

## Staff Briefing Papers – Volume 2

Meeting Date May 4, 2023

Agenda Item 2\*\*

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Company	Northern States Power Company, d/b/a Xcel Energy
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Docket No.	E-002/M-21-814
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**In the Matter of Northern States Power Company d/b/a Xcel Energy's Petition for Approval of the Transmission Cost Recovery Rider Revenue Requirements for 2021-2022, and the Resulting Adjustment Factors by Customer Class**

Issues	Should the Commission approve or modify Xcel Energy's 2021-2022 Transmission Cost Recovery (TCR) Rider revenue requirement for (1) transmission-related and (2) AGIS-related components and (3) resulting adjustment factors by customer class, including potential revisions as required by the Commission? What, if any, other action should the Commission take related to (4) AGIS-related performance metrics, cost recovery, reporting, and future filings?
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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.

 <b>Relevant Documents</b>	<b>Date</b>
Xcel Initial Filing (Public and Trade Secret)	November 24, 2021
Xcel Advanced Distribution Management System Annual Report (2021)	January 25, 2022
Department of Commerce (Department) Letter (Guidance Document)	February 9, 2022
Department Comments	March 30, 2022
Xcel Comments	March 30, 2022
Citizen's Utility Board (CUB) comments	March 30, 2022
Department Reply Comments	May 2, 2022
Xcel Reply Comments	May 2, 2022
Order, Settlement Agreement	June 2, 2022
Xcel – Workshops 1 and 2 Recordings and Presentations	August 4, 2022
Xcel Supplemental Filing	August 17, 2022
PUC Notice of Comment Period	August 22, 2022
Xcel Letter, Workshop Materials	September 14, 2022
Xcel Cost/Benefit Analysis (CBA) (Public and Trade Secret)	October 14, 2022
Citizen's Utility Board (CUB) comments	October 17, 2022
Department Comments	October 17, 2022
Office of the Attorney General (OAG) Comments	October 17, 2022
Department, OAG, and CUB, Joint Comments	November 16, 2022
Xcel Reply Comments	November 16, 2022
Xcel Advanced Distribution Management System Annual Report	January 25, 2023

**Referenced Documents Docket No. E999/DI-20-627**

Center for Energy and the Environment (CEE) comments	September 18, 2020
Xcel comments	September 25, 2020
Fresh Energy comments	September 25, 2020
Citizen's Utility Board (CUB) comments	October 16, 2020
Office of the Attorney General (OAG) comments	October 16, 2020
Xcel reply comments, docket no. E999/DI-20- 627, E002/M-19-666, E002/M-20-680	October 30, 2020
Department of Commerce Report "Methods for AMI and FAN Performance Evaluations, Metrics, and Customer Protections" docket nos. E002/M-19-666 and E999/DI-20-627.	December 1, 2020
Department Appendices to Report	March 15, 2022

### Referenced Documents, Additional Dockets

2015 Biennial Report- Distribution Grid Modernization filed in Docket Nos. E999/M-15-439 and E002/M-15-962.	October 30, 2015
Order Certifying Advanced Distribution Management System (ADMS) project Under MN. Stat. § 216B.2425 and Requiring Distribution Study in Docket No. E-002/M-15-962	June 28, 2016
Docket No. E,G-999/CI-12-1344, Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment	January 19, 2017
Xcel Petition Transmission Cost Recovery Rider for 2017-2018 in Docket No, E002/M-17-797	November 8, 2017
Order Establishing Performance-Incentive Mechanism Process, Docket No. E-002/CI-17-401	January 8, 2019
Order authorizing rider recovery, Setting Return on Equity, and Setting Filing Requirements in Docket no. E002/M-17-797	September 27, 2019
Xcel 2019 initial IDP Filing in docket no. E002/M-19-666	November 1, 2019
Xcel Petition for approval of 2019-2020 TCR revenue requirements filed in Docket no. E002/M-19-721	November 15, 2019
Xcel Advanced Distribution Management System Annual Report Docket Nos. 19-666 and 17-797	Jan 24, 2020
Commission <i>Order Approving True-Ups and Requiring Xcel to Withdraw its Notice of Change in Rates and Interim Rate Petition</i> in Docket No. 19-688	March 13, 2020
Order Accepting Integrated Distribution Plan, Modifying Reporting Requirements, and Certifying Certain Grid Modernization Projects in Docket no. E002/M-19-666	July 23, 2020
Xcel Compliance Filing in Docket 19-666	October 1, 2020
Order Adopting Open Data Access Standards and Establishing Further Proceedings in Docket Nos. E,G-999/M-19-505 and E,G-999/CI-12-1344	November 20, 2020
Xcel Advanced Distribution Management System Annual Report Docket Nos. 19-666, 19-721, and 20-680	January 25, 2021
Xcel's IDP 2021 initial filing in docket no. E002/M-21-694	November 1, 2021
Commission Order Authoring Rider Recovery in Docket No. 19-721	December 10, 2021
Order Accepting Reports and Setting 2021 Reliability Standards issued in Docket No. E002/M-21-237	March 2, 2022
CUB Comments in Docket Nos. E,G-999/M-19-505 and E,G-999/CI-12-1344 p5	May 23, 2022
Commission Order Approving Tracker and Setting Additional Requirements, Otter Tail Power's Petition to Implement Electric Utility Infrastructure Cost Recovery Rider for Advanced Metering / Outage Management System / Demand Response System, Rate Schedule 13.11, Docket No. E017/M-21-382.	August 4, 2022
Commission <i>Order Declining to Adopt Guidance Document</i> in Docket Nos, 21-694, 21-390, 21-612, 21-728	October 14, 2022
Order Refining Open Data Access Standards in docket nos. E,G-999/M-19-505 and E,G-999/CI-12-1344	March 13, 2023

### AMI Evaluation in Other States

HI PUC Decision and Order no. 37507 filed in Docket no. 2018-0088 <a href="#">2018-0088.PBR_Phase-2-DO.Final_mk_12-22-2020.E-FILED.pdf (hawaii.gov)</a>	December 23, 2020
HI PUC Decision and Order no. 37787 issued in Docket no. 2018-0088 <a href="#">DocumentViewer (hawaii.gov)</a>	May 17, 2021
Ameren IL AMI Annual Update 2021 accessed <a href="#">Ameren Illinois Company Advanced Metering Infrastructure</a> and Commonwealth Edison Smart Grid Advanced Metering Annual Implementation Progress Report April 2021 accessed <a href="#">Commonwealth Edison Advanced Metering Infrastructure (illinois.gov)</a>	April 2021
Colorado Unanimous Comprehensive Settlement Agreement in Proceeding No. 21A-0279E.	February 18, 2022

### ACRONYMS

ADMS – Advanced Distribution Management System

AGIS – Advanced Grid Intelligence and Security

AMI – Advanced Metering Infrastructure

APT – Advanced Planning Tool or LoadSEER

CEUD - Customer Energy Use Data

DI – Distributed Intelligence

FAN – Field Area Network

FLISR – Fault Location, Isolation, and Service Restoration

HAN- Home Area Network

IDP – Integrated Distribution Plan

IVVO – Integrated Volt Var Optimization

MTEP - MISO Transmission Expansion Plan

PBR – Performance-based Ratemaking

PIMs – Performance Incentive Mechanisms

QSP—Quality of Service Plan

RECB - Regional Expansion Criteria and Benefits

SRSQ – Safety, Reliability, and Service Quality

TCR—Transmission Cost Recovery Rider

TOU – Time of Use

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### ISSUES FOR COMMISSION ACTION

At its May 4, 2023 Agenda Meeting, the Commission is tasked with deciding whether to approve the following:

- 1) Xcel’s Transmission Cost Recovery Rider Revenue Requirements for 2021-2022 for transmission-related components;
- 2) Xcel’s Transmission Cost Recovery Rider Revenue Requirements for 2021-2022 for Advanced Grid Intelligence and Security-related components;
- 3) the TCR Adjustment Factors proposed by Xcel; and
- 4) AGIS-related Performance Metrics, Cost Recovery, Reporting, and Future Filings

For issue 2, the Commission has been asked to consider potential cost caps and a true-up for Advanced Metering Infrastructure and Field Area Network costs. Staff has moved additional AGIS-related issues to a fourth issue; including performance evaluation and whether to establish additional standardized procedures for future grid modernization proposals. Staff offer these topics in this Volume 2 of briefing papers. The executive summary is presented in Volume One. Staff also provides a history of TCR issues and dockets in Attachment three. Decision options will be separated by volume with volume 2 options beginning at 201.

### DISCUSSION: AGIS-RELATED PERFORMANCE METRICS, COST RECOVERY, REPORTING, AND FUTURE FILINGS

Beyond the revenue requirement and adjustment factor for the current TCR rider decision and cost cap and true up mechanism for AGIS-related costs (Volume 1), parties offered recommendations that spoke to the Commission’s July 23, 2020 Order which conditioned future cost recovery for AMI and FAN on “accomplishing Commission-approved metrics and

performance evaluations for the certified projects (emphasis added).”<sup>1</sup> Key discussions on these topics took place during the Department’s stakeholder process to produce recommendations on “specific metrics, detailed methods for evaluating performance, and consumer protections or other conditions, including cost caps.”<sup>2</sup>

At the upcoming agenda meeting the Commission can consider three sets of metrics offered by the Joint Commenters (OAG, CUB, and Department). Staff has termed these: 1) performance evaluation metrics, 2) transparency metrics, and 3) narrative. Metrics were provided by the Joint Commenters. Metrics reflect the Department’s stakeholder process as they include metrics recommended in the Department’s December 1, 2020 report, metrics suggested by Fresh Energy, the OAG, and Xcel’s witness testimony. Xcel supports some of the Joint Commenter’s metrics and did not comment on the narrative. Thus, most of the metrics currently under consideration are supported by all who have commented in the instant docket.

The Commission must also choose a method of performance evaluation. Parties have recommended two pathways. The Commission may adopt the Joint Commenters’ recommendation that Xcel develop Performance Incentive Mechanisms (PIMs) to tie performance to cost recovery. This option would include collection of baseline data; setting performance targets; regular reporting; and penalties or incentives tied to performance. Alternatively, the Commission may select some of the elements from the first option (e.g. baseline data) or select reporting only. Per Volume 1, the Commission could pair either pathway with cost caps and / or revenue sharing. The parties’ positions on these options are shown in Table 1.

<b>Table 1.</b> Pathways to accomplish Commission-approved metrics and performance evaluations as well as consumer protections		
	<b>Joint Commenters</b>	<b>Xcel Energy</b>
<b>Cost Caps</b>	Yes. Based on lesser amounts from 2019 IDP / 2021 TCR Petition	Yes. Aggregate and based on current information
<b>Credit to Customers in the TCR</b>	Incremental cost savings or revenues from AMI and FAN returned in true-up	Applicable revenues from AMI and FAN realized by customers in rate setting process

<sup>1</sup> Projects certified because they are meant to meet goals of modernizing the distribution system by enhancing reliability, improving security, and increasing energy conservation opportunities, with special mention of doing so using two-way meters per Order Accepting Integrated Distribution Plan, Modifying Reporting Requirements, and Certifying Certain Grid Modernization Projects. Issued July 23, 2020 in docket no. E002/M-19-666 at 14; also quoting a category, two-way meters, explicitly included in Minn. Stat. § 216B.2425, subd. 2(e)

<sup>2</sup> Order Accepting Integrated Distribution Plan, Modifying Reporting Requirements, and Certifying Certain Grid Modernization Projects. Issued July 23, 2020 in docket no. E002/M-19-666 at ordering paragraph 9

<b>Reporting- Metrics</b>	Yes. Based on AMI and FAN quantitative benefits and others based on addtl. stated benefits	Largely accepts the Joint Commenters' metrics; sees as deployment and post-deployment phases
<b>Reporting- Narratives</b>	Yes.	No comment.
<b>Performance Incentive Mechanisms</b>	Yes. Xcel to contemplate and file.	No. PIMs would be inconsistent with prior Orders but if adopted, should be in PBR docket only.
<b>Baseline Data</b>	Support PIMs process; which, in docket no. 17-401 includes three years of baseline data.	Supports three years of baseline data and tying reporting back to anticipated benefits from 2022 Supplement CBA
<b>Performance Targets</b>	Yes. Based on AMI and FAN CBA	Not appropriate at this time.
<b>Penalties</b>	Yes. Xcel must propose two penalty options and details for each PIM.	No. But if chosen, should include incentives and penalties.

### **Department Report on Measurement and Evaluation**

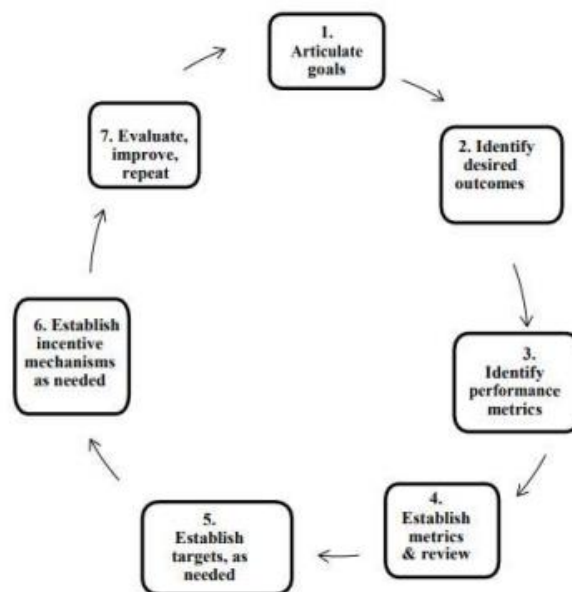
On August 20, 2020 the Department solicited input on the development of performance metrics for the recovery of AMI and FAN costs, including the appropriateness of metrics proposed in Xcel's witnesses' testimony and Fresh Energy's comments in the Company's Integrated Distribution Planning (IDP) proceeding (docket no. E002/M-19-666), customer protections, need for baseline data, targets, and alignment with other reporting dockets. The Department convened stakeholder meetings and opened a comment period. Efforts culminated in the Department's report filed December 1, 2020 in docket no. E999/DI-20-627. The Commission has not yet taken action on the Department's report. Staff presents discussions from the report and docket record below in the context of the record summary of the current docket (docket no. E002/M-21-814).

### ***PIM Process***

To develop metrics, CEE, Xcel, and the OAG supported use of a PIM model (Fig. 1), like used in the Commission's investigation into performance metrics and possibly incentives for Xcel Energy (docket no. E002/CI-17-401, sometimes called Performance Based Ratemaking (PBR)).<sup>3</sup>

<sup>3</sup> Comments filed in Docket No. E999/DI-20- 627; CEE on September 18, 2020; Xcel on September 25, 2020; OAG on October, 16 2020.



**Figure 1. PIM Process**

## Metrics

In its initial comments in the Department’s stakeholder process and report docket (E999/DI-20-627), Xcel maintained that the metrics proposed by its witnesses during its IDP proceeding were sufficient to monitor and assess performance on AMI and FAN projects.<sup>4</sup> Xcel again shared its witness’ metrics in its November 24, 2021 initial filing Attachment 4 in the instant docket; Xcel maintained that its witness’ metrics were sufficient for reporting (metrics indicated in Attachment 1 to Staff briefing papers).<sup>5</sup> The metrics offered by Xcel’s witnesses focused on 1) the benefits used in the Company’s Cost Benefit Analysis (CBA) which focused on short-term performance related to AMI/FAN installation and deployment and immediate-post-deployment metrics focused on use of AMI for meter-reading purposes, outage communications, and MyAccount access. Xcel also proposed 2) metrics related to customer surveys on the AMI deployment process and adoption of new products and services.

Alternatively, the metrics ultimately recommended by the Joint Commenters on November 16, 2022 in the instant docket were based largely on metrics discussed through the Department’s stakeholder engagement process in docket no. E999/DI-20-627 including Fresh Energy’s metrics<sup>6</sup>, built on Xcel’s witness’ metrics to ultimately measure customer outreach and education, installation and deployment, spending and avoided field visits, post-deployment,

<sup>4</sup> Xcel initial comments on Sept 25, 2020 in Docket No. E999/DI-20- 627 at 4. Witness testimony provided by Gersack, Bloch, Harkness, Cardenas, and Duggirala in Xcel Energy’s November 1, 2019 Integrated Distribution Plan, Attachments M1-M5.

<sup>5</sup> See Xcel Reply Comments filed October 30, 2020 in Docket Nos. E999/DI-20- 627, E002/M-19-666, E002/M-20-680 at 10

<sup>6</sup> Fresh Energy on Sept 25, 2020 in Docket No. E999/DI-20- 627.

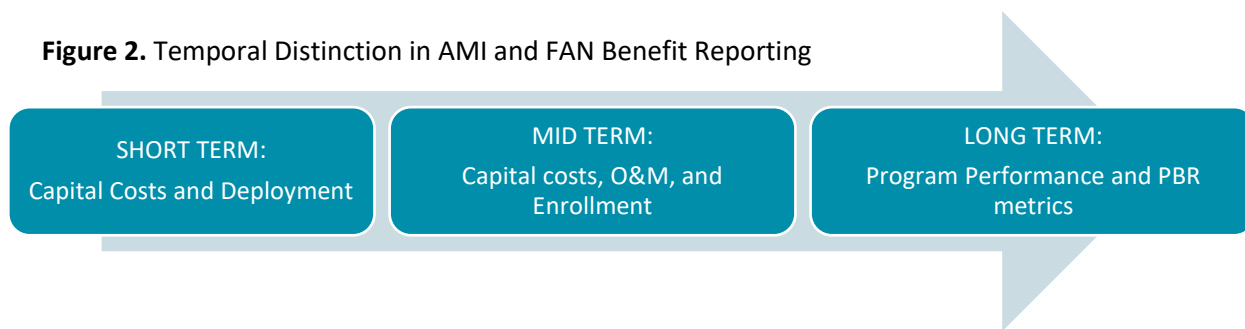
customer engagement, customer-site asset effectiveness, and others. Indeed, commenters like CUB for example, had found Xcel's witnesses' metrics "not sufficient" as they focused primarily on meter deployment<sup>7</sup> rather than programmatic outcomes dependent on use of meters.

However, later in Xcel's initial filing in the instant docket the Company agreed to report on most of the Joint Commenters' metrics.<sup>8</sup>

### ***Temporal Scope of Metrics***

In thinking about which benefits might be measured and reported on, CEE, Xcel, and Fresh Energy saw distinctions in short- vs. long-term benefits resulting from AMI investments.<sup>9</sup> In its report, the Department underscored this point, explaining that regular reporting, "could evaluate capital costs in early stages, capital and operations and maintenance costs mid-point, and to be considered jointly or potentially transition to the Performance Based Metrics [PBR] proceeding in the long-term."<sup>10</sup> CEE discussed the relationship to PBR further, stating that PBR would capture the high-level impacts of AMI investments.<sup>11</sup> See figure 2.

**Figure 2.** Temporal Distinction in AMI and FAN Benefit Reporting



However, the extent to which the functionality of meters and performance beyond deployment could be assessed is not agreed upon by commenters.

Early in the Department's stakeholder group to develop metrics Xcel stated, "it is unrealistic at this stage to expect the Company to know all the capabilities of these advanced meters, and it would be unreasonable to condition cost recovery on the achievement of such capabilities."<sup>12</sup> Xcel cautioned against metrics tied to specific, not-yet-developed programs and noted that the Company considered customer benefit as well as technology and market readiness in determining which programs would be offered and when.<sup>13</sup>

<sup>7</sup> CUB Comments filed on October, 16 2020 in Docket No. E999/DI-20- 627 at 4

<sup>8</sup> Xcel initial filing made November 24, 2021 in docket no. E002/M-21-814 Attachment 4 page 89.

<sup>9</sup> CEE Comments filed September 18, 2020 at 2 and Fresh Energy on Sept 25, 2020 in Docket No. E999/DI-20- 627. Xcel's IDP 2021 initial filing in docket no. E002/M-21-694 Appendix B2.

<sup>10</sup> Department report filed December 1, 2020 in docket no. E999/DI-20-627 at 30

<sup>11</sup> CEE Comments filed September 18, 2020 at 2

<sup>12</sup> See Xcel Reply Comments filed October 30, 2020 in Docket Nos. E999/DI-20- 627, E002/M-19-666, E002/M-20-680 at 11

<sup>13</sup> Comments, Xcel filed on September 25, 2020 in Docket No. E999/DI-20- 627 at 14

More recently the Company considered the timing at which certain elements of meter deployment and programs could be measured. As noted in its CBA:

[M]ost benefits were not projected to begin accruing until 2024. Accordingly, Attachment A [the Company's CBA for AMI & FAN] reflects a plan under which we would begin by reporting on up to 31 deployment-related data points in 2023, and then begin post-deployment reporting on up to 19 items beginning in 2025 and continuing quarterly (including an annual report) for three years.<sup>14</sup>

...

However, we note that while we can and do report items such as distribution O&M and capital spending in rate cases and IDPs, the reporting we would do for this as it relates to our AMI and FAN implementation will be estimates that use the same basis as our benefit assumptions used in the CBA. We do not have specific tracking mechanisms, and even if it were practicable to establish specific tracking, doing so would be administratively burdensome.<sup>15</sup>

The OAG interpreted Xcel's comments to mean Xcel has no way to prove AMI benefits will materialize, because the Company can only report estimates, but then even if the Company could prove the benefits, doing so would be too burdensome. The OAG concluded that the Company should be held accountable to what it promised in rate case testimony<sup>16</sup> by tracking quantifiable benefits of AMI and FAN to ensure benefits materialize and should explain why any benefits do not materialize.<sup>17</sup>

In considering if promised benefits materialize, groups like CUB for example, stated that the issue before Commission was one of risk management. CUB stated that many AGIS-type projects run over projected costs and many fail to capture full range of AMI capabilities and customer-facing benefits.<sup>18</sup> In the instant docket, the OAG highlighted this same risk:

Rather than being essential to delivering basic utility service, the value proposition of AMI and FAN depends on these investments' ability to deliver operational efficiencies along with new features and applications for customers. Furthermore, because these are new technologies, there is a greater risk that unforeseen issues may cause their costs to exceed Xcel's estimates.<sup>19</sup>

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<sup>14</sup> Xcel replies filed November 16, 2022 in docket no. E002/M-21-814 at 9

<sup>15</sup> Xcel replies filed November 16, 2022 in docket no. E002/M-21-814 at 56-57

<sup>16</sup> Also included in Xcel's IDP initial filing 04 IDP Atts M3-Q4 Docket No. E002/M-19-666 on November 1, 2019 at Att. M5 beginning p7 with quantitative input discussion beginning Attachment M5 - Page 24 of 161.

<sup>17</sup> Comments, OAG, on Oct 17, 2022 in docket no. E002/M-21-814 at 11 &13. OAG quotes Xcel's supplemental filing made August 17, 2022 in docket no. E002/M-21-814 at 57. OAG believes benefits should be tied back to promises made in rate case testimony, see OAG Comments filed on October, 16 2020 in Docket No. E999/DI-20- 627.

<sup>18</sup> Comments, CUB filed October 16, 2020 in Docket No. E999/DI-20- 627

<sup>19</sup> Comments, OAG, on Oct 17, 2022 in docket no. E002/M-21-814

Similarly, the Department's report argued that if future benefits and functionality are unknown, customers should not bear all the risk of the cost of the asset.<sup>20</sup>

### ***Staff Interpretation***

The disagreement over what can and should be measured may stem from the fact that when Xcel petitioned for certification of AMI and FAN it outlined the full scope of benefits available through its investment in AMI and FAN (see Table 2). However, the metrics suggested by Xcel's witnesses represent what the Company can do with its meters with the money it is currently seeking to recover. In this way, the Company's estimates for when various functionalities would be rolled out could perhaps also be seen as a timeline as to when additional funding will be needed to realize those functions.

**Table 2.** Product and Service Roadmap August 17, 2022<sup>21</sup>

Day One (2022)	Near-Term (through 2025)	Future (2025+)
<ul style="list-style-type: none"> <li>• Energy Usage Dashboard</li> <li>• Enhanced Web and Mobile Apps</li> <li>• Energy Usage Alerts and Notifications</li> <li>• Green Button Connect My Data</li> <li>• Enhanced Communication Options with Behind the Meter Systems (HAN)</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced Outage Notifications</li> <li>• Emergency and Safety Notifications</li> <li>• Personalized Notifications</li> <li>• Power Quality Analysis</li> <li>• Whole Facility Monitoring</li> <li>• Rate Advisor</li> <li>• Time Varying Rates</li> <li>• Virtual Energy Audits</li> <li>• Demand management optimization</li> <li>• Enhanced access to battery storage and electric vehicles</li> <li>• Green notifications and controls</li> <li>• Enhanced DER detection and enablement</li> </ul>	<ul style="list-style-type: none"> <li>• Artificial Intelligence Enabled Notifications</li> <li>• Smart Premise Restoration</li> <li>• Enhanced Microgrid Integration</li> <li>• Smart Safety Disconnect</li> <li>• Enhanced Automated Demand Response</li> </ul>

When considering measurement of additional meter functionality, the Company explained that it provided a separate CBA that included DI with AMI and FAN, the above analyses were separate from DI. Per filings in its current rate case (E002/GR-21-630) and indicated in its supplemental filing, "While the Riva 4.2 meters have built-in DI capabilities, we have and continue to seek cost recovery of AMI and FAN separate from DI."<sup>22</sup>

<sup>20</sup> Department of Commerce Report "Methods for AMI and FAN Performance Evaluations, Metrics, and Customer Protections" December 1, 2020 in Docket No. E999/DI-20- 627 at 16

<sup>21</sup> Xcel Supplemental Filing August 17, 2022 in Docket No. E002/M-21-814 at 21. Table explained in Xcel's 2021 IDP in Docket No. E002/M-21-694 Appendix B2 at p8, The AMI-enabled Customer Product and Service Roadmap.

<sup>22</sup> Xcel supplemental filing August 17, 2022 in docket no. E002/M-21-814 at 54.

The Company may expect to bring new uses for AMI/DI before the Commission as separate projects. The Company stated, “while the benefits identified in the CBA may serve as a roadmap of future benefits, some may be tied to the development of specific programs or services in the future. As such, the appropriateness or need for any metrics associated with those, as well as the specifics associated with measurement should be determined as those programs or services are proposed or committed.”<sup>23</sup> In the Company’s rate case the Commission may wish to consider the process by which the Company will gain permission to use technologies enabled by AMI/DI and FAN (see Xcel’s Colorado Settlement in Attachment 5).

Therefore, it appears that while the Company explained the entirety of the meters’ functionality in its previous filings, it intended only to utilize the most basic of those functionalities with current funding. The Company may seek additional funding to further develop the capabilities of its meters. Thus, the Company envisions metrics related to programming would also be developed in future proceedings.

### **Performance Evaluation**

In addition to approval of metrics, the Commission’s July 23, 2020 Order also suggested AMI and FAN cost recovery would be based on performance evaluation. To evaluate performance, the Joint Commenters recommended development of Performance Incentive Mechanisms, using the PIM Design Process outlined in Docket No. E002/CI-17-401 and suggested a set of Performance Evaluation metrics and targets (Table 3). Xcel agrees that the PIMs framework, “provides helpful and important guidance to development of performance standards, metrics and incentives.”<sup>24</sup> However, in its most recent filing, the Company stated that the PIMs being suggested in this proceeding are unnecessary, not required by previous Commission Orders, and do not comport with the Commission’s PBR process. The Company asserted that previous Orders, “did not state that achievement of targets would be required for cost recovery.”<sup>25</sup> The Company concluded its position by stating that if the Commission does intend to pursue PIMs, it should do so in the PBR docket and consider both performance incentives and penalties.

Thus, the Commission must contemplate what it means to evaluate. Specifically, does evaluation require predetermined analysis of reported data through comparisons to baseline data and / or targets and does basing cost recovery on metrics and performance evaluations require the use of baselines, targets, incentives and / or penalties?

### **Baseline Data**

Xcel, OAG, and Fresh Energy supported gathering baseline data. However, as Fresh Energy noted, the metrics proposed by Xcel’s witnesses in 2019 IDP testimony lacked baseline data. Fresh Energy recommended the Commission require Xcel to establish baselines; while the OAG

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<sup>23</sup> Comments, Xcel, Sept 25, 2020 in Docket No. E999/DI-20- 627 at 10

<sup>24</sup> Comments, Xcel, Sept 25, 2020 in Docket No. E999/DI-20- 627 at 8

<sup>25</sup> Replies, Xcel, November 16, 2022 in Docket No. E002/M-21-814 quotations in this sentence and previous at 9

recommended Xcel start reporting data immediately so the Commission can establish baselines. Xcel suggested that three years of baseline data would be appropriate to allow room for “natural variations in performance” (three years, Staff notes, is consistent with the timeline set in the Company’s PBR docket).<sup>26</sup> See **Decision Option 208**.

However, in its most recent filing Xcel, found lack of clarity as to whether, “all the proposed metrics and targets can be tracked, and even if they can, what an appropriate baseline would be given that the “targets” are based on a cost-benefit analysis and future scenario that will not occur.”<sup>27</sup>

### ***Targets***

Considering targets, Staff again notes that Xcel stated in its most recent filing, “[w]hile the Commission’s prior Orders provided for reporting requirements, they did not state that achievement of targets would be required for cost recovery.”<sup>28</sup> Conversely, the Joint Commenters created targets for the performance metrics based on the quantifiable benefits that the Company identified in its benefit-cost analysis of the AMI and FAN investments and recommend the Company create interim performance targets for each of the performance metrics where targets are not yet defined (**Decision Options 202 and 209**).

### ***Penalties or Incentives***

Both the OAG and Fresh Energy mentioned either the use of penalties or incentives to increase the likelihood that customer benefits materialize. But the OAG did note, “[a] mechanism that only awards incentives would be inequitable because the AMI and FAN investments already represent a net cost to ratepayers before factoring in the cost of any incentives.”<sup>29</sup> Similarly, after filing its report, the Department stated that only penalties should be used, “since the Company already has an incentive in achieving its return on capital investments. These PIMs will function to hold the Company accountable to the expected performance and benefits indicated by the Company in its petition for these investments.”<sup>30</sup>

In setting penalties or incentives, the OAG recommended waiting to evaluate the need until after at least a year of data collection, allowing time to review baseline performance data and trends, following the PIM process.<sup>31</sup> CEE believed the incentives / penalties would be more appropriate for the Company’s performance metrics docket (E002/CI-17-401) and would focus on utility performance, broadly.<sup>32</sup> The OAG saw a distinction that long-term benefits would be

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<sup>26</sup> Comments, both Xcel and Fresh Energy filed comments on Sept 25, 2020 in Docket No. E999/DI-20- 627; Xcel quotation at 9. OAG comments filed October 16, 2020 in Docket No. E999/DI-20- 627.

<sup>27</sup> Replies, Xcel, November 16, 2022 in Docket No. E002/M-21-814 at 2

<sup>28</sup> Replies, Xcel, November 16, 2022 in Docket No. E002/M-21-814 at 9

<sup>29</sup> OAG Comments filed on October, 16 2020 in Docket No. E999/DI-20- 627 at 14

<sup>30</sup> Department Comments October 17, 2022 Docket Nos. E002/M-20-680 and E002/M-21-814 Attachment 1 p11

<sup>31</sup> OAG comments filed October 16, 2020 in Docket No. E999/DI-20- 627.

<sup>32</sup> Comments filed in Docket No. E999/DI-20- 627; CEE on September 18, 2020.

captured in PBR and that reporting in the instant docket should be used to ensure short-term benefits were realized.<sup>33</sup>

Xcel does not support the use of penalties but noted that, “[t]o the extent the Commission does require the establishment of PIMs for these investments, those PIMs should not be one-sided penalties as proposed by the Department, OAG, and CUB. The imposition of PIMs in general, and particularly such an approach to PIMs, would *disincentivize* utilities from investing in grid modernization.”<sup>34</sup> Xcel was non-committal as to what action might be taken if benefits do not materialize and stated, “We are committed to maximize the AMI and FAN technologies for the benefit of our customers. However, delays or changes to plans for customer programs and services could occur for many reasons, some of which we can control and some that we cannot.”<sup>35</sup>

### **Xcel’s Stated Benefits of AMI and FAN**

Parties agree that the metrics used to evaluate Xcel’s AMI and FAN performance should be based on the purported benefits of AMI and FAN, including Xcel which, is “largely in alignment with the AMI- and FAN-related metrics that have been proposed [in the Department’s December 1, 2020 report]”<sup>36</sup>. However, parties disagree on *which* benefits should be evaluated for cost recovery. Below Staff summarizes Xcel’s stated AMI benefits.

#### ***Customer-facing benefits***

Xcel’s initial filing stated that customer experience would be improved through education and data to control energy usage which, and in some part would be incentivized through use of new rates. New data would assist the Company with energy conservation and faster outage response. Xcel expanded on customer benefits in supplemental comments.<sup>37</sup> With respect to data, Xcel first described how AMI would provide usage feedback- online data provided in 15-minute intervals, usage alerts and potential to share data with third parties via Green Button Connect- and data disaggregation to assign energy usage to unique personal devices. More, the Company explained that the Company could connect to energy generation or storage devices in customer’s home. Finally, this information would facilitate time varied pricing and rates.

#### ***Grid-facing benefits***

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<sup>33</sup> OAG Comments filed October 16, 2020 in Docket No. E999/DI-20- 627 and E002/M-20-680 at 11

<sup>34</sup> Xcel replies filed November 16, 2022 in docket no. E002/M-21-814 at 2.

<sup>35</sup> Xcel comments made September 25, 2020 in docket no. E999/DI-20-627 at 16

<sup>36</sup> Xcel initial filing made November 24, 2021 in Docket No. E002/M-21-814. Att. 4 at 89 of 97.

<sup>37</sup> Xcel Supplemental Comments filed August 17, 2022 into Docket no. E002/M-21-814. Note, Synapse’s review for the Department concluded that the filing had complied with Commission requirements for functional information on FAN and AMI proposed investments as well as descriptions of quantitative and qualitative benefits of those investments.



The Company again highlighted its ability to respond more quickly to outages and thus reduce outage duration. The Company also stated it would be able to proactively identify and address both issues of high or low voltages (power quality) and deteriorating or loose connections (high impedance connections) without need for a customer report of a suspected issue, as is current practice. Indeed, remote capabilities would allow for adaptation- to growth and in response to advances in meter technology, including security, and programs- as well as for updates, responsiveness to align generation to load, and meter reading. Remote work, including disconnections and reconnections, would save time and money on field visits and reduce unsafe interactions for meter readers and technicians. Themes of adaptation and cost and time savings are also seen in the stated benefits of stream-lined billing practices and lower bills as well as flexible technologies that would allow for interoperability with other technologies and systems.

### ***Connections***

Xcel stated that AMI and FAN would facilitate connections that would bring understanding of when and where EVs are charging, for use in planning and EV rates, as well as to other meters and transformers to ground-truth GIS data on AMI. The Company's required roadmap (Table 2 above) shows benefits that are expected to materialize.<sup>38</sup>

### **Recommended Metrics Compared to Xcel's Filings**

Several iterations of metrics to evaluate AMI and FAN performance for cost recovery have been proposed: Xcel's 2019 IDP; the Department's investigation in docket no. E999/DI-20-627, and the instant docket. All<sup>39</sup> metrics have coalesced in the Joint Commenters' (Department, OAG, and CUB) November 16, 2022 recommendations. The two tables shown in Attachment 1 to these briefing papers, which are referenced and reproduced throughout the document, show two sets of the Joint Commenters' metrics; narrative metrics shown in **Decision Option 203**. These are the metrics the Commission will need to review and determine their appropriateness for use in evaluation of Xcel's performance related to AMI and FAN and potentially, for some metrics, for use as the basis of cost recovery.

### ***First Set of Metrics: Transparency***

The first set of metrics are what Staff has termed Transparency Metrics; these are shown in Attachment 1 Table 2. These are reporting-only metrics; a subset is proposed for use in

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<sup>38</sup> Order Accepting Integrated Distribution Plan, Modifying Reporting Requirements, and Certifying Certain Grid Modernization Projects issued July 23, 2020 in docket no. E-002/M-19-666, Ordering Paragraph #12 Requiring Roadmap

<sup>39</sup> All apart from one recommendation. "Avoided distribution capital costs due to reduced peak load from time-varying rate programs" was mentioned in the Department's December 1, 2020 report and Fresh Energy's September 25, 2020 comments both filed in in docket no. E999/DI-20-627 but was not included in metrics.



determining Xcel's cost recovery, see below. Transparency metrics were most recently filed by the Joint Commenters but as mentioned earlier, are nearly the same as the metrics recommended in the Department's report which, are "a summary of Xcel's, CUB's, and Fresh Energy's proposed metrics. The Department found this collective list a reasonable list of metrics to use as a baseline for setting metrics at the time of the Initial AMI/FAN Cost Recovery Proceeding."<sup>40</sup>

### ***Second Set of Metrics: Performance Evaluation***

The second set of metrics is shown below (Table 3) as well as in Attachment 1 Table 1. Staff has termed them the Performance Evaluation Metrics. The performance evaluation metrics are a subset<sup>41</sup> of the transparency metrics. The Joint Commenters stated that these metrics and targets, "are based upon the quantifiable benefits that the Company identified in its benefit-cost analysis of the AMI and FAN investments, and should serve as the basis for evaluating the ongoing performance and cost recovery request of the Company's AMI and FAN investments."<sup>42</sup> None of the metrics proposed by Xcel's witnesses' testimony are included in the performance evaluation metrics; thus, cost recovery would not be based on deployment.

<b>Table 3. Comparison of Performance Evaluation Metrics to Stated Benefits</b>				
<b>#</b>	<b>Joint Commenters' Performance Evaluation Metrics</b>	<b>Target</b>	<b>Xcel's Response to Reporting in 21-814 petition</b>	<b>AMI / FAN-enabled Benefits<sup>43</sup> this Metric would likely reflect</b>
A	Capital and O&M \$ spent on Asset Health and Reliability projects and Capacity projects	1% ↓	<i>No. Unrelated to AMI / FAN. Reported in IDP</i>	CAP Distribution System Management Efficiency Proactive action to address power quality and high impedance Interoperability Avoided capacity projects via ability to align generation and load Enhanced access to storage

<sup>40</sup> The Department report filed December 1, 2020 in Docket No. E999/DI-20-627 at 29.

<sup>41</sup> Performance evaluation metrics are a subset of the transparency metrics. However, "increase in retail revenue from reduced tamper / theft" and avoided CO2 emissions are both performance evaluation metrics but are not listed in transparency metrics, per the Joint Commenter's November 16, 2022 filing in docket no. E002/M-21-814.

<sup>42</sup> Joint Commenters filed Nov 16, 2022 in Docket Nos. E002/M-20-680 and E002/M-21-814, p3 Decision Option 3 quoted text.

<sup>43</sup> Per Xcel's Supplemental Comments filed August 17, 2022 and its Initial Petition filed November 24, 2021, both in Docket No. E002/M-21-814 as well as in the Company's IDP filed in Docket No. E002/M-19-666. As Xcel did not directly link benefits to metrics, this column was determined by Staff.

<b>Table 3. Comparison of Performance Evaluation Metrics to Stated Benefits</b>				
#	Joint Commenters' Performance Evaluation Metrics	Target	Xcel's Response to Reporting in 21-814 petition	AMI / FAN-enabled Benefits <sup>43</sup> this Metric would likely reflect
				Virtual energy audits & Facility monitoring
B	Capital \$ spent on storm recovery	10% ↓	<i>No. Unrelated to AMI / FAN. Reported in IDP</i>	CAP Outage Management Efficiency Outage reductions Faster outage response
C	O&M \$ spent on storm recovery	0.1% ↓	<i>No. Unrelated to AMI / FAN. Reported in IDP</i>	O&M Outage Management Efficiency Outage reductions Faster outage response
D	\$ spent on meter replacement due to failure	?	annual	CAP Avoided Meter Purchases & investment of alt. meter reading system
E	Field trips due to customer equipment damage	50% ↓	annual	Cost savings with internal repairs O&M reduction in field and meter services, incl meter reading Staff safety Remote updates
F	Percent of disconnects done remotely	70% remote	annual	Cost savings Staff safety
G	Percent of reconnects done remotely	95% remote	annual	Cost savings Speed of reconnection Staff safety
H	"Ok on arrival" outage field visits	50% ↓	annual	O&M reduction in field and meter services, incl meter reading Staff safety Faster outage response
I	Usage on unassigned accounts	20% ↓	annual	Other reduced consumption inactive premise Cost Savings- billing
J	\$ of bad-debt write-offs	8% ↓	<i>future</i>	Other uncollectible / bad debt Cost Savings- billing
K	Increase in retail revenue from	?	<i>No comment.</i>	Other reduction in energy theft Cost Savings

<b>Table 3. Comparison of Performance Evaluation Metrics to Stated Benefits</b>				
#	Joint Commenters' Performance Evaluation Metrics	Target	Xcel's Response to Reporting in 21-814 petition	AMI / FAN-enabled Benefits <sup>43</sup> this Metric would likely reflect
	reduced tamper / theft			Staff safety
L	Customer energy price savings due to time-of-use (TOU) rates	?	<i>potential future-already part of PBR</i>	Other TOU Customer price signals Usage Feedback Time-Variied Pricing & Rates Bill savings Enhanced demand response
M	Avoided tons of CO2 emissions due to TOU rates	4,500 ↓ tons/yr.	<i>No comment.</i>	Other Reduced CO2 Emissions Energy Conservation
N	Customer savings due to critical peak pricing (CPP)	?	<i>potential future-already part of PBR</i>	Other critical peak pricing Usage Feedback Time-Variied Pricing & Rates Bill savings Enhanced demand response

\*Reduction shown in column two with down arrow (↓); metrics "undefined" shown with "?" Italicized font used to show which metrics Xcel would not report right now / no comment.

### ***Additional Reporting Recommendations***

Finally, the Department, and more recently CUB, recommended reporting narrative elements. The Department's requested narrative element<sup>44</sup> mirrored annual ADMS reporting while CUB's more recent recommendations built on the Department's.<sup>45</sup> The Joint Commenters' final narrative reporting (also shown in **Decision Option 203**):

- a. Narrative description of AMI and FAN developments, including
  - a. comprehensive account of all functionalities achieved and any changes to functionality or potential future uses;
  - b. the Company's plan and scope for implementation in the upcoming year; and
  - c. Implementation and integration status of related information technology systems in comparison to the Company's plans and scope.
- b. Description and explanation of any AMI or FAN functionalities that have been disabled and the number of impacted meters;

<sup>44</sup> The Department report filed December 1, 2020 in Docket No. E999/DI-20-627.

<sup>45</sup> Comments, CUB, on Oct 17, 2022 in docket no. E002/M-21-814

- c. Revenue-generating opportunities identified or engaged that relate to the use of AMI, FAN, or the use of associated data or distributed intelligence technologies;
- d. All entities with whom the Company shares AMI data; and e. Any metrics derived from the quantitative benefits assumed in Xcel's benefit-cost analysis of the AMI and FAN projects that are not represented in [Attachment 1, Table 2] below.

Xcel did not comment on requested narratives but did respond to proposed performance evaluation and transparency metrics. Xcel explained which metrics it could report on and at what frequency as well as metrics that were potential future metrics and those that it felt were out of scope for AMI / FAN and/or were reported elsewhere, like in IDP proceedings.<sup>46</sup> Staff captured this information in Table 3 above and Attachment 1, Table 2. The Commission will need to determine which metrics will be used in reporting and performance evaluation using **Decision Options 203-205**.

### Performance Incentive Mechanisms

Parties have largely been discussing the same set of metrics since the Department held workshops and filed its December 1, 2020 report in docket no. 20-627.<sup>47</sup> However, the report was silent on a mechanism by which to evaluate Xcel's performance beyond the filing of annual reports that, "could be used as a data point in any adjunct cost recovery request to evaluate capital costs in early stages, capital and operations and maintenance costs mid-point, and to be considered jointly or potentially transition to the Performance Based Metrics proceeding in the long-term."<sup>48</sup> Likewise, the OAG recommended that at a minimum, the Company track and report on metrics, as doing so will likely in itself have a positive impact on performance.<sup>49</sup>

The Joint Commenters offered a different path to base cost recovery on performance. In addition to reporting, the Joint Commenters recommended that in its next TCR rider proceeding, Xcel be required to propose PIMs for each performance target, using the PIM Design Process outlined in Docket No. E002/CI-17-401, including (**Decision Option 210**):

1. PIM structure
2. The dates when the PIMs will take effect and terminate
3. The penalty associated with each PIM
4. Specific mechanisms for effectuating a penalty that include:
  - Option A: calculating the penalty as a proportion of the incremental costs of the proposed investments compared to the least-cost alternative
  - Option B: calculating the penalty as a proportion of the return on these incremental costs.

<sup>46</sup> Xcel initial petition November 24, 2021 docket no. E002/M-21-814 Attachment 4 pages 91-97

<sup>47</sup> See the inadvertently-late-filed appendix to the Department's December 1, 2020 report filed March 15, 2022 Appendix E, in docket no E999/DI-20-627 and in E002/M-19-666.

<sup>48</sup> The Department report filed December 1, 2020 in Docket No. E999/DI-20-627 at 30.

<sup>49</sup> Comments filed in Docket No. E999/DI-20- 627 OAG on October, 16 2020

5. Evaluating the above performance targets annually, as is done in PBR.

The OAG considered how a PIM might function; the Commission could, “establish a base-level rate of return for rider investments that would be decreased for performance below a set goal and increased for performance substantially above the goal, up to some maximum return. The maximum return could be the Company’s authorized rate of return, and the base return could be some lower rate deemed reasonable for rider projects because of their lower investment risk, such as the Company’s weighted cost of debt.”<sup>50</sup>

Xcel responded that it was not made aware of the Joint Commenter’s recommendation to establish PIMs prior to the filing and thus, it did not have time for a detailed response to the Joint Commenters, but did state:<sup>51</sup>

Given the establishment of cost caps, and the requirement to return revenue from AMI and FAN to customers, PIMs related to these investments are unnecessary, and imposing PIMs at this time on this record would conflict with Commission precedent regarding performance-based ratemaking

...

The imposition of PIMs in general, and particularly such an approach to PIMs, would disincentivize utilities from investing in grid modernization, and would conflict with the Legislature’s clear goal of incentivizing grid modernization investments, as reflected in Minn. Stat. §§ 216B.16, Subd. 7b and 216B.2425.

Thus, another matter for the Commission to decide, after selecting metrics, will be to select the mechanism by which those metrics will be evaluated to serve as the basis for cost recovery. The Commission can choose to have

- Reporting only with **Decision Option 201 and 203-205**
- Comment periods on annually reported data with **Decision Option 206**
- Collecting baseline data with **Decision Option 208**
- Setting performance targets with **Decision Option 209**
- Development of penalties or incentives for under- or exceptional performance (PIMs) with **Decision Option 202 and 210.**
- As discussed in Volume 1, cost caps and revenue sharing.

<sup>50</sup> Comments filed in Docket No. E999/DI-20- 627 OAG on October, 16 2020 at 14

<sup>51</sup> Xcel Nov 16, 2022 DOCKET NOS. E002/M-20-680 & E002/M-21-814 Reply Comments at 2. Per the Notice issued by the Commission on August 22, 2022 in E002/M-21-814, replies closed November 16, 2022.

### Timing of Reporting

The Department's report stated that stakeholders have supported Xcel's framework to provide annual AMI and FAN progress reports.<sup>52</sup> The Department envisioned the annual report could be used as a basis for cost recovery. In addition to annual reports, Fresh Energy, CUB, and the Department support quarterly progress reporting on timelines, forthcoming filings, and AGIS-enabled programming. Fresh Energy specifically recommended,

... that performance is tracked through quarterly reports and evaluated annually in the cost recovery proceeding. It is appropriate for the Commission to consider prior performance when evaluating a subsequent request for cost recovery, and if needed, establish additional customer protections, more frequent reporting, or more stringent metrics. For example, if Xcel is granted cost recovery in 2021 for 25% of the current budget for AMI installation, and after one year has installed significantly less than 25% of the AMI project, the Commission may need to re-evaluate the cost-benefit analysis previously provided and whether sufficient consumer protections and/or performance incentives are in place.<sup>53</sup>

Xcel has agreed to some annual and quarterly reporting as shown in Table 8, above, and in Attachment 1 Table 2; metrics which Xcel has said it would not report are discussed in the Staff analysis.

The Department's report also advocated for a synchronization of annual reporting, or alignment with regular reporting, for information related to the following:

- Advanced Data Management System (ADMS)
- Advanced Grid Infrastructure Annual Report
- Integrated Distribution Plan
- Hosting Capacity Analysis Report
- Demand Response Annual Report
- Transmission Cost Recovery Riders
- Potentially other dockets

The Department further suggested consolidation "under the heading of the IDP or other type of collective, or use the Advanced Grid Infrastructure Annual Report to simply track all of Xcel's advanced grid-related products, services, and related proceedings, as appropriate."<sup>54</sup> The Commission can decide reporting schedules and alignment with **Decision Option 211**.

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<sup>52</sup> Report, Department of Commerce filed December 1, 2020 in docket no. E999/DI-20-627 at 30

<sup>53</sup> Fresh Energy comments filed September 25, 2020 in docket no. E999/DI-20-627 at 10.

<sup>54</sup> Report, Department of Commerce filed December 1, 2020 in docket no. E999/DI-20-627 at 31

## Standards for Future Cost Recovery

In their comments, CUB stated:

It has been unclear to CUB precisely which questions would be taken by the Commission at each stage of this process, and we have, at times, spent substantial time on analysis that were apparently not helpful to the Commission at the times it was presented...Further, full participation in these proceedings requires expertise that CUB- and, we believe, most other parties- does not have in house. We have engaged outside experts, when possible, but that is resource intensive and is particularly difficult when the timing and scope of proceedings are unclear.<sup>55</sup>

CUB encouraged the Commission to develop clear criteria for evaluating future grid modernization and cost recovery proposals and certification requests in IDPs. In the Department comments, Synapse recommended the Commission implement additional requirements for grid modernization filings including a detailed grid modernization investment roadmap, a complete accounting of all historical grid modernization costs and anticipated future costs, and a table with all filing requirements and where the requirement is addressed in the filing.<sup>56</sup>

In its reply comments, Xcel contested Synapse's recommendation for instituting additional filing requirements for grid modernization investment filings and stated the TCR Rider process is already a suitable venue for such consideration and is consistent with the Legislature's intent. The Company stated that they are aware the Department is intending to open an investigation to address consideration of utility grid modernization investments and that they would engage constructively with other stakeholders in the process should this occur.<sup>57</sup>

In their reply comments, the Joint Commenters recommended that in Xcel's next IDP proceeding, the Company would address the following in its initial filing (**Decision Option 213**):

- a. Should the Commission establish standard procedures for reviewing utility grid modernization proposals and cost recovery petitions and if so, what should those procedures be?;
- b. Should the Commission require utility grid modernization proposals to adhere to standardized filing requirements and if so, what should those filing requirements be?;
- c. Should the Commission establish formal criteria for evaluating certification requests in Integrated Distribution Plan proceedings and if so, what should those criteria be?; and

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<sup>55</sup> CUB Comments filed October 17, 2022 into Docket 21.814, at 10

<sup>56</sup> Department Comments filed October 17, 2022 into Docket No. 21-814, Synapse Attachment at 11. Staff notes: This proposal was also filed in Xcel's current rate case (E002/GR-21-630)

<sup>57</sup> Xcel Reply Comments filed November 16, 2022 into Docket No. 21-814, at 10

- d. Should the Commission establish a timeline for reviewing the prudence of projects in certifies in Xcel's IDP and if so, what should that timeline be?<sup>58</sup>

### STAFF ANALYSIS

The Commission's July 23, 2020, Order required all future cost recovery for AMI and FAN to be based on "accomplishing Commission-approved metrics and performance evaluations for the certified projects."<sup>59</sup> While basing cost recovery on the Company's performance was novel treatment for grid modernization projects in the TCR rider, monitoring performance and potentially tying compensation to that performance is not new Commission practice nor is it new in the context of AMI in other states. The Commission may look to existing practices to settle disagreements on what metrics should be used to evaluate Xcel's performance as well as the mechanism by which cost recovery would be based on performance.

Staff's ultimate recommendation is that the Commission require reporting from Xcel as shown in Attachment 1, Tables 1 and 2; that Xcel provide existing data to serve as a baseline; that Xcel review performance against those baselines and potentially targets. When Xcel files annual AMI and FAN data, stakeholders could weigh in on those data and determine the need for performance to be met with penalties or incentives. The Commission could require Xcel to provide an appropriate penalty or incentive, modeled after the OAG's recommendation<sup>60</sup> and the work of the Hawaii Commission (**Decision Option 210e**). Alternatively, the Joint Commenters offer a path to evaluate performance using PIMs. In this analysis, Staff first summarizes what the Commission will need to decide at its upcoming agenda meeting and then, Staff explains the analyses that led to Staff's recommendation.

1. **Metrics-** commenters mostly agree on the transparency, performance evaluation, and narrative metrics. However, if the Commission wishes to proceed with a set of metrics, determinations on additional metrics and the metrics Xcel said it cannot report or reports elsewhere is necessary. To assist the Commission's decision-making, Staff provides the following analysis:

- Summary of how the Commission has approached cost recovery for previous grid modernization projects to invite consideration of where previous approaches overlap and can guide reporting and performance evaluation in this proceeding (see also Attachments 2 and 6);

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<sup>58</sup> Joint Commenters Reply Comments filed November 16, 2022 into Docket No. 21-814, at 5-6. Staff Note: Filed after the Commission's October 14, 2022 Order Denying to Adopt Guidance Document in Docket Nos. 21-694, 21-390, 21-612, 21-627.

<sup>59</sup> Order Accepting Integrated Distribution Plan, Modifying Reporting Requirements, and Certifying Certain Grid Modernization Projects issued July 23, 2020 in docket no. E002/M-19-666.

<sup>60</sup> Comments filed in Docket No. E999/DI-20- 627 OAG on October, 16 2020 at 14



- How proposed metrics align or do not align with the benefits Xcel promised from AMI and FAN to assist the Commission in determining if additional metrics should be considered in evaluating performance for cost recovery or in other dockets; and,
- Work of other States for the Commission to gauge where practices may be transferable (see Attachment 5).

2. **Cost recovery and performance-** Xcel does not see the need for PIMs if reporting, cost caps, and revenue sharing are what is required. Conversely, the Joint Commenters offered a PIM proposal for connecting cost recovery to performance evaluation. The Commission will need to determine what fulfills its requirement to base cost recovery upon Xcel accomplishing Commission-approved metrics and performance evaluations.

To evaluate performance, Staff believes baseline data are necessary; parties agree on the collection of baseline data though Xcel cautions appropriate baselines may not be available for all metrics.<sup>61</sup> The Commission will need to determine if and how to collect baseline data. The Commission will also need to consider if setting targets for performance is appropriate. Finally, if a PIMs process is required, parties disagree on the use of penalties and / or incentives tied to Xcel's performance. To aid decision-making, Staff provides the following analysis:

- Potential implications of the Joint Commenters' proposal for Xcel to develop PIMs by reviewing the timing of previous TCR filings and considering the timeline for future filings. Consideration of a PIMs process includes considering the timeline for cost recovery of AMI and FAN investments (see Attachments 2 and 6);
- Appropriateness of imposing penalties and incentives for under- or exemplary performance; and,
- Considering how penalties or incentives could interact with other dockets, like PBR.

3. **Reporting-** the Commission will need to determine the frequency of reporting as well as how to align reporting data related to AMI and FAN performance with other dockets. Parties agree with the frequency of reporting but have yet to propose how to align reporting across dockets.

- Staff briefly summarizes the Joint Commenters' position and offers the Commission a preferred path forward.
- When it comes to producing and sharing data, the Department had recommended the Company explain data privacy considerations. Customer Energy Use Data and protections are described in Attachment 4.

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<sup>61</sup> Xcel reply comments filed November 12, 2022 in Docket No. E002/M-21-814 at 2.

4. **Deciding Standards for review-** the Joint Commenters recommended standards for future grid modernization proposals and the Commission will need to determine if it wishes to change its previous position which, was to opt against such standards.

- Staff briefly summarizes the Joint Commenters' position and offers the Commission a preferred path forward.

## Metrics

### *Previous Grid Modernization Projects*

In Xcel's first cost recovery petition, ADMS recovery was not accompanied by cost caps; instead, cost recovery was approved for actual expenditures for ADMS through 2018.<sup>62</sup> Recovery following the Company's second TCR petition was capped at the amount Xcel predicted to spend on programs per its initial petitions for recovery in dockets E002/M-17-797 and E002/M-19-721, despite in 2019 the amount requested in recovery exceeding predicted spending.<sup>63</sup>

The Commission also oversees Xcel's ADMS implementation through initial and annual filings detailing spending to date, work completed on the project, additional functional requirements, and estimated future costs (Attachment 6).<sup>64</sup> However, the annual ADMS report does not include the delivery of ADMS benefits proposed by Xcel in its initial petition. Detailed reporting, beyond the installation and initial deployment would be new practice in the Company's TCR petitions. Further, basing cost recovery on grid modernization asset functionality or use, not strictly cost estimates, would be a new practice for the Commission.

### *Adequacy of Metrics to Evaluate the Benefits Xcel Promised from AMI and FAN*

Goals of modernizing the distribution system and enhancing reliability, improving security, and increasing energy conservation opportunities, with special mention of doing so using two-way meters<sup>65</sup> are reflected in Xcel's stated benefits of AMI and FAN and Minn. Stat. § 216B.2425; Subd. 2(e). These benefits and others, including: remote reading and updates, data that can inform behavior change and time-varied rates, and faster responses to outages and the needs of the grid appear to be largely captured by the Joint Commenters' performance evaluation (Table 3; Attachment 1, Table 1), transparency metrics (Attachment 1, Table 2; **Decision**

<sup>62</sup> Order authorizing rider recovery, Setting Return on Equity, and Setting Filing Requirements issued September 27, 2019 in Docket No. E002/M-17-797.

<sup>63</sup> Xcel Petition for recovery 2017-2018 filed November 8, 2017 in Docket no. E002/M-17-797. Xcel Petition for approval of 2019-2020 TCR revenue requirements filed November 15, 2019 in Docket no. E002/M-19-721

<sup>64</sup> Reporting Requirements found in Order point 7 issued September 27, 2019 in docket no. E002/M-17-797 Order authorizing rider recovery, Setting Return on Equity, and Setting Filing Requirements.

<sup>65</sup> Order Accepting Integrated Distribution Plan, Modifying Reporting Requirements, and Certifying Certain Grid Modernization Projects. Issued July 23, 2020 in docket no. E002/M-19-666 at 14; also quoting a category explicitly included in Minn. Stat. § 216B.2425, subd. 2(e)

**Options 204 and 205**), and narratives (**Decision Option 203**). However, Staff identifies some remaining issues with the proposed metrics.

**Xcel Argued Against Reporting Some Metrics.** Xcel agreed to report most but not all data suggested by the Joint Commenters (shown Tables 3 & 4 for performance evaluation metrics; Attachment 1, Table 2 and below, Table 5 for transparency metrics).<sup>66</sup> As the Commission has final approval over metrics,<sup>67</sup> the Commission could require Xcel to further explain why it will not report certain metrics nor has not yet suggested alternatives (**Decision Options 204 a & b**) (described below). While no party has suggested changes to the metrics, the Commission could consider capturing additional AMI benefits in PBR (**Decision Option 207**).

<b>Table 4. Proposed Performance Evaluation Metrics that Xcel Would <b>Not</b> Currently Report</b>		
<b># in Att. 1 &amp; Table 3</b>	<b>Proposed Performance Evaluation Metric</b>	<b>Why Xcel Cannot Report Right Now</b>
A	Cap and O&M \$ spent on Asset Health and Reliability projects and Capacity projects <i>Target 1% reduction</i>	Not related to AMI/FAN. Reported in IDP
B	Capital \$ spent on storm recovery <i>10% reduction</i>	Not related to AMI/FAN. Reported in IDP
C	O&M \$ spent on storm recovery <i>0.1% reduction</i>	Not related to AMI/FAN. Reported in IDP
J	\$ of bad-debt write-offs <i>8% reduction</i>	Future
L	Customer energy price savings due to time-of-use (TOU) rates <i>UNDEFINED</i>	Potential future- already part of PBR
N	Customer savings due to critical peak pricing (CPP) <i>UNDEFINED</i>	Potential future- already part of PBR

\*Xcel stated it would report on manual reconnections / disconnections as a performance evaluation metric. See full list of performance evaluation metrics in Table 3 and in Attachment 1, Table 1.

<b>Table 5. Proposed Transparency Metrics that Xcel Would <b>Not</b> Currently Report</b>		
<b># in Att. 1</b>	<b>Proposed Transparency Metric</b>	<b>Why Xcel Cannot Report Right Now</b>
10	Number of intelligent field devices enabled by the FAN	Potential future
28, 41	Number of customers enrolled in time-varying rate programs	Potential future
29	Number of customers enrolled in other AMI-enabled demand management programs	Potential future
33, 34	Remote reconnection / disconnections*	Future

<sup>66</sup> Xcel initial filing made November 24, 2021 in docket no. E002/M-21-814 Attachment 4 page 89.

<sup>67</sup> Ordering para. 8, Order Accepting Integrated Distribution Plan, Modifying Reporting Requirements, and Certifying Certain Grid Modernization Projects issued July 23, 2020 in Docket No. E-002/M-19-666

43, 49, 50	Demand Response participation and MW reduction	Potential future
44, 45, 51-54, 58	DER and Storage participation and MW installed or generated	Not related to AMI/FAN. Reported elsewhere
47	Third party service access to customer data	No. Reported elsewhere
55-57	NWA participation, MW of load, and savings / year	Not related to AMI/FAN.

\* See full list of transparency metrics in Attachment 1, Table 2.

Some metrics on which the Company has argued against reporting (Tables 4 & 5) are concerning. Data on third party access to customer data would be crucial to track revenue sharing from the selling of data access to third parties (see Volume 1). Also, Xcel's list of qualitative benefits of AMI / FAN per its Cost Benefit Analysis, included better support for DER and net metering for DER customers.<sup>68</sup> Therefore, an unwillingness to provide data on DER adoption, MW installed, and MWh generated would seem to be a lack of acknowledgment for a benefit Xcel had claimed would result from AMI and FAN. To this same point, Xcel's argument against reporting on storage would also contradict its initial filing in which it stated, "AMI will also support the two-way flow of energy via net metering, further supporting customers' abilities to invest in DER options such as rooftop solar and potential energy storage or battery options, if they should choose to do so."<sup>69</sup> That said, AMI/FAN is anticipated to enable or support DER, but there are a number of other factors that impact the DER metrics proposed.

Metrics related to spending would reflect the benefits of AMI / FAN as outlined in Xcel's petition, but spending could also be influenced by other factors. To this extent, it would not be possible to determine causation- if use of AMI / FAN was the sole factor responsible for a cost reduction. CUB weighed in on this matter stating, "[b]ecause there are 'likely to be overlapping or difficult-to-distinguish costs related to distribution investments' split between the rider and base rates, the Commission should, to the extent reasonably practicable, require a detailed accounting of costs." CUB recommended detailed accounting of project spending to attribute costs to AGIS or general distribution investments that could be recovered in a rate case.<sup>70</sup>

Some metrics Xcel would not report are not concerning to Staff. Non-Wires Alternative (NWA) metrics, per Xcel's initial filing, are related to APT/ LoadSEER technology, not to AMI/FAN utilization. The Commission's July 23, 2020 Order did not base APT/LoadSEER cost recovery on metrics and performance evaluations. Finally, metrics Xcel has labeled as "future" are not troubling to Staff, provided reporting does occur as certain functionality comes online.

<sup>68</sup> Xcel initial filing made November 24, 2021 in docket no. E002/M-21-814, Attach. 4 p67-70.

<sup>69</sup> Xcel initial filing made November 24, 2021 in docket no. E002/M-21-814, Attach. 4 p68

<sup>70</sup> CUB comments October 17, 2022 in docket no. E002/M-21-814 at 9.

***AMI & FAN benefits not captured in Performance Evaluation metrics may be reported in other dockets.***

If the Commission requires Transparency metrics, many aspects of meter functionality would be regularly reported, apart from those metrics on which Xcel would not report. However, if the Commission chooses to pursue the Joint Commenter's path and require PIMs based on Performance Evaluation metrics (Table 3 / Attachment 1, Table 1), only some of the purported benefits of AMI and FAN would be used for the basis of cost recovery. This is because the Performance Evaluation metrics reflect Xcel's CBA which, focused only on quantitative benefits of AMI and FAN.

Below, Staff discusses what the Joint Commenters' proposed Performance Evaluation metrics do not capture. Then, Staff's Table 6 compares the Performance Evaluation metrics with metrics in the PBR, Safety, Reliability, and Service Quality (SRSQ), and Quality-of-Service Plan (QSP) dockets. Staff concludes that many of the broad, beneficial outcomes enabled by AMI and FAN are or could be captured by reporting in other dockets. Staff also notes that as proposed currently, the Performance Evaluation metrics focus on benefits for the Company resulting from AMI & FAN while Transparency metrics, which would not be the basis for cost recovery, include focus on customer benefits. Ultimately, the Commission will need to determine if PBR and other dockets can capture a sufficient array of AMI and FAN benefits or if there are consequential gaps in Performance Evaluation metrics that cannot be filled by reporting done in SRSQ, PBR, or QSP.

**Benefits not captured by metrics.**

***Deployment.*** Xcel's witnesses had proposed deployment metrics for AMI. The Commission will need to determine if cost recovery should, in some part, be based upon number of meters installed and deployment timelines, etc.

***Reliability.*** Xcel claimed that AMI will reduce outage duration and allow faster outage identification. However, proposed performance evaluation metrics only measure reductions in spending on distribution system investments, storm damage, and reduced "ok on arrival" outage visits (Metrics A, B, C, H from Table 3). The reporting-only Transparency metrics list only "Customer Minutes of Outage." As SAIDI, SAIFI, and CAIDI data are already collected and compared benchmarks set by the performance of a group of industry peers of similar size, Staff believes considering these data for metrics makes sense. Though SAIDI, SAIFI, and CAIDI are also reported in Xcel's PBR docket, the Commission has not yet weighed on whether incentives or penalties are needed in PBR<sup>71</sup>. Decisions made at a later time in PBR may serve to reward / penalize for AMI and FAN performance as related to reliability but such decisions would need to

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<sup>71</sup> Order Establishing Performance-Incentive Mechanism Process issued January 8, 2019 in docket no. E-002/CI-17-401 at 2, "the Department recommended, and the Commission concurred, that a separate proceeding should be initiated to evaluate Xcel's proposed metrics, create any new metrics, and explore the possibility of tying incentives or penalties to performance under those metrics."

take place as the Commission and stakeholders review baseline PBR data and determine the need for targets and penalties / incentives.

**Grid-facing benefits.** High or low voltage and high impedance detection were named as grid-facing benefits of AMI and FAN in Xcel's supplemental comments<sup>72</sup> but high impedance detection was not listed in the Joint Commenter's performance evaluation or transparency metrics except within the context of the budget for distribution investments (Metric A, Table 3). Also, annual field visits for voltage investigations (with the OAG proposing a 50% reduction target)<sup>73</sup> was absent from the Joint Commenters' Performance Evaluation metrics unless it was caught in the broader category of "okay on arrival" outage field visits (Metric H, Table 3).

**EVs.** EVs were also absent from the proposed metrics, in terms of understanding where EVs are charging for planning purposes and to potentially offer EV rates. However, Staff is not concerned about this absence as Xcel's PBR docket has a large set of reporting on EVs. Staff believes the PBR reporting on EVs would be more appropriate.

**Adaptability of meters.** Staff found it notable that the Company explained how it chose technology for both interoperability and for ease of upgrades or adapting to changes in the market (Attachment 3). This suggests that adaptability was an important feature for Xcel in choosing the technology it did and perhaps, could explain some of the expenses above costs of traditional meters (i.e., AMR). However, no measure of adaptation is found in the Joint Commenters' metrics for performance evaluation or transparency.

**Security.** While physical security could be reported with Transparency metrics, cybersecurity, including customer data protections, was not included in either Transparency or Performance Evaluation metrics. Xcel noted in its initial filing that variety, quality, and accessibility of customer data available (consistent with privacy and CEUD requirements) could be reported annually and that third party service access to customer energy usage data (CEUD) may be more appropriately reported elsewhere, like docket no. E999/M-19-505. Thus, Staff finds it useful to consider reporting how customer data will be kept secure, with metrics in the instant docket or other docket. Cybersecurity could be captured with a new "adaptability metric," measuring, for example, updating meter software in alignment with manufacturers' specifications. CEUD is reviewed in Attachment 4 and **Decision Option 212**.

**Customer Use of AMI.** Two performance metrics focus on customer savings from TOU and CPP rates (Metrics L & N, Table 3) which may fit best in PBR. However, Staff's review of AMI reporting in Hawaii and Illinois found metrics appeared to focus more on customer

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<sup>72</sup> Xcel supplemental comments filed August 17, 2022 in docket no. E002/M-21-814 at 24-25

<sup>73</sup> OAG comments filed October 17, 2022 in docket no. E002/M-21-814.

participation and capture a range of meter usage: the potential for use of meters, sign ups or action related to use of meters, and change in energy usage or other behaviors (Attachment 5).

Staff appreciated HI PUC metrics that conditioned Utility incentives on customers taking advantage of at least two benefits of AMI meters and that IL metrics related to the potential to use meters, the actual use of meters (in sign-ups and opt-outs), and change in energy usage (Attachment 5). Note, even if a metric did not measure “change” directly, evidence of behavioral change would emerge through longitudinal data collection.

### ***Tracking & Performance Incentives for Xcel- Precedent for PIMs***

Xcel’s performance is currently tracked in PBR,<sup>74</sup> SRSQ, and QSP<sup>75</sup> dockets. Metrics proposed for AMI & FAN are related but not identical to what is reported in these other dockets. As shown in Table 6, some benefits of AMI and FAN would be reported in these dockets. Long-term system benefits are intended to be captured by the PBR docket; thus, improved reliability, use of demand response, and emissions reductions which are all benefits promised from AMI and FAN could be captured long-term in PBR reporting.

<b>Table 6. All PBR, SRSQ, &amp; QSP Metrics and Where those Metrics Align to Proposed AMI &amp; FAN Performance Evaluation (bold) and Transparency Metrics</b>				
<b># in Att 1</b>	<b>AMI &amp; FAN (#)</b>	<b>SRSQ</b>	<b>PBR</b>	<b>QSP</b>
16, 30, 62-66	Avoided field visits	Safety (OSHA reports and injuries)		Gas Emergency Average Response Time

<sup>74</sup> MN Stat. §216B.16 subd. 19 (h) allows the Commission to “initiate a proceeding to determine a set of performance measures that can be used to assess a utility operating under a multiyear rate plan.” A proceeding (Docket No. E002/CI-17-401) for the only MN utility to meet these qualifications, Xcel Energy, was initiated in 2017, following the resolution of Xcel’s rate case in that same year. Consistent with PIM process, the Commission has adopted goals and performance metrics upon which Xcel is currently reporting. The Company will file its third year of baseline data in April 2023. Then, Company performance will be evaluated. The PIM process and Commission Orders have not required progression through the PIM process beyond metric design and reporting to-date. After evaluating three years of baseline data, the Commission can decide if it will require the Company to set performance targets and perhaps base a portion of revenue recovery on Xcel’s performance relative to targets.

<sup>75</sup> Many of the metrics ultimately adopted in Xcel’s PBR proceeding are already reported in Xcel’s SRSQ annual reporting docket. Data are not tied to any monetary compensation but do provide a longitudinal view of Company performance. Additionally, Xcel has a QSP in which the Utility makes underperformance payments for not meeting certain targets. Targets were based on historical average performance or comparison to peers, like IEEE benchmarks for reliability.



<b>Table 6.</b> All PBR, SRSQ, & QSP Metrics and Where those Metrics Align to Proposed AMI & FAN Performance Evaluation (bold) and Transparency Metrics				
<b># in Att 1</b>	<b>AMI &amp; FAN (#)</b>	<b>SRSQ</b>	<b>PBR</b>	<b>QSP</b>
66 – 69-71 – 60, 68 - H	Annual field visits for voltage investigations – Customer Minutes of Outages (CMO) – Storm-related savings - “Ok on arrival” outage field visits	SAIDI, SAIFI, CAIDI Bulk power interruption Circuit interruption data Voltage performance Staffing at work centers Major service interruptions	SAIDI, SAIFI, CAIDI, CELID, CEMI, and ASAI  Future- MAIFI, power quality	SAIDI, SAIFI
7_ 16, 30, 62-66	Opt-out of AMI – Avoided field visits	Meter reading		
<b>F-G, 33-34, 63-64</b>	<b>% Disconnects or reconnects done remotely</b>	Disconnections	<b>Disconnects</b>	
8_ 27	Calls re: installation_ Inquiries on AMI or time-varying rates	Calls answered within 20 sec.	Calls answered within 20 sec. + all IVR calls / Total Calls	Calls answered within 20 sec.
9, 19	Complaints re: installation & inaccurate metering	Complaints about inaccurate metering, etc.* DER Complaints	Total # Complaints	Total # Complaints
17-18	AMI meters used in billing & estimated bills		Bill invoice accuracy	Bill invoice accuracy
29, 49-50; storage 53-54	Enrollment in demand management programs		<b>DR capacity available and called. EV-charging and avoided gas use. Building electrification. CO<sub>2</sub> Emissions and Criteria Pollutants</b>	
<b>N, L, 74-77; enrolled 28, 41</b>	<b>Customer savings due to Critical Peak Pricing and TOU rates</b>			
<b>M</b>	<b>Avoided CO<sub>2</sub> emissions due to TOU rates</b>			
21-26	Electronic engagement	Electronic engagement		



<b>Table 6. All PBR, SRSQ, &amp; QSP Metrics and Where those Metrics Align to Proposed AMI &amp; FAN Performance Evaluation (bold) and Transparency Metrics</b>				
<b># in Att 1</b>	<b>AMI &amp; FAN (#)</b>	<b>SRSQ</b>	<b>PBR</b>	<b>QSP</b>
	Customer survey on the adequacy and clarity of communications prior to installation of advanced meters; customer survey on outage communication		JD Power customer satisfaction survey.	
No analog in TCR metrics		Service extension requests; Emergency Medical Account Status; Deposits	Average bill; Average arrearages.	

Note, metrics on cost savings feature prominently in AMI&FAN metrics but not in PBR, QSP, or SRSQ. This table lists all SRSQ, PBR, and QSP metrics. This table does **not** show all proposed AMI & FAN metrics; the table only shows where proposed AMI & FAN metrics align with existing dockets' reporting which, is shown in full. Proposed performance evaluation metrics, by which AMI & FAN cost recovery would be determined, are bolded.

\*Number of Complaints alleging billing errors, inaccurate metering, wrongful disconnection, high bills, inadequate service, and the number involving service-extension intervals, service-restoration intervals, and any other identifiable subject matter involved in five percent or more of customer complaints. DER refers to Distributed Energy Resources.

Should the Commission choose to adopt the PIMs pathway, at present there is little risk “double-counting” penalties or incentives in the TCR and other dockets with the exception of future PIMs in PBR. First, no financial penalties are tied to reporting in SRSQ. Second, though many of the QSP metrics align with the proposed *transparency metrics* for AMI and FAN, there is no overlap between the AMI and FAN performance evaluation metrics and the QSP metrics that determine if Xcel makes payments for underperformance. Importantly, QSP has metrics related to meter reading which may capture AMI’s promised streamlined billing process.

While disconnections are reported in PBR, the metric of “% of disconnects done remotely” chosen to assess AMI and FAN recovery, instead captures use of a technology and as the measurement is a percent, is independent of the actual number of disconnections undertaken.

Per the previous section, Benefits Not Captured by Metrics, the Commission may require Xcel to work with stakeholders to reevaluate metrics to capture more of the AMI and FAN benefits described in the Company’s Supplemental Comments and Initial Petition in the instant docket as well as in its IDP filed in Docket No. E002/M-19-666. Benefits include, but are not limited to, deployment; meter adaptability; high impedance detection; cybersecurity; connectivity to other meters and transformers to ground-truth GIS data on AMI; benefits in Table 7.

Table 7 shows benefits not captured by current Performance Evaluation metrics that may be adequately captured in PBR and SRSQ, though not tied to cost recovery or performance incentives or penalties currently. More, if the Commission chooses to pursue PIMs, some of these benefits are captured in the Joint Commenters' Transparency Metrics and could perhaps be re-located to Performance Evaluation metrics for cost recovery.

<b>Table 7. Benefits Not Captured by Joint Commenters' Metrics that Could be Captured in PBR</b>	
<b>AMI/FAN Benefit</b>	<b>PBR metric</b>
Reliability	SAIDI, SAIFI, CAIDI, CELID, CEMI, ASAI
EVs	% EV charged on managed or household TOU rate % Managed charging occurring off-peak
Using Improved AMI Data	CO <sub>2</sub> avoided by building electrification Demand Response (see above)

### Baselines

Xcel already reports many of the Joint Commenters recommended metrics in IDP filings, PBR, or said that the metrics could be reported quarterly or annually. Thus, it may be the case that complete baseline data are already available for some if not all performance evaluation metrics. Three metrics: avoided CO<sub>2</sub> emissions from TOU rates, revenue change from reduced meter theft or tampering, and amount of bad debt write off were not commented on or were listed as "future" metrics. Staff understands that the TOU pilot has concluded (docket no. 17-775), and that the Company intends to file residential TOU rates in 2024; therefore, ongoing TOU data beyond the 12 hours on/off are not available at present. If possible, the other baseline data could be provided in a compliance filing following the issuance of an Order in the instant docket. Like the PIM model used in the PBR docket, the Company could provide three years of data. The Commission can require baseline data with **Decision Option 208**.

A challenge would arise if the Company or Commission wishes to collect three additional years of baseline data. Such an action would put further pressure on the timeline difference between the benefits and cost recovery. Staff finds it more appropriate to conceptualize the AMI meters as a "treatment" and compare data from before meter deployment, likely data from customers with AMR meters, to post-deployment data. Baseline data would then already be available. Such a comparison would allow the Commission to view changes that occurred because of AMI meters. Though, of course, other factors influence customer behavior, like weather, and therefore not all pre- and post-treatment variables can be "controlled."

### Targets

If the Commission chooses to require PIMs, performance targets will need to be set. The Commission may agree with Joint Commenters that expected performance should align with

the quantifiable benefits that the Company identified in its benefit-cost analysis of the AMI and FAN investments.<sup>76</sup> Staff finds it useful to set targets, regardless of the mechanism (PIM or otherwise) by which cost recovery is based on performance. A target allows the Commission to compare performance to both change from a baseline and to a set value.

The Joint Commenters did not include targets for four metrics and has recommended Xcel set these values based on pertinent information (**Decision Option 209a**):

- \$ spent on meter replacement due to failure (Metric D, Table 3)
- Increase in retail revenue from reduced tamper / theft (Metric K)
- Customer energy price savings due to time-of-use rates (Metric L)
- Customer savings due to critical peak pricing (Metric N)

### Penalties

Staff agrees with the Department that it would be inappropriate to award incentives beyond any actual spending in the TCR.<sup>77</sup> Such incentives would be more appropriately tied to broader goals as captured in the Company's PBR docket and set by the stakeholders that have invested much time already in that proceeding. The matter then before the Commission would be either: 1) limiting performance evaluation to reviewing reporting, 2) imposing penalties, or 3) another method to consider a lesser-than-requested cost recovery for underperformance.

### Considerations of Timing for Cost Recovery and Performance

A challenge with any mechanism that bases cost recovery on performance, including PIMs, is the timing of cost recovery requests. As Xcel seeks recovery of 2021 – 2022 costs now, Staff identifies two temporal mismatches. First, advanced meters are still being deployed (see Table 8<sup>78</sup>) and were delayed.<sup>79</sup> Also, the benefits from those meters will materialize after deployment (see Xcel's Roadmap, Table 7). Finally, 12 months of AMI data are needed before improved load profiles can be created.<sup>80</sup> Thus, basing recovery for money spent now on performance that will occur further down the road presents challenges for cost recovery. This is where Xcel's focus on deployment metrics appears to better align with the timing of TCR cost recovery, at least at this stage of implementation.

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<sup>76</sup> Joint commenters comments made November 16, 2022 in docket no. E002/M-21-814 decision option 3.

<sup>77</sup> Department Comments October 17, 2022 Docket Nos. E002/M-20-680 and E002/M-21-814 Attachment 1 p11

<sup>78</sup> Supplemental filing Xcel filed August 17, 2022 in docket no. E002/M-21-814 at 17

<sup>79</sup> Delays seen in comparing the Company's IDP (Table 56, from Xcel 2019 IDP Filing November 1, 2019 in docket no. E002/M-19-666 at 248, referenced in Dept Notice of Comment in DI-20-627) and its August 17, 2022 supplemental filing where it wrote, "the Company began deploying AMI meters in April 2022 and plans to complete installations by the end of 2024." Xcel Supplemental Filing August 17, 2022 in Docket No. E002/M-21-814 at 16.

<sup>80</sup> Annual ADMS Compliance Filings made: Jan 24, 2020 (Docket Nos. 19-666 and 17-797) at 14.

<b>Table 8.</b> Expected Annual Meter Deployment as of August 2022	
Year	# Meters Deployed
2022	250,000
2023	670,000
2024	496,893

Second, the Joint Commenters have requested Xcel determine PIMs, targets, and associated penalties and / or incentives which would govern the amount of AMI and FAN investment that Xcel could recover (**Decision Option 210**). The Joint Commenters requested this information by November 2023. The process for stakeholder review and Commission approval of those PIMs again prolongs clarity on Xcel's cost recovery.

Importantly, as part of the Company and Department's settlement agreement, the Commission approved language stating that if the Company's TCR rider petition had not been considered before December 31, 2022, the Commission would approve recovery of the 2020 and 2021 AMI and FAN revenue requirements by the end of December, subject to a later true-up.

The Settlement Agreement cost recovery has begun and will be confirmed including addressing the true-up (Volume 1). Then, the Commission must still address recovery of costs incurred in 2022, as 2022 costs were included in Xcel's November 24, 2021 petition.

In sum, while Xcel seeks recovery of costs now, the reality of the time needed for PIM development and benefits to materialize does not align with cost recovery timelines in a rider. In Table 9, Staff speculates on future recovery. Staff notes that the Joint Commenters have proposed November 1, 2023 as a start point for reporting on performance data from 2022 and perhaps, a portion of 2023. Then, Xcel will seek funding for 2023 and 2024. Thus, performance will be measured for years different than those for which cost recovery is sought. More, full meter functionality will not have been achieved and may be petitioned separately to the Commission and may include requests for additional funding. Thus, the Commission will need to consider if costs will be fully recovered before the full functionality and/or use of AMI/FAN would be realized.

<b>Table 9.</b> Hypothetical, Future Recovery Scenario			
Date	Filing	Years	Content of Filing
2023	Xcel files PIMs		<i>The Company would propose interim performance targets, per the Joint Commenter's Decision Option, 60 days after Order issued in matter presently before Commission.</i>
Nov 1, 2023	Xcel files first PIM report	?	<i>Per the Joint Commenters, Xcel reports performance evaluation and transparency metrics annually.</i>
Nov 2023	Xcel files TCR rider Petition	2023-2024	<i>Xcel seeks to recover for spending occurring in 2023 and 2024 but will have reported on performance for 2022 and perhaps a portion of 2023.</i>

2024	Commission Order	2023-2024	Adjustment to Xcel's return based on performance in metrics, related to baselines and/or targets. Penalties / incentives determined by Commission.
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### Mechanism for Basing Cost Recovery on Performance

The Joint Commenters recommended that Xcel should propose PIMs for each performance evaluation metric, using the PIM Design Process outlined in Docket No. E002/CI-17-401 (**Decision Option 210**). Without advancing the Joint Commenters' PIMs process, the Commission would still have quarterly and annual reports, and potentially: cost caps that would permit AMI and FAN recovery up to a certain amount, revenue-sharing, comment periods, baselines, and targets. With comment periods, the Commission and stakeholders could review the reports. If concerns were revealed, the matter could be brought before the Commission, with parties, not exclusively Xcel, proposing solutions for how to adjust subsequent cost recovery based on under or exemplary performance (**Decision Option 206**).

If performance evaluation is to impact allowable cost recovery, the Commission must at some point decide the mechanism to accomplish this. For instance, if the Commission chose to apply a reduction or increase to a base rate of return as proposed by OAG (with authorized rate of return as the top and weighted cost of debt as the floor), this could be applied via modification of Xcel's adjustment factor in a future TCR petition. This approach appears straightforward for metrics within the Company's control and the time horizon of rider recovery (e.g. deployment). It is less clear when to apply a penalty or adjustment factor to future benefits or savings given the temporal mismatch with rider recovery.

If the Commission directs Xcel to establish PIM targets and associated penalties or incentives, Staff also finds it helpful to consider Hawaii's approach with use of penalties and incentives for performance at certain thresholds and a "deadband," a neutral zone around the target for acceptable performance with no attached penalty or incentive. The Company could consider Hawaii's approach if required to calculate PIMs with its next cost recovery petition. The Commission and commenters would then weigh in on the most reasonable approach (**Decision Option 210e**).

### Reporting

Parties and Xcel have agreed to both annual and quarterly reporting. The Department suggests annual reports being used to determine cost recovery. Quarterly metrics could be filed in the instant dockets and/or other relevant dockets. Substantive comments on those filings could trigger a comment period; absent comments, no further action would be taken (**Decision Option 206**).

Finally, as explained by the Department in their report, a synchronization of reporting should be considered for the following dockets or reports with a potential solution being consolidating reporting under IDP or AGIS dockets.<sup>81</sup>

Staff understands the challenge of tracking and comparing information across different dockets and timing, and the trade-off that consolidated reporting could result in less updated information in a specific docket. The Department's request is a suggestion without a specific proposal or comment from Xcel or other parties that use the information in these reports. Xcel could propose a consolidation of reporting or offer guidance on how to interpret or understand information reported in various locations at various points in time in their individual filings to demonstrate from the utility's perspective how the information informs each proposal or has been updated since last presented (**Decision Option 211**).

### **Standards for Review of Future Grid Modernization Proposals**

Regarding **Decision Option 213 parts a and b**, the Commission declined to adopt standard procedures for reviewing utility grid modernization proposals proposed by the Department of Commerce in its Guidance Document in its October 14, 2022 Order Declining to Adopt Guidance Document, stating in part:

The Commission appreciates the Department's work to develop a framework for evaluating utility grid modernization investments and encourages utilities to continue working with the Department to provide information that aids the Department's evaluation of grid modernization proposals. The Commission will not, however, adopt the Guidance Document for future use in all cases and will instead continue to evaluate utility filings and their proposals on a case-by-case basis going forward.

Regarding **Decision option 213 part c**, there have been numerous requests by the Department and others to establish certification criteria; however, the Commission has consistently stated:

Regarding the potential adoption of additional criteria for certification, the Commission continues to hold the opinion it expressed in its 2016 order certifying ADMS that it is most appropriate to apply the statute on a case-by-case basis and to develop more detailed criteria, if necessary, over time, as the Commission gains further experience with grid modernization. At this time, the Commission believes that it is appropriate to look to the language of the statute to guide its review.<sup>82</sup>

Unless the Commission feels differently, Staff does not recommend resoliciting input on this topic. Indeed, the Joint Commenters do not provide new or compelling evidence to changed circumstances for why the Commission should revisit these positions.

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<sup>81</sup> Report, Department of Commerce filed December 1, 2020 in docket no. E999/DI-20-627 at 31

<sup>82</sup> Commission Order issued July 23, 2020 into Docket No. 19-666, at 12

Regarding **Decision Option 213 part d**, projects that have been certified under Minn. Stat. 216B.2425 Subd. 2(e) are certified without a determination on prudence and are eligible for inclusion in the Company's TCR rider. Prudence of costs are addressed as part of the TCR petition review. Unless the Commission feels differently, Staff does not recommend soliciting input on this topic.

## DECISION OPTIONS

*Decision options related to this Volume (2) start at Decision Option 201.*

### Evaluating Cost Recovery Based on Performance

201. Do not use PIMs as a basis for the Company's cost recovery for AMI and FAN investments. *(Xcel, preferred) (if 201 is selected, do not select 210; Consider 208 and 209)*

**OR**

202. On an annual basis use the performance evaluation metrics and targets shown in Attachment 1, Table 1 as the basis for evaluating the ongoing performance and cost recovery request of the Company's AMI and FAN investments as part of the Company's most current TCR proceeding. *(Staff modification of Joint Commenters' language and Fresh Energy's original language<sup>83</sup>) (If 202 is selected, consider 204, 208-210)*

### Metrics and Reporting

203. Require Xcel to report the following AGIS information annually, in **narrative** form, beginning November 1, 2023 in the instant docket and subsequent TCR proceedings *(Joint Commenters)*:

- a. Comprehensive account of all functionalities achieved and any changes to functionality or potential future uses;
- b. The Company's plan and scope for implementation in the upcoming year;
- c. Implementation and integration status of related information technology systems in comparison to the Company's plans and scope.
- d. Description and explanation of any AMI or FAN functionalities that have been disabled and the number of impacted meters;

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<sup>83</sup> "The performance metrics and targets in Table 1 below are based upon the quantifiable benefits that the Company identified in its benefit-cost analysis of the AMI and FAN investments, and should serve as the basis for evaluating the ongoing performance and cost recovery request of the Company's AMI and FAN investments" AND "The Company must evaluate AMI and FAN performance targets on an annual basis consistent with the Company's evaluation of Performance Incentive Mechanisms (PIMs) in Docket No. E002/CI-17-401."





- e. Revenue-generating opportunities identified or engaged that relate to the use of AMI, FAN, or the use of associated data or distributed intelligence technologies;
- f. All entities with whom the Company shares AMI data;
- g. Any metrics derived from the quantitative benefits assumed in Xcel's benefit-cost analysis of the AMI and FAN projects that are not represented in Attachment 1, Table 1.
- h. Require Xcel to explain why any benefits it had promised for AMI and FAN do not materialize (*OAG*)

204. Require the Company to file an **annual report** of the metrics outlined in Attachment 1, Tables 1 and 2, beginning November 1, 2023 in the instant docket and subsequent TCR proceedings unless otherwise directed by the Executive Secretary. (*Joint Commenters; Fresh Energy*)

- a. For metrics for which performance may not yet be tracked, the Company must specify when it expects to be able to begin tracking performance. (*Department*)
- b. For any metric that the Company is unable to provide data for, the Company must explain why it is unable to do so and what efforts can be taken to obtain that data in future reports. (*Joint Commenters*)

205. Require Xcel Energy to submit **quarterly reports** beginning November 1, 2023 in the instant docket and subsequent TCR proceedings, unless otherwise directed by the Executive Secretary, pertaining to the following: (*CUB*)

- a. Transparency Metrics identified as "quarterly" (Attachment 1, Table 2), for those metrics which Xcel has noted it is possible to do so. (Staff addition)
- b. The Company's plans and scope for implementation of its AMI and FAN projects in the upcoming months and/or year (*Staff note: This is provided annually if 203b is adopted*)
- c. The status of the number of meters and units of telecommunications infrastructure that the Company has installed and placed in service, in comparison to the Company's plans and scope, to be reported in aggregate, by class, and by class and census block or 9-digit ZIP code
- d. The status of the installation of the FAN in comparison to the Company's plans and scope
- e. Implementation status of metering and network communications headend systems in comparison to the Company's plans and scope (*Staff note: This may be provided annually if 203c is adopted*)
- f. The actual capital and O&M costs incurred by the Company, as well as any proposed deferred costs.



206. Delegate authority to the Executive Secretary to take comment on Xcel's annual reports which may occur in a TCR, PBR, or other proceeding. (*Fresh Energy*)

- a. Delegate authority to the Executive Secretary to vary the deadlines and time periods for any reporting required by this order. (*Staff*)

### **Additional Metrics**

207. As part of a forthcoming comment period in Docket No. E002/CI-17-401 (PBR), require Xcel to file an update describing the Company's consideration of AMI and FAN benefits which include but are not limited to: Deployment; Reliability; EVs; Meter Adaptability; High impedance detection; Connectivity; Safety; Security; and Use of Customer Data, and the extent to which existing metrics in PBR might reasonably serve to capture those benefits. (*Staff*)

### **Baseline Data (select one of the following, 208 a - c)**

208a. Require Xcel to determine baselines for metrics shown in Attachment 1, Table 1 reflecting either data collected since inception of the reporting regime, or benefits projected in petition for AMI and FAN. To the extent possible, file baselines within 60 days of the issuance of the order in the instant docket. (*Joint Commenters; Fresh Energy*)

OR

208b. Require Xcel to collect [*one or three*] years of data, and delegate authority to the Executive Secretary to set baselines. (*OAG*)

OR

208c. Require Xcel, within 60 days of the issuance of the order in the instant docket, to file a .xls spreadsheet containing data for at least the three previous years pertaining to all metrics in Attachment 1, Table 1 to the extent possible, and where the data cannot be provided, explain why. Delegate authority to the Executive Secretary to set baselines. (*Staff*)

### **Targets**

209. In a compliance filing to be submitted no later than 60 days after the Commission's Order, require the Company to (*Joint Commenters; Fresh Energy also supports setting targets*):

- a. Provide interim performance targets for each of the performance metrics that are "undefined" in Attachment 1, Table 1. Such interim performance targets must be based upon projected benefits used in the Company's benefit-cost analysis of the AMI and FAN Projects, and any other pertinent information
- b. Propose evaluation methods for each of the metrics (*Staff substitution of "metrics" for Joint Commenter's original "performance targets" to align with Order language*)

### **Design Performance Incentive Mechanisms (PIMs)**

210. In the Company's next TCR Rider Proceeding, require the Company to propose Performance Incentive Mechanisms (PIMs) for each performance target listed in Attachment 1, Table 1 above, using the PIM Design Process outlined in Docket No. E002/CI-17-401. Xcel's PIM proposal shall include, at minimum, the following elements: *(Joint Commenters)*

- a. PIM structure
- b. The dates when the PIMs will take effect and terminate

*(Then, select c. or d.)*

- c. Determination of the penalty values to be associated with each PIM.

**OR**

- d. Determination of the penalty AND incentive values to be associated with each PIM *(OAG, Fresh Energy, and Xcel, if PIMs are chosen)*

*(Whether c. or d. is selected, must also do e. If e. is selected, consider e(a))*

- e. Specific mechanisms for effectuating a penalty or incentive on the Company. *(Joint Commenters, Staff addition of "or incentive on the Company")*
  - a. Xcel's PIM proposal must include at least two penalty options: one that calculates the penalty as a proportion of the incremental costs of the proposed investments compared to the least-cost alternative, and another that calculates the penalty as a proportion of the return on these incremental costs. *(Joint Commenters)*
  - b. Xcel's PIM proposal must include the Company's weighted cost of debt as a base-level rate of return for rider investments that would be decreased for performance below a set goal and increased for performance substantially above the goal, up to the maximum return of the Company's authorized rate of return. *(OAG)*
  - c. Xcel's PIM proposal must consider Hawaii's approach with use of penalties and incentives for performance at certain thresholds and a "deadband," a neutral zone around the target for acceptable performance with no attached penalty or incentive. *(Staff)*
- f. An explanation of how stakeholders were engaged in the creation of PIMs *(Department, per its 2020 report)*

**Synchronize Reporting Location** *(Decision Option 211 can be paired with any previous DOs)*

211. Require Xcel, within 30 days, to file a proposed consolidation of AGIS-related reporting based on Department's recommendation in Docket No. E999/DI-20-627. *(Staff)*

**Customer Energy Use Data** *(Decision Option 212 can be paired with any previous DOs)*

212. Require Xcel to provide a comprehensive framework in Docket No. E,G999/M-19-505 for assessing (*Department, per its 2020 report*):

- HAN, AMI and AMI-DI specifications and related customer data access policies,
- Bring-your-own device HAN requirements and terms,
- Potential terms and conditions for third-party data access to AMI, AMI-DI or HAN,
- Methods to provide customers equal access to the level of data available to the utility,
- A summary of industry customer data access standards.

**Standards for Review of Future Grid Modernization Proposals** (*Decision Option 213 can be paired with any previous DOs*)

213. Require Xcel in its next Integrated Distribution Plan proceeding to address the following topics in its Initial Filing:

- a. Should the Commission establish standard procedures for reviewing utility grid modernization proposals and cost recovery petitions and if so, what should those procedures be?;
- b. Should the Commission require utility grid modernization proposals to adhere to standardized filing requirements and if so, what should those filing requirements be?;
- c. Should the Commission establish formal criteria for evaluating certification requests in Integrated Distribution Plan proceedings and if so, what should those criteria be?; and
- d. Should the Commission establish a timeline for reviewing the prudence of projects it certifies in Xcel's IDP and if so, what should that timeline be? (*Joint Commenters*)

## Attachment 1: Reporting Requirements

<b>Table 1: AMI and FAN Performance Evaluation Metrics and Targets</b>		
<b>Benefit</b>	<b>Metric and # from Table 3</b>	<b>Target</b>
Distribution Management Efficiency	Capital and O&M \$ spent on Asset Health and Reliability projects and Capacity projects (A)	1% reduction
Outage Management Efficiency	Capital and O&M \$ spent on storm recovery (B&C)	10% Capital reduction .1% O&M reduction
Avoided Meter Purchases	\$ spent on meter replacement due to failure (D)	Undefined
Reduced Field and Meter O&M Expenses	Field trips due to customer equipment damage (E)	50% reduction
	Percent of disconnects and reconnects done remotely (F&G)	70% of disconnects 90% of reconnects
	“Ok on arrival” outage field visits (H)	50% reduction
Reduced Consumption on Inactive Meters	Usage on unassigned accounts (I)	20% reduction
Reduced Bad Debt Expense	\$ of bad-debt write-offs (J)	8% Reduction
Reduced Theft/Meter Tampering	Increase in Retail Revenue (K)	Undefined
Load Flexibility Benefits	Customer energy price savings due to time-of-use (TOU) rates (L)	Undefined
	Avoided tons of CO <sub>2</sub> emissions due to TOU Rates (M)	4,500 tons annual reduction
	Customer savings due to critical peak pricing (CPP) (N)	Undefined

<b>Table 2: AMI and FAN Transparency Metrics; Xcel’s Witnesses’ metrics in bold</b>			
<b>#</b>	<b>CATEGORY</b>	<b>DESCRIPTION</b>	<b>XCEL REPORTING</b>
1	Customer Outreach and Education	<b>Survey results of customer on the adequacy and clarity of communications prior to installation of advanced meters</b>	quarterly



<b>Table 2: AMI and FAN Transparency Metrics; Xcel's Witnesses' metrics in bold</b>			
#	CATEGORY	DESCRIPTION	XCEL REPORTING
2	Installation and Deployment	<b>Number of advanced meters installed</b>	quarterly
3	Installation and Deployment	Percentage of advanced meters deployed compared to planned installation	quarterly
4	Installation and Deployment	Percentage of customers with advanced meters	quarterly
5	Installation and Deployment	<b>Percentage of FAN deployed</b>	quarterly
6	Installation and Deployment	Percentage of FAN deployed compared to planned installation	quarterly
7	Installation and Deployment	<b>Number of customers electing to opt-out of AMI installation</b>	quarterly
8	Installation and Deployment	<b>Number of calls to Customer Contact Center and meter installation vendor regarding meter installation</b>	quarterly
9	Installation and Deployment	<b>Number of complaints regarding AMI installation</b>	quarterly
10	Installation and Deployment	Number of intelligent field devices enabled by the FAN	Potential future
11	Installation and Deployment	Number of missed installation appointments	quarterly
12	Financial	Total AMI project capital spend to-date vs. total AMI project capital budget	annual
13	Financial	Total FAN project capital spend to-date vs. total FAN project capital budget	annual
14	Financial	Total AMI project O&M spend to-date vs. total AMI project O&M budget	annual
15	Financial	Total FAN project O&M spend to-date vs. total FAN project O&M budget	annual
16	Financial	O&M cost savings from avoided field visits	annual
17	Post-Deployment	<b>Percentage of customers with advanced meters that receive estimated bills</b>	quarterly
18	Post-Deployment	Total number of AMI meters use for billing (activated)	quarterly
19	Post-Deployment	<b>Percentage of customers with an advanced meter that have made a complaint of inaccurate meter readings</b>	quarterly
20	Post-Deployment	Survey of customer satisfaction with outage related communications	annual



<b>Table 2: AMI and FAN Transparency Metrics; Xcel's Witnesses' metrics in bold</b>			
#	CATEGORY	DESCRIPTION	XCEL REPORTING
21	Post-Deployment	<b>Number of customers with an advanced meter with an active web portal account</b>	quarterly
22	Post-Deployment	<b>Number of monthly, unique visits to the web portal (My Account)</b>	quarterly
23	Post-Deployment	Percentage of customers with an advanced meter with Home Area Network (HAN) functionality	annual
24	Post-Deployment	Number of customers with an advanced meter with Home Area Network (HAN) functionality	quarterly
25	Post-Deployment	Percent of customers with an advanced meter with Green Button Connect My Data (CMD) functionality	quarterly
26	Post-Deployment	Number of customers with an advanced meter with Green Button Connect My Data (CMD) functionality	quarterly
27	Post-Deployment	Number of customer/account inquiries regarding AMI or time varying rates	quarterly
28	Post-Deployment	Number of customers enrolled in time-varying rate programs	Potential future
29	Post-Deployment	Number of customers enrolled in other AMI-enabled demand management programs	Potential future
30	Post-Deployment	Number of avoided truck rolls/field visits	annual
31	Post-Deployment	Meter accuracy test percentage	annual
32	Post-Deployment	Percentage of interval reads received	annual
33	Post-Deployment	Number of remote meter disconnect operations	future
34	Post-Deployment	Number of remote meter connect operations	future
35	Post-Deployment	Percentage of interval reads received	annual
36	Customer Engagement	Percentage of customers with advanced meter at least 30 days that are targeted with energy savings messaging	quarterly
37	Customer Engagement	Percentage of low-income customers with advanced meters at least 30 days that are targeted with energy savings messaging	quarterly
38	Customer Engagement	Percentage of customers aware of AMI	annual
39	Customer Engagement	Understanding of AMI technology and benefits	annual



<b>Table 2: AMI and FAN Transparency Metrics; Xcel's Witnesses' metrics in bold</b>			
#	CATEGORY	DESCRIPTION	XCEL REPORTING
40	Customer Engagement	Percentage of low-income customers aware of AMI	annual
41	Customer Engagement	Number of customers with advanced meters that adopt an advanced rate option (e.g. TOU ) tariff, expressed as a number and percentage by each rate	Potential future
42	Customer Engagement	Number of organizational events attended where information on AMI presented, by region	quarterly
43	Customer Engagement	Demand Response: percentage participation by class	Potential Future
44	Customer Engagement	DER: percentage adoption, by class	Unrelated. Reported Elsewhere
45	Customer Engagement	Storage: percentage adoption, by class	Unrelated. Reported Elsewhere
46	Customer Engagement	Customer access to hourly or sub-hourly data	quarterly
47	Customer Engagement	Third-party service access to customer data	No. Reported elsewhere
48	Customer Engagement	Variety, quality, accessibility of customer data available (consistent with privacy and CEUD requirements)	annual
49	Customer-Site Asset Effectiveness	Demand Response: annual max MW reduction total and as a percentage of load, by class	Potential future
50	Customer-Site Asset Effectiveness	Demand Response: MW enrolled total and as percentage of load, by class	Potential future
51	Customer-Site Asset Effectiveness	DER: MWh generated as percentage of sales, by class	Unrelated. Reported Elsewhere
52	Customer-Site Asset Effectiveness	DER: MW installed as percentage of load, by class	Unrelated. Reported Elsewhere
53	Customer-Site Asset Effectiveness	Storage: MWh installed energy capacity as percentage as percentage of sales, by class	Unrelated. Reported Elsewhere



<b>Table 2: AMI and FAN Transparency Metrics; Xcel's Witnesses' metrics in bold</b>			
#	CATEGORY	DESCRIPTION	XCEL REPORTING
54	Customer-Site Asset Effectiveness	Storage: MW installed capacity as percentage of load, by class	Unrelated. Reported Elsewhere
55	Customer-Site Asset Effectiveness	Non-Wires Alternatives (NWA): MW as percentage of (peak) load	Unrelated
56	Customer-Site Asset Effectiveness	NWA: percentage of customers participating, by class	Unrelated
57	Customer-Site Asset Effectiveness	NWA: savings (\$) per year	Unrelated
58	Customer-Site Asset Effectiveness	Percentage of grid supporting services provided by DER vs. traditional solutions	Unrelated
59	AMI (Capital)	Capex for Asset Health/Reliability, Capacity Projects	Unrelated. Reported Elsewhere
60	AMI (Capital)	Storm related capital restoration costs	Unrelated. Reported Elsewhere
61	AMI (Capital)	AMI meter failure rate (avoided meter purchases)	annual
62	AMI (O&M)	Annual trips for damaged customer equipment	annual
63	AMI (O&M)	Annual trips for residential manual disconnection	annual
64	AMI (O&M)	Annual trips for residential manual reconnection	annual
65	AMI (O&M)	Annual "OK on Arrival" field visits	annual
66	AMI (O&M)	Annual voltage investigation field visits	annual
67	AMI (O&M)	O&M for Asset Health/Reliability, Capacity Projects	Unrelated. Reported Elsewhere
68	AMI (O&M)	O&M for storm related activity	Unrelated. Reported Elsewhere
69	AMI (Other)	Customer-minutes of outage (CMO) - major events	Possibly
70	AMI (Other)	CMO-single customer events	Possibly
71	AMI (Other)	CMO-tap level events	Possibly
72	AMI (Other)	Cost of consumption on inactive meters	annual
73	AMI (Other)	Commodity bad-debt expense	future
74	AMI (Other)	Residential demand shift from TOU rates	Potential future



<b>Table 2: AMI and FAN Transparency Metrics; Xcel's Witnesses' metrics in bold</b>			
#	CATEGORY	DESCRIPTION	XCEL REPORTING
75	AMI (Other)	Medium C&I demand shift from TOU rates	Potential future
76	AMI (Other)	Residential peak demand reduction from Critical Peak Pricing	Potential future
77	AMI (Other)	Medium C&I peak demand reduction from Critical Peak Pricing	Potential future

\*Xcel reporting column reflects if Xcel could / would report on the metric as stated in its initial petition filed November 24, 2021 in docket no. E002/M-21-814 attachment A pp90-97.

## Attachment 2: History of Transmission Cost Recovery Riders

Per the Transmission Statute, MN Stat. §216B.2425, all public, municipal, and cooperative utilities must provide status reports in November of each odd-numbered year (biennial transmission reports). These reports list specific present and reasonably foreseeable future inadequacies in the transmission system in Minnesota as well as identify alternative means of addressing each inadequacy listed.

In 2015, the Legislature amended MN Stat. §216B.2425 to add an additional requirement for utilities operating under multiyear rate plans to file biennial reports on investments that they consider necessary to modernize the transmission and distribution system by enhancing reliability, improving security against cyber and physical threats, and by increasing energy conservation opportunities by facilitating communication between the utility and its customers through the use of two-way meters, control technologies, energy storage and microgrids, technologies to enable demand response, and other innovative technologies. In 2015, at the same time as it amended MN Stat. §216B.2425, the Legislature amended MN Stat. §216B.2425, subdivision 7b, to allow for rider recovery of certain distribution costs associated with new facilities, planning, and grid modernization investments certified by the Commission under MN Stat. §216B.2425.

In a proceeding separate from a project's certification, utilities can petition to recover costs associated with certified projects, eligible under MN Stat. §216B.16; Subd. 7b.

Generally, a public utility may not change its rates without undergoing a rate case in which the Commission comprehensively reviews the utility's costs and revenues. However, the Legislature created exceptions to this general policy, whereby a utility may implement a rider to expedite recovery of certain costs not reflected in the company's current base rates. Under Minn. Stat § 216B.16, subd. 7b, the Commission is authorized to approve a "tariff mechanism" that allows a utility to use a rider to recover the Minnesota jurisdictional costs of new, Commission-approved transmission facilities, projects determined by the Midcontinent Independent System Operator (MISO) to benefit the utility or the integrated transmission system, and certified grid modernization projects. It has been the Company's past practice in TCR petitions to request approval for recovery of the total costs under a single recovery mechanism—the TCR Rider. It has also been the Company's past practice in grid modernization certification petitions to request approval for certification every odd-numbered year, in November, and for the Commission to certify projects by June of even-numbered years, and then for the utility to seek TCR cost recovery the following November. All projects granted recovery under the TCR rider are rolled into a monthly per kWh or KW charge, depending on the customer class, on customers' bills.

On October 30, 2015 Xcel filed its first Biennial Distribution Grid Modernization Report.<sup>84</sup> In its report the Company requested certification for its ADMS that was positioned as a necessary technical upgrade to allow the Company to monitor and control the entire electric distribution grid network that it asserted aligned with specifications in Minn. Stat. §216B.2425. Groups were split on whether the Commission should grant certification. While the Department and OAG wanted the Commission to delay certification until developing rules surrounding certification criteria others like Fresh Energy and MN Solar Energy Industry Association (MnSEIA) argued that the potential for a project to promote efficient uses of the grid should be the focus of any certification decision. The Commission certified ADMS on June 28, 2016; citing alignment with MN Stat. §216B.2425. More, the Commission's Order stated:

The Commission is not persuaded that it is necessary to adopt a comprehensive set of certification criteria at this time, or to delay certification to conduct rulemaking... Moreover, the Commission agrees with Xcel that it can interpret the statute on a case-by-case basis until such time as a comprehensive list of criteria is established. Rather than initiate rulemaking immediately, the Commission is convinced that it is more prudent to develop these criteria over time as the Commission gains experience with grid modernization.<sup>85</sup>

The action of certification acknowledges a “priority” status for the project and is akin to the Certificate of Need granted to Transmission projects under MN Stat 216B.243, as no such certification or set of standard criteria are available for distribution projects other than those listed in MN Stat. 216B.2425. In granting certification, the Commission also, importantly, established the relationship between certification and cost recovery.<sup>86</sup> Specifically, the Commission wrote that its decision represented only a finding that the project was consistent with the requirements of MN Stat. §216B.2425. Any rider recovery of costs associated with the project will be determined in response to a petition for rider recovery of those costs under Minn. Stat. § 216B.16, subd. 7b. At that time, Xcel would have the burden of establishing the prudence of the costs it requests to recover through the Transmission Cost Recovery (TCR) Rider.<sup>87</sup>

On November 8, 2017 Xcel filed a TCR rider petition to recover costs associated with its ADMS project. On September 2017, 2019 the Commission authorized rider recovery and required

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<sup>84</sup> 2015 Biennial Report- Distribution Grid Modernization filed October 30, 2015 in Docket Nos. E999/M-15-439 and E002/M-15-962.

<sup>85</sup> Order Certifying Advanced Distribution Management System (ADMS) project Under MN. Stat. § 216B.2425 and Requiring Distribution Study issued June 28, 2016 in Docket No. E-002/M-15-962 p9

<sup>86</sup> Order Certifying Advanced Distribution Management System (ADMS) project Under MN. Stat. § 216B.2425 and Requiring Distribution Study issued June 28, 2016 in Docket No. E-002/M-15-962

<sup>87</sup> Order Certifying Advanced Distribution Management System (ADMS) project Under MN. Stat. § 216B.2425 and Requiring Distribution Study issued June 28, 2016 in Docket No. E-002/M-15-962 p9

regular reporting on the status of ADMS installation and spending.<sup>88</sup> More, the Order required Xcel, upon requesting future AGIS cost recovery, to include a business case and comprehensive benefits assessment. In addition to requirements for Xcel in future TCR petitions, the Commission also requested the Department of Commerce investigate the potential costs and benefits of grid modernization investments proposed for recovery by Xcel in its next rate case or TCR filing and to assist the Department in providing recommendations to the Commission regarding any such investments.

On November 1, 2019 Xcel Energy filed both a rate case and its second integrated distribution plan (IDP). Both filings presented Xcel's AGIS. Included within AGIS are the Company's management software (ADMS), new meters (Advanced Metering Infrastructure; AMI), and a web allowing dispersed meters to communicate with customers and the Company (Field Area Network; FAN). Xcel later withdrew the rate case but still, under Minn. Stat. § 216B.2425, requested certification of its AGIS investments as outlined in its IDP.

On July 23, 2020 the Commission certified Xcel's AMI and FAN projects and APT, rendering them, similar to the previously certified ADMS and TOU Pilot, eligible for rate recovery through the TCR.<sup>89</sup> However, while the Commission found that AMI and FAN aligned with the Grid modernization statute (MN Stat. §216B.2425), some parties argued that consistency with statute was not clear, logical, or workable standard for evaluating certification requests. In response, the Commission determined that for certification requests the Commission would continue to apply statute on a case-by-case basis, and that cost recovery would be based upon a utility accomplishing Commission-approved metrics and performance evaluations for the certified projects. Any future proposals for cost recovery of investments certified in this order must be accompanied by a proposal for specific metrics and evaluation methods, and a detailed plan describing how the company will maximize the benefits of the investments for ratepayers.

The Commission moved forward AMI and FAN cost recovery by setting out additional criteria for future cost recovery proposals: mechanisms to minimize cost increases and maximize reductions; discussion of alternatives considered; and a rate design "road map." The Commission also opened two dockets that were to precede a TCR rider petition: Docket no. 20-680 focused on procedural paths; Docket no. 20-627 in which the Department led a stakeholder process to produce a report on potential metrics, performance evaluation methods, and consumer protections applied to cost recovery of AMI and FAN investments.

**Table. TCR Rider Petitions, Certifications, and Recovery Amounts.**

Docket	Date	Item	Years	Amount
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<sup>88</sup> Order Authorizing Rider Recover, Setting Return on Equity, and Setting Filing Requirements issued Sept 27, 2019 into docket no. E002/M-17-797.

<sup>89</sup> Order Accepting Integrated Distribution Plan, Modifying Reporting Requirements, and Certifying Certain Grid Modernization Projects issued July 23, 2020 in Docket No. E002/M-19-666.

15-439	Report 30 Oct 2015	ADMS	2016 - 2018	Design phase (2016) - implement (2018) \$9 million / year for three years
15-962	Order <sup>90</sup> 28 Jun 2016	ADMS		Certification of ADMS
17-797	Petition	ADMS	2017- 2018	Budget \$69.1 mil 2016 – 2018 = \$27mil; 2019-2020 <sup>+</sup> = \$42.1mil
17-797	Order 27 Sept 2019	ADMS	-2018	\$10.2mil (portion of cost not recovered in base rates)
19-721	Petition 15 Nov 2019	ADMS	2019– 2020	\$27.2mil (portion of cost not recovered in base rates)
19-721	Order 10 Dec 2021	ADMS	2019– 2020	\$69.1 mil cap, including \$27.2 mil forecasted cap ex above base rates
19-666	IDP initial	AGIS incl AMI & FAN		AMI & FAN capital: \$275.7 million through 2022, and approximately \$204 through the 2029 IDP period. AMI & FAN O&M: \$41 million of O&M through 2022, and approximately \$101 million through the 2029 IDP period  AMI Capital \$376.2 mil; O&M 94.8 mil FAN Capital \$92.6 mil; O&M 8.1 mil
19-666	Order 23 Jul 2020	AMI & FAN		Certify AMI and FAN. No cost boundaries. Cost recovery contingent on accomplishing performance metrics.
21-814	Petition 24 Nov 2021	AMI & FAN	2021- 2022	AMI Capital \$366.3 mil; O&M 92.9 mil FAN Capital \$98.1 mil; O&M 6.4 mil

<sup>90</sup> Order Certifying Advanced Distribution Management System (ADMS) project Under MN. Stat. § 216B.2425 and Requiring Distribution Study. Issued June 28, 2016 in DOCKET NO. E-002/M-15-962 at 9, "Several parties argued that the Commission should delay certifying ADMS until an exhaustive set of certification criteria can be fleshed out through rulemaking. However, the Commission is not persuaded that it is necessary to adopt a comprehensive set of certification criteria at this time, or to delay certification to conduct rulemaking."

Attachment 3: Adaptability of Investments<sup>91</sup>

Tech	Model	Plans for Adaptation
Meter	Itron Riva 4.2	Built in theft detection and “last-gasp” outage notice
	Energy Measurement	Remote configuration- no need for separate meters for separate rates (e.g. TOU or DER). Record energy consumption at 5min but most programmed at 15min. Data transmitted every 4 hours but also on-demand
	2-Way Radio communication with FAN to Xcel and to devices in home.	<p>Non-proprietary, industry-standard protocols that gave Xcel “greater certainty” of future interoperability.</p> <p>Radios connect to Company via FAN using:</p> <ul style="list-style-type: none"> <li>-mesh network where multiple connectivity nodes allow system to form alternate connection pathways if one path fails</li> <li>-industry standard WiSUN</li> </ul> <p>Radio connects, with permission, to Customer’s devices:</p> <ul style="list-style-type: none"> <li>-WiFi radio using IEEE 802.11 protocol, industry standard for communication with advanced grid devices</li> <li>- WiFi aligns with tech already in customers’ devices so they don’t need to purchase new tech to communicate with meters.</li> </ul> <p>Powerline Carrier (PLC) firmware update planned 2023 allows communication via power lines to other Company devices for improved picture of meters/grid for planning</p>
	Distributed Intelligence (DI)	<p>Linux-based operating system</p> <p>ARM cortex microprocessor with RAM and Flash memory that allow for data analysis at meter, not at Xcel HQ.</p> <p>DI also allows for remote updates to meter software which also precludes need for new hardware</p>
	Internal service switch	Remote disconnect / reconnect will reduce field work and truck rolls.
FAN	Communication method (broadly)	All meters collect usage data but AMI can also: Alerts company to outages, tampering, or other abnormal conditions. Reduces field visits by meter-readers.
	Mesh WiSUN	Industry standard like IEEE standards for WiFi. Avoids costs / complexity of hard-wired design (like fiber-optic cable) or “lack of robust nature of” point-to-multi-point radio.
	Backhaul	<p>-public long-term evolution (LTE)</p> <p>(cellular) service contracted from well-known providers</p> <p>- industry standard, non-proprietary-based equipment</p>
	Wide Area Network	Pre-dates FAN. Privately owned fiber-optic cable and hardware, supplemented by leased circuits from a variety of carriers and satellite backup facilities

<sup>91</sup> Xcel Supplemental Filing August 17, 2022, docket no. E002/M-21-814.

#### Attachment 4. Customer Energy Use Data (CEUD)

Individual data are available through AMI in intervals shorter than allowed by the Commission, and data sharing may require customer consent or further contemplation of anonymization screens. Therefore, additional data privacy practices may be appropriate to discuss as well as how to request consent in a way that is easily comprehensible and offers adequate protection for customers. The Department suggested docket no. 19-505 as the appropriate venue for discussions. The Department's concerns included access to data from customers' Home Area Network (HAN).

#### ***Background for Docket No. 19-505***

In 2017, the Commission prohibited utilities from disclosing CEUD to third parties without customer consent unless the utility adequately protected its customers' anonymity but did not set specific standards for doing so.<sup>92</sup> In 2020 the Commission accepted CUB's petition for the use of uniform Open Data Access Standards (The Standards or ODAS) for gas and electric rate-regulated utilities.<sup>93</sup> The Standards **only** apply to whole-building aggregated CEUD for building owners and benchmarking purposes and buildings with 4 units or larger. All other requests for aggregated CEUD and all requests for anonymized CEUD are subject to each utility's individual privacy screening policies.

Standards include use of aggregated datasets (all customers' use added together) in which no fewer than 4 customers with none greater than 50% of energy use). Standards also offer potential screens for Anonymized data in which no fewer than 15 customers can be in a dataset w no one customer more than 15% of use (names / PII removed but each customer's usage visible). However, the Commission did not authorize application of the Standards to any use case related to anonymized CEUD in its November 2020 Order.

The Commission also defined third parties<sup>94</sup> as able to request CEUD which, only include for-profit companies that provide services, like demand response or energy efficiency, to the utility (Table 1<sup>95</sup>). Utilities must sign a contract with a third party with whom it shares anonymized CEUD that offers certain protections for customers' data.

In April 2022, the Commission approved a petition to use Confidence Intervals to share data for Minneapolis buildings with 1-3 units, to comply with Minneapolis' recent legislation to make

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<sup>92</sup> In the Matter of a Commission Inquiry into Privacy Policies of Rate-Regulated Energy Utilities, Docket No. E,G-999/CI-12-1344, Order Governing Disclosure of Customer Energy Use Data to Third Parties, Requiring Filing of Privacy Policies and Cost Data, and Soliciting Comment (January 19, 2017).

<sup>93</sup> Order Adopting Open Data Access Standards and Establishing Further Proceedings issued November 20, 2020 in Docket Nos. E,G-999/M-19-505 and E,G-999/CI-12-1344

<sup>94</sup> Regional governments were added to list of third-parties able to request CEUD see p16, Order Refining Open Data Access Standards issued March 13, 2023 in docket nos. E,G-999/M-19-505 and E,G-999/CI-12-1344

<sup>95</sup> Staff's December 5, 2022 Briefing Paper in Docket No. G-999/M-19-505 at 11



energy usage available to prospective tenants. Use of confidence intervals allowed utilities to share CEUD without first seeking customers' consent.

The Commission last heard docket no. 19-505 on December 15, 2022. In one consideration for the Commission, Staff explained that widespread AMI deployment would increase importance of third-party access to CEUD. For example, CUB's comments<sup>96</sup> highlighted the importance of data access for research that would support climate action which, Staff suggested may be realized through new investments like additional electrification efforts. The Commission added census boundaries to the Standards' list of geographic boundaries for which a third party may request CEUD. The Commission delegated authority to the Executive Secretary to open a comment period on certain topics regarding anonymized data under the Commission's approved Open Data Access Standards.<sup>97</sup>

**Table 1: Organizations permitted to request Aggregated and Anonymized CEUD**

<b>Aggregated CEUD<sup>27</sup></b>	<b>Anonymized CEUD<sup>28</sup></b>
<ul style="list-style-type: none"> <li>• Tax-exempt organizations<sup>29</sup> based within the U.S.</li> <li>• U.S. Federal Government Agencies and subdivisions</li> <li>• State of Minnesota Government agencies, boards, and/or commissions</li> <li>• Local government entities with jurisdiction within Minnesota</li> <li>• Government entities of federally recognized tribes that share Minnesota's geography</li> </ul>	<ul style="list-style-type: none"> <li>• Tax-exempt organizations based within the U.S.</li> <li>• U.S. Federal Government Agencies and subdivisions</li> <li>• State of Minnesota Government agencies, boards, and/or commissions</li> <li>• Local government entities with jurisdiction within Minnesota</li> <li>• Government entities of federally recognized tribes that share Minnesota's geography</li> </ul>
<ul style="list-style-type: none"> <li>• Property owners and managers<sup>30</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Entities that provide or seek to provide demand response, energy efficiency, or other services to a utility<sup>31</sup></li> </ul>

AMI will provide individual customer data (raw data not aggregated or anonymized) at 15-minute intervals or shorter. However, the Commission decided at its Dec 15, 2022 agenda meeting to modify the Standards to require aggregated data to be shared at intervals no more granular than monthly, and anonymized data to be shared at intervals no more granular than hourly.

<sup>96</sup> Comments CUB filed on May 23, 2022 in Docket Nos. E,G-999/M-19-505 and E,G-999/CI-12-1344 p5

<sup>97</sup> Comment period to include: a. Identification of anonymized CEUD use-cases; b. Refinement of specific provisions of the contract requirements for anonymized data access for identified use cases; c. Ascertaining the appropriate threshold for limiting the application of the Standards to commercial and industrial natural gas and electric customers for anonymized CEUD requests; d. Establishing the shortest data time interval for anonymized CEUD requests under the Standards; e. Ascertaining the preferred method by which to apply the 15/15 anonymization screen to CEUD at 15-minute and hourly time intervals; and f. Ascertaining the ability of Utilities to respond to anonymized CEUD requests at varying time-scales



#### Attachment 5: Other States' Approaches to AMI and Performance Incentive Mechanisms.

In January / February 2023 Staff learned from NARUC Center for Partnership and Innovation Staff that Hawaii and Illinois have metrics to assess utility performance related to AMI. NARUC Staff was not aware of other states with AMI metrics directly tied in with PBR frameworks / PIMs at the time of the discussion. Since, Staff has also evaluated Colorado's settlement agreement pertaining to AMI and specifically, the State's Itron Riva meters.<sup>98</sup> The settlement found that the meters' DI capabilities are in the public interest as is provision of HAN. Xcel was allowed to deploy grid-facing DI capabilities- capabilities of benefit to Company. However, to deploy customer-facing DI, which would provide analysis about device in a data about devices in customer's home, the Company would need to make a subsequent filing for which the Commission set several requirements. A caveat, the Company can deploy the existing HAN functionality of AMI (settlement thus lifted PSC's prior ban on HAN deployment). Xcel Colorado plans to seek cost recovery for the incremental costs of DI development and deployment in other cost recovery proceedings. While the settlement did not discuss performance evaluation or metrics, Xcel must report on AMI-DI grid-facing capabilities in its Distribution System Plan.

**Hawaii Long-Term PBR.** In December 2020 the Hawaii Public Utilities Commission (HI PUC) approved a performance-based regulatory framework for Hawaiian Electric Companies.<sup>99</sup> HI PUC introduced an AMI utilization PIM to accelerate use of AMI. The metric focused on number of customers with advanced meters that enable participation in time-varying rates and DER programs; more, the HI PUC expects this PIM to evolve as the Companies finds new ways to deliver customer and system benefits related to AMI meter data.<sup>100</sup>

A stakeholder workgroup met following the HI PUC decision. The group produced a PIM that "would incentivize the Companies to leverage their grid modernization investments and engage customers beyond what is already planned" in Grid Modernization programs.<sup>101</sup>

Table. Metric for HI PUC AMI Performance Incentive Mechanism	
<b>Metric</b>	% Of total customers with advanced meters delivering at least two of the following benefits:

<sup>98</sup> Colorado Unanimous Comprehensive Settlement Agreement in Proceeding No. 21A-0279E. In the matter of public service company of Colorado for approval to amend the certification of public convenience and necessity for its advanced grid intelligence and security (AGIS) initiative. Attachment A. February 18, 2022.

<sup>99</sup> <https://puc.hawaii.gov/energy/pbr/> see also Decision and Order no. 37507 filed December 23, 2020 in Docket no. 2018-0088 [2018-0088.PBR .Phase-2-DO.Final .mk .12-22-2020.E-FILED.pdf \(hawaii.gov\)](#) beginning p137.

<sup>100</sup> HI PUC Decision and Order no. 37507 filed December 23, 2020 in Docket no. 2018-0088 [2018-0088.PBR .Phase-2-DO.Final .mk .12-22-2020.E-FILED.pdf \(hawaii.gov\)](#) p141.

<sup>101</sup> HI PUC Decision and Order no. 37787 issued May 17, 2021 in Docket no. 2018-0088 [DocumentViewer \(hawaii.gov\)](#) p52-53.

<b>A</b>	“Customer Authorization”	Customer authorization for the sharing of interval data with third parties. This refers to customers with advanced meters who authorize the Companies to share the customer's interval data with third parties through Green Button Connect My Data or alternative mechanism.
<b>B</b>	“Energy Usage Alert”	Customers with advanced meters who sign up, via the Companies' Customer Energy Portal ("Energy Portal") or by other means, for customer energy usage alerts. Usage alerts should allow customers to choose a preferred delivery method (e.g. text, phone call, email). In this way, customers are not required to consistently visit the Company Energy Portal to receive their AMI data.
<b>C</b>	“Program Participation”	Customers with advanced meters who <u>newly</u> enroll in open existing time-varying tariffs or DER programs, as well as any new time-varying tariffs or DER programs. This metric incentivizes the Companies to encourage participation in programs that leverage AMI investments and to measure customers who <i>are</i> enrolled, not that merely <i>could be</i> enrolled.

The HI PUC also introduced a PIM that captures use of AMI as it relates to DER curtailment, recognizing that DER customers with advanced meters provide the most reliable data source; utilities will report Total MW and MWh of curtailment from DERs, including partial curtailment or power reductions.<sup>102</sup>

The HI PUC PIM incentive is tied to financial reward only and is calculated on a target revenue basis. “The PIM structure provides for incremental incentives according to linear interpolation between upper and lower reward targets. This target and reward design ensures that incremental improvements are eligible for a greater range of rewards and represents an alternative to a tiered structure.”<sup>103</sup> Targets were linked to the Companies’ forecasted meter deployment and were set as a percent of customers with AMI/ year for three years with plans to revisit after three years.

<sup>102</sup> HI PUC Decision and Order no. 37787 issued May 17, 2021 in Docket no. 2018-0088 [DocumentViewer \(hawaii.gov\)](#) p107 with final metric listed in Appendix A p5.

<sup>103</sup> HI PUC Decision and Order no. 37787 issued May 17, 2021 in Docket no. 2018-0088 [DocumentViewer \(hawaii.gov\)](#) p59. Table found on p53.

**Table. HI PUC Incentive Structure**

Target and Potential Rewards	2021	2022	2023
Reward opportunities for meeting upper target: \$1,400,000 HECO \$300,000 HELCO \$300,000 MECO	5%	15%	30%
If the Companies' performance falls between the lower and upper targets, the Companies will be eligible for a reward that corresponds to a linear interpolation between the minimum and maximum rewards.			
Reward opportunities for meeting lower target: \$700,000 HECO \$150,000 HELCO \$150,000 MECO	2.5%	10%	20%

**Illinois Short-Term AMI Implementation Monitoring.** Pursuant to the Energy Infrastructure Modernization Act (Illinois Public Act 97-616, or "EIMA") and other initiatives, Ameren and Commonwealth Edison (ComEd) have been consulting with the Smart Grid Advisory Council and reporting on their AMI implementation plan since 2013.<sup>104</sup> Utilities report progress in the previous 12 months and plans for the following year as well as progress towards metrics the utility identified in their AMI plan. It does not appear that incentives or penalties are tied to Illinois utility performance.

Table. Metric Categories on which Ameren and/or ComEd Report			
Metric Category	Metrics Showing Potential for Use of Meters	Metrics Showing Actual Use	Metrics Showing Change
Deploy	Pre-deployment set up	# and % customers w AMI; opt-outs; AMI meter failures	
Web / Portal	Customers able to access	customers signed up	customers with accounts whose energy use changes

<sup>104</sup> Ameren IL AMI Annual Update 2021 accessed [Ameren Illinois Company Advanced Metering Infrastructure](#) and Commonwealth Edison Smart Grid Advanced Metering Annual Implementation Progress Report April 2021 accessed [Commonwealth Edison Advanced Metering Infrastructure \(illinois.gov\)](#)

<b>Table. Metric Categories on which Ameren and/or ComEd Report</b>			
<b>Metric Category</b>	<b>Metrics Showing Potential for Use of Meters</b>	<b>Metrics Showing Actual Use</b>	<b>Metrics Showing Change</b>
Rate	Customers eligible for special rates	customers signed up	Demand reduction via AMI-enabled programs
Data	Customers registered to receive AMI data	# meters communicating back to network	
3 <sup>rd</sup> Parties	Interoperability-certified products introduced to smart grid marketplace; retail service provider requests for energy data		
Greenhouse Gasses			Emissions reductions from limited manual reading
Storage	# Storage locations connected to grid; MW capacity		
System	total DG capacity connected to distribution system; Average # customers per automated three phase 12kV line segment	Use of AMI for voltage regulation; # Customers on Net Metering tariff; Load Factor; # and % grid assets monitored, controlled, or automated via SCADA	Improvement in line loss reductions
Parallel Operation	# Locations and MW with service under Parallel operation connected to transmission or distribution system	Retail sales to the grid from customers under Parallel Operation	
Utility Finances	Consumption on inactive meters; uncollectibles; Capital and O&M costs		
Customer Service	Time to connect; complaints; bill impacts; education; outreach; disconnection notices & disconnects		

Attachment 6: Annual ADMS Compliance Report Filing<sup>105</sup>

	<b>Actual Spend</b> (In millions)	<b>Est. Future Spend (Mil)</b>	<b>Work Completed</b>	<b>Work in Progress</b>
<b>2020</b>	Capital- \$38.9 O&M- \$1.2	Capital- \$22.6 O&M- \$16.6  (Through 2025)	Design and Planning	Software install, * Hardware install, Software testing, Implementation- training and GIS modeling completed
<b>2021</b>	Capital- \$10.8 O&M- \$1.2	Capital- \$15.9 O&M- \$12.5  (Through 2025)	Design and Planning, Software install, Software testing	Hardware install- finishing operator workstations Implementation- building network at control centers; determining data needed to function; device test and tuning
<b>2022</b>	Capital- \$5.5 O&M- \$1.4	Capital- \$12.8 O&M- \$11.1  (Through 2026)	Design and Planning, Software install, Software testing, Hardware install	Implementation- finished go- live for all three MN control centers. Bring in remaining substations and feeders. Included training.
<b>2023</b>	Capital- \$1.3 O&M- \$1.4	Capital- \$10.1 O&M- \$10.2  (Through 2027)	Design and Planning, Software install, Software testing, Hardware install, Device testing, Training, technical validation, and business readiness.	Implementation- Network model enhancement activities. Design for integration with AMI and FAN concurrent with AMI implementation.

\* Category would include linking to existing systems like Supervisory Control and Data Acquisition (SCADA); prefix "D-" would mean Distribution.

<sup>105</sup> Annual ADMS Compliance Filings made: Jan 24, 2020 (Docket Nos. 19-666 and 17-797); Jan 25, 2021 (Docket Nos. 19-666, 19-721, and 20-680); Jan 25, 2022 (Docket Nos. 21-694 and 21-814); Jan 25, 2023 (Docket Nos. 21-694 and 21-814).