COMMERCE DEPARTMENT

May 20, 2019

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, Minnesota 55101

RE: **Comments of the Minnesota Department of Commerce, Division of Energy Resources**
Docket No. E,G999/CI-19-160

Dear Mr. Wolf:

Attached are the *Comments* of the Minnesota Department of Commerce, Division of Energy Resources (Department) in the following matter:

> Minnesota Public Utilities Commission (Commission) Inquiry into the Impacts of Severe Weather in January and February 2019 on Utility Operations and Service.

The Commission issued a *Notice of Comment Period* on March 18, 2019 requesting information from utilities; these utility filings were due on April 12, 2019. The utility comments were filed on the following days:

- Greater Minnesota Gas, March 25, 2019;
- Great Plains Natural Gas Company, April 8, 2019;
- Dakota Electric Associate, April 10, 2019;
- CenterPoint Energy Minnesota Gas, April 12, 2019;
- Minnesota Energy Resources Corporation, April 12, 2019,
- Otter Tail Power Company, April 12, 2019;
- Minnesota Power, April 12, 2019; and
- Xcel Energy, Electric and Gas utilities, April 15, 2019.

On April 18, 2019, the Commission issued a second notice requesting comment from other parties on the utilities' submittals and related issues and topics. Based on its review of the various utility comments, the Department offers the attached *Comments* and requests that the utilities provide additional information in reply comments, as detailed herein. A trade secret version specific to each utility will be sent via electronic mail to the respective utilities.

The Department is available to respond to any questions the Commission may have on this matter.

Sincerely,

/s/ ADAM J. HEINEN
Public Utilities Rates Analyst

AJH/ja
Attachment

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COMMERCE DEPARTMENT

Before the Minnesota Public Utilities Commission

Comments of the Minnesota Department of Commerce
Division of Energy Resources

Docket No. E,G999/CI-19-160

I. BACKGROUND AND INTRODUCTION

Starting on January 28, 2019 and continuing through February 1, 2019, the State of Minnesota experienced an extreme weather event, which resulted in the coldest weather conditions since January and February of 1996. Although weather conditions did not reach the levels experienced in 1996, the weather event did approach utility planning objectives[1] and caused isolated service quality issues and pricing spikes in electricity markets.

The Minnesota Public Utilities Commission (Commission) issued a *Notice of Commission Planning Meeting* on February 21, 2019 directing Minnesota's regulated natural gas and electric utilities and the Midcontinent Independent System Operator (MISO) to give presentations and respond to questions at the Commission's February 28, 2019 Planning Meeting. At this Planning Meeting, each regulated Minnesota gas and electric utility, along with MISO, presented preliminary findings and summarized their performance during the extreme weather event.

To gain better understanding of utility performance during this event, the Commission issued a *Notice of Comment Period – Information from Utilities* (*First Notice*) on March 18, 2019 for comments to be filed by April 12, 2019. Responsive to the *First Notice*, comments were filed on the following dates:

- Greater Minnesota Gas (Greater Minnesota), March 25, 2019;
- Great Plains Natural Gas Company (Great Plains), April 8, 2019;
- Dakota Electric Association (Dakota Electric), April 10, 2019;
- CenterPoint Energy, Minnesota Gas (CenterPoint), April 12, 2019;
- Minnesota Energy Resources Corporation (MERC), April 12, 2019;
- Otter Tail Power Company (Otter Tail), April 12, 2019;
- Minnesota Power, an Allete Company (Minnesota Power), April 12, 2019; and

[1] For regulated Minnesota natural gas utilities, the planning objective is the coldest day experienced, or reasonably expected, on the individual utility. For most utilities, the planning objective is approximately -25F, or 90 Heating Degree Days (HDD), on average for a 24-hour period.

- Northern States Power Company, d/b/a Xcel Energy, (Xcel Gas and Xcel Electric), April 15, 2019,[2] April 16, 2019, and May 13, 2019.[3]

On April 18, 2019, the Commission issued a second *Notice of Comment Period* (*Second Notice*) for additional discussion of the severe weather event. In the *Second Notice*, the Commission noted that the following issues may be addressed in comments:

- What impact did the cold weather in January and February 2019 have on utility operations and service?
- Were there lessons learned from this severe weather event that can be used to keep utility systems operating reliably and safely under extreme, challenging circumstances in the future?

The Commission also specifically referenced the following topics that are open for discussion in comments:

- Natural Gas Utilities—reinforcement projects and curtailment activities;
- Electric Utilities—actual and forecasted status of resources;
- Communications with the public during severe cold weather;
- Lessons learned and next steps; and
- Are there other issues or concerns related to this matter?

After reviewing the various utility filings, the Minnesota Department of Commerce, Division of Energy Resources (Department) observed various areas that merit comment. The Department provides its analysis and recommendations below.

II. DEPARTMENT ANALYSIS

The Department addresses the various areas of the Commission's *Second Notice* separately below. The Department's *Comments* are organized as follows:

A. Reinforcement projects and curtailment activities;
B. Other Issues--Potential tariff changes;
C. Electric Utilities – actual and forecasted status of resources;
D. Communication with the public during severe cold weather;
E. Lessons Learned; and
F. Other Issues—Natural Gas system reliability on a peak day

[2] The Department notes that Xcel was given a received date in eDockets on April 15, 2019 since it filed its comments on April 12, 2019 after the 4:30pm filing deadline.
[3] Xcel made an errata filing on April 16, 2019 clarifying a minor inconsistency in its comments. Xcel filed updated comments (referred to as reply comments*)* on May 13, 2019 further updating information in its initial comments.

A. REINFORCEMENT PROJECTS AND CURTAILMENT ACTIVITIES

The Commission's *Second Notice* mentions reinforcement projects and curtailment activities as topics that are open for comment. The Department addresses natural gas reinforcement projects, natural gas curtailments and electric curtailments.

1. Reinforcement Projects

After reviewing the natural gas utility comments, the Department notes that MERC and Great Plains did not report projects or areas that require reinforcement, although MERC did note that some areas of its system where pressure had historically been an issue had been resolved through upgrades prior to the heating season.[4] Xcel Gas and CenterPoint noted reinforcement projects that will be completed in response to this latest cold weather event. Greater Minnesota stated that it identified areas in its system that need reinforcement. Projects to address those areas were previously planned and included in Greater Minnesota's 2019 capital budget, which Greater Minnesota expects to be completed to reduce risk during future extreme weather events.[5]

Xcel Gas stated that it first modified its distribution system modeling with more severe temperature constraints to account for the greater gas loads that occurred during the extreme cold weather event.[6] After analyzing its system using the updated load assumptions, Xcel Gas identified nine projects in seven communities that require reinforcement to ensure delivery pressures. Beyond the known pressure issues in the Princeton and Hugo areas, Xcel Gas explained that upgrades are necessary in Becker, Big Lake, Blaine, Roseville, and Chisago Lakes. Xcel Gas stated that these projects involve installing 13.6 miles of new main in various sizes, adding one new regulating station, and upgrading a second regulator station. Xcel Gas provided a description of each reinforcement project in its Comments.[7] Xcel Gas anticipates installing only pipe in Becker, Blaine, Chisago Lakes, Hugo, and Princeton; whereas, it anticipates installing pipe and completing regulator station work in Big Lake and Roseville. Xcel Gas committed to making an informational filing later in the year once these projects are completed.

The Department appreciates Xcel Gas' comments on this topic and its discussion of planned reinforcement projects. The updated distribution system modeling conducted by Xcel Gas confirms statements made at the Commission's *Planning Meeting* on February 28, 2019; specifically, that the reliability issues experienced in the Princeton area were in existing service areas and not new developments. The reliability issues in an established neighborhood

[4] MERC Comments, Page 3.
[5] Greater Minnesota Comments, Pages 2-3.
[6] Xcel Comments, Page 8.
[7] Xcel Comments, Pages 8-9.

suggested a change in usage characteristics (presumably increased usage or usage at unexpected times) by firm customers, which was subsequently confirmed by Xcel Gas' updated distribution system modeling. The Department anticipates that updated distribution modeling assumptions and data will be incorporated into Xcel Gas' demand entitlement filing for the 2019-2020 heating season, which the Department will review in detail at that time.

CenterPoint identified two areas of its service territory that require reinforcement after this past heating season's cold weather event.[8] CenterPoint explained that prior to the last heating season, it identified two areas, one in Cambridge and one in Richfield, as potentially having reliability issues. In anticipation of the cold weather in January 2019, CenterPoint deployed mobile Compressed Natural Gas (CNG) trucks to these areas and, ultimately, used these CNG trucks for approximately two hours to maintain system pressure in the Richfield area during the cold weather event. For both areas, CenterPoint anticipates installing additional pipe to reinforce the system.

The Department appreciates CenterPoint's discussion on this topic and recommends that CenterPoint file further informational with the Commission once these projects are completed.

2. Natural Gas Curtailment Activities

Curtailment activities and proper curtailment of interruptible customers, in accordance with a utility's tariff, are essential to a natural gas utility's operations during a peak, or near peak, weather event or in response to reliability issues (*e.g.,* service disruption) in a given geographic area. Natural gas utilities are expected to base peak planning assumptions strictly on use by firm customers; in other words, the utility assumes that all interruptible customers will be off the system on a peak day. When interruptible customers fail to curtail, there is a reliability risk because insufficient capacity may be available for firm customers on the peak day. Further, such failure to curtail unfairly disadvantages firm customers who pay higher rates to fund the interruptible rate discount if interruptible customers are receiving essentially firm rates and service.

In their Comments, each natural gas utility described its curtailment activities during the most recent cold weather event. Every regulated natural gas utility called a curtailment of some, or all, of its interruptible customers during the recent cold weather event. The curtailments for each utility were in effect for the following periods and number of customers:

[8] CenterPoint Comments, Pages 1-2.

Table 1: Curtailment Timeline

Utility	Number of Customers Curtailed	Curtailment Start	Curtailment Lifted
CenterPoint Energy	All	January 28	February 1
Great Plains	4	January 29	January 31
Greater Minnesota	All	January 29	January 31[9]
MERC	75	January 28 (morning)	February 1 (12:00pm)
Xcel Gas	All	January 28/29[10]	February 1

Note: Number of customers curtailed is the requested number and not the actual number of customers who responded to curtailment.

The information in Table 1 above shows that three of the five natural gas utilities called on all interruptible customers to curtail natural gas use during the cold spell, whereas the remaining two requested limited curtailment In addition, most utilities began curtailments on January 28, likely in anticipation of the coldest temperatures that occurred on January 29 and January 30.

The Department notes that Xcel Gas indicated that it intended to curtail its interruptible transportation customers, but its communication about the curtailment was not as clear as it should have been. Xcel Gas stated that it has revised its scripts to improve this situation in the future and, since the mistake was an Xcel Gas issue, it did not assess unauthorized use penalties to the transport customers receiving the unclear communication. The Department requested further information from Xcel Gas on this matter.

In its response to Department discovery, Xcel Gas stated that it initially charged penalties to these customers but after analyzing the reasons for the penalty, Xcel Gas concluded that it was appropriate to remove most of the penalty charges since failures to curtail were the result of issues with Xcel Gas' miscommunication. Xcel Gas clarified that it did assess penalties to customers in the interruptible transportation rate group who burned more gas than their nominations for a specific gas day, but that Xcel Gas did not incur pipeline penalties because the pipeline company (*e.g.,* Northern Natural Gas, Viking Pipeline) did not initiate the curtailment.[11] For interruptible transportation customers, Xcel Gas' tariff requires that when

[9] Greater Minnesota clarified that two customers remained curtailed on February 1, 2019 for system capacity reasons.

[10] Xcel Gas began curtailing a limited number of interruptible customers, 15, on the evening of January 28 and the remaining interruptible customers at 9:00am on January 29. April 16, 2019 Xcel Errata filing.

[11] If a transportation customer fails to nominate correctly, the utility (not the individual transportation customer) may face pipeline penalties, which, all else being equal, in turn raises rates to all customers. To avoid having sales customers subsidize transportation customers, utilities impose balancing penalties on specific transportation customers for their imbalances and credit sales customers' gas costs with resulting revenues throughout the year.

the customer's daily receipts from Xcel Gas are more than +/- 5% of the customer's daily nomination, the customer is subject to imbalance penalties.[12]

As noted above, interruptible customers who fail to curtail, when a curtailment is called, represent a potential reliability issue to a gas utility's system and consume gas at a discounted (interruptible) rate even though effectively receiving firm service. The interruptible tariffs include charges for unauthorized use, but in their respective comments, several natural gas utilities acknowledged that certain interruptible customers did not curtail as required.[13]

The issue of unauthorized natural gas use was a significant issue during the 2013-2014 heating season, during which there were several polar vortexes, one of which was coupled with an explosion of a major interstate natural gas pipeline. During that heating season, the utilities experienced significant, widespread unauthorized use by interruptible customers. During the 2013-2014 heating season, the unauthorized use was driven by curtailment penalties that were too low and many customers did not curtail for economic reasons. This widespread unauthorized use resulted in an overhaul of unauthorized use penalties in the interruptible tariffs.[14]

Regarding this heating season's cold weather event, the three largest natural gas utilities in the state (*i.e.,* CenterPoint, Xcel Gas, MERC) analyzed of the unauthorized use and provided some preliminary discussion as to why customers did not curtail use.[15] Great Plains and Greater Minnesota reported that there were no instances of unauthorized usage. Each utility classified the reasons for unauthorized use differently; those reasons are summarized in Table 2 below.

Table 2: Reasons for Curtailment

Xcel Gas	MERC	CenterPoint	
Reason for Unauthorized Use	Reason for Unauthorized Use	Reason for Unauthorized Use	Percentage
Customer equipment failure	Lag in communication	Backup system failure	36%
Backup fuel issues	Backup system issues	Customer staffing issues	26%
Customer communication issues	Daily Firm Capacity (DFC) customer did not reduce to nominations	Customer system modifications and no backup source	11%
	Contact information issues	Ran out of backup fuel	6%
	Customer with no backup using gas to prevent freeze	Communication issues	5%
		Electric curtailment	<1%
		Unknown	16%

[12] Xcel response to Department Information Request No. 3. Department Attachment 1.
[13] CenterPoint Comments, Pages 2-3; Xcel Comments, Pages 9-12; MERC Comments, Page 2.
[14] Docket No. G999/AA-14-580.
[15] CenterPoint Comments, Pages 2-3; Xcel Comments, Pages 9-12; MERC Comments, Page 2.

The discussions provided by Xcel Gas, CenterPoint and MERC suggest that interruptible customers' failure to curtail is generally split into two categories, 1) issues with backup equipment, and 2) communication issues. These two areas are important to ensure correct and timely curtailment, and the Department concludes that there are tariff improvements that can help address these areas. The Department discusses the issue of tariff changes in detail below.

The Department also requested detailed information regarding unauthorized natural gas use,[16] which is summarized in Table 3 below.

Table 3: Curtailment Compliance and Information

Utility	Number of Interruptible Customers	Non-Compliant Customers	Percentage of Non-Compliance	Unauthorized Usage (Dkt)	Curtailment Penalties ($)
CenterPoint Energy	1,613	587	38%	65,884	$972,724
Great Plains	4	0	0%	0	$0
Greater Minnesota[17]		0	0%	0	$0
MERC	75	34	45%	3,858	$192,915
Xcel Gas[18]	361	139	39%	15,390	$769,491

The Department observes the following regarding the interruptible consumption data in Table 3 above. Despite the consumption reductions, the Department notes that the state's larger utilities still experienced non-compliance levels with between 38 and 45 percent of interruptible customers failing to curtail when requested to do so. The Department is concerned that interruptible customer compliance remains too low in the event of a serious cold weather event. The Department discusses this concern in greater detail in Section II.B below.

3. Other Issues—Electric Curtailment Activities

Electric utilities in Minnesota also offer interruptible tariffs and service options. However, unlike natural gas interruptible customers, interruptible service to electric customers typically involves a required decrease in load rather than a requirement that a customer cease all consumption for the duration of the curtailment.[19] Further, Xcel Electric's and Otter Tail's interruptible tariffs generally define the period during which interruptions would occur as being in the summer, rather than winter. Only Minnesota Power's interruptible tariffs allow for

[16] Informal Department Information Request No.1. Department Attachment 2.
[17] Greater Minnesota did not report the number of customers, instead indicating that all customers complied with the curtailment requests.
[18] Xcel revised it unauthorized usage and curtailment penalty figures in its May 13, 2019 Reply Comments.
[19] An example of the difference is air conditioning cycling programs offered by the electric utilities. If a curtailment is called, the electric utility remotely cycles a customer's cooling load, but the customer is still able to use all other electric devices.

interruptions to occur "when in the Company's opinion the reliability of the system is endangered."

Given the impact that natural gas curtailments could have on electric generating units, the Department issued discovery to all Minnesota rate-regulated electric utilities (including Dakota Electric) regarding curtailment during the cold weather event and any penalties assessed by MISO associated with the cold weather event.[20] The Department notes that this information request is due the same date that these *Comments* are filed. The Department will review these data and provide any relevant discussion and recommendations, if needed, in later comments.

Xcel Electric discussed issues on the Northern Natural Gas (Northern) system with its Farmington Compressor Station that necessitated operational modifications for certain Xcel Electric generators.[21] In particular, it appears that this issue on Northern's system resulted in a reduction in capacity of over 1,000 MW over a period of approximately 10 hours. This event is significant especially in light of the event declared by MISO and the weather conditions at the time. The Department requests that Xcel Electric provide the following in Reply Comments:

- A discussion of whether Xcel Electric has a pressure guarantee for the generators that were impacted by the NNG compressor station issue;
- A discussion of whether Xcel Electric had to purchase replacement power as a result of the forced outages resulting from the Northern compressor station issue; and
- A discussion of whether Xcel Electric has a contract with Northern regarding the generators impacted by the compressor station issue and whether this contract has provisions that would address forced outages due to loss of a compressor station or other interstate pipeline equipment.

In addition, to the extent that Northern's compressor station issue, or any other interstate pipeline issue, impacted operations for other Minnesota electric utilities, the Department invites these utilities to provide that information in their Reply Comments.

B. OTHER ISSUES—POTENTIAL TARIFF CHANGES

The Commission's *Second Notice* inquired of parties whether there are other issues or concerns related to this matter. As noted in Section II.A, unauthorized gas use by interruptible customers occurred during the weather event. This unauthorized use may have made the situation even more challenging for the utilities to maintain firm service. Since the penalty for unauthorized gas use is outlined in each natural gas utility's tariff, it is possible that unauthorized use is the result of miscommunication or lack of clarity in a utility's tariff. As such, the Department conducted a review of current interruptible tariff language.

[20] Department Information Request Nos. 4 and 6, Department Attachment 3.
[21] Xcel Comments, Pages 2 and 6-7. Xcel February 28, 2019 *Commission Presentation*, Slide 5.

The Department acknowledges that some level of unauthorized use is inevitable based on situations such as timing between an announcement and when an interruptible customer can safely or efficiently stop, or reduce, natural gas consumption. However, one would expect this unauthorized usage to be minimal, such that firm reliability would not be compromised and that tariff penalties would be sufficient to account for the costs and risks associated with these interruptible customers.

As illustrated in Table 3 above, during the recent cold weather event, the contrary was evident. The unauthorized use for certain utilities represented a significant portion of their interruptible customers, up to 45 percent. This unauthorized use imposed a cost and reliability risk on firm customers with the only risk to interruptible customers being the threat of unauthorized use penalty charges.

It is clear that the tariff changes implemented since the 2013-2014 heating season were insufficient to decrease unauthorized use by interruptible customers to an acceptable level. This continued non-compliance, despite increased unauthorized use penalties, may be driven by two main factors 1) the discount between firm and interruptible service may be so large relative to penalties that there is no incentive for certain interruptible customers to curtail service to avoid penalties, and 2) there may be an expectation that very few, if any, curtailments will be called such that it would always be economic to buy through the curtailment.

Regarding the rate differential, interruptible customers receive a lower distribution rate because they accept the risk of having their service interrupted by the utility. Theoretically, this discount represents, in part or full, the avoided cost realized by the utility through decreased investment because the customer will not receive service when interrupted. For example, the gas utility may be able to install smaller equipment or less plant in an area because a customer agrees to interruptible service and thus reduce non-gas costs of the system.

In terms of the gas cost component of the interruptible rate, interruptible customers are not assessed the full demand portion of the Purchased Gas Adjustment (PGA).[22] The demand rate relates to the costs of procuring peak capacity for firm customers so, in the event of a peak day, interruptible customers should not be receiving service and thus not charged a demand rate.

The Department notes that the difference between interruptible and firm distribution rates generally cannot be modified outside of a general rate case or a Commission decision to reopen distribution rates, but that does not preclude the utilities from providing information and discussion regarding this issue in advance of a rate case or making changes to non-rate aspects of its tariffs, if needed. The Department requests that each natural gas utility provide the following in Reply Comments:

[22] Interruptible customers are generally charged the portion of the demand component related to storage or reservation fees because these customers receive benefits from these contracts.

- A detailed discussion of whether avoided costs are included in the utility's determination of interruptible rates; and
- A detailed discussion of how the utility determines avoided costs for interruptible customers, on both a distribution and commodity basis, and the amount of avoided costs included in the utility's distribution and PGA rates.

Regarding the communication issues discussed above, the Department notes that CenterPoint's Process Interruptible Sales Service Rider includes a provision that these customers must maintain three current contract people to receive notice of curtailment. The Department believes that all natural gas utilities should consider a similar requirement for habitual unauthorized users, and potentially, all interruptible customers. Requiring multiple contacts as a condition of interruptible service adds a level of redundancy and should ensure that customers will receive timely information and curtail service when directed by the utility.

In addition, the Department believes that natural gas utilities should include language in the tariff stating that it is the responsibility of the utility to update these contact information on a regular basis (*e.g.*, annually, every September 1st) and/or that interruptible customers must notify the utility whenever there is a change needed to the customer contacts. Regular periodic communication with interruptible customers to ensure that contact information remains fresh, stressing the importance of curtailing when asked, and identifying the best method(s) to communicate a curtailment event is important to ensure that communication failures are no longer barriers to curtailment compliance. The Department requests that each utility detail in their reply comments of their current communications with interruptible customers regarding curtailments, including frequency and content, and propose tariff language memorializing communication best practices.

The Department also reviewed the current interruptible tariffs for each natural gas utility to try to identify potential best practices and explore changes that may be needed to reduce unauthorized usage.[23] The interruptible tariffs for all natural gas utilities include language regarding which entities are eligible for interruptible service, procedures on how to curtail, the costs to the customer of unauthorized use, and the potential consequences to the customer for such use. Each utility also includes relatively explicit language regarding which customers are eligible for interruptible service. In general, the presence of a backup fuel supply is a requirement, although there are certain provisions that allow for interruptible service without a backup fuel supply (*e.g.,* Process Interruptible Sales Service Rider for CenterPoint).

The Department concludes that modifications to the eligibility requirements section of the interruptible tariff could reduce unauthorized usage. For example, for customers with backup service, the utility has an obligation to verify customer claims of having back-up service or other ability to cease taking utility service on a scheduled basis. If a customer fails to maintain its

[23] Department Attachment 4.

backup equipment or demonstrate its ability to cease taking utility service, the customer should not be allowed to stay on the interruptible tariff. Interruptible tariffs should be clear that customers receiving interruptible service without functioning backup equipment or ability to cease taking utility service, be terminated from interruptible service and switched to an appropriate firm service. The Department recommends that the natural gas utilities provide proposed tariff language that addresses the requirements for interruptible service in reply comments.

Further, while the interruptible tariffs have language that passively acknowledges that this service may be discontinued if the customer consumes gas in a manner outside of the tariff the current interruptible tariff language evidently does not adequately convey to current interruptible customers that their service is not firm service and that there are requirements that such customers must meet to receive interruptible service. For example, if an interruptible customer fails to interrupt more than once, the tariff language could be written to state that this customer will be removed from interruptible service and cannot return to interruptible service for some period of time. The Department requests that the natural gas utilities provide proposed tariff language intended to reduce unauthorized use in Reply Comments.

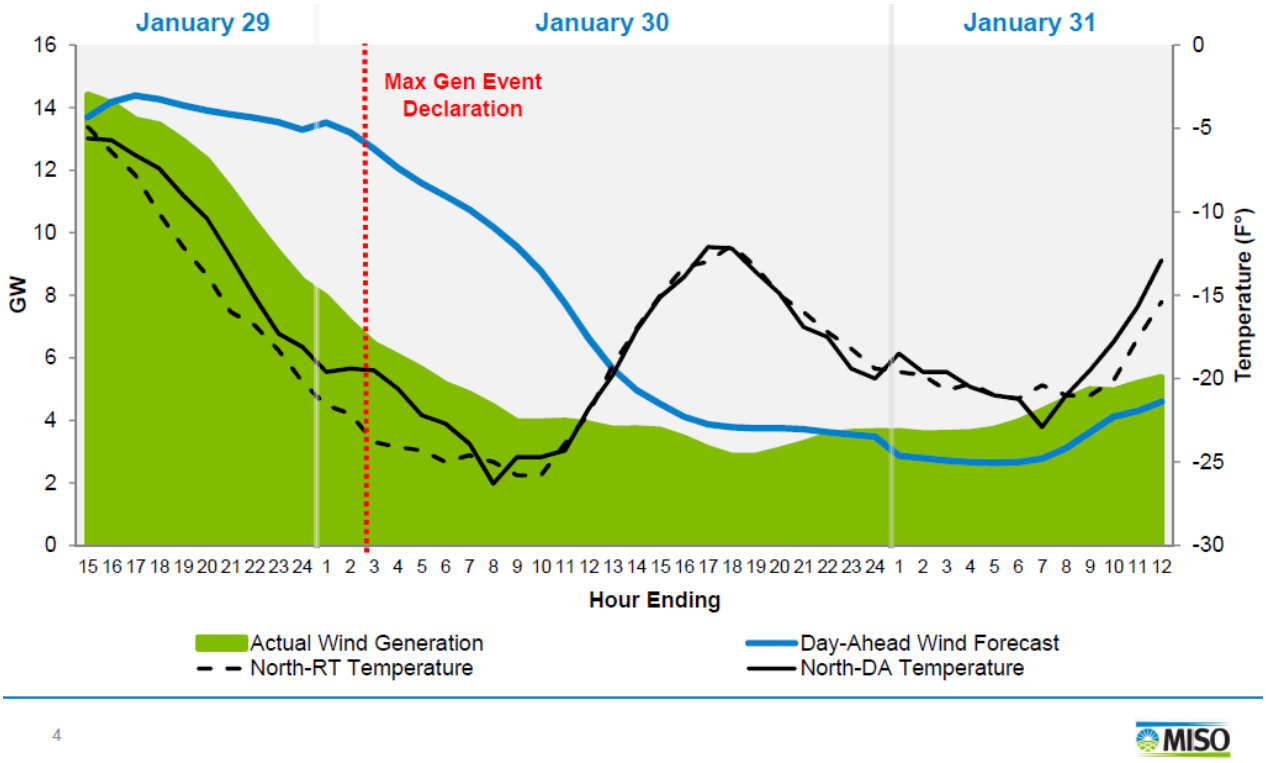
The correct application of an effectively designed interruptible tariff is of utmost importance to the reliability of the natural gas system on a peak day. If natural gas utilities do not enforce their tariffs and interruptible customers consume unauthorized gas, firm customer reliability may be at risk. The Department looks forward to the discussion and any proposed tariff language changes that may be offered in the utilities' Reply Comments.

C. ELECTRIC UTILITIES—ACTUAL AND FORECASTED STATUS OF RESOURCES

The Commission's *Second Notice* indicated that among the topics open for comments regarding electric utilities is "actual and forecasted status of resources." MISO's February 28, 2019 presentation in this proceeding provided helpful information on this issue. Below is the Department's additional analysis regarding this topic.

Regarding wind resources, Figure 1 below is from MISO's February 27, 2019 presentation to the Reliability Subcommittee regarding the January 30 and 31 Max Gen Event, which MISO presented to the Commission and filed in this proceeding on February 28, 2019. MISO experienced a significant difference between forecasted and actual wind generation late on January 29, 2019 and in the early hours of January 30, 2019. The forecast was much higher than actual wind (an over-forecast).

Figure 1: MISO Slide on Wind Forecast and Max Gen Event



In comparison to the experience of MISO's system, below are charts showing each Minnesota electric utility's forecasted and real-time wind fleet output.[24] These data are shown for all hours requested by the Commission (January 28th through January 31st).

Figure 2 shows that Minnesota Power experienced a large (at least 150 MW) over-forecast two times—early on January 28 and late on January 29. The second occurrence coincides with the issues experienced by MISO's system.

[24] Dakota Electric is not included in this analysis because it does not have generation; it is strictly a distribution utility. It receives power and capacity from Great River Energy.

Figure 2: Minnesota Power's Forecasted and Real-Time Wind

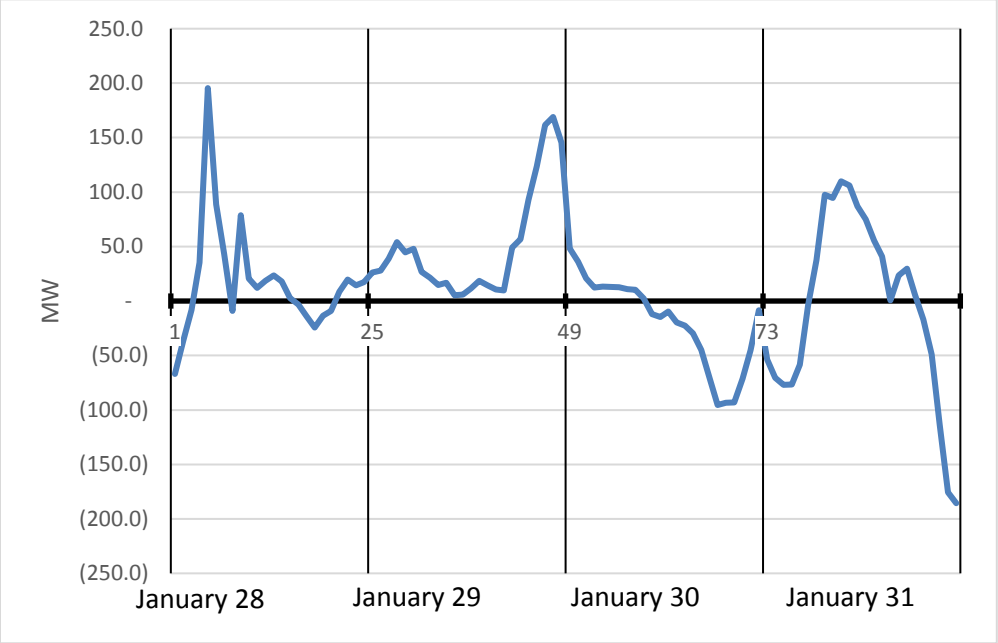


Figure 3 shows that Otter Tail experienced a consistent over-forecast nearly all day on January 29, January 30, and January 31. The greatest degree of over-forecast occurred at mid-day on the 29th, slightly before MISO as a whole began to experience over-forecast problems.

Figure 3: Otter Tail's Forecasted and Real-Time Wind

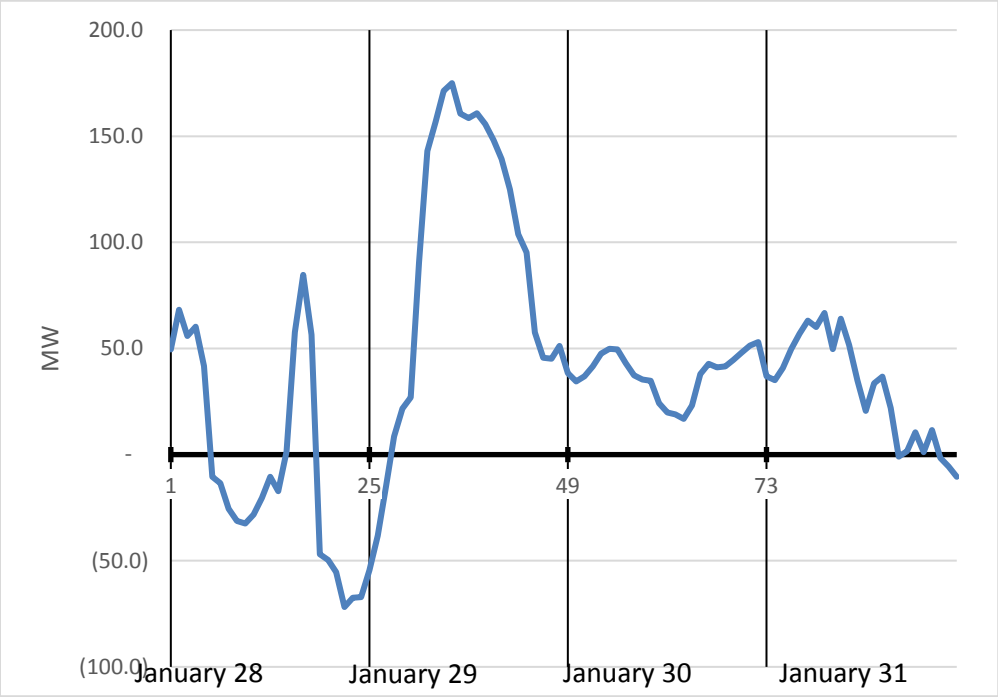
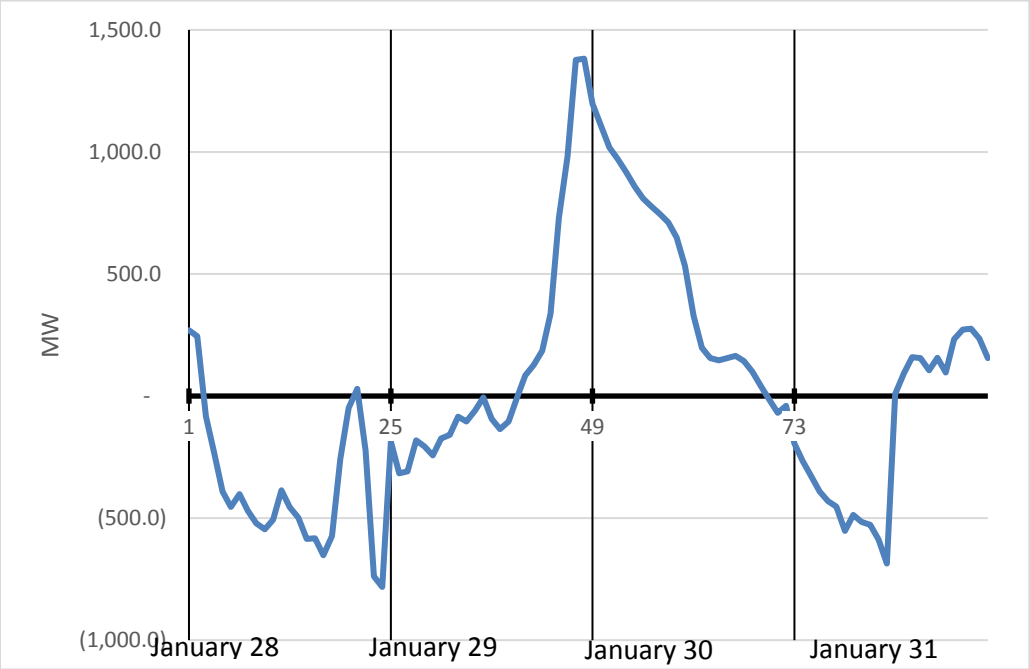


Figure 4 shows that Xcel Electric experienced a significant over-forecast at the same time as MISO's system, late on January 29 and the early hours of January 30.

Figure 4: Xcel Electric's Forecasted and Real-Time Wind



In summary, it appears that each utility had problems with forecasting wind output at some point during the cold weather event. The problems experienced by both Minnesota Power and Xcel Electric coincided with the problems experienced by MISO's system as a whole. OTP's problems did not coincide with the problems experienced by MISO's system as a whole.

In addition, slide 5 of MISO's February 28, 2019 presentation filed in this proceeding shows that forced outages of coal and natural gas generation were significant on January 29 through 31. MISO reported on slide 6 that "Total outages were higher than previous cold weather events with approximately 25% unavailable due to unplanned outages."

D. COMMUNICATION WITH THE PUBLIC DURING SEVERE COLD WEATHER

In its *First Notice*, the Commission requested that all utilities provide details of how the Commission could help convey messages to the public during a future cold weather event. The Commission's *Second Notice* includes this subject as an area that is explicitly open for comment. The Department reviewed the comments from each utility and notes that each utility, except Xcel Gas and Electric, provided discussion or recommendations on this topic. The Department recommends that Xcel Gas and Xcel Electric provide a response to this issue in its *Reply Comments* per the Commission's *First Notice* in this docket. The Department summarizes the responses from other utilities below.

Dakota Electric noted that MISO declared a maximum generation emergency event on January 30 during the cold weather event. Dakota Electric only made one suggestion on this matter, in particular, that if the Commission desires to provide messages to the public, such messages could reinforce or provide perspective on the messages being distributed by MISO.[25]

Otter Tail stated that it believes utilities are in the best position to convey messages related to facility performance during a severe weather event. Otter Tail further explained that if MISO requests load control or reduction, it has detailed communication plans in place, which includes the Commission as part of its news release distribution list.[26]

Minnesota Power stated that it did not make a specific plea to its customers to reduce load, but there was media coverage of customer interruptions for its Dual Fuel customers and that it uses social media applications to notify customers regarding outages or other important messages. Minnesota Power also stated that it does not have a specific proposal for the Commission to convey messages to the public, but Minnesota Power does appreciate this discussion and believes that this topic may warrant a technical conference to determine the most appropriate way to communicate with customers during a peak weather event.[27]

Greater Minnesota provided a brief discussion on this topic, stating that it is concerned that the Commission could confuse customers during a weather event. Greater Minnesota also stated that it believes that utilities are in a better position to deal with these kinds of situations.[28]

Great Plains stated that it appreciated the Commission's efforts on this topic, but it does not have specific recommendations regarding how the Commission can best communicate with the public.[29]

CenterPoint stated that it does not issue blanket communications to customers in the event of weather issues. CenterPoint further stated that it was concerned that, outside issues that are statewide in nature, information from the Commission may cause confusion and anxiety among ratepayers. CenterPoint also stated that it is committed to maintaining communication with state agencies and that it is best, during peak periods, to refer customers to CenterPoint for issues concerning possible service interruptions.[30]

MERC appreciated the Commission's willingness to help on this topic, but stated its belief that under most circumstances targeted communication from the utility is most effective. MERC further opined that most curtailments are geographically limited and not statewide in nature.[31]

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[25] Dakota Electric Comments, Page 4.
[26] Otter Tail Comments, Page 3.
[27] Minnesota Power Comments, Page 7.
[28] Greater Minnesota Comments, Page 2.
[29] Great Plains Comments, Page 2.
[30] CenterPoint Comments, Page 4.
[31] MERC Comments, Pages 2-3.

The Department appreciates the comments on this topic to date and looks forward to any additional information that may be forthcoming from Xcel Gas and Xcel Electric.

On a preliminary basis, the Department notes, first, that it is critical for utilities to communicate actively with the Commission and Department when severe weather emergencies arise. Both agencies are likely to be contacted by media, and it is important to ensure that the agencies have accurate and timely updates.

Second, since circumstances are likely to vary across the state and utilities, and even within the utilities' service areas, referring customers to the utilities is likely to result in more accurate and up-to-date information. Utilities need to keep the agencies informed of specific contact information to provide to consumers who may contact the agencies.

Third, if there is a statewide or macro-type issue, such as the TransCanada Explosion during the 2013-2014 heating season, communication and engagement from the Commission, and other state agencies, seems appropriate as a supplement to the information from utilities. Finally, the Department agrees with Minnesota Power in so much that discussions between utilities and the Commission is necessary to determine when it may be appropriate for the Commission to release information to the public during a severe weather event. As such, the Department recommends that each utility address this issue in reply comments and make any relevant recommendations to the Commission about relevant situations where announcements from the Commission are necessary.

E. LESSONS LEARNED

In its *First Notice*, the Commission requested that utilities discuss lessons learned during the most recent cold weather event. In its *Second Notice*, the Commission continued to leave this topic open for discussion in future comments. The Department summarizes the responses of each utility below.

Dakota Electric briefly discussed this topic, stating that it learned that its load control of retail members worked well and that this program is an important asset to meet need. The Department is encouraged that this load control system positively affected reliability during the recent severe weather event.[32]

Otter Tail stated that it did not have any specific lessons that it learned from the most recent severe weather event. Otter Tail noted that it did not observe any issues from either a generation or distribution perspective that were out of the ordinary for this type of event. Otter Tail also stated that it considered its maintenance program to be sufficient and that it is pleased with its overall system performance.[33]

[32] Dakota Electric Comments, Page 5.
[33] Otter Tail Comments, Page 3.

Minnesota Power noted that, prior to this event, MISO had not declared a Max Gen Event Step 2a-b and NERC EEA 2 emergency event for its North Area in over a decade. As such, Minnesota Power learned several lessons related to Demand Response; in particular, how MISO communicates such information and the need for demand response and curtailments during an emergency event. Thus, Minnesota Power stated that it is taking steps to improve training and internal procedures, along with communicating with customers in preparation for the next severe weather event.

Minnesota Power also provided a detailed discussion of its emergency planning process and protocols. Minnesota Power noted that it followed its protocol and, in preparation for the extreme weather event, its substation technicians conducted preventative maintenance and inspections to limited potential issues. However, Minnesota Power noted that it still responded to numerous alarms for transmission and substation equipment.[34]

Xcel Electric noted two areas where it learned from the recent cold weather event and where it may be able to improve future operations. First, it learned that it needs to improve how it optimizes gas supply contracts for its generating facilities. Based on this concern, Xcel Electric further stated that it is currently conducting a survey of electric plants to determine how they performed since this weather event was a rare and unique occurrence. Second, Xcel Electric explained that this event provided a great example of where there may be benefits to self-committing units rather than responding only to MISO instructions.[35]

Greater Minnesota stated that it was generally happy with its performance, but it did learn important lessons for the future. Greater Minnesota explained that it did not experience issues with its excess flow values (EFVs), but it is aware that there can be issues at low pressures. Greater Minnesota stated that it will remain alert to these concerns with EFVs. Greater Minnesota also stated that it learned that wind conditions and customer behavior contributed to actual consumption exceeding design-day projects. Despite these concerns, Greater Minnesota believes that its reserve margin is sufficient and concludes that the Commission does not need to take steps to change utility practices.[36]

The Department appreciates Greater Minnesota's discussion on this topic. Given the higher actual consumption levels noted by Greater Minnesota, the Department expects that these concerns will be addressed in future demand entitlement filings, and the Department will review Greater Minnesota's design-day results and planning assumptions at that time. The Department also notes that it discusses this topic in greater detail in Section II.F below.

[34] Minnesota Power Comments, Pages 7-9.
[35] Xcel Comments, Page 15.
[36] Greater Minnesota Comments, Pages 2-3.

Great Plains stated that it did not report any specific lessons learned from the most recent cold weather event. Great Plains also explained that it experienced no EFV issues during the event.[37]

CenterPoint discussed various lessons that it learned from the most recent cold weather event. First, CenterPoint learned that its peak day modeling worked well and that its distribution planning successfully allowed it to identify problem areas and pre-emptively place CNG assets in potential problem areas. CenterPoint further stated that it will continue to monitor and model system flows and investigate potential problems using pressure recorders so that CenterPoint can prioritize future system upgrades and minimize pressure issues.

Second, CenterPoint discussed lessons it learned regarding unauthorized use by interruptible customers. CenterPoint stated that it will continue to monitor this unauthorized usage and determine whether these interruptible customers are satisfying the tariffs. CenterPoint noted that customers who fail to comply with the interruptible tariff will be moved to firm service.

Third, CenterPoint discussed lessons it learned regarding EFVs, noting that it experienced some EFV issues with some newer construction. CenterPoint investigated these issues and determined that the issues were related to moisture trapped in the piping system. CenterPoint explained that moisture can cause EFVs to false trip or freeze and efforts are underway to institute procedures and training protocol to attempt to eliminate moisture issues when pipe is installed.[38]

MERC explained that it learned lessons in four areas. First, MERC intends to establish a meeting schedule prior to future weather events where it will coordinate decisions between different parts of the utility. MERC noted that it held these meetings during the recent severe weather event, but it did not begin this coordination until after the event began.

Second, MERC learned that continued communication to customers during a cold weather event is important to ensure that customers are prepared to interrupt service for a potential curtailment. MERC also stated that this open communication will help it identify where potential curtailment issues may occur.

Third, after the cold weather event, MERC determined that it is necessary to expand current pressure checkpoints to include new areas, developments, and areas of recently replaced pipe. MERC further explained that it concluded it is necessary to verify that recently reinforced areas are still working effectively in light of changes in load assumptions.

[37] Great Plains Comments, Page 1.
[38] CenterPoint Comments, Pages 4-5.

Fourth, MERC concluded that it was necessary to continue staff training especially in way that can lead to a more thorough understanding of pressure monitoring. MERC also provided discussion regarding EFVs. MERC stated that there were EFV issues during the cold weather event and that it needs to further investigate these issues and understand why they happened. MERC further explained that understanding these EFV issues could either assist MERC in its installation procedures in the future or provide MERC with valuable knowledge of where similar instances may occur in the future, so that MERC can react in an efficient manner.[39]

Xcel Gas discussed various lessons learned from the recent cold weather event, explaining that a positive development from the cold weather event was the coordination between its electric and gas operations. This coordination allowed Xcel Gas to deal solely with the pressure issues in Princeton and Hugo and restoring service while the electric operations were able to secure necessary equipment and resources for affected customers.

The other significant takeaway that Xcel Gas learned from the cold weather event was that it needed to update its distribution modeling assumptions. After the communication issues with Interruptible Transport customers, which is discussed in greater detail in Section II.A.2 above, Xcel Gas also decided to its communication generated by its automated customer curtailment communications system, so that Interruptible Transport customers receive clearer instructions.[40]

The Department appreciates the discussion of lessons learned from the various utilities. Based on these responses, it appears that the utilities have made, or plan to implement, various process improvements because of the severe weather event. The Department recommends that the Commission require the utilities to report on their progress in implementing these efforts by November 1, 2019.

F. OTHER ISSUES—NATURAL GAS SYSTEM RELIABILITY ON A PEAK DAY

The Commission's *Second Notice* inquired of parties whether there are other issues or concerns related to the cold weather event. In addition to the tariff discussion in Section II.C above, the Department identified another area that requires additional analysis and discussion. Prior to each heating season, regulated gas utilities in Minnesota make demand entitlement filings that detail each utility's capacity purchases to ensure firm reliability on a peak day.[41] These capacity purchases not only allow the utility to transport natural gas to its distribution system but also allow access to natural gas supply and storage via various delivery points on an interstate

[39] MERC Comments, Pages 4-5.
[40] Xcel Comments, Pages 14-15.
[41] For natural gas utilities, the Commission defined peak day, or planning objective, is the coldest average day that the utility has experienced. Generally speaking, this translates into an average temperature of approximately -25F, or 90 HDD.

pipeline system. This demand entitlement filing is part of a gas utility's planning to ensure firm reliability on a peak day; however, it is not the only part of a gas utility's planning objectives.

Once natural gas is transferred from an interstate pipeline to a local distribution company's (LDC) distribution system through a Town Border Station (TBS), it is the responsibility of the LDC to ensure that it can adequately transport the fuel where it is needed, in a reliable and safe manner. As noted in Section II.A.1 above, there were isolated distribution system issues during the cold weather event, but it is unclear whether capacity issues existed or may have occurred if the planning objectives for each utility were met.

As part of the demand entitlement, each utility conducts a design-day analysis, which estimates firm usage on a peak day. Although the weather event associated with this docket did not reach the Commission planning objective for any natural gas utility, the weather conditions experienced were close to the planning objective and allow parties to reach certain educated conclusions regarding whether natural gas utilities likely had sufficient capacity to serve customers on a Commission peak day.

The Department issued discovery requesting that each utility provide daily sales data, by customer type, for the months of January and February.[42] With these data, the Department used actual weather data from the cold weather event to extrapolate actual use to approximate usage on a Commission peak day. The Department extrapolated these data on a use-per-degree-day basis, which is not an ideal metric, but it allows for an estimation especially in an instance where actual temperatures are close to the planning objective. The Department notes that these data are not ideal because consumption was lower on the coldest of the two days during the cold weather event. The Department provides its preliminary analysis below.[43]

This analysis is preliminary, and subject to change, because MERC and Great Plains do not have sufficient data available at this time. In its response to discovery, MERC stated that it will not have detailed daily data, by customer type, available until June 30, 2019. In its response to discovery, Great Plains stated that it does not track daily data on a customer type basis. Since Great Plains conducts a design-day analysis, which estimates firm usage, the Department is confident that Great Plains is able to estimate firm usage. As such, the Department recommends that Great Plains provide daily firm usage estimates in *Reply Comments*.

Given the data issues on the coldest day during the event, the Department used information from January 29, 2019 to test potential use if a peak day had occurred. Based on the Department's analysis, it appears that Xcel Gas and CenterPoint procured sufficient entitlement and peaking capacity to serve firm customers on a peak day. As to Xcel Gas, the Department compared the estimated peak day number (838,334 Dkt/day) to the total entitlement level

[42] **Trade Secret** Department Information Request No. 2, **Trade Secret** Department Attachment 5.
[43] **Trade Secret** Department Attachment 6.

(891,084 Dkt/day) presented in Xcel's demand entitlement filing for the heating season.[44] The calculated difference in available capacity suggests that Xcel had sufficient gas available to serve firm customers. As noted in Xcel Gas' Comments, there were deliverability issues in Princeton and Hugo; however, based on the information available in this record, the Department remains unsure why Xcel issued a general conservation request to its customers. Xcel Gas attempted to address this issue in its response to informal discovery, but, even with additional information, Xcel Gas has not provided sufficient discussion detailing why it experienced system reliability issues, given the results of its design-day analysis, and why it asked for conservation during the cold weather event.[45] The Department is aware that the conservation request was done out of an abundance of caution,[46] but the Department recommends that Xcel Gas provide a detailed discussion, and hour-by-hour timeline, in its *Reply Comments* that clearly shows why Xcel Gas made this request. As part of this discussion, Xcel Gas should detail, at a minimum, the assumptions between its distribution planning and design-day analysis that differed and an explanation of why these assumptions differed.

Based on its analysis of Greater Minnesota's daily data, the Department is concerned that Greater Minnesota would have potentially experienced reliability issues on a peak day. The Department estimated potential firm usage on a Commission peak day of 14,275 Dkt/day, while Greater Minnesota procured 14,109 Dkt/day of entitlement for the heating season, which is a deficit of 166 Dkt/day. If these numbers are accurate, and a peak day occurred during the cold weather event, it is possible that Greater Minnesota could have experienced reliability issues or required some level of firm curtailments. The Department notes that it does not believe that Greater Minnesota was imprudent in its design-day analysis or procurement strategy. The Department fully reviewed Greater Minnesota's design-day analysis and assumptions in its demand entitlement filing and concluded that its analysis and procurement level were reasonable. The Department expects Greater Minnesota to address any analytical deficiencies in its next demand entitlement filing and looks forward to reviewing this information in the future.

Based on its analysis at this time, the Department concludes that Minnesota natural gas utilities generally planned well, from an entitlement and procurement standpoint, for the recent cold weather event. The Department looks forward to reviewing any additional information or discussion provided in reply comments and will make any additional conclusions or recommendations at that time.

[44] The Department notes that its calculated figure includes use by interruptible customers. Although the demand entitlement plans for strictly firm usage, the unauthorized use noted in Section II.A.2 of these *Comments* suggests that some level of interruptible usage would have occurred on a peak day.
[45] Department Attachment 7.
[46] Xcel Comments, Page 6.

III. DEPARTMENT RECOMMENDATIONS

Based on its review of utility comments, the Department recommends that the Commission require the utilities to report on their progress in implementing various process improvements because of the severe weather event these efforts by November 1, 2019. The Department also requests that additional information be provided in reply comments.

The Department requests that Xcel Electric provide:

- A discussion of whether Xcel Electric has a pressure guarantee for the generators that were impacted by the NNG compressor station issue;
- A discussion of whether Xcel Electric had to purchase replacement power as a result of the forced outages resulting from the Northern compressor station issue; and
- A discussion of whether Xcel Electric has a contract with Northern regarding the generators impacted by the compressor station issue and whether this contract has provisions that would address forced outages due to loss of a compressor station or other interstate pipeline equipment; and
- A discussion regarding communications between the Commission and the public per the *First Notice* in this docket.

The Department requests that Xcel Gas provide:

- A detailed discussion, including direct statements regarding the utility's planning assumptions and data, regarding the utility's general curtailment called during the cold weather event and a detailed explanation of why this curtailment occurred. As part of this discussion, please update any relevant information from the February 28. 2019 Commission *Planning Meeting* regarding Xcel Gas' deliverability issues; and
- A detailed discussion, and hour-by-hour timeline, that clearly shows why Xcel Gas made its system-wide conservation request. As part of this discussion, Xcel Gas should detail, at a minimum, the assumptions between its distribution planning and design-day analysis that differed and an explanation of why these assumptions differed; and
- A discussion regarding communications between the Commission and the public per the *First Notice* in this docket.

The Department requests that Great Plains provide daily firm usage estimates in its *Reply Comments*.

The Department requests that each natural gas utility provide the following in its *Reply Comments*:

- A detailed discussion of whether avoided costs are included in the utility's determination of interruptible rates;

- A detailed discussion of how the utility determines avoided costs for interruptible customers, on both a distribution and commodity basis, and the amount of avoided costs included in the utility's distribution and PGA rates;
- proposed tariff language intended to reduce unauthorized use;
- proposed tariff language that addresses the requirements for interruptible service;
- proposed tariff language stating that it is the responsibility of the utility to update interruptible customer contact information on a regular basis; and
- a discussion of any other area of the tariff that needs updated and proposed tariff language that addresses these other areas.

The Department requests that all utilities provide in *Reply Comments*:

- A discussion of whether interstate pipeline issues impacted operations during the cold weather event and what, if any, impact this had on rates or reliability; and
- A detailed discussion of their current communications with interruptible customers regarding curtailments, including frequency and content, and proposed language memorializing communication best practices;
- A discussion of the instances when public communication from the Commission is appropriate during a severe weather event, or operational issue, and how these communications should be made.

/ja

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Comments

Docket No. E,G999/CI-19-160

Dated this 20th day of May 2019

/s/Sharon Ferguson

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