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BEFORE THE MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS
600 North Robert Street, St. Paul, MN 55101

FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION
121 7th Place East, Suite 350, St Paul MN 55101-2147

In re of Sherco Unit 3 Energy Replacement Costs.	OAH Docket No. 65-2500-38476
In re the Application of Northern States Power Company for Authority to Increase Rates for Electric Service in the State of Minnesota, et al.	MPUC Docket No. E-002/GR-12-961
In re the Application of Northern States Power Company for Authority to Increase Rates for Electric Service in the State of Minnesota, et al.	MPUC Docket No. E-002/GR-13-868
In re the Review of the 2012-13 Annual Automatic Adjustment Reports for All Electric Utilities	MPUC Docket No. E-999/AA-13-599
In re the Review of the 2013-14 Annual Automatic Adjustment Reports for All Electric Utilities	MPUC Docket No. E-999/AA-14-579
In re the Review of the 2015-16 Annual Automatic Adjustment Reports for All Electric Utilities	MPUC Docket No. E-999/AA-16-523
In re the Review of the 2016-17 Annual Automatic Adjustment Reports for All Electric Utilities	MPUC Docket No. E-999/AA-17-492
In re the Review of the 2017-18 Annual Automatic Adjustment Reports for All Electric Utilities	MPUC Docket No. E-999/AA-18-373

THE MINNESOTA DEPARTMENT OF COMMMERCE'S EXCEPTIONS TO THE ALJ'S FINDINGS OF FACT, CONCUSIONS OF LAW AND RECOMENDATION

INTRODUCTION

This case represents the final chapter in the long-running saga that began more than a dozen years ago when Xcel's Sherco 3 coal burning electric generation plant suffered a catastrophic failure – what Xcel has referred to as an "explosion like event" – that destroyed the plant.[1]

Based on the extensive record in this case, the ALJ found that Xcel made a business decision to defer an inspection of Sherco 3's low pressure turbines, knowing that doing so increased the risk of exactly the type of catastrophe that gives rise to this case. That decision had disastrous consequences. As the ALJ found, had Xcel conducted the inspection that it chose to defer, the catastrophe that destroyed Sherco 3 would have been avoided. In other words, Xcel was imprudent in its inspection and maintenance practices and one consequence of that imprudence was Sherco 3 was out of service for nearly two years and Xcel charged its ratepayers to replace the power that Sherco 3 would have produced during that time.

The result that reasonably flows from Xcel's lack of prudence is that Xcel should be required to refund to ratepayers the full amount of power replacement costs, plus interest. The ALJ, however, recommended that the refund be reduced by more than half to reflect a determination regarding "contributory negligence" of General Electric, the manufacturer of the turbine that failed. The Department believes that this aspect of the ALJ's recommendation is plainly incorrect and urges the Commission to reject it.

The ALJ's recommendation that the amount of the refund due Xcel ratepayers be reduced is based on a policy judgment that is contrary to the Commission's precedent regarding prudence review. "Contributory negligence" is a tort law concept that is not applicable in the context of determining whether a utility has engaged in prudent practices. There is nothing that GE did or

[1] Ex. Xcel-2 at 11 (Krug Direct).

did not do that prevented Xcel from acting prudently. There is nothing that GE did or did not do that reduces Xcel's responsibility for the catastrophe or ratepayers' right to electric rates that are just and reasonable. Xcel's ratepayers cannot look to GE for a refund. The effect of adopting the ALJ's recommendation regarding the amount of the refund will be to leave ratepayers holding the bag to the tune of tens of millions of dollars while giving Xcel's shareholders a windfall.

FACTS

Sherco 3 consists of a "train" of four turbines, a high pressure (HP) turbine, and intermediate pressure (IP) turbine, and two low pressure (LP) turbines, arranged in a line through which pressurized steam travels.[2] Each turbine has a series of turbine blades, often called "buckets,"[3] that are attached to a rotor.[4] On November 19, 2011, Xcel was bringing Sherco 3 back into service following an outage for planned maintenance. During testing, the rotor of one of Sherco 3's LP turbines failed. This failure caused several buckets to come loose from the rotor and the resulting mass imbalance essentially caused the turbine to shake itself apart, destroying not only the turbine that had experienced the failure, but also Sherco 3's other low pressure turbine, its high pressure turbine, its intermediate low pressure turbine, and its generator.[5]

This case concerns whether the Commission should require Xcel to refund the costs that it incurred and passed on to its ratepayers to purchase replacement power for the nearly two years that Sherco 3 was out of service.[6]

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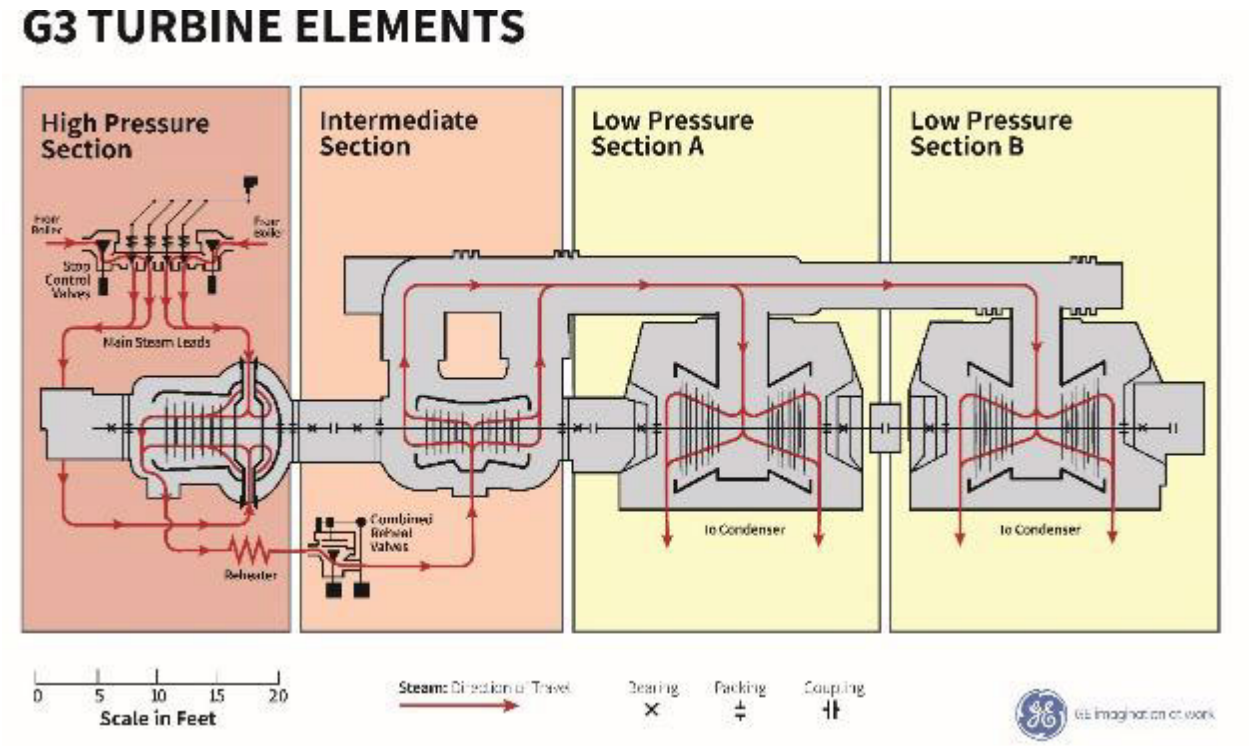
[2] Recommendation, Findings of Fact, ¶33.
[3] Because the documents and testimony in this case usually refer to these structures as "buckets," these exceptions will generally use the term "bucket" rather than "blade."
[4] Recommendation, Findings of Fact, ¶36.
[5] Recommendation, Findings of Fact, ¶59.
[6] Notice and Order for Hearing at 10.

A. Sherco 3's Design and Operation

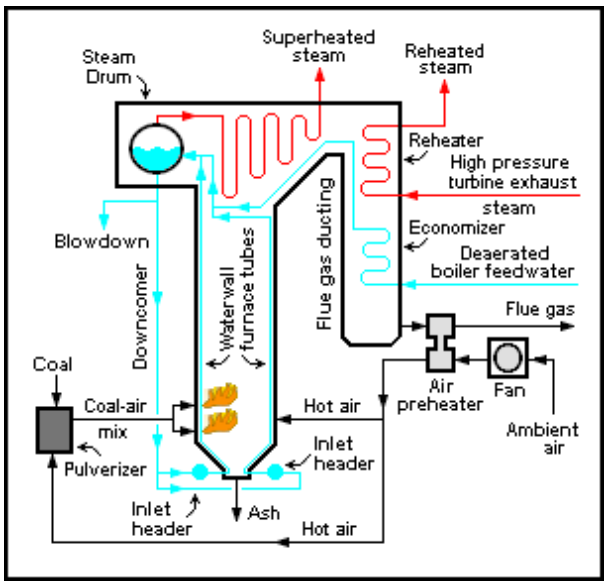
Sherco 3 is one of three coal-fired generating units owned and operated by Xcel in Sherburne County.[7] Xcel put Sherco 3 into service in 1987; it is the largest of the Sherco units, with a generating capacity of 900 megawatts.[8] As illustrated below, Sherco 3 has four turbines: a high pressure (HP) turbine, an intermediate pressure (IP) turbine, and two low pressure (LP) turbines (referred to as LP turbines A and B).[9] These four turbines combine to make up Sherco 3's turbine generator train.[10]



Sherco 3 burns coal to turn water into the steam that powers the turbines. Sherco 3 makes steam using a type of boiler called a "drum boiler," which is illustrated below. A drum boiler has a large steel drum at the top of the boiler, which serves multiple purposes, one of which is to separate steam from water in the

[7] Recommendation, Findings of Fact, ¶5.
[8] Recommendation, Findings of Fact, ¶29.
[9] Recommendation, Findings of Fact, ¶33, Figure 3; *see also* Ex. Xcel-7 at 6-7 (Kolb Direct).
[10] Recommendation, Findings of Fact, ¶33, Figure 3; *see also* Evid. Hrg. Tr. Vol. 1 at 151-52, 157-58 (Kolb).

steam-production process. The boiler feedwater in a power generation plant like Sherco 3 enters the boiler through an economizer section which performs the initial water heating. From the economizer, the feedwater typically enters the steam drum. The drum is designed with tubes on the bottom which circulate water down vertical sections of tubing (called the "water walls") of the boiler and tubes on the top which extract steam from the drum. The water from the bottom of the drum circulates down through the walls of the boiler and then back to the drum, gaining sufficient heat to turn the water into saturated steam (steam containing water droplets). The drum separates the water from the steam and sends the steam to the high temperature sections of the boiler where it is superheated and sent to the steam turbine.[11]

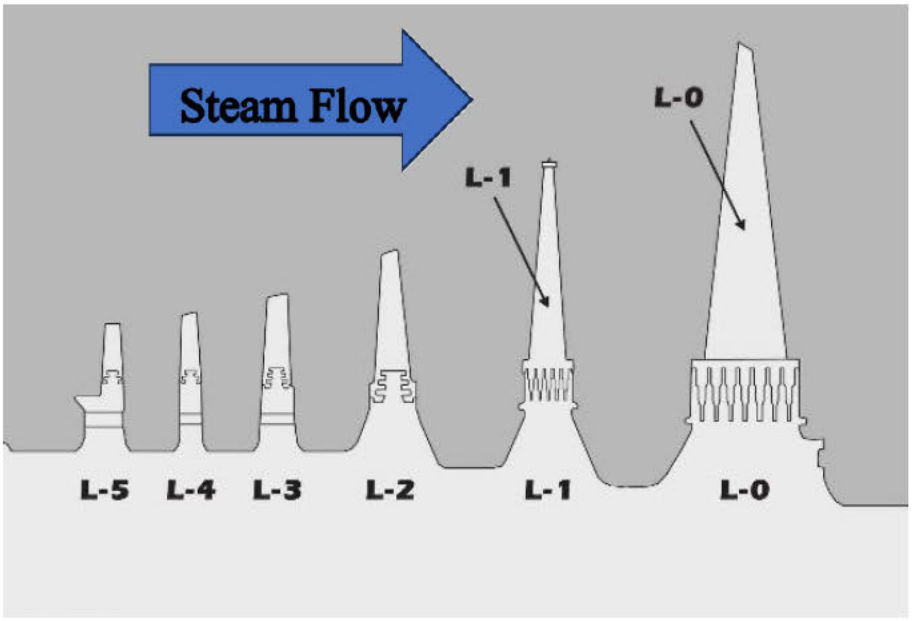


Sherco 3's LP turbines are double-flow turbines; steam enters the center of the turbine and flows in opposite directions. Each turbine has multiple rows (or stages) of buckets. There are six stages of buckets on each side of each of the LP turbines, identified as stages L-0 through L-5. Pressurized steam entering the turbine first encounters nozzles that help to distribute the steam

[11] *See* Recommendation, Findings of Fact, ¶¶ 49-51; *see also* Ex. DOC-1 at 9-10. Figure 3 (Polich Direct).

around the entire 360 degrees of the turbine. The steam exerts force on the buckets, converting the energy of the steam to horsepower in the turbine shaft that is used to power the generator.[12]

As the steam passes through each stage of buckets, the steam pressure drops and the steam expands, requiring longer buckets to maximize the conversion of steam energy to horsepower.[13] As shown in the diagram below, each row of buckets becomes progressively longer as steam passes through the turbine. The longest row is the L-0 row and the next longest is the L-1 row.[14]



The buckets of the Sherco 3 LP turbines are attached to the rotor in one of two ways. The L-2, -3, -4, and -5 stages connect to the rotor with "tangential dovetails," which use an interlocking configuration, like the pieces of a jigsaw puzzle fitting together, to connect the buckets to the rotor.[15] The L-0 and L-1 rows connect to the rotor using finger-pinned dovetails, which are finger-

[12] Recommendation, Findings of Fact, ¶¶37; Ex. DOC-1 at 11 (Polich Direct).
[13] Recommendation, Findings of Fact, ¶¶36-38; Ex. DOC-1 at 11-12 (Polich Direct).
[14] Recommendation, Findings of Fact, Figure 7; Ex. Xcel-4 at 9 (Murray Direct); Ex. DOC-1 at 10-11, Figure 5 (Polich Direct).
[15] Recommendation, Findings of Fact, ¶40

like structures that mate with grooves in the rotor and are held in place by pins inserted into the rotor disk.[16]

After the steam leaves the turbine, it condenses into water and returns to the boiler to be re-circulated.[17] The area of the turbine where the steam begins to condense into water is known as the "phase transition zone" or the "Wilson line."[18] In the case of Sherco 3, the phase transition zone is generally in the area of the L-1 row of buckets.[19]

B. The Catastrophic Failure

In November 2011, Sherco 3 had been in operation for approximately 24 years. Xcel took Sherco 3 offline for a planned outage to provide an opportunity for maintenance on the unit. During the planned outage, Xcel performed work on the HP and IP turbines to increase the amount of electricity those turbines were able to produce. This work was discretionary; it was not necessary to perform a repair or address a safety issue.[20] To accommodate work on the HP and IP turbines, Xcel decided to defer to 2014 a major overhaul (also known as a major inspection or major outage) of the LP turbines that, under Xcel's established inspection schedule, would've taken place in November 2011. Xcel instead elected to perform a more limited minor inspection on the LP turbines. [21]

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[16] Recommendation, Findings of Fact, ¶41, Figures 9 and 10; Ex. DOC-1 at 12, Figure 7 (Polich Direct); Ex. Xcel-4 at 10-11 (Murray Direct).
[17] *Id*.
[18] Ex. Xcel-26 at 11 (Tipton Direct); Ex. Xcel-62, part 1, GE Litigation Tr. Vol. 2, at 307-308 (Oct. 17, 2018) (Murray); Ex. Xcel-62, GE Litigation Tr. Vol. 3 at 595-596 (Oct. 18, 2018) (Kolb).
[19] Recommendation, Findings of Fact, ¶52-53; Evid. Hrg. Tr. Vol. 1 at 63-64 (Nov. 1, 2023) (Murray); Ex. Xcel-62, GE Litigation Tr., Vol. 2 at 307-308 (Oct. 17, 2018) (Murray).
[20] Recommendation, Findings of Fact, ¶176; Evid. Hrg. Tr. Vol. 1 at 85 (Nov. 1, 2023) (Murray).
[21] Recommendation, Findings of Fact, ¶57-58; Ex. DOC 1 at 38-39 (Polich Direct); *see also* Ex. Xcel-4 at 18-19 (Murray Direct); Ex. Xcel-7 at 45 (Kolb Direct); Evid. Hrg. Tr. Vol. 1 at 81-83 (Nov. 1, 2023) (Murray).

On November 19, Xcel had completed the maintenance outage and was performing testing before bringing the unit back online. One test was an "overspeed test," which is designed to test the function that shuts the turbine down if it exceeds a certain RPM threshold. During this testing, some of the L-1 bucket attachment points on the LP turbine rotor failed. As a result, some of the L-1 buckets came loose from the rotor, which caused a mass imbalance in the rotor and significant vibration that caused the turbine to self-destruct. The generator shaft and the exciter shaft fractured, hurling a 200-pound part of the generator across the turbine floor and into the operator's room. A fire broke out when oil systems and the hydrogen cooling system ruptured and were ignited by overheating bearings. The resulting catastrophic failure of the LP turbine substantially destroyed the HP turbine, the IP turbine, both LP turbines, and the generator. Flying debris and fire caused significant damage to the control room and other plant facilities. The damage was catastrophic and fortunately no one was injured.[22]

Restoring Sherco 3 cost almost $200 million and the unit was out of service for nearly two years.[23] While the unit was offline, Xcel had to purchase replacement power from the Midcontinent Independent System Operator (MISO). These replacement power costs, before interest, totaled over $41 million on a Total Company basis and over $33 million on a Minnesota Jurisdictional basis for the outage period.[24]

An engineering firm that Xcel retained concluded that the L-1 rotor dovetail failed because of a condition called "stress corrosion cracking" or "SCC."[25] SCC causes a material to crack well

[22] Recommendation, Findings of Fact, ¶¶59-60Ex. DOC-1 at 13-14 (Polich Rebuttal); *see also* Ex. Xcel-1 at 10-11 (Krug Direct).
[23] Recommendation, Findings of Fact, ¶61; Ex. Xcel-1 at 11-12 (Krug Direct).
[24] Recommendation, Findings of Fact, ¶¶61, 323; Ex. DOC-3 at 4, 18 (King Direct).
[25] Recommendation, Findings of Fact, ¶¶64, 102; Evid. Hrg. Tr. Vol. 2 at 33-35 (Nov. 2, 2023) (Tipton); Ex. Xcel-26, AAT-D-2 at 3 (Tipton Direct, Schedule 2).

below its design strength when placed under stress. Xcel's expert found that finger dovetail attachments at the L-1 turbine end disk had failed due to SCC, most likely resulting from sodium hydroxide contamination of the steam. [26] Xcel's expert concluded that the SCC that caused the LP rotor to crack had formed some number of years – perhaps more than ten – prior to the accident.[27]

C. Xcel's Inspection and Maintenance Practices

SCC and risks associated with SCC were well-known in the industry generally and to Xcel in particular long before the Sherco 3 failure.[28] Xcel knew that undetected and unabated SCC could lead to a catastrophic rotor failure.[29] Further, Xcel knew that the area of the turbine where the steam condenses into water, known as the phase transition zone or Wilson line, was particularly susceptible to SCC, because of the greater potential for the concentration of contaminants in that area.[30] Xcel also knew that, in the Sherco 3 LP turbines, the phase transition zone is generally found at the L-1 row of buckets, where the November 2011 failure originated.[31]

While GE could, and did, make recommendations regarding inspection and maintenance of the turbines, it was up to Xcel, as the turbine owner and operator, to decide whether and how to act on those recommendations.[32] Although Xcel had established a schedule for frequency of major

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[26] Recommendation, Findings of Fact, ¶¶64 102, Ex. Xcel-26, AAT-D-2 at 3 (Tipton Direct, Schedule 2).
[27] Recommendation, Findings of Fact, ¶104; Evid. Hrg. Tr. Vol. 2 at 44 (Nov. 2, 2023) (Tipton).
[28] Recommendation, Findings of Fact ,¶147; Ex. Xcel-62, part 1, GE Litigation Tr., Vol. 2 at 307 (Oct. 17, 2018) (Murray); Ex. Xcel-62, GE Litigation Tr. Vol. 3 at 592-594 (Oct. 18, 2018) (Kolb).
[29] Evid. Hrg. Tr. Vol. 1 at 63-64 (Nov. 1, 2023) (Murray); Ex. Xcel-62, GE Litigation Tr., Vol. 2 at 316 (Oct. 17, 2018) (Murray).
[30] Recommendation, Findings of Fact, ¶¶53, 125; Ex. Xcel-26 at 11 (Tipton Direct); Ex. Xcel-62, part 1, GE Litigation Tr. Vol. 2, at 307-308 (Oct. 17, 2018) (Murray); Ex. Xcel-62, GE Litigation Tr. Vol. 3 at 595-596 (Oct. 18, 2018) (Kolb).
[31] Recommendation, Findings of Fact, ¶¶53, 125, 180; Evid. Hrg. Tr. Vol. 1 at 63-64 (Nov. 1, 2023) (Murray); Ex. Xcel-62, GE Litigation Tr., Vol. 2 at 307-308 (Oct. 17, 2018) (Murray).
[32] Recommendation, Findings of Fact, ¶¶ 106, 180; Evid. Hrg. Tr. Vol. 1 at 159-61 (Nov. 1, 2023) (Kolb).

inspections of the Sherco 3 LP turbines, it failed to follow its own schedule in connection with the 2011 planned outage. Xcel understood that increasing the inspection interval increased risk to the turbine. As part of his job duties, Sherco's systems engineer, Mr. Kolb, prepared an annual System Health Report for the Sherco 3 low pressure turbines for the purpose of keeping Xcel's management informed.[33] A System Health Report dated December 7, 2010 – a little less than a year before the turbine failure caused by SCC – observes, similar to reports prepared in 2007 and 2009, that "These LP's may suffer from an industry-wide problem with rotor wheel cracking."[34] Mr. Kolb goes on to note that "Risks associated with wheel cracking involve wheel failure and buckets departing the rotor. Resulting collateral damage could be severe (i.e. due to mass imbalance and projectiles)."[35] In his report to management, Mr. Kolb also states that "GE recommends a TBO [time between major overhauls] of 5 years. Increasing inspection interval adds risk. Currently scheduled for a 8 1/3 year TBO this cycle."[36] These warnings were communicated to Xcel management.[37] With respect to inspection plans for the low pressure turbine, the System Health Report states, "Maintain 6 year inspection frequency, consider extending to 9 years" and that "[w]ith the proper engineering study the LP inspection interval could

[33] Recommendation, Findings of Fact, ¶136, 186; Evid. Hrg. Tr. Vol. 1 at 171-72 (Nov. 1, 2023) (Kolb).
[34] Recommendation, Findings of Fact, ¶¶147; 162, 167, 169; Ex. Xcel-24, HJS-D-14 at 18 (Sirois Direct, Schedule 14).
[35] Recommendation, Findings of Fact, ¶¶147, 169-170; Ex. Xcel-24, HJS-D-14 at 19 (Sirois Direct, Schedule 14).
[36] Recommendation, Findings of Fact, ¶169; Ex. Xcel-24, HJS-D-14 at 18 (Sirois Direct, Schedule 14); *see also* Evid. Hrg. Tr. Vol. 1 at 109 (Nov. 1, 2023) (Murray); Evid. Hrg. Tr. Vol. 1 at 179 (Nov. 1, 2023) (Kolb).
[37] Recommendation, Findings of Fact, ¶174.

possibly be extended to 9 years . . . . Otherwise maintain 6-year overhaul frequency. Next major scheduled for 2014."[38]

The last major inspection of the Sherco 3 low pressure turbines took place in 2005. If Xcel had stuck to a six-year inspection interval, it would've performed another major inspection in 2011.[39] But that's not what happened. Nor did Xcel do the engineering study that Mr. Kolb's report described as necessary prior to extending the interval from six to nine years.[40] Nevertheless Xcel decided to defer the major inspection of the low pressure turbines for three years, until 2014.[41] Instead of doing the major inspection of the low pressure turbines in 2011, Xcel did work on the high pressure and intermediate turbines, not out of any concerns for safety or reliability, but in order to increase the Sherco 3 plant's output.[42]

EXCEPTIONS

I. THE COMMISSION SHOULD REJECT THE ALJ'S RECOMMENDATION TO REDUCE THE RATEPAYER'S REFUND BASED ON GE'S "CONTRIBUTORY NEGLIGENCE"

A. The ALJ's Recommended 52% Reduction in the Amount of the Refund Due Ratepayers is Based on Tort Law Concepts that are Not Relevant to the Commission's Prudency Review

The ALJ correctly found that a preponderance of the evidence established that Xcel over-charged its ratepayers tens of millions of dollars to replace the power that Sherco 3 would have produced but for Xcel's imprudence.[43] She erred, however, by concluding that Xcel should, its

[38] Recommendation, Findings of Fact ,¶172; Ex. Xcel-23, HJS-D-14 at 21 (Sirois Direct, Schedule 14).
[39] Evid. Hrg. Tr. Vol. 1 at 80-81 (Murray); Ex. DOC-25 (Sherco 3 Low Pressure Turbine Operation and Inspection History).
[40] Recommendation, Findings of Fact, ¶177; Evid. Hrg. Tr. Vol. 1 at 112-13 (Nov. 1, 2023) (Murray).
[41] Ex. Xcel-4 at 18-19 (Murray Direct); Ex. Xcel-7 at 45 (Kolb Direct).
[42] Recommendation, Findings of Fact, ¶187; Ex. Xcel-7 at 45-46 (Kolb Direct); Evid. Hrg. Tr. Vol 1 at 85 (Nov. 1, 2023) (Murray).
[43] Recommendation, Findings of Fact, ¶188-90, 317.

imprudence notwithstanding, be permitted to retain more than half of the overcharge based on a determination of GE's "contributory negligence."[44] Contributory negligence is a concept of tort law that has no application to the Commission's prudency review and is, in fact, contrary to the purpose of such review. The ALJ cited no decision where the Commission reduced a utility's financial responsibility for imprudent conduct based on the negligence of a third party and the Department's research has uncovered no such case. The Commission should reject this aspect of the ALJ's recommendation.

This case is founded on the legal requirement that "[e]very rate made, demanded, or received by a public utility must be just and reasonable."[45] Any doubt as to the reasonableness of a utility's rates must be resolved in favor of ratepayers.[46] When a utility's lack of prudence causes ratepayers to pay higher rates than would otherwise be the case, those higher rates are, by definition, unreasonable and ratepayers are entitled to a refund.

GE, in contrast, owes no duty of prudence to Xcel's ratepayers. GE is not before the Commission and the Commission does not have jurisdiction to require GE to pay a refund of imprudently incurred replacement power costs. If the Commission accepts the ALJ's recommendation to reduce the refund by more than half, ratepayers will have no remedy; they will simply be forced to bear the costs that they had no role in causing and no ability to avoid.

In commencing this case, the Commission recognized that, although this case and the GE Litigation involved many of the same facts, the two cases had fundamentally different purposes. In deciding to refer this matter for a contested case proceeding, the Commission observed:

> Although the events underlying this regulatory proceeding and the litigation overlap, the respective questions asked in the two venues materially differ. The

[44] ALJ's Recommendation, Summary of Facts and Recommendation.
[45] Minn. Stat §216B.03.
[46] *Id*.

> litigation focused on the turbine manufacturer's legal liability for certain tort claims, while the key question in this Commission proceeding—whether Xcel acted prudently for purposes of cost recovery under rate-regulation principles—was not addressed in the litigation.[47]

Xcel, similarly, recognized the crucial difference between the two cases, stating, "Although the trial against GE involved evidence relevant to the accident, the focus of the litigation was GE's alleged gross negligence and fraud – and not Xcel Energy's prudence."[48]

When it sued GE, Xcel took advantage of the legal remedies available to it to hold GE financially responsible for its role in the disaster. Xcel ultimately chose to settle its claims against GE before trial rather than take its chances with the jury.[49] Xcel agreed to return the settlement to ratepayers as a refund and the Department argued in this case, and the ALJ agreed, that the refund calculated in this case should be reduced to reflect the portion of the settlement attributable to replacement power costs.[50] In this way, the ALJ already recommended a reduction of the refund to ratepayers by the amount that Xcel accepted as compensation for GE's financial responsibility; Xcel is not entitled to a further reduction. Ironically, although the purpose of this case is to make ratepayers whole for the costs they were charged because of Xcel's imprudence, the effect of the ALJ's recommended 52% reduction of the refund is to make Xcel whole at the expense of ratepayers.

[47] Notice and Order for Hearing at 7.
[48] Xcel Reply Comments at 2 (Jan. 27, 2021)
[49] This turned out to be a wise decision. Xcel's insurers did not settle and, as a result, ended up with nothing because the court determined they could not make out the legal elements of their claims.
[50] Recommendation, Findings of Fact, ¶¶340-41.

B. The ALJ's Recommended Reduction in the Amount of the Refund to be Returned to Ratepayers will Harm Ratepayers and Give Xcel's Shareholders a Windfall

As the ALJ accurately observed, it is Xcel's burden to establish that it is just and reasonable for ratepayers – as opposed to Xcel's shareholders – to bear the power replacement costs at issue here.[51] Even if consideration of GE's "contributory negligence" were appropriate in the context of the Commission's prudence review, there is nothing that GE did or didn't do that should mitigate Xcel's financial responsibility for its imprudent maintenance practices.

Utilities have a duty to perform maintenance consistent with good utility practice in order to minimize unplanned outages of the kind that took Sherco 3 out of service for nearly two years.[52] As the Commission has explained, diligent oversight is needed to assure that utilities do not foist the consequences of their lack of prudent maintenance practices onto their ratepayers:

> When a utility's plant cannot operate, the utility may need to buy replacement energy from the wholesale market—and the cost of replacement energy is charged to ratepayers through the FCA. To guard against the possibility that a utility would seek to increase profits by skimping on maintenance—with the expectation that ratepayers would bear any financial consequences—the Commission monitors utility expenditures related to maintenance and forced outages.[53]

The Commission requires that a utility's maintenance practices be undertaken in a manner that advances the interests of ratepayers in safe, reliable service, and not the interests of shareholders in the bottom line. That is not what happened here.

Consistent with the evidence in the record, the ALJ's findings conclude that Xcel made the fateful decision to defer the major inspection of the LP turbines that was planned to take place in

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[51] Recommendation, Findings of Fact, ¶24, citing *In re Petition of N. States Power Co*., 416 N.W.2d 719, 723 (Minn. 1987).
[52] *In the Matter of the Review of the July 2018-Decmber 2019 Annual Adjustment Reports*, Docket No. E-999/AA-20-171, ORDER ADOPTING ADMINISTRATIVE LAW JUDGE REPORT AS MODIFIED AND REQUIRING REFUND, at 2.
[53] *Id*. at 3.

November 2011 with full knowledge of the risk it was taking and that that decision had disastrous consequences. Key findings on this point include:

- As far back as the 1990s, Xcel knew that SCC was occurring in LP turbines, specifically including the phase transition zone, which was the point of origin of the cracking that caused the Sherco 3 disaster.[54]
- In 2005, Xcel was aware of a potential industry-wide problem with wheel cracking and that risks included "wheel failure and buckets departing the rotor," with potentially severe collateral damage – which is exactly what happened in November 2011.[55]
- Xcel knew that it, and not GE, was responsible for determining the scope and timing of inspections of its turbines.[56]
- Xcel elected to not follow GE's inspection recommendations, even though it was aware that not following GE's recommendations increased risk.[57]
- In 2005, Xcel sought another vendor instead of GE to inspect Sherco 3's dovetails because it was concerned that GE's advice would be "overly conservative" (i.e., by recommending an expensive "buckets off" inspection).[58]
- Xcel knew that the surest way to detect the presence of SCC in the type of buckets found in the L-1 row of the Sherco 3 LP turbines was to remove the buckets and

[54] Recommendation, Findings, ¶125
[55] Recommendation, Findings, ¶138.
[56] Recommendation, Findings, ¶¶ 106, 180.
[57] Recommendation, Findings, ¶¶ 140-42; 169-170.
[58] Recommendation, Findings, ¶¶141-42.

perform a type of nondestructive testing called "magnetic particle inspection" or "MPI."[59]

- Xcel employees with responsibility for maintenance of the Sherco 3 LP turbines wanted to a "buckets off" inspection with MPI but did not because of the cost.[60]
- Had Xcel removed the LP turbine buckets and conducted an inspection in 2011, the disaster would have been avoided.[61]
- Xcel's decision to defer the 2011 major inspection of the LP turbines "was a calculated business decision made by the Company with full knowledge of the potentially 'catastrophic' losses that could result."[62]
- "The evidence in this case proves that Xcel affirmatively acknowledged and accepted the risk of catastrophic failure when it decided to defer the 2011 major inspection. A preponderance of the evidence further establishes that had Xcel conducted a major inspection of the LP turbines with MPI in 2011, Xcel would have discovered the SCC in the L-1 finger-pinned dovetails and avoided the loss."[63]

These findings are amply supported by the record and show that Xcel's decision to defer the 2011 major inspection – which led directly to the disaster – was motivated by Xcel's desire to save money for its shareholders. These findings cannot be reconciled with a conclusion that, notwithstanding that decision, it is reasonable to require Xcel's ratepayers to bear more than half of the resulting cost.

[59] Recommendation, Findings, ¶179.
[60] Recommendation, Findings, ¶ 179.
[61] Recommendation, Findings, ¶¶ 179, 184.
[62] Recommendation, Findings, ¶ 180
[63] Recommendation, Findings, ¶ 188.

There is nothing that GE did or didn't do that prevented Xcel from conducting a major inspection of the Sherco 3 LP turbines in 2011. The evidence established that, had Xcel conducted such an inspection, the disaster would not have happened and the costs of replacement power would not have been incurred. The decisions about whether to inspect and the scope of inspections remained at all times with Xcel. Xcel employees with responsibility for Sherco 3's safe operation communicated to Xcel's management that extending the inspection interval increased the risk of precisely the kind of that catastrophe that resulted. Those employees wanted to do the buckets off inspection that would have found the SCC but did not do so out of concerns about the cost. Xcel's imprudence is responsible for the disaster that necessitated the costs for replacement power and Xcel should refund those costs in full, plus interest.

If the Commission were to adopt the ALJ's recommendation to reduce the amount of the refund by the amount of GE's "contributory negligence," this would open up a new strategy for utilities seeking to avoid responsibility for their imprudent practices. Any time a utility's lack of prudence results in higher rates, the utility would be encouraged to claim that its financial responsibility must be reduced or even eliminated altogether because some third party or parties not before the Commission were negligent. Such an outcome would serve only the interests of the utility's shareholders in higher profits and not the interests of ratepayers who would be stuck paying unreasonable rates because they are unable to get a full refund from the utility that charged those rates.

II. THE COMMISSION SHOULD ORDER A REFUND BASED ON THE REPLACEMENT POWER COST ESTIMATE DEVELOPED BY XCEL FOR THE GE LITIGATION, LESS A PORTION OF THE XCEL/GE SETTLEMENT, PLUS INTEREST

Xcel provided two separate estimates of replacement power costs from the turbine failure. Xcel provided its first estimate in November 2014 in the 2012-13 docket for Xcel's Annual

Automatic Adjustment ("AAA") reports—the AAA estimate.[64] The AAA estimate calculation resulted in replacement power costs of $41.2 million for Xcel's Minnesota jurisdiction.[65] Xcel provided the second estimate in its lawsuit against GE to estimate the loss of use damages—the GE Litigation estimate.[66] Under the GE Litigation estimate, the total energy replacement cost is $33.7 million for Xcel's Minnesota jurisdiction.[67]

The ALJ recommended that the refund be calculated based on the AAA estimate, reasoning that Xcel's AAA filing "as closely as possible match[ed] the incremental amount customers paid through the FCA as a result of the Event."[68] The Department disagrees with this aspect of the ALJ's recommendation.

Although it produces a lower refund amount, the Department continues to support using Xcel's GE Litigation estimate as the basis for estimating replacement power costs incurred during the period that Sherco 3 was out of service. The GE Litigation estimate is based on complex modeling to estimate the MISO market results under a scenario where Sherco 3 remained available.[69] The AAA estimate, while appropriate to estimate replacement power costs for shorter outages, contains simplifying assumptions on forced outage rates and start-up costs that are not realistic for an outage lasting almost two-years.[70] The GE Litigation estimate is also based on a more comprehensive methodology and considers broader market impacts to Xcel's load and other resources.[71] Last, the GE Litigation estimate was supported by Xcel and its insurers in the

[64] Ex. Xcel-34 at 2, NJD-D-2 (Detmer Direct, Schedule 2).
[65] Ex. Xcel-34 at 11–12, NJD-D-2 at 7 (Detmer Direct, Schedule 2).
[66] Ex. Xcel-34 at 3, NJD-D-3 & 4 (Detmer Direct, Schedules 3 and 4).
[67] Ex. Xcel-34 at 18, NJD-D-3 (Detmer Direct, Schedule 3); Ex. DOC-3 at (King Direct).
[68] Recommendation, Findings of Fact, ¶320.
[69] Ex. Xcel-34 at 15–17 (Detmer Direct); Ex. DOC-3 at 11 (King Direct).
[70] Ex. Xcel-34 at 13–15 (Detmer Direct); Ex. DOC-9 at 15 (King Rebuttal).
[71] Ex. Xcel-34 at 13–15 (Detmer Direct); Ex. DOC-9 at 15 (King Rebuttal).

extensive litigation, where they had an incentive to seek the highest defensible replacement power costs amount to support higher damages. The GE Litigation estimate is the most reasonable estimate of replacement power costs and should be used to calculate a refund to Xcel's customers.[72]

III. MODIFICATIONS OF THE ALJ'S RECOMMENDATIONS ARE NECESSARY TO HOLD RATEPAYERS HARMLESS FROM THE CONSEQUENCES OF XCEL'S IMPRUDENT INSPECTION AND MAINTENANCE PRACTICES AND PROVIDE FOR RATES THAT ARE JUST AND REASONABLE

In order to assure that ratepayers are not harmed by Xcel's imprudent conduct, the Department requests that the ALJ's Recommendation be modified as follows, to reflect the refund of the entire cost of replacement power based on Xcel's GE Litigation estimate, less a credit for a portion of Xcel's prior settlement with GE, plus interest.

Summary of Facts and Recommendation, first paragraph, revise:

> The Administrative Law Judge finds that Xcel failed to operate and maintain Sherco Unit 3 in a reasonable and prudent manner consistent with good utility practices. Xcel's failure to conduct necessary inspections and maintenance on Unit 3 ~~contributed to~~ resulted in its catastrophic failure on November 19, 2011 (Event). ~~The Judge further finds that Xcel's imprudence is mitigated by the contributory negligence of Unit 3's manufacturer, General Electric (GE), which knew of defects in its product design but failed to adequately advise Xcel, after affirmatively undertaking a duty to do so.~~

Summary of Facts and Recommendation, second paragraph, revise:

> As a result of the ~~combined negligence of GE and~~ lack of prudence of Xcel, the Administrative Law Judge finds that the energy replacement costs for Unit 3 from November 2011 to October 2013, were not reasonably and prudently incurred, and should be reimbursed to ratepayers in ~~proportion to Xcel's contributory fault in causing the Event.~~full, including interest.

Summary of Facts and Recommendation, third paragraph, revise:

> The extensive record developed in this proceeding incorporates relevant evidence from the civil litigation initiated by Xcel and its insurers against GE (GE

[72] *See* Ex. DOC-9 at 17 (King Rebuttal); Ex. Xcel-34 at 18 (Detmer Direct): Ex. OAG-1 at 13–14 (Lee Rebuttal).

Litigation) arising out of the Event. ~~In that case, a jury found that GE was 52% at fault and Xcel was 48% at fault for the Event, due to their respective negligence.~~

Summary of Facts and Recommendation, fourth paragraph, omit:

~~Having thoroughly reviewed the extensive record developed in this proceeding, supplemented by the record developed in the GE Litigation, the Administrative Law Judge concludes that the jury's allocation of contributory negligence in the GE Litigation is consistent with the evidence presented in this proceeding. The Judge finds that Xcel's imprudence in the inspection, operation, and maintenance of Unit 3 comprises 48% of the fault for the Event.~~

Summary of Facts and Recommendation, fifth paragraph, revise:

Accordingly, the Judge respectfully recommends that the Commission direct Xcel to refund to ratepayers ~~48% of~~ the energy replacement costs charged to ratepayers from November 2011 to October 2013, plus interest. The amount of replacement energy costs charged to ratepayers is best represented by the Company's ~~Fuel Clause Adjustment (FCA) calculated by Xcel in the 2012-2013 Annual Automatic Adjustment docket, MPUC Docket No. E-999/AA-13-599.~~ damages analysis prepared by Xcel for the GE Litigation. Returning ~~48% of~~ the costs actually charged to ratepayers is the most fair and equitable method for refunding the portion of energy replacement costs imprudently incurred by Xcel. It is also consistent with Minnesota law requiring that any doubt as to reasonableness of a utility rate charged be resolved in favor of the consumer

Findings of Fact, ¶191, omit.

Findings of Fact, ¶¶ 204 and 205, omit.

Findings of Fact, Heading VI.O (at p. 49), revise:

O. ~~Allocation of Contributory Fault~~ Xcel's Responsibility for the Disaster

Findings of Fact, ¶206 omit.

Findings of Fact, ¶207, revise:

207. Xcel's management, not its ratepayers, made the informed decision to defer the 2011 major inspection, despite the known risk of SCC for finger dovetails and the potential for "catastrophic" results, including units with drum boilers. Xcel made the economic decision, despite manufacturer recommendations and warnings from its own engineers, to defer the 2011 major inspection and proceed with efficiency upgrades to the HP and IP turbines. This was a business decision by Xcel management, on behalf of its shareholders. Thus, as between Xcel's shareholders and ratepayers (who had no input in this decision), Xcel's shareholders should assume ~~Xcel's proportionate share of~~ the loss ~~(48%)~~.

Findings of Fact, ¶306, revise:

306. Nonetheless, the Administrative Law Judge finds that Xcel has not established that it acted reasonably and prudently in not at least considering the condenser tube leaks and the 2005 washing incident before deferring the 2011 major inspection of Unit 3. Xcel's imprudence in this respect is not a reflection of any imprudence in its steam chemistry program, but rather, goes to the lack of reasonable care that Xcel exercised in its inspection and maintenance practices. The fact that Xcel did not consider these anomalies or abnormal events in its decisions regarding the timing and need for major or blades-off inspections -- despite GE's guidance in TIL 1121-3AR1 – contribute to Xcel's ~~share of~~ fault in the Event.

Findings of Fact, ¶330, revise:

330. Xcel, the Department, and the OAG suggest that the Commission use Xcel's estimate of energy replacement costs from the GE Litigation because of its greater complexity and detail, and because of Xcel's failure to fully explain the AAA calculation. The Administrative Law Judge agrees.~~disagrees. Instead, the Judge finds more reasonable and equitable the arguments presented by XLI, as well as the rationale expressed by King: the amount of replacement costs should, as closely as possible, match the incremental amount customers paid through the FCA as a result of the Event~~.

Findings of Fact, ¶331, omit.

Findings of Fact, ¶332, revise:

332. Accordingly, the Administrative Law Judge recommends that the Commission use the total energy replacement costs estimated ~~reported~~ by Xcel in ~~its 2012-2013 AAA report~~ the GE Litigation, subtract a portion of Xcel's GE settlement attributable to reimbursement for energy replacement costs, and add interest, as calculated by King, for a total of energy replacement costs and interest of $~~71,548,388~~55,675,052 on a Minnesota Jurisdictional basis.

Heading IX.C (at p. 83), revise:

C. ~~Percentage of~~ Recovery Attributable to Xcel Imprudence

Findings of Fact, ¶360, omit

Findings of Fact, ¶362, revise:

362. In this proceeding, the parties stipulated to including pertinent portions of the transcripts, depositions, evidence, and exhibits from the GE Litigation into this administrative record. The parties have also presented new exhibits, testimony, and argument in this proceeding. Xcel has had the full opportunity to present its evidence with regard to prudence, GE's culpability, energy replacement costs, and

all other matters at issue in this proceeding. ~~The Judge has carefully reviewed all of the evidence in this record and concludes that GE and Xcel both contributed to causing the Event. The Judge's independent allocation of fault is consistent with the jury's verdict in the GE Litigation: 48% Xcel and 52% Xcel~~

Findings of Fact, ¶363, revise:

363. Xcel's imprudence in the operation and maintenance of Unit 3, and, specifically, its failure to conduct a major inspection in 2011, ~~contributed to~~ caused the catastrophic loss that occurred on November 19, 2011. Reducing the refund due in this case based on a claim that GE was "contributorily negligent" is inconsistent with the purpose of this proceeding and otherwise inappropriate. ~~While GE's knowledge of its faulty product design, and its failure to adequately advise Xcel of the SCC risks for drum boiler turbines, contributed to the loss, Xcel should nonetheless be responsible for its share of imprudence (48%), which caused the Event.~~

Findings of Fact, ¶¶ 365-368, revise:

365. The Judge thus recommends that the Commission require Xcel to refund ~~48% of~~ the energy replacement costs incurred by ratepayers during the outage, as calculated by Xcel ~~in its 2012 and 2013 AAA reports and FCA~~for the GE Litigation, plus interest, as calculated by Department witness King.

366. The energy replacement costs set forth in Xcel's ~~2012 2013 AAA report~~damage calculation for the GE Litigation, less credit for a portion of Xcel's settlement with GE, plus interest, total ~~$71,548,388~~$55,675,052. ~~Forty-eight percent of that figure is $34,343,226.~~

367. In addition, as set forth above, the Administrative Law Judge recommends that the ~~net~~ amount ~~of $34,343,226~~ be reduced by 24.4% of the Minnesota portion of the GE Litigation settlement, **[PROTECTED DATA BEGINS:** [redacted] **PROTECTED DATA ENDS]**, which was previously credited to Minnesota ratepayers in the Company's 2019 FCA.

368. ~~Forty-eight percent of is $34,343,226~~, $33,681,734 less **[PROTECTED DATA BEGINS:** [redacted] **PROTECTED DATA ENDS]**, plus interest, results in a final sum of **[PROTECTED DATA BEGINS:** [redacted] **PROTECTED DATA ENDS]**, which should be returned to Minnesota ratepayers.

Conclusions of Law, ¶11, revise:

11. Xcel has failed to satisfy its burden of proof that it operated and maintained Unit 3 in a reasonable and prudent manner consistent with good utility practices. A preponderance of the evidence establishes that Xcel's failure to conduct necessary inspections and maintenance on Unit 3 ~~contributed to~~ caused its catastrophic failure on November 19, 2011.

Conclusions of Law, ¶12, omit

Conclusions of Law, ¶13, revise:

13. As a result of the ~~combined negligence~~ imprudent inspection and maintenance practices of ~~GE and~~ Xcel, the Administrative Law Judge finds that the energy replacement costs for Unit 3 from November 2011 to October 2013, were not reasonable and prudently incurred and should be refunded to ratepayers ~~in proportion to Xcel's contributory fault (48%)~~ for the Event, plus interest.

Conclusions of Law, ¶14, revise:

14. The amount of energy replacement costs incurred by Xcel for Unit 3 from November 2011 to October 2013, is best represented by the Company's damage calculation prepared for the GE Litigation~~Fuel Clause Adjustment (FCA) calculated by Xcel in the 2012-2013 Annual Automatic Adjustment docket, MPUC Docket No. E-999/AA-13-599~~.

Conclusions of Law, ¶15, omit.

Conclusions of Law, ¶16, revise:

16. Based upon Xcel's imprudence and ~~contributory~~ fault for the Event, ratepayers are entitled to a refund of ~~48% of~~ the total energy replacement costs charged to ratepayers through the FCA, plus interest. This amount equals ~~$34,343,226~~ $55,675,052.

Conclusions of Law, ¶17, omit.

Conclusions of Law, ¶20, revise:

20. A summary of the refund due to ratepayers is as follows:

Energy Replacement Costs ~~in 2012-2013 AAA Report~~as estimated by Xcel for the GE Litigation: ~~$41,327,637~~ 33,681,734

Less 24.4% of GE Settlement (MN): **[PROTECTED DATA BEGINS:** [redacted]

Interest on Energy Replacement Costs: [redacted][73]

~~Subtotal:~~ [redacted]

[73] The Department has calculated the amount of interest based on the prime rate. The prime rate is currently 8.5%. If the prime rate changes before Xcel makes the refund, the Commission may request a compliance filing to give effect to the interest rate change.

~~Multiplied by .48 (percentage of Xcel's imprudence)~~ [redacted]

~~Less 24.4% of GE Settlement (MN):~~ **~~[PROTECTED DATA BEGINS:~~** [redacted]

TOTAL: [redacted] [redacted][74] **PROTECTED DATA ENDS]**

CONCLUSION

The Department requests that the Commission reject the ALJ's recommendation that the refund to Xcel ratepayers be reduced to reflect GE's "contributory negligence." Such a reduction will force ratepayers to bear the costs of Xcel's imprudent maintenance practices and result in rates that are not just and reasonable. Instead, the Commission should require Xcel to make ratepayers whole by refunding power replacement costs incurred during the time Sherco 3 was out of service, less a credit for a portion of Xcel's settlement with GE, plus interest through the date of the refund.

Dated: June 6, 2024

Respectfully submitted,

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[74] If the Commission adopts the ALJ's recommendation to base the refund on Xcel's AAA filing rather than the GE Litigation damage estimate, a slight reduction in the amount of interest (approximately $500,000) is necessary to reflect the fact that the refund of the GE Litigation settlement proceeds was made in February of 2019.