PUBLIC DOCUMENT

STATE OF MINNESOTA
BEFORE THE PUBLIC UTILITIES COMMISSION

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In the Matter of Xcel's Residential Time of Use Rate Design Pilot Program	E002 / M-17-775

COMMENTS OF THE OFFICE OF THE ATTORNEY GENERAL

The Office of the Attorney General – Residential Utilities and Antitrust Division ("OAG") respectfully submits these Comments regarding the proposal of Northern States Power Company ("Xcel" or "the Company") to establish a Residential Time of Use ("TOU") Pilot. The OAG recommends that the Commission approve the TOU Pilot with the changes described below.

These Comments will begin by discussing the procedural history of the TOU Pilot and the transparency of the process that Xcel used to create its proposal in Section I. Section II will address the details of the TOU Pilot, and why the Commission should approve it. Section III will discuss some changes that should be made to the pilot, and also some changes that the OAG considered but ultimately did not recommend. Section IV will focus on Xcel's position regarding rider recovery of the TOU pilot costs. Section V will address the meters required to operate the TOU Pilot, and how it relates to Xcel's future plans for metering infrastructure.

I. THE TOU PILOT PROCESS AND TRANSPARENCY.

Before Xcel filed its TOU Pilot proposal, the OAG recommended that the Commission take a different path based on concerns about the transparency of the process, and the resources necessary to review the technical details of an alternative rate design proposal. While the OAG

continues to recommend that significant changes like new rate designs or regulatory structures be developed by independent experts, the process that led to the TOU pilot proposal mitigated some (although not all) of the transparency concerns.

The process to develop a TOU Pilot began in Xcel's 2013 rate case, Docket No. 13-868. In that proceeding, a group of intervenors proposed that the Commission require Xcel to move its residential customers to an Inclining Block Rate ("IBR").[1] The OAG disagreed with the proposal, in part because it was important to compare the IBR against other alternative rate designs such as TOU. The Commission agreed, and ordered Xcel to establish an alternative rate design stakeholder working group in Docket 15-662.[2]

The alternative rate design working group met several times and the Department produced a report on November 10, 2015. The Commission requested additional comments, and on December 18, 2015, issued an Order establishing a procedure for moving forward with alternative rate designs.[3] The Commission requested several more rounds of comments, including a request for comments on whether Xcel should be required to develop an alternative rate design pilot.[4] The OAG and several other parties recommended a new TOU rate be developed, and provided specific parameters for how the TOU could be developed.[5] In particular, the OAG recommended that the Commission obtain the services of an independent expert to design a TOU rate for Xcel in order to ensure that the potential benefits of a TOU rate could be maximized for ratepayers.[6] Instead of responding to the Commission's Notice, Xcel,

[1] Direct Testimony of Colton, Chernick.
[2] Order at 90–91.
[3] Order Taking Procedural Actions to Further the Process to Establish an Alternative Rate Design, Docket No. 15-662 (Dec. 18, 2015).
[4] Notice of Comment Period, Docket No. 15-662 (Feb. 15, 2017).
[5] OAG Comments (Mar. 31, 2017); Citizen's Utility Board Comments (Mar. 31, 2017); Fresh Energy Comments (Mar. 31, 2017).
[6] OAG Comments (Mar. 31, 2017).

the Center for Energy and Environment, and the Great Plains Institute jointly filed brief comments stating that they had already begun developing a TOU Pilot, and that they would provide more information in the future.[7] On April 19, 2017, the Commission issued a Notice of Comment Period requesting comments on what procedures to use in light of Xcel's proposal,[8] but ultimately took no action.

When Xcel announced that it was developing a TOU pilot, the OAG expressed concerns with the transparency of Xcel's process. As the OAG stated in its March 31, 2017 Comments, "Xcel's financial interest conflicts with the goals of a TOU rate because the Company makes money by building infrastructure, and one of the goals of the TOU rate is to reduce the amount of infrastructure that is necessary to provide service."[9] The OAG's Comments explained that design features like "the timing and duration of peak hours and the price ratio between peak and off-peak hours" can have a very significant impact on how effective the TOU rate is in reducing system peak demand, and on customer retention.[10] The Comments further explained that "[g]iving the Company the responsibility to design and market an effective TOU rate would, effectively, be asking the Company to do something that is intended to reduce the amount of money the Company makes in the future."[11] For these reasons, the OAG recommended that the Commission require a TOU rate to be developed by an independent third party.

The OAG continues to believe that the best practice would be for independent experts to develop programs when they could provide benefit to customers but are potentially inconsistent with the utility's financial incentives. That said, some of the steps Xcel took in creating its TOU

[7] Joint Comments of Xcel, CEE, and GPI (Mar. 31, 2017).
[8] Notice of Comment Period (Apr. 19, 2017).
[9] OAG Comments at 11 (Mar. 31, 2017).
[10] *Id.* at 13.
[11] *Id.* at 14.

pilot proposal mitigated these concerns about transparency. The primary mitigating step Xcel took was to hire a consultant, Mr. Lon Huber from Strategen Consulting, who provided a transparent method for developing a TOU rate based on Xcel's demand curve and system characteristics. Developing the TOU rate using a specific analytical method mitigated some of the concerns about transparency, because the method was tied to specific data, and it was possible to review how the transparent method was applied to the data.

In addition, Xcel allowed Mr. Huber a significant amount of independence in developing the TOU pilot. As Mr. Huber explained in response to OAG Information Request 2, he was given "full latitude to conduct independent analysis and form independent recommendations" in a "collaborative process."[12] Mr. Huber further stated that "nearly every recommendation of [his was] adopted without material modification."[13] By allowing Mr. Huber a significant level of independence, Xcel improved the transparency of the program.

Xcel also held a series of small group workgroup meetings to solicit feedback on what the goals of a TOU rate should be, and how to accomplish them. These meetings were effective at educating the workgroup participants on the technical details for a TOU rate. The meetings also provided an opportunity for workgroup participants to explain the preferences and expectations to Xcel. Xcel explained that Mr. Huber's method "primarily relied on" these workgroup objectives.[14] The specific parameters of the proposed pilot indicate that this is the case.

In general, Xcel's process has produced a TOU pilot proposal that should be approved. That does not mean, however, that concerns about transparency in this proceeding, or in future

[12] OAG Information Request 2 Supplement, Exhibit 1
[13] *Id.*
[14] OAG Information Request 4, Exhibit 2.

ones, should not be addressed. Because Xcel has a financial interest in the rate designs and regulatory processes it uses to collect money from ratepayers, the best practice is for significant changes to be developed by an independent expert who does not report to Xcel. When those changes are developed by Xcel, or by experts hired by Xcel, the Commission should require Xcel to provide the types of transparency that are present in this proceeding: a stakeholder process to provide input on what the goals and outcomes should be, and a transparent method that is fully explained by the utility.

II. THE TOU PILOT WILL BENEFIT RATEPAYERS.

The Commission should approve Xcel's proposed TOU pilot because it will benefit ratepayers. The TOU pilot is designed to meet the primary goal of TOU rates—to reduce system peak demand—which should reduce the investments required to meet demand in the future.

A. THE GOALS OF AN EFFECTIVE TOU PILOT.

The TOU pilot could, potentially, be a significant regulatory change if the data from the pilot supports rolling out the TOU rate for all customers. For any significant regulatory change, it is important to establish what the goals and objectives are at the outset. Some significant work of this nature was done by the stakeholder workgroup, which is reported in the stakeholder meeting notes summary filed in Docket 15-662.[15]

The OAG agrees that the objectives described in the stakeholder meeting notes summary are the right ones for this pilot. The primary objective of a TOU rate should be to reduce system peak demand, in order to reduce system costs and use the system that exists more efficiently. It is equally as important that a TOU rate accomplish these objectives in a way that maintains or

[15] Notes from Stakeholder Meetings, *In the Matter of an Alternative Rate Design Stakeholder Process for Xcel Energy*, Docket No. E-002/CI-15-662 (Sept. 11, 2017) (eDocket No. 20179-13593-01).

improves customer satisfaction so that customers want to participate in the new rate. Xcel's TOU pilot should be evaluated based on whether it is designed to achieve this goal.

The stakeholder group also identified a series of objectives for this pilot, in particular. The stakeholder group's goals suggest that the Commission should use this pilot to (1) determine whether the timing, duration, and pricing of peak periods in Xcel's pilot are the best ones for accomplishing the overall goals of a TOU rate; (2) gather information about the most effective ways to inform and educate customers about the new TOU rate; and (3) understand the potential impact on vulnerable customer segments, and in particular low-income customers. The stakeholder group also discussed other important goals such as exploring how a TOU rate would interact with new demand response, how it could impact the future roll-out of Advanced Metering Infrastructure ("AMI") for Xcel, and exploring how the TOU rate could be improved through the use of technology.

The Commission should support this effort by establishing specific goals for the TOU pilot, so that Xcel and others know what outcomes the Commission expects the pilot to seek, and the stakeholder meeting notes provide a useful starting point. In particular, the Commission should find that the primary objective of a TOU rate is to reduce system peak demand, and that the goals of the TOU pilot should be to (1) determine the prices and on-peak periods that will most effectively reduce peak demand; (2) identify the outreach and education strategies that are the most effective; and (3) understand the potential impact on vulnerable customer segments like low-income customers.[16] The primary reason that the Commission should approve Xcel's TOU pilot proposal is that it is designed to meet these goals.

[16] The OAG does not object to the other goals discussed in the stakeholder meeting notes, but finds these goals to be the most important.

B. AN EFFECTIVE TOU RATE CAN REDUCE SYSTEM PEAK DEMAND.

The information gathered in this proceeding and the Alternative Rate Design proceeding (Docket 15-662) demonstrates that an effective TOU rate can reduce system peak demand, and that doing so will save customers money in the long-term. One meta-analysis conducted by the Regulatory Assistance Project concluded that a TOU rate could reduce system peak demand by more than ten percent.[17] When combined with technology, the impact can be even greater.[18] Even more importantly, the meta-analysis determined that from nearly fifty TOU or TOU plus technology pilots, *all but one* produced measurable reductions in peak demand.[19]

These conclusions are supported by specific analysis applied to Xcel's system. In 2014, The Brattle Group produced a study on Demand Response Market Potential for Xcel and concluded that a well-designed TOU rate could reduce system peak demand by more than 14 percent.[20] Xcel's current Time of Day rate is not effective at reducing system peak demand, given that fewer than one percent of eligible customers have chosen to enroll; the Market Potential report, in combination with the national experience with TOU rates, suggests that a better-designed TOU rate for Xcel could have a significant impact.

Recent research on customer behavior supports the theory that customers will change their consumption patterns in response to price signals from a TOU rate. One recent analysis concluded that sending a ten percent increase in the price ratio during peak periods would incent

[17] Regulatory Assistance Project & The Brattle Group, Time-Varying and Dynamic Rate Design (July 2012), http://www.raponline.org/wp-content/uploads/2016/05/rap-faruquihledikpalmer-timevary-ingdynamicratedesign-2012-jul-23.pdf

[18] The "technology" includes devices such as programmable or smart thermostats.

[19] *Id.*

[20] The Brattle Group, Demand Response Market Potential in Xcel Energy's Northern States Power Service Territory 3 (April, 2014), *available at* https://www.xcelenergy.com/staticfiles/xe/PDF/Regulatory/18-App-O-Demand-Response-Potential-Brattle-Group-Study-January-2015.pdf. It is worth pointing out that the potential 14% reduction was based on an opt-in TOU rate; the impact of an opt-out TOU rate could be higher.

customers to decrease their peak usage between 6.5 and 11.1 percent.[21] The analysis confirmed that customers also reduce their consumption, on average, in an opt-out rate design construct.[22] The analysis further concluded that the results were statistically significant: customers do respond to price signals by reducing their energy consumption during peak periods.[23]

The benefit of achieving these peak reductions could be significant. Xcel states that its 2017 through 2024 forecast predicts a net system peak of 8,792 MW.[24] If peak demand were reduced by ten percent, which has been achieved by other TOU rate designs, Xcel's net system peak would fall by approximately 880 MW. For comparison, Xcel recently estimated that its plan to construct a 750 MW combined-cycle gas plant in Becker would cost about $800 million. While it is not a direct comparison, reducing system peak demand is one factor that could mitigate the need for future generators, and the high level of capital investment that they require.[25]

C. XCEL'S TOU PILOT PROPOSAL IS A MORE EFFECTIVE TOU RATE THAN THE EXISTING ONE.

The parameters of Xcel's TOU pilot indicate that it may be an effective way to reduce system peak demand for several reasons.

[21] Faruqui, Sergici, and Warner, *Arcturus 2.0: A meta-analysis of time-varying rates for electricity*, 30 THE ELECTRICITY JOURNAL 67–68 (2017).
[22] *Id.*
[23] *Id.*
[24] Fresh Energy Information Request 1 Supplement, Exhibit 3 The Excel file in question will be e-filed in its native format because it is more than one thousand pages long. The net system peak represents the gross peak minus generation from renewables; Xcel's forecast predicts that the system peak will occur on July 29, 2021 at 4:00 p m.
[25] Reducing peak demand through effective rate design may also help to avoid problems of stranded costs, given the risk of constructing large, long-lived generators in this period of falling demand, increasing self-generation, and technological change.

1. The On- and Off-Peak Periods Proposed By Xcel Are Significantly Better Than The Existing Time Of Day Rate.

Xcel proposes a TOU rate with three pricing periods. Most of the day consists of the mid-peak from 6 AM to 3 PM and 8 PM to 12 AM. The on-peak period with higher prices lasts from 3 PM to 8 PM, and an off-peak period with lower prices lasts from 12 AM to 6 AM. On the weekends, there is no price increase during the on-peak time period. Xcel presented the prices for these time periods in the table reproduced below:

Table 5. TOU Pilot Rate Design

Proposed TOU Pilot Energy Rates with Standard Rate Comparison		TOU Ratio		Rates - Cents per kWh Average Monthly	June - September	October- May
TOU Pilot Rate						
On-Peak	3PM-8PM Weekdays	4.20		23.821	25.949	22.385
Mid-Peak	Other Hours	1.95		11.070	12.125	10.430
Off-Peak	12AM-6AM All days	1.00		5.676	5.676	5.676
Standard Flat Rate				12.386	13.437	11.742
TOU Percent Change from Standard Rate						
On-Peak	3PM-8PM Weekdays			+92%	+93%	+91%
Mid-Peak	Other Hours			-11%	-10%	-11%
Off-Peak	12AM-6AM All days			-54%	-58%	-52%
Notes: 1) Rates include fuel cost, 2) On-Peak excludes designated holidays						

These time-periods and prices are based on Xcel's system data and the method described in Attachment E to Xcel's petition. The method is a rational, transparent method for assigning costs to each hour of the day. Once each hour has been assigned a cost, it is relatively easy to group them into time periods, calculate the aggregate cost for each time period, and develop prices to collect the costs that are assigned. In other words, once an analyst decides what hours

will be in the on- and off-peak periods, it is relatively simple to create the prices for the those periods.

The remaining question, then, is whether the peak periods that Xcel has proposed are the best for this pilot. At the outset, it is clear that the TOU pilot proposal is a significant improvement over Xcel's existing Time of Day rate. In general, though, a shorter, earlier on-peak period may make it easier for customers to respond. The OAG looks forward to reviewing the Comments of other parties to determine whether a shorter or earlier on-peak is appropriate. If some parties prefer an earlier, shorter on-peak period, and Xcel prefers its proposal, the Commission could modify the pilot slightly to test multiple proposals across the two geographic areas.[26] Testing multiple on-peak periods to determine which one has the greatest impact on system peak, and is best for customers, would be consistent with the primary goal of the TOU pilot. In any event, the structure that Xcel has proposed is a significant improvement over the existing Time of Day rate, and is an indication that the TOU Pilot should be approved, possibly with minor changes to the timing or duration of the on-peak period.

2. The Peak To Off-Peak Ratios Will Produce Effective Price Signals.

Another key component of an effective TOU rate is the peak to off-peak ratio. Xcel's existing Time of Day rate has a peak to off-peak ratio of 7:1—meaning that the price during the on-peak period is seven times as high as the off-peak period. One recent report from the Rocky Mountain Institute found that standard TOU pricing ratios typically vary from 2:1 to 7:1,[27] indicating that Xcel's current design is on the far end of the range and may be a barrier for customers.

[26] Essentially, the test group could be split into two test groups, and each one could be assigned to a different peak period.

[27] Rocky Mountain Institute, A Review of Alternative Rate Designs 27 (May 2016), *available at* http://www.rmi.org/alternative_rate_designs.

The TOU pilot proposes an on-peak price that is approximately two times that during the mid-peak hours.[28] While this is on the low end of the range discussed in the Rocky Mountain Institute's report, the TOU pilot proposal also includes an overnight off-peak price that is approximately half of the price during mid-peak hours. The on-peak rate is approximately four times that of the overnight off-peak price. Because the TOU pilot includes three pricing periods, it cannot be directly compared to the results of the Rocky Mountain Institute analysis. That said, it appears that the on-peak to off-peak ratios that Xcel proposes are within the acceptable range of results. It is also consistent with a recent meta-analysis which concluded that a ratio of 2:1 would incent a customer to reduce consumption by nine percent, while a ratio of 4:1 would incent a reduction of 16 percent.[29] The meta-analysis concluded that higher ratios would have diminishing returns.[30] Based on this information, the ratios and prices that Xcel proposes strike a reasonable balance between sending strong price signals and seeking high levels of customer participation.

3. The Opt-Out Structure Will Increase Participation Without Limiting Customer Choice.

Xcel's choice to design a TOU pilot with an opt-out structure is a reasonable one that will maximize the potential benefits of the program while preserving customer choice. There are, generally, two possibilities for a TOU rate design: an opt-in program where customers must affirmatively choose to move to the TOU rate, or an opt-out program where customers are automatically moved to the TOU rate but may opt-out of the rate if they choose to. The opt-out structure is better for this pilot for several reasons.

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[28] Petition at 20, Table 5.
[29] Faruqui, Sergici, and Warner, *Arcturus 2.0: A meta-analysis of time-varying rates for electricity*, 30 THE ELECTRICITY JOURNAL 67–68 (2017).
[30] *Id.*

First, research indicates that the potential impact on peak reduction is dramatically higher for an opt-out rate than for an opt-in rate. While the average peak reduction per participant can be lower in an opt-out rate than an opt-in rate (because opt-in participants self-select and are typically more motivated and educated about the rate design), research indicates that the *aggregate* peak reduction of an opt-out program can be much higher because of the dramatically higher enrollment rate.[31] For example, Sacramento Municipal Utility Department ("SMUD") concluded that "[opt-out] plans offered to the same population of customers as opt-in plans are likely to produce much higher aggregate load reductions."[32] SMUD calculated that an opt-in plan producing 11.6 MW of peak load reduction would improve to 34.5 MW of load reduction if it were an opt-out plan—tripling the impact.[33] An opt-out rate is the best choice because it maximizes the potential peak reduction, and therefore the potential cost savings.

Second, selecting an opt-out rate reduces the cost of the pilot by limiting marketing costs. Xcel is conducting an opt-in TOU pilot in Colorado, but has had to expend significant ratepayer funds to get customers to move to the new TOU rate. In response to OAG Information Request 15, Xcel stated that it is spending between $130 and $173 to enroll each customer in the opt-in TOU pilot in Colorado.[34] If Xcel experienced similar costs to enroll the 10,000 customers it has targeted for *this* TOU pilot, it would end up costing ratepayers somewhere between $1.3 million and $1.7 million that is simply not required to conduct an opt-out pilot. This could make the Minnesota pilot cheaper, allow more funding to be directed towards educating customers about

[31] *See, e.g.,* Smart by Default, Faruqui, Hledik, and Lessem, Fortnightly Aug. 2014 https://www.fortnightly.com/fortnightly/2014/08/smart-default

[32] SMUD SmartPricing Options Pilot Evaluation, At 4, (Aug. 6, 2014) available at https://www.smartgrid.gov/files/SMUD_SmartPricingOptionPilotEvaluationFinalCombo11_5_2014.pdf.

[33] *Id.*

[34] OAG Information Request 15, Exhibit 4.

how to save money and reduce peak demand on the new rate design, or some combination of the two.

Third, an opt-out rate structure preserves customer choice. While customers in the TOU pilot group will be defaulted into the TOU rate structure, they will be able to return to standard rates at any time. There are no limitations on when customers are allowed to move back to standard rates, and no requirements to stay on TOU for a particular time. This structure allows customers to have complete control over which rate they are on, while targeting the greater aggregate impacts discussed above.

Fourth, the TOU pilot proposal includes additional consumer protections to ensure that customers are not harmed by the opt-out rate structure. Xcel's proposal includes a form of bill protection for all customers enrolled in the pilot. Customers who remain on the TOU pilot rate for 12 months are eligible for bill protection at the end of one year. At the end of the year, Xcel will compare the customer's bill under the TOU pilot rate to what the bill would have been under standard rates. If the customer's TOU bill is more than ten percent greater than it would have been under standard rates, Xcel will credit the excess to the customer's account. In other words, customers will be protected from the risk of unexpected bill increases from the TOU rate.

Fifth, Xcel proposes that customers who receive LIHEAP funds be eligible for additional bill protections. Rather than the single annual true-up available to all TOU participants, LIHEAP customers would receive true-ups on a monthly basis. Customers would receive a credit after any month in which the TOU rate caused a bill impact of more than ten percent. The LIHEAP protection is stronger in two ways: first, a monthly true-up provides credits to LIHEAP customers faster. Second, monthly true-ups may result in more credits over the course of a year because months with negative bill impact will not be netted against months with positive bill

impacts. While the OAG recommends some modifications to the bill protection, the structure that Xcel has proposed will provide important protections to ensure that customers are not unduly harmed by the TOU pilot.

4. The Geographic Design Of The TOU Pilot Is Necessary To Keep Costs Low.

One potential concern with the pilot design is that Xcel proposed to select customers on a geographic basis rather than selecting randomly from its entire customer base. Xcel explains that it has selected two geographic areas: the Hiawatha West/Midtown substation in Minneapolis, and the Westgate substation in Eden Prairie. Xcel will select 5,000 participants from each area, and an additional 7,500 control group participants from the two areas together. Because the customers will be selected based on where they live, and not randomly, there is some concern that the results of the pilot will be influenced by the area in which the participants live, rather than being random.

To obtain more information, the OAG issued several information requests to Xcel about its selection process. In its responses, Xcel explained that it selected the Hiawatha/Midtown and Eden Prairie substations because it was consistent with its grid modernization strategy.[35] In other words, Xcel was already planning to invest in some grid modernization infrastructure in those areas, so it would cost less to choose them for the TOU pilot. Xcel did not provide any information about why it has targeted *these* areas for advanced services, but given its decision to do so it makes sense to keep the TOU pilot cost effective by targeting the same areas.

Further, placing customers onto the TOU rate requires several technology upgrades. While AMI meters could, theoretically, be installed at any residential customer location, the AMI meters cannot operate a TOU rate unless they are within range of Xcel's communication

[35] OAG Information Request 11, Exhibit 5.

hardware. If customers from across Xcel's service territory were randomly selected for the TOU rate, Xcel would have to install new communication hardware to ensure that every AMI meter would be able to connect to the communication system. While Xcel has not provided a cost estimate of doing so, it would almost certainly be far more expensive than the geographic pilot model Xcel has proposed.

Ultimately, while it is possible that a random selection would produce a "better" or more random sample, it appears that it would be effectively impossible to do so; Xcel's proposal to use geographical areas is a reasonable alternative in light of the limitations.

5. The Estimated Bill Impacts Suggest That Customers Will Not Be Surprised By Significant Bill Changes.

In its Petition, Xcel provided an estimate of bill impacts in Attachment G. The attachment predicts that the vast majority of customers will see bill impacts ranging from an increase of 6 percent to a decrease of 6 percent, assuming that they take no action in response to the new price signals. In other words, even if the customers take *no action* in response to the new TOU price signals, the bill impact for most customers will be less than 6 percent.[36]

The evidence, discussed above, demonstrates that customers *are* likely to respond to the new TOU price signals. To determine the potential bill impacts if customers do respond, the OAG issued information requests to Xcel. In response to OAG Information Request 51, Xcel provided the following bill impact estimates:[37]

[36] In the event that customers have significantly greater bill impacts, they will benefit from Xcel's bill protection proposal.

[37] OAG Information Request 51, Tab Summary 1, Exhibit 6.

	Percent of Customers			
		KWH Shift: On to Mid Peak		
TOU Bill Change	Filed	2.5%	5.0%	10.0%
-18% to -16%	0.6%	0.6%	0.6%	0.6%
-16% to -14%	0.6%	0.6%	0.6%	1.3%
-14% to -12%	0.6%	0.6%	1.3%	0.6%
-12% to -10%	0.6%	1.3%	0.6%	2.5%
-10% to -8%	2.5%	1.9%	1.9%	1.9%
-8% to -6%	3.1%	5.0%	7.5%	10.0%
-6% to -4%	10.0%	10.6%	15.6%	17.5%
-4% to -2%	16.3%	18.8%	13.1%	20.6%
-2% to 0%	21.3%	20.0%	19.4%	16.3%
0% to 2%	16.3%	16.3%	16.3%	15.6%
2% to 4%	15.6%	15.0%	16.9%	8.8%
4% to 6%	8.1%	5.6%	3.1%	2.5%
6% to 8%	1.9%	1.9%	1.3%	0.6%
8% to 10%	1.3%	1.3%	1.3%	0.6%
10% to 12%	0.6%	0.0%	0.0%	0.6%
12% to 14%	0.6%	0.6%	0.6%	0.0%
14% to 16%	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

The estimates in this table suggest that even a moderate response to the new price signals (shifting 2.5 percent of consumption from on-peak to mid-peak) would reduce the percentage of customers with increased billing, and increase the percentage of customers who save on the TOU rate. Moderate shifts in consumption patterns will allow most customers to take advantage of the TOU rate to save money, and the bill protection will protect customers who would have been unreasonably harmed.

6. The TOU Pilot Should Be Approved With Some Changes.

The TOU pilot has the potential to provide significant benefit to ratepayers, and it should be approved. As discussed in the next section, however, the Commission should make several minor changes to the pilot.

III. THE COMMISSION SHOULD MAKE SOME MINOR CHANGES TO THE TOU PILOT.

The core structure of the TOU pilot is sound, and should be approved. That said, the Commission should make several changes to improve the efficacy of the pilot. This section will first discuss several minor changes that should be made. Next, this section will discuss a few changes that the OAG analyzed, but concluded should not be made at this time.

A. THE COMMISSION SHOULD REQUIRE IMPROVED BILL PROTECTION FOR LIHEAP CUSTOMERS.

Xcel's bill protection proposal is an important part of the pilot that will protect low-income customers from undue harm, but it has one significant limitation: Xcel's low-income bill protection program would only give extra protection to customers who receive funding from the Low Income Energy Discount Rider—LIHEAP customers. As the Commission is aware, there are many customers who are be *eligible* for LIHEAP funding, but do not receive it for one reason or another.

The Commission should modify the bill protection program so that all customers who self-identify that they are eligible for LIHEAP funding receive the improved bill protection offered to low-income customers. As Xcel explained in its Petition, the Company plans to "conduct a participant pre-survey that will ask customers to provide income and household size information."[38] While Xcel intends to use this information to direct customers to LIHEAP funding, it could also be used to directly enroll LIHEAP-eligible customers in the low-income bill protection without requiring the receipt of funds. In other words, customers who state in their pre-surveys that their income and household size would make them eligible for LIHEAP should receive low-income bill protection even if they do not receive LIHEAP funds.

[38] Petition at 27, n.16.

One potential problem with expanding the low-income bill protection is that it could disrupt the data collected about low-income customers. One of the most important purposes of the TOU pilot is to review the impact of TOU rates on low-income customers. If customers improperly self-identify as low-income, it could bias the data collected from the pilot and create problems for a future rollout of TOU rates. While this concern is valid, there is an easy solution: Xcel should be required to be able to disaggregate self-identified low-income customers from LIHEAP recipients, so that the data can be analyzed separately if it becomes necessary. Said another way, Xcel should track customers who self-identify as low-income separately from LIHEAP recipients for purposes of this pilot. In this way, data from the two groups can be kept separate, and any differences between the self-identified and LIHEAP-recipient customers can be analyzed. In response to OAG Information Request 17, Xcel agreed that it would be possible to provide low-income bill protection to self-identified customers, and to track them separately from LIHEAP-recipient customers.[39]

One potential benefit of allowing TOU participants to self-identify for low-income bill protection is to explore the success of self-identification. The Energy Cents Coalition has regularly raised the concern that providing services only to LIHEAP recipients excludes low-income customers who should receive assistance, but are not aware of or choose not to sign up for LIHEAP. While it is not a perfect solution, allowing customers to self-identify for low-income protections will likely increase the number of low-income customers who actually receive protections. It is possible that customers will improperly self-identify as low-income in order to receive improved bill protection, but there is no indication that the problem would be widespread. This program is a pilot, and an opportunity to explore new ideas in a controlled

[39] OAG Information Request 17, Exhibit 7.

setting. Allowing customers to self-identify and tracking them separately would ensure that the data produced by the pilot is useable, and also explore one potential way to improve low-income protections for Xcel's customers. While there are some potential downsides, the possible benefits outweigh the negatives. The Commission should modify the TOU pilot to require Xcel to pre-survey all customers, and provide low-income bill protection to all customers that self-identify as low-income in addition to LIHEAP recipients. In addition, the Commission should require Xcel to track self-identified low-income customers separately from LIHEAP recipients, and analyze any differences between the two groups to determine whether self-identification is a reasonable way to identify customers for low-income services.

B. THE PILOT PROGRAM SHOULD HAVE A ROBUST REPORTING SCHEDULE.

One purpose of the TOU pilot is to gain new information about alternative rate designs. To ensure that information is gathered and shared, the Commission should establish a robust reporting schedule during the duration of the pilot.

At minimum, the Commission should require Xcel to file a mid-pilot report after the first year to provide information and analysis about the performance of the pilot. This will give the Commission the opportunity to check on the program, review any concerns, and course-correct to the extent that it is required. The mid-pilot report should include information about customer consumption patterns, bill impacts, the accuracy of the forecasts used to develop the pricing, and the effectiveness of different customer education strategies that have been employed. Given the length of the pilot, it would be helpful to begin analysis of the price signals and marketing tools sometime earlier than the two-year mark, and a mid-pilot report should allow that. The Commission may want to consider monthly reporting for a limited number of statistics, such as enrollment percentage and customer bill impacts.

C. THE PILOT PROGRAM SHOULD HAVE A STRONG CUSTOMER EDUCATION AND OUTREACH PLAN.

Customers will only change their consumption patterns in response to new price signals if they are aware of the new rates, and if they understand how to interact with them effectively. Educating customers about their rates and how to save money by changing their behavior is an essential part of any rate design pilot. This TOU pilot will not meet its objectives if it is not accompanied by a well-designed, thorough customer education plan.

In its Petition, Xcel includes a one-page description of its plan to develop a customer marketing program in the future.[40] Based on conversations with Xcel during the stakeholder workgroup, it appears that Xcel's plan is to wait until the Commission has approved the pilot to develop a customer marketing and outreach plan. One benefit of this approach is that money would not be wasted developing marketing in the event that the Commission does not approve the TOU pilot. That said, it may have been possible to present a detailed education and outreach plan with the pilot proposal. Doing so would have given the Commission the opportunity to review plans, and provide Xcel with the opportunity to demonstrate that it has the personnel and organizational structure to conduct a successful marketing program. While Xcel's approach is not necessarily unreasonable at this stage, it is clear that there is a significant amount of work to do to develop an effective marketing program for this pilot.

It is not an overstatement to say that the customer education and outreach program may be the most important part of the TOU pilot. If the customers in the pilot do not know about and understand the new rate structure, they will not respond effectively and the potential benefits of the program will be lost. The effectiveness of the marketing program used to contact customers and educate them about their rates will likely be the single most important factor in determining

[40] Petition at 32-33.

customer response to the rate. For that reason, the Commission may want to consider establishing a performance target for the education and outreach component.

If the Commission identifies high enrollment as a desired regulatory outcome (because it could lead to greater peak reductions), it could consider a metric by which to measure the success of the pilot. The education and outreach strategies Xcel uses to inform customers will likely be the single most important factor in determining how many customers remain enrolled in the pilot. In other words, the effectiveness of Xcel's education and outreach will directly impact the enrollment rate for the program. For that reason, a metric for the enrollment rate may be an effective way to encourage a strong education and outreach program.

An enrollment-related performance metric and, possibly a target, would create shared expectations about how successful the marketing program should be, and there are examples from across the country. For example, one study found that opt-out programs achieved enrollment rates of more than 90 percent, with retention rates being similarly high.[41] If other opt-out programs have achieved enrollment rates of *more* than 90 percent, then a target rate of 90 percent for Xcel may be a reasonable goal. Any enrollment target could be reinforced with a limited financial incentive. If an enrollment target were used, the Commission could create a limited financial incentive by ordering that the program's marketing budget will only be recoverable if the enrollment target is met. This would give Xcel an incentive to ensure that participant outreach is prioritized and the education program is well-designed.

An enrollment percentage may be a reasonable performance metric because it is: something that Xcel can impact directly, tied to a desired regulatory outcome, quantifiable,

[41] U.S. Department of Energy, *Customer Acceptance, Retention, and Response to Time-Based Rates from the Consumer Behavior Studies*, SMART GRID INVESTMENT GRANT PROGRAM, at 25–30 (Nov. 2016), https://energy.gov/sites/prod/files/2016/12/f34/CBS_Final_Program_Impact_Report_Draft_20161101_0.pdf.

verifiable, and clearly defined. At this point, it may not be reasonable to attach any incentives to a performance target because the TOU pilot is in an experimental stage.[42] For education and outreach, however, Xcel will have direct control over the ways in which customers are contacted and educated about the program, and this will have the largest impact on the program's enrollment rates. If the Commission is interested in creating shared expectations and reinforcing how important customer education is, it could set an enrollment target; it could also require Xcel to put some skin in the game by ordering that the program's marketing budget will be only be recoverable if the enrollment target is met.

D. THE TOU PILOT SHOULD BE ORGANIZED TO PERMIT BROAD ROLLOUT OF TOU RATES AFTER THE PILOT IS CONCLUDED.

There was broad agreement in the stakeholder workgroup that one goal of the TOU pilot should be to design a rate that could be extended to all customers in the future. In effect, the pilot would be a trial run to identify any problems and correct them, so that the TOU rate could be extended to all of Xcel's customers in the future. In order to achieve the reductions in system cost that a TOU rate can provide, it needs to be offered to the broad customer group—the TOU pilot should be specifically designed to move towards that goal, rather than as a discrete experiment that will end after two years.

The stakeholder workgroup did not identify any specific steps that should be taken in order to direct the TOU pilot towards a future rollout. Instead, the OAG and other members of the workgroup discussed that this objective could be best accomplished by establishing a common understanding of what the goals of the project should be. There have been many TOU pilots across the country; while it is important to test these TOU concepts in Minnesota, the real

[42] Once more information about potential impacts is discovered during the TOU pilot, performance metrics for load shifting or peak reduction is something the Commission may wish to consider in the future.

benefit of conducting a pilot is to make sure that the learnings and outcomes that ratepayers have enjoyed in other places work in Minnesota, so that Minnesota ratepayers can take advantage of the reduced system costs that should result from an effective TOU.

The Commission has the opportunity to plot a course toward broad rollout in this proceeding, even if concrete decisions are not made at this time. The Commission can move towards this objective by including language in its order directing Xcel to gather data and conduct analysis on how to roll out a TOU rate more broadly after the pilot is complete. One specific step that can be taken is to ensure that the tariff for the TOU pilot does not include an end date.[43] Removing customers at a specific time would not be consistent with planning for a future rollout; allowing them to continue to be on the rate (with the option to leave if they wish) would maintain progress towards a future rollout.

E. THE COMMISSION SHOULD REQUIRE XCEL TO EXPLORE METHODS FOR INCLUDING NET METERING CUSTOMERS IN FUTURE TOU ROLLOUTS.

Xcel's TOU proposal excludes certain groups of customers, including customers who have net metering service. Xcel explains that net metering customers are excluded because of "limitations to our current billing system capabilities, as well as the incompatibility of existing rate designs with the TOU pilot structure."[44] Some skepticism is warranted for Xcel's claim of billing limitations, because Xcel has found a way to include net metering customers in its TOU pilot in Colorado without apparent trouble.[45] That said, it may be reasonable to exclude net metering customers from this limited duration pilot because net metering customers have invested in solar PV with certain assumptions about their rates. Changing the underlying rates could have unexpected impacts on the payoff periods they expected when investments were

[43] It appears that the tariff Xcel proposed already complies with this recommendation.
[44] Petition at 18.
[45] OAG Information Request 14, Exhibit 8.

made. In light of this concern, and the limited number of net metering customers in Xcel's service territory, Xcel's decision appears reasonable at this time.

In the future, though, the goal of any future broad rollout of TOU rates should be to include the largest possible customer group. Toward that end, the Commission should direct Xcel to investigate what steps would be necessary to include net metering customers in the future. In its exploration, Xcel should consider the ways that net metering customers are different from standard-service customers, the potential growth of the net metering customer base, the interaction between new technologies (such as home storage) with a time-varying rate, and the enrollment method that should be used for net metering customers.

F. THE COMMISSION COULD CONSIDER ADDITIONAL MODIFICATIONS FOR THE FUTURE.

In addition to the changes discussed above, there are several options for TOU rate design that the Commission may wish to consider in the future. First, in the past the OAG has advocated for a TOU rate combined with a significantly lower customer charge. Reducing the customer charge in a TOU rate allows sharper peak to off-peak ratios, which can send a stronger price signal and may result in greater reductions to peak demand. If the TOU pilot does not perform as expected, the Commission should consider a reduction in the customer charge as one tool that could be used to increase its performance in the future, but there are a few reasons why it is not necessary to reduce the customer charge at the outset of the TOU pilot.

In response to OAG Information Request 6, Xcel explained that it did not consider reducing the customer charge because it wanted to "isolate customer response to TOU energy prices."[46] In other words, Xcel views one purpose of the TOU rate as being to discover how much customers will respond to TOU price signals. Adjusting the customer charge at the same

[46] OAG Information Request 6, Exhibit 9.

time would make it difficult to measure how much of a customer's response was caused by the TOU price, and how much was caused by the lower customer charge. As a result, it is reasonable to leave the customer charge alone during the TOU pilot, but it is an issue that could be revisited if the TOU pilot does not perform as hoped, or before a broad rollout in the future.

Second, Xcel discusses at various points in its Petition the possibility of establishing a peak time rebate ("PTR") program as an addition to the TOU pilot. A PTR program allows customers to receive small rebates for reducing their consumption during specific, very limited windows during high peaks. It is worth discussing additional components such as PTR because there is some evidence that they can increase the effectiveness of a TOU rate. That said, the potential downside of incorporating a PTR into the TOU pilot is that the mechanics of PTR could increase the complexity of the rate design for customers. The utility generally provides 24-hour notice, or even shorter depending on the technology available. The customer's consumption during the peak period is compared to their consumption during a similar period, and, if there is a reduction the customer gets a small rebate. Because the only consequence of changing consumption is a rebate, there are no real downsides for customers with a PTR. Establishing a PTR can be complicated, though, because it requires a system of benchmarking in order to function. This benchmarking can be difficult to educate customers about, and it can also be prone to manipulation.[47] Adding a PTR component to the TOU pilot could increase effectiveness; it could also reduce effectiveness because it will be more difficult to educate customers about both a new TOU rate and a PTR at the same time.

[47] For example, it was determined that the Camden Yards ballpark in Baltimore was intentionally turning its lights on during benchmarking periods in order to qualify for rebates during future PTR periods. *FERC Settles Investigation Concerning Demand Response Products in PJM*, WASHINGTON ENERGY REPORT (June 24, 2013), https://www.troutmansandersenergyreport.com/2013/06/ferc-settles-investigation-concerning-demand-response-products-in-pjm/. There is also some skepticism about the reality of peak shaving from PTR programs. *See, e.g.*, Severin Borenstein, *Peak-Time Rebates: Money for Nothing?*, GREENTECH MEDIA (May 12, 2014), https://www.greentechmedia.com/articles/read/peak-time-rebates-money-for-nothing#gs.jxhfLMQ.

In addition, any PTR concept should be compared against a similar critical peak pricing ("CPP") concept. In contrast to PTR, which provides rebates for reduced consumption, a CPP dramatically increases prices during a similarly short window, and with similar notice standards. Like PTR, there is some evidence that a CPP rate can increase the effectiveness of a TOU rate. In comparison to PTR, a CPP rate is somewhat easier to explain to customers. It is simpler to explain that prices will increase during certain time periods than it is to explain how consumption during a PTR period will be compared to consumption in a previous time period to calculate a rebate. If the Commission considers a CPP at any point, that consideration should be limited to an opt-in program only. CPP can be a significant hardship for customers who do not understand the rate, or who cannot respond to it. As a result, it should be limited to only those customers who affirmatively choose to enter the rate.

G. SUMMARY.

As discussed in Section II, the Commission should approve the TOU pilot because it is designed to be more effective at reducing system peak demand than the existing Time of Day rate, and it is important to explore that benefit for customers. That said, the Commission should make small several changes to the TOU pilot:

- The Commission should require Xcel to provide improved bill protection for customers who self-identify as LIHEAP eligible in the TOU pilot pre-survey, rather than limiting the program to LIHEAP recipients;

- The Commission should require Xcel to track customers who self-identify as LIHEAP eligible separately from customers who are LIHEAP recipients in order to preserve data for analysis;

- The Commission should require Xcel to file a mid-pilot report including information and analysis about the performance of the pilot, the accuracy of the forecasts used to develop the pricing, and the effectiveness of any marketing strategies; and,

- The Commission should consider establishing an enrollment target to reinforce the importance of the customer education program, and further consider establishing a limiting financial incentive for the enrollment target;

- The Commission should direct that the TOU pilot be operated with the goal of moving towards rolling out TOU rates to Xcel's entire residential customer base; and,

- The Commission should require Xcel to explore methods for including net metering and other customers in future TOU rollouts.

IV. RIDER RECOVERY.

In its Comments in Docket 17-776, filed at the same time as these Comments, the OAG recommends that the Commission certify the TOU pilot through the biennial grid modernization process outlined in Minnesota Statutes section 216B.2425. If the Commission certifies the TOU pilot, Xcel will be authorized to seek rider recovery of the TOU pilot costs through the Transmission Cost Recovery ("TCR") rider in the future. While rider recovery is not guaranteed, certification is the first step.

That said, it is necessary to address some statements included in Xcel's Petition related to rider recovery. In its Petition, Xcel states "the Company is in a multi-year rate plan and the majority of these investments are not a part of that rate plan so, to the extent any of these costs are not approved in the TCR, the Company would stop the pilot process and wait for a future rate case to bring the pilot and any remaining costs forward."[48] Xcel suggests that it would not move forward with the TOU pilot unless it is permitted to recover the costs through a rider, and, presumably, that without rider recovery it will not pursue the TOU pilot (or other programs that are beneficial for ratepayers) outside of a test year in a future rate case.

Xcel's position is not consistent with the system that Minnesota uses to regulate utilities. The fact that Xcel is operating under a MYRP does not mean that all of the potential costs not

[48] Petition at 2.

included in the test years should be recovered through a rider. As Xcel recently explained in a different docket, the purpose of the MYRP is "encourage cost containment during the course of the plan."[49] It is difficult to see how the MYRP could encourage cost containment if Xcel is anticipating that it will be allowed to recover anything outside of the MYRP through one of the twenty or more riders it operates, which now cover, among other items, costs related to fuel, transmission, grid modernization, and renewable energy generation. For that matter, if Xcel is aware of investments or opportunities that would be beneficial to ratepayers, but chooses not to pursue them because they are outside of a test year, then Xcel is acting imprudently.

In addition to cost containment, another purpose of the MYRP is to reduce regulatory burden so that Xcel can direct more of its resources to creative concepts like the TOU pilot.[50] There will be little benefit to reducing regulatory burden from rate cases if Xcel will simply choose not to move forward with new endeavors unless it is guaranteed rider recovery for any costs it incurs outside of a test year.

Xcel's statements about the TOU pilot and rider cost recovery raise concerns both for this pilot proposal and for the MYRP Xcel is operating under. The Commission should require Xcel to explain its position in light of the statements included in its Petition, and, if necessary, evaluate its policy on the use of riders and the MYRP.

V. ADVANCED METERING INFRASTRUCTURE.

According to Xcel's Petition, new meters and the associated infrastructure will be required in order to operate the TOU pilot. This means that approving the TOU pilot is also approving the first deployment of AMI meters for Xcel's residential customers of any measurable scale. While the Commission will have the opportunity to consider AMI in the

[49] Xcel Comments, Docket No. E-002/CI-17-401, at 6 (Dec. 21, 2017).
[50] *Id.*

future, it is important to recognize that the first steps towards AMI, which will be taken in this pilot, will have an impact on future decision-making as well.

A. XCEL'S PLAN FOR OBTAINING AMI METERS FOR THE TOU PILOT.

Xcel's residential customers currently have meters capable of automated meter reading—typically referred to as AMR. In the past, it was sometimes possible to supplement AMR meters with additional components that could collect and transmit the interval consumption data necessary to operate a TOU rate.[51] In order to obtain the interval consumption data that is required to measure usage during different time periods, however, Xcel will need to install new AMI meters for pilot participants, plus any infrastructure necessary to collect the data produced by the new meters.

In its Petition, Xcel stated that it was "currently in negotiations with potential AMI vendors."[52] In response to several OAG Information Requests, Xcel provided additional information that was marked as Trade Secret. **[TRADE SECRET BEGINS]**

[51] For more information, *see* OAG Information Request 50, Exhibit 10.
[52] Petition at 30.
[53]

[TRADE SECRET ENDS]

Xcel elaborated that the negotiations were not limited to this TOU pilot (or the one for PSCo).[57] Instead, the negotiations are intended to cover Xcel's entire service area—in effect, Xcel is negotiating the terms for broad rollout of AMI in the future. Xcel further confirmed that it intends to execute an agreement with AMI vendors before seeking regulatory approval from the Commission, but confirmed that the agreement would be contingent upon receiving approval.[58]

B. CONCERNS RELATED TO AMI METER NEGOTIATIONS.

Xcel's plan for AMI raises several concerns. First, it is important to recognize and understand how this relatively limited TOU pilot could impact future decisions about installing AMI meters. It appears that Xcel's existing meter vendor is able to accommodate the limited scope of the TOU pilot without requiring changes to the existing metering contract,[59] but any future expansion of the TOU rate would require Xcel to reach new agreements with AMI vendors—agreements that Xcel is in the process of negotiating. This proceeding is not directly about Xcel's future plans for AMI, but decisions about the TOU rate may be the first steps along the path toward making a significant investment in new meters. While it would not be

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[57] OAG Information Request 40, Exhibit 13.

[58] *Id.*

[59] *See* OAG Information Request 21, Exhibit 14. This information request includes some trade secret information that is redacted from the public version.

reasonable to delay the TOU pilot until a final decision can be made about the future for AMI, it is also important to ensure that decisions about the TOU pilot do not lock in decisions about AMI before the Commission can conduct a full review of Xcel's plans.

Second, Xcel has clarified that it intends to negotiate and execute agreements for AMI, and then bring them to the Commission for approval. While there may be some efficiencies to finalizing agreements before bringing them to the Commission, it could create friction in several ways. For example, Xcel's plan would not allow the Commission to provide guidance on what functionalities AMI should include until after agreements are finalized. If there are problems with Xcel's choices for AMI, the Commission could be faced with approving a plan that could have been better, or ordering changes that restart the clock on moving forward with AMI. It may be more efficient for the Commission to provide some guidance on the front end of the process, rather than after Xcel has made all of the decisions.

Moving to AMI is a significant investment for Xcel's customers, and it is important that decisions about how to make that investment are made with care. It is not necessarily a problem that the TOU pilot will impact future decisions about AMI, but it could become a problem if the TOU pilot prevents a full review of Xcel's plans in the future. Further, it may be useful to consider establishing a process to allow parties and the Commission to have input on the future of AMI before Xcel finalizes all of its agreements. While it appears that the selection process for the communication and software components are nearing completion, Xcel has not yet issued the RFP for meter selection and there may be an opportunity to involve the Commission at the beginning of that process rather than the end. The OAG does not present specific recommendations at this time, but raises the issue to ensure that the Commission has the opportunity to consider it.

VI. CONCLUSION.

The TOU pilot proposal is the result of several years of work from both the utility and a broad stakeholder group, and it should be approved because it is a reasonable step toward reducing system peak demand. The Commission should take the following actions:

- The Commission should find that the primary objective of a TOU rate is to reduce system peak demand, and that the goals of the TOU pilot should be to (1) determine the prices that will most effectively reduce peak demand; (2) identify the outreach and education strategies that are the most effective; and (3) understand the potential impact on vulnerable customer segments like low-income customers;

- The TOU pilot should be approved with changes, as follows:

    - The Commission should require Xcel to provide improved bill protection for customers who self-identify as LIHEAP eligible in the TOU pilot pre-survey, rather than limiting the program to LIHEAP recipients;

    - The Commission should require Xcel to track customers who self-identify as LIHEAP eligible separately from customers who are LIHEAP recipients in order to preserve data for analysis;

    - The Commission should require Xcel to file a mid-pilot report including information and analysis about the performance of the pilot, the accuracy of the forecasts used to develop the pricing, and the effectiveness of any marketing strategies; and,

    - The Commission should consider establishing an enrollment target to reinforce the importance of the customer education program, and further consider establishing a limiting financial incentive for the enrollment target;

    - The Commission should direct that the TOU pilot be operated with the goal of moving towards rolling out TOU rates to Xcel's entire residential customer base; and,

    - The Commission should require Xcel to explore methods for including net metering and other customers in future TOU rollouts.

- The Commission should require Xcel to explain its position on rider recovery during the MYRP; and,

- In the future, significant changes such as new rate designs or new regulatory structures should be developed or reviewed by independent experts. If they are developed by Xcel or experts reporting to Xcel, the Commission should require Xcel to use a transparent

method that is fully explained, and convene a stakeholder process to allow input on what the goals and outcomes should be.

The OAG may, after reviewing the comments filed by other parties, recommend minor changes to the timing or duration of the on-peak period.

Dated: February 5, 2018

Respectfully submitted,

LORI SWANSON
Attorney General
State of Minnesota

s/ **Ryan P. Barlow**
RYAN P. BARLOW
Assistant Attorney General
Atty. Reg. No. 0393534

445 Minnesota Street, Suite 1400
St. Paul, Minnesota 55101-2131
(651) 757-1473 (Voice)
(651) 296-9663 (Fax)
ryan.barlow@ag.state.mn.us

ATTORNEYS FOR OFFICE OF THE ATTORNEY GENERAL – RESIDENTIAL UTILITIES AND ANTITRUST DIVISION

PUBLIC DOCUMENT

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☒ **Public Document**

Xcel Energy
Docket No.: E002 / M-17-0775 Information Request No. 2
Response To: Office of Attorney General
Requestor: Ryan Barlow
Date Received: November 21, 2017 **SUPPLEMENT**

Question:
Produce all recorded communications between Xcel, its parents or affiliates and Mr. Huber or Strategen, regarding the Time of Use Pilot Program.

Response:

The Company respectfully objects to this Request as being beyond the scope of reasonable discovery. The Request is overly broad and unduly burdensome. Further, the OAG has issued significant other discovery in this docket that the Company is responding to with documents, facts, and opinions relating to specific issues with the Petition and Pilot plan. The Company also notes that Mr. Huber was produced for the stakeholder meetings in this proceeding and will also be produced for the hearing.

Supplement:

Beyond the guidance documented in the response to OAG IR No. 3, I was given full latitude to conduct independent analysis and form independent recommendations. I presented best practices together with my findings and recommendations in a highly collaborative process. This process openly considered and evaluated my recommendations for the pilot proposal, with nearly every recommendation of mine adopted without material modification.

Preparer:	James R. Denniston	**Supplement:**	Lon Huber
Title:	Assistant General Counsel		Senior Director
Department:	Legal		Strategen
Telephone:	612.215.4656		510.665.7811 ext 103
Date:	December 5, 2017		January 2, 2018

Exhibit 1

PUBLIC DOCUMENT

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☒ **Public Document**

Xcel Energy

Docket No.:	E002 / M-17-0775	Information Request No.	4
Response To:	Office of Attorney General		
Requestor:	Ryan Barlow		
Date Received:	November 21, 2017		

Question:
Produce all goals, instructions, objectives, directions, or other similar items that Xcel provided to Mr. Huber regarding the TOU Pilot.

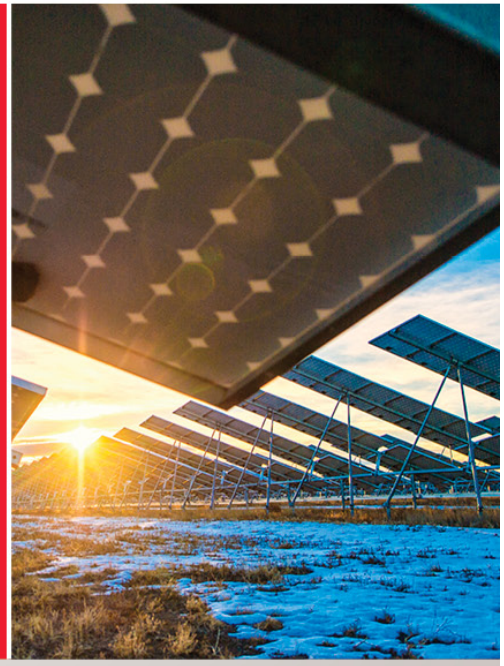
Response:
Mr. Huber primarily relied on goals, objectives and directions provided by stakeholders during working-group sessions. The only materials provided to Mr. Huber by the Company were Mr. Clark and Mr. Chandarana's presentation from the April 11, 2017 Commission Planning Meeting, included as Attachment A to this response, and the agreement between the Company and Strategen. The agreement is provided in our response to OAG IR No. 3 –Attachment A.

Preparer:	Amber Hedlund
Title:	Regulatory Case Specialist
Department:	Regulatory Affairs
Telephone:	612.337.2268
Date:	December 5, 2017

NSPM Rate Design Pilot

MPUC Informational Meeting

April 11, 2017



Agenda and Purpose

- Agenda
  - Introduction – *C. Clark*
  - Pilot and Stakeholder Engagement – *A. Chandarana*
  - Q&A

- Purpose
  - Share rate design pilot concept, goals and timing
  - Receive feedback and thoughts

Concept and Goals

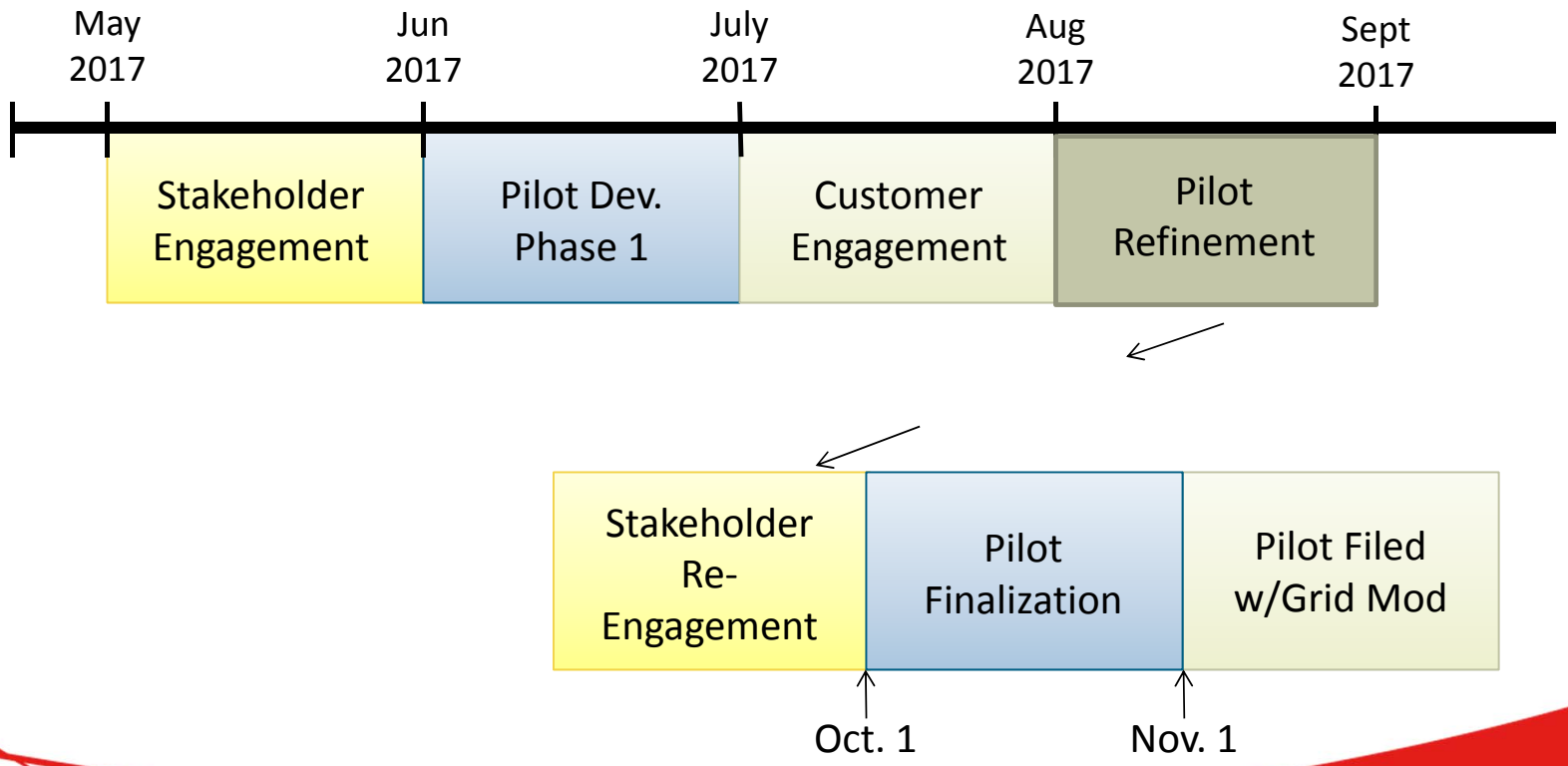
- Concept
  - Update current TOU offering to address emerging technologies
  - Deploy geographically focused smart grid investments to complement TOU offering
  - Leverage new investments and rate to meet new DR requirement
  - Share learnings with stakeholders

- Goals
  - Modify current TOU without offering incentives
  - Increase ratio of residential customer participation
  - Understand the changes to rate structure, marketing and education to increase the number of customers using time of use rates
  - Make progress towards requirement to add 400 MW of demand response by 2023
  - Engage stakeholders and customers

Pilot Team

- Diverse Internal Team
  - NSPM Rate Design Knowledge + Recent Colorado Experience
- External Expert Support
  - Strategen (Lon Huber)
    - National perspective on TOU offerings
    - National perspective on education and marketing best practices
    - Participate in stakeholder engagement
    - Assist Pricing on TOU rate design and related analytics
- Externally Driven Stakeholder Outreach and Engagement Team
  - CEE & GPI

Pilot Development Timeline



Stakeholder Engagement

- Small, Diverse Group of Stakeholders
  - Low income customers
  - Business customers
  - Renewable developers
  - Electric Vehicle advocates
  - Environmental advocates
  - Residential customers
  - DSM experts
  - MN Commerce
  - MN Office of Attorney General
- Convene core group of stakeholders for 2-3 meetings in May and Sept.
  - Deeper dive on specific topic areas
  - Facilitated stakeholder discussion, together w/ Company experts

Example topics for stakeholder discussion

- Impacts on low income and special medical need customers
- Combine TOU with other rates (CPP or PTR) or stand-alone?
- Compare use of AMI vs AMR?
- Test multiple TOU offerings?
- Duration of Peak period
- Differential between Peak/Off-Peak rates
- Number of periods
- Number and customer type of participants
- Pilot Period
- Alignment with MN PUC Rate Design Principles

Q&A

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Xcel Energy
Docket No.: E002 / M-17-0775 Information Request No. 15
Response To: Office of Attorney General
Requestor: Ryan Barlow
Date Received: November 21, 2017

Question:
Reference: Petition at 19

The Company states that it is "devoting substantial resources to attract volunteers" to its opt-in TOU in Colorado.

How much has it cost Xcel to obtain customers for its opt-in TOU program in Colorado? Discuss how that cost compares to the estimated cost of obtaining customers for the opt-out TOU it proposes for Minnesota?

Response:
As of October 2017, the average marketing cost to enroll customers into the Colorado Pricing Plan program is $130/per customer. When early adopters (those who enrolled through an email campaign during the first three weeks of the program) are removed from the enrollment base, cost per signup is $173. These marketing for enrollment costs are not included in the proposed pilot in Minnesota because customers will not need to be recruited into the pilot. Instead, customers will receive educational materials prior to and during meter installation, as well as when they are enrolled in the pilot, to make them aware of choices, options and time periods associated with the TOU rates. Colorado customers receive similar information and tools after enrolling to help them succeed on the TOU rates.

Preparer: Kerry Ryan Klemm
Title: Manager, Renewable / Choice Programs
Department: Customer Solutions
Telephone: 612.330.6285
Date: December 5, 2017

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Xcel Energy

Docket No.:	E002 / M-17-0775	Information Request No.	11
Response To:	Office of Attorney General		
Requestor:	Ryan Barlow		
Date Received:	November 21, 2017		

Question:
Did Xcel consider any other geographic areas for the TOU Pilot? If so, why were they discarded? If not, why?

Response:
Other geographic areas for the pilot were not considered. The selection of the two areas is consistent with Xcel Energy's Grid Modernization strategy. The Company has two other initiatives, ADMS and FLISR, both of which also center on these geographic areas for their initial deployments. As is explained in the Petition, we gain efficiencies in the programs by deploying them in the same footprint. Given the proposed timeline and goals of meter deployment, the geographic areas proposed are the most cost-effective areas for this pilot.

Preparer:	Dan Lysaker
Title:	Senior Engineer
Department:	Grid Modernization
Telephone:	651.229.2382
Date:	December 5, 2017

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	Percent of Customers			
		KWH Shift: On to Mid Peak		
TOU Bill Change	Filed	2.5%	5.0%	10.0%
-18% to -16%	0.6%	0.6%	0.6%	0.6%
-16% to -14%	0.6%	0.6%	0.6%	1.3%
-14% to -12%	0.6%	0.6%	1.3%	0.6%
-12% to -10%	0.6%	1.3%	0.6%	2.5%
-10% to -8%	2.5%	1.9%	1.9%	1.9%
-8% to -6%	3.1%	5.0%	7.5%	10.0%
-6% to -4%	10.0%	10.6%	15.6%	17.5%
-4% to -2%	16.3%	18.8%	13.1%	20.6%
-2% to 0%	21.3%	20.0%	19.4%	16.3%
0% to 2%	16.3%	16.3%	16.3%	15.6%
2% to 4%	15.6%	15.0%	16.9%	8.8%
4% to 6%	8.1%	5.6%	3.1%	2.5%
6% to 8%	1.9%	1.9%	1.3%	0.6%
8% to 10%	1.3%	1.3%	1.3%	0.6%
10% to 12%	0.6%	0.0%	0.0%	0.6%
12% to 14%	0.6%	0.6%	0.6%	0.0%
14% to 16%	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

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Xcel Energy
Docket No.: E002 / M-17-0775 Information Request No. 17
Response To: Office of Attorney General
Requestor: Ryan Barlow
Date Received: November 21, 2017

Question:
Reference: Petition at 27, n.16

Footnote 16 states that the Company will conduct a pre-survey to identify low-income customers and connect them to the LIHEAP program. Please provide more details about the survey, and how Xcel will identify LIHEAP-eligible customers using it.

In addition, please provide the following information:

1. What would happen to customers who identify in the survey that they would be LIHEAP eligible, but do not complete LIHEAP verification or enrollment?

a. Would they receive low-income protection in the pilot?

b. If not, what purpose would be served by withholding the low-income protection in the pilot?

c. Could Xcel provide low-income protection to all customers who self-identify in the survey without requiring LIHEAP verification?

2. Would it be possible to separately track customers who are already enrolled in LIHEAP from those who identify in response to the survey?

Response:

The survey has not been developed yet, but would include questions to establish potential LIHEAP eligibility and route respondents to the LIHEAP enrollment process. All customers indicating possible LIHEAP eligibility would be forwarded to their local agency. The local agency will determine eligibility based on household size and income. Customers not completing the eligibility process would not be

considered low-income as part of the pilot. If a customer did not complete LIHEAP verification or enrollment, they would receive the bill protection provided to the non-LIHEAP enrolled population.

In an effort to accurately measure the pilot results, the Company is committed to making sure income-qualified customers receive the LIHEAP bill protection. Relying on self-qualifying information versus third party organizations contracted with the Department of Commerce, may not provide the level of data accuracy the Company hopes to assess for reporting purposes.

The Company could provide low-income protection to self-identifying customers, but this would be inconsistent with the Company's existing programs and has the potential to impact pilot results. The Company's billing system is not currently configured to track customers in this way and would require modification to do so.

The Company maintains information on its billing system for those receiving LIHEAP benefits. It is theoretically possible to separately track LIHEAP-enrolled customers and those who self-identify as low income qualified in a survey, but again, the Company's billing system is not currently configured to track customers in this way and would require modification to do so.

Preparer:	Holly Hinman/Patrick Boland
Title:	Regulatory Manager/Manager
Department:	Regulatory Affairs/Customer Policy and Assistance
Telephone:	612-330-5941/651-639-4407
Date:	December 5, 2017

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Xcel Energy

Docket No.:	E002 / M-17-0775	Information Request No.	14
Response To:	Office of Attorney General		
Requestor:	Ryan Barlow		
Date Received:	November 21, 2017		

Question:
Are net metering customers included in Xcel's TOU pilot in Colorado?

Response:
Yes. As an opt-in pilot, the Colorado rate pilots specifically recruit net metering customers in order to achieve substantial participation from this group, so as to be able to separately measure the impacts of time-based rates on net metered customers. Because the proposed Minnesota TOU pilot is geographically limited, we do not foresee the ability to obtain a significant sampling of net metered customer participants. Additionally, the load reductions of net metered customers have the potential to skew the impacts of TOU rate design on the general public. From an operational perspective, adding net-metered customers to the pilot would create administrative burden without measurable benefit.

Preparer:	Kerry Ryan Klemm
Title:	Manager, Renewable / Choice Programs
Department:	Customer Solutions
Telephone:	612.330.6285
Date:	December 5, 2017

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Xcel Energy
Docket No.: E002 / M-17-0775 Information Request No. 6
Response To: Office of Attorney General
Requestor: Ryan Barlow
Date Received: November 21, 2017

Question:
Did Xcel contemplate reducing the customer charge for the TOU Pilot program, or conduct any analysis on how doing so would impact program design? Explain, and please produce any such analysis.

Response:
No. Increasing or decreasing customer charges for the pilot was recognized as inappropriate from the beginning stage of the proposed pilot development as it would counter the main purpose of pilot, which is to isolate customer response to TOU energy prices.

The proposed TOU Pilot program retains the applicable standard Residential Service customer charges, rather than include the additional $2.00 per month amount included in the currently available Residential Time of Day Service tariff. In addition to the main objective of isolating the impact of time-of-use energy charges, this approach recognizes other considerations that include:

1. Including the current additional $2.00 monthly charge would not be appropriate for the proposed opt-out pilot.
2. Anticipates the future installation of advanced TOU capable metering for all residential customers that would remove the basis for differential monthly customer charges.
3. Anticipates the possibility of default TOU rates

Preparer: Lon Huber
Title: Senior Director
Department: Strategen
Telephone: 510.665.7811 ext 103
Date: December 5, 2017

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Xcel Energy
Docket No.: E002 / M-17-0775 Information Request No. 50
Response To: Office of Attorney General
Requestor: Ryan Barlow
Date Received: November 21, 2017

Question:
Reference: e21 Stakeholder Meeting notes on XE TOU Proposal

During the stakeholder meetings, Xcel discussed interval data at various grades — network grade and billing grade. Do Xcel's existing AMR meters have the capability of collecting any interval data? If they can collect data that is not "billing grade," explain what "billing grade" is and why it cannot be used to operate a TOU rate or provide baseline information for a TOU pilot.

If Xcel believes that network grade interval data cannot be used to operate a TOU Pilot, provide specific citation to law or other authority supporting the position.

Response:
"Network grade" interval data is interval data that is generated by network devices - for the one-way AMR system - these network devices are the Micro-Cell Controllers (MCCs). MCCs generate interval data from total consumption data sent by AMR meters. On the other hand "Billing grade" interval data, is interval data that is generated by the meter itself and transmitted via the network devices to the data center. In essence, for "billing grade" data is measured and recorded within the meter, while, "Network grade" data relies on the network equipment to generate the data.

Meters that the Company uses for customer billing conform to the American National Standards Institute (ANSI C.12) metrology standards, such standards include accuracy requirements. Through random or periodic testing programs, the Company ensures that these meters comply with the required accuracy standards. MCCs are not governed by the same standards and are not subject to similar accuracy testing and therefore data generated by such devices cannot be relied upon for billing purposes. Network grade generated data can be used for research purposes and not for billing.

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Preparer:	Russ Borchardt
Title:	Director
Department:	Gas & Electric Metering
Telephone:	612.630.4122
Date:	December 5, 2017

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Xcel Energy
Docket No.: E002 / M-17-0775 Information Request No. 23
Response To: Office of Attorney General
Requestor: Ryan Barlow
Date Received: November 21, 2017

Question:
Reference: Petition at 30

Xcel states it is "currently in negotiations with potential AMI vendors."

Please provide the following information:

1. Identify the vendors that Xcel is negotiating with.

2. Identify any potential vendors that Xcel is not negotiating with.

3. Provide a status report of negotiations.

4. Are negotiations limited to this pilot, or do they encompass planning for the end of the existing metering contract and roader rollout of AMI?

Response:

1. For the AMI Headend/Network, **[TRADE SECRET BEGINS**

TRADE SECRET ENDS]

For AMI Meters, **[TRADE SECRET BEGINS**

TRADE SECRET ENDS]

2. For the AMI Headend/Network, **[TRADE SECRET BEGINS**

TRADE SECRET ENDS]

For AMI Meters, **[TRADE SECRET BEGINS**

TRADE SECRET ENDS]

3. For the AMI Headend/Network, **[TRADE SECRET BEGINS**

TRADE SECRET ENDS]

For AMI Meters, **[TRADE SECRET BEGINS**
TRADE SECRET ENDS]

4. For both AMI Headend/Network and Meters, **[TRADE SECRET BEGINS**

TRADE SECRET ENDS]

This response includes material terms regarding the Company's negotiations, which contain Trade Secret Information as defined by Minn. Stat. §13.37(1)(b). We have thus marked as "Trade Secret" those materials which incorporate substantive terms of the negotiations or would allow others to infer substantive terms of the negotiations. This information is the subject of efforts to maintain its secrecy and derives independent economic value from not being generally known or readily ascertainable by others who could obtain a financial advantage from its use.

Preparer:	Dan Pendar
Title:	Manager, Supply Chain-Corporate Sourcing
Department:	Supply Chain Sourcing
Telephone:	612.330.6251
Date:	December 5, 2017

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Xcel Energy
Docket No.: E002 / M-17-0775 Information Request No. 24
Response To: Office of Attorney General
Requestor: Ryan Barlow
Date Received: November 21, 2017

Question:
Reference: Petition at 30

Please answer the following questions:

1. Identify specifically which meter or meters that Xcel has selected for the TOU Pilot, and explain why Xcel selected it.

2. Which meter is Xcel using for the Colorado TOU pilot?

3. Describe the process employed to select meters, including any negotiations or limitations based on existing metering contracts or vendors.

4. Identify all meters that Xcel considered for the TOU Pilot or is considering for broad AMI rollout, including cost estimates and capabilities.

5. Was Xcel able to select from all meters available in the open market, or was the selection of meters constrained by any factors? Identify any factors that limited what meters Xcel could consider for the pilot.

Response:
1. The Company is currently in negotiations and expects an agreement to be reached by end of 2017 with an AMI vendor to provide the RF mesh network hardware and the headend software to operate the AMI system. Components of the RF mesh network hardware include the communication module that will be integrated within the electric meters. The communication module is referred to as a network interface card (NIC).

   After finalizing the AMI contract, a next step will be to select the meters that will have the NIC integrated within the meter. The selection of the meters to be used

within the Company's AMI system will occur through a Meter Request for Proposal (RFP) process and evaluation of meter vendor responses. The selection of meters and meter types to be used for the TOU Pilot will be included in this process. The Company estimates the Meter RFP will be released in the first quarter of 2018.

2. The Company is using Itron's "Bridge" meter for the Colorado TOU Pilot. This meter was selected because it utilizes the same drive-by AMR technology in place in Public Service Company of Colorado. It is an interim TOU solution before fully deploying AMI.

3. Meters will be selected through a RFP process. The RFP will include the Company's requirements for AMI metering, provide estimated schedules and meter quantities to be exchanged, and request pricing for meters and associated installation costs. Additionally, the Company will require sample proposed meters to be provided for qualification testing. The meter suppliers' RFP responses and the sample meter testing results will be evaluated and scored to select the meter type. Once the meter vendor is selected, final negotiations will occur.

   We do not expect limitations to the TOU Pilot due to existing contracts. However, the selection of AMI meters may be influenced by proposed meter pricing, and also any favorable Supplier proposals that will enable the Company to transition from a managed service AMR system to a Company owned and operated AMI system.

4. Meters for the TOU Pilot have not yet been selected, but the Company will be releasing the RFP to **[TRADE SECRET BEGINS**
   TRADE SECRET ENDS] for consideration of their electric meters. Prior to receiving formal pricing bids, the Company used $107.55 for average estimated AMI meter costs in developing estimates for the TOU pilot. Because capabilities between meter types and suppliers may vary, a full listing of capabilities can be provided upon final meter selection.

5. The Company will select electric meters from the meter suppliers mentioned in response 4 above. The Company has long-standing business relationships with these suppliers, and they are the leading meter providers in the utility industry.

This response includes material terms regarding the Company's negotiations, which contain Trade Secret Information as defined by Minn. Stat. §13.37(1)(b). We have thus marked as "Trade Secret" those materials which incorporate substantive terms of the negotiations or would allow others to potentially affect the terms of the negotiations. This information is the subject of efforts to maintain its secrecy and

derives independent economic value from not being generally known or readily ascertainable by others who could obtain a financial advantage from its use.

Preparer:	Russ Borchardt
Title:	Director
Department:	Gas & Electric Metering
Telephone:	612.630.4122
Date:	December 5, 2017

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Xcel Energy
Docket No.: E002 / M-17-0775 Information Request No. 40
Response To: Office of Attorney General
Requestor: Ryan Barlow
Date Received: November 21, 2017

Question:
Reference: Petition at 35

Xcel states that it "anticipates that by the end of 2017, contract negotiations will be complete with an AMI vendor."

Please answer the following questions

1. Are these negotiations limited to the TOU Pilot, or does Xcel mean that it will have completed negotiations on future AMI rollout for all customers by the end of 2017?

2. Please provide more detail about Xcel's plan for the timing of the TOU Pilot, negotiations required for the TOU Pilot, broad AMI rollout, negotiations required for broad rollout, and when Xcel will seek approval from the Commission for its AMI plans.

3. Does Xcel intend to reach an agreement with an AMI vendor before seeking Commission approval of its AMI rollout plan? If so, what would happen if the Commission does not approve Xcel's plan?

Response:
1. The contract negotiations are with an AMI vendor for the mesh network components, network interface cards for the meters and required software applications for AMI. The Company's strategy is to take an enterprise approach to AMI to leverage volume pricing for our customers. The negotiations are not limited to the TOU Pilot and include all areas serviced by the Company. For additional information, please see our response to OAG IR No. 24.

2. The Company's current plan is to coordinate the TOU Pilot with our AMI efforts in Colorado, starting meter deployment at the end of 2019. As noted in our November 1, 2017 Grid Modernization report in Docket No. E002/M-17-776 (pages 2-3), the Company intends to request certification for AMI in a November 1, 2018 filing, if the Commission approves our request to submit our next Grid Modernization report and certification request at that time.

3. The Company does intend to reach an agreement with an AMI vendor enterprise wide before seeking Commission approval for an AMI rollout plan. The agreement with the AMI vendor will be contingent on regulatory approval of an AMI rollout plan in each state.

Preparer: Paul Davis
Title: Director
Department: Meter Reading
Telephone: 715.737.5603
Date: December 5, 2017

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Xcel Energy

Docket No.:	E002 / M-17-0775	Information Request No.	21
Response To:	Office of Attorney General		
Requestor:	Ryan Barlow		
Date Received:	November 21, 2017		

Question:
Reference: Petition at 30

Xcel states that its "existing vendor has some capabilities to extend their network."

Produce all communications Xcel has had with its meter vendor regarding this pilot.

Response:
The vendor confirmed primarily through verbal discussions that their current 2-Way network is sufficient to support the pilot size and locations we initially provided. There was also communication in an email string provided in Attachment A. In these discussions, they also confirmed that if any additional network equipment was needed, they would cover the cost.

Portions of Attachment A include material terms from the Agreement between Xcel Energy and Cellnet, which contains Trade Secret Information as defined by Minn. Stat. §13.37(1)(b). We have marked as "Trade Secret" material that is the subject of efforts by the parties of the Agreement to maintain its secrecy, and that derives independent economic value from not being generally known or readily ascertainable by others who could obtain a financial advantage from its use.

Preparer: Justin Goethel
Title: Sr Performance Analyst
Department: Meter Reading Support
Telephone: 715-737-3132

Date: December 5, 2017

Exhibit 14

PUBLIC DOCUMENT

[redacted]

From: Goethel, Justin K
Sent: Friday, September 29, 2017 3:06 PM
To: Mahlum, Bill
Cc: Davis, William P; Terrell, Troy
Subject: RE: MN 4-Bin TOU Pilot

Thanks Bill, I appreciate the timely response. I have forwarded this information to Regulatory so they can include this information with their filing.

From: Mahlum, Bill [mailto:Bill.Mahlum@landisgyr.com]
Sent: Friday, September 29, 2017 2:49 PM
To: Goethel, Justin K
Cc: Davis, William P; Terrell, Troy
Subject: RE: MN 4-Bin TOU Pilot

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Justin,

We will agree to an exception for the TOU Pilot and will take on the additional network cost. So from a project standpoint you just need to budget for normal meter and installation costs. The meters would still need to be a USC 2-way Focus AX or an Elster A3 using our 2-way module.

Bill

From: Goethel, Justin K [mailto:Justin.K.Goethel@xcelenergy.com]
Sent: Friday, September 29, 2017 9:39 AM
To: Mahlum, Bill <Bill.Mahlum@landisgyr.com>
Cc: Davis, William P <william.p.davis@xcelenergy.com>
Subject: MN 4-Bin TOU Pilot

Bill,

I got an email yesterday evening regarding the MN 4-Bin Pilot. The original pilot was targeting 10,000 meters. They are now looking at three options (10,000 meters, 17,500 meters, or 20,000 meters). If we did the 10,000 or 17,500, [redacted]. However, if we did the 20,000 meter pilot, [redacted]. Since you already confirmed earlier that you could cover all of the meters (we gave you a list of about 25,000) in the proposed area with existing network, the regulatory team would like to know an estimate on the cost if we went with the larger pilot of 20,000 meters [redacted]. They are looking at having an estimate by Tuesday, October 3rd at 3pm.

[redacted]

Justin Goethel

Xcel Energy | Responsible By Nature
ANALYST*SR PERFORMANCE
1414 W Hamilton Ave, Eau Claire, WI 54702
P: 715.737.3132 C: 715.495.4988
E: Justin.K.Goethel@xcelenergy.com

XCELENERGY.COM
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