9. Provide additional information on the ICI and the System Expansion or Upgrade for Reliability and Power Quality increases beginning in 2021. (OAG, City of Minneapolis, SRA)

Forecasting

10. require the Company to make the development of enhanced load and DER forecasting capabilities, as well as, tracking and updating of actual feeder daytime minimum loads, a high priority in 2019 and include a detailed description of its progress in the Company's next IDP (Fresh Energy)
11. convene stakeholders or encourage Xcel to acquire resources to define objectives of DER adoption forecast tools and methodologies (CEEM)

Cost Benefit Information

12. Provide all supporting data, analysis, and assumptions supporting the 0.70-1.10 benefit-cost ratio for AMI, FAN and FLISR; and IVVO and CVR cost-benefit analysis as part of its 2019 IDP filing or other future filings (Fresh Energy)
13. Order Xcel to provide a cost-benefit analysis for each grid modernization project in its 5 year action plan, based on the best information it has at the time and including a discussion of non-quantifiable benefits, and including all supporting information; and,

recommends adjustments to enable easier comparisons of past and future Company expenditures (OAG)

14. Request Xcel file additional cost-benefit and consumer focused supplemental information for the 2018 IDP and future filings

Non-Wires Alternatives

15. Incorporate NWA best practices in next IDP and prioritize improving evaluation and deployment of NWA (Fresh Energy)

16. Discuss opportunities for cost-effective Distribution Deferral (NWAs) and integration of electrification and distribution level improvements (e.g. solar and EV charging) (City of Minneapolis)

17. Lower the $2m threshold for the NWA for future IDPs to $.5m or $1m (CEO)

18. Utilize criteria developed in NY and CA NWA analyses (Fresh Energy)

Distribution System Data and Project Ranking

19. Order Xcel to provide the results of its annual distribution investment risk-ranking, and a description of the risk ranking methodology, in future IDPs (OAG, Fresh Energy, DOC)

20. Order Xcel to provide information on forecasted net demand, capacity, forecasted percent load, risk score, planned investment spending, and investment summary information for all feeders and substation transformers, in future IDPs (OAG, Fresh Energy, DOC)

21. Order Xcel to file any long-range distribution studies it had conducted in the past year (OAG, Fresh Energy, DOC)