

January 15, 2021

PUBLIC DOCUMENT

Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
Saint Paul, Minnesota 55101-2147

RE: **PUBLIC Comments of the Minnesota Department of Commerce, Division of Energy Resources**
Docket Nos. E002/GR-12-961; E002/GR-13-868; E999/AA-13-599; E999/AA-14-579; E999/AA-16-523;
E999/AA-17-492; E999/AA-18-373

Dear Mr. Seuffert:

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

In the Matter of Application of Northern States Power Company for Authority to Increase Rates for Electric Service in the State of Minnesota, et al. (Sherco 3 outage-related issues)

The compliance filing was filed on August 24, 2020 by:

Ryan J. Long
Managing Attorney
Northern States Power Company, d/b/a Xcel Energy
414 Nicollet Mall
Minneapolis, MN 55401

The Department recommends that the **Commission accept the Company's compliance filing, authorize Xcel to discontinue providing quarterly litigation updates, and require the Company to refund \$17 million to ratepayers so as to leave ratepayers unharmed from the Sherco 3 outage.** The Department is available to answer any questions that the Commission may have.

Sincerely,

/s/ MICHAEL N. ZAJICEK
Rates Analyst

MNZ/ar
Attachment



Before the Minnesota Public Utilities Commission

PUBLIC Comments of the Minnesota Department of Commerce

Division of Energy Resources

Docket Nos. E002/GR-12-961; E002/GR-13-868;
E999/AA-13-599; E999/AA-14-579;
E999/AA-16-523; E999/AA-17-492;
E999/AA-18-373

I. BACKGROUND

A. *Compliance filing*

On August 24, 2020, Northern States Power Company, d/b/a Xcel Energy (Xcel or the Company) filed a compliance filing (Compliance Filing) with the Minnesota Public Utilities Commission (Commission) in response to the April 11, 2019 *Order Authorizing Sherco Unit 3 Ratepayer Refund Amount And Method Of Requiring Compliance Filing* in numerous dockets.¹

On September 30, 2020, the Commission issued a Notice of Comment Period requesting comments on the following topics:

- Did Northern States Power Company d/b/a Xcel Energy (Xcel Energy) provide the required compliance information related to the November 19, 2011 accident at Sherco 3?
- Are all of the issues related to the Sherco 3 outage resolved and, if so, should Xcel Energy be authorized to discontinue providing quarterly litigation updates?
- How should the Commission proceed regarding the issue of Xcel Energy's prudence, recoverability of costs related to the accident, and ratemaking treatment of replacement power and additional fuel costs?
- What further procedural steps, if any, do the parties recommend?
- Are there other issues or concerns related to this matter?

On October 20, 2020, the Minnesota Department of Commerce, Division of Energy Resources (Department) filed an extension request with the Commission, which was granted on the same day. This extended the Comment deadline to November 30, 2020.

On November 10, 2020, the Minnesota Office of the Attorney General, Residential Utilities Division (OAG) filed an extension request with the Commission, which was granted on the same day. This extended the Commission deadline to January 15, 2021.

¹ Docket Nos. E002/GR-12-961; E002/GR-13-868; E999/AA-13-599; E999/AA-14-579; E999/AA-16-523; E999/AA-17-492; E999/AA-18-373

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B. Procedural History

Sherburne County Generating Station (Sherco) Unit 3 is a 900 MW coal-fired generator first put into service in November 1987; it is the largest generator in Xcel's system. Xcel owns the facility jointly with the Southern Minnesota Municipal Power Agency (SMMPA), with Xcel owning 59 percent, or 531 MW.

On November 19, 2011, an accident forced the shutdown of Sherco 3. At that time, the generator was offline for a planned overhaul. Xcel completed the overhaul and started the unit. During the startup testing procedure, the turbine and generator instruments reported vibration significantly above normal levels, and the unit shut down. The vibration damaged many of the steam, oil, and hydrogen seals in the unit and started a fire; no one was injured. Following the event, Sherco 3 remained shut down from November 2011 to October 2013, nearly two years.

The nature of the catastrophic event, and the liability for that outcome, became the subject of litigation between Xcel and the manufacturer of the generator's low pressure turbine.

The Commission's September 3, 2013 *Findings of Fact, Conclusions, and Order* in Xcel's 2012 rate case proceeding addressed the issues of insurance proceeds and repair costs as follows:²

- Required Xcel to remove from rates all direct costs for the Sherco Unit 3, except for property taxes, from the 2013 test year.
- Approved deferred accounting for Sherco Unit 3's 2013 depreciation expense.
- Accepted Xcel's proposed 21-year remaining life of Sherco Unit 3 as a placeholder and required Xcel to have an engineer evaluate Sherco Unit 3 and provide that analysis in its subsequent (2013) rate case.
- Required Xcel to provide an analysis and report on the Sherco Unit 3 total costs, insurance recoveries, and costs not covered by insurance in its November 2013 rate case filing.
- Required Xcel to provide a full accounting of repair costs and insurance recovery in its 2013 rate case to ensure that no repair costs reimbursed by insurance would be recovered from ratepayers.

The order also stated, "[t]he Commission cannot at this time conclude who should bear the significant costs the Company has incurred for replacement power" and deferred this issue to the fuel clause adjustment proceedings. Under Minn. R. 7825.2390 to .2920, utilities file detailed monthly and annual reports on all automatic rate adjustments made through the fuel clause. These filings receive careful review by interested stakeholders and by the Department, which files a report analyzing the year's fuel-clause activity and highlighting any concerns with accuracy, prudence, or related issues. The Commission holds an annual meeting to examine and act on the utilities' annual reports.

On October 21, 2013, Xcel filed a Root Cause Analysis Report in Docket Nos. E002/GR- 13-868 and E002/AA-13-599. The report was issued by a consulting firm hired by Xcel to investigate the Sherco 3 outage event.

On November 15, 2013, the joint owners of Sherco 3, Xcel and SMMPA, and insurers of Sherco 3 filed a lawsuit against the turbine manufacturer to recover costs associated with the Sherco 3 outage event.

² Docket No. E002/GR-12-961.

On January 2, 2014, the Commission required that parties in Xcel's 2013 rate case proceeding address the issue of how the proceeds of any insurance claims and litigation proceeds related to Sherco 3 should be incorporated into Xcel's rates.³

On March 31, 2015, Xcel filed its final quarterly Sherco 3 Insurance Recovery Update.⁴ This compliance filing detailed what the Company described as the final Sherco 3 restoration project costs and insurance cost recovery information.

On August 31, 2015, the Commission issued its *Order Reopening, Clarifying, and Supplementing May 8, 2015 Order*.⁵ The August 31, 2015 Order required Xcel to include Sherco 3 insurance proceeds as an offset to its rate base in the 13-868 proceeding.

On September 2, 2015, Xcel filed a "Final Rates Compliance" filing along with updated tariff sheets, as required by the Commission's orders in this case.⁶

On October 30, 2015, the Commission issued its *Order Approving Compliance Filing* in Docket No. E002/GR-13-868.

On June 2, 2016, the Commission issued its *Order Acting on Electric Utilities' Annual Reports and Requiring Additional Filings* (2016 Order) in Docket Nos. E999/CI-03-802, E999/AA-12-757, - 13-599, and -14-579. The 2016 Order deferred any decision on the recovery replacement power costs until there is a sufficient record to determine if recovery is appropriate, and clarified that the Commission may act in the future to remedy any inequities for ratepayers.⁷

On November 2, 2018, Xcel filed an update on the litigation, stating that the Company reached a settlement (Settlement) with the turbine manufacturer on September 20, 2018. On October 9, 2018, Xcel's claims against the manufacturer were dismissed, while Xcel's insurers continued to litigate.

On December 3, 2018, Xcel provided more details on the litigation, and proposed to return the Settlement payment as a credit to customers through the monthly fuel clause adjustment beginning on February 1, 2019. This refund was approved by the Commission on April 11, 2019.⁸

On January 14, 2019, the Department filed initial comments recommending that the Commission order Xcel to refund additional expenses arising from the Sherco 3 outage. However, on February 6, 2019, the Department recognized in reply comments that the Commission should withhold "judgment . . . until the conclusion of the related civil litigation process."

³ January 2, 2014 Notice and Order for Hearing in Docket No. E002/GR-13-868.

⁴ Docket No. E002/GR-13-868.

⁵ *Id.*

⁶ *Id.*

⁷ On November 10, 2014, Xcel filed reply comments in Docket No. E999/AA-13-599 identifying the Company's total incremental replacement power costs due to the Sherco 3 outage, \$55,517,206 million, based on the use of a production cost model (Attachment I, pp. 3 and 7 of 49).

⁸ Docket No. E002/AA-19-121.

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Consistent with this recommendation from the Department and OAG, the Commission's April 11, 2019 *Order Authorizing Sherco Unit 3 Ratepayer Refund Amount and Method and Requiring Compliance Filing* withheld final determination on the prudence of replacement power costs until the completion of the related civil litigation and required Xcel to provide compliance filings with status updates on civil litigation related to the Sherco 3 outage by Xcel's insurers.

On May 26, 2020, Xcel stated in a compliance filing that the Minnesota Supreme Court denied its insurers' petition for further review of the Court of Appeals decision on April 28, 2020.

On August 24, 2020, Xcel filed another compliance filing with the Commission providing details of the total costs of the Sherco 3 outage and what costs were recovered from which parties.

II. DEPARTMENT ANALYSIS

On September 30, 2020 the Commission issued a Notice of Comment Period requesting comments on the following topics:

- Did Northern States Power Company d/b/a Xcel Energy (Xcel Energy) provide the required compliance information related to the November 19, 2011 accident at Sherco 3?
- Are all of the issues related to the Sherco 3 outage resolved and, if so, should Xcel Energy be authorized to discontinue providing quarterly litigation updates?
- How should the Commission proceed regarding the issue of Xcel Energy's prudence, recoverability of costs related to the accident, and ratemaking treatment of replacement power and additional fuel costs?
- What further procedural steps, if any, do the parties recommend?
- Are there other issues or concerns related to this matter?

The Department responds to the Commissions topics here.

A. Compliance Information

The Commission's April 11, 2019 *Order Authorizing Sherco Unit 3 Ratepayer Refund Amount And Method And Requiring Compliance Filing* required Xcel to submit a compliance filing with the following information:

- Total cost to the Company (total company and Minnesota jurisdiction);
- Identification of which of those costs have been recovered or approved for recovery, including both the mechanisms of recovery and citations to the Commission orders approving those recoveries;
- Identification of any attempts to recover costs that the Commission denied, including citations to the Commission orders denying those recoveries;
- Identification of any costs that the Commission has deferred or delayed final decisions on, including citations to Commission orders deferring or delaying those recoveries; and
- Identification of any insurance proceeds or settlements with third parties, including description of how those proceeds have been returned to ratepayers.

The Department reviewed the Company's compliance filing to determine if Xcel provided all the requested information.

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i. *Total cost to the Company (total company and Minnesota jurisdiction);*

As shown in Table 1 below, the Company provided the total restoration project costs as well as the costs assigned to NSP and the portion of those costs that were assigned to the Minnesota jurisdiction. The Company noted that there were additional excess fuel oil costs of **[TRADE SECRET DATA HAS BEEN EXCISED]** but that these costs had been recovered from insurance companies.

Table 1: Sherco Unit 3 Restoration Costs (\$ millions)

Cost Category	Total Sherco 3 Costs	Xcel's Share of Sherco 3 Costs	MN Jurisdiction of Sherco 3 Costs
Equipment Repair	[TRADE SECRET DATA HAS BEEN EXCISED]		
Construction Contracts			
Indirect Costs			
Sub Total			
Non-Insurance Reimbursable Costs			
Total Project Costs			

Additionally, replacement power costs for the NSP system (amounts above the estimated cost of the power that Sherco unit 3 would have provided) were between \$55 million and \$60 million. Table 2 below shows the calculation of these costs. These costs were recovered through the monthly fuel charge as they were incurred.

Table 2: Replacement Power Costs (\$ millions)

	Xcel Energy	MN Jurisdiction
Average Replacement Cost	\$196.8	[TRADE SECRET DATA HAS BEEN EXCISED]
Sherco Incremental Cost	\$141.3	
Increase in Energy Costs Due to Outage	\$55.5	

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Table 3 below combines these costs to show the total event costs incurred.

Table 3: Total Sherco 3 Event Costs (\$ millions)

	Xcel Energy	MN Jurisdiction
Restoration Costs	[TRADE SECRET DATA HAS BEEN EXCISED]	
Excess Fuel Oil		
Replacement Power Costs		
Total Costs		

The Department concludes that the Company has provided the relevant total cost information required for their compliance filing.

- ii. *Identification of which of those costs have been recovered or approved for recovery, including both the mechanisms of recovery and citations to the Commission orders approving those recoveries*

As stated above, the replacement power costs were recovered from customers through the monthly fuel clause charge while the majority of the restoration costs were recovered from insurers. In response to Department information request number 3,⁹ the Company stated that the remaining non-insurance reimbursable costs from Table 1 for the Minnesota jurisdiction were recovered in the Xcel's last rate case in Docket No. E002/GR-15-826. The Department concludes that the Company has adequately identified which costs have been recovered and how they were recovered.

- iii. *Identification of any attempts to recover costs that the Commission denied, including citations to the Commission orders denying those recoveries*

As stated above, the Commission disallowed all direct costs associated with Sherco 3 in the Company's 2012 rate case with the exception of property taxes and depreciation expense.¹⁰ This resulted in a total disallowance of approximately \$21.6 million. These costs have not been recovered from ratepayers by the Company. The Company did not identify any other costs that have been disallowed by the Commission and the Department is unaware of any such costs. Therefore, the Department concludes that the Company has adequately identified all costs that were denied and where the Commission denied them.

⁹ Department Attach. A.

¹⁰ Docket No E002/GR-12-961

iv. *Identification of any costs that the Commission has deferred or delayed final decisions on, including citations to Commission orders deferring or delaying those recoveries*

The Company stated that in its 2012 rate case the Commission allowed the Company to defer Sherco 3's 2013 depreciation expense.¹¹ The Commission later allowed the recovery of the depreciation expense in the Company's 2013 rate case.¹²

Additionally, the Commission deferred a decision on the ultimate recoverability of replacement power costs, although as discussed above, the Company recovered those costs as they were incurred.¹³ The Department discusses these costs further below.

The Department concludes that the Company has adequately identified costs that the Commission has deferred or delayed as required for the compliance filing.

v. *Identification of any insurance proceeds or settlements with third parties, including description of how those proceeds have been returned to ratepayers*

As discussed above, the Company collected more than **[TRADE SECRET DATA HAS BEEN EXCISED]** from its insurers, which covered all but **[TRADE SECRET DATA HAS BEEN EXCISED]** of the costs necessary to return the plant to service. The Company also negotiated a settlement with the turbine manufacturer, which refunded **[TRADE SECRET DATA HAS BEEN EXCISED]** was allocated to the Minnesota jurisdiction. The settlement funds were refunded to customers in a February 2019 Fuel Clause Adjustment that was approved in an April 11, 2019 Commission Order.¹⁴

The Department concludes that the Company has adequately identified the insurance and settlement proceeds related to the Sherco 3 outage as required for the compliance filing.

vi. *Compliance filing conclusion*

The Department concludes that Xcel has provided all of the information required in the Commission's April 11, 2019 *Order Authorizing Sherco Unit 3 Ratepayer Refund Amount And Method And Requiring Compliance Filing* for the compliance filing, and therefore recommends the Commission accept the Company's compliance filing.

B. *LITIGATION UPDATES*

The Commission's second Notice of Comment period question asked:

- Are all of the issues related to the Sherco 3 outage resolved and, if so, should Xcel Energy be authorized to discontinue providing quarterly litigation updates?

¹¹ Docket No. E002/GR-12-961, *Findings of Fact, Conclusion, and Order* (September 3, 2013)

¹² Docket No. E002/GR-13-868, *Findings of Fact, Conclusion, and Order* (May 8, 2015)

¹³ Docket Nos. E999/AA-12-757, E999/AA-13-599, and E999/14-579. Order Point No. 3 of the June 2, 2016 Order.

¹⁴ Docket No. E002/GR-12-961, E002/GR-13-868, E999/AA-13-599, E999/AA-14-579, E999/AA-16-523, E999/AA-17-492, and E999/AA-18-373.

The Department believes that there are further issues related to the Sherco 3 outage for the Commission to address, as discussed below. However, *Aegis Ins. Servs., LTD v. Gen. Elec. Co.*, Sher. Cty. 71-CV-13-1472, has been resolved and additional updates are unlikely to provide new and relevant information.¹⁵ Therefore, the Department concludes that Xcel should be authorized to discontinue providing quarterly litigation updates.

C. RECOVERABILITY OF COSTS

The Commission's third question asked:

- How should the Commission proceed regarding the issue of Xcel Energy's prudence, recoverability of costs related to the accident, and ratemaking treatment of replacement power and additional fuel costs?

The Department recommends that the Commission require Xcel to absorb the remaining costs associated with the Sherco 3 outage for several reasons. First, fundamental utility regulation principles hold that Xcel's investors accepted the risks of providing utility service, including costs arising from an outage, in exchange for a "just and reasonable" rate of return on their investments.¹⁶

Second, Xcel's own employee testimony—provided under oath and penalty of perjury—demonstrates that the Company knew that stress corrosion cracking was a significant risk and nonetheless delayed turbine inspections in violation of both internal guidelines and manufacturer recommendations.¹⁷ Even absent long-standing utility regulation principles that hold investors responsible for the risk of utility operations, the Department finds that it is unreasonable to require ratepayers to absorb expenses attributable to Xcel and, possibly, the turbine manufacturer.¹⁸

Third, as a public policy matter, the Department notes it creates a perverse incentive to require ratepayers to cover costs that Xcel was not able to recover from insurers and equipment manufacturers. If utilities believe that ratepayers instead of investors will ultimately absorb unrecoverable expenses, they will have less incentive to recover all costs from third-parties.

i. Background on Sherco 3 Turbine Failure

Sherco Unit 3 has "four steam turbines connected by a common shaft; one High Pressure (HP) steam turbine, one Intermediate Pressure (IP) steam turbine and two Low Pressure steam turbines (LP-A and LP-B). . . . As the

¹⁵ Aegis' petition for further review was denied by the Minnesota Supreme Court on April 28, 2020, and final judgment was entered in the case on June 19, 2020. See generally *T.A. Schifsky & Sons, Inc. v. Bahr Const., LLC*, 773 N.W.2d 783, 788 (Minn. 2009) ("A final judgment ends the litigation on the merits . . .").

¹⁶ *Infra* Sec. II(C)(ii).

¹⁷ *Infra* Sec. II(C)(iii).

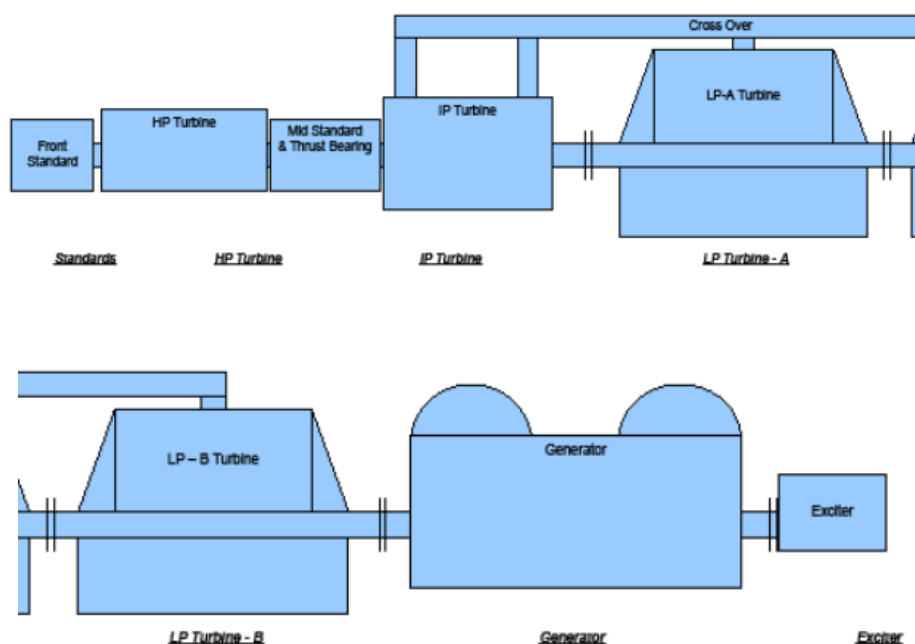
¹⁸ The Department agrees that it would be inappropriate, and irrelevant, to rely on jury verdict determinations in an attempt to apportion responsibility. The jury was asked a different question than that before the Commission. The jury considered whether the manufacturer was at fault for the outage, while the Commission must instead determine whether ratepayers should be responsible for the subsequent costs. Even if it were appropriate to engage in some sort of quasi-comparative fault analysis, the manufacturer is absent from this proceeding and the Commission lacks authority to assign outage costs to it.

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steam moves through the system, it expands (becomes less dense); as it expands, the blades become progressively larger and longer. Thus, the LP blades are the largest blades.”¹⁹

Figure 1: Sherburne County Generating Station Unit No. 3²⁰



continued,

On November 19, 2011, as a planned overhaul outage was being completed, “the finger pinned blade attachments located on the next to last row, known as the L-1 row, of the low pressure turbine failed.”²¹ The failure occurred as the turbine “was brought up in speed . . . at which point the unit instantaneously and without warning began to vibrate violently.”²² The vibrations caused the generator shaft to fracture. They also caused the exciter shaft to fracture and break free “with sufficient energy to burst through the doghouse enclosure then skip across the turbine deck and through two glass windows of a nearby conference room before coming to rest on the floor of the control room.”²³ The failure released oil, hydrogen, and other combustible materials, causing a fire in the turbine area.²⁴

¹⁹ *In re Appl. of N. States Power Co. for Auth. to Increase Rates for Elec. Serv. in the State of Minn.*, Docket No. E-002/GR-13-868 (“2013 Rate Case”), Brevig Direct Testimony at 5–6 (Nov. 3, 2013) (“Brevig Direct”).

²⁰ *Id.* at 6.

²¹ *Id.* at 10.

²² *In re Review of the 2012-2013 Annual Automatic Adjustment Reports*, Docket Nos. E002/AA-13-599, E002/GR-13-868, Sherco Unit 3 Restoration Update – Root Cause Analysis Report at 5–6 (Oct. 21, 2013) (“Root Cause Analysis Report”).

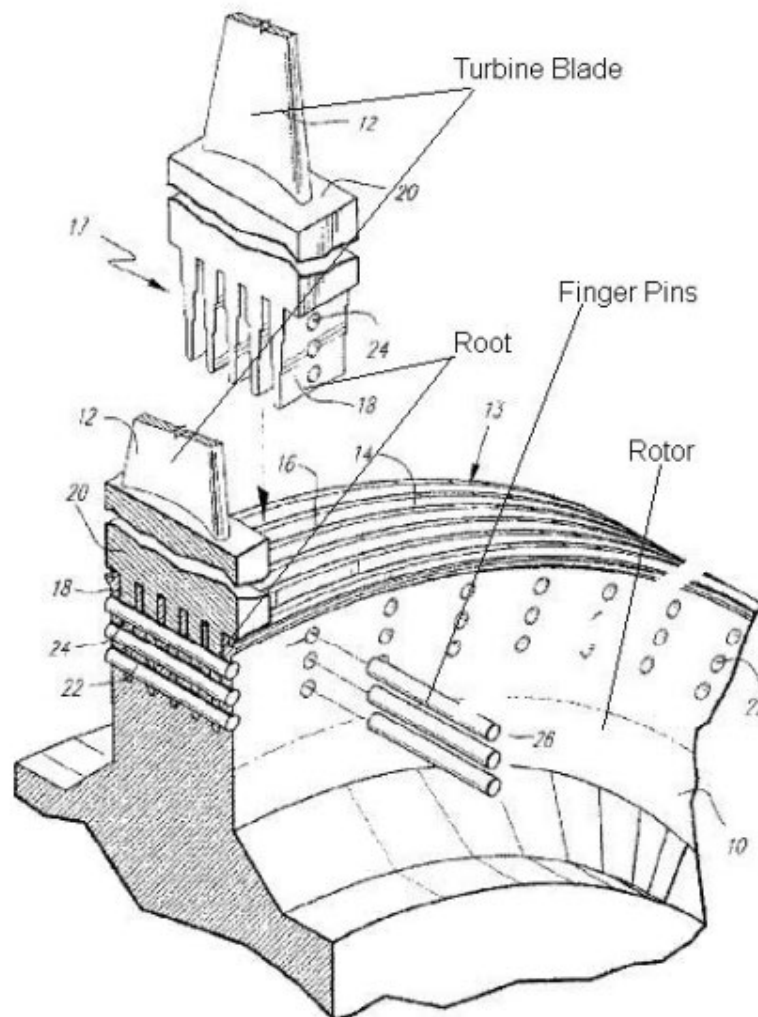
²³ *Id.* at 6.

²⁴ Brevig Direct at 10.

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Figure 2: Low Pressure Turbine Blades and Rotor²⁵



A root cause analysis performed for Xcel found:

The fractures of the finger pinned blade attachments in the low pressure turbine L-1 turbine end disk were due to the presence of pre-existing caustic stress corrosion cracks at the pin holes, ledges and at the base of the finger pinned blade attachments. The chemical species responsible for stress corrosion cracking could not be positively identified but sodium hydroxide (NaOH) is suspected. Although the exact age of the stress corrosion cracks could not be determined, it is likely that they initiated a few years ago. The propagation and “linking-up” of the stress corrosion cracks during subsequent operation incrementally reduced the load carrying capability of the finger pinned blade attachments.

By November 2011 the load carrying capability of the finger pinned blade attachments had been reduced to the point that they could no longer sustain the

²⁵ Brevig Direct at 12.

centrifugal stresses Investigation also revealed numerous similar stress corrosion cracks in the finger pinned blade attachments of the LP “B” generator end L-1 disk and the generator and turbine end L-1 disks of the LP “A” turbine.²⁶

Figure 3: Generator End L-1 Finger Pinned Blade Attachment From LP Turbine “B” Showing Locations of Cracks²⁷



ii. *Investors Assumed the Risk of Loss in Exchange for a Fair Rate of Return*

Utilities receive “just and reasonable rates” in exchange for the provision of service to all customers within the monopoly service territory.²⁸ The Commission sets these rates, in part, by considering what is necessary for “the utility . . . to earn a fair rate of return.”²⁹ In its last rate case, Xcel testified that the U.S. Supreme Court’s *Hope* decision “remains the guiding principle for rate making regulatory proceedings to this day.”³⁰ *Hope* explains what constitutes a fair rate of return:

²⁶ Root Cause Analysis Report at 93.

²⁷ *Id.* at 303.

²⁸ Minn. Stat. §§ 216B.16, subd. 6, 216B.37–.40 (2020); see also Neil Hamilton & Irving Colacci, *Economic Efficiency as the Primary Objective of State Utility Commission Policy*, 8 WM. MITCHELL L. REV. 309, 316 (1982) (discussing why utilities function as natural monopolies).

²⁹ Minn. Stat. § 216B.16, subd. 6.

³⁰ *In re Appl. of N. States Power Co. for Auth. to Increase Rates Elec. Serv. in the State of Minn.*, Docket No. E-002/GR-15-826 (“2015 Rate Case”), Coyne Direct Testimony at 5–6 (Nov. 2, 2015) (“Coyne Direct”).

[T]he return to the equity owner should be commensurate with returns on investment in other enterprises having commensurate risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise so as to maintain its credit and to attract capital.³¹

Xcel further testified that an authorized return must consider “investors’ expectations and requirements regarding both risks and returns.”³² In the 2010 Rate Case, which set rates in effect when the Sherco 3 outage event occurred, Xcel explained, “a utility’s cost of capital . . . must be reflective of the returns achieved by other enterprises having comparable risks acting independently in the financial markets.”³³ Xcel’s own testimony, thus, makes clear that the rate of return approved by the Commission is intended to be commensurate with, and compensate investors for assuming, the risks of providing utility service. The Department agrees.

In recent years, Xcel repeatedly accepted the Commission-approved rate of return. In the 2010 Rate Case, for example, the Commission approved a 10.37 percent return on equity and overall rate of return of 8.32 percent for Xcel.³⁴ The Company also accepted Commission-set rates of return in the 2008, 2012, 2013, and 2015 rate cases.³⁵ The Department is unaware of any recent instance where Xcel challenged a Commission rate case decision because the approved rate of return did not fairly compensated investors for accepting the risk of investing in its operations.

Xcel’s own testimony and actions, along with longstanding precedent, show that Commission-approved rates account for the risks of providing service to customers.³⁶ Accordingly, utility investors are responsible for any hypothetical risk that is ultimately realized. In this proceeding, these fundamental utility regulation principles mean that investors—not Minnesota ratepayers—should absorb the remaining Sherco 3 outage costs.

iii. Employee Testimony Demonstrates Xcel Understood Stress Corrosion Cracking Risks, Failed to Timely Inspect Sherco 3, or Address Potential Contamination

As discussed above, basic utility regulation principles require Xcel’s investors to bear the remaining Sherco 3 outage costs. However, even absent these principles, the Department believes that the factual record provides ample basis for requiring Company investors to absorb the remaining outage costs. This is particularly true given that the Commission’s alternative is to require Minnesota ratepayers to reimburse Xcel’s investors.

³¹ *Fed. Power Comm’n v. Hope Nat. Gas Co.*, 320 U.S. 591, 603 (1944).

³² Coyne Direct at 8.

³³ *In re Appl. of N. States Power Co. d/b/a Xcel Energy for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E-002/GR-10-971 (“2010 Rate Case”), Reed Direct Testimony at 7 (May 14, 2012) (setting interim rates that were in effect when the outage occurred); *see also In re Appl. of N. States Power Co. d/b/a Xcel Energy, for Auth. to Increase Rate for Elec. Serv. in Minn.*, Docket No. E-002/GR-08-1065 (“2008 Rate Case”), Reed Direct Testimony at 6 (Nov. 3, 2008) (providing the same testimony and setting the last final rates before the outage).

³⁴ 2010 Rate Case, FINDINGS OF FACT, CONCLUSIONS, & ORDER at 8, 29 (May 14, 2012).

³⁵ 2008 Rate Case, FINDINGS OF FACT, CONCLUSIONS, & ORDER at 8–12, 69 (Oct. 23, 2009); *In re Appl. of N. States Power Co. for Auth. to Increase Rates for Elec. Serv. in the State of Minn.*, Docket No. E-002/GR-12-961, FINDINGS OF FACT, CONCLUSIONS, & ORDER at 11–12, 46 (Sept. 3, 2013); 2013 Rate Case, FINDINGS OF FACT, CONCLUSIONS, & ORDER at 57, 97 (May 9, 2015); 2015 Rate Case, FINDINGS OF FACT, CONCLUSIONS, & ORDER at 10–11 (June 12, 2017).

³⁶ *See, e.g., Hope*, 320 U.S. at 603; *Bluefield Waterworks & Improvement Co. v. Pub. Serv. Comm’n of W. Va.*, 262 U.S. 679, 693 (1923); 2012 Rate Case at 49 (“A fair and reasonable ROE is one that is . . . commensurate with returns being earned on other investments having equivalent risks.”).

The Commission considers both adjudicative and legislative facts when considering a matter before it.³⁷ In the former capacity, it is appropriate for the Commission to rely on “all evidence on which reasonable, prudent persons are accustomed to rely in the conduct of their serious affairs.”³⁸ Here, the Department recommends that the Commission consider the trial testimony of Xcel’s employees, Dr. Timothy Patrick Murray and Mr. Matthew Kolb to make a determination in this proceeding.³⁹

At the time of the outage, Dr. Murray was a Principal Engineer with Xcel’s Turbine Overhaul Services Group and provided “technical support for planning and executing major steam turbine overhauls.”⁴⁰ Mr. Kolb was a Systems Engineer assigned to the Sherburne County Generating Station with a focus on “the main turbine and its auxiliary service.”⁴¹

The testimony of Dr. Murray and Mr. Kolb demonstrates that Xcel knew that stress corrosion cracking—which the Company’s own root cause analysis found to be a cause of the Sherco 3 outage⁴²—could occur in low pressure (“LP”) turbines without adequate inspection and steam contaminant control practices. Their testimony further shows Xcel postponed a major turbine inspection scheduled for 2011—the same year as the outage—until 2014 without first conducting an engineering study assessing the merits of the delay or consulting the turbine manufacturer.

A. TURBINE INSPECTION DELAYS

Mr. Kolb admitted that Xcel postponed a major Sherco 3 turbine inspection by three years without following internal Company guidelines:

Q: So this is December 7, 2010. Do you see that, Mr. Kolb?
Kolb: Yes.
Q: And we see down below that GE recommends a [time between overhauls (TBO)] of five years, right?
Kolb: Yes.
Q: This is – you wrote this [systems health report], right?
Kolb: Yes, sir. Um-hum.
....
Q: Okay. And you said increasing the inspection interval adds risk; is that right?
Kolb: Yes.
Q: And that you had currently scheduled it for eight-and-a-third time between overhauls in the cycle; is that right?
Kolb: Yes.
....
Q: And the turbine rating is still green, is it not?
Kolb: Yes.
Q: And you recall in 2005 you said the green rating was contingent on a six-year TBO, right?

³⁷ Minn. Stat. § 216A.05, subd. 1 (2020).

³⁸ Minn. R. 1400.7300, subp. 1 (2019).

³⁹ Minn. Stat. § 609.48, subds. 3, 4(2) (2020).

⁴⁰ Department Attach. C, Doc. 475 at 124:6–126:7.

⁴¹ Department Attach. B, Doc. 474 at 434:19–436:10.

⁴² Root Cause Analysis Report at 1 (“The fractures of the finger pinned blade attachments in the low pressure turbine L-1 turbine end disk *were due to the presence of pre-existing caustic stress corrosion cracks* at the pin holes, ledges and at the base of the finger pinned blade attachments.”) (emphasis added).

Kolb: Yes.
Q: Okay. And you pushed the TBO out and you left the rating green; is that right?
Kolb: Yes. I mean, that's what's said –
....
Q: Risks associated with a yellow or red code is "wheels cracking involving wheel failure" and "buckets departing the rotor." Is that what happened in November 2011?
Kolb: Yes.
Q: And extending [the] GE recommended TBO increases risk of failures. Do you see that?
Kolb: Yes.
Q: And that includes risk of an [stress corrosion cracking] failure with the buckets departing the rotor, right?
Kolb: I was referring to risks, in general.
Q: And one of the risks in general that you identified above, risks associated with a wheel cracking involve wheel failure and buckets departing the rotor. That's one of the risks, in general, right?
Kolb: Yes.⁴³
....
Q: Yeah. So in connection with the 2011 outage, before you deferred the LP turbine major overhaul, you did not review the steam and water chemistry for Unit 3, correct?
Kolb: Personally, to the degree that you are implying, no.
Q: And you are not aware of anybody else who did so?
Kolb: I am not aware of anybody else.⁴⁴

Dr. Murray similarly admitted that Xcel knew that lengthening the turbine inspection interval increased the risk of turbine failure:

Q: [This Xcel Energy systems health report states that] GE recommends a TBO of five years, [and that] increasing inspection interval adds risk. Do you see that there?
Murray: Yes.
Q: Currently scheduled for an eight-and-a-third-year TBO cycle. Do you see that there?
Murray: Yes.
Q: So am I correct that according to this 2010 document, the LP major unit inspection that should have been conducted in 2011 has been pushed to 2014?
Murray: Yes, the plan was changed to move that to 2014.
Q: Okay. So you did not maintain a six-year inspection interval, correct?
Murray: Not on the low-pressure turbines.⁴⁵

Dr. Murray then admitted that Xcel failed to conduct an engineering study to assess the merits of delaying the turbine inspection. Dr. Murray also admitted that Xcel internal documents recognized that an engineering study was needed before going ahead with the delay:

Q: [The systems health report states], with the proper engineering study, the LP inspection interval could possibly be extended to nine years . . . if required, otherwise maintain six-year overhaul frequency, next major overhaul scheduled for 2014; do you see that there?

⁴³ Department Attach. D, Doc. 480 at 676:11–678:10.

⁴⁴ *Id.* at 679:10–16.

⁴⁵ Department Attach. B, Doc. 474 at 408:8–21.

Murray: Yes.

....

Q: Okay. And you're not aware of any engineering study to study the LP inspection interval to extend to nine years, right?

Murray: No, I am not.⁴⁶

B. STRESS CORROSION CRACKING

Dr. Murray admitted that the Sherco 3 turbine stress corrosion cracking went undetected. He further admitted that the Company knew that stress corrosion cracking was a concern for the "finger dovetails" on the Sherco 3 turbine:

Q: So do you recognize this as the depiction of the steam cycle diagram for a fossil steam turbine?

Murray: Yes.

Q: And this is a reasonably accurate picture – depiction of the system for Sherco Unit 3 with the exception of it has two LP turbines and it has multiple condensate polishers?

Murray: Yeah. I'd say it's reasonably accurate.

Q: Right. And so that we understand what we're talking about, . . . contaminants can enter through . . . the cooling water which is not pure through leaks . . . into the purer steam condensates cycle, right?

Murray: Yes.

Q: And that also if there's contaminants in the makeup water, that that can enter into the steam condensate cycle, right?

Murray: Correct.

Q: And then the condensate polisher as it existed at Sherco 3 doesn't take sodium out, so whatever would come in through any problems with the makeup water, or condenser, would then go right into the steam through the attemperators, right?

Murray: It would, yes.

Q: Right. Otherwise the contaminants can go into the boiler and you can use blow-down and other things to regulate the contaminants and keep them from getting into the steam, right?

Murray: Correct.

Q: So you knew in the 1999 to 2000 timeframe that in order to minimize the risk of stress corrosion cracking in LP turbines it was important to limit the sodium compounds that entered the steam turbine?

Murray: Yes.

Q: Okay. And as a result of that, it was important to keep track of and evaluate any corrosive issues with respect to the LP turbines such as Unit 3?

Murray: Yes.

Q: Okay. To summarize, it's fair to say during the period 1999 to 2011 you knew, one, about the risk of stress corrosion cracking in LP turbines?

Murray: Yes.

Q: Two, what causes stress corrosion cracking in LP turbines?

Murray: Yes.

⁴⁶ *Id.* at 410:8–25.

....
Q: [Three,] you knew how to inspect for the presence of stress corrosion cracking?
Murray: Yes, we did.⁴⁷
....
Q: And where . . . is the susceptibility in the Sherco GE turbines to stress corrosion cracking?
Murray: Generally, [stress corrosion cracking], as far as buckets and rotor, occurs around the – predominantly along the L-1 row and potentially L-2 and further upstream.
Q: And you understand that that’s true regardless of the type of dovetail connection at the L-1 row?
Murray: Yes.
Q: So doesn’t matter whether it’s a finger dovetail or a tangential entry dovetail, they both have the same risk of stress corrosion cracking?
Murray: I don’t agree that they have the same risk, but that’s the predominant area in which [stress corrosion cracking] occurs.⁴⁸

Mr. Kolb separately admitted that he received an email in November 2005 from Sherco’s chemistry supervisor, stating that the low-pressure turbine rotors had been “steam-cleaned with supply water from Sherco wells which [were] high in sulfate and chlorides.”⁴⁹ Mr. Kolb then admitted that he did not investigate whether this cleaning had contaminated the turbine or consult with the manufacturer about it:

Q: And did you consider supply water with sulfate and chloride to be chemical contamination of the turbine?
Kolb: Contamination with those chemicals in a sufficient enough quantity could be.
Q: Did you contact GE and ask them whether or not that would qualify for [magnetic particle inspection] of the rotor dovetail under [the 1121-3AR1 technical information letter]⁵⁰ because of the steam cleaning with supply water?
Kolb: No, I did not.
Q: Did you pull the buckets off as a result to inspect and test the dovetails?
Kolb: No.⁵¹

C. MANUFACTURER INSPECTION RECOMMENDATIONS

Dr. Murray admitted that Xcel knew that the turbine manufacturer recommended consideration of bucket removal and finger inspection if the turbine had contamination, carryover from the boiler, or a leaking condenser heater tube:

Q: Okay. This [1121-3A technical information letter]⁵² applies to all steam turbine rotors which have buckets attached with finger dovetails, right?
Murray: That’s correct.
Q: Provides instructions [about] how to do the inspection that you described for us?
Murray: Yes.

⁴⁷ *Id.* at 325:18–327:24.

⁴⁸ Department Attach. E, Doc. 480 at 595:18–596:10.

⁴⁹ *Id.* at 647:5–11.

⁵⁰ Root Cause Analysis Report, App. E17 (eDocket No. 201310-92760-10, pg. 89).

⁵¹ Department Attach. D, Doc. 480 at 649:12–23.

⁵² Root Cause Analysis Report, App. E1 (eDocket No. 201310-92760-10, pg. 73).

....
Q: And it has two recommendations of when to do it. Number one, whenever buckets are removed, and, number two, abnormal operation or unusual operating events that cause concern for long-term reliability may be reason to consider removal of the buckets, right?

Murray: Correct.

....
Q: But item two lists examples of events that may increase the risk of stress corrosion cracking. Is that how you read that?

Murray: Yes.

Q: And three events: A, is caustic or chemical ingestion or contamination[.] B, carryover from the boiler, and, C, leaking condenser heater tubes. And down at the bottom it says in there – can you read that for me?

Murray: If in doubt, GE will help evaluate the need for additional [magnetic particle inspection] of the rotor wheel finger dovetail area. Contact your local GE field service representative.⁵³

D. OTHER TURBINE OPERATOR BEST PRACTICES

Dr. Murray admitted that Xcel knew about a similar turbine failure in Arizona and was aware of several tests that it could perform to help decide whether to pursue further stress corrosion cracking investigation:

Q: And you got involved in what came to be called the L-1 users group in [the] 1995 to 1996 timeframe, right?

Murray: Yes.

Q: And what that involved is a power company known as Navajo Generating Station, I believe that was in Utah?

Murray: Or Arizona.

Q: Arizona?

Murray: Arizona.

....
Q: Right. And they also had stress corrosion cracking in their L-1 LP finger dovetails on three units in that time period.

Murray: I believe that's correct.

Q: And those units were identical to Sherco Unit 3 except for they had once-through boilers.

Murray: I can't say for sure that they were identical, but they were very close, yes.

Q: Okay. They had finger dovetails on the L-1 rows.

Murray: Yes.

Q: And they were G3⁵⁴ units.

Murray: Yes.

Q: Okay. And you attended meetings where they discussed methods of how to detect stress corrosion cracking without removing all the buckets, right?

Murray: I believe there was a presentation made at one of the meetings.

....
Q: This is a document that comes from NSP's files, right?

⁵³ Department Attach. B, Doc. 474 at 334:9–336:21.

⁵⁴ This may be a typographical error ("G3" instead of "GE") in the trial transcript.

Murray: Yes.

Q: And does this come from your personal files?

Murray: I believe so.

....

Q: And it says: Replicated L-1 wheel circumferential indication, SCC. Do you know what that means?

Murray: So it would have been like a metallurgical examination where they try to basically replicate or copy the actual surface, and then they can examine that copy of the surface under a microscope and try to determine the mechanism involved.

Q: So they are doing an investigation trying to figure out the mechanism and this is the method they used and they found out it was [stress corrosion cracking]?

Murray: Yes.

....

Q: They then removed and inspected the entire L-1 generator and buckets and found crack indications, right?

Murray: Yes.

Q: And then they also removed and inspected one 5-bucket L-1 turbine end group and found crack indications, right?

Murray: Correct.

Q: So you knew from this particular presentation that it was possible to remove a bucket group, do an inspection of the wheel, and make a determination as to whether there's any crack indications if you didn't want to take all the buckets off, right?

Murray: That's what they suggest.

Q: Right. And you had the presentation, it was presented to you, it was in your file, and you knew it was done at Navajo Generating Station, right?

Murray: Correct.⁵⁵

Overall, this testimony by Xcel employees demonstrates that the Company: (1) understood that stress corrosion cracking could occur in its LP turbines; (2) knew that stress corrosion cracking had occurred in a similar turbine; (3) was familiar with appropriate inspection and testing procedures; (4) delayed inspections scheduled in violation of internal practices and manufacturer guidance; (5) did not test relevant turbine components for stress corrosion cracking after possible contamination; and (6) did not inquire with the manufacturer about whether testing was necessary after possible contamination.

In addition to Xcel's conduct, the turbine manufacturer might have contributed to the stress corrosion cracking that caused Sherco 3's failure. The manufacturer, however, is not a party to this proceeding. The Commission, moreover, lacks jurisdiction over it. The question is then, whether investors or ratepayers should bear the expenses incurred as a result of the outage.

Based on the testimony of Xcel's employees, the Department concludes the Company should bear these costs because the Company's conduct—at a minimum—contributed to the outage event. Given the Company's role in Sherco 3's failure, it would be unreasonable to allocate costs that investors should bear—as a matter of basic utility regulation—to ratepayers. The Department recommends that ratepayers be reimbursed for replacement power costs and capital costs not covered by insurance, as discussed below.

⁵⁵ Department Attach. B, Doc. 474 at 372:2–376:2.

iv. Remaining Ratepayer Harm

To determine the ratepayer harm, the Department examined the Sherco 3 outage costs and the counteracting payments; specifically, the reimbursements by insurers and the settlement with the turbine manufacturer. Further in its Compliance Filing, Xcel states that the Commission previously disallowed \$21.6 million in costs associated with the Sherco outage in 2012, and that it would be unreasonable to count these costs again to determine the remaining replacement power costs. The Department agrees and, therefore, subtracts the previously denied costs from the total calculated damages to determine the remaining damage to ratepayers due to the outage. Table 4 below shows the Department's calculations.

Table 4: Remaining Damage to Ratepayers⁵⁶

Costs, MN Jurisdiction	\$ Millions
	[TRADE SECRET DATA HAS BEEN EXCISED]
Replacement Power Costs	
Total Repair Costs	
Damage to Ratepayers	
Ratepayer relief	
Insurance Reimbursement	
Sherco 3 Disallowance	
GE Settlement	
Total Ratepayer Relief	
Remaining Damage:	\$17.0

The Department calculates that approximately \$17.0 million in remaining Sherco 3 outage costs are owed to ratepayers. As stated above, the Department concludes that it is unreasonable for ratepayers to absorb these costs resulting from risks that Xcel's investors assumed in exchange for a Commission approved rate of return. Additionally, Xcel's actions contributed to the outage, and it is not reasonable for ratepayers to absorb these costs, as they are the only party that is absolutely blameless.

Therefore, the Department recommends that the Commission require Xcel to refund \$17.0 million to ratepayers for replacement power costs that were recovered through the monthly fuel clause charge, so as to leave ratepayers unharmed from the Sherco 3 outage. The Department believes that the refund should be distributed through the monthly fuel clause charge in the same manner as the replacement power costs were originally recovered by the Company.

III. CONCLUSIONS AND RECOMMENDATIONS

The Department recommends that the Commission require Xcel to absorb the remaining \$17.0 million in costs associated with the Sherco 3 outage for several reasons. First, fundamental utility regulation principles hold that Xcel's investors accepted the risks of providing utility service, including costs arising from an outage, in exchange for a "just and reasonable" rate of return on their investments.⁵⁷

Second, Xcel's own employee testimony demonstrates that the Company: (1) understood that stress corrosion cracking could occur in its LP turbines, (2) knew that stress corrosion cracking had occurred in a similar turbine; (3) was familiar with appropriate inspection and testing procedures; (4) delayed inspections scheduled in

⁵⁶ Table 4 does not include excess fuel oil costs as those costs were fully recovered from insurers by the Company.

⁵⁷ *Supra* Sec. II(C)(ii).

violation of internal practices and manufacturer guidance; (5) did not test relevant turbine components for stress corrosion cracking after possible contamination; and (6) did not inquire with the manufacturer about whether testing was necessary after possible contamination.⁵⁸ Accordingly, even absent long-standing utility regulation principles, the Department finds that it is not reasonable to require ratepayers to absorb expenses for which they are blameless.

Third, as a public policy matter, it creates a perverse incentive to require ratepayers to subsidize costs that Xcel was not able to recover from insurers and equipment manufacturers. Requiring investors to absorb unrecovered expenses fully aligns utility interests and litigation strategy because the possibility of diverting expenses to ratepayers is no longer available.

As a result, the Department recommends that the Commission:

- Accept the Company's Compliance Filing;
- Authorize Xcel to discontinue providing quarterly litigation updates; and
- Require the Company to refund \$17.0 million to leave ratepayers unharmed from the Sherco 3 outage.

/ar

⁵⁸ *Supra* Sec. II(C)(iii).