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Xcel Energy

Docket No.: E002/M-17-776

Response To: MN Public Utilities Information Request No. 5  
Commission

Requestor: Hanna Terwilliger, Michelle Rosier, Tricia DeBleeckere

Date Received: December 21, 2017

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Question:

Please give more detail on the FAN and AMI, including total projected capital cost, how long the rollout is projected to take, and what other system functions it will or could support. In particular, could it support customer election into optional programs while reducing or eliminating additional monthly customer charges, including:

- DER customers

Electric vehicle Demand response programs; such as, SaverSwitch and AC Rewards.

Response:

As noted in our Grid Modernization Report, our AMI and Field Area Network (FAN) proposal has not yet matured to the point where the Company is prepared to seek certification. Therefore, there is limited additional information on expected functionality, projected costs, and implementation timelines beyond the general information we have already provided.

At the most fundamental level, our AMI proposal will ensure that we can continue to support meter reading for the range of rates that we currently offer to customers. This functionality, while seemingly basic, is critical in that it positions the Company to continue to meet our requirements under the Commission's Rules regarding meter reading, estimated bills, and meter accuracy.<sup>1</sup> We are currently operating under an agreement with a vendor for Automated Meter Reading (AMR) services. Customers' meter readings are gathered via the vendor's proprietary, fixed wireless network that was initially deployed in the 1990s. Our AMR vendor has informed the Company that

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<sup>1</sup> For example, Minn. Rules 7820.3300, 7820.3400, 7820.3800, 7826.0900.

the network supporting our present AMR is approaching the end of its life – and even sooner, we are approaching the end of our present agreement with our AMR vendor.

This presents the opportunity to decide whether the right approach for Minnesota is a like-for-like replacement of our present AMR capabilities – or whether we should lever-up to AMI to enable greater future capabilities. In our view, a move to AMI allows the Commission to retain the flexibility to add functionalities as technology advances and our customers’ expectations evolve. In that way, AMI fits into the building-block approach we are recommending – establishing a solid, open, and scalable foundation, continuing to meet our baseline regulatory requirements, and pausing before we advance toward additional functionalities.

As we discuss in our response to MPUC Information Request Nos. 1, we will be able to scale-up from the incremental FAN infrastructure that will support FLISR and the TOU Pilot to support AMI. While the future functionalities may not be fully defined at this point, we believe that provides important flexibility. For example, we know that we will want to learn from pilots, talk to other utilities, and glean insights directly from our customers about what works – and use that information to further leverage our AGIS investments to improve our operations, delight our customers, and possibly even reshape our system. Even though the future functionality of our proposal is not set in stone, we have put significant time and effort into understanding potential customer and operational opportunities that AMI may enable – each of which will require incremental communications infrastructure or other investment to support beyond fundamental meter reading.

Potential customer-side opportunities that may be enabled or enhanced by AMI:

1. Improved Company segmentation of customer types and improved marketing and outreach;
2. Proactive bill alerts that make customers aware of their energy use and corresponding charges prior to their actual billing date;
3. The opportunity to offer dynamic or more advanced rates that encourage load shifting, energy conservation, or demand response;
4. Improved monitoring of and communication with DERs;
5. “Smart” or “connected” home solutions that use interval billing and usage data to optimize the operation of connected devices and appliances; and
6. Improved insight into customer energy usage and more valuable recommendations for customers to conserve energy or change behavior in order to reduce bills.

Potential system operational capabilities that may be enabled or enhanced by AMI:

1. Improved power quality event captures e.g. sags, swells, etc. that would reduce response time to resolve distribution problems before they magnify;

2. Cost-effective sensors for applications such as voltage control;
3. Improved outage management and storm restoration efficiencies;
4. Improved tamper and energy theft detection;
5. Remote configuration and troubleshooting capabilities of field devices enabling operational efficiencies.

We note that each functionality requires consideration of the underlying FAN infrastructure – the requirements for which are determined by the numbers of devices it needs to support and the volume of expected data it will need to communicate.

In terms of deployment, we provided general considerations and a timeline starting at page 42 of our Annual Report. In summary, the plan is for component facilities to be constructed and placed in-service over time – growing and laying additional capabilities and functionalities. ADMS and the FAN are foundational to all other AGIS components. ADMS is well-underway, and as discussed in our Transmission Cost Recovery Rider Petition in Docket No. E002/M-17-797, is expected to go into service in 2020.<sup>2</sup> The WiMAX and backhaul portion of the FAN is underway in 2018.<sup>3</sup>

If certified, the Wi-SUN portion of the FAN to support our proposed FLISR and TOU Rate Pilot will begin in 2019. In general, the FAN installation precedes the deployment of the advanced grid devices, such as FLISR and AMI meters by approximately six months.<sup>4</sup> For AMI specifically, our Annual Report provided a very general timeline of 2018 to 2023, which assumed a Company certification request in November 2018 and Commission approval of the request in June 2019.<sup>5</sup> We expect that we would begin implementation as soon as practicable after certification – and as determined through the certification process. As discussed in our Report, we would need to have FAN communications to customers’ homes and the AMI “head-end” in place before we install an AMI meter, in order to start billing those customers.<sup>6</sup>

In summary, we are facing a significant investment in metering infrastructure that will be necessary to continue to meet our fundamental meter reading and billing requirements. We have the opportunity to also make a step change in capabilities that

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<sup>2</sup> See Petition, IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY FOR APPROVAL OF THE TRANSMISSION COST RECOVERY RIDER REVENUE REQUIREMENTS FOR 2017 AND 2018, AND REVISED ADJUSTMENT FACTORS (November 8, 2017).

<sup>3</sup> To the level contemplated in our MYRP, as discussed by Company Witnesses Harkness and Bloch (Docket No. E002/Gr-15-826).

<sup>4</sup> In some instances, field devices may be installed in advance of FAN operability. Those devices will begin using the FAN for communication once the FAN components have been deployed and the network is operational in the area where the devices are located.

<sup>5</sup> Xcel Energy Grid Modernization Report, page 43.

<sup>6</sup> The AMI “head-end” is the software that facilitates the sending of commands to the field devices and receives the data back from the field devices.

will provide the Company robust information to facilitate analysis and development of pilot proposals for customer products, services, and rate programs, such as the TOU Pilot we proposed on November 1, 2017 in Docket No. E002/M-17-775. Our foundational AGIS initiatives will also facilitate improved system information and capabilities to improve our planning processes, understanding of Distributed Energy Resources on our system – and perhaps even facilitate changes to our system load shape and resource mix over time.

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