PUBLIC DOCUMENT

BEFORE THE MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS 600
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IN THE MATTER OF A COMMISSION INVESTIGATION INTO XCEL ENERGY'S MONTICELLO LIFE CYCLE MANAGEMENT/EXTENDED POWER UPRATE PROJECT AND REQUEST FOR RECOVERY OF COST OVERRUNS	OAH Docket No. 48-2500-31139 MPUC Docket No. E002/CI-13-754

INITIAL BRIEF OF THE MINNESOTA DEPARTMENT OF COMMERCE

OCTOBER 31, 2014

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I. INTRODUCTION

The Minnesota Department of Commerce, Division of Energy Resources, Energy Regulation and Planning Unit ("Department" or "DOC") respectfully submits this Initial Post Hearing Brief to provide Administrative Law Judge ("ALJ") Steve M. Mihalchick and the Minnesota Public Utilities Commission ("Commission" or "MPUC") with an analysis of the facts and law pertaining to the following: whether Northern States Power Company, d/b/a Xcel Energy ("NSP," "Xcel" or "the Company") has shown the reasonableness of its actions and resulting costs, based on what it knew or should have known at the time it sought approval from the Commission, regarding all project costs concerning the Life Cycle Management ("LCM") and Extended Power Uprate ("EPU") programs at the Monticello Nuclear Generating Plant ("Monticello") that Xcel seeks to recover from ratepayers, to extent that the costs differ from the amounts Xcel initially proposed in its 2008 certificate of need ("CN").[1]

II. NATURE OF PROCEEDING

This matter concerns the prudency of Xcel's Monticello LCM/EPU-related costs for purposes of rate recovery. It is, essentially, a rate proceeding, which arose out of Xcel's 2012 rate case, MPUC Docket No. E002/GR-12-961, in which Xcel sought rate recovery for LCM/EPU costs for the first time.[2] The Commission began this proceeding with its September 3, 2013 *Findings of Fact, Conclusions of Law and Order* in Xcel's 2012 general rate case at 19:

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[1] December 18, 2013, *Order Approving Investigation and Notice and Order for Hearing,* MPUC Docket No. E002/CI-12-754 at 3 noting the acknowledgement of the Department and Xcel that "the scope of the investigation would include all project costs that Xcel seeks to recover that differ from what Xcel initially proposed."

[2] In its December 18, 2013 Order at 4, the Commission identified its authority "to investigate the prudence, reasonableness, and rate recoverability of the Monticello LCM/EPU project" under at least the following: Minn. Stat. §§ 216B.16 (rate change and cost recovery provisions), 216B.09 (Footnote Continued on Next Page)

> The Commission shares the Department's concern regarding the project's significant cost overruns. The Commission will open a separate docket to investigate whether the Company's handling of the LCM/EPU project was prudent, and ***whether the Company's request for recovery of the Monticello LCM/EPU cost overruns is reasonable***. ***The project proceeded as the record for this case was being developed, preventing a final determination of the project's prudence at this time***. Investigating the project costs in a separate proceeding will promote development of a complete record on the issue, and ***allow the Commission to make a prudence determination outside the considerable time pressure involved in a rate case***. (Emphasis added)

Further, in its December 18, 2013, *Order Approving Investigation and Notice and Order for Hearing,* MPUC Docket No. E002/CI-12-754 ("December 18, 2013 Order"), the Commission summarized its determination in Xcel's 2012 rate case that the Company had not demonstrated to the Commission's satisfaction the prudence of the LCM/EPU project costs, as follows:[3]

> When Xcel filed its 2012 rate case, the Company estimated that the LCM/EPU project would cost approximately $586,700,000, 83.3% higher than the cost anticipated in the Company's certificate of need filing. [citation omitted] ***The Commission concluded that the record in the rate case was not sufficient to make a determination of the prudence of the project costs, and opened this docket to investigate whether the costs were reasonable and should be subject to recovery from ratepayers.***

Similarly, the Commission identified the purpose of the present docket as whether Xcel's actions were "prudent and whether the Company's request for recovery of Monticello LCM/EPU project cost overruns is reasonable."[4] The Commission expressed its expectation that the ALJ's report and recommendation in this 13-754 docket would be considered as "part of Xcel's pending rate case."[5]

(Footnote Continued from Previous Page)
(authority over just and reasonable standards, classifications, rules or practices) and 216B.17 (authority to investigate).

[3] December 18, 2013 Order at 2 (emphasis added).

[4] December 18, 2103 Order at 3.

[5] The Commission, in its December 18, 2013 Order at 4, stated regarding rate recovery of LCM/EPU-related costs, in relevant part:

> The Commission therefore requests that the Administrative Law Judge coordinate the schedule for this proceeding and the schedule of the proceedings in Docket No. E-002/GR-13-868, with the goal of returning the ALJ's report and recommendation for this investigation to the Commission ***in time to consider them as part of Xcel's pending rate case.***

(Footnote Continued on Next Page)

In Xcel's October 18, 2013, *Report on Monticello LCM/EPU Prudence* filed in the present docket, the Company confirmed its understanding of the ratemaking purpose of this matter in that Xcel waived "any defense we may have that the outcome of this investigation could be limited by the prohibition against retroactive ratemaking."[6]

Certainly, based on the insufficiency of Xcel's justification to recover Monticello costs in the 2012 rate case record, the Commission had authority to deny recovery of Xcel's proposed Monticello LCM/EPU costs. Instead, the Commission chose to allow further record development in a separate docket, which now is the present matter, together with the assistance of a consulting engineer; the Commission approved the Department's request for proposal ("RFP) to hire such an expert(s). Nowhere, however, in its 2012 Xcel Rate Case Order or its December 18, 2013 Order in the present docket did the Commission alter Xcel's burden of proof to demonstrate the prudence of costs for rate recovery purposes in this matter. Thus, just as Xcel attempted in its 2012 rate case, albeit unsuccessfully, to demonstrate the prudence of all Monticello LCM/EPU costs it sought to recover from ratepayers, Xcel must show in the present proceeding, to the extent that the Company seeks to recover those costs from ratepayers, the prudence of all such costs that exceed the level of costs initially proposed, and it must do so in a manner consistent with the rate recovery requirements of Minn. Stat. §216B.16 (2014), including the overall requirement of subdivision 4: "The burden of proof to show that the rate change is just and reasonable shall be upon the public utility seeking the change."

(Footnote Continued from Previous Page)
See also, id. at 6 (emphasis added). Further, on page 6, the Commission makes a similar request and asks to receive the ALJ's report "as soon as is practical, and no later than December 31, 2014[.]" *See also, id.* at 7 (Ordering Points 3 and 4).

[6] Xcel Ex. 1 at 1 (Xcel's *Report on Monticello LCM/EPU Prudence).*

III. PROCEDURAL HISTORY

On September 3, 2013, the Commission issued its decision in Xcel's 2012 rate case, *Findings of Fact, Conclusions of Law and Order,* MPUC Docket No. E002/GR-12-961, in which the Commission decided that the record was not sufficiently developed to allow for a final determination of the project's prudence, and ordered "a separate docket to investigate whether the Company's handling of the LCM/EPU project was prudent, and whether the Company's request for recovery of the Monticello LCM/EPU costs overruns is reasonable."[7] The Commission directed its staff to work with the Department to develop a proposal for conducting the investigation.

On October 18, 2013, Xcel filed its *Report on Monticello LCM/EPU Prudence* as well as written direct testimony of four witnesses.

On December 18, 2013, the Commission issued its *Order Approving Investigation and Notice and Order for Hearing,* MPUC Docket No. E002/CI-13-754. The Commission approved the draft RFP's expression of the investigation's scope, with the clarification that the "scope includes project cost differences between what was initially proposed and what has been presented to the Commission for recovery, and the reasons for those changes."[citation omitted]. With that clarification, the scope is as follows:[8]

> This investigation is designed to investigate whether Xcel Energy's handling of the Monticello Life Cycle Management/Extended Power Uprate Project ("LCM/EPU") was prudent and whether the Company's request for recovery of Monticello LCM/EPU project cost overruns is reasonable.
>
> This investigation should evaluate the prudence, reasonableness, and rate recoverability of the Monticello LCM/EPU project with particular attention given to the cause and reason for the cost overruns that have occurred since the project was first approved. The consulting engineer selected for this engagement will be

[7] *Id.* at 19, 46.
[8] *Id.* at 3.

required to evaluate the four principal engineering modifications as well as other smaller changes referred to in this RFP to determine:

1. whether the modifications were necessary because of [Nuclear Regulatory Commission] NRC requirements, the Fukushima incident, or other related factors,

2. whether the cost levels for these modifications were reasonable, and

3. how these costs should be allocated between the Life Cycle Management and Extended Power Uprate parts of the Monticello project.[citation omitted]

Characterizing the investigation as "unique,"[9] the Commission requested that the schedule for this E002/CI-13-754 docket be coordinated with the schedule of Xcel's pending rate case, E002/GR-13-868, to allow the Commission time to consider the ALJ's report and recommendation as part of Xcel's pending rate case.[10] The Commission referred the matter to the Office of Administrative Hearings.

On January 27, 2014, and February 10, 2014, ALJ Mihalchick convened prehearing conferences. On February 14, 2014, the ALJ issued the First Prehearing Order that set forth the following schedule for the proceeding:

First Prehearing Conference	January 27, 2014
Second Prehearing Conference	February 10, 2014
Direct Testimony of the Department and the Consulting Engineer	July 2, 2014
Petitions to Intervene	July 16, 2014
Third Prehearing	July 16, 2014
Rebuttal Testimony	August 26, 2014
Surrebuttal Testimony	September 19, 2014

[9] *Id.,*
[10] *Id.* at 4 and 6.

Evidentiary Hearing	September 29 – October 3, 2014
Initial Briefs	October 31, 2014
Reply Briefs	November 21, 2014
ALJ Report	December 31, 2014

On July 2, 2014, Department witness Mr. Chris Shaw and Ms. Nancy Campbell, and the Department's consulting nuclear engineering experts Mr. Mark Crisp[11] and Dr. William Jacobs[12] filed direct testimony.

On or before July 16, 2014, the following parties intervened as, or were named as, parties in this matter: Xcel Energy, the Minnesota Office of Attorney General – Antitrust and Utilities Division ("OAG"), and the Department. Counsel for Xcel Large Industrials ("XLI") filed a notice of appearance.

[11] Mr. Crisp is a registered Professional Engineer with undergraduate degrees in civil and electrical engineering and an MBA (Finance and Accounting). He is Managing Consultant with Global Energy & Water Consulting, LLC. Mr. Crisp has nearly 37 years of experience working in the electric utility industry as an engineer in the design, construction and operations areas of nuclear, fossil, hydro, and renewable energy generating resources and as an independent consulting engineer to the industry. His experience includes design and construction of both "greenfield" power projects and retro-fit projects. Retro-fit projects are those that are located at an existing operating plant very similar to the conditions Xcel found itself at the Monticello Plant, in this case. DOC Ex. 419 at 1 (Crisp Opening Statement); DOC Ex. 300 at MWC-1 (Crisp Public Direct).

[12] Dr. Jacobs is a registered Professional Engineer with a doctorate and a master's degree in nuclear engineering, and an undergraduate degree in mechanical engineering. He is an Executive Consultant for GDS Associates, Inc. Dr. Jacobs has worked in the nuclear industry for over 40 years as a nuclear engineer, and has extensive experience on types of projects similar to the Monticello EPU, from his work as a consultant with the minority owners of the Duane Arnold Energy Center, a sister plant to Monticello, and his analysis and evaluation of EPU projects on behalf of the Florida Office of Public Counsel regarding Florida Power and Light Company's Turkey Point 3 and 4 and St. Lucie 1 and 2, and Progress Energy's Crystal River 3. He also has significant experience in the construction and start-up of nuclear power plants overseas. DOC Ex. 421 at 1 (Jacobs Opening Statement); DOC Ex. 305 (Jacobs) (resume) and Tr. Vol. 4 at 55, 81 (Jacobs).

On July 16, 2014, ALJ Mihalchick and ALJ Cochran held a joint prehearing conference for MPUC Dockets E002/CI-13-754 and E002/GR-13-868, respectively. On July 17, 2014, the ALJs issued a Joint Prehearing Order that articulated the issues to be determined in each docket, as follows:

> 1. The issue of the reasonableness and prudence of the costs for the Life Cycle Management and Extended Power Uprate at the Monticello Nuclear Generating Plant will be addressed in MPUC Docket E-002/CI-13-754.
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> 2. The issue of whether the Extended Power Uprate should be considered "used and useful" during 2014 will be addressed in MPUC Docket E-002/GR-13-868.
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> 3. The issue of cost allocation between the Extended Power Uprate and Life Cycle Management will be addressed in MPUC Docket E-002/CI-13-754.
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> 4. The issue of the recovery and amortization of expenses from the 13-754 docket will be addressed in MPUC Docket E-002/GR-13-868.
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> On August 26, 2014, Xcel, the OAG and the Department filed rebuttal testimony.
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> On September 19, 2014, Xcel, the OAG and the Department filed surrebuttal testimony.

On September 29 – October 1, 2014, the evidentiary hearing took place in the Commission's large hearing room.

IV. ISSUES

The Commission in its December 18, 2013, *Order Approving Investigation and Notice and Order for Hearing,* at 4, identified the following issues to be addressed in this proceeding:

> Parties shall specifically and thoroughly address the prudence, reasonableness, and rate recoverability of the Monticello LCM/EPU project in the course of the contested case proceedings ordered herein, including:
>
> - whether Xcel Energy's handling of the LCM/EPU was prudent;
> - whether the Company's request for recovery of Monticello LCM/EPU project cost overruns is reasonable; and,
> - which cost increases are due to 1) solely the EPU, 2) solely the LCM and 3) both projects.

It is undisputed that Xcel's initial cost estimates of the LCM and EPU projects were

inaccurate.[13] Xcel seeks to recover from ratepayers all of the cost overruns, even though costs have, to date and adjusted for inflation, more than doubled from the costs that Xcel represented to the Commission in the LCM and EPU certificate of need proceedings. Xcel initially represented in Docket No. E002/CN-05-123 that the costs of the LCM to extend the life of the plant would be $135 million in 2005 dollars[14] and in Docket No. E002/CN-08-185 that the costs for the EPU to upgrade the capacity of the plant would be $133 million in 2008 dollars,[15] for a total in current dollars of $346 million.[16] However, based on information from March 31, 2014, total project costs were $748 million, including financing costs,[17] amounting to $402 million in costs that exceed Xcel's initial cost estimates.[18] Thus, Xcel's cost overruns ($402 million) were more than the total estimated costs of the combined certificates of need ($346 million).

The Department's analysis, discussed in this Initial Brief, indicates that Xcel's cost representations, particularly in the 2008 Certificate of need, were inadequate, given what Xcel knew or should have known in 2008.[19] Had Xcel represented its costs reasonably in the EPU proceeding, the Department would not have supported granting a certificate of need for the EPU since other alternatives would have been more cost effective.

Despite these and other facts regarding how Xcel's management of the project resulted in higher costs as discussed below, the Company still requests that ratepayers be held responsible for all costs, including cost overruns and financing costs, amounting to estimated total costs of $748 million (based on financing costs as of March 31, 2014).

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[13] *See, e.g.,* Xcel Ex. 12 at 27 (Sparby).
[14] DOC Ex. 309 at 3 (Shaw Direct).
[15] DOC Ex. 309 at 4 (Shaw Direct).
[16] DOC Ex. 313 at NAC-5 (Campbell Direct)
[17] Tr. Vol. 4 at 119 (Campbell) and DOC Ex. 313 at 13-14 (Campbell Direct) (identifying final project costs of $748.1 million on a total company basis that includes $84.8 million in financing costs through March 31, 2014 (allowance for funds used during construction).
[18] Xcel Ex. 12 at 33 (Sparby Rebuttal).
[19] *See, e.g.* Tr. Vol. at 73-74 (Crisp).

V. SUMMARY: DEPARTMENT WITNESSES RAISED SIGNIFICANT DOUBT AS TO THE REASONABLENESS OF XCEL'S COST OVERRUNS

Testimony of Department witnesses raised significant doubt as to the reasonableness of some portion of the $402 million in cost overruns that Xcel seeks from ratepayers. [20] They identified many decisions and actions including poor project management by Xcel that were not reasonable at the time, based on what Xcel knew or should have known, and that likely resulted in costs being higher than they would have been if reasonable decisions and actions had occurred.[21] Examples of such decisions that were not shown by Xcel to be reasonable when made or performed included:[22]

> …pursuit of a "fast-track" approach, the lack of separate cost tracking for the LCM and the EPU projects, lack of effective cost controls, lack of reasonable planning and design scoping, and the lack of reasonable use of contingencies in the budgeting process and economic justification for the EPU.

Xcel's Life Cycle Management project was comprised of the Company's repair and maintenance activities to keep the Monticello plant running smoothly over the extended 20-year NRC license-life of the plant, whether operated without an EPU at 600 MW or eventually operated at the intended EPU level of 671 MW.[23] Department witness Dr. Jacob contrasted performance of LCM work during a normal refueling outage ("RFO") and performance of such work during an EPU-related RFO. Only one or two major LCM plant modifications typically are performed during a normal RFO for an existing, operating generation plant, with other major LCM projects planned and completed over many years, rather than in only a few years.[24] He explained that the scope and design for LCM projects performed during a normal RFO is the subject of rigorous pre-

[20] *See, e.g.,* DOC Ex. 419 (Crisp Opening Statement); DOC Ex. 436 (Campbell Opening Statement).
[21] DOC Ex. 419 (Crisp Opening).
[22] DOC Ex. 419 at 1-2 (Crisp Opening Statement).
[23] Tr. Vol. 4 at 61-64 (Jacobs).
[24] Tr. Vol. 4 at 61-63 (Jacobs).

planning, pre-measuring and even mock-ups such that the work is performed efficiently, the outage is relatively short, and the work results in reasonable costs. [25]

By contrast, there typically are 10 to 15 major EPU-related complex modifications that are performed during an EPU-related RFO.[26] EPU work is not spread over many years since the EPU cannot operate at the higher power level until all such work is completed.[27] Thus, reasonable management of EPU projects requires even greater detailed pre-planning and execution than the more routine LCM work, to ensure that costs and timing are reasonably manage. Absent reasonable management, highly detailed scoping, design, and implementation, the cost overruns for EPU-related work can be staggering. For instance, Dr. Jacobs noted that Xcel far exceeded its estimated costs to replace the feed pump motor and pump. In 2003, Xcel's cost estimate was less than $1 million for this work, which at that time the Company expected to be completed during a normal RFO[28] (*i.e.,* the cost estimate in 2003 was for the LCM's "extended period of operation" and not for the EPU). However, the actual costs were $92 million when performed during Xcel's EPU-related RFOs.[29]

Xcel's decisions to combine its normal LCM maintenance projects along with its EPU project, to put the combined LCM/EPU project on a fast track for completion two years earlier than Xcel's on-site engineers recommended, and to do so without the type of rigorous and detailed

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[25] *Id.* at 62-64.
[26] *See id.* at 64-65; DOC Ex. 305 at 13 (Jacobs).
[27] Tr. Vol. 4 at 64-65 (Jacobs).
[28] Tr. Vol. 3 at 129 (Jacobs).
[29] Tr. Vol. 3 at 133 (Jacobs); Tr. Vol. 4 at 69 (Jacobs) (referring to Xcel Ex. 9 at (TJO-2) Sch. 32 at 26 of 57 (O'Connor Rebuttal) ("capital projects" less than $1 million) and Xcel Ex. 3 at (TJO-1) Sch. 26 at 2 of 3 (O'Connor Public Direct). *See also* Tr. Vol. 4 at 53 (Jacobs) (regarding the greater complexity of replacing a pump or feedwater heater as part of an EPU due to the need to increase the capacity of the pumps rather than solely as LCM work on an existing plant: "You have to sometimes reinforce the building, . . . as in the case of Monticello, go down to bedrock for the foundations of the feedwater pumps, so it becomes a much more complicated and expensive proposition at that point.").

scoping, design and execution that was typical for a normal RFO let alone the much more complex, time-pressed EPU-related RFOs, provides context for Department testimony and its noted concerns.[30]

Mr. Crisp provided a number of examples of problems such as Xcel's failure to anticipate the "very small footprint" of the existing plant and the resulting difficulties that the small space would create for dismantling and removing existing equipment as well as for installing the new larger equipment such as the feedwater heater.[31] He testified, in relevant part:

> Xcel ***knew the dimensions of the containment "room"*** for the feedwater heater. However, Xcel's estimated cost of installing the new, much larger feedwater heater ***did not take into account*** the significant difficulty in removing the former feedwater heater, modifying the size of the then-existing concrete "room" and installing the new, larger feedwater heater.[32]
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> * * *
>
> [T]here should not have been a case of the project being materially "more difficult than we anticipated" or "costs . . . higher than we expected" to the extent that occurred with Monticello. . . . . ***Of course, Xcel knew that Monticello had a small footprint*** and knew, or certainly should have known, at that time about the layout of Monticello. Taking that knowledge into account with proper scoping of the equipment needed and logistics of installing the equipment would have anticipated many of the difficulties Xcel has pointed to as causing the cost overruns.[33]

He concluded that Xcel's project management decisions and actions "were responsible for increased costs of the LCM and EPU projects substantially above what reasonably should have been incurred."[34]

In light of the significant doubt raised by Department witnesses that all of the $402 million

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[30] *See e.g.,* DOC Ex. 302 at MWC-3 (Crisp Direct Attachment); Tr. Vol. 4 at 62-74 (Jacobs); DOC Ex. 419 (Crisp Opening Statement).
[31] DOC Ex. 300 at 18-19 (Crisp Public Direct); DOC Ex. 303 at 13 (Crisp Surrebuttal).
[32] DOC Ex. 300 at 19 (Crisp Public Direct) (emphasis added).
[33] DOC Ex. 300 at 13 (Crisp Surrebuttal) (emphasis added).
[34] DOC Ex. 303 at 31 (Crisp Surrebuttal).

in cost overruns was prudently and reasonably incurred,[35] together with Xcel's failure to show that all $402 million was prudently and reasonably incurred, disallowance of some level of cost overrun dollars is warranted. Xcel's failure, however, to make and maintain detailed and transparent records regarding EPU-related costs significantly hampers efforts to quantify a disallowance level. No party recommended complete disallowance of the $402 million in cost overruns; however, the fact remains that the burden of proof to allow any recovery of the cost overruns remains on Xcel, not on any other party. Levels of potential reasonable cost disallowance, based on the record, range from:

- OAG's disallowance recommendation of at least $321 million[36] for a $58 million revenue requirement reduction on a Total Company basis ($42.9 to $38.4 million on a Minnesota Jurisdictional basis) beginning in 2015;[37]
- No-return on the overruns for a $25.796 million revenue requirement reduction (Minnesota Jurisdictional basis) beginning in 2015;[38]
- Earning only a weighted short-term and long-term debt return on the cost overruns for a $20.507 million reduction (Minnesota Jurisdictional basis) for 2015;[39] and
- Department's preferred break-even remedy of disallowing only those costs that

[35] *See e.g., id.;* DOC Ex. 419 (Crisp Opening Statement); DOC Ex. 436 (Campbell Opening Statement).
[36] OAG Ex. 204 at 24 (Lindell Surrebuttal).
[37] DOC Ex. 315 at 37 (Campbell Surrebuttal) (citing OAG Ex. 200 at 29-30 (Lindell Rebuttal)). The Department noted that the revenue requirement for the OAG adjustment was a rough calculation and this revenue requirement was a Total Company amount and not the Minnesota Jurisdictional amount. Taking the $58 million times the 73.9969 (see upper right concern of the last page of NAC-S-4) results in a Minnesota Jurisdictional amount of $42.9 million, which is close to the $38.4 million noted on page 28 of Mr. Alders' Surrebuttal Testimony.
[38] DOC Ex. 436 at 4 (Campbell Opening Statement); DOC Ex. 315 at 37 and NAC-S-4 (Campbell Surrebuttal).
[39] DOC Ex. 315, *id.* at 37-38.

would render the Monticello plant not to be cost effective on a present basis[40] for a $10.237 million revenue reduction (Minnesota Jurisdictional basis) beginning in 2015.

The Department's preferred recommended disallowance is the only disallowance option that is based on the Commission's decision in the 2008 CN proceeding as to whether or not to grant a certificate of need for the EPU. This analysis indicates that Xcel provided inadequate information to the Commission of the expected costs of the project, based on what Xcel knew or should have known at that time. Had Xcel provided adequate information that they knew or should have known at that time, the record in the 2008 CN proceeding for the EPU would have shown that there were more cost-effective options than the EPU to provide capacity and energy needs to Xcel's ratepayers.

The analysis in Mr. Shaw's testimony is based on the same kind of Strategist analysis used in certificate of need proceedings, assuming costs of natural gas in 2008, which were much higher than current costs, costs of complying with carbon dioxide regulations, 2008 capital costs, etc. Because this analysis focused on the Commission's decision in the 2008 CN regarding the EPU, it was necessary for this analysis to be based only on EPU costs. Thus, it used Dr. Jacob's determination of a reasonable cost split between those costs reasonably attributable to EPU-related work and costs not attributable to the EPU. Dr. Jacobs notes that this split understates the costs due to the EPU in that he did not include any costs that appear to be reasonably attributable to both the EPU and LCM projects; those costs were allocated to the LCM.[41]

Mr. Crisp testified that, given the minimal level of design work that Xcel had completed

[40] DOC Ex. 315 at 31-32 (Campbell Surrebuttal). While not recommending a higher or lower disallowance, the Department identified additional disallowance options for the Commission to consider. *Id.* at 37-39 (Campbell Surrebuttal).
[41] DOC Ex. 421 at 2 (Jacobs Opening Statement).

when the Company filed its 2008 CN petition, industry standards at that time indicated that Xcel should have used contingencies around its cost estimates of at least 100%, which would have resulted in reasonable cost estimates for the EPU, especially given how little due diligence Xcel had performed on the EPU project for ratepayers at the time they requested a CN from the Commission.[42] Given those more reasonably developed costs, the Department's Strategist analysis provides the record with a break-even cost point over which the EPU would not have been cost-effective in the 2008 EPU CN proceeding.[43] That amount is 73% of total EPU and LCM costs or $485,390,000.[44] The Department would not have recommended approval of the EPU in the 2008 CN proceeding since there would have been more cost-effective options to meet ratepayers' needs, even with the higher costs of natural gas in 2008 and even considering the costs of complying with CO_2 regulations.[45,46] As Mr. Crisp testified, "if the estimated project cost plus contingencies does not produce a Benefit / Cost ratio greater than 1.0 then the project is not economically justified."[47]

Department witness Ms. Campbell presented the Department's overall conclusion that Xcel failed to demonstrate the prudency of all the cost overrun amounts it seeks from ratepayers.[48] The Department discussed several options for the Commission to consider regarding a disallowance of costs, ultimately recommending a $71.42 million reduction to recovery of the capital costs of the Monticello EPU resulting in a $10.237 million revenue requirement downward adjustment for

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[42] Tr. Vol. 3 at 73 (Crisp) (100% to 150%; 100% "was every bit appropriate.")DOC Ex. 303 at 24 (Crisp Surrebuttal) (50% to 100% or more, based on Class 5 AACE cost estimating practice).
[43] DOC Ex. 309 at 30-32 (Shaw Direct).
[44] *Id.* at 32 (Table 20).
[45] DOC Ex. 309 at 32 (Shaw Direct).
[46] DOC Ex. 435 at 1-2 (Shaw Opening Statement). Mr. Shaw also testified that the Commission ***did not*** order Xcel in 2006 (for the 2004 resource plan) to pursue an EPU, that the 2008 CN modeling used assumptions in Xcel's 2007 resource plan, not the 2004 resource plan, and that the 2008 CN modeling focused entirely on the incremental value of the EPU, and did not model the LCM and EPU together. DOC Ex. 311 at 15-17 (Shaw Surrebuttal).
[47] DOC Ex. 302 at 21 (Crisp Surrebuttal).
[48] DOC Ex. 436 at 1 (Campbell Opening Statement).

2015 on a Minnesota jurisdictional basis, and ongoing adjustment for the life of the plant stepped down for accumulated depreciation.[49] Ms. Campbell acknowledged that in the past the Commission has employed various disallowance methods[50] with a common practice being to allow no return on costs that exceed certificate of need-approved costs.[51] Although the record would support higher disallowance, at this time the Department continues to recommend its preferred alternative to disallow a level of cost overruns that render the plant not to be cost-effective.[52]

VI. BURDEN OF PROOF: XCEL BEARS THE BURDEN OF PROOF TO SHOW THAT THE PROPOSED RATE CHANGES ARE JUST AND REASONABLE

As noted above, Xcel bears the burden of showing that the costs it seeks to recover from ratepayers in rates are reasonable.[53] This burden is affirmative. In this case, it requires Xcel to show the prudency and reasonableness of the costs it seeks to recover. That is, a record that fails to show affirmatively that costs were prudently and reasonably incurred falls short of satisfying Xcel's burden proof. Minnesota law requires that every rate established by the Commission must be just and reasonable, and that any doubt is to be resolved in favor of the consumer:[54]

> Every rate made, demanded or received by a public utility … shall be just and reasonable. … Any doubt as to reasonableness should be resolved in favor of the consumer.

The Minnesota Supreme Court found that the burden is on the utility to prove the facts required to sustain its burden by a fair preponderance of the evidence. The Court in *In re Northern States Power Co*. (*"In re NSP"*),[55] described the Commission's role in determining just and

[49] DOC Ex. 315 at 38-39 (Campbell Surrebuttal).
[50] DOC Ex. 313 at 22-27 (Campbell Direct); DOC Ex. 315 at 37-38 (Campbell Surrebuttal).
[51] DOC Ex. 313 at 27 (Campbell Direct).
[52] DOC 315 at 39 (Campbell Surrebuttal).
[53] Minn. Stat. § 216B.16, subd. 4 (2014).
[54] Minn. Stat. § 216B.03 (2014).
[55] 416 N.W.2d 719, 722 (Minn. 1987).

reasonable rates in a rate proceeding, including its role in evaluating whether the utility has met its burden to show the reasonableness of recovery particular costs from ratepayers:[56]

> [I]n the exercise of the statutorily imposed duty to determine whether the inclusion of the item generating the claimed cost is appropriate, or whether the ratepayers or the shareholders should sustain the burden generated by the claimed cost, the MPUC acts in both a quasi-judicial and a partially legislative capacity. To state it differently, in evaluating the case, the accent is more on the inferences and conclusions to be drawn from the basic facts (i.e., the amount of the claimed costs) rather than on the reliability of the facts themselves. Thus, *by merely showing that it has incurred, or may hypothetically incur, expenses, the utility does not necessarily meet its burden of demonstrating it is just and reasonable that the ratepayers bear the costs of those expenses.*

Moreover, the utility—not public agencies, other parties, or the Commission—bears the burden to demonstrate that the utility's proposed rate increase is just and reasonable.[57] In light of Xcel's request that it be allowed to recover in rates all of its cost overruns in this matter, the above decision is particularly significant. *In re NSP* included the Court's holding that a utility does not enjoy at any point in a rate proceeding, a rebuttable presumption of reasonableness that other parties must overcome.[58] This case continues to be controlling Minnesota law for the Commission's ratemaking decisions under Minn. Stat. § 216B.16. Further, Minnesota law provides that any doubt as to reasonableness must be resolved in favor of the ratepayer.[59]

For these reasons, Minnesota law requires Xcel to demonstrate the prudence and reasonableness of the entire amount of the $402 million in cost overruns it seeks to recover from ratepayers. The Company failed to do so. The fact that the Department has not recommended complete disallowance of the $402 million, even though Xcel did not show the reasonableness of the entire $402 million, does not mean that at any point in this proceeding the burden of proof shifted to the Department to demonstrate imprudence or unreasonableness. It did not.

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[56] *Id.* at 722-23 (emphasis added).
[57] Minn. Stat. § 216B.16, subd. 4 (2014).
[58] 416 N.W.2d, *supra,* at 722, 725-726.
[59] Minn. Stat. § 216B.03 (2014).

VII. HISTORY OF THE MONTICELLO LCM AND EPU PROJECTS

After 1994 and prior to 2003, Minnesota law made it very difficult to extend a nuclear power plant's operating license.[60] Xcel had a policy of deferring capital projects, expecting that the plant would be shut down and decommissioned in 2010.[61] Monticello's net plant in rate base had depreciated to $153 million by 2007, thus limiting the amount that could be earned on a potentially risky nuclear plant.[62] In 2003, Minnesota law changed, making it possible to obtain permission to extend the operating license for 20 years.[63] Xcel then set out to obtain permission from the Commission and the NRC to extend the operating license to operate Monticello for another 20 years. Xcel obtained this permission from both regulatory bodies in 2006.

In 2004 Xcel began to investigate the possibility of also accomplishing an EPU that would increase power output from the plant to 120 percent of the original 1971 level, from 564 MW to 671 MW.[64] Monticello had uprated its capacity prior to the EPU at issue in this proceeding. In 1998, the NRC granted Monticello had been uprated by 6.3 percent, from 564 MW to 600 MW (about 585 MWe).[65] Mr. Crisp explained how the first uprate project was accomplished to use all available margins:[66]

> The original design of Monticello, as with any nuclear, coal or natural gas plant, included additional operating margins with each component. It is normal to include this additional margin in order to absorb some efficiency losses as equipment ages over time. During the planning and design for the 1998 uprate project Xcel used these margins in the existing equipment to uprate the electric output while making all necessary modifications to meet NRC requirements for operational safety at the new power output level.

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[60] DOC Ex. 305 at 3 (Jacobs Public Direct).
[61] *Id.*
[62] *Id.*
[63] *Id.;* DOC Ex. 402 (Minn. Stat. 116C.71).
[64] DOC Ex. 305 at 4 (Jacobs Public Direct).
[65] *Id.; See also* DOC Ex. 300 at 4 (Crisp Public Direct).
[66] DOC Ex. 300 at 4 (Crisp Public Direct).

The first uprate project produced a new design basis for the Monticello plant, with few changes to existing equipment, as explained by Mr. Crisp:[67]

> Xcel and General Electric (GE), the original plant designer, had to evaluate exactly what the differential between the existing plant systems and the proposed higher power output would require from those same plant systems while also making certain that NRC requirements were met. This analysis and the subsequent uprate produced a new "design basis" for the plant. The Company, in its application for certificate of need [in 2008] discussed the original uprate project in 1998. The Company articulated that:
>
> > This first power uprate at Monticello was completed by making use of available excess equipment, system and component capabilities at the site. The site was able to increase generation by 35 MWe to a nominal net electrical output to the grid of 585 MWe with very few changes to installed plant equipment.

In 2005, Xcel filed an application for a CN, MPUC Docket No. E002/CN-05-123, for an Independent Spent Fuel Storage Installation ("ISFSI") in which Xcel also identified the expected costs of the LCM as a wholly stand-alone life extension project.[68] The LCM also required modification of its license from the NRC for a 20-year period, from 2010 to 2030.[69] In the 2005 CN proceeding, the Company provided the Commission with the necessary documentation and analysis, including the economic cost justification supporting both the ISFSI and LCM for the life extension or continuation of operation for a 20-year period.[70] The Commission approved the CN for the ISFSI and approved Xcel's decision to continue the operation of Monticello in compliance with its NRC-granted life extension license modification.[71]

In 2008, the Company returned to the Commission with an Application for a CN for the EPU to uprate the Monticello unit by increasing the generation power from 600 Mw to 671 MW,

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[67] DOC Ex. 300 at 5 (Crisp Public Direct (citing February 14, 2008 Petition to the Minnesota Public Utilities Commission for CN, Docket No. E002/CN-08-185 at 3-14).
[68] DOC Ex. 419 at 2 (Crisp Opening Statement).
[69] *See id.*
[70] DOC Ex. 419 at 2 (Crisp Opening Statement).
[71] *Id.*

MPUC Docket No. E002/CN-08-185.[72] Again, this 2008 CN application was a wholly stand-alone project that required a separate NRC license modification for the increased power.[73] The EPU CN application did not reference the LCM or consider the LCM within the context of its economic justification other than the fact that the approved life extension was a necessary formality for the uprate to be useful.[74] Nonetheless, Xcel claims without support that the Commission, in January of 2009, "approved the ***LCM/EPU*** Program in January 2009" (emphasis added).[75] The Company, despite approval of each separate and distinguishable CN by this Commission, chose to combine the two projects, both financially as to tracking of costs and technically.[76] The record does not indicate that at the time Xcel combined its LCM and EPU efforts, the Company informed the Commission of the combination or of the Company's decision not to separately track EPU-related costs. The Company's decision to join the two projects created what appears to have been an untenable situation to effectively manage costs, schedules and deployment, and to identify and address areas of spiraling cost overruns.[77] Mr. Crisp agreed with Department witness Ms. Campbell "that this decision to manage the LCM and EPU projects as a single project was as problematic then as it would be today."[78]

The 2008 EPU CN proposed to add another 13 percent of the original 564 MW level, to approximately 671 MW.[79]

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[72] *Id.*
[73] *Id.*
[74] *Id.* In contrast, Xcel claims that the Company decided in 2004 to combine its LCM and EPU efforts, DOC Ex. 1 at
[75] Xcel Ex. 3 at 3 (O'Connor Public Direct) (emphasis added). Throughout its testimony in this matter, Xcel witnesses refer to the 2008 EPU CN as the LCM/EPU project.
[76] DOC Ex. 419 at 2 (Crisp Opening Statement).
[77] DOC Ex. 419 at 2 (Crisp Opening Statement).
[78] *Id.*
[79] DOC Ex. 305 at 4(Jacobs Public Direct); *See also,* DOC Ex. 300 at 4 (Crisp Direct).

Dr. Jacob's provided a brief history of EPU and LCM project cost estimates and a list of significant decision points, as follows:[80]

- 2004 September. The Nuclear Management Company ("NMC") and Xcel produced an NMC feasibility study of a range of costs, from $60 million low to $91.5 million high to complete the EPU project based on work by General Electric ("GE").

- 2006 May. NMC had GE provide an Initial Scoping Assessment with an estimate of $123.2 million.

- 2006 August. Xcel's Board of Directors approved an estimate of $274 million for combined LCM/EPU project.

- 2006 Fall. Xcel signed contracts with GE for engineering, licensing and procurement for combined LCM/EPU project.

- 2007 December. Xcel selected Day Zimmerman/Sargent & Lundy **[TRADE SECRET DATA REMOVED]** to complete LCM/EPU project.

- 2008 February. Certificate of Need Application cost estimate, $316 million (adds steam dryer for $29 million).

- 2009 June. As part of the then-upcoming year's budget, the estimated cost was increased to $361 million.

- 2010 June. The estimated cost was increased to $399 million (adds 13.8 kV project).

- 2011 mid-year. Xcel hired Bechtel to complete the project.

- 2011 June. The estimated cost was increased to $499 million (added $100 million for engineering, installation and some other costs).

- 2011 December. The estimated cost was increased to $587 million (increased 13.8kV and other installation costs).

- 2013 February. The estimated cost was increased to $640 million.

- 2013 June. The estimated cost was increased to $655 million.

[80] DOC Ex. 305 at 5-6 (Jacobs Public Direct).

- 2013 August. The cost was increased to the current estimate of $664.9 million.

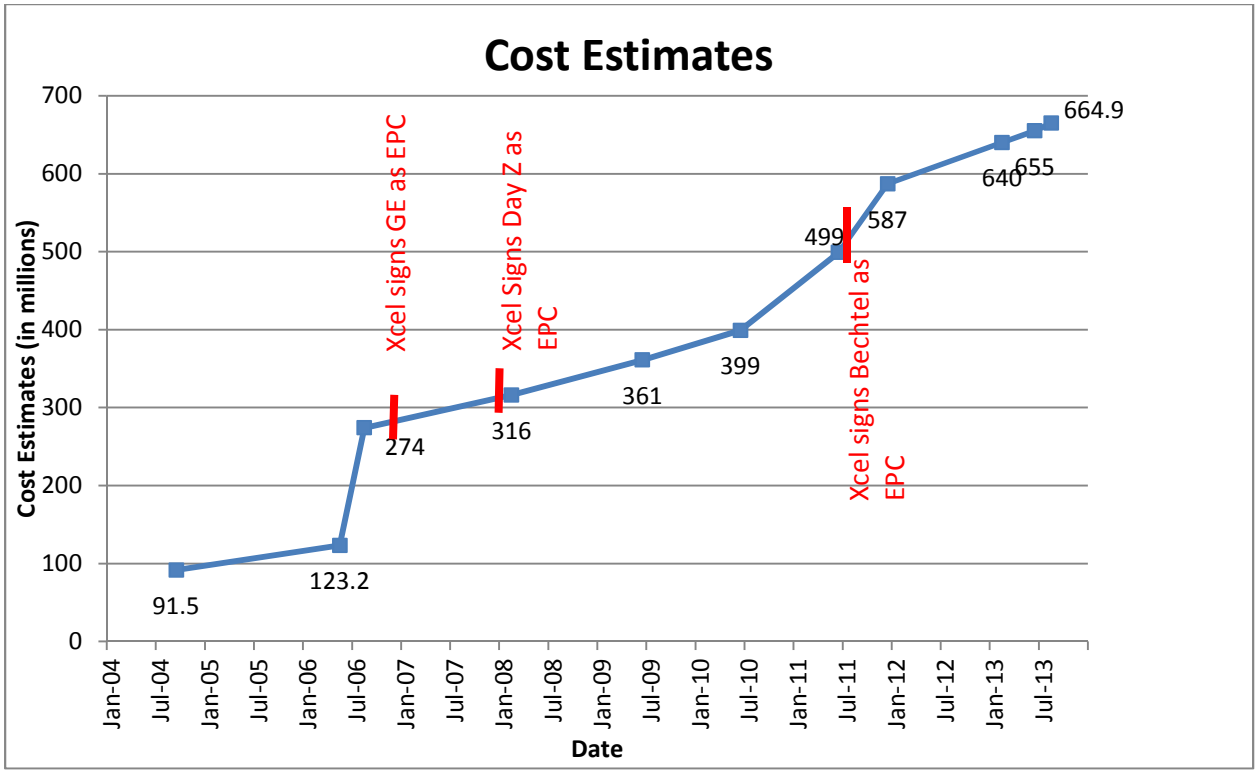
- 2013 December. NRC EPU license received.

- 2014 Spring. Data collection problems delay power ascension.

- 2014 December. Xcel's forecast of when the Company will achieve full EPU power of 671MWe.

Below is Dr. Jacob's graph of Xcel's LCM/EPU cost estimates over the nine years of the project.[81] The first two estimates were for a more limited scope. Xcel's estimated $664.9 cost in August 2013 does not include the significant cost of over a year of startup testing, increase in finance costs, or loss of use of the EPU during that time.[82]

Increase in Monticello LCM/EPU Cost Estimates over Time



[81] DOC Ex. 305 at 6-7 (Jacob's Public Direct).
[82] *Id.*

Department witness Nancy Campbell testified at the evidentiary hearing that Xcel's estimated final costs of its LCM/EPU project, as of March 31, 2014, was $748 million on a total company basis that includes $635.3 million for construction work in progress ("CWIP"), $28 million for retirement work in progress ("RWIP") and $84.8 million for allowance for funds used during construction ("AFUDC"). [83]

VIII. CONSULTING ENGINEER MR. MARK W. CRISP'S FINDINGS

A. OVERVIEW: THE RECORD INCLUDES SIGNIFICANT DOUBT AS TO THE REASONABLENESS OF XCEL'S LCM/EPU PROJECT MANAGEMENT AND RESULTING COSTS

Based on his review of Xcel's planning, management and execution of the LCM/EPU project, based on what Xcel knew at the time, Mr. Mark W. Crisp testified facts that show significant doubt as to the reasonableness of Xcel's LCM/EPU project management and the reasonableness of the likely higher project costs – costs higher than they otherwise would be if Xcel had acted reasonably.[84] Mr. Crisp stated, as follows:[85]

> My Direct Testimony presents my findings from my review of decisions made by Xcel during its planning, management and execution of the LCM and the EPU project's schedule and budget - based on what Xcel knew or should have known at the time - that negatively impacted the cost of the projects. I identified from my review ***several issues of significant concern that call into question the reasonableness and effectiveness of the project management -based on what Xcel knew or should have known at the time -*** including pursuit of a "fast-track" approach, the lack of separate cost tracking for the LCM and the EPU projects, lack of effective cost controls, lack of reasonable planning and design scoping, and the lack of reasonable use of contingencies in the budgeting process and economic justification for the EPU. These failings likely resulted in increased costs of the LCM and EPU projects. My findings are supported by a summary document, "EPU Cost History" that I provided as Attachment MWC-3 to my Direct Testimony.

[83] Tr. Vol. 4 at 119 (Campbell).
[84] Tr. Vol. 3 at 60-61, 66 (Crisp); DOC Ex. 419 at 1 (Crisp Opening Statement).
[85] *Id.* (emphasis added).

Mr. Crisp testified to the effects of Company decisions at points in time prior to and during the EPU CN process and during the installment phases of the project and the fact that resulting costs likely are higher, but did not quantify the extent to which costs likely are higher due to poor Company management. Tr. Vol. 3 at 23 (Crisp). He and Ms. Campbell noted that Xcel's poor record-keeping and the effects of Xcel's poor project management prevented such an analysis.[86] Mr. Crisp was clear, however, that there likely would have been some cost savings if Xcel had followed reasonable management steps. *Id.*

B. THE IMPORTANCE OF COST-EFFECTIVE PROJECT MANAGEMENT DECISIONS AND EXECUTION

The purpose of Mr. Crisp's testimony was to provide a technical review of Xcel's Project Management decisions and project management execution and how they impacted costs throughout the project timeline from the point the Application for a CN was made to the Commission throughout the execution of the LCM and EPU projects.[87] He did not testify regarding the overall prudence of Xcel's LCM/EPU project, but identified decisions by Xcel that raise substantial questions about the reasonableness of Xcel's management and execution of its LCM/EPU project that added costs and delay.[88] Mr. Crisp described the importance of project management, as follows:[89]

> Project Management, as a discipline, is an all-encompassing activity designed to ensure that any project, not just a project at a nuclear generation facility, is developed from the conceptual basis to the deployment basis in a cost effective, risk managed, and schedule-conscious manner. Reasonable Project Management raises the likelihood that the final product is deployed as it was initially scoped and approved.

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[86] DOC Ex. 315 at 11-17, 26 (Campbell Surrebuttal) and DOC Ex. 302 at 11-14 (Crisp Surrebuttal).
[87] DOC Ex. 300 at 2 (Crisp Public Direct).
[88] DOC Ex. 302 at 2 (Crisp Surrebuttal).
[89] DOC Ex. 419 at 1 (Crisp Opening Statement).

Key to cost-effect project management is extensive, highly detailed and accurate pre-project definition or scope.[90] Failure to establish the scope at the outset all but guarantees schedule delays and cost overruns.[91] Another critical component of cost-effective project management is pre-planning and design, as Mr. Crisp testified:[92]

> [B]efore any design is initiated, a fully integrated team representing operations and designers must be assembled for the purpose of ***determining the existing condition of plant equipment,*** whether the existing equipment has adequate capacity to be used in the future plans or whether the existing equipment does not have the remaining life or capacity to work within the new scheme.
>
> At this point in the scoping process the goals of the project must be specifically identified in order for the design team to begin the process of establishing the requirements for new and replacement equipment.
>
> In a parallel effort [i.e., Xcel's decision to combine the LCM repair and maintenance work with the EPU work], the design team along with the plant operational team must be physically evaluating the logistics required to dismantle any retired existing equipment and remove those components from their specific installation sites within the plant while determining the physical size and installation requirements of the new equipment. ***Failing to follow these steps in the planning and design process almost guarantees schedule delays and cost overruns*** during the actual process of constructing the project.

Unfortunately, Xcel's poor project management was responsible for costs being greater than they would have been if reasonable project management, based on what Xcel knew or should have known at the time, would have occurred.[93]

C. XCEL'S PROJECT MANAGEMENT FOR THE MONTICELLO LCM/EPU PROJECT WAS FLAWED

Mr. Crisp identified some decisions made by Xcel that, based on what the Company knew or should have known at the time, during the planning, management and execution of the LCM and the EPU project's schedule and budget, negatively impacted the cost of the LCM/EPU

[90] DOC Ex. 300 at 6 (Crisp Public Direct).
[91] *Id.* at 7.
[92] *Id.* at 7-8 (emphasis added).
[93] DOC Ex. 419 at 1-4 (Crisp Opening Statement). *See also* DOC Ex. 302 at 28-29, 30-31 (Surrebuttal).

Project.[94] He testified "without a doubt" that Xcel's inability to properly manage the scoping, the general contractor (GE) and its subcontractors, staffing issues "and the various complexity issues which should have been identified prior to any engineering design caused the project to experience increased costs."[95]

In response to the Company's identification of three main causes for the cost overruns (difficulties with the initial scope, the complexity of modification installation of equipment, and evolving NRC licensure requirements), Mr. Crisp addressed these three areas and other areas of concern and found that Xcel's poor management and execution were not reasonable at the time, and likely resulted in costs being substantially higher than they reasonably should have been.[96]

1. Program design and scope changes were not fully understood or thought out

a. Xcel unreasonably failed to maintain as-built documentation

Xcel's project management for the Monticello LCM/EPU project should have begun with the Company's 1998 uprate, since there was no additional margin available to increase capacity of the plant. As Mr. Crisp explained, Xcel would have known at the start of its LCM/EPU project the details of the Monticello plant's "as-built" condition following the first uprate:[97]

> Xcel and GE, now GE Hitachi, would have produced an "as-built" summary of the design modifications in the first uprate in order to meet NRC requirements and to receive NRC approval. This as-built condition should have established the baseline, or original starting point, for the conceptual design, implementation schedule, and cost estimate for this power uprate project. The "as-built" condition would have or should have also identified any excess component capability or expansion capability of the existing plant components. The completion of the original uprate program in 1998 was able to take advantage of all available operating margins of electrical and mechanical components of the plant. As a result, the latest life cycle management and extended power uprate programs had to start from essentially a fresh start to increase capacity further.

[94] DOC Ex. 419 at 2 (Crisp Opening Statement).
[95] DOC Ex. 300 at 49 (Crisp Public Direct); *see also* Tr. Vol. 3 at 63 (Crisp).
[96] *Id.* at 1-4; *see* DOC Ex. 302 at 28-29, 30-31 (Crisp Surrebuttal).
[97] DOC Ex. 300 at 5 (Crisp Public Direct).

Xcel did not update its as-built drawings with respect to its 1998 uprate, and stated that doing so was not necessary or reasonable.[98] Mr. Crisp disagreed, and made clear that maintaining updated as-built drawings, summaries, conditions, etc., was the industry standard in 2008 and it is the industry standard today.[99] Mr. Crisp provided the importance of maintaining up-to-date as-built documentation, as follows:[100]

> ***As-built drawings, summaries, conditions, procedures and policies are the life blood of an operating power plant***, whether nuclear, coal, solar, etc., particularly plants that have been in operation for a number of years such as Monticello. Over the years in the due course of normal operation and maintenance and capital initiatives, "things" change; new cabling, wiring, updated instrument and controls, old equipment is removed and new equipment is added. If "as-builts" are not maintain in an updated conditions, everyone in the Plant runs the risk of making a serious mistake while carrying out normal everyday operational functions.
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> * * *
>
> [T]he updated as-built condition of a plant is the life blood of the plant. As far as my personal experience with all types of electric generating plants, the storage and maintenance of as-built drawings is a critical process with management and one that carries a very high priority. ***It is and has been widely understood that the as-built drawings are the first and primary source of reference during maintenance and capital project definition. I cannot over emphasize the need for properly updated as-built drawings in execution of safety or non-safety related projects.***

b. Lack of reasonable scoping likely resulted in increased costs

The Company's lack of detailed scoping of the LCM/EPU project as a whole, and as to individual modifications specifically, was not reasonable and likely resulted in costs being higher than they otherwise would have been with reasonable, detailed scoping of the project.[101] Mr. Crisp summarized his findings that Xcel's lack of planning violated industry standards at the time, just as it would today, as follows:[102]

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[98] DOC Ex. 303 at 15 (Crisp Surrebuttal).
[99] *Id.*
[100] *Id.* at 25-26 (emphasis added).
[101] DOC Ex. 419 at 1 and 3 (Crisp Opening Statement).
[102] *Id.* at 3.

> Second, the LCM and the EPU, individually, required thorough planning before the first pipe was removed or the first bucket of concrete was poured. ***That was a requirement prior to 2008 and continues to be an industry standard. Unfortunately thorough planning did not occur, and my testimony describes how actions followed from the lack of planning that likely resulted in costs being higher than they otherwise would have been.*** For a major project like the EPU, in particular, to be reasonably successful within the context of project management requires not only that the design of the plant meets functional needs but also that the schedule for accomplishing the project has realistic time constraints with realistic budgets that are reasonably likely to be met. However, difficulties regarding the initial scoping of the projects presented considerable upward pressure on the budget. Xcel's failure to properly scope the project suggests to me that the Company did not understand the real scope of the project, which resulted in significant cost increases over cost estimates from the 2008 EPU CN. ***Failure to properly scope, failure to include installation costs for major equipment, and failure to include that equipment in the scope drove up the costs over the initial EPU CN estimate, likely resulting in costs being higher than costs otherwise would have been.***

Mr. Crisp described in detail the kinds of issues that need[103] to be fully considered at the beginning of a major project such as the LCM/EPU: establishing the scope requires considerable coordination among employees, management, and designers (present and current); the design team, particularly in the parallel effort that Xcel chose, requires physical evaluation of the "logistics" for dismantling/removing retired existing, and determining the size and installation requirements for the new equipment. The goal of reasonable management is to "avoid changes in program design and scope by careful examination of the project" in detail, including consideration of the complexity of modification installation, and in advance of the work.[104]

Xcel's lack of reasonable, detailed initial scoping as well as its lack of initial detailed design[105] resulted in project delays and, accordingly, costs that were higher than they reasonably

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[103] DOC Ex. 300 at 7-8 (Crisp Public Direct).
[104] *Id.* at 9.
[105] Xcel's EPU CN cost estimates, according to Mr. O'Connor, were based on a "high level conceptual design," Xcel Ex. 3 at 31-32 (O'Connor Direct), rather than having prepared rigorous and detailed plans. However, Xcel didn't even know the size of the new equipment, or the likely resulting costs that size might cause, at the time the Company filed its 2008 CN with the Commission. DOC Ex. 300 at 11 (Crisp Public Direct).

should have been. Delays alone cause increased costs,[106] as it did in this matter, and as did Xcel's lack of pre-planning to identify the expected costs of the upgrade to the distribution system at an early stage or to know early on the size of new equipment to be installed relative to the small footprint of the Monticello plant.[107]

Mr. Crisp's concerns and conclusions are supported by the *EPU Cost History*[108] that was prepared following the 2011 RFO by Mr. Steve Hammer, an engineer and member of the Monticello Site EPU Project team, as an internal status document at the request of then-Chief Nuclear Officer Mr. Dennis Koehl.[109] Mr. Koehl requested the document to provide "input on the Project structure and opinions on the best way to proceed forward to complete the installation."[110] The document notes the inadequate initial scope, schedule and resulting cost increases, as follows:[111]

> **PROJECT RISK RELATED TO COST**
>
> **1. INITIAL SCOPE AND SCHEDULE WERE INADEQUATE**
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> a. The Board approval of a $273M budget in August 2006 was $90M below the Project Team recommendation. The 2006 Cost Scoping Assessment was based on a limited review of possible modifications that addressed identified pinch points; the identification of pinch points was successful since few additional issues were identified. The cost estimate had high uncertainty since little engineering was done on the design concepts suggested. ***The NSP EPU project team position was that each project should have a more detailed review to define final scope and cost. Design and installation would be handled by bids for each modification. This would have resulted in each modification obtaining more detailed estimates as it progressed through design and installation phases to provide final***

[106] Tr. Vol. 3 at 36 (Crisp).
[107] *See* DOC Ex. 300 at 11 (Crisp Public Direct).
[108] DOC Ex. 300 at MWC-3 (Crisp Public Direct) (*EPU Cost History)*; DOC Ex. 302 at MWC-3 (Crisp Trade Secret Attachment) (*EPU Cost History).*
[109] DOC Ex. 300 at 24 (Crisp Public Direct).
[110] *Id.*
[111] DOC Ex. 300 at MWC-3 at 3 of 5 (Crisp Public Direct) (*EPU Cost History)* (underlining in original; emphasis added).

cost numbers. The Project Team recommended a budget of $362.5 M that reflected uncertainty in the Scoping Assessment and also the fact that GE work did not cover all required scope to allow implementation.

b. ***The EPU project team recommended installation in the 2011 and 2013 RFOs.*** This was based on the amount of work required and the expected impact on site resources and capabilities. ***NSP Board approval was based on a 2011 implementation date. This made all work activities "fast track" with little ability to meet outage milestones.*** The project never caught up to work load. Ideally the project needed to be working on two outages at the same time to be able to complete required design and implementation planning work. This was not successful. Work on the subsequent outage always lagged until completion of the current outage with additional schedule impact after the outage for "rest and recovery". ***There were insufficient experienced, qualified personnel to manage workload of doing two outages at once.*** This resulted in outage milestones being challenged.

i. ***Engineering and construction costs were poorly estimated and resulted in significant overruns and delays.*** The inability to complete work in a timely fashion contributed to this issue.

Additionally, the *EPU Cost History* identifies one source of the LCM/EPU project's inadequate scope to be the use **[TRADE SECRET DATA REMOVED]** , as follows:[112]

2. SCOPE CONTROL

a. The use of **[TRADE SECRET DATA REMOVED]** ***defeated the ability to obtain detailed bids for each modification and locked in preliminary modification scope*** suggested in Cost Scoping Study [of 2006]. The work prior to GE contract issuance ***did not include any detailed engineering*** and had very limited site input. Requests during the Cost Scoping Study for site involvement were unsuccessful since [less than] 6 hours of site input was provided. This resulted in a project scope defined by firm price contract that had a defined scope that had not been agreed to by the site. Use of the estimate, design and installation phases for design approval typical of other

[112] DOC Ex. 300 at MWC-3 at 3 of 5 (Crisp Public Direct) (*EPU Cost History)*; DOC Ex. 302 at MWC-3 at 3 of 5 (Crisp Trade Secret Attachment) (*EPU Cost History)*.

design/project work would have provided an opportunity for site input.

In addition to the increased costs due to lack of an adequate initial scope, discussion below identifies Xcel's fast tracking of the project, its decision not to track costs separately for the LCM and EPU projects and resulting delays and higher costs for modifications for equipment installations as additional causes of costs being higher than they reasonably should have been.

d. Failure to separately track costs of the LCM and EPU efforts, and the manner that Xcel treated the projects as one, was unreasonable

Xcel's failure to separately track costs of the LCM and EPU efforts, and instead the manner in which it chose to treat the two projects as one, was unreasonable at the time and likely resulted in costs being higher than they otherwise should have been.[113] Mr. Crisp summarized the unreasonableness of Xcel's actions in this regard, as follows:[114]

> ***An outgrowth of combining the two projects into one massive project without reasonable pre-planning and without first creating and maintaining proper cost controls is that it appears to have contributed to the significant increases in project costs over what costs might otherwise have been.*** For example, two issues developed that with proper project management should have been avoided, which likely would have minimized increases in costs. First, the original cost justifications (estimates) for the two separate CN's were relied upon by the Commission as a primary basis for approval of the CN's. However, later combining the two projects into one project meant that as challenges and project management issues evolved the cost increases associated with the EPU, for instance, were embedded in the one budget. ***The Company appears not to have been able to identify the degree to which EPU costs were escalating since it did not track the costs separately by LCM and EPU.***
>
> ***Had Xcel tracked the costs at the individual project level, the cost overruns would have been easier to track and subsequently would have been more easily identifiable when there were likely to be significant cost overruns.*** Having each project managed within its individual scope, even while the projects were coordinated, would have presented the Company with a much easier task of

[113] DOC Ex. 419 at 2-3 (Crisp Opening Statement); DOC Ex. 300 at 5 of 5 (Crisp Public Direct) (*EPU Cost History)*; DOC Ex. 302 at MWC-3 at 5 of 5 (Crisp Trade Secret Attachment) (*EPU Cost History)*.

[114] DOC Ex. 419 at 2-3 (Crisp Opening Statement) (emphasis added).

> tracking costs and schedules. Separate and independent cost tracking would have provided the Company with specific knowledge not only as to when the cost increases were occurring, but also where the cost increases were occurring, and to what degree each project was increasing. Tracking the costs and responses to the costs also would have provided for clear accounting of the costs along with a decision tree for how the Company addressed each cost increase. Given that the Company insists that its decisions were reasonable, tracking the costs separately for each project would have increased the transparency of those decisions for later Commission review.

Mr. Crisp also noted Xcel's poor performance in using the parallel approach without knowing, for example, through detailed scoping prior to filing the 2008 EPU CN petition (with cost estimates for the EPU), the size of the new equipment.[115]

The *EPU Cost History* confirms Mr. Crisp's conclusions. The document states in relevant part, as follows:[116]

> **4. INSUFFICIENT PROJECT CONTROLS**
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> * * *
>
> c. Projects did not have separate cost tracking with many projects rolling up to a single charge number. ***Not having a budget by project resulted in a challenge to project managers to be able to control and forecast cost.*** This also allowed changes in scope to be "covered' by deleting selected projects. ***The low level of cost tracking that resulted from having one bucket for many projects was insufficient to allow early identification of cost issues. Management attention was not applied to address these issues.***

Further, Mr. Crisp disagreed with Mr. Sparby's characterization of Mr. Crisp's testimony regarding Xcel's decision to proceed in parallel with the LCM/EPU project as well as pursuing the program design, construction and license activities at the same time. Mr. Crisp clarified his concern not to be that Xcel chose to proceed with activities in parallel, but that Xcel did so without rigorous pre-planning and physical plant assessment in order to consider the existing plant conditions and dimensions available to dismantle existing equipment, and to understand the size of

[115] DOC Ex. 303 at 4-5 (Crisp Surrebuttal).
[116] DOC Ex. 300 at MWC-3 at 5 of 5 (Crisp Public Direct) (*EPU Cost History)* (emphasis added).

the new equipment and their installation requirements. Absent detailed planning and design, "almost guarantees schedule delays and cost overruns during the actual process of constructing the project."[117] Similarly, Mr. Crisp pointed out that Xcel did not manage the parallel path of the project reasonably:[118]

> My direct testimony [at 7-8 and 10-11] pointed out that Xcel's performance in the parallel path did not manage the project appropriately:
>
> > Given the focus on my testimony on the reasonableness of Xcel's management of the project, I note that the program design and scope changes would have been minimized with proper initial scoping of the project. That is the function of a well thought-out scoping process. It may not have corrected all of the issues with scoping but it certainly would have minimized the issues.
> >
> > For example, Xcel should have anticipated the upgrade to the distribution system at the plant early on in designing the system, rather than the ad-hoc approach Xcel used. Xcel also should have known the size specifications of the new equipment early in the process. Not having that basic information in the initial estimates indicates that Xcel wasn't thinking through the process adequately to ensure that the design and scope were reasonably worked out at that time.

Mr. Crisp noted two statements of Xcel witness Mr. Sieracki that confirm that Xcel's choice to use a parallel path in a fast-track manner without adequate pre-planning resulted in higher project costs, particularly since the Company did not select a traditional "design/bid/build" approach.[119]

e. Fast-tracking was not shown to be reasonable at the time, and likely resulted in costs being higher than they otherwise would have been.

Although Xcel claimed that the LCM/EPU project had to be expedited in order to meet legislative and Commission dictates,[120] Mr. Crisp concluded that the record does not support

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[117] DOC Ex. 302 at 3 (Crisp Surrebuttal).
[118] *Id.*
[119] DOC Ex. 302 at 4 (Crisp Surrebuttal) (citing Xcel Ex. 11 at 5-6, 10-11 (Sieracki Rebuttal)).
[120] *See, e.g.,* Xcel Ex. 12 at 21-22 (Sparby Rebuttal (stating that Xcel did not have ample time to pursue and implement the combined Monticello initiative). On cross-examination, Mr. Sparby testified that he meant that the Company had "sufficient" but "not . . . more time than needed" to complete the LCM/EPU project. Tr. Vol. 1 at 30 (Sparby).

Xcel's choice to use a fast track. He testified in response to being asked whether the Company has shown it was reasonable to put the EPU on a fast track at that time, as follows:[121]

> From my analysis I do not see that it was necessary to be fast tracked. The . . . this is a generality, this piece. Load curves for most every utility around the country has taken pretty much a nose dive since the 2008 economic downturn. Most all of the forecasts were incorrect because of that economic downturn. And so I don't see that there was a need to continue the thought process of fast tracking, once you got into the actual 2010-2011 time frame.

The term "fast track" refers to the project management effort requirement to engineer, procure, and construct a project in an abnormally short period of time.[122] In the LCM/EPU project at Monticello, the Board chose the completion date to be 2011 rather than select a 2013 date; this expedited schedule undoubtedly lead to delays and cost increases that could have been avoided, as Mr. Crisp described: [123]

> Unfortunately at the time this schedule was approved by the Xcel Board of Directors [2006], licensing had not begun, design was not started, little if any actual project definition had been accomplished and ***certainly the overall Project Management Team was not in a position to be responsible for such a project undertaking in this short of a timeframe.*** An expedited project is successful in meeting schedule, budget and constructability only if all components are completed ahead of the actual implementation.
>
> Projects such as Monticello with (as the Company indicates) a "small footprint" benefit from the time and effort to build a 3-dimensional model on the computer of the activities required to construct the design. Had Xcel not been so aggressive with schedules a 3-D design model would have been invaluable to point out conflicts and construction interferences. ***It is simply not wise to expedite a project without the benefit of proper project planning on the front end.***
>
> ***Undoubtedly, the expedited approach caused delays and budget increases that could have been avoided with proper preplanning, project management and proper design sequencing.*** Proper Project Management and management strategy could have actually supported the 2011 or 2013 refueling outage. Unfortunately, neither of these occurred satisfactorily.

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[121] Tr. Vol. 3 at 70 (Crisp).
[122] DOC Ex. 300 at 28 (Crisp Public Direct).
[123] *Id.* at 29 (emphasis added).

The *EPU Cost History* confirms Mr. Crisp's conclusions that fast tracking the LCM/EPU project without adequate pre-planning was unreasonable and lead to higher costs than otherwise would have been. The document states in relevant part, as follows:[124]

> **1. INITIAL SCOPE AND SCHEDULE WERE INADEQUATE**
>
> b. The EPU project team recommended installation in the 2011 and 2013 RFOs. This was based on the amount of work required and the expected impact on site resources and capabilities. ***NSP Board approval was based on a 2011 implementation date. This made all work activities "fast track" with little ability to meet outage milestones.*** . . . .
>
> * * *
>
> **3. LACK OF SITE OWNERSHOP**
>
> b. There was limited capability for the project team to obtain a scope change decision that balanced scope and cost. The project principle to enhance equipment margins became a reason to change scope. Reviews during Site Steering Committees and design review meetings often led to increased scope. In 2007 the modifications defined by contract were brought to the Site Steering Committee to insure site management team acceptability since there had been no site involvement in the Cost Scoping Assessment. The most significant scope changes from this review were decisions to essentially replace the full condensate demin system and a requirement to switch from a supplemental RFP to an upgrade to the capacity of the reactor feedwater pumps. FRP replacement eventually led to 13.8 kv upgrade. These large cost changes did not appear to be approved by management in any detail. ***Part of the reason for this was that schedule restraints forced parallel work and required significant cost commitments to be made to achieve goals.***
>
> * * *
>
> **4. INSUFFICIENT PROJECT CONTROLS**
>
> a. ***Changes to scope with an appropriate consideration of cost were challenged by "fast track" schedule.*** The modification to upgrade the original FRPs was given to
>
> **[TRADE SECRET DATA REMOVED]** that

[124] DOC Ex. 300 at MWC-3 at 3-4 of 5 (Crisp Public Direct) (*EPU Cost History)*; DOC Ex. 302 at MWC-3 at 3-4 of 5 (Crisp Trade Secret Attachment) (*EPU Cost History).*

included engineering and material procurement for a price of [TRADE SECRET DATA REMOVED] There were no activities to cover project cost estimating or approval of engineering phase costs. This resulted in the loss of management approval for these cost items. Poor performance **[TRADE SECRET DATA REMOVED]** eventually led to the transfer of this work to NSP in 2010 with decisions to have other contractors perform the work.

2. Complexity of modification installation: Xcel did not show that it was reasonable for the Company not to have better understood such complexity much earlier, and likely much less cost

A second of three main cost drivers, according to Mr. O'Connor, was the complexity of installing the plant modification.[125] Mr. O'Connor stated that installation costs were nearly $290 million greater than Xcel initially estimated,[126] and identified four "Key Scope Additions" that were by far the great installation costs, as follows:[127]

- 13.8 kV System addition
- Condensate Demineralizer System Replacement
- Feedwater Heater Replacement
- Reactor Feed Pump Replacement

While Mr. Crisp agreed with Xcel that the plant modification generally, and these four modifications specifically, appear to be the single largest impact to schedule and cost of the Project,[128] he disagreed that the Company's rationale of complexity reasonably justified those excess costs. In particular, Mr. Crisp noted that Xcel's installation costs caused 40% of Xcel's cost overruns, and represented an astounding *increase of 955%* over Xcel's initial estimated installation cost of $27.5 million.[129] The record does not support a conclusion that it was

[125] DOC Ex. 300 at 9, 15 (Crisp Public Direct) (referencing Xcel Ex. 3 at 35 (O'Connor Direct).
[126] Xcel Ex. 3 at 35 (O'Connor Direct).
[127] Xcel Ex. 3 at 35, 37 (O'Connor Direct).
[128] DOC Ex. 300 at 15-19 (Crisp Public Direct).
[129] *Id.* at 16.

reasonable for Xcel to have encountered the level of surprise and resulting delays and cost increases associated with modification installation, as Mr. Crisp explained:[130]

> It is troubling that this area caused so much of the cost overrun since ***this is the area where: 1) the Company and the Company's contractors had the most control and 2) advanced planning and information should have negated this area as a cause of cost overruns.*** It is crucial for managers of any project to have a clear understanding of the "complexity" issue whether it is in the licensing phase, design phase, material manufacture phase, construction phase or start-up phase or any combination of these areas.

For retrofit projects like the Monticello EPU, as opposed to new or "greenfield" projects, Mr. Crisp described the importance of management to identify "controlling factors" that might mean that the plant can or cannot actually be built as designed. Examples of controlling factors for the Monticello EPU project included:[131]

> …spacing, clearances, access, physical arrangement, as well as existing capacity of certain equipment that would continue to function in the uprated environment. These controlling factors clearly had material effects on the costs of the project. Further, failure to recognize these conflicts is a direct failure of Project Management.

Xcel offered no reasonable basis for not identifying these controlling factors early in its planning for the EPU project, as Mr. Crisp explained:

> This plant had been in operation for 40 years, with outages occurring roughly every two years. During these outages, plant operating personnel were required to inspect all sections of the plant. ***Obviously, Xcel was well aware of the physical arrangement with the plant power block itself. Xcel and GE, the original designer of Monticello, and the contractor hired by Xcel to perform initial scoping, design, and provide cost estimating services knew or should have known about the physical arrangement inside the power block.*** In addition, as acknowledged by Xcel, NRC regulations require the Owner, Xcel, to maintain complete documentation as to design, design modifications made throughout the life of the project, and/or any changes in the Plant's physical arrangement that may have an impact on the design basis. ***Generally speaking this is commonly referred to as the "as-built" condition.***

[130] DOC Ex. 300 at 16 (Crisp Public Direct).
[131] *Id.* at 17.

Mr. Crisp acknowledges that Xcel witness Mr. O'Connor recognized this need for careful design and preplanning, but Xcel did not offer plausible rationale for why it was reasonable for the Company or its agents (contractors) not to identify the limiting factors early on. For instance, Xcel explained the "very small footprint" within which LCM/EPU modifications would take place and the fact that the small area, "limited in range of options and made aspects of installation more challenging."[132] Mr. Crisp testified that it is reasonable to expect that Xcel would have anticipated the difficult access to the "very small footprint" for purposes of dismantling the existing equipment and installing new *larger* equipment, and that the Company reasonably should have known that there would be additional difficulty and cost associated with modification installation. Mr. Crisp testified, in this regard:[133]

> For example, ***Xcel knew the dimensions*** of the containment "room" for the feedwater heater. However, Xcel's estimated cost of installing the new, much larger feedwater heater ***did not take into account the significant difficulty in removing the former feedwater heater, modifying the size of the then-existing concrete "room" and installing the new, larger feedwater heater.*** In addition, Xcel was aware of the size of the cable tray, where all cables were located, and should have been aware of the significant difficulty that would be involved in installing the new cable equipment.
>
> * * *
>
> While there is no dispute that the age of the design and the small footprint affected costs, ***it should not have been a critical issue causing cost overruns in the actual design of LCM/EPU nor should these controlling factors have been a surprise to Xcel or GE for construction***; GE was the original designer and had access to all of this information. It is simply unclear where the breakdown occurred that ultimately lead to the cost increases and increased constructability costs; ***"complexity issues" should not have been the cause of such high cost overruns of installation.***

At the evidentiary hearing, Mr. Crisp responded to Mr. O'Connor's Direct Schedules 19-28 that show major LCM/EPU modifications such as the 13.8 kV distribution system. The schedules included the Company's initial scope and cost estimate together with Xcel's final scope and actual

[132] Xcel Ex. 3 at 33 (O'Connor Direct).
[133] DOC Ex. 300 at 19 (Crisp Public Direct) (emphasis added).

installation costs. In response to counsel for Xcel, Mr. Crisp agreed, as to each modification, that he did not take issue with the Company's final scope for the modifications,[134] but he explained, as follows:[135]

> What I did -- what I did discuss -- please leave that up there for me, if you don't mind -- is that ***the scope changed from the initial scope to the final scope. These changes are a reason why the costs went up dramatically.*** And had proper initial scoping and thoroughness in initial scoping been accomplished at the initial scoping process, many of these bullets under the final scope would be moved up into the initial scope process and many of the milestones also that are addressed at the bottom would also be addressed in the initial scoping and estimate.

Mr. Crisp on redirect further clarified with respect to the 13.8 kV modification, for example, where the initial scope was limited, the final scope included many more items, and the cost estimate of ***$20.9 million*** became the actual installed cost of ***$119.5 million***: [136]

> Yes. I believe Mr. Hemming -- the questions he asked, had I evaluated the individual issues in the ***final scope*** and had I provided some testimony as to the -- the appropriateness or the accuracy of those individual items. And my response was no, I had not. . . . .
>
> [I]n my discovery I was always cognizant of the issue ***why the initial scope and estimate was so small relative to the final scope and final cost.*** And one of the big indicators for me, since I'm – I feel like ***initial scoping is where a project can be made or broken. If you don't get that initial scope appropriate -- appropriately completed and the estimate assigned to that appropriately-completed scope, you're going to have the scope creep issues. And this is a perfect example of that.***

Mr. Crisp pointed out that like the 13.8 kV System modification, the initial scope bullet details and initial estimates were small compared to the final scope and final installed cost for the Condensate Demineralizer System Replacement (initial estimate $18 million; *final cost $79.8 million*), Feedwater Heater Replacement (initial estimate $37 million*; final cost $114.9 million*), and the

[134] Tr. Vol. 3 at 20-27 (Crisp).
[135] *Id.* at 58.
[136] Tr. Vol. 3 at 76-77, (Crisp) (referring to Xcel Ex. 3 at (TJO-1) Sch. 28 (O'Connor Direct).

Reactor Feed Pump Replacement (initial estimate $27.8 million; *final cost $92.2 million*).[137] Many other modifications had similar differences between the initial scope and final scope, which indicated "scoop creep" together with much higher final installed costs.[138]

Mr. Crisp reasonably concluded that it does not appear that the level of skilled project management, communications, and sufficient support for employees entrusted to carry out the project "was focused on this project until the later construction time period when it became obvious to the Company that costs were spiraling far above expectations."[139] The LCM/EPU project cost more due to Xcel's poor management.[140]

3. Stops and Starts Caused Delay and Higher Costs

Mr. Crisp identified a number of stops and starts regarding the LCM/EPU project that likely resulted in higher costs.[141] Without opining as to the reasonableness at the time of any particular event, Mr. Crisp noted that this type of activity is consistent with disjointed projects that suffer from substantial initial planning problems due to a lack of proper management control and an overly aggressive schedule, as occurred at Monticello.[142] He provided a short chronology of events in this regard:[143]

- 2006 GE is engaged as the engineering, procurement and licensing team responsible for the Monticello LCM/EPU project.
- 2007 Xcel chooses the Team of Day Zimmerman/Sargent Lundy instead of GE to complete the project.

[137] Tr. Vol. 3 at 79-82 (Crisp).
[138] *Id.*
[139] DOC Ex. 300 at 19-20 (Crisp Public Direct).
[140] Tr. Vol. 3 at 66 (Crisp).
[141] DOC Ex. 300 at 20-23 (Crisp Public Direct).
[142] *Id.* at 23.
[143] *Id.* at 20.

- 2010 Poor performance on the part of Day Zimmerman/Sargent Lundy led to transfer of some project scope to Northern States Power (NSP), Xcel, and then on to other contractors.
- 2011 Xcel retains Bechtel Corporation to take over and complete the LCM/EPU project.

Mr. Crisp explained that each of the above course corrections occurred at a time when significant cost increases were experienced, although not all of the cost increases were due to changes in contractors.[144]

Xcel, not ratepayers or the Commission, is responsible for reasonable management of its contractors and coordination with Xcel employees, and it is Xcel's burden to demonstrate that it did so based on what it knew or should have known at the time. Reasonable management of contractors is particularly important in a complex EPU project since bringing in a new contractor while the project is underway often causes significant delay and adds additional cost.[145] Reasonable management includes a demonstration that Xcel worked hard to avoid the need for such changes. The record does not support Xcel's claim that it did so.

In the Monticello case, contractor changes occurred at least two significant times, in 2010 and 2011, and considerable delays occurred as a result of these contractor changes.[146] These delays cost considerable dollars and could have been mitigated with proper Company oversight and project management controls.[147] The *EPU Cost History*, quoted in part previously in this Initial Brief, shows there were significant warning signs of escalating costs and scheduling issues as early as 2006.[148] The document confirmed Mr. Crisp's concerns that contractor changes were an indication of poor initial planning, an overly aggressive schedule as well as showing poor

[144] *Id.*
[145] *Id.* at 21-23.
[146] *Id.* at 22.
[147] *Id.*
[148] *Id.* at 24-25.

communication between Xcel's Board of Directors and on-site employees called the Monticello Site Projects Team. Mr. Crisp, discussing the *EPU Cost History* at 1 of 5, stated in relevant part:

> [In 2006] [t]he GE estimate was provided to the Monticello Site Projects Group that, as noted above, recommended the budget be expanded to $362.5 million due to uncertainty with work scope and estimate quality and recommended the installation occur during the 2013 refueling outage (RFO). However, without explanation, the ***Xcel Board disregarded the Monticello Site Projects Group, approving a budget that was substantially (33 percent) lower than the amount recommended by the "boots-on-the-ground" Team. Further, the Board of Directors required the installation to occur in 2011, 2 years earlier than recommended by the Monticello Site Projects Group, thus requiring a "fast track approach."*** DOC Ex. [300] at MWC-3 (Crisp Trade Secret Direct)

The 2011 *EPU Cost History* details escalating costs and budget issues from 2006 through 2011, and identifies significant "scoop creep" which is an extension of scope, and scheduling issues. In addition, the document notes poor performance **[TRADE SECRET DATA REMOVED]** resulted in transfer of work in 2010 to other contractors, in relevant part, as follows:[149]

> **4. INSUFFIENT PROJECT CONTROLS**
>
> a. Changes to scope with an appropriate consideration of cost were challenged by "fast track" schedule.
>
> * * *
>
> ***Poor performance*** **[TRADE SECRET DATA REMOVED]** ***eventually led to the transfer of this work to NSP in 2010*** with decisions to have other contractors perform the work.

This document shows dysfunctional project management, and Mr. Crisp testified that these issues "should have set off a significant warning to Xcel that project Management and Project Controls were severely lacking with regards to execution of this project."[150] Xcel knew or should have

[149] DOC Ex. 300 at MWC-3 at 4 of 5 (Crisp Public Direct) (*EPU Cost History)*; DOC Ex. 302 at MWC-3 at 4 of 5 (Crisp Trade Secret Attachment) (*EPU Cost History).*
[150] DOC Ex. 300 at 25 (Crisp Public Direct).

known that the LCM/EPU project lacked reasonable management control, as suggested by Mr. Crisp:[151]

> [I]n the category where Xcel and its contractors had the most information and the most control, the scope increase, budget increase in implementation and schedule impacts should have been under better control.

Mr. Crisp reasonably concluded that changes in contractors as well as other stops and starts of the LCM/EPU project "occurs in many projects that incur substantial planning problems from the beginning due to lack of proper management controls and an overly aggressive schedule, such as the expedited approach Xcel used with Monticello."[152]

The *EPU Cost History* identifies specific and numerous problems such as "Initial Scope and Schedule were Inadequate," and difficulties with "Scope Control."[153] The *EPU Cost History* discusses problems with "Lack of Site Ownership" such as Xcel not using operational experiences recommended by the EPU Site Team, the very limited capability for the EPU Site Team to obtain a scope change that balanced scope and cost, and that the site did not have "cost ownership" of the budget.[154] Finally, the *EPU Cost History* identifies under the heading "Insufficient Project Controls" such as that changes to scope with appropriate consideration of cost were challenged by the fast track schedule, by expected cost impact not reviewed by appropriate management, and the lack of separate cost tracking of the many projects involved.[155] As Mr. Crisp concluded:[156]

> Each and every one of these issues identified by Xcel's internal document [the *EPU Cost History*] and relayed to the then-Chief Nuclear Officer, Mr. Koehl, reflects that there was not a well-structured project plan for this project.

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[151] *Id.*
[152] DOC Ex. 300 at 25 (Crisp Public Direct).
[153] *Id.* at 26 (referring to MWC-3 at 3-4 of 5) (*EPU Cost History).*
[154] DOC Ex. 300 at 27 (Crisp Public Direct) (referring to MWC-3 at 4 of 5) (*EPU Cost History).*
[155] *Id.* (referring to MWC-3 at 4-5 of 5) (*EPU Cost History).*
[156] *Id.* at 27.

4. Lack of reasonable and customary contingencies

Xcel's failure to include reasonable and customary contingencies in its cost estimates for the 2008 EPU CN application suggests that the Company did not understand the true scope of the project, which in turn likely resulted in costs being higher than costs otherwise would have been.[157] He testified, as follows:

> Third, ***Xcel did not employ reasonable contingencies, as is expected today and was expected then, for estimating project costs, particularly given how little work Xcel had done to scope out the costs of the EPU when Xcel filed its 2008 EPU CN.*** The budgeting process in any project regardless of size carries with it a significant probability of error, particularly when scoping of the project is at a conceptual stage, as was the case in the 2008 EPU CN Application. During the budgeting process at the conceptual phase it is customary to employ the use of contingencies in order to mitigate the unknowns at this stage. At the CN Application stage the project was at a 0% - 10 % Design Completion Stage. It is customary to use a 50%-100% contingency on top of the Direct Cost estimate for a major utility project at a conceptual stage. However, the Company elected not to include any material contingency over its Direct Cost estimate in its CN Application. The Company, in order to represent to the Commission the risk of upward cost pressure due to substantial unknowns, should have provided a cost estimate that included reasonable contingencies in order to allow the Commission to fully vet whether the project appeared to be the best approach to meeting the identified need, even at the high contingency level.
>
> ***Had the Company elected to follow normal procedures at the time in the cost accounting field, an envelope of costs would have been developed and cost benefits would have been properly defined.*** This analysis would have provided both the Company and the Commission with significant forward looking information regarding project economic viability. ***In fact, had Xcel applied proper cost estimating standards to this project when they applied for the 2008 EPU CN, the cost would have been $480 million - $640 million without consideration of allowance for funds used during construction (AFUDC).*** The high end of this level is much closer to the actual final costs per Xcel's latest estimate and would have given the Commission better information to make an informed decision on whether or not to grant the certificate of need for the EPU. ***Unfortunately, Xcel did not include customary and reasonable contingencies for the Commission to consider or, apparently, for the Company itself to have considered in its management and execution of the LCM and EPU projects.***

[157] DOC Ex. 419 at 3 (Crisp Opening Statement) (emphasis added).

Xcel's initial testimony in this case admits that the Company included only minimal contingencies in its cost estimate for the 2008 CN. Schedule 8 to Mr. O'Connor's Direct Testimony on page 2 of 18, affirmatively showed absolutely no contingencies for the LCM/EPU project for 2008, 2009, 2010, 2011 or 2012, and only a small $20 million contingency for 2013.[158] The Department relied on that Xcel testimony. It is interesting to observe that, following Mr Crisp's Direct Testimony, which noted the unreasonableness of Xcel's omission of contingencies from its 2008 cost estimates for the 2008 EPU CN, Xcel's rebuttal witnesses testified that the Company did include contingencies.[159] However, even these amounts were minor.[160]

Mr. Crisp discussed the industry standard for cost estimation that existed before the Company filed its 2008 EPU CN, and that exists today. He provided an attachment entitled "AACE* International Recommended Practice No. 19R-97 COST ESTIMATE CLASSIFICATION SYSTEM,[161] and testified as to the level of contingency that would have been reasonable for Xcel to include at the time it was considering and planning – in a conceptual stage – its certificate of need cost estimates in 2008, as follows:[162]

> A Based on my review and understanding where the project was in terms of its definition, ***I think 100 percent was every bit appropriate***. And, quite frankly, if it had been me doing the cost estimating to provide to my management for a determination of cost effectiveness, ***I would have used 150 percent, maybe a little less, maybe a little more, because there was significant risk that was not captured or at least was not spelled out in documentation that would have affected the cost estimate.***
>
> Q What types of risks were those?

[158] Tr. Vol. 3 at 47-48 (Crisp).
[159] Xcel Ex. 11 at 54 (Sieracki Rebuttal); Xcel Ex. 10 at 40 (O'Connor Public Rebuttal).
[160] DOC Ex. 303 at 20-23 (Crisp Surrebuttal).
[161] DOC Ex. 303 at MWC-S-1 (Crisp Surrebuttal).
[162] Tr. Vol. 3 at 72-73 (Crisp) (emphasis added).

> A Well, some of those that were identified by the Company in some of their own documentation and testimony . . . ***they did not include the installation costs for certain subprojects, they were concerned about the availability of craft labor, they said that they did not -- one example I recall vividly was that they said they did not know where structural reinforcing steel was located within concrete walls and columns.***
>
> And that was where the issue of as-built drawings became even more critical; that if you don't know where these things are, ***there is a considerable risk associated with not having that knowledge and trying to design or trying to cost estimate a project without that kind of information.***

Mr. Crisp also testified that it was an industry standard as of the time Xcel filed their EPU CN petition in 2008 to have included with such a cost estimate escalation for inflation.[163] He also explained as well that wages for craft labor are always a concern with any project whether or not it is a nuclear project, as to whether they may escalate during that project.[164]

5. NRC licensure timeframes did not delay the Monticello LCM/EPU

Delays for the Monticello LCM/EPU project were not caused by NRC licensing delays, contrary to Mr. O'Connor's claim. In fact, Xcel claims that "increasingly rigorous NRC standards and to provide new information" caused delay and was one of the major cost drivers.[165] Mr. O'Connor stated that, "most importantly, the extended and unexpected licensing effort delayed our ability to operate at uprate levels for the full duration of the extended license."[166]

Mr. Crisp disagreed that the record supports Xcel's claim. At most, there were minimal delays attributable to the NRC. Specifically, Mr. Crisp explained:

> As is evidenced by the NRC administrative record for the LCM license extension and the EPU increase there were in reality minimal licensing delays attributable to the NRC. The license renewal (LCM extension) process actually was completed in a very expeditious manner. The application date to the NRC was March 24, 2005 and the final decision and order was granted on November 8, 2006. The Extended

[163] Tr. Vol. 3 at 74 (Crisp).
[164] *Id.* at 53-54.
[165] DOC Ex. 300 at 11 (Crisp Public Direct) (referring to Xcel Ex. 3 at 34 (O'Connor Direct)).
[166] *Id.* (referring to Xcel Ex. 34-35 (O'Connor Direct)).

> Power Uprate process was more lengthy but as discussed further below, not necessarily due to NRC delays or added NRC requirements.
>
> The EPU process was initiated November 5, 2008 with final notice provided by the NRC on December 9, 2013, a 5-year process. The 5-year process included a lengthy period amending the previous Facility Operating License and the revision to Technical Specifications that included approximately sixty-three (63) official correspondences between Xcel and the NRC. This is the time period when the Fukushima incident occurred. I discuss below how this longer time period was appropriate for safety reasons.

Further, Mr. Crisp testified that Xcel's statement is misleading in that it appears at face value to place considerable if not all the blame on the NRC licensing process. Doing so is incorrect, as Mr. Crisp explained:[167]

> NRC granted Xcel the License Renewal, which did not include an EPU request, in November of 2006. The EPU application did not occur until November of 2008. Had the EPU application only taken 2 years for approval, as did the initial Xcel License Renewal, given Xcel's construction period to install the EPU, the operation of the plant at the 1671 MWe level could not have commenced before 2013. ***Therefore, 5 years of the new extended license operating time frame would still be lost. So it is misleading to make the assertion that the licensing effort delayed the plant's ability to operate at the uprate levels for any period within the new license timeframe.***

Also contrary to Xcel's claims of NRC-caused delay, Mr. Crisp stated that Xcel's own behavior and the provision of confusing and contradictory information to the NRC in 2008 may have caused brief delay in NRC licensing.[168] For example, in 2006 the NRC approved Xcel's request for a license extension for Monticello, perhaps based in part on Xcel's statement to the NRC in 2005 that Xcel does not propose to construct or to alter the facility and that the ***"current licensing basis . . . will be continued and maintained throughout the period of extended operation.***"[169] Clearly, Xcel had been studying the possibility of building an EPU as early as 2004; Xcel's filing with the NRC just two and a half years after the NRC granted the license to 2030, for a license amendment to include an EPU may have been a factor in the NRC's suggestion

[167] DOC Ex. 300 at 11-12 (Crisp Public Direct).
[168] *Id.* at 13-14.
[169] DOC Ex. 300 at 13 (Crisp Public Direct) (emphasis added).

that Xcel withdraw its EPU license amendment request for the EPU.[170] Five months later, Xcel re-filed with the NRC its EPU-related request for a license amendment.[171] Mr. Crisp identified other action by Xcel with respect to its decision to use the "NRC guidance" regarding higher water temperatures for an EPU, which was a new, and Xcel was the first to use the guidance. Mr. Crisp concluded:[172]

> While neither Xcel nor the NRC could have anticipated that the Fukushima incident would have occurred prior to that event, the Company's election to use the SECY - 11-0014 CAP guidance, which was new, resulted in a longer than normal approval process.
>
> Relating this issue to the Project Management issue, I conclude that Xcel's Licensing Team should have maintained extensive two-way communication with the NRC as to the vulnerability of schedules using the chosen analysis path. The Licensing Team should have been in constant contact with the NRC, particularly if a new criterion or guidance was to be used in the license analysis phase.

In his Surrebuttal Testimony, Mr. Crisp testified in greater detail that Xcel's management decisions is principally the cause of the NRC's delay:[173]

> I think any reasonable person associated with nuclear design and licensing now or at that time would agree that when there is new guidance or rules promulgated by the NRC, it is important to fully vet the new guidance with the NRC and make certain that all issues have been resolved prior to initiating new designs or new calculations. It has been shown time and again that new procedures take an inordinate amount of time before they are fully deployable in an efficient manner. Thus, Xcel should have been aware that moving in an expedited manner without full NRC and ARCS approvals [regarding the steam dryer] was likely to generate delays and cost increases.

For the many reasons discussed above, Mr. Crisp showed, based on what Xcel knew or should have known at the time, facts that raise significant doubt as to the reasonableness of Xcel's LCM/EPU project management and, accordingly, doubt as to the reasonableness of the resulting project costs.

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[170] *Id.*
[171] *Id.*
[172] *Id.*
[173] DOC Ex. 303 at 18-19 (Crisp Surrebuttal).

IX. CONSULTING ENGINEER DR. WILLIAM R. JACOBS' FINDINGS

A. OVERVIEW: THE RECORD SUPPORTS DR. JACOBS' FINDING THAT $569.5 MILLION OR 85.7% OF THE LCM/EPU COSTS WERE REQUIRED FOR THE EPU AND THE REMAINING $95.4 MILLION OR 14.3% WERE NOT REQUIRED TO SUPPORT THE EPU.

One of the issues identified by the Commission in this matter concerns which cost increases are due to 1) solely the EPU, 2) solely the LCM and 3) both projects.[174] In large part, as discussed above, Xcel did not separately track costs for its LCM-related work versus the EPU-related work, thus requiring this additional analysis.[175] Dr. William R. Jacobs, Ph.D., focused his testimony on identifying modifications needed to support the EPU and assigning costs to those EPU-related modifications. He used several methods of identifying EPU-only projects, but relied to a considerable extent on Xcel's 2008 sworn letter to the NRC that expressly identified particular modifications intended for the EPU and other modifications planned for the LCM.[176] He also considered his discussions with Xcel employees as to projects like the 13.8 kV distribution system that likely would not have been needed absent pursuit of an EPU, together with his basic criterion that:[177]

> …if Monticello could not operate at the higher EPU power level without the particular work or project being evaluated, I considered that particular work or project to be an EPU project.[178]

Once he classified the modifications or work as EPU work, LCM work, both or "Items not in NRC Enclosure 8", he assigned costs to the modifications based on the costs identified in

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[174] *Order Approving Investigation and Notice and Order for Hearing* at 4, MPUC Docket No. E002/CI-12-754 ("December 18, 2013 Order").
[175] DOC Ex. 421 at 1 (Jacobs Opening Statement).
[176] DOC Ex. 421 at 1-2 (Jacobs Opening Statement); DOC Ex. 305 at Att. B at 3 of 14 (Jacobs Public Direct).
[177] DOC Ex. 421 at 1-2 (Jacobs Opening Statement).
[178] *Id.*

Mr. O'Connor's Direct Testimony Schedule 30.[179] In his Opening Statement, Dr. Jacobs summarized his main analysis and findings, as follows:[180]

> Xcel presents the work done at Monticello as a single LCM / EPU project for which LCM costs and EPU costs were not separately tracked in many respects. ***The primary focus of my direct testimony is to present my analysis to identify the costs incurred by Xcel that were necessary for the EPU project and to allocate the remaining costs to the LCM project.*** My approach was to utilize Xcel's 2008 letter to the U.S. Nuclear Regulatory Commission (NRC) in which it identified, under oath, specific projects required for the EPU, information gathered by speaking with Xcel employees at the Monticello plant site and my experience with other EPU projects to identify the projects specifically required for the EPU, ***I applied a basic criterion that if Monticello could not operate at the higher EPU power level without the particular work or project being evaluated, I considered that particular work or project to be an EPU project.*** Once I identified the EPU-only projects, I assigned the costs to these projects based on the costs shown on Exhibit TJO-1, Schedule 30 of Mr. O'Connor's direct testimony. In addition to the projects identified as EPU projects in Xcel's letter to the NRC, I included $59.3 million for EPU License Development as an EPU cost as this cost is identified on Mr. O'Connor's Schedule 30 as "EPU only work." Further, I included the $119.5 million cost that Xcel incurred for the 13.8 kV distribution project as an EPU project because absent the EPU this project would not have been needed to provide electric power to the larger reactor feedwater pumps required by the EPU.
>
> ***The results of my analysis are that $569.5 million or 85.7% of the LCM / EPU costs were required to support the EPU and the remaining $95.4 million or 14.3% were not required to support the EPU. My analysis under-estimates the EPU-related costs*** because I included no costs that were identified by Xcel as needed for both the EPU and LCM projects.

Dr. Jacobs also evaluated the impact of the NRC on the LCM/EPU projects and concluded that the Fukushima incident did not result in significant delay of the LCM/EPU project or in significant additional capital costs.[181] In addition, Dr. Jacobs presented his opinion that one of the factors that most significantly impacted the design and cost overrun of the Monticello LCM and EPU projects, "was Xcel's lack of understanding of the true scope of the work," and "the amount

[179] DOC Ex. 305 at 9-10 (Jacobs Public Direct).
[180] *Id.* (emphasis added).
[181] DOC Ex. 421 at 2 (Jacobs).

of uncertainty and resulting inadequacy in providing a reasonably accurate estimate of the cost to implement the projects."[182]

He discussed as well Xcel's flawed approach to allocating costs to the EPU such as the Company's assumption that all costs were LCM costs until proven otherwise. He also found to be unreasonable Xcel's method of estimating LCM and EPU costs without determining which cost components would be required if only the LCM had been pursued. Dr. Jacobs provided examples of Xcel's unreasonable shifting of EPU-related costs to the LCM (*i.e.,* the 13.8 kV distribution system, the condensate demineralizer replacement, the new turbine and the new reactor feedwater pumps).[183] Dr. Jacobs' reasonably concludes that the record supports a finding that EPU-related costs are approximately 87.7% of total project costs, and that Xcel failed to demonstrate the reasonableness of its recommended cost split between EPU costs and LCM costs of 41.6% and 58.4%, respectively.[184] Dr. Jacobs recommended that the Commission determine that a reasonable cost split be determined as 85% (EPU) and 15% (LCM).[185]

B. PROJECT CLASSIFICATION: DR. JACOBS USED REASONABLE METHODS TO IDENTIFY EPU-RELATED MODIFICATIONS OR PROJECTS

1. Sworn November 2008 Letter to the NRC and its Enclosure 8 Identify EPU-Only Modifications and LCM-Only Modifications

Dr. William Jacobs identified projects that were needed to support the EPU with the assistance of Enclosure 8 of Xcel's November 8, 2008, which is a sworn letter to the NRC that set forth "a list of modifications planned for EPU implementation" as well as "modifications that are

[182] DOC Ex. 421 at 2-3 (Jacobs Opening Statement) (emphasis added).
[183] *Id.* at 3.
[184] *Id.* at 3-4.
[185] DOC Ex. 305 at 8, 12 (Jacobs Public Direct); DOC Ex. 307 at 17 (Jacobs Surrebuttal).

not required for EPU but have been approved as part of the ongoing life cycle management (LCM) program for MNGP [Monticello]."[186] The letter stated in relevant part:[187]

> ***Enclosure 8 includes a list of modifications planned for EPU implementation.*** The modifications listed in Enclosure 8 are planned actions which do not constitute regulatory commitments by NSPM. Modifications listed in Enclosure 8 are being implemented in accordance with the requirements of 10 CFR 50.59. ***The Enclosure 8 tables also include modifications that are not required for EPU but have been approved as part of the ongoing life cycle management (LCM) program for MNGP [Monticello].*** These LCM modifications are planned to be coordinated with the EPU project and are ***planned to incorporate EPU conditions*** to maintain or improve performance margin of the respective systems.

Given the 2008 date of Xcel's letter to the NRC, and given that the NRC had already allowed Xcel to extend the life of Monticello by 20 years with the requirement that Xcel must operate the plant safely throughout that additional 20 years, it must be assumed that the LCM activities that had been "approved" at that time related to the Commission's approval of Xcel's 2005 CN, MPUC Docket No. E002/CN-05-123, for an Independent Spent Fuel Storage Installation (ISFSI) in which Xcel also identified the expected costs of the LCM as a wholly stand-alone life extension project.[188] Xcel witness Mr. O'Connor signed the Company's 2008 NRC letter "under penalty of perjury."[189]

Dr. Jacobs relied on Enclosure 8 in part for identification of EPU-related projects and LCM-related projects in Enclosure 8 as a basis for projects to which he then assigned costs between the EPU and LCM (based on the costs identified in Mr. O'Connor's Schedule 30).[190] His reasons for considering Enclosure 8 to be a reliable indicator of Xcel's determination of the need for each modification or project are: 1) that Enclosure 8 was created contemporaneously with

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[186] DOC Ex. 421 at 1-2 (Jacobs Opening Statement); DOC Ex. 305 at Att. B at 3 of 14 (Jacobs Public Direct).
[187] DOC Ex. 305 at Att. B at 3 of 14 (Jacobs Public Direct).
[188] *See generally,* DOC Ex. 419 at 2 (Crisp Opening Statement) (regarding the 2005 CN).
[189] DOC Ex. 305 at 8 (Jacobs Public Direct).
[190] DOC Ex. 305 at 9-10 (Jacobs Public Direct).

Xcel's NRC request rather than at a later time such as in preparation for providing testimony in the present matter, and 2) because the document was a sworn representation of Xcel's plans in 2008.

Enclosure 8 includes nine pages of tables that set forth various modifications, and Xcel's designation of whether a modification was needed for the EPU or for LCM. Three of the four modifications of significant cost noted by the Commission were identified in Enclosure 8 as EPU-related work:[191]

- Condensate Demineralizer System Replacement
- Feedwater Heater Replacement
- Reactor Feed Pump Replacement

The fourth modification, the 13.8 kV distribution system addition, was identified in Enclosure 8 as an LCM project.[192] However, to determine whether the 13.8 kV distribution system addition was needed principally to support the EPU as opposed to the LCM, Dr. Jacobs relied on his basic criterion (if the plant could not operate at the higher EPU level without the modification, then it is an EPU project), as well as discussions with Xcel employees. Based on that criterion, Dr. Jacobs had independently determined that the 13.8 kV distribution system would not have been done absent the EPU, and Mr. O'Connor confirmed during Dr. Jacobs' on-site tour that Xcel was not sure what distribution system (4.1 kV, 6.9 k) Xcel would have done without an EPU.[193]

Also, as to the 13.8 kV distribution system upgrade, Dr. Jacobs disagreed that Xcel has shown that significant additional distribution capacity was needed without the EPU. On page 10 of his Surrebuttal Testimony, Dr. Jacobs examined the Company's 2005 CN application where

[191] DOC Ex. 305 at Att. B at 12 of 14 (Jacobs Public Direct).
[192] DOC Ex. 305 at Att. B at 13 of 14 (Jacobs Public Direct).
[193] Tr. Vol. 4 at 71-72 (Jacobs). *See also,* DOC Ex. 305 at 11 (Jacobs Public Direct).

Xcel did not mention a needed upgrade to the distribution system (Xcel noted only an "electrical breaker replacement").[194]

2. Dr. Jacobs' basic criterion was reasonable to assess whether the 13.8 kV modification was needed to support the EPU as opposed to the LCM

As noted immediately above, Dr. Jacobs applied his basic criterion to the question of whether the 13.8 kV distribution system addition was needed principally to support the EPU as opposed to the LCM. Described on page 11 of his Direct Testimony, is Dr. Jacobs' reasoning for his determination that "but for" the EPU, the 13.8 kV distribution system addition would not have been needed.[195] He summarized his analysis, as follows:

> I conclude that, but for the EPU, this upgrade would not have been needed. That is, ***this modification was needed only to provide the power to the larger reactor feedwater and condensate pumps necessitated by the increased secondary side flow rates.*** In addition, none of the EPU projects with which I am familiar, including the similar DAEC uprate, required this type of modification. Absent the EPU requirements, this $119.5 million project cost was not necessary.
>
> Further, this judgment was confirmed in discussions during my visit to Monticello. Specifically, Mr. O'Connor was asked if the 13.8 kV project would have been needed absent the EPU and he responded that it would not have been needed.

Moreover, in his Rebuttal Testimony, Mr. O'Connor acknowledged that, in the event Xcel had not pursued an EPU, the Company may have continued with its 4 kV distribution system, or may have made other decisions based on Xcel's needs, as follows:[196]

> Without the uprate, we would have undertaken the analysis necessary to determine the optimal configuration and voltage for the electric distribution system for the period of extended operations. ***While I acknowledge that we may have chosen to stay with 4 kV voltage and added capacity to the existing system***, such a decision would have been made only after considerable analysis and it is possible and perhaps likely that we would have decided upon the 13.8 kV (or possibly 6.9 kV) system because of the benefits gained by splitting the safety system loads from the non-safety system loads.

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[194] DOC Ex. 307 at 10 (Jacobs Surrebuttal).
[195] DOC Ex. 305 at 11 (Jacobs Public Direct) (emphasis added).
[196] Xcel Ex. 9 at 96 (O'Connor Public Rebuttal).

On a more general level and of significance is Dr. Jacobs' explanation of why it is reasonable to include as EPU-only modifications (and their costs as EPU costs) the work that would not have been completed *but for* the EPU: LCM projects often are completed over several if not many years during normal RFOs and, often at significantly lower cost than modifications completed for an EPU. First, routine LCM modifications often are like-for-like replacements (using the term generally) and, thus, are typically significantly less costly than replacements with larger components.[197] For example, Dr. Jacobs explained:[198]

> [I]f you're replacing a pump, you replace it with a pump of roughly the same size, the same weight, the same performance. . . . [I]n an EPU project, where you have to increase the capacity of the pumps or the feedwater heaters or the other equipment, it is much more complicated. You have to sometimes reinforce the building . . . as in the case of Monticello, go down to bedrock for the foundations of the feedwater pumps, so it becomes a much more complicated and expensive proposition at that point.

Second, LCM modifications typically are planned to be completed during normal refueling outages over many years.[199] Typically, a utility plans one or two major projects during a normal RFO, and the scope and design for the projects is the subject of rigorous pre-planning, pre-measuring and even mock-ups so that the work is performed efficiently, the outage is relatively short, and the costs are relatively less costly than EPU-related modifications.[200] These facts are consistent with Dr. Jacobs' testimony that some EPU modifications at Monticello simply would not have been completed if the EPU were not pursued (such as the condensate demineralizers),[201] while other modifications may be completed significantly later than would be required for an EPU.[202] For those modifications that may have been performed later, one reasonably could expect

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[197] DOC Ex.
[198] Tr. Vol. 4 at 53 (Jacobs).
[199] Tr. Vol. 4 at 62-63 (Jacobs).
[200] *Id.* at 62-64.
[201] DOC Ex. 305 at 13 (Jacobs Public Direct).
[202] *Id.* at 12.

that it would be LCM-related work done during normal RFOs as part of a long-term plan covering many years and likely would be less costly.[203]

Third, and in contrast to LCM work performed during normal RFOs over a long period of time, in EPU-related work, the modifications are not spread over many years because the plant cannot operate at its higher intended level until all the EPU-necessary work is done.[204] Dr. Jacobs described the management difficulties during an EPU-related RFO where typically 10 or 15 major projects are being worked on, and the equipment often is larger or different from the existing equipment that must be replaced:[205]

> [I]n an EPU project, a large portion of what's called secondary plant, the power generating plant, has to be increased in capacity. Because you're dealing with higher steam flows, higher water flows, you need bigger pumps, bigger feedwater heaters, as Mr. O'Connor pointed out, larger pipe, so it's really a massive undertaking.

Dr. Jacobs stressed the heightened need for pre-planning EPU-related work to understand the project's complexities, and to perform reasonable estimating together with appropriate contingencies in cost estimates to reflect uncertainties – failure to do so with EPU projects, in particular, results in cost overruns.[206] For instance, he noted Xcel's 2003 cost estimate of *less than $1 million* for the LCM Feed Pump Motor and Pump Replacement project that the Company expected to be completed during a normal RFO (*i.e.,* the cost estimate in 2003 did not include consideration of an EPU), that resulted in a *$92 million final cost* when performed during Xcel's EPU-related RFOs.[207] Another example of concern is the five-fold increase in Xcel's 13.8 kV

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[203] Tr. Vol. 4 at 62-64 (Jacobs).
[204] *Id.* at 64-65.
[205] *Id.* at 64-66.
[206] *See* DOC Ex. 305 at 13 (Jacobs Public Direct).
[207] Tr. Vol. 4 at 69 (Jacobs) (referring to Xcel Ex. 9 at (TJO-2) Sch. 32 at 26 of 57 (O'Connor Rebuttal) and Xcel Ex. 3 at (TJO-1) Sch. 26 at 2 of 3 (O'Connor Public Direct). *See also* Tr. Vol. 4 at 53 (Jacobs) (regarding the greater complexity of replacing a pump or feedwater heater as part
(Footnote Continued on Next Page)

distribution system modification, from an initial estimate of $20.9 million to the final installed cost of $119.5 million.[208] Dr. Jacobs found no reasonable basis for such an increase in cost:[209]

> [I]t is possible that the 13.8 kV electric distribution system modification can be justified at the initial cost estimate of $20.9 million. However, justification at the final cost of $119.5 million is not credible. There is no reasonable basis for Xcel incurring a 5-fold increase in costs of a distribution system in the Company's own generation plant.

In conclusion, Dr. Jacobs' *but for* method of classifying EPU-related modifications makes sense. But for the EPU, the Monticello plant could have continued operating at the pre-EPU power level with implementation of the LCM projects listed in Xcel's 2005 certificate of need discussed above.[210] The plant was operating at that power level before the EPU project was undertaken and could have continued operating with the existing equipment. However, the plant could not operate at the EPU power level without implementation of the EPU projects.[211]

Dr. Jacobs acknowledged that eventually all nuclear power plants require on-going maintenance over time, and the utilities make routine decisions on whether to repair or replace equipment, on the timing of the repair or replacement, and on the specific approach to take.[212] The point, however, is that "the specific repair or replacement decision for routine maintenance (LCM) would have been different in many cases absent the need to support the power uprate."[213]

(Footnote Continued from Previous Page)
of an EPU due to the need to increase the capacity of the pumps rather than solely as LCM work on an existing plant: "You have to sometimes reinforce the building, . . . as in the case of Monticello, go down to bedrock for the foundations of the feedwater pumps, so it becomes a much more complicated and expensive proposition at that point.").
[208] Xcel Ex. 3 at (TJO-1) at Sch. 28 at 1, 3 of 9 (O'Connor Direct).
[209] DOC Ex. 30 at 23 (Jacobs Public Direct).
[210] DOC Ex. 307 at 11 (Jacobs Surrebuttal).
[211] *Id.*
[212] *Id.* at 11-12.
[213] DOC Ex. 307 at 12 (Jacobs Surrebuttal).

3. Xcel employees also confirmed certain of Dr. Jacobs' EPU-only classifications

As noted above, Dr. Jacobs' discussions with Xcel's Mr. O'Connor confirmed Dr. Jacobs' determination that it was reasonable to classify the 13.8 kV distribution system upgrade as needed solely for the EPU. Xcel employees also confirmed for Mr. Jacobs during a tour of Monticello that the condensate demineralizer replacement was needed only because of the higher flow due to the EPU.[214]

4. Examples of Xcel's unreasonable shift of costs to the LCM by misclassifying a modification that was necessary principally to support the EPU

Dr. Jacobs identified several examples in his Surrebuttal Testimony of unreasonable attempts by Xcel to shift costs from the EPU to the LCM by misclassifying a modification as being necessary to support the LCM, as follows:[215]

> • **13.8 KV distribution system** - I classified the $119.5 million, 13.8 kV distribution project as an EPU cost as discussed in my direct testimony at page 11. The ***larger distribution system was installed to power the larger feedwater and condensate pumps and confirmed to be an EPU project by Mr. O'Connor during discussion at the Monticello plant and in his rebuttal testimony***, both as discussed above and where he stated that if the EPU were not accomplished, "…we may have chosen to stay with the 4kv voltage and added capacity to the existing system…" Xcel Ex. ___ at 96 (O'Connor Rebuttal). These facts simply do not support Xcel's proposal to allocate the entire $119.5 million for the 13.8 kV distribution plant to the LCM project without an analysis or an idea of what the alternative LCM project would have been or cost.
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> • **Condensate demineralizer replacement** - ***I allocated these costs to the EPU in my direct testimony because it was classified as such in Mr. O'Connor's NRC letter. In addition I was told during a tour of Monticello that the demineralizer tanks were only replaced because of the higher flow due to the EPU.*** Contrary to these facts, Xcel allocated the cost of this system primarily to the LCM project. Mr. O'Connor and Mr. Stall attributed the need for replacement of the entire demineralizer tanks to the outmoded system controls. However, controls can be replaced without replacing tanks, valves and piping. Contrary to Xcel's proposal in this proceeding to allocate all of the costs of replacing the condensate demineralizers to the LCM, ***the fact is that tanks, piping and valves had to be***

[214] DOC Ex. 307 at 14-15 (Jacobs Surrebuttal).
[215] *Id.* (emphasis added).

replaced because of the higher flows required by the EPU, not the LCM. This conclusion reflects what Mr. O'Connor told the NRC.

- **New turbine** - Despite the component's name, Xcel proposes to classify the EPU Turbine Replacement as almost entirely LCM costs. The prior turbine was new in 1998, as part of an earlier uprate. The original turbine lasted for 25 years and it is not uncommon for turbines to last for the life of the plant. ***This turbine was replaced "…to accommodate increased steam flow under EPU conditions" as stated by Mr. O'Connor's letter to the NRC.***

- **Reactor Feedwater Pumps** - The component, MNGP EPU Replacement of Reactor Feedwater Pumps/Motors, was ***described by Mr. O'Connor to the NRC as "…Replace the existing reactor feedwater pumps with new pumps sized for EPU conditions."*** Yet Mr. O'Connor inappropriately charged this project almost entirely to the LCM.

Xcel did not show that its classification as LCM-related work is reasonable. The record supports a determination that they are modifications necessary to support the EPU.

C. COST ASSIGNMENT: DR. JACOBS ASSIGNED COSTS TO EPU-ONLY PROJECTS IN A REASONABLE MANNER:

1. Following classification of work as EPU-only, Dr. Jacobs assigned costs to those projects based on Schedule 30 of Mr. O'Connor's Direct Testimony

To be included in his cost assignment attachment, Attachment WRJ-3, which identifies costs associated with EPU-related modifications, Dr. Jacobs required that a modification or project item must be listed in Xcel's November 2008 NRC letter (with the exception of the NRC EPU licensure costs[216] and later added 13.8 kV distribution system)[217] and be priced out in Mr. O'Connor's Schedule 30.[218] He identified projects in his Surrebuttal Testimony whose costs he

[216] Of the twelve items included in Mr. O'Connor's Schedule 30 that were not also listed in Enclosure 8 of the NRC letter, the two largest cost items were the EPU License Development cost ($59.3 million) and the Steam Dryer Replacement ($30.4 million). Other items were relatively low cost. Dr. Jacobs included the EPU License Development cost as an EPU cost (Schedule 30 lists it as, "EPU only work – Could have been avoided in the absence of an uprate"), but did not include as an EPU cost the Steam Dryer Replacement given his conclusion that it provided sufficient benefit to long term operation). DOC Ex. 305 at 10-11 (Jacobs Public Direct).
[217] DOC Ex. 305 at 11 (Jacobs Public Direct).
[218] DOC Ex. 305 at 11 (Jacobs Public Direct); DOC 307 at 4 (Jacobs Surrebuttal).

did not include as EPU projects because their costs were not priced out in Mr. O'Connor's Schedule 30.[219]

In his Direct Testimony at 9-14, Dr. Jacobs described the results of assigning costs to the EPU project based on the costs attributable to that project in Mr. O'Connor's Schedule 30, together with the $59.3 million in EPU license development costs.[220] He created the following table of his conclusions:

Refining Cost Allocations to Reflect Cost-Causation

Category	Amount ($ millions)	Percent
EPU work orders	$569.5	85.7%
Not required for EPU	$95.4	14.3%
LCM work orders	$7.2	1.1%
Items for both	$39.8	6.0%
Items not in NRC Encl. 8	$48.3	7.3%
Total	$664.9	100 %

As shown, Dr. Jacobs included only the costs of EPU-only work, and excluded costs for modifications that were noted in Schedule 30 as being for LCM and EPU work.

2. Xcel failed to show that its cost allocation methodology as between EPU-only costs and LCM work is unreasonable

Xcel did not demonstrate that its cost allocation methodology as to EPU-only modifications and LCM-related work is reasonable; Dr. Jacobs' showed that the Company's methods are not reasonable. As described above, Dr. Jacobs' method of identifying projects necessary for the EPU using Mr. O'Connor's list of all needed EPU modifications set forth in his November 5, 2008 letter

[219] *Id.*
[220] DOC Ex. 305 at 12 (Jacobs Public Direct).

to the NRC (plus with the addition of the costs for EPU license development and the cost for the 13.8 kV distribution system upgrade) as EPU costs.[221] Based on his conservative analysis, Dr. Jacobs' determination that 87.7% of total LCM/EPU costs were needed to support the EPU is reasonable.

Xcel's claim that its initial estimated ratio of EPU-related costs to LCM-related costs of 41.6% to 58.4%, respectively, is not supported by the record as a reasonable split of final total costs (and overruns). Dr. Jacobs explained that allocating only 41.6 % of final total costs to the EPU would be unreasonable because Xcel's initial estimate of the cost split in 2008 was based on its flawed initial estimate of final costs.[222] This allocation would not reflect two important facts: 1) Xcel's initial cost split estimate is based on a much lower total cost estimate, and 2) it does not consider the impact of the final cost of major EPU components such as the $121 million 13.8 kV distribution system modification which greatly shifted the cost ratio to the EPU projects.[223]

Further, Xcel did not show that its claimed "avoided cost" method of allocating costs between the EPU and LCM was reasonable. It assumes, essentially, that all costs are LCM costs until proven otherwise.[224] Dr. Jacobs explained that, according to Mr. O'Connor's effort to allocate costs between the EPU and the LCM, to do so reasonably would require significant analysis which Mr. O'Connor did not provide:[225]

> [Mr. O'Connor's approach would require] detailed estimates for each project with and without the requirements imposed by the EPU. The cost difference between the project needed to support the EPU and the hypothetical LCM project assuming no EPU could then be used to allocate costs between LCM and EPU. ***However, Mr. O'Connor did not undertake this analysis***.

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[221] DOC Ex. 305 at 10-12 (Jacobs Public Direct); DOC Ex. 307 at 8 (Jacobs Surrebuttal).
[222] Xcel has not offered to be bound for cost recovery by its initial cost estimate for the LCM/EPU project, although it demands that its initial cost split estimate must be used by the Commission. Dr. Jacobs disagreed for reasons discussed in the text, above.
[223] DOC Ex. 307 at 16 (Jacobs Surrebuttal).
[224] DOC Ex. 307 at 12-13 (Jacob Surrebuttal).
[225] *Id.* at 13 (emphasis added).

Xcel's approach to estimating LCM and EPU costs is not reasonable since 1) it did not estimate the LCM-only costs of the components as needed to determine a proper allocation; 2) it did not determine which components would be required for the LCM-only scenario and did not determine when certain components would be needed; and 3) Xcel's approach of allocating costs for some components to the EPU based on the ratio of EPU capacity to total plant capacity does not adequately reflect the higher costs due of Xcel's difficulties in installing larger equipment in a facility with a small footprint.[226] Dr. Jacobs described what would be required to estimate the LCM-only costs, if Xcel had attempt to do so, which it did not:

> ***Estimating the LCM-only costs for each project would be a challenging task.*** First it would need to be determined if the existing component could support operation during the LCM period of operation. If not, the next decision would be to determine whether repair, refurbishment or replacement would be the best option and when the repair, refurbishment or replacement would be done. If replacement was determined to be the best option the availability of an appropriate replacement component would need to be evaluated based on the performance, physical characteristics and safety requirements. If repair or refurbishment was determined to be the best option, the costs of these activities would need to be estimated. Finally the total project cost including engineering, procurement, removal and installation costs would need to be estimated. ***This approach would be a lengthy and time consuming exercise.***

Xcel did not attempt a reasonable cost allocation analysis. Dr. Jacobs' cost split of 85/15 is reasonable in that it recognizes, for example, that the EPU resulted in higher costs such as the modifications requiring excavation to bedrock to install the EPU, which Xcel would not have incurred with the LCM alone.[227]

D. THE NRC HAD NO SIGNIFICANT IMPACT ON THE LCM/EPU PROJECT SCHEDULE OR ITS CAPITAL COSTS

1. Neither the NRC generally nor the Fukushima accident specifically negatively impacted the LCM/EPU project schedule or its capital costs

[226] *Id.* at 13 (emphasis added).
[227] DOC Ex. 307 at 16 (Jacobs Surrebuttal).

Dr. Jacobs agreed that NRC licensure costs increased, and that all of those increased costs should be assigned to the EPU, but strongly disagreed that either the NRC generally or the Fukushima accident specifically negatively impacted the LCM/EPU project schedule or its capital costs.[228] He testified that the LCM and the EPU projects were conducted to strictly comply with NRC regulations and to ensure that the licensing basis of the plant is maintained to ensure safe plant operation.[229] While the Fukushima accident in Japan and the NRC's decision to review the methodology for Containment Accident Pressure analyses did result in additional licensing costs for the EPU project, Dr. Jacobs provided the following reasons as to why the NRC did not cause significant additional capital costs or impact the overall LCM/EPU project schedule:[230]

> While the initial schedule objective of completing the LCM and EPU projects during the 2011 refueling outage was delayed to resolve licensing issues, discussions with Xcel personnel during the Monticello site visit revealed that other issues, including procurement and installation of critical components, would have delayed completion until the 2013 refueling outage even without licensing delays. Discussions with Xcel personnel also revealed that there are no costs specifically related to NRC requirements regarding Fukushima impacts in the LCM/EPU project costs.

2. Xcel's lack of understanding of the true scope of the LCM/EPU work had the most significant impact on Xcel's high cost overruns

Based on his review of the record in this case, Dr. Jacobs' concluded that the factors that most significantly impacted the design and cost overrun of the Monticello LCM and EPU projects were Xcel's lack of understanding of the true scope of work, and the amount of uncertainty and resulting inadequacy in providing a reasonably accurate estimate of the cost to implement the projects.[231] He cited as an example what was in his opinion completely unreasonable: Xcel's five-

[228] DOC Ex. 305 at 15 (Jacobs Public Direct); DOC Ex. 307 at 2, 7 (Jacobs Surrebuttal).
[229] DOC Ex. 305, *supra,* at 15.
[230] DOC Ex. 305 at 15 (Jacobs Public Direct).
[231] *Id.* at 16.

fold cost increase for the 13.8 kV electric distribution system modification.[232] As noted above, although he agreed that Xcel might have been able to justify the initial cost estimate of $20.9 million for that work, "justification at the final cost of $119.5 million is not credible. There is no reasonable basis for Xcel incurring a 5-fold increase in costs of a distribution system in the Company's own generation plant."[233] Further, he testified that Xcel's lack of understanding of the scope of the LCM and EPU projects is clearly evidenced by its more than ten-fold cost increase over Xcel's initial estimates, as follows:[234]

> ***Xcel's lack of understanding of the scope of the LCM and EPU projects is clearly shown*** by comparing the original estimate of installation costs of $27.5 million to the actual installation costs of $288.6 million, an increase of ***more than ten times*** the original estimate. Installation costs for the 13.8 kV project by itself were $73.4 million ***more than 2.5 times*** the installation costs that Xcel estimated for the entire project.

Dr. Jacobs pointed to record support for other factors that affected the final cost of the LCM/EPU project including the project management issues discussed by Mr. Crisp. That is, Xcel's "failure to control scope growth resulted in steadily increasing cost estimates as the scope of the project grew over time. As the scope of the project grew and evolved, project management was forced to react to the changing scope."[235] Reasonable project management from the beginning engineering to procurement to construction would have lowered costs, and Dr. Jacobs noted that the Company's choice to perform the project design in parallel with procurement and construction was problematic[236] particularly in this EPU project where Xcel did not perform extensive and detailed pre-planning, design and implementation.[237] He explained, as follows:

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[232] *Id.*
[233] *Id.*
[234] DOC Ex. 305 at 15 (Jacobs Public Direct) (emphasis added).
[235] DOC Ex. 305 at 16 (Jacobs Public Direct).
[236] *Id.* at 17.
[237] *See id.;* Tr. Vol. 14 at 64-65 (Jacobs) (emphasis added).

> Completion of project design leads to a known scope and allows for more accurate estimates of costs. Design completion allows for development of detailed work packages which should identify the constraints and working conditions that impact productivity. ***Having a reasonably developed scope of the project, with specific information about the size of the equipment on logistics of installation would have resulted in a more accurate cost estimate and a better managed project resulting ultimately in lower costs.***

Dr. Jacobs did not quantify the potential cost savings that could be realized from a higher level of design completion and better cost estimating at the beginning of the project, but he compared Xcel's project cost curve to the cost curve of a well-managed project.[238] He explained that the cost curve of a well-managed project does not continue to increase significantly over time:[239]

> [A well-managed project's cost curve does not look like the curve shown in Figure 1 [that appears on page 7 of his Direct Testimony, as replicated previously in this Initial Brief], where [Xcel's] costs increase significantly over time. ***Ultimately, if Xcel had understood the scope and uncertainty of the project and applied a contingency factor appropriate for that level of uncertainty, they might have had a more realistic idea about the cost effectiveness of the project much earlier in the project.***

E. CONCLUSION

Xcel has not shown that its proposed split of costs between EPU-related work and LCM-related work is reasonable. Based on Dr. Jacobs' review and analysis, he has shown that a reasonable split of costs between the EPU and LCM projects is 85% and 15%, respectively. Dr. Jacobs' approach is consistent with Xcel's sworn representations to the NRC in 2008, and reflects the realities of Xcel's actual cost experience with the EPU and LCM for the Monticello plant.[240]

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[238] DOC Ex. 305 at 17 (Jacobs Public Direct).
[239] *Id.* (emphasis added).
[240] DOC Ex. 305 at 17 (Jacobs Public Direct).

X. MR. CHRISTOPHER SHAW: COST-EFFECTIVE DISALLOWANCE REMEDY

A. THE DEPARTMENT'S DISALLOWANCE REMEDY ANALYSIS

Given Xcel's failure to demonstrate the prudency and reasonableness of the $402 million cost overruns, the Department explored as a disallowance remedy the extent to which total estimated costs of the LCM and EPU project render the plant not to be cost-effective. Applying the Strategist model used for the 2008 CN, Department witness Mr. Christopher Shaw performed a cost-effectiveness analysis of the Monticello LCM and EPU updated to reflect the $402 million cost overrun.[241] He provided the record with a break-even cost point over which the EPU would not have been cost-effective in the 2008 EPU CN proceeding.[242] That amount is 73% of total EPU and LCM costs or $485,390,000. The break-even point represents the highest amount of cost that would continue to render the EPU cost-effective, and over which the EPU would not be cost-effective based on actual costs that Xcel knew or should have known in 2008.[243] That is, the addition of Mr. Shaw's break-even or cost-effective analysis allows several conclusions to be drawn from the record regarding the cost-effectiveness of the *EPU as of 2008,* using:

- Mr. Shaw's break-even point based on natural gas costs in 2008, costs of complying with CO_2 regulations, and other cost factors in 2008, together with,
- Dr. Jacobs' cost split determination (85% of total costs are EPU-costs), and with,
- Mr. Crisp's determination of what a reasonable EPU cost estimate in 2008 should have been, based on what Xcel knew or should have known at that time (100% to 150% higher costs than Xcel estimated).

If Xcel had provided the Commission reasonable cost estimates in 2008, based on contingency factors indicated by industry standards, given how little due diligence Xcel had done

[241] DOC Ex. 435 at 1 (Shaw Opening Statement).
[242] DOC Ex. 309 at 30-32 (Shaw Direct).
[243] *Id.*

at that time to estimate the EPU costs, which Mr. Crisp testified would have included a contingency of 100% ($346×2 or $692 million total excluding AFUDC),[244] and a reasonable cost split, [245] the total estimated LCM/EPU cost of $665 million (excluding AFUDC)[246] would not have been cost effective as would have been modeled in the 2008 CN proceeding, compared to the alternatives then considered.[247] Mr. Shaw included the resulting expansion plan, without the addition of the EPU, which showed a more cost-effective alternative than the addition of the EPU in his testimony.[248] That alternative relied on additions of natural gas-fired generation, which was still more cost-effective than the EPU even at the high natural gas costs in 2008 and even with consideration of the costs of complying with CO_2 regulations.

Mr. Shaw also testified that the Commission ***did not*** order Xcel in 2006 (for the 2004 resource plan) to construct an EPU, that the 2008 CN modeling used assumptions based on Xcel's 2007 integrated resource plan (IRP), not the 2004 IRP, and that the 2008 CN modeling focused entirely on the incremental value of the EPU which means that the 2008 CN modeling assumed completion of the LCM regardless of whether the EPU was constructed.[249]

B. THE 2008 MONTICELLO EPU CERTIFICATE OF NEED PROCEEDING ANALYZED THE COST-EFFECTIVENESS OF THE EPU ADDITION

In approving the 2008 CN for the EPU, the Commission accepted, adopted and incorporated the findings, conclusions, and recommendations of the ALJ.[250] The ALJ relied on the

[244] DOC Ex. 303 at 23-24 (Crisp Surrebuttal), Tr. Vol. 3 at 73 (Crisp).
[245] DOC Ex. 311 at 19 (Shaw Surrebuttal).
[246] The DOC Strategist modeling conducted in this proceeding included AFUDC. DOC Ex. 309 at 23 (Shaw Direct).
[247] DOC Ex. 309 at 32 (Shaw Direct); DOC Ex. 311 at 5 (Shaw Surrebuttal).
[248] DOC Ex. 310 at CJS-7 (Shaw Direct Attachments).
[249] DOC Ex. 311 at 15-17 (Shaw Surrebuttal).
[250] ORDER GRANTING CERTIFICATE OF NEED AND ACCEPTING ENVIRONMENTAL ASSESSMENT, January 8, 2009, Docket No. E002/CN-08-185.

Strategist capacity expansion modeling performed by both the Department and Xcel and concluded that: [251]

> 88. Xcel Energy and the [Department] have analyzed a comprehensive list of potential alternatives to this project. It would be neither reasonable nor prudent of Xcel Energy to choose any of them over the Monticello power uprate.

Xcel filed its petition for a certificate of need for the Monticello EPU on February 14, 2008.[252] Xcel estimated the cost of the EPU to be $133 million including $29 million to install a new steam dryer (that is, without the steam dryer, Xcel's estimated EPU cost was $104 million) in 2008 dollars.[253] Under its base case assumptions, Xcel calculated that the Monticello EPU would result in a net present value of revenue requirements (PVRR) savings of $169 million in 2008 dollars, compared to the next best alternative.[254] When the $29 million estimated cost of the new stream dryer was included, the projected PVRR savings was reduced to $128 million.[255] Xcel's baseline cost assumptions were the same assumptions used in the Company's 2007 IRP, not the 2004 IRP.[256] Those cost assumptions included a $17 per ton cost of CO_2 emissions starting in 2010, escalated at 2.5 percent per year, and a natural gas cost of $8.38 per MMBTU in 2008 dollars.[257] Later in the proceeding, Xcel provided updated assumptions that increased the net present value savings to $196 million.[258]

The Department in the 2008 EPU CN proceeding reviewed the cost-effectiveness of the proposed Monticello EPU by comparing the costs as presented by Xcel for the EPU ($133 million

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[251] FINDINGS OF FACT, CONCLUSIONS OF LAW, AND RECOMMENDATION, November 19, 2008, Docket No. E002/CN-08-185.
[252] Docket No. E002/CN-08-185.
[253] MPUC Docket No. E002/CN-08-185, Xcel Petition at 1-6.
[254] *Id.* at Xcel Petition at 6-18.
[255] *Id.*
[256] MPUC Docket No. E002/RP-07-1572
[257] *Id.*
[258] *Id.* at 6.

including the steam dryer) to other alternatives available to meet Xcel's capacity and energy needs.[259] Like Xcel, the Department used the Strategist capacity expansion model to compare the Monticello EPU to alternative capacity expansion options. DOC relied on the Department's preferred case as developed in the 2007 Xcel IRP proceeding.[260] Those assumptions included a $17 per ton cost of CO_2, the midpoint of the Commission's range of $4 to $30 per ton, and the same gas costs relied upon by Xcel.[261]

In the 2008 EPU CN proceeding, the Department compared the proposed Monticello EPU to a biomass alternative, a wind alternative, a coal alternative, and an unconstrained alternative, which allowed the Strategist model to choose the most cost effective options to meet needs.[262] Under the unconstrained main case, the Department concluded that the Monticello EPU would result in approximately $330 million in 2008 dollars in terms of net present value of social costs (PVSC) savings as compared to the next best alternative.[263]

C. XCEL'S 2004 IRP DID NOT REQUIRE XCEL TO PURSUE THE LCM AND EPU ON A PARALLEL BASIS REGARDLESS OF COST.

Mr. Shaw explained that the Commission did not require Xcel to pursue the LCM and EPU projects on a parallel basis, and certainly did not do so irrespective of cost. As summarized in Xcel's initial filing in the 2004 IRP (Docket No. E002/RP-04-1752), the issue at that time (2004-2006) was not whether to add capacity to Xcel's nuclear power plants, but whether to shut down or continue operations at the plants:

> ***If continued operation of our nuclear plants is not the state's preferred option,*** immediately begin resource acquisition for up to 700 MW of peaking and 400

[259] *Id.* at 5.
[260] *Id.*
[261] *Id.*
[262] Even though Department Witness Dr. Steve Rakow determined that a coal facility could not be built by the 2011 date proposed for the EPU, the Department included a coal alternative in its analysis to provide a broad range of cost information to the Commission.
[263] DOC Ex. 309 at 5 (Shaw Direct).

> MW of intermediate capacity and energy for installation in 2011 and 2012. Immediately begin evaluation and selection process for up to 1,600 MW of additional base load resources to come on line in the 2011-2015 timeframe. ***If Monticello and Prairie Island are required to shut down,*** Xcel Energy will need to immediately replace the capacity and energy supplied from those units. While it is unlikely that we would have a base load resource option available to replace Monticello as early as 2011, one strategy would be to bridge the gap with peaking resources until new base load facilities can be brought on line. Given the time frame for replacing the Monticello plant, it is likely that Xcel Energy would need to participate in the construction of facilities for contingency replacement.[264]

Rather than directing Xcel to "take swift action"[265] in a manner that did not allow proper planning, design and construction of the EPU, the Commission's Order after Reconsideration in Xcel's 2004 resource plan (October 18, 2006) did not require Xcel to pursue an EPU for Monticello. The Commission requested that Xcel file a report on the "nature, costs, and benefits of the proposed plant upgrades without diverting limited resources to a premature certificate of need proceeding." Regarding CNs for nuclear facilities, the Commission's Order after Reconsideration stated:[266]

> The Commission agrees with the parties. The detailed report the Company will file in December 2006 will adequately ***apprise regulators and stakeholders of the nature, costs, and benefits of the proposed plant upgrades without diverting limited resources to a premature certificate of need proceeding.***

Moreover, a request to file a certificate of need should not be construed as providing any indication as to whether the Commission would approve the CN.[267] Instead, the 2008 CN proceeding provided the forum for the Commission to evaluate whether Xcel should proceed with the proposed EPU.[268] If Xcel's proposed timeline in that matter had required additional costs or

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[264] Xcel's October 31, 2004 initial filing in its 2004 resource plan, page 1-8 (emphasis added).
[265] Xcel Ex. 12 at 22 (Sparby Rebuttal).
[266] Order After Reconsideration, MPUC Docket No. E002/RP-04-1752, October 18, 2006 (emphasis added).
[267] DOC Ex. 311 at 16 (Shaw Surrebuttal).
[268] *Id.*

risk, Xcel should have incorporated those additional costs and risks into the EPU CN filing for evaluation by the Commission.[269]

D. 2008 EPU CN ANALYSIS STRATEGIST MODELING WAS BASED ON THE 2007 IRP

In this case, the Department relied on Xcel's Strategist capacity expansion model used by the Company in its analysis conducted in the 2008 EPU CN[270] and included the 2007 IRP assumptions rather than those included in the 2004 IRP.[271] This model is the same one that Xcel used in the modeling conducted in this proceeding.[272] The only change to the model the Department made was to remove a 12 MW increase for 2010-2013 that Xcel included its model.[273] This change was done in order to reflect the actual capacity of Monticello.[274] If the actual capacity of Monticello is not reflected in the modeling, the actual cost of the EPU will not be accurate.[275] Adding capacity that occurred prior to the EPU effectively reduces the cost of the EPU,[276] although the practical effect of the Department's removal of 12 MW is minimal.[277]

Costs and assumptions other than the total expected costs of the Monticello LCM and EPU projects remained the same as in 2008, for modeling in this proceeding.[278] The Department agrees with Xcel that the Company could not have anticipated the significant changes due to the Great Recession and hydraulic fracturing.[279] Thus, the assumptions included in the base files included

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[269] *Id.*
[270] DOC Ex. 309 at 30 (Shaw Direct).
[271] DOC Ex. 311 at 11, 15-17 (Shaw Surrebuttal).
[272] *Id.*
[273] DOC Ex. 311 at 19 (Shaw Surrebuttal).
[274] *Id.*
[275] *Id.*
[276] *Id.*
[277] As shown in DOC Ex. 309 at 30 (Shaw Direct) by comparing Tables 6 and 7 to Table 8 and 9 , the effect of the 12MW reduction together with two corrections to data errors *increased* the PVSC of the EPU as compared to Xcel's results.
[278] DOC Ex. 309 at 9 (Shaw Direct); DOC Ex. 311 at 19-20 (Shaw Surrebuttal).
[279] DOC Ex. 309 at 17 (Shaw Direct).

2008 natural gas costs in EPU CN Strategist modeling to represent the best estimates of load growth and fuel prices at the time of the Commission's 2008 CN approval of the EPU.[280]

The Department then determined at what point the allocation of total expected costs to the EPU provides costs and benefits that are approximately equal.[281] As a 73% allocation of total costs to the EPU resulted in the break-even point between costs and benefits, the Department concluded that the portion of the EPU that is not cost-effective is the difference between 73% and the 85.7% of total costs Dr. Jacobs determined was attributable to the EPU project.[282] Use of an incorrect split to determine cost-effectiveness would be unreasonable because doing so would attribute less than the total expected costs of the EPU project to the EPU, and would unreasonably appear to reduce the costs of the EPU below actual expected costs.[283] For purposes of a disallowance remedy, an issue is what level of actual expected costs should be disallowed, given Xcel's failure to demonstrate the prudency and reasonableness of requiring ratepayers to pay for all of the $402 million cost overruns.

E. THE DEPARTMENT DID NOT USE A COST-EFFECTIVENESS ANALYSIS TO DETERMINE PRUDENCY.

The purpose of the Department's cost-effectiveness analysis was to provide an appropriate basis for a remedy based on the specific circumstances in this case.[284] In other words, the Department's cost-effectiveness disallowance analysis is only one part of the Department's recommendation.[285] Moreover, it is important to note that, as a general matter, continued cost-

[280] DOC Ex. 309 at 17-18 (Shaw Direct).
[281] DOC Ex. 309 at 30-31 (Shaw Direct).
[282] DOC Ex. 309 at 31-32 (Shaw Direct).
[283] DOC Ex. 311 at 19 (Shaw Surrebuttal).
[284] DOC Ex. 311 at 6 (Shaw Surrebuttal).
[285] *Id*.

effectiveness of the LCM and EPU overall does not equate with prudency.[286] Ms. Campbell provided the Department's overall recommendation.

F. CONCLUSION

Based on the Department's Strategist analysis and allocation of costs to the EPU, the Department concludes that the Monticello EPU was not a cost-effective resource addition based on the final total estimated costs that Xcel requests to recovery from ratepayers,[287] or based on what a reasonable cost estimate in 2008 would have shown. As discussed below, Ms. Campbell provided the Department's recommendation to disallow that part of the $402 million in cost overruns that would render the Monticello plant not to be cost-effective.

XI. MS. NANCY CAMPBELL: THE DEPARTMENT'S OVERALL RECOMMENDATION

A. OVERVIEW: XCEL DID NOT SHOW THAT ALL OF ITS COST OVERRUNS WERE PRUDENTLY AND REASONABLY INCURRED

Department witness Ms. Nancy Campbell provided the Department's overall conclusion that Xcel has not shown the reasonableness of charging ratepayers for all of the costs of Xcel's $402.1 million cost overrun since the Company failed to show, based on what it knew or should have known at the time, that the costs were reasonable and prudently incurred.[288] Ms. Campbell listed some of the many reasons the Department concluded that the Company failed to demonstrate the prudence and reasonableness of all of the $402.1 million cost overrun, including:[289]

- lack of upfront planning as addressed by Mr. Crisp;
- effects of the "fast-track" approach as addressed by Mr. Crisp;
- inadequate understanding of the true scope of work as addressed by Mr. Jacobs;

[286] *Id.* at 7.
[287] DOC Ex. 309 at 32 (Shaw Direct).
[288] DOC Ex. 436 at 1 (Campbell Opening Statement).
[289] *Id.* at 3.

- insufficient oversight of contractors and the entire process as addressed by Mr. Crisp;
- start and stop process of contractors addressed by Mr. Crisp;
- poor project management as addressed by Mr. Crisp;
- ineffective use of contingencies as addressed by Mr. Crisp;
- lack of cost controls and tracking concerns as addressed by Ms. Campbell;
- human performance errors raised by NRC as addressed by Ms. Campbell;
- low cost estimates and inadequate information in initial CNs and in this case regarding necessary capital costs as addressed by Ms. Campbell and Mr. Shaw;
- lack of communication by Xcel with Commission and interested parties regarding cost overruns as addressed by Ms. Campbell;
- lack of showing that it is reasonable to allow recovery from ratepayers of the amount of EPU project that is not cost effective as addressed by Mr. Shaw.

It is Xcel's burden to demonstrate the prudence and reasonableness of costs it seeks to recover from ratepayers,[290] and it failed to satisfy that burden.[291] Ratepayers are entitled to any doubt as to reasonableness.[292] Quantifying a level of disallowance also is not the Department's burden to prove, although the record certainly supports disallowance of some portion of the cost overruns.[293]

Ms. Campbell calculated the final estimated cost of $748.1 million on a total company basis, including AFUDC, which resulted in a $402.1 million cost overrun.[294] Because Xcel seeks to include in rates full recovery of its cost overruns including total AFUDC, it is important to

[290] Minn. Stat. § 216B.16, subd. 4 (2014).
[291] DOC Ex. 436 at 1, 3 (Campbell Opening Statement);
[292] Minn. Stat. § 216B.03 (2014).
[293] *Id.*
[294] *Id.* at 1-2.

include these AFUDC financing charges in the Commission's disallowance determination, particularly if the Commission adopts the Department's preferred alternative for a disallowance remedy. At this time, the Department's preferred disallowance remedy is to disallow the portion of the EPU overrun that would render the plant not cost-effective (as calculated by Mr. Shaw and that includes AFUDC): a $71.42 million reduction to the capital costs of the Monticello EPU resulting in a $10.237 million revenue requirement downward adjustment for 2015 on a Minnesota Jurisdictional basis, over the remaining life of the plant and stepped down each year due to accumulated depreciation.[295]

The Department acknowledges that in the past the Commission has employed various disallowance methods[296] with the most common practice being to allow no return on costs that have exceeded the Company's approved certificate of need amount. [297] Although the record would support higher disallowance, the Department continues at this time to recommend its preferred alternative to disallow a level of cost overruns that render the plant not to be cost effective.[298] Other disallowance remedies identified in the record do not require a cost-effective analysis.

B. FAILING TO SEPARATELY TRACK AND ACCOUNT FOR COSTS FOR THE LCM AND EPU PROJECTS WAS UNREASONABLE FOR PURPOSES OF COST RECOVERY

Xcel failed to show that it was reasonable, for cost recovery purposes, *not* to separately track and account for the costs of the two separate Monticello LCM and EPU CN projects.[299] Ms. Campbell, a certified public accountant with extensive experience in state and federal regulatory accounting, testified that the Company's tracking process for Monticello LCM and EPU

[295] DOC Ex. 436 at 4 (Campbell Opening Statement); DOC Ex. 315 at 39 (Campbell Surrebuttal).
[296] DOC Ex. 313 at 22-27 (Campbell Direct); DOC Ex. at 37-38 (Campbell Surrebuttal).
[297] DOC Ex. 313 at 27 (Campbell Direct).
[298] DOC 315 at 39 (Campbell Surrebuttal).
[299] *Id.* 11-17.

projects overall does not make sense.[300] At a minimum, Xcel's single cost tracking process creates significant doubt as to the reasonableness of Company claims as to how much of the cost overruns are attributable to the LCM as opposed to the EPU.[301]

1. Two CNs with separate costs and analyses require transparent and accurate cost tracking for rate recovery purposes

Xcel filed two separate CNs in different years for different projects (the 2005 CN included the ISFSI and the LCM costs, the 2008 CN was for the EPU), with different cost estimates and financial analysis.[302] The Commission approved each CN separately, based on separate economic analyses. Yet, for purposes of accounting the Company then (initially) tracked all costs in only one work order – an approach that doesn't make sense,[303] at least not for ratemaking purposes. The Company neither disclosed this practice single-tracking approach to the Commission nor did Xcel seek its approval. Further, even the "child" work orders for modifications that Xcel created in preparation for the 2009 RFO now are disavowed by the Company which claims that most references entitled "EPU" costs really mean "LCM" costs.[304]

A hallmark of rate regulation is and has been transparent cost tracking and accounting of regulatory costs which are costs the public utility intends to seek to recovery from ratepayers. Xcel knew or certainly should have known that it would be subject to cost disallowance by the Commission at a later date as to cost overruns (costs in excess of the cost levels approved for the two projects in the CNs) absent the Company's demonstration of the reasonableness of such

[300] DOC Ex. 313 at 21 (Campbell Direct).
[301] DOC Ex. 315 at 12 (Campbell Surrebuttal).
[302] *Id.* at 19-21.
[303] DOC Ex. 313 at 19 (Campbell Direct).
[304] *Id.* at 21-22 (citing Xcel Ex. 2 at 55-58 (Alders Direct)).

costs.[305] Xcel's practices assured that it would be very difficult to separately review the actual costs of the projects.[306]

Ms. Campbell summarized the many reasons that Xcel's failure to separately track and account for the costs of the two projects was unreasonable:[307]

> First, I noted that Xcel treated Monticello LCM and EPU projects as two separate projects for purposes of review and approval of the projects in CN proceedings before the Commission. Thus, it is not reasonable for Xcel to have tracked these costs for purposes of accounting and regulatory compliance as if they were one project.
>
> Second, Xcel's decision to include all of the costs of the Monticello LCM and EPU projects estimated at $346 million in a single work order is not reasonable since doing so guarantees that the costs are not transparent.
>
> Third, I noted that Xcel's choice in tracking these costs resulted in needlessly higher costs for this prudency review since it was necessary for the Department to hire a consultant to split apart what Xcel never should have put together.
>
> Fourth, the Company's choice not to track costs separately for the Monticello LCM and EPU projects indicated the Company did not think it was important to track the costs approved by the Commission in the two separate CNs.
>
> Fifth, the Company's child orders for modification are labeled as being EPU, yet the Company claims in this proceeding that most of the costs are for the LCM. Ratepayers are entitled to the benefit of any doubt as to Xcel's proposed showing of reasonableness and, thus, it is important to note that Xcel's selection of a non-transparent method of tracking costs appears to create significant doubt as to Xcel's claims regarding costs being attributable to one project rather than the other. DOC Ex. [313] at 19-20, 22 (Campbell Direct).

2. Xcel's reference to an "Integrated Program" is misleading

Xcel witness Mr. Sparby's Rebuttal Testimony on pages 30-31 implies incorrectly that the issues and projects addressed by the separate CNs were the subject of only one CN proceeding, one cost/benefit and alternatives analysis, and one Commission decision. He characterizes all such matters as an "integrated initiative," an "integrated Program" and as "the Program" to "replace

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[305] *Id.* at 20.
[306] *Id.*
[307] DOC Ex. 315 at 12 (Campbell Surrebuttal).

older with newer equipment necessary to support the 20-year life extension as well as the uprate."[308] Further, Xcel then stated incorrectly that its model for "the Certificate of Need" included the total cost with a portion assigned to the EPU.[309] It did not.

Irrespective of whatever program Xcel adopted internally, Xcel did not file an "integrated" certificate need application for the EPU CN: it filed an ISFSI and LCM CN in 2005 and an EPU CN in 2008. Remarkably, Xcel claims entitlement to recover from ratepayers costs for these CN projects, that were presented separately and approved separately by the Commission, but the Company has not presented those costs in manner that allows their review by project or that allows evaluation of the extent to which costs exceeded initial representations to the Commission. To the extent that Mr. Sparby claims that Xcel has no obligation to separately track the costs of the two separate CNs, the obvious response is that ratepayers have no obligation to pay for any cost that Xcel has not shown to have been prudently and reasonably incurred. To the extent that Xcel seeks recovery from ratepayers, it was and is obligated to provide transparent and accurate cost tracking and accounting if it expects the Commission to be able to review the costs of these separate projects; Xcel has not done so with its single tracking approach.

Ms. Campbell acknowledge that single tracking of costs might have reasonable if the Company had started with one combined CN for the LCM and EPU, with one cost estimate, and then later needed to separate the costs. In that event, she testified that there could be higher costs associated with trying to separate costs that were not previously joined.[310] The current case concerns the reverse situation. Xcel chose to combine costs of separated projects which, in turn, resulted in higher costs in this proceeding due to the effort required by the Department's consultant, Dr. Jacobs, to isolate EPU-related costs from non-EPU related costs in order to

[308] Xcel Ex. 12 at 30-31 (Sparby Rebuttal); DOC Ex. 315 at 14 (Campbell Surrebuttal).
[309] *Id.* at 31; DOC Ex. 315 at 14 (Campbell Surrebuttal).
[310] *Id.*

determine a reasonable split of total costs. Xcel has not shown that it was reasonable at the time or now for Xcel to take two separate projects, and combine their costs without a means to provide transparent and accurate review of the separate project costs, at least not for rate recovery purposes.

3. The 2008 CN modeling did not treat the LCM and EPU as one project

In contrast to Mr. Sparby's claim, Department witness Mr. Shaw explained that Xcel's modeling of its EPU CN did not treat the LCM and EPU together as one project.[311] Rather, the 2008 modeling allowed the model to select the least-cost alternative to the 71 MW of capacity for EPU, and the alternatives analysis in that CN proceeding "***focused entirely on the incremental value of the EPU***, not the project as a whole."[312]

4. Even though Xcel claims its internal effort was to implement a combined LCM and EPU project, separate cost tracking for ratemaking purposes would have been available and reasonable

Although the Company claims that its internal effort was to implement the LCM and EPU together, Xcel surely could have tracked the costs separately, at least for ratemaking purposes. Ms. Campbell testified that Xcel routinely tracks costs separately for all kinds of projects that are going on at the same time. For example, she noted that the Company routinely performs plant outages for nuclear, coal and gas plants, where there are several projects underway at the same time during a plant outage and where the different costs of the projects are tracked in separate work orders.[313] For example, attached to Ms. Campbell's Surrebuttal Testimony, NAC-S-3, is Xcel's response to Department discovery in a recent Xcel rate case that shows how the Company tracks costs for several projects in different work orders related to a spring 2012 outage for Xcel's King Plant.[314]

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[311] DOC Ex. 311 at 16-17 (Shaw Surrebuttal).
[312] DOC Ex. 311 at 16-17 (Shaw Surrebuttal).
[313] DOC Ex. 315 at 14 (Campbell Surrebuttal).
[314] *Id.* at NAC-S-3.

4. Xcel witness Alders did not show that resource planning concerns justified Xcel's failure to separately track costs

Xcel witness Mr. Alders did not demonstrate that resource planning concerns justified Xcel's failure to separately track costs for ratemaking purposes.[315] He did not address the matter of separate cost tracking, which Xcel certainly could have done, but instead stated that it would have been highly inefficient and inconsistent with the Company's twin goals of preserving and increasing this generation resource for customers to pursue the LCM and EPU uprates separately.[316] He testified that much of the equipment being replaced for the LCM purposes also need to be modified for the EPU, so planning for these needs concurrently maximized use of the Company's resources.[317] Dr. Jacobs and Mr. Crisp addressed their concerns in this regard, as discussed previously in this Initial Brief.

Ms. Campbell showed that Mr. Alders' efficiency concerns support ***separate, not combined,*** cost tracking and accounting for the separate CN projects. As costs began spiraling upward, if the Company really believed it should still go ahead with the EPU project despite the cost increases they saw, to the extent it intended to seek the increased costs from ratepayers, then it reasonably should have provided notice to the Commission with a request that the Commission find that the project was likely to continue to be cost-effective.

For instance, Xcel could have included in its November 22, 2011, *Notice of Changed Circumstances* ("NOCC") notification to the Commission and interested parties in that proceeding about its expected significantly higher costs, including a rerun of its Strategist modeling to show the Commission that the EPU project was still likely to cost-effective. This is precisely what the Company did with respect to its Prairie Island EPU. For the Prairie Island EPU, the Company

[315] DOC Ex. 315 at 15-16 (Campbell Surrebuttal).
[316] NSP Ex. 8 at 9-10 (Alders Rebuttal).
[317] *Id.*

filed a NOCC in March of 2012, and provided an in-depth economic analysis based on its modeling as to the likelihood of the Prairie Island EPU to continue to be cost-effective, and asked the Commission to make a finding of cost-effectiveness, or not. This Initial Brief discusses Xcel's Monticello NOCC in a later section.

5. Xcel's internal Governance Council/Financial Council decisions do not bind the Commission

Xcel witness Mr. O'Connor seems to suggest incorrectly that the Commission is somehow bound by the Company's internal "Governance Council/Financial Council" decision to implement the LCM and EPU projects together (some years after a power point presentation in 2003), such that it was reasonable for Xcel to use a single work order to track the costs of the two separate Commission-approved CNs.[318] The Department disagrees. The Governance Council/Financial Council is not the Commission. It does not determine whether Xcel has shown its costs to be reasonably incurred, and it does not have authority to impose on ratepayers the costs of projects that exceed the cost estimates presented by Xcel and approved by the Commission.[319] To the extent that Xcel expected to seek recovery from ratepayers of costs and any cost overruns, as a practical matter it had a regulatory obligation to track costs separately for the two CNs in order to make the required showing.[320]

C. HUMAN PERFORMANCE ERRORS BY XCEL LEAD TO HIGHER COSTS AND MAY CONTRIBUTE TO DELAY THE EPU

Human performance errors identified by the NRC have led to higher costs[321] and may have contributed to EPU delay.[322] In response to an April, 2014, newspaper article stating NRC

[318] Xcel Ex. 9 at 11 and Sch. 4-5 (O'Connor Public Rebuttal) (and citing Mr. Weatherby's testimony that costs were tracked in one work order).
[319] *See* DOC Ex. 315 at 16-17 (Campbell).
[320] DOC Ex. 315 at 17 (Campbell).
[321] DOC Ex. 313 at 3-6 (Campbell Direct); DOC Ex. 315 at 3-9 (Campbell Surrebuttal).

concerns regarding "degraded" performance at the Monticello plant, the OAG issued discovery to which provided a lengthy response.[323] Essentially, the Company explained that it had corrected certain issues of concern to the NRC (procedures to address an external flooding scenario) and that a list of human performance issues was being resolved.[324] On September 2, 2014, however, the NRC notified Xcel by letter of continuing concerns. The NRC letter included a chronology of continuing NRC concerns from October 2013, noted that Xcel provided information to the NRC in May, 2014, but said in a summer inspection of the plant that the NRC identified continuing concerns regarding the external flooding and human performance issues such as wiring errors and weld cask test issues.[325] The NRC stated that it will perform additional inspection, beyond routine inspections, through December 31, 2015.[326]

Xcel acknowledged that the NRC determined that the Company's human performance issues had issues crossed a threshold for what the NRC calls a Substantive Cross-Cutting finding in the area of human performance.[327] Xcel witness Mr. O'Connor stated that the performance concerns were determined to be manifested in inadequate procedure and work instructions preparation and usage, attributed to loss of experience and skills with the Operations Department. He said that Contractor procedure usage was another area of human performance caused by supplemental workers that had less experience, which contributed to issues at the last Monticello EPU refueling outage.[328]

(Footnote Continued from Previous Page)

[322] The issue of whether or not the Monticello EPU is used and useful to ratepayers is an issue to be analyzed in MPUC Docket No. E002/GR-13-868.

[323] DOC Ex. 313 at 3-4 (Campbell Direct).

[324] DOC Ex. 313 at 4 (Campbell Direct)

[325] DOC Ex. 315 at 6-7 and NAC-S-1 (Campbell Surrebuttal).

[326] *Id.* at 7.

[327] *Id.* at 5.

[328] DOC Ex. 315 at 7 (Campbell Surrebuttal) (citing NSP Ex. 9 at 35-36 (O'Connor Public Rebuttal)).

While the Department is confident that the Company is working to resolve the NRC's concerns, there can be no doubt that such issues caused higher regulatory costs and may have contributed to delay of the EPU. Clearly nuclear operations costs will be higher due to increased NRC review and required Company responses to NRC, and NRC's additional NRC inspections. Additionally, there are costs related to the Company having to figure out an alternative method to address work that was completed incorrectly such as the post-weld issue, as well as costs involved with Xcel's efforts to request an exemption from certain NRC requirements.

D. INADEQUATE COMPANY COMMUNICATIONS OF MOUNTING COSTS -- TO THE EXTENT XCEL WISHED ASSURANCE OF FUTURE FULL RECOVERY OF COSTS

Xcel, now having spent hundreds of millions of dollars, claims both that any significant disallowance will financially harm the Company *and* that it adequately apprised the Commission and interested parties as those costs were escalating. To be clear, at least for rate recovery purposes and prior to the Company seeking recovery of those costs from ratepayers, it is irrelevant whether Xcel fully informed the Commission of Monticello's soaring costs and expected cost overruns. Xcel bears the burden to demonstrate that whatever amount it spent was reasonably and prudently incurred when it seeks recovery from ratepayers.

Nonetheless, Company maintains both positions and its witnesses chronicled a series of statements to the Commission beginning in 2011 of its rising cost expenditures and total cost estimates.[329] Those updates lacked detail and economic rigor, however, and appear to have been intended perhaps to impute to the Commission shared responsibility for Xcel's actions and resulting costs. "But you knew," does not accurately characterize the state of knowledge of the Commission or interested parties, and does not relieve Xcel of its responsibility to prove the prudence and reasonableness of such costs.

[329] Xcel Ex. 12 at 29-20 (Sparby Rebuttal); Xcel Ex. 8 at 15-17 (Alders Rebuttal).

It may be instructive to review the type of meaningful filing that Xcel could have made, and knew it could have made, regarding its Monticello swelling cost increases *if* Xcel had sought assurance of likely future rate recovery. Specifically, on November 22, 2011, Xcel filed an NOCC regarding a change in the timing of "our Extended Power Uprate ('EPU') at the Monticello Nuclear Generating Plant" in the EPU CN docket, E002/CN-08-185.[330] Xcel discussed in the 4-page letter the NRC's focus on Fukushima-related response by utilities, and that the NRC was not likely to approve the plant's license amendment for some time. [331]Thus, Xcel stated that it decided to complete the EPU work during the 2013 spring outage.[332] *The filing was silent regarding the rising costs of the project.*

In contrast, and just a few months later in March, 2012, Xcel filed an NOCC regarding its Prairie Island EPU project, in MPUC Docket E002/CN-09-509.[333] The 22-page NOCC letter for the Prairie Island EPU discussed not only the timing of the project and NRC concerns, but detailed the Company's rerun of its CN modeling analysis of alternatives, under new forecast assumptions, together with a request that the Commission *"reaffirm the uprate program remains in the public interest before we proceed further."*[334] It included meticulous economic analysis of the results of its modeling, and the basis for the Company's view that the project continued to be cost-effective even with current assumptions.[335] Xcel sought the Commission's ruling "to confirm" that it would

[330] DOC Ex. 405. Minn. R. 7849.0400, subp.2 (H) requires a NOCC filing when a CN-approved project is delayed in implementation.
[331] DOC Ex. 405 at 1-3.
[332] *Id.* at 1-4.
[333] DOC Ex. 406 at 22.
[334] *Id.* at 22.
[335] *Id.* at 8-20 and Att. A at 1-13.

not have made a different decision, if the Commission had known then the current circumstances," as follows:[336]

> We believe a retrospective review is appropriate in this Petition ***to confirm that a different decision would not have reasonably been made had the Commission known the current*** timing and size of the EPU at the time the Certificate of Need was issued.[citation omitted]

In conclusion, the Company stated its willingness "to implement the EPU if the Commission determines it is in the public interest after balancing the potential risks and benefits."[337]

The Department agrees with Mr. Alders that Xcel was not required for the Monticello plant to perform the detailed economic analysis provided for the Commission the Prairie Island EPU,[338] and was not required to seek Commission affirmation that it was reasonable for Xcel to continue with the Monticello project; however, the fact remains that Xcel continues to have the burden of proof to show that the costs it seeks to recover from ratepayers are reasonable. Further, the Department does not agree that Xcel's updates regarding Monticello made in 2011 during the 2010 rate case were particularly meaningful, at least for rate recovery purposes. The 2010 rate case included the Company's first communication that costs could exceed $500 million.[339] Because this communication of higher costs occurred after the primary evidentiary hearing and because Xcel did not seek cost recovery at that time, the Department had a very limited opportunity to review these costs and the Department was not that concerned because the net effect of the changes in the rate case resulted in an overall net reduction to rates in the rate case. Xcel first

[336] *Id.* at 7.
[337] *Id.* at 21
[338] Xcel Ex. 15-17 (Alders).
[339] DOC Ex. 313 at 8 (Campbell Direct).

sought recovery of Monticello project costs in the 2012 rate case, at which point Xcel had spent another $100 million plus dollars,[340] with costs continuing to rise.

The point is that if Xcel wanted assurance regarding recovery of Monticello EPU project costs from ratepayers, it certainly should have provided detailed economic evaluation of Monticello's cost-effectiveness and requested that the Commission confirm the project's reasonableness, as it did for the Prairie Island EPU project. The Company chose not to do so.

E. XCEL OVER-ESTIMATED THE FINANCIAL BENEFITS OF THE LCM AND EPU PROJECTS

On pages 9 through 11 of her Surrebuttal Testimony, Ms. Campbell identified three areas in which Xcel witness Mr. Sparby overstated the likely financial benefits of the LCM and EPU projects: the power capacity level at which the Monticello plant has been operating, the length of time that the EPU will operated under the current NRC license amendment, and lack of recognition of ongoing costs of spent nuclear fuel.[341] Additionally, Mr. O'Connor suggested incorrectly that the Commission should expect the NRC to approve another license amendment that would provide benefits beyond some 60 years.[342] Ms. Campbell concluded, as follows:

> I believe that the Company is likely overstating its benefits of Monticello LCM and EPU projects regarding the actual MWs available and the actual time period these MWs are available because the costs were so high – more than double their actual CN estimates. I conclude that the Company is attempting to find additional overstated benefits to make the Monticello LCM and EPU projects appear to be more cost-effective than they really are.[343]

Benefits as well as costs must be accurately represented in the current matter. This is particularly true in light of the Department's recommended disallowance remedy method to identify the highest cost level at which the combined project would be cost-effective (costs less

[340] DOC Ex. 22-24 (Campbell Surrebuttal).
[341] DOC Ex. 315 at 9-11 (Campbell Surrebuttal).
[342] *Id.* at 10-11 (citing Xcel Ex. 10 at 9-10 and Sch. 2 (O'Connor Rebuttal)).
[343] DOC Ex. 315 at 11 (Campbell Surrebuttal).

than benefits), based on 2008 modeling, and therefore, it is important to correctly identify overstatements of benefits. Exaggerated benefits would skew analysis of whether (or by how much) costs exceed those benefits. Of course, if the Commission were to select a different disallowance alternative, resolution of this this issue may not be necessary, but should be considered.

As to Mr. Sparby's testimony that the Monticello LCM and EPU projects "provided benefits of 671 MW of generation and 20 years of carbon-free baseload generation,"[344] Ms. Campbell provided the following corrections:[345]

> First, ***the Monticello Plant continues to operate at the 600 MW pre-EPU level, not at 671 MW.*** As I noted in my Opening Hearing Statement on page 3 in the current Xcel Rate Case (Docket No. E002/GR-13-868), Xcel did not show that the Monticello EPU (approximately 71 MW) would likely be available in 2014. As a result, the Department recommended a January 2015 assumed in-service date for purposes of ratemaking, since: 1) the EPU will likely not be available for customers in 2014 and 2) customers are already paying replacement power costs in 2014.
>
> Second, as noted in my Direct Testimony in the current Xcel Rate Case and attached to my Direct Testimony in this proceeding as Attachment NAC-13 (specifically page marked NAC-9), ***for purposes of depreciation, the remaining life of the Monticello Plant is 16.8 years as of January 1, 2014. This fact means that the Monticello EPU Project (71 MW) will likely only be available for 15.8 years*** assuming a January 1, 2015 in-service date for purposes of rates as recommended by the Department.
>
> [Third] [r]egarding the benefits of carbon-free generation, Mr. Shaw noted in his Direct Testimony that those benefit were incorporated in the analysis conducted in the 2008 CN by applying a $17 per ton cost of CO2 emissions. DOC Ex. [309] at 5 (Shaw Direct) Further, while ***I agree that a nuclear plant provides carbon free benefits,*** for the more limited timeframe and MWs as corrected above, . . . ***nuclear plants creates [sic] nuclear spent fuel that the Department of Energy still is not taking and likely will not take for years to come.*** As a result, this nuclear spent fuel will need to remain in interim casks, which clearly has some environmental impacts.

[344] *Id.* at 9-10 (citing (Xcel Ex. 12 at 4, 21 (Sparby Rebuttal)).
[345] DOC Ex. 9-10 (Campbell Direct) (emphasis added).

Mr. O'Connor similarly encourages the Commission to count on significant NRC license extension without any reasonable basis to do so. He states that, despite the NRC license being only valid only until September 2030:[346]

> [T]he NRC and nuclear industry are well underway in developing extended license policies to ensure that the extended operating plants' lives ***beyond 60 years*** (40 initially and 20 for relicense) is safe, manageable, and economical.

For support, he noted NRC reference to "subsequent license renewal," and he attached a White Paper from the Nuclear Energy Institute (NEI) discussing this initiative."[347] Ms. Campbell reasonably disagreed with Mr. O'Connor, as follows:[348]

> The question of whether the operating life of Monticello would extend beyond 2030 is far too speculative to give any weight, even with an NEI whitepaper, so the only supportable benefits are those up through 2030, per the current license.

For the reasons discussed, Ms. Campbell reasonably corrected Xcel's overstatements of benefits, above.

F. CONFIRMING THE TOTAL ESTIMATED COSTS OF THE MONTICELLO LCM/EPU PROJECT

1. Final estimate: $748.1 million on a total company basis, with AFUDC

The Department confirmed that total estimated costs of the Monticello LCM and EPU projects are $748.1 million on a total company basis, using actual information through March 31, 2014 and estimated vendor credits.[349] As noted above, the $748.1 million on a total company basis is comprised of $635.3 million for CWIP, $28.0 million for retirement work in progress, and $84.8 million for AFUDC.[350] The Company forecasted its final costs through December 31, 2014, for

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[346] DOC Ex. 315 at 10 (Campbell Direct) (citing Xcel Ex. 9 at 9-10 and Sch. 2 (O'Connor Rebuttal) (emphasis added).
[347] *Id.*
[348] DOC Ex. 315 at 10-11 (Campbell Direct). *See also* Tr. Vol. 3 at 14 (Jacobs) (NRC extension is "possible").
[349] DOC Ex. 436 at 2 (Campbell Opening Statement); DOC Ex. 315 at 19 (Campbell Surrebuttal).
[350] *Id.*

Monticello to be $663.4 million, which excludes AFUDC costs.[351] Ms. Campbell testified that Xcel's forecasted final number is only $0.1 million different than the total of the $635.3 million for CWIP and $28.0 million RWIP/removal costs, or $663.3 million that I noted.[352]

2. AFUDC is Part of the Total Cost of the LCM and EPU Projects

AFUDC is the net cost of financing funds that are used for construction purposes for the period of construction.[353] AFUDC overall costs increases over time, as Ms. Campbell explained:[354]

> The longer it takes for a plant to be constructed and placed in service, the higher total AFUDC becomes.

Xcel seeks to recover from ratepayers not only the construction costs of the LCM and EPUC projects, but also the total AFUDC associated with the LCM and EPU projects.[355]

Ms. Campbell testified that AFUDC costs need to be part of the overall assessment of the cost overruns in this matter.[356] It is particularly important to do so in light of the lengthy period of time that AFUDC has been accruing. The Department's analysis through Mr. Shaw's modeling analysis reasonably incorporates the effects of the higher AFUDC costs.[357]

3. The $346 million total CN cost estimates include inflation, based on the record

The Department showed that the correct calculation – in 2013 numbers – of the Commission-approved cost estimates for the 2005 CN (LCM $135 million) and 2008 EPU CN (EPU including steam dryer $133 million) is $346 million.[358] That is, the Department made a

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[351] *Id.*
[352] *Id.;* DOC Ex. 313 at 35, NAC-8 (Campbell Direct) and Xcel Ex. 16 at 2 (O'Connor Public Surrebuttal).
[353] DOC Ex. 313 at 12 (Campbell Direct).
[354] *Id.*
[355] Tr. Vol. 1 at 125 (O'Connor).
[356] DOC Ex. 313 at 18 (Campbell Direct).
[357] *Id.*
[358] Tr. Vol. 4 at 127-128 (Campbell).

simple calculation of taking the 2005 LCM approved estimate of $133 million and escalated this amount for inflation of 4% each year through 2013, and did the same calculation for the 2008 EPU approved estimate (escalated by 4% for each year through 2013), and then added those values which equals $346.57 million in 2013 dollars, approximately.[359] Additionally, the $346 million is consistent with the Company's response to DOC information request 94 on page 3.[360] The $135 million figure was used in Xcel's 2005 CN,[361] and the $133 million figure was used in Xcel's 2008 EPU CN.[362]

Accurate calculation of the Commission-approved LCM CN and EPU CN cost estimates is important for two reasons. First, the level of cost overruns (costs exceeding Commission-approved estimates) would be incorrectly diminished if the Commission-approved estimates were miscalculated as being higher than they were. Second, in order for the Commission to consider the Department's recommended disallowance remedy the correct figures must be modeled to reflect the cost estimates used in the 2008 CN modeling of the EPU of Mr. Shaw.

For the reasons discussed above, the Department demonstrated the accuracy of the Commission-approved CN estimates it used in its modeling.

[359] *Id.*; *see generally* Tr. Vol. 39-42 (Anderson).
[360] DOC Ex. 313 at 9 and NAC-5 at 3 (Campbell Direct) (citing Xcel response to DOC IR. No. 94).

[361] DOC Ex. 309 at 3 (Shaw Direct); Tr. Vol. 2 at 18 (Alders).
[362] DOC Ex. 309 at 4 (Shaw Direct).

G. DISALLOWANCE RECOMMENDATION

1. Summary

In her Opening Statement, Ms. Campbell summarized the Department's recommended adjustment at this time: to disallow $71.42 million on a Minnesota jurisdictional basis[363] with related AFUDC costs, which reflects the portion of the Monticello EPU overrun that was not cost effective (as calculated by Mr. Shaw), for a resulting revenue requirement adjustment of $10.237 million for 2015 on a Minnesota jurisdictional basis, over the remaining life of the plant and stepped down each year due to accumulated depreciation.[364]

In addition, the Department discussed the Commission's precedent regarding disallowance remedies, including the Commission's most common remedy of allowing no overall rate of return on costs that exceeded the Commission approved CN amounts.[365] Based on a $402.1 million cost overrun, a no-return approach would result in a downward revenue requirement adjustment of $25.796 million for 2015 on a Minnesota jurisdictional basis, over the life of plant, stepped down over time for accumulated depreciation.[366] Ms. Campbell also discussed a potential Commission option of allowing Xcel to earn only a weighted short-term and long-term debt return (no equity) on the $402.1 million, which would result in a downward revenue requirement adjustment of $20.507 million for 2015 on a Minnesota jurisdictional basis, over the life of plant, stepped down over time for accumulated depreciation.[367] The 75 percent disallowance and 25 percent no return recommendation of OAG witness Mr. Lindell would result in roughly a $321 million cost disallowance and roughly no-return on $107.1 million of the cost overrun, for a downward revenue

[363] *See* DOC Ex. 313 at NAC-12 (Campbell Direct) for detailed adjustment calculation.
[364] DOC Ex. 436 at 4 (Campbell Opening Statement); DOC Ex. 315 at 39 (Campbell Surrebuttal).
[365] DOC Ex. 436 at 4 (Campbell Opening Statement); DOC Ex. 313 at 22-27 (Campbell Direct).
[366] DOC Ex. 436 at 4 (Campbell Opening Statement); DOC Ex. 315 at 37 and NAC-S-4 (Campbell Surrebuttal).
[367] *Id.* at 37-38.

requirement adjustment of $58 million for 2015 on a Total Company basis ($42.9 to $38.4 million on a Minnesota Jurisdictional basis), stepping down for accumulated depreciation over the life of the plant.[368]

2. Commission precedent regarding disallowance remedies

The Department identified Commission disallowance decisions involving rate cases as well as rider dockets that concern cost recovery between rate cases.[369] Regarding, rate cases, Ms. Campbell discussed Xcel's 2010 and 2012 rate cases in which the Commission disallowed for each case full cost recovery of the Company's Nobles wind generation project by allowing no overall rate of return on costs that exceed the amount of Xcel's winning competitive bid.[370] She also identified the Commission's practice in riders (where costs are allowed to be recovered between rate cases), by providing a non-exhaustive list of rider dockets in which the Commission capped cost recovery above certain levels, as follows:[371]

- The Commission's February 7, 2014 Order in Docket No. E002/M-12-50 for the capped costs of the Bemidji transmission project to $74 million for Xcel.
- The Commission's March 10, 2014 Order in Docket No. E017/M-13-103 for the capped costs of the Bemidji transmission project to $74 million for Otter Tail Power.

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[368] DOC Ex. 315 at 37 (Campbell Surrebuttal) (citing OAG Ex. 200 at 29-30 (Lindell Rebuttal)).
[369] DOC Ex. 313 at 22-27 (Campbell Direct).
[370] DOC Ex. 313 at 23-24 (Campbell Direct). Ms. Campbell also identified Xcel's 2008 rate case in which the Department's challenged recovery of costs that exceeded Xcel's Commission-approved cost estimates for the Grand Meadow wind farm. MPUC Docket No. E002/GR-10-971. The Company then corrected its cost figures such that there were no cost overruns being requested from ratepayers, and the issue was resolved. *Id.* at 22-23. Moreover, in the Interstate Power and Light (IPL) rate case and supplemental rate case docket, MPUC Dockets E001/GR-10-276 and E001/M-10-312, the Department and other parties challenged IPL's demonstration of prudent and reasonable costs as to a wind farm in Iowa, (the "WWE") that the Commission had not reviewed or approved. The matter resolved between the parties prior to a second evidentiary hearing based on parties' testimony, and with Commission approval. *See* DOC Ex. 313 at 24-25 (Campbell Direct).
[371] DOC Ex. 313 at 25-26 (Campbell Direct).

- The Commission's April 22, 2010 Order in Docket No. E002/M-09-1083 for the capped costs of the Nobles Wind and Wind2Battery projects.
- The Commission's January 23, 2014 Order in Docket No. E002/M-00-1583, requiring Xcel to return to the Renewable Development Fund (RDF) cost overruns for an RDF contract that the Commission previously approved but was "improperly amended and imprudently administered" in 2004.

Significantly, the Commission in its April 22, 2010 Order on page 5 regarding Xcel's Nobles and Wind2Battery wind projects, ordered to cap cost recovery between rate cases such that it disallowed costs that exceeded approved CN amounts or Commission approved amounts, between rate cases, as follows:[372]

> ***The Commission will allow*** Xcel to recover, through its RES rider, ***only the costs up to the amounts of the initial estimates at the time the projects are approved as eligible projects. No amounts above what Xcel initially indicated the projects would cost will be allowed to flow through the RES rider. Nor will additional cost overruns be eligible for deferred accounting.***
>
> However, ***Xcel will be allowed to seek recovery, on a prospective basis, of additional costs at the time of its next rate case, upon a showing that it is reasonable to require ratepayers to pay for any such additional costs.*** This approach allows Xcel to recover the majority of the costs for projects eligible for RES rider recovery promptly, while providing at least some incentive for Xcel to minimize costs and help protect ratepayers. [Emphasis added]

2. Department's preferred disallowance recommendation, at this time

Department witnesses raised significant doubt as to the prudency and reasonableness of all of Xcel's cost overruns, but acknowledged that its analysis does not lend itself to item by item quantification of a particular level of cost disallowance other than complete disallowance, given Xcel's all-or-nothing approach.[373] There is no invoice or document that quantifies the likely cost increases that resulted from the many examples of Xcel's failure of reasonable management of the LCM and EPU projects, of failure to provide reasonable CN estimates and of the human

[372] *Id.* at 26 (emphasis added).

[373] Xcel seeks recovery of ratepayers of all of the $402 million in cost overruns. DOC Ex. 12 at 33 (Sparby Rebuttal). While recommending full recovery with no disallowance, Xcel identified some disallowance options for the Commission. Xcel Ex. 15 at 26-28 (Alders Surrebuttal) (*i.e.,* ***$3.5 million*** reduction on a revenue requirement basis).

performance errors.[374] As an alternative to the Commission disallowing all of the $402 million in cost overruns, the Department's proposed a disallowance remedy that is based on a cost-effective analysis. Xcel has stridently challenged that cost-effective analysis. To be clear, other disallowance remedies are discussed in the record -- most of which would result in higher cost disallowance than the Department's preferred alternative – and they remain available to the Commission.

Although a common Commission practice has been to deny recovery of costs in excess of Commission-approved costs estimates that were not shown to be reasonable, either in whole or through allowing no-return of such costs, Ms. Campbell expressed concern about denying Xcel a rate of return on the amount of the Monticello LCM and EPU projects costs over the CN-approved levels.[375] She testified that the cost overrun, $402.1 million costs, "is significantly higher than any cost overrun the Department has ever reviewed and, to my knowledge, is higher than any Minnesota public utility has ever incurred."[376] It is more than double (116%) above the Commission's CN-approved costs of $346 million (escalated to current 2014 dollars and including the steam dryer), compared to Xcel's total estimated final cost of $748.1 million.[377] Ms. Campbell stated:[378]

> While such a high cost overrun seems to suggest that it would make sense not to allow the Company to earn a return on any costs above the CN-approved levels, I would have a concern about whether Xcel could continue to operate the plant safely with such a significant disallowance. Instead, the Department proposes a different approach.

Rather than a no-return on the cost overrun, which the Commission may choose to do, at this time the Department recommends a disallowance adjustment *based on the amount of the cost*

[374] DOC Ex. 315 at 26 (Campbell Surrebuttal).
[375] DOC Ex. 313 at 27 (Campbell Direct).
[376] *Id.*
[377] *Id.*
[378] DOC Ex. 313 at 27 (Campbell Direct).

overrun that made the EPU not cost-effective, compared to other alternatives that were available in 2008, as discussed in Mr. Shaw's testimony.[379] This approach is reasonable, in the Department's view, because it balances Xcel's needs with the need to protect ratepayers. Ms. Campbell explained:

> As noted above, setting the level of disallowance at the amount above the CN-approved levels could be considered excessive. However, as noted by Mr. Shaw in his Direct Testimony, the Company's costs are so high that it has resulted in part of the Monticello EPU not being cost effective. From the Department's perspective, it would be unreasonable to conclude that the Company should be able to recover all of its significant cost overruns from ratepayers; including those costs that are not cost effective. Instead, the Department recommends that the Commission use an appropriate balance and deny cost recovery only of the amount of the EPU costs that made the EPU no longer cost-effective, as discussed in Mr. Shaw's testimony.

As discussed in the previous section regarding the cost-effective disallowance remedy analysis, the amount of the cost overruns that renders the Monticello EPU not to be cost effective is $84.445 million without AFUDC on a total company basis, adjusted for reductions for vendor credits resulting in an $82.906 million total company basis without AFUDC.[380] Ms. Campbell showed how the Minnesota jurisdictional amount of the $82.906 million is determined, such that the calculation results in approximately 73 percent up to 74.8 percent of the total company amount assigned to the Minnesota jurisdiction depending on the year.[381] Ms. Campbell's calculations are included in attachment NAC-12 of her Direct Testimony and NAC-S-4 of her Surrebuttal Testimony, including calculations for AFUDC.[382] Specifically, she testified:[383]

> Using the total company amounts that Mr. Shaw calculates as not being cost effective, with the application of these allocators results in an adjustment of $63.378 million without AFUDC on Minnesota Jurisdictional basis. I have provided the detailed calculation by year and in total on my adjustment for

[379] DOC Ex. 315 at 31, 37 (Campbell Surrebuttal).
[380] DOC Ex. 313 at 27-28 (Campbell Direct).
[381] DOC Ex. 313 at 29-30 (Campbell Direct).
[382] *Id.*
[383] DOC Ex. 313 at 30-31 (Campbell Direct).

> Monticello EPU spreadsheet that I have attached to my testimony. DOC Ex. [313] at NAC-12 (Campbell Direct).
>
> * * *
>
> [S]ince AFUDC is a part of the total capitalized cost of the plant. To calculate this amount, I note that AFUDC's percentage is applied to the CWIP balance; for example a 5 percent AFUDC rate times a $100,000 CWIP balance results in $5,000 in AFUDC costs assigned to the project for the year. Ratepayers should not pay interest on capital costs that Xcel failed to demonstrate were reasonable and cost-effective. Therefore, a reduction to the CWIP balance would reduce the associated capitalized AFUDC amount.
>
> [To calculate the related AFUDC adjustment] I simply used the 14.82 percent disallowed costs on a total company basis for purposes of calculating the portion of the Monticello EPU that is not cost effective and applied this percentage to the total Company AFUDC amount assigned to the Monticello EPU of $72.632 million. This calculation results in disallowed AFUDC capital costs of $10.763 million on a total company basis, and $8.042 million on a Minnesota jurisdictional basis, or an approximate $1.206 revenue requirement reduction due to the translation from capital costs to revenue requirement.

In her Surrebuttal Testimony, Ms. Campbell testified that the Department continues to recommend the prudency adjustment recommended in her Direct Testimony, with a slight improvement in precision, to equal a $71.42 million reduction to the capital costs of the Monticello EPU resulting in a $10.237 million revenue requirement downward adjustment for 2015 on a Minnesota Jurisdictional basis, and ongoing adjustment for the life of the plant stepped down for accumulated depreciation.[384] The Department continues to be concerned, however that higher cost overruns could occur particularly in light of fact that the plant is not operating at the higher EPU level.[385]

3. Xcel's response to the Department's recommended disallowance

The record clearly supports a disallowance at some level, given the significant doubt as to reasonableness raised by Department witness and the Company's failure to demonstrate that all of the $402 million cost overrun amount was prudently and reasonably incurred. Mr. Sparby,

[384] DOC Ex. 315 at 39 (Campbell Surrebuttal).
[385] *Id.*

however, argues that even if the Commission finds Xcel did not prove the prudency of the cost overruns, all of the $402 million must be imposed on ratepayers because any "material" disallowance would harm the Company.[386] Nowhere, however, did Mr. Sparby acknowledge harm to ratepayers if the Commission required them to pay for a "material" level of imprudently incurred costs. In essence, Mr. Sparby urged the Commission to ignore Minnesota law and not hold Xcel responsible for its actions, based on what the Company knew or should have known at the time.

Mr. Sparby also claimed inaccurately that the Company has "under recover[ed]" Monticello costs in past rate cases. Ms. Campbell disagreed. She explained that the Commission has not yet denied Xcel cost recovery of Monticello costs, although that is the question now before the Commission in this matter together with Xcel pending rate case.[387]

According to Mr. Sparby, the Department's approach involved "hindsight" and instead should have focused on whether the Company's decisions were reasonable based on the facts that were known or reasonably knowable at the time of Xcel's decisions.[388] The record, however, belies that claim. Department witnesses Mr. Crisp and Dr. Jacobs provided substantial testimony as to industry standards at the time Xcel made various decisions, and provided examples of Company decisions that raised significant doubt as to the reasonableness of Xcel's actions, based on what it knew or should have known, and doubt as to resulting considerable cost overruns.[389]

To avoid "hindsight," Xcel insists that any determination of the likely level of total LCM and EPU projects attributable to the EPU must be based solely on Xcel's 2008 estimate of 41.6%

[386] DOC Ex. 315 at 34 (Campbell Surrebuttal) (citing Xcel Ex. 12 at 33 (Sparby Rebuttal).
[387] DOC Ex. 315 at 35 (Campbell Surrebuttal).
[388] DOC Ex. 315 at 33 (Campbell Surrebuttal) (citing Xcel Ex. 12 at 33-34 (Sparby Rebuttal).
[389] *See, e.g.,* DOC Ex. 419 (Crisp Opening); Tr. Vol. 4 at 60-74 (Jacobs).

EPU and 58.4% LCM.[390] Again, the Department disagrees. First, Xcel seeks only to be held to its unrealistic cost estimate split *but not also* to recovering only its 2008 cost estimate of approximately $346 million. Xcel seeks the current total cost recovery of $748.1 million. The Company makes no argument that the Commission would be acting with hindsight if it awarded Xcel 100% of actual current costs. Obviously, Xcel encourages an inconsistent and unreasonable approach, and one that it has not shown to be reasonable to ratepayers.

Second, Dr. Jacobs' determination of total costs representing approximately 85% EPU-related costs and 15% LCM-related costs is based on what Xcel knew or reasonably should have known at the time, and is directly tied to the actual purposes at the time of the Company's modification implementation. As Dr. Jacobs testified, if a modification was essential for the EPU, while without the EPU it may have been performed later (if at all) during normal refueling outages and likely at significantly reduced cost), he determined it was EPU-related.[391]

Third, the record demonstrates that in 2008, based on what Xcel knew or reasonably should have known, its 41.6% EPU to 58.4% LCM cost split was not reasonable, and Xcel has not shown it to be reasonable. Rather, the record supports a conclusion that Xcel in 2008 reasonably should have known how little the Company had developed its estimated costs of the EPU, and should have known the magnitude and complexity of a combined LCM/EPU project. The scale of the $402 million in cost overruns is a testament of that failing on the Company's part to provide a reasonable estimate of the costs of the EPU in 2008, as confirmed in particular by Department witnesses Dr. Jacobs and Mr. Crisp. The Company's "good faith," as proposed by Mr. Sparby,[392] is no substitute for competent, detailed planning and management of this massive project. Rather,

[390] *See* DOC Ex. 315 at 33 (Campbell Surrebuttal) (citing Xcel Ex. 12 at 33 (Sparby Rebuttal).
[391] DOC Ex. 421 at 1-2 (Jacobs Opening Statement); Tr. Vol. 4 at 69-74 (Jacobs).
[392] Xcel Ex. 12 at 13 (Sparby Rebuttal).

as Dr. Jacobs testified, determining a reasonable EPU/LCM split needs to reflect how Xcel's decisions affected the actual costs of the LCM and EPU projects differently.[393]

The Department's preferred disallowance remedy, which would result in a $10.237 million revenue reduction beginning in 2015, is opposed by Xcel for several reasons. Mr. Sparby stated a concern for the financial health of the utility, and that the record did not support a significant disallowance.[394] He stated that, without specific facts supporting imprudence, the Department's proposed disallowance could send a signal to investors that Xcel's nuclear programs do not have strong regulatory support in Minnesota, and that it would signal a lack of full appreciation for the complexity of and degree of resources for the nuclear program.[395] He suggested that disallowance could call into question whether Xcel would have the resources necessary to ensure the integrity and safety of nuclear facilities.[396] He also noted that the Department makes no mention of the issues faced by other utilities like those in Florida, or that the Florida commission allowed 100% of what he considered to be similar cost increases.

The Department is quite concerned that while Xcel claims financial harm if the Commission were to adopt its preferred disallowance remedy, the Company did not provide a single document in response to Department discovery, and as confirmed at the evidentiary hearing, to support that claim.[397] Certainly, the Department agrees with the Company that specific facts are important and welcomed record development of particular and detailed findings of the concerns

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[393] DOC Ex. 315 at 33 (Campbell Surrebuttal); DOC Ex. 307 at [JA to cite] (Jacobs Surrebuttal).
[394] DOC Ex. 315 at 33-34 (Campbell Surrebuttal) (citing Xcel Ex. 12 at 33 (Sparby Rebuttal).
[395] DOC Ex. 315 at 33-34 (Campbell Surrebuttal) (citing Xcel Ex. 12 at 33 (Sparby Rebuttal). Mr. Sparby also said that a material disallowance would "compound" the effects of past under recovery of Monticello costs, Xcel Ex. 12 at 33 (Sparby Rebuttal), a claim that Ms. Campbell showed to be inaccurate (no disallowance by the Commission, yet), as discussed previously in this Initial Brief.
[396] DOC Ex. 315 at 34 (Campbell Surrebuttal) (citing Xcel Ex. 12 at 33 (Sparby Rebuttal).
[397] DOC Ex. 315 at 35 and at NAC-S-5 (Campbell Surrebuttal) (DOC IR 135); Tr. Vol. 1 at 47 (Sparby).

identified by Department witnesses that raise significant doubt as to the reasonableness of the Company's actions, based on what Xcel knew or reasonably should have known at the time. Xcel did not provide such information. The Department agrees that investors and ratepayers alike should be privy to the facts underlying the Department's recommended disallowance.

The Department does not agree with Xcel that the Company need not demonstrate prudence or that the public agencies must demonstrate imprudence. Minnesota law is clear on Xcel carrying the burden to demonstrate that any costs it seeks from ratepayers in rates be shown *by the Company* to have been prudently and reasonably incurred.

Based on this record, Xcel has not shown that Xcel would be harmed by the Department's preferred disallowance remedy or, for that matter, that it would be harmed by other disallowance options included in the record. As the former Chief Financial Officer of Xcel Energy Inc. from 2009-11, Mr. Sparby surely has experience in the types of issues that concern the capital markets.[398] He must recognize that while unpleasant or even difficult, the Company at least could absorb the direct financial impact of a disallowance in the amount recommended by the Department in this proceeding.[399]

Thus, it would be unfair for ratepayers, rather than the Company itself, to be held responsible for *all* of the $402 million in cost overruns, as Xcel proposes. The Department's preferred disallowance remedy would result in denial of rate recovery only for that portion of the $402 cost overruns that would render the Monticello EPU not to be cost effective portion (i.e. ratepayers would have better off if the Company built a gas plant).[400] As discussed above, the record includes several options for remedies due to Xcel's failure to show that the costs it proposes to charge ratepayers are reasonable.

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[398] DOC Ex. 315 at 35 (Campbell Surrebuttal).
[399] DOC Ex. 315 at 35 at (Campbell Surrebuttal).
[400] DOC Ex. 315 at 36 (Sparby Rebuttal).

XII. THE DEPARTMENT'S RECOMMENDATIONS

The Department respectfully requests a recommendation from the Administrative Law Judge and an Order from the Commission determining that Xcel failed to demonstrate the prudency of the entire $402 million in cost overruns, based on what the Company knew or reasonably should have known at the time of its decisions and actions. Department witnesses raised significant doubt that all of the $402 million in cost overruns were prudently and reasonably incurred. It would be unreasonable for the Company to recover from ratepayers the entire $402 million in excess of initial cost estimates. Any doubt as to reasonableness must be given to ratepayers.

At this time, the Department recommends that the Commission order disallowance of that portion of EPU-related costs that render the Monticello plant not cost-effective as of the present. Specifically, the Department recommends a $71.42 million reduction to the capital costs of the Monticello EPU resulting in a $10.237 million revenue requirement downward adjustment for 2015 on a Minnesota jurisdictional basis, and ongoing adjustment for the life of the plant stepped down for accumulated depreciation.[401]

[401] DOC Ex. 315 at 38-39 (Campbell Surrebuttal).

The Department further, requests that the Commission establish rates consistent with the principles, analyses and recommendations as addressed in the Department's testimony and this Initial Brief.

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Respectfully submitted,

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