Minnesota Public Utilities Commission

Staff Briefing Papers

Meeting Date: March 3 & 6, 2015 ..... Agenda Item # _1_

Company: Northern States Power Company d/b/a Xcel Energy (Xcel or NSP)

Docket No. E-002/CI-13-754
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

Issues: (1) Was Xcel Energy's handling of the Monticello Life-Cycle Management/Extended Power Uprate Project prudent?

(2) Is Xcel's request for recovery of Monticello LCM/EPU Project cost overruns reasonable?

(3) How should costs be allocated between the LCM & EPU parts of the Project?

(4) What disallowance remedy, if any, should be adopted?

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Relevant Documents

Xcel Energy – Initial Filing
- Prudence Report .....October 18, 2013
- Alders - Direct Testimony .....October 18, 2013
- O'Connor – Direct Testimony & Schedules .....October 18, 2013
- Stall - Direct Testimony .....October 18, 2013
- Weatherby - Direct Testimony & Schedules (Public & Non-Public) .....October 18, 2013

Department of Commerce - Direct
- Campbell – Direct Testimony & Attachments .....July 2, 2014
- Crisp – Updated Direct Testimony w/Attachments (Public & Non-Public) .....July 10, 2014
- Jacobs – Updated Direct Testimony w/Attachment (Public & Non-Public) .....July 10, 2014
- Shaw – Direct Testimony & Attachments .....July 2, 2014

Xcel Energy - Rebuttal

Alders - Rebuttal Testimony & Schedules ..... August 26, 2014
O'Connor - Rebuttal Testimony & Schedules (Public & Non-Public) ..... August 26, 2014
Sieracki - Rebuttal Testimony & Schedules ..... August 26, 2014
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Office of Attorney General - Rebuttal

Lindell - Rebuttal Testimony & Schedules (Public & Non-Public) ..... August 26, 2014

Xcel Energy - Surrebuttal

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Initial Briefs

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Reply Briefs

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Proposed Findings

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Department of Commerce (Public & Non-Public) ..... November 24, 2014
Office of Attorney General ..... November 21, 2014

ALJ Report

ALJ - Findings of Fact, Conclusions of Law and Recommendations ..... February 2, 2015
Final Master Exhibit List ..... November 21, 2014

Exceptions to the ALJ Report

Xcel Energy ..... February 12, 2015
Office of Attorney General ..... February 12, 2015
Xcel Large Industrials ..... February 12, 2015

Reply Exceptions to the ALJ Report

Xcel Energy ..... February 17, 2015
Department of Commerce (Public & Non-Public) ..... February 17, 2015
Office of Attorney General ..... February 17, 2015

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February 26, 2015

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Statement of the Issues

Was Xcel Energy's handling of the Monticello Life-Cycle Management/Extended Power Uprate Project ("LCM/EPU Project", "Project" or "Program") prudent?

Is Xcel's request for recovery of Monticello LCM/EPU Project cost overruns reasonable?

How should costs be allocated between the LCM & EPU parts of the Project?

What disallowance remedy, if any, should be adopted?

Background

In 2003, after a Minnesota law[1] change, Xcel began the renewal process for its Monticello Nuclear Regulatory Commission (NRC) operating license. In 2005-06 the Company obtained a certificate of need (CN) that allowed it to store spent fuel at the site. During that time, Xcel received the NRC license renewal authorizing the Company to operate the plant through 2030.

In 2006, Xcel decided to combine its required Life-Cycle Management (LCM) Program with an effort to seek an Extended Power Uprate (EPU) that would increase Monticello's capacity by 71 MW. In late 2008, the Company filed with the NRC a license amendment application requesting approval to operate Monticello with additional capacity and, in January 2009, it obtained a certificate of need for authority to construct the upgrades necessary to achieve the uprate.

When requested full recovery of the LCM/EPU Project in its 2012 rate case[2], original combined project costs had climbed from the original cost estimate of $320 million to almost $600 million. On September 3, 2013, the Commission issued its Findings of Fact, Conclusions, and Order on the 2012 rate case. In that Order, the Commission determined that only the LCM was in service and that the EPU was not yet used and useful because the additional 71 MW was not operational.

At that time, the Commission decided to open this docket and directed the Executive Secretary, in consultation with the Department, to develop a proposal for conducting an investigation into whether the Company's handling of the Monticello LCM/EPU project was prudent and whether the Company's request for recovery of Monticello LCM/EPU project cost overruns is reasonable. To develop a report and recommendation for the Commission, the Order also authorized the retention of an expert under Minn. Stat. § 216B.62, subd. 8.

In its Initial Filing[3], Xcel acknowledged that the Project's cost climbed from an initial cost estimate of $320 million to $665 million[4]. The Company explained that cost overruns were the result of three main drivers:

[1] Minn. Stat. §§ 116C.83 and 216B.243, subd. 3b
[2] PUC Docket No. E-022/GR-12-961
[3] Xcel Energy, Initial Filing Prudence Report, page 3.
[4] As of August 31, 2013. Final cost does not include AFUDC.

1. To address long-term plant needs, Xcel expanded the scope of a number of modifications. The Company explained that, in order to complete the Project safely and to assure reliable operations for the extended license period, several components that originally were expected to be repaired or recertified ultimately required replacement. As a result, the initial scope did not capture all the required work needed and; therefore, initial "high-level" cost estimates were too low.

2. Installation of the modifications was more difficult and expensive than Xcel foresaw. The Company stated that it found significant difficulties conducting multiple major construction activities at an operating nuclear plant; and that space for installation was extremely tight. These issues made it necessary to remove or work around hundreds of interferences and ultimately slowed productivity.

3. NRC licensing for the EPU proved challenging. The NRC's review of the application took five years, was beset by major difficulties outside of Xcel's control (such as Fukushima), and cost double what the Company originally expected.

Despite the increased costs, Xcel stated that it obtained the following valuable and tangible benefits for the safe and reliable operations of the plant:

- The work substantially improved electrical performance in the plant, reduced the likelihood of trips and forced outages, and increased reliability;

- It added safety margins and restored operational margins that had been utilized with changes to the plant over time;

- Some installations are providing unexpected benefits that could lower the O&M costs of the plant for the remainder of its useful life;

- To support the Plant's extended operations, it replaced degraded wiring and obsolete controls that will avoid future capital additions and future potential unplanned outages; and

- By selecting designs that ensure the plant remains operator-friendly, it avoided costly retraining and major changes to daily operations.

Xcel asserted its confidence that costs, although much higher than anticipated, were what it took to complete the level of activity in the timeframe that it pursued the Project. The Company added that, as a result, the plant is safer, will operate more efficiently and reliably, and serve customers and the State well into the future.

Final costs, including AFUDC, for the LCM/EPU Project were approximately $748 million.

Cost Overruns and Implementation Challenges

Xcel Energy – Initial Filing and Direct Testimony

Xcel stated that it had to proceed with both of the Project's phases concurrently; otherwise, it would have been unable to deploy the additional capacity to meet forecasted demand growth[5]. In order to move the Project forward promptly, the Company undertook a high-level analysis, based primarily on General Electric's estimate of the projected LCM/EPU's costs. In 2008, Xcel filed a Certificate of Need[6] that estimated total Project costs of approximately $320 million - $133 million, or 41.6%, for the EPU and $189 million, or 58.4%, for the LCM[7]. Ultimately Project costs totaled $665 million.

Ultimately, the Company stated that the bulk of the cost increase was caused by four major modifications that were necessary to restore or improve safety and degraded operational margins; as well as to operate the facility at uprated conditions.

LCM/EPU– Major Scope Additions[8]

MODIFICATION	MILLION $	
	2008 ESTIMATE	ACTUAL COST
13.8 kV System Addition	20.9	119.5
Condensate Demineralizer System Replacement	18.0	79.8
Feedwater Heater Replacement	37.0	114.9
Reactor Feed Pump Replacement	27.8	92.2
Total	103.7	406.4

In addition to scope changes, the Company asserted that it confronted unprecedented regulatory delays before the NRC that were beyond its control. Those delays included an 18-month suspension of all review activities related to a specific portion of its License Amendment Request ("LAR"). Furthermore, the NRC's review also became more stringent after the events at the Fukushima Nuclear Power Plant in March 2011. As a result of these delays, Xcel revealed that its licensing costs increased from an initial estimate of $28.6 million to approximately $60

[5] O'Connor Direct Testimony, page 3
[6] Docket No. E002/CN-08-185
[7] Alders Direct Testimony, page 21
[8] O'Connor Direct Testimony, page 5

million, with an estimated $5 million still required to complete the licensing effort through the final power ascension.[9]

As a result of the scope changes, Xcel also discussed the Project's increased complexity and revealed that installation costs climbed to $288.6 million from its initial estimate of $27.5 million. The Company attributed the difference to the fact that it substantially underestimated the complexity and difficulty of completing the installation work. Xcel asserted that the installation costs were required in order to complete the LCM/EPU Program, and the fact that the original estimate was substantially below actual costs did not change the fact that this work was required to complete the Project.

As shown in the next table, the Company provided a cost difference comparison:

Initial Estimate Compared to Actual Cost[10]

Cost Category	2008 Certificate of Need Estimate	Actual Costs (August 31, 2013)	Variance 2013 – 2008
Installation Costs	$27.5*	$288.6	$261.1
All Other Costs	$292.5	$376.3	$83.8
Total	$320.0	$664.9	$344.9

*Partial Scope

Of the $261.1 million installation costs overrun, $233.8 million was incurred in the four modifications previously mentioned:

[9] Ibid, page 34
[10] Ibid, page 35

Installation Costs of Four Key Scope Additions[11]

MODIFICATION	INSTALLATION COSTS (MILLION $)
13.8 kV System Addition	73.4
Condensate Demineralizer System Replacement	36.1
Feedwater Heater Replacement	70.5
Reactor Feed Pump Replacement	53.8
Total	233.8

Xcel estimated that acceleration of the pumps and drain piping to the scope of the feedwater heater modification added approximately $30 million to the cost of that modification. The condensate pump and motor modification totaled $21.9 million. The Company added that the remaining components that were accelerated contributed to the overall costs of the condensate demineralizer replacement and the reactor feed pumps and motors modifications. Xcel asserted that by replacing these components as part of the LCM/EPU Program it attempted to efficiently manage our resources and maximize the benefits of the Program's investments.

As it moved from the planning to construction phase, Xcel revealed that it encountered a variety of "as found" issues that required design and implementation adaptations to be undertaken on tight timelines. For instance, when preparing to install new digital controls for the condensate demineralizer system, Xcel found that the existing wiring had degraded and required replacement; therefore, it had to design and replace this wiring before proceeding with the control panel replacement.

Similarly, during the 2009 outage, Xcel discovered that the as-built designs for the feedwater heater piping were incorrect and had to prepare in-outage design and constructability packages to alleviate and avoid the piping interferences.

Although the Company did not directly track the costs attributable to these discoveries, it incurred higher installation costs than originally estimated.

In addition to the construction challenges, the Company also encountered productivity issues as well. The Company admitted that it overestimated the productivity for all of the three Project outages and, generally, implementation tasks required more labor hours than originally expected and predicted by its vendors. Xcel attributed the productivity challenge to several factors, including the challenging work conditions, difficulties hiring experienced craft labor due to the competitive nuclear labor market, and restrictions on work schedules imposed by the NRC's fatigue rule.

[11] Ibid, page 37

The final challenge the Company encountered was vendor performance. Xcel initially anticipated that the bulk of the design and engineering work would be conducted by Monticello's original designer - General Electric. Although the Company was satisfied with some aspects of General Electric's support, it encountered difficulties with some of the design and engineering services and determined that there were a number of modifications for which General Electric was not the optimal vendor.

Xcel stated that it required vendor support to proceed with the work on multiple parallel paths, which often resulted in tight schedules. Other times it used vendors to help overcome specific design impediments. Finally, it also needed to deploy replacement vendors when the initial design work was not satisfactory. The Company used additional vendors to integrate designs with its existing plant layout or complete alternative designs that Xcel evaluated to be more cost-effective or easier to install or maintain.

During Xcel implementation process, many tasks were to be performed during the 2009, 2011 and 2013 Refueling Outages (RFO). Each RFO lasted longer than planned and incurred costs higher than planned.

Outage Durations and Cost[12]

Outage	Duration		Costs Incurred	
	Planned	Actual	Planned	Actual
2009 Outage (RFO 24)	45 days	56 days	$25 million	$34 million
2011 Outage (RFO 25)	65 days	81 days	$101 million	$133 million
2013 Outage (RFO 26)	85 days	138 days	$99 million	$151 million

2009 RFO

The 2009 Outage had six modifications scheduled, was completed in 56 days (instead of 45), at a cost of $34 million (instead of $25 million) and had the Day Zimmerman firm as its primary implementation contractor.

The 11-day outage delay was due to challenges accessing the condenser during installation and startup issues with the turbine and generator at the conclusion of the outage. The Company explained that the high pressure turbine was found to be out of alignment with the generator, and required approximately three days to bring it into alignment and an extra four days to fully flush the turbine. As a result, the installation of the Power Range Neutron Monitor was also delayed because of the need for engineers to technically assist with installation.

[12] Ibid, page 68

Xcel explained the outage ran $9 million over budget due to the complexity of the work and difficulty installing the modifications and that the majority of the overrun was attributable to the need for additional labor and materials necessary to complete the work.

2011 RFO

At the end of the 2009 RFO, designs for the 2011 RFO were in development and, to ensure appropriate mobilization and retention of construction supervisors, Xcel retained Day Zimmerman to conduct similar work for the 2011 outage planning period and through the 2011 outage.

During this planning, Xcel experienced difficulties throughout 2010 and early 2011 – it rejected all designs in 2010 and rapidly pursued recovery plans to complete designs that met specifications. Xcel's efforts to supplement the design process with its internal engineering resources also put pressure on its outage planning. Xcel admitted that, although it believed that the decision to select Day Zimmerman was the best choice to complete the outage work, it believes that Day Zimmerman's 2011 performance was not as strong as hoped or expected[13].

Also, in June 2010, Xcel decided to defer certain work scheduled for the Spring 2011 Outage to a Fall 2011 Outage. Three main factors drove the decision to split the work and add a third outage:

- First, the planned 13.8 kV electrical work presented significant shutdown risk and required intricate work sequence planning and the work would have extended the 2011 outage through the summer peak.

- Second, the NRC license amendment request was on hold while the agency resolved the CAP standards.

- Third, vendor fabrication issues with some of the pumps and motors remained unresolved, complicating Xcel's outage planning and posing significant risk of requiring critical path attention throughout the outage.

Ultimately, other factors led Xcel to postpone its "off-cycle" Fall 2011 Outage and the remainder of the work to the regularly-scheduled Spring 2013 refueling outage. The primary work that was deferred was the installation of the 13.8 kV distribution system. By deferring this work, it became necessary to also defer upgrades to the reactor feed pumps and motors and the condensate pump and motor. Xcel also delayed final installation of the 13 A/B feedwater heaters because we were concerned they would not arrive in time for the 2011 outage.

Xcel stated that ultimately it could not have completed all of the Project work in two outages and the decision to split the 2011 outage did not materially impact the costs incurred to complete the spring 2011 outage.

[13] Ibid, page 76

The 2011 RFO also had six major modifications, was completed in 81 days (instead of 65) and cost of $133 million (instead of $101 million).

Xcel explained that the main driver for the 2011 outage being $32 million over budget was the condensate demineralizer system ($13 million). As with other modifications in 2011, this one encountered difficulties related to as-found conditions.

First, while preparing for the work, Xcel identified that the condensate demineralizer vessel vaults were radiological and, to mitigate the risk to plant workers, it was forced to add shielding to the location and further plan the work. Similarly, while preparing to install new digital controls for the condensate demineralizer system, it identified that existing wiring for the controls was degraded and required replacement. Thus, the Company was forced to quickly plan for and replace this wiring before proceeding with the rest of the work.

Second, the condensate demineralizer system work required replacement of all vessels and associated piping. Since piping is located in a very small space, when coupled with the high-dose environment found in this location, only a small number of workers could simultaneously work in this area. This substantially limited the ability to complete the work as efficiently and expeditiously as expected.

Third, because of the complexity of the condensate demineralizer system modification, Xcel was unable to complete all of the detailed scheduling and sequencing with other outage activities until just prior to the start of the outage. That delay substantially limited its opportunity to optimize the sequencing of the work and, as a result, it encountered difficulties with overlapping activities that delayed portions of the work.

Xcel mentioned one more issue that related to the 2011 RFO – it experienced a malfunction with a steam dryer seal on top of the reactor vessel. This malfunction led to a 4-day delay for the steam dryer replacement modification and cost $2 million in excess of the initial steam dryer installation estimate.

To synchronize the final implementation outage with its scheduled refueling outage and the NRC's review of its license amendment request, in November 2011, Xcel elected to move its final outage to spring 2013.

2013 RFO

In preparation for the 2013 RFO, Xcel selected Bechtel Power Corporation ("Bechtel") to provide comprehensive project management to ensure successful completion of the final LCM/EPU modifications. By the end of 2011, Bechtel had arrived at an estimate for total project costs of $586.7 million. After that, Bechtel and Xcel continued working through iterations and a final Program $639.9 million estimate with a $20 million contingency was approved in January, 2013, By June 2013, an additional $15 million of costs were added for the LCM/EPU Program to arrive at a final forecast of $655 million.

The 2013 RFO also had six major modifications, was completed in 138 days (instead of 85) and cost of $151 million (instead of $99 million).

Xcel recognized that it faced several challenges during the 2013 RFO. The most significant implementation challenges related to the 13.8 kV electrical system upgrade and the reactor feed pump replacement.

In addition to the technical implementation challenges, Xcel also encountered lower productivity than anticipated. Productivity was adversely impacted by challenges in hiring experienced craft labor, tasks taking longer than estimated due to radiological conditions or small work spaces, and loss of experienced workers as a result of the current market for craft labor and the NRC worker fatigue rule.

In the end, 10 major modifications accounted for 95% of the Program's costs:

Major Modifications Summary[14]

	Major Modification	Child Work Order Numbers	Year In-Service	Total Costs (million $)	% of Total Program Costs
1	Turbine Replacement	11133668	2009 and 2011	$57.5	8.64%
		11335729			
2	Power Range Neutron Monitor	10942850	2009	$17.5	2.64%
3	Steam Dryer	10859413	2011	$37.7	5.66%
		11215274			
4	Condensate Demineralizer System	11133705	2011	$79.8	12.00%
5	Main Transformer	10943007	2009 and 2011	$29.9	4.50%
		10735617			
6	Feedwater Heaters	11638897	2009, 2011, and 2013	$114.9	17.29%
		11842626			
		11133719			
		11284286			
		11757884			
		11286961			
		11133856			
		11133713			
7	Reactor Feed Pumps and Motors	11286955	2013	$92.2	13.86%
8	Condensate Pumps and Motors	10943052	2013	$21.9	3.29%
		11845189			
9	13.8kV System Addition	11257804	2013	$119.5	17.98%
10	Licensing	11536446	2013 2014*	$59.3	8.92%
		11636097			
		11636101			
		11636105			
		11636109			
		11636114			
		11775097			
Total of Major Modifications				**$630.2**	**94.77%**

* Based on anticipated final NRC approval dates

Xcel stated that, even with paying $665 million for all of the LCM/EPU improvements, Monticello, as a whole, is cost-effective under today's conditions. The Company added that it reviewed several scenarios and determined that:

- Monticello generation would have been cost effective in 2008 even if final Program costs of $665 million had been known.

[14] Ibid, pages 93-94

- Monticello remains cost-effective in 2013.

- Annually, it was reasonable to continue forward with the Program in light of the costs that had already been incurred.

- Incrementally, the cost-effectiveness of the additional 71 MWs varies, depending on the allocation of costs attributable to the 71 MW.

Department of Commerce – Direct Testimony

To develop a report and recommendation for the Commission and consistent with the Order, the Department of Commerce retained the firm of Global Energy & Water Consulting, LLC ("GEWC") to assist in this prudence review. GEWC consultants Mr. Mark W. Crisp and Dr. William R. Jacobs, Jr. represented the Department in this proceeding.

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.

In Mr. Crisp's Direct Testimony he discussed Monticello's 1998 power uprate and pointed out the importance of that project because, in order to meet NRC requirements and to receive NRC approval, Xcel and GE, now GE Hitachi, would have, at that time, produced an "as-built" summary of the design modifications. 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 completion of the original uprate program was able to take advantage of all available operating margins of electrical and mechanical components of the plant. As a result, the latest LCM/EPU programs had to start from essentially a fresh start to increase capacity further.

Mr. Crisp pointed out that the success of any major project and most minor projects is directly attributed to thorough and exhaustive project management. Success is defined by the schedule, cost, and operational benefits that the project is able to accrue to the plant and to the ratepayers. Each attribute of overall project management, including proper staffing, scope definition, scheduling, budgeting, design, procurement, and construction is linked together to form a synergistic approach to the overall execution of the project.

Each of these attributes must be addressed as thoroughly as possible in the initial project definition and the expectations defined for the schedule, scope, design, construction, start-up, operation, and final cost. Mr. Crisp found the project management for the Monticello LCM/EPU project suffered from failure of several of these activities to be adequately defined and for responsibility to be assigned to fully able and skilled personnel at each step in the process. He pointed out that the scope for the LCM/EPU project required considerable coordination among all of the involved departments of Xcel, internal management of Xcel, the original designer of

Monticello, the current responsible designer, and all sub-designers supporting the original design and the scope of the LCM/EPU. These entities need to accomplish the following tasks at the beginning of the project:

1. Define the final outcome. That is, what is the project to accomplish, how will the project be accomplished, and what is the scheduled completion or operational date for the project.

2. Before 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.

3. In a parallel effort, 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 and, as acknowledged by the Company, initial scope definition and project planning appeared to contribute significantly to the cost overruns of the Monticello LCM/EPU project.

Mr. Crisp addressed the three main areas that Xcel attributed to the overruns:

A. Program design and scope changes – Mr. Crisp noted that, had Xcel properly scoped the four design changes ($406 million cost, as detailed above), subsequent program design and scope changes would have been minimized. For example, rather than the ad-hoc approach Xcel used, it should have anticipated the upgrade to the distribution system at the plant early on in designing the system. Since 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.

B. Licensing delays – 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 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 revisions 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. Despite the 5-year wait, Mr. Crisp found Xcel's statement that it could not use the uprate during that time to be misleading. Had the EPU application only taken 2 years for approval, 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.

Additionally, Dr. Jacobs noted that in his discussions with Xcel personnel during his Monticello 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[15].

Mr. Crisp also pointed out other communication issues regarding the EPU application and concluded 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, particularly if a new criterion or guidance was to be used in the license analysis phase.

C. Complexity of the modification installation – Mr. Crisp points out that the complexity of installing the plant the modification appears to be the single largest impact to schedule and cost of the Project.

He found it 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.

It is also essential in a well-managed and executed Project Management Plan that the initial design and the construction functions have a solid connection between the two functions. A design can be fully functional "on paper." However, other issues may mean that the design cannot be physically built; these issues are called controlling factors. In order to avoid such failures especially in a retrofit project, such as Monticello, the Project Management Team must provide adequate time for the construction sub-Team to review and sign-off on the design that it can actually be built as designed.

For Monticello, controlling factors included 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. Failure to recognize these conflicts is a direct failure of the

[15] Jacobs Direct Testimony, page 15

> Project Management Team. Furthermore, since Monticello had been in operation for 40 years, Xcel, as required by the NRC, should have been familiar with "as-built" conditions; therefore, "complexity issues" should not have been the cause of such high cost overruns of installation.

Based on his observations, Mr. Crisp 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.[16]

Mr. Crisp pointed out that the Project suffered from a number of "starts and stops," changes in company management, changes in design and construction team, and an overall disjointed process. He listed the four changes in engineering contractors between 2006 and 2011 and pointed out that each one occurred at a time when significant cost increases were experienced. A contractor change is not as simple a process as "handing off" responsibilities to a new contractor. Risk management issues that must be addressed and the Engineering Company cannot simply assume that previous designs or designs in progress were performed to meet all codes and requirements by all regulatory bodies that have jurisdiction. These personnel and firms must reaffirm that any completed design or partial design to be used in the project meets all professional and regulatory requirements. Since both Xcel and the new contractor are at extreme risk of liability claims, the new contractor must mitigate this risk by spending considerable time to reassess and analyze the position it faces as it takes over from the previous contractor. Such changes and processes take considerable time, which impacts the overall project schedule. Mr. Crisp concludes that contractor changes in 2010 and 2011 resulted in considerable delays that cost considerable dollars and could have been mitigated with proper Company oversight and project management controls.

In addition to contractor issues, Mr. Crisp noted that, even before Xcel submitted the CN with the Commission, there were severe signs of schedule and budget impacts. Mr. Crisp provides a trade-secret protected chronology of events dating back to as early as 2006[17], including the decision to "fast-track" the Project. Continual annual escalating budget issues starting in 2006, the effect of a lack of project controls on cost increases, "scope creep," (expansion of scope) and scheduling 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.

Mr. Crisp concluded that undoubtedly, the expedited approach caused delays and budget increases that could have been avoided with proper pre-planning, 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.

Xcel Energy – Rebuttal Testimony

[16] Crisp Direct Testimony, page 19
[17] Ibid, Trade Secret, pages 23-27

Xcel pointed out that the Department, as discussed below, found the Program to be cost effective. The Company also pointed out the following benefits that resulted[18]:

- Condensate Demineralizer System - the old system had analog controls and the new one is an automated, digital system. The old system required multiple manual valve manipulations while the new system automated and repositioned the system components to reduce the potential for human error. The old system required two plant personnel a total labor time of 12 to 16 hours per week to clean the vessels. The total labor time for the new process is approximately four hours per week. The new system more efficiently removes fine debris and resin from the condensate. As a result Xcel expects reduced operations and maintenance costs.

- Electrical Distribution System - it allows splitting of the internal power needs (providing additional redundancy) and operation of Monticello with substantially higher operating and safety margins. This improved electrical performance reduces the likelihood of trips and forced outages. This new system will allow Xcel to meet evolving regulatory requirements after the events at Fukushima.

- Power Range Neutron Monitoring - the new system is a state-of-the-art and gives Xcel greater insight and information about Monticello's reactor core performance.

- Feedwater Heaters - six of the ten feedwater heaters in the Plant were down to minimal code-allowable metal thickness. Replacing them allows Xcel to avoid substantial maintenance to re-tube them, avoiding longer re-fueling outages.

- Reactor Feed Pumps and Motors - they improved Monticello's operational reliability by addressing or eliminating issues related to the age and wear of the existing equipment.

- Steam Dryer – it is providing substantial benefits because it is more efficient at removing moisture from the steam produced in the reactor, reducing future operation and maintenance costs on larger components such as turbine blading.

- Plant Operations – Xcel made design choices to be user-friendly to its NRC-licensed operators, by minimizing the number of new operator procedures for normal, abnormal, and emergency situations, such as implementing the two-pump solution for the reactor feed pumps and motors modification.

- Turbine - the new turbine eliminated a higher vibration condition which added maintenance and monitoring expenses.

Xcel also disagreed with the Department's assessment that licensing did not change capital costs and that the NRC review costs were minor. The Company stated that, while it did not separately track costs to specific NRC requirements, it incurred additional licensing and design costs

[18] O'Connor Rebuttal Testimony, pages 6-8

necessary to demonstrate Monticello's compliance with the relevant regulatory requirements and provided the following table for NRC-related costs[19]:

NRC Related Costs for the Program

Cause	Cost
Increase in Licensing Costs	$30+ million (increase over 2008 estimate
Additional Calculation Costs	$16+ million
Addition of New Steam Dryer	$30+ million (added to scope after 2007 authorization)
Addition of Monitoring Equipment	$7 million (added to scope after 2007 authorization)
CAP Issues	$1 million

Xcel also indicated that, as shown in the table below, during the timeframe in which it was deciding to proceed with the Program, uprate projects were coming in at costs within 133 percent of initial cost estimates. More recently, however, uprate projects have been coming in 160 to 220 percent of initial cost estimates.[20]

[19] Ibid, page 24
[20] Ibid, pages 38-39

Cost Increases and Schedule Changes

Project	Description	Initial Cost Estimate	Latest Cost Estimate	Ratio of Final to Initial Cost	Estimate of Schedule Extension	Year Completed
Ginna	EPU	$33 million	$44 million	1.33	n/a	2006
Brunswick	EPU	$145 million + $2.5 million contingency	$180* million	1.22* (including contingency)	n/a	2002
Vermont Yankee	EPU	$75 million	$100 million	1.35	n/a	2006
Grand Gulf	EPU	$420-$500 million	$874 million	1.7-2.1	n/a	2012
Turkey Point and St. Lucie	4 EPUs	$1,398 million	$3,129 million	2.2	1 year	2011, 2012, 2013
Cooper	EPU	$289 million	$409 million	n/a	Suspended	n/a
Bruce A, Units 1 & 2	Refurbishment and Restart	C$2.75 billion	C$4.8 billion	1.7	2 years	2012
Point Lepreau	Refurbishment	C$1.4 billion	C$2.4 billion	1.7	3 years	2012
Susquehanna	EPU	$217 million	$345 million	1.6	2 years	2010, 2011
Monticello	LCM/EPU	$320-$346 million	$665 million	1.9-2.1	2 years	2013

In response to Mr. Crisp's assessment that Xcel should have undertaken a much more detailed design and engineering analysis prior to commencing work, the Company indicated that, if it had waited until completion of the detailed design, it would have had the effect of delaying its CN and NRC license amendment requests and would ultimately have delayed or potentially precluded implementation.[21] Xcel also pointed out that Mr. Crisp did not quantify any costs associated with poor management or planning. Since the Company perceived the Department's overall criticism of the 2011 RFO to a focal point of analysis, Xcel provided a comparative analysis of the 2011 and 2013 RFOs that show the average daily "burn rate" to be almost identical[22]:

Comparison of the 2011 and 2013 Outage Costs

	2011 Outage	2013 Outage
Outage Planning	$10.7 million	$32 million
Outage Costs	$135 million	$151 million
Actual Outage Days	87	138
Estimated cost per Outage Day	$0.91 million	$0.91 million

In response to Mr. Crisp's criticism regarding vendor changes, Xcel asserted that, whenever a change occurred, it was for a reasonable and defensible reason, whether it be cost, skill set, or

[21] Ibid, Schedule 21, page 2
[22] Ibid, page 74

quality of work product and concluded that those changes were appropriate decisions for the success of the Program.[23]

Xcel Energy, Department of Commerce and Office of Attorney General – Initial Briefs

In their briefs, the parties essentially recapped their positions and explained their disagreements with the other parties. Since no new information or clarification was introduced, the parties' positions have not been repeated.

ALJ Report

On pp. 6 through 23 of the ALJ Report, the ALJ provided his findings regarding

- the initial planning for the EPU in 2006-2007 (findings 21 through 33),
- EPU certificate of need in 2008-2009 (findings 34-43),
- activity during the 2009 refueling outage (findings 44 through 45),
- activity before and during the 2011 refueling outage (findings 46 through 63),
- activity before and during the 2013 refueling outage (findings 64 through 67),
- NRC license amendment process in 2013 (findings 68 through 7), and
- the Department's criticisms of Xcel's management of the LCM/EPU project (findings 72 through 90).

LCM/EPU Cost Separation Analysis

Xcel Energy – Initial Filing and Direct Testimony

Xcel ascertained that, while it believes all costs should be considered integral to the plant as a whole, as part of this proceeding, it analyzed what costs could have been avoided if it had not undertaken the EPU. This "avoided cost" analysis differed from rough allocation made during the certificate of need proceeding and focused on what work was or would have been necessary over the course of Monticello's operations, and what work was avoidable without the EPU initiative. Xcel identified three categories of costs from this analysis:

1. EPU-only costs – costs that were solely related to the EPU, including licensing costs and EPU-specific equipment, and

2. LCM-only costs – costs that were related to the LCM activities, and

[23] Ibid, page 61

3. LCM costs that include some incremental EPU costs above what would have been spent for the LCM work.

Using these criteria and based on analysis performed by Xcel's Chief Nuclear Officer, the Company determined that 78.0 % of the work was unavoidable LCM work needed to provide long-term benefits to the plant and the remaining 22.0 % was classified as avoidable EPU costs[24].

Department of Commerce – Direct Testimony

GEWC consultant Dr. Jacobs' analysis of the scope of the project was to identify projects and related costs that were needed only for LCM, those that were needed only for EPU, and those that supported both LCM and EPU. Dr. Jacobs' analysis concluded that $569.5 million (85.7%) of the Project's $664.9 million was for the EPU work and $95.4 million (14.3%) was not required only for the EPU[25].

Dr. Jacobs relied on an Xcel letter to the NRC (Enclosure 8) dated November 5, 2008 and signed "under the penalty of perjury" by Mr. O'Connor as the basis for assigning costs between EPU and LCM. Dr. Jacobs explained that based on his experience, rather than subsequent analyses, it has been his practice to use contemporaneous documentation when evaluating utility expenses or operating performance. He found the NRC letter to provide the best source of the Xcel's determination of the need for each project.

To assign costs between LCM and EPU projects, Dr. Jacobs initially assigned the costs for the projects detailed in Mr. O'Connor's Schedule 30 to the projects identified in Enclosure 8. Since some project costs shown on Schedule 30 are not included in Enclosure 8, Dr. Jacobs created a category called "items not explicitly mentioned in NRC Enclosure 8." Dr. Jacobs' initial assessment is summarized in the following table:

Reconciliation of Mr. O'Connor's Schedule 30 to NRC Enclosure 8[26]

Category	Amount ($ millions)	Percent
EPU work orders	$390.6	58.8%
Not required for EPU	$274.5	41.3%
LCM work orders	$126.7	19.1%
Items for both	$39.8	6.0%
Items not in NRC Encl. 8	$107.6	16.2%
Not required for EPU	$274.1	41.3%
Total	$664.9	100 %

[24] O'Connor Direct Testimony, Schedules 29 and 30
[25] Jacobs Direct Testimony, page 8
[26] Ibid, page 10

After reviewing the items not included in NRC enclosure 8, Dr. Jacobs assigned the EPU license development cost of $59.3 million as EPU.

Using his experience and information provided during his visit to the Monticello plant in April, he evaluated the projects included in the "LCM work order" category. Dr. Jacobs concluded that, absent the EPU project, the 13.8 kV project would have been unnecessary. For this reason, he classified the 13.8 kV project costs of $119.5 million as EPU.

After reclassifying the EPU license and the 13.8 kV project costs, Dr. Jacobs arrived at his recommended breakdown of 85.7% EPU and 14.3% non-EPU (LCM):

Refining Cost Allocations to Reflect Cost-Causation[27]

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%
Not required for EPU	$95.3	14.4%
Total	$664.9	100 %

Dr. Jacobs acknowledged that while it is true that some of these projects also have a favorable effect on the extension of Monticello's plant life, his analysis, along with his examination of the plant and his experience with other nuclear power plants, indicates that, at best, it is uncertain how many of these projects would have actually been accomplished if not for the EPU. Moreover, the timing of such life extension projects most likely would have been significantly later, if they were undertaken at all.

Dr. Jacobs disagreed with Xcel's allocation methodology in which portions of the LCM work order costs were allocated to the EPU on a pro rata basis based on the amount of capacity that was expected to be added to the plant as a result of the EPU (12.1%). Dr. Jacobs did not find this approach to adequately or reasonably reflect the costs that are due to the EPU. As a result, he found Xcel's approach was inordinately biased toward minimizing EPU costs.

Dr. Jacobs added that, if any of the new equipment was even required for the LCM, those projects could have been accomplished on a "like-for-like" basis at considerably less cost. He

[27] Ibid, page 11

found that assigning only about 22% of total actual project costs to the EPU was neither credible nor reasonable.

Xcel Energy – Rebuttal Testimony

Xcel disagreed with Dr. Jacobs' modified LCM/EPU analysis and called it an after-the-fact assessment developed with the benefit of all facts as they are known today, as opposed to what was known to the Company in 2008. The Company stated that, to be consistent with the prudence standard, any cost effectiveness analysis should use the same good faith inputs as were used in 2008. Thus, the 58.4/41.6 percent LCM/EPU split that was developed and used to assess alternatives in the 2008 timeframe should guide the economic analysis[28] and, if that estimate was reasonable, then no disallowance should be ordered based on any after-the-fact cost effectiveness assessment.[29]

Xcel stated that the 78/22 percent split represents an after-the-fact split based on the costs it could have avoided if it had not done the EPU. Also, the 58.4/41.6 percent split was our good faith estimate based on the facts that were available in the CN proceedings. Although Xcel believes it would be inappropriate to impose a disallowance based on an after-the-fact perspective, it ran the results to assure that both views are included in the record[30]. Xcel did reiterate that it does not support using a split in the costs for ratemaking purposes. Also, when addressing Dr. Jacobs' observations that Xcel labeled the majority of the work orders as "EPU" and attributed the work to LCM, the Company stated that it used the moniker "EPU" as shorthand for the LCM/EPU Program as a whole[31].

Xcel found Dr. Jacobs' allocation approach to be much different than the Company's. Rather than looking at what costs could have been avoided if the EPU was not pursued, Dr. Jacobs focused on identifying costs that supported the EPU. Thus, Dr. Jacobs did not take into account the age and condition of the equipment prior to the LCM/EPU Program but focused solely on whether they could also be used to support the uprate. Xcel found Dr. Jacobs' finding that only $95.4 million of total costs is attributable to the LCM to unreasonable. Furthermore, Xcel stated that it could not have made the necessary repairs that were required to operate Monticello safely and reliably until 2030 on such limited funds given the age and condition of the existing equipment.[32] The Company pointed out that Dr. Jacobs' reliance on a 2008 letter to the NRC is based on a document that was not an economic analysis of the split between LCM and EPU nor was the NRC concerned about the cost of the Program. As such, the descriptions of the modifications were for context and convenience rather than to classify the underlying purpose of each modification. Xcel stated that Dr. Jacobs incorrectly assumed that this meant that all of the equipment was for EPU purposes.[33]

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[28] Alders Rebuttal Testimony, page 2
[29] Ibid, page 20
[30] Ibid, page 27
[31] O'Connor Rebuttal Testimony, page 15
[32] Ibid, page 86
[33] Ibid, page 87

Xcel took exception to Dr. Jacobs' classification of the 13.8 kV upgrade as entirely EPU. The Company explained that the NRC Letter explicitly stated that the 13.8 kV upgrade is "an LCM modification to increase margin in the on-site distribution system" and classified it as such.[34]

Xcel also provided a comparison of other disagreements with Dr. Jacobs' classifications[35]:

LCM and EPU Allocation Comparison for the Company and Dr. Jacobs

Modification	Xcel Energy's Allocation	Dr. Jacobs' Allocation
Electrical distribution system	LCM (100%)	EPU (100%)
Condensate Demineralizer System Replacement	LCM (75%) EPU (25%)	EPU (100%)
Main and 1AR Transformer Replacement	EPU (9%) LCM (91%)	EPU (Main Transformer 100%) and LCM (1AR Transformer 100%)
Feedwater Heater Replacement	EPU (10%) LCM (90%)	EPU (88%) LCM (12%)
Reactor Feed Pumps and Motors	EPU (7%) LCM (93%)	EPU (100%)
Condensate Pumps and Motors Replacement	EPU (75%) LCM (25%)	EPU (100%)
Turbine Replacement	EPU (6%) LCM (94%)	EPU (100%)
PRNM Replacement	LCM (100%)	EPU (100%)
Steam Dryer Replacement	LCM (100%)	LCM (100%)
EPU and MELLLA+ Licensing Costs	EPU (100%)	EPU (100%)

Although Xcel does not believe that a split is necessary, it stated that, if the Commission decides that it is important to have a hypothetical allocation, then it would choose the 2008 split (58.4/41.6 percent) because it was based on what was reasonably known at the time. If the Commission decides that the 2008 split is not reliable, then Xcel recommends that the Commission use the Company's 78% LCM/22% EPU split.[36]

Xcel Energy – Surrebuttal Testimony

In surrebuttal, Xcel once again reaffirmed its position that it does not support allocating the costs between LCM and EPU for purposes of this prudence review. If, however, the Commission believes it is appropriate to allocate those costs, then the Company's position is that the

[34] Ibid, page 92
[35] Ibid, page 85
[36] Ibid, page 123

allocation should be based on what it knew or reasonably should have known in 2008 and thus the 58.4/41.6 split would be appropriate.[37]

Department of Commerce – Surrebuttal Testimony

Regarding his 13.8 kV adjustment for the LCM/EPU split, Dr. Jacobs responded that the Company's own witness, while responding to him, essentially agreed with his conclusion.[38]

Dr. Jacobs did address other Company responses on the split but, since they did not introduce any new information, they are not repeated.

Xcel Energy and Department of Commerce – Initial Briefs

Both parties recapped their positions and disagreements with each other regarding this issue. Since no new information or clarification was introduced, the parties' positions have not been repeated.

XLI – Initial Brief

XLI did not object to the 85.7/14.3 split; however, it expressed concerns about the Department's reliance on it as basis for its recommendation. Additionally, XLI pointed that, if the ALJ or the Commission determines that a different split is appropriate such that a lower percentage of costs is attributed to the EPU, then the Department's remedy is further diminished and would not be proportional to the level of concern the investigation identified.[39]

Xcel Energy and Department of Commerce – Reply Briefs and Proposed Findings

Both parties repeated their position and disagreements with other parties regarding this issue. Since no new information or clarification was introduced, the parties' positions have not been repeated.

ALJ Report

Regarding the LCM/EPU split, the ALJ made the following recommendation[40]:

3. Costs should be allocated between the LCM and EPU portions of the Project in a ratio of 15 percent to 85 percent, respectively.

As a Conclusion of Law, the ALJ stated the following:[41]

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[37] Alders Surrebuttal Testimony, page 12
[38] Jacobs Surrebuttal Testimony, pages 8-9
[39] XLI Initial Brief, page 10
[40] ALJ Report, page 2

12. Xcel failed to demonstrate that either of its proposed allocations between LCM costs and EPU costs is reasonable. Xcel's initial allocation was based upon a "rough estimate" of projected costs of the EPU. It did not include some of the very expensive machines and work that were planned and installed later that were clearly related to the EPU. The second allocation, 78 percent to the EPU and 22 percent to the LCM, is not reasonable because it improperly assumes that all costs are LCM costs until proven otherwise, which causes many items to be classified as LCM costs inappropriately.

13. Dr. Jacobs' review and analysis was more thorough and more consistent with the actual cost incurred for the EPU. Dr. Jacobs demonstrated that the appropriate allocation of costs between the LCM and EPU is 15 percent and 85 percent, respectively.

ALJ recommendation #5 stated the following[42]:

5. Find that that the appropriate allocation of total LCM/EPU Project costs between LCM costs and EPU costs is 15 percent and 85 percent, respectively.

Prudence and Disallowance Remedy, if any

Xcel Energy – Initial Filing and Direct Testimony

Xcel has conceded that implementation of this Program was more expensive and took longer than anticipated. Nevertheless, despite the many challenges, the Company maintained that the installation was done right, the equipment is functioning properly, and the Monticello upgrades were important to the plant's long-term viability. While acknowledging that their actions were not perfect over the past eight years, the Company learned many lessons along the way and states that its efforts were prudent and designed to implement the Program in good faith based upon what was known at the time. Xcel requested the Commission find its actions were prudent and that the costs incurred in support of the Program are eligible for recovery in rates.

Department of Commerce – Direct Testimony

The Department stated that, in CN proceedings, it is important for utilities to provide accurate estimates of project costs; not doing so adversely affects the integrity of the CN process and could harm ratepayers. Further, approval of utility projects in CNs and similar proceedings is not a blank check for any utility to recover from ratepayers all costs that are incurred to construct a project.[43]

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[41] Ibid, page 32
[42] Ibid, page 33
[43] Shaw Direct Testimony, page 12

The Department noted that Xcel treated the 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, the DOC concluded that it is not reasonable for Xcel to start tracking these costs for accounting purposes as if they were one project and added that Xcel certainly knew, or should have known, that, absent the demonstration of their reasonableness, cost overruns would be subject to cost disallowance. Xcel's unreasonable practices assured that it would be very difficult to separately review the separate actual costs of the projects. Finally, the Department stated that Xcel's choice in tracking these costs resulted in needlessly higher costs for this prudence review since it was necessary for the Department to hire a consultant to split apart what Xcel never should have put together.[44]

Since Xcel requested separate Certificates of Need for both the EPU and the LCM, the Department undertook an incremental value analysis of the EPU. In order to perform this analysis, using Strategist software, total project costs must be split between the LCM and EPU. Also, the Department determined that, in order to do the appropriate analysis, contemporaneous data from the Company's 2008 EPU CN and 2007 IRP filings should be used. Furthermore, the Department also concluded that Xcel's calculations mixed real and nominal costs and; therefore, required correction.

Using various LCM/EPU splits, the Department then performed a Strategist analysis, based on its corrected data, and compared its present value of social costs (PVSC) savings results to those of Xcel's. The Department determined that, while the DOC model generally produces results that show the EPU to be somewhat less cost-effective than Xcel's model from the 2008 CN proceeding, the modelling results are consistent and show a similar break-even point for the cost-effectiveness of the EPU. The Department concluded that, since it was the basis for the 2008 EPU CN decision, the Commission should rely on Xcel's base model – with some minor corrections. The following table summarizes the Department's analysis using different LCM/EPU splits:

Cost Split		Net PVSC Cost (Benefit) $Millions
LCM	EPU	
20%	80%	$44
40%	60%	($78)
58%	42%	($112)
78%	22%	($309)

Based on its analysis, the Department concluded that when 73% of total costs are allocated to the EPU, the costs and benefits are approximately equal. Therefore, costs over that amount represent investment that was not cost-effective.

Based on Jacobs' 85.7% EPU recommendation, the Department, as shown in the following table, determined that $84.445 million (total Company basis) of the EPU costs are not cost effective.

[44] Campbell Direct Testimony, pages 19-20

Difference between 73% and 85.7% Assignment of Costs to the EPU
(Amount Not Cost-Effective, in millions)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Total EPU/LCM Costs	100%	$796	$14	$6,987	$15,705	$73,560	$118,709	$76,079	$173,887	$47,041	$152,140	$664,918
EPU Cost-Effective Amount	73%	$581	$10	$5,101	$11,465	$53,699	$86,658	$55,538	$126,938	$34,340	$111,062	$485,390
Percent EPU	85.7%	$682	$12	$5,988	$13,459	$63,041	$101,734	$65,200	$149,021	$40,314	$130,384	$569,836
Not Cost-Effective EPU		$101	$2	$887	$1,995	$9,342	$15,076	$9,662	$22,084	$5,974	$19,322	$84,445

Although the Department discusses various other projects that had cost overruns and/or rates of return disallowed, it expressed concerns about using that approach in Monticello's case. Since the Monticello LCM and EPU projects cost overruns are significantly higher than any cost overrun the Department has ever reviewed and because such a high cost overrun seems to suggest that it would not make sense to allow the Company to earn a return on any costs above the CN-approved levels. However, the DOC was concerned about whether Xcel could continue to operate the plant safely with such a significant disallowance. Instead, the Department proposed a different approach to moderate the size of the recommended disallowance – a disallowance adjustment based on the amount of the cost overrun that made the EPU not cost-effective. The Department argued that this approach balances Xcel's needs with the need to protect ratepayers.

The Department calculated the disallowance amount to be $63.378 million without AFUDC on a Minnesota Jurisdictional basis when applying the Interchange Demand and Jurisdictional Demand Allocators to the (Company basis) $84.445 million mentioned above. The Department also calculated the Minnesota Jurisdictional AFUDC disallowance of $8.042 million for a total recommended disallowance of $71.42 million.[45]

Since Monticello is not yet in service, the Department added that any additional cost overruns should be subject to an 85.7% (DOC consultants recommended allocator for EPU costs) disallowance on a Company basis.

Xcel Energy – Rebuttal Testimony

In rebuttal, Xcel argued that the Department's recommendation was an after-the-fact assessment of "cost effectiveness" and disagreed that it is the correct basis to assess prudence or to judge Xcel's decisions. The Company argued that Department's proposed cost effectiveness disallowance applies the prudence standard incorrectly because it (i) requires Xcel's assumptions to be updated with information known today, as opposed to information known in 2008, (ii) relies on hindsight evaluation of its decisions, and (iii) does not assess whether its higher-than-predicted costs were prudently incurred.[46]

[45] Ibid, pages 30-31
[46] Alders Rebuttal Testimony, page 2

Xcel also stated that the Department's refinements previously mentioned were inconsistent with the appropriate application of the prudent investment standard. The Company believes that using estimates Xcel knew and used at the time results in an approach that is consistent with the prudent investment standard. Regardless of these refinements, the Company noted that the Program is cost-effective when the 58.4/41.6 percent LCM/EPU split is used.[47]

Xcel hired an outside consultant, Richard J. Sieracki, to review the Department's testimony and findings. Based on his review, he concluded that Xcel's project management was generally appropriate. He pointed out that, although Xcel's project management was not perfect, Xcel proceeded appropriately under the circumstances and generally made sound decisions based upon the information available at the time. Mr. Sieracki added that, in his experience, a company's decisions and actions only need to be reasonable, not perfect, to support a finding of prudence.

Mr. Sieracki went on to dispute several of Mr. Crisp's findings[48]:

1. Although Mr. Crisp repeatedly points out that Xcel Energy did not provide accurate estimates of the cost of the LCM/EPU Program, Mr. Crisp does not assert that Xcel was imprudent.

2. Mr. Sieracki disagreed with Mr. Crisp's criticism of Xcel's effort at developing the scope of the LCM/EPU Program. Mr. Sieracki opined that "better" Project management would not have anticipated the need for the 13.8 kV Distribution System any earlier nor would it have foreseen its installation challenges once fully designed.

3. Mr. Crisp asserted that Xcel was not prepared for the LCM/EPU Program. Mr. Sieracki did not find Xcel's Project preparation and coordination to be lacking. He added that, while large, capital-intensive projects can suffer from coordination issues, his review suggests that this Project was not impacted by coordination issues that were out of the ordinary or beyond what he would expect.

4. Mr. Sieracki concluded that the LCM/EPU Program did not suffer from "starts and stops" by switching contractors - Xcel made a prudent decision to change contractors when it did. In his experience, it is important for the owner to maintain the ability to direct external resources and remove a contractor if another contractor can do a better job or has more targeted expertise.

5. Xcel's treatment of tracking the EPU and LCM work together as a single Project was warranted under the circumstances. While Mr. Sieracki agreed that Xcel Energy could have separated the one initial Work Order into the Child Work Orders ("CWOs") at the outset of the LCM/EPU Program, he disagrees that proceeding with a single work order was unreasonable.

[47] Ibid, pages 23-24
[48] Sieracki Rebuttal Testimony, pages 5-8

6. Mr. Crisp challenges Xcel's use of contingencies but never suggests that use of higher contingency levels would have resulted in lower overall costs. However, Mr. Sieracki believes Xcel appropriately estimated contingencies for the Program. Furthermore, whether or not Xcel used contingencies does not change the actual costs incurred.

7. Cost growth was not due to poor Project management. Rather, the cost growth was primarily due to the evolving scope of the job and the implementation challenges that were encountered. Mr. Sieracki noted that such cost growth can occur on projects where permitting, design and implementation are occurring concurrently.

Mr. Sieracki later added that

8. Mr. Crisp criticized the initial cost estimate; however, he did not offer an opinion on what the initial cost estimate should have been nor did he state that a different estimate would have resulted in lower actual costs for the Project.[49]

Mr. Sieracki concluded that, given the tight time frame needed to deploy additional baseload generation, Xcel did not have sufficient time to have GE fully design the then-identified modifications, develop a detailed scope of all the required modifications, and completely understand the complexity of the potential modifications to an operating nuclear plant. In essence, the timeframes required Xcel to design and build the proposed LCM/EPU Program concurrently.

Mr. Sieracki stated that his analysis contradicts Mr. Crisp's unsupported assertions. Mr. Sieracki did not find evidence that Project management practices contributed in any meaningful way to the cost growth. Rather, cost growth was attributable to additional work with the modifications, which happens on projects where design and implementation are occurring concurrently. He concluded that cost growth is not due to poor management and that Xcel's management decisions were reasonable and prudent.[50]

Xcel asserted that, in this prudence review, the Commission should apply a standard of "reasonableness under the circumstances". Reasonableness does not mean perfection, and the Company is concerned that the Department's Consultant's testimony suggests an unattainable standard by assuming that because costs went up, the Company must be responsible.[51]

Xcel urged the Commission to keep the following factors in mind when judging prudence:

1. focus on the decision or action itself, not on the after-the-fact outcome of that decision or action;

[49] Ibid, page 17
[50] Ibid, pages 59-60
[51] Sparby Rebuttal Testimony, page 13

2. focus on the information known or that reasonably should have been known at the time the decision was made or the action taken, rather than relying upon after-discovered facts or hindsight;

3. recognize that the utility must make business judgments and decisions that plan for future business and customer needs;

4. do not require perfection; and

5. do not focus on "cost overruns" as a primary factor because, without more information, increased costs alone do not establish imprudence.[52]

The Company continued to assert that its decisions and actions do not warrant a disallowance or impairment.

Office of Attorney General – Rebuttal Testimony

The OAG stated that it believes that the primary objectives of this investigation were to determine whether the Monticello cost overruns were prudent and reasonable, and to determine the separation of costs between the LCM and the EPU. However, OAG concluded that Department has addressed how costs should be allocated between the LCM and the EPU and that its recommendation for cost disallowance was not based on whether costs were prudent or reasonable, but on a comparative cost allocation analysis, which is a very different type of analysis. The OAG added that the DOC performed its cost analysis to determine whether the Monticello cost overruns were appropriate based on the analysis in the CON proceeding which compared the EPU project to other generation alternatives. OAG asserted that the DOC's method is not a substitute for a prudence review because it does not provide any analysis as to whether NSP has met its statutory burden of proof to show that identifiable costs within the project were reasonable.[53]

The OAG stated that it had several problems with the Department's analysis:

- A proper prudence review should review each decision NSP made to incur costs and determine whether it was reasonable. The DOC's analysis did not review the individual costs of the project and did not make any recommendations regarding the specific costs incurred by NSP. The DOC's consultants submitted testimony demonstrating that a significant portion of the cost overruns were the result of NSP's mismanagement which the DOC did not subsequently address.

- Use of the DOC's methodology limits the ability of consumers to enjoy the benefits of the best option selected from a CON proceeding. The Department determined the point at which the 71 MW Monticello EPU was cost-effective compared to other generation alternatives available in 2008, and recommended disallowing costs greater than the

[52] Ibid, page 15
[53] Lindell Rebuttal Testimony, pages 5-6

alternative generation options. This method implicitly surrenders the benefits that ratepayers would have received from the most cost effective option in a CON process. Allowing a utility to recover cost overruns up to the level of the alternatives that were not selected eliminates the additional benefits that should have been gained from having chosen the most cost-effective option as compared to the alternatives. If the DOC's method is approved, some of the benefits that should have been realized by ratepayers will be eliminated due to NSP's inefficiency and mismanagement, while other benefits will be transferred from ratepayers to NSP's shareholders through higher returns and recovery.

- The DOC identified many other cost overrun situations in which it recommended that recovery of the overruns be denied; however, the DOC's proposal in this case deviates significantly from the methods that the DOC has used in previous cases.

- The DOC's statement that, while such a high cost overrun suggests that it would make sense not to allow the Company to earn a return on any costs above the CN-approved levels, OAG stated that speculation as to whether Xcel could continue to operate the plant safely with such a significant disallowance serves only to distract from the investigation's purpose: to determine whether the cost overruns were prudent and reasonable.

Based on Mr. Crisp and Dr. Jacobs' overwhelming evidence demonstrating that a significant portion of the cost overruns were the direct result of NSP's mismanagement of the project, the OAG reached the following conclusions and recommended the following disallowances[54]:

1. NSP not be allowed any return on the cost overruns. Public policy concerns support denying a return on the cost overruns. If utilities can earn a return on significant cost overruns, especially when their accounting methods make it difficult or impossible to track whether individual expenses were reasonable, then utilities will have an incentive to incur additional cost overruns in order to increase additions to rate base and recover greater returns.

2. Installation cost overruns were unreasonable, and the $261.1 million in installation cost overruns should be disallowed.

3. The 13.8 kV distribution system costs were unreasonable and the $98.6 million in cost overruns should be denied.

4. Recovery of the $77.9 million in cost overruns for the feedwater heater should be denied because NSP acted imprudently and unreasonably.

5. Because of NSP's poor accounting practices, the DOC's expert witnesses were unable to determine costs were attributable to the mismanagement of the project. For that reason, The OAG recommended use of a percentage based approach to determine which costs were related to mismanagement. Installation cost overruns make up at least $261.1

[54] Ibid, pages 26-30

million, which represents between 61% of the total cost overrun of $428.1 million, plus any portions of the feedwater heater and 13.8 kV distribution system that are not included with the installation costs. By incorporating the specifically-identified items and those items that cannot be quantified, the OAG believes it is reasonable to conclude that at least 75% of the cost overruns, or $321 million, were caused by NSP's poor management, were unreasonable and imprudent, and should be disallowed.

6. If the Commission believes that more analysis is required to determine which additional cost overruns were caused by NSP's poor management, the Commission should order a forensic accounting analysis and, if so ordered, NSP should be required to bear the cost of any forensic auditor.

7. Based on the DOC's statement that Dr. Jacobs' testimony would not have been necessary if NSP had used a reasonable accounting method, the OAG also recommended that any cost related to Dr. Jacobs' assistance should be specifically excluded from recovery.

Xcel Energy – Surrebuttal Testimony

Since the basis of Xcel's rebuttal testimony is to address the OAG's testimony and the OAG's testimony relied on much of the Department's experts' testimony, much of Xcel's surrebuttal duplicates information previously filed. In such cases, that information has not been repeated here.

In surrebuttal Xcel disagreed with the OAG's conclusions regarding imprudence and noted that neither the Department nor the OAG identify any specific action(s) the Company took as imprudent. The company agreed that, if it had done a better job of estimating, it would have resulted in least somewhat lower cost increases but not because the overall costs would have been less, but rather because their initial estimate would have been higher, thus making the difference smaller.[55]

Regarding costs related to the 13.8 kV distribution system, Xcel stated that the OAG assumed that, because costs were higher, such costs are not credible. The Company stated that despite a year of effort by a world-class engineering firm, the final cost was still underestimated.[56]

Regarding costs related to the feedwater system, Xcel pointed out that, due to equipment age and condition, replacement would have been necessary for the life extension of the Plant, even absent the uprate.[57] The Company added that the OAG assumed that costs going up meant that money was wasted; however, it did not testify that the work was unnecessary nor did it point to why it thought the replacement could have been achieved for significantly less than what the modification cost.[58]

[55] O'Connor Surrebuttal Testimony, page 4
[56] Ibid, page 12
[57] Ibid, page 13
[58] Ibid, page 15

Regarding installation cost overruns, Xcel pointed out that the OAG ignored that the overall estimate included a significant amount of non-segregated common costs and that 90% of the installation amounts paid for the 2009 and 2011 outages and approximately 75% of the installation amounts paid for the 2013 outage were for craft labor expenses.[59]

Regarding the OAG's position that accounting has made it difficult to determine which cost overruns were caused by poor management, Xcel pointed out that it provided all accounting information and records that were requested and, just because the Company used a single work order, it does not mean that those records were not made available for review.[60]

Regarding the OAG's call for a forensic accounting analysis, Xcel believes that, since a forensic accounting analysis would be more geared to assessing what was spent and to whom it was paid, such an effort would not lead to meaningful results. The Company also noted that forensic accounting analysis could not focus on the question of why expenditures were made or whether they were reasonable under the circumstances or were based on prudent decisions or actions.[61]

Xcel also pointed out that the OAG failed in its application of the prudent investment standard. The Company disagreed with the OAG's assumption that Xcel's higher-than-projected costs must mean mismanagement and that excess costs should be disallowed (or denied a return) simply because they were higher than initially predicted.[62] The Company found the OAG's proposed remedy to be arbitrary, without support in the record and disproportionately high.[63]

Regarding total Project costs, Xcel stated that the $346 million in the CN was based on 2008 dollars and did not include AFUDC. To create an apples-to-apples cost comparison, the 2008 amount needs to be escalated to 2014 dollars; therefore, in 2014 dollars the Project's CN amount would be $453 million - $397.5 million plus about $45.5 million of AFUDC.[64]

Xcel continued to recommend no disallowance; however, it also proposed an alternative. The Company stated that, to the extent the Commission finds Xcel's performance fell short of the required standard, it could reduce the Company's return on equity for the overall investment by a specified number of basis points for the remainder of the Project's life. The net present value of such a reduction would reflect the magnitude of the disallowance and would allow that remedy to be spread over time to benefit all ratepayers over time. For instance, a 100-basis point reduction translates into an effective reduction in the Company's Minnesota jurisdiction overall recovery of about $20 million over the life of the investment on a net present value basis, and a $3.5 million decrease in the Company's proposed revenue requirement in its current rates.[65]

Finally, Xcel quantified the impact of both the OAG and the Department's recommendations. The OAG's disallowance would result in an effective reduction in the Company's Minnesota

[59] Ibid, pages 17-18
[60] Ibid, page 23
[61] Ibid, page 25
[62] Alders Surrebuttal Testimony, pages 6-7
[63] Ibid, page 10
[64] Ibid, page 15
[65] Ibid, page 27

jurisdiction overall recovery of $271 million over the life of the investment on a net present value basis, and an approximately $38.4 million decrease in the Company's proposed revenue requirement in its current rate case. Xcel described such an outcome as confiscatory and not sustained by any facts on the record. Likewise, the Company calculated that the Department's recommendation would result in an effective reduction in the Company's Minnesota jurisdiction overall recovery of $67 million over the life of the investment on a net present value basis, and an approximately $10 million decrease in the Company's proposed revenue requirement in its current rate case. Xcel equated the DOC's recommendation to a 340-basis point return on equity reduction.[66]

Department of Commerce – Surrebuttal Testimony

Mr. Crisp acknowledged that he did not offer on opinion on the Project's prudence. He clarified that the purpose of his testimony was to bring to PUC's attention areas that raised substantial questions about the reasonableness of Xcel's management and execution of the LCM/EPU project that added costs and delays to the project. The Department then assessed whether Xcel met its burden of proof.[67]

Mr. Crisp went on to describe the Company's response to issues he raised and essentially characterized Xcel's responses as "missing the point". Mr. Crisp's responses did not introduce any new information and; therefore, they are not repeated.

Dr. Jacobs' testimony takes exception with what he termed as misrepresentations of his testimony. Specifically, Dr. Jacobs addressed misrepresentations related to his Fukushima analysis and his "scope changes" testimony.

Dr. Jacobs mentioned that Xcel's argument that he stated that no costs specifically related to Fukushima impacted the LCM/EPU effort is incorrect. Dr. Jacobs clarified that he concluded that, while Fukushima clearly resulted in additional licensing costs for the EPU project, it did not result in significant additional capital costs nor did it impact the overall project schedule. Regarding the scope changes, Dr. Jacobs added that he never addressed that issue.[68]

Dr. Jacobs responded to other characterizations of his testimony by the Company; however, as with Mr. Crisp's responses, he did not introduce any new information and; therefore, they are not repeated.

The Department, in response to Xcel's criticism, clarified the reason it used actual costs (for its Strategist analysis) is because Xcel confuses a general prudency standard with the Department's application of its proposed remedy in this case. The Department concluded that Xcel failed to show that it is reasonable for Xcel to recover all of the cost overruns from ratepayers.[69] The Department added that, as a general matter, continued cost effectiveness does not equate with

[66] Ibid, pages 27-28
[67] Crisp Surrebuttal Testimony, pages 1-2
[68] Jacobs Surrebuttal Testimony, pages 1-3
[69] Shaw Surrebuttal Testimony, page 3

prudency and, based on the record, the DOC did not dispute that the projects remain cost-effective.[70]

As with the consultants' testimony, the Department addressed several of the Company's responses; however, in most instances they did not introduce any new information, and they are not repeated.

The Department also responded to the OAG by disagreeing with the OAG's criticisms and recommendations; however, the responses did not introduce any new information and; therefore, they are not repeated.

The Department concluded by summarizing possible adjustments the Commission could consider and their 2015 revenue requirement impact on the rate case:[71]

1. OAG - recommended 75% of the overrun, or $321 million, be disallowed and the remaining 25%, or $107.1 million, receive no return. This recommendation amounts to a downward revenue requirement adjustment of $58 million for 2015.

2. Department alternative - consistent with the DOC's recommendation for the abandoned Prairie Island EPU costs in the current rate case, the Commission could consider allowing Xcel to earn only a weighted short-term and long-term debt rate (no equity) on the $402.1 million. The effect of this adjustment would be a downward revenue requirement adjustment of $20.507 million of 2015 on a Minnesota Jurisdictional basis.

3. Department – recommended a $71.42 million reduction to the capital costs of the Monticello EPU resulting in a $10.237 million downward revenue requirement adjustment for 2015 on a Minnesota Jurisdictional basis.

Office of Attorney General – Surrebuttal Testimony

The OAG produced the following table to refute the Company's claim that Monticello is a source of cheap power:[72]

Year	Revenue Requirement (000s)	MWH Generated (000s)	Revenue Requirement per MWH
2011	$42,935	3,356	$12.79
2012	$42,935	4,890	$8.78
2013	$50,716	2,994	$16.94

[70] Ibid, page 7
[71] Campbell Surrebuttal Testimony, pages 37-39
[72] Lindell Surrebuttal Testimony, pages 4-5

The OAG mentioned that the table shows that, for 2011-2013, the average revenue requirement for Monticello is $12.83 per MWH. Since NSP's current revenue per MWH sold is approximately $9 to $10, the OAG stated that the Monticello generation costs are excessive and contributed to the significant increase in revenues that NSP has requested in the pending rate case.

The OAG also addressed several of the Company's responses; however, in those instances that they did not introduce any new information, they are not repeated.

The OAG continued to recommend a $321 million disallowance.

Xcel Energy, Department of Commerce and Office of Attorney General – Initial Briefs

All these parties essentially recapped their position and disagreements with the other parties regarding prudence and possible remedies. Since no new information or clarification was introduced, the parties' positions have not been repeated.

Xcel Large Intervenors (XLI) – Initial Brief

XLI agreed with the Department's standard of review for this proceeding and stated that the burden of proof lies with NSP to show that its proposed cost recovery is reasonable and prudent under this standard.[73]

To address Xcel's issue regarding the appropriate cost-effectiveness threshold for implementing the Department's proposed remedy, XLI stated that this question can be avoided by applying XLI's no return proposal.[74]

Regarding the issue of imprudent management, XLI stated that it should be evident from review of this record that there is substantial evidence that NSP management decisions in both the initial planning of the Project and in its implementation contributed to the cost overruns. XLI added that it is not the Department's burden to show that the costs NSP seeks to recover are reasonable and that NSP should not be able to shield itself from disallowance by hiding behind opaque cost accounting.[75]

XLI concurred with the Department's and OAG's conclusions and recommended that NSP receive no return on the cost overrun.[76]

XLI is concerned that the Department's cost-effectiveness proposal potentially sets a bad precedent for the future. Limiting the disallowance of cost overruns to the amount above the next least-cost alternative provides no incentive to control costs above the estimate, but below the

[73] XLI Initial Brief, page 1
[74] Ibid, pages 1-2
[75] Ibid, pages 6-7
[76] Ibid, page 8

next least-cost alternative. Depending on the alternatives considered in any given proceeding, there could be a lot of room for cost overruns. Further, if precedent is set for capping costs at a cost-effectiveness threshold rather than at the level approved in a CN proceeding, a perverse incentive is established to offer low estimates, especially when potential alternatives are of significantly higher cost. Additionally, the unintended precedent may be two-fold. First, it could establish that large cost overruns, which have the greatest potential impact on ratepayers, are subject to lower disallowances. Second, it could incent utilities to underbid third-party owned projects in a resource acquisition proceeding based on an understanding that the utility would be allowed to recover its investments up to the next cheapest alternative.[77] For that reason, XLI concluded that the no-return option is the best remedy to address the significant cost overrun in this docket.

Xcel Energy, Department of Commerce and Office of Attorney General – Reply Briefs and Proposed Findings

Once again these parties repeated their position and disagreements with other parties regarding prudence and possible remedies. Since, other than Xcel's *prima facie* argument mentioned below, no new information or clarification was introduced, the parties' positions have not been repeated.

In its Reply Brief, Xcel argued that the probative evidence it provided established a *prima facie* case that proves its costs were reasonable.[78] The basis of Xcel's prima facie case argument was addressed by the other parties and is discussed in the ALJ's Report (please see below).[79]

ALJ Report

Based on his Findings, the Administrative Law Judge made several Conclusions of Law and Recommendations:[80]

CONCLUSIONS OF LAW

1. Any of the above Findings of Fact more properly considered a Conclusion of Law is adopted as such.

2. The Commission and the Administrative Law Judge have jurisdiction in this matter pursuant to Minn. Stat. §§ 14.50, 216B.08, and 216B.16 (2014).

3. Xcel bears the burden of showing that the costs it seeks to recover from ratepayers in rates were prudently incurred and are reasonable. The burden is on Xcel to prove the facts required to sustain its burden by a fair preponderance of the evidence.

[77] Ibid, pages 10-11
[78] XLI Reply Brief, pages 7-12
[79] ALJ Report, page 30
[80] ALJ Report, pages 30-33

4. The utility—not public agencies, other parties, nor the Commission—bears the burden to demonstrate that the utility's proposed rate increase is just and reasonable. A utility in a rate proceeding does not enjoy at any point a rebuttable presumption of reasonableness that other parties must overcome. Even if the utility presents a *prima facie* case and there is no contrary evidence, "the utility does not necessarily meet its burden of demonstrating that it is just and reasonable that the ratepayers bear the costs of those expenses." Minnesota law requires that every rate established by the Commission be just and reasonable and that any doubt be resolved in favor of the consumer.

5. 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 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, for a total in current dollars of $346 million. Based on information from March 31, 2014, total estimated Project costs were $748 million, including financing costs to that date, amounting to $402 million in costs that exceeded Xcel's initial cost estimates.

6. Xcel has failed to demonstrate that the cost overruns it seeks to recover were prudently incurred and are reasonable.

7. Xcel's principal failure was that it did a very poor job managing the initial scoping and early Project management up until beginning installation during the 2009 refueling outage. The Company's decision to proceed with the combined LCM/EPU Project in 2009 rather than 2011 created an extremely difficult task that Xcel was not able to manage. From that point forward, additional issues arose that compounded Xcel's difficulties and required unreasonable amounts of time and money to resolve. It was a failure of management and was not prudent. As a result, significantly increased unreasonable costs occurred until the Project was completed.

8. The cost overruns for the feedwater heater, the 13.8 kV distribution system, and the installation costs totaling at least $261 million were caused by Xcel's imprudent management. They are unreasonable and should be denied.

9. The Company's failure to recognize problems with spacing, clearances, access, and physical arrangements of the Plant was a direct failure of its LCM/EPU Project management. Nothing related to the characteristics of the Plant, including its size, should have surprised Xcel or led to cost overruns.

10. Xcel's decision to proceed on an aggressive, fast-track schedule by using a parallel process contained unreasonable risks. The fast track schedule required the Company to rely on preliminary scoping, rather than performing the full scoping effort necessary to have a thorough understanding of what needed to be done to finish the Project. The result was dramatically increased Project costs that were imprudently incurred by Xcel.

11. Xcel's accounting practices made it difficult to separately review the actual costs of the EPU from the costs of the LCM. The costs were not transparent as required. Identifying these costs for this prudency review was a needless expense.

12. Xcel failed to demonstrate that either of its proposed allocations between LCM costs and EPU costs is reasonable. Xcel's initial allocation was based upon a "rough estimate" of projected costs of the EPU. It did not include some of the very expensive machines and work that were planned and installed later that were clearly related to the EPU. The second allocation, 78 percent to the EPU and 22 percent to the LCM, is not reasonable because it improperly assumes that all costs are LCM costs until proven otherwise, which causes many items to be classified as LCM costs inappropriately.

13. Dr. Jacobs' review and analysis was more thorough and more consistent with the actual cost incurred for the EPU. Dr. Jacobs demonstrated that the appropriate allocation of costs between the LCM and EPU is 15 percent and 85 percent, respectively.

14. The facts in the record support a substantial disallowance of cost overruns incurred by the Company to implement the EPU Project.

15. Because of the failure of Xcel to demonstrate a reasonable figure for a disallowance and the difficulty determining the specific amount for a disallowance, it is most appropriate to order disallowance of that portion of EPU-related costs that render the Monticello Plant not cost-effective as of the present, as recommended by the Department. Such a calculation gives Xcel credit for its investment in the EPU to the extent that it will produce benefit to ratepayers, but does not reward it for its actions that were imprudent and unreasonable. Either a total allowance or total disallowance would be unreasonable and unfair.

16. Specifically, the disallowance should be 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.

17. The foregoing figures will likely have to be recalculated by the Department to account for more recent information and to address any impact in the 2013 rate case proceeding of the cost allocation to LCM Project costs.

Based on his Conclusions of Law, the Administrative Law Judge hereby makes the following

RECOMMENDATIONS

1. Find that 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 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, for a total in 2014 dollars of $346 million.

2. Find that, based on information from March 31, 2014, total estimated Project costs were $748 million, including financing costs to that date, amounting to $402 million in costs that exceeded Xcel's initial cost estimates.

3. Find that Xcel failed to demonstrate that the entire $402 million in cost overruns, or any identified part thereof, was reasonable and prudent.

4. Find that Xcel failed to demonstrate that the cost overruns incurred in the LCM/EPU Project were prudently incurred and reasonable.

5. Find that that the appropriate allocation of total LCM/EPU Project costs between LCM costs and EPU costs is 15 percent and 85 percent, respectively.

6. Order disallowance of that portion of EPU-related costs that render the Monticello Plant not cost-effective as of the present and adopt the Department's recommendation for 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.

7. Order that this matter be incorporated into the 2013 rate case proceeding, PUC Docket No. E-002/GR-13-868.

After his recommendations, the ALJ also issued the following:[81]

MEMORANDUM

Burden of Proof

Xcel, like every other public utility in Minnesota, has the burden to prove that its rates are "just and reasonable." Minnesota law unequivocally requires that the "burden of proof to show that the rate change is just and reasonable shall be upon the public utility." In order to make entirely clear where the burden lies, Minnesota law also requires that any doubt as to the reasonableness of rates "should be resolved in favor of the consumer." In this particular matter, the Commission stated that the purpose of this investigation is to determine "whether Xcel Energy's handling of the [Monticello Project] was prudent and whether the Company's request for recovery of [Monticello Project] cost overruns is reasonable." In order to satisfy its burden, Xcel must present evidence that proves it handled the Monticello Project prudently and that the costs it seeks to recover are reasonable.

To satisfy that burden, Xcel must do more than produce evidence showing that it acted prudently in making the initial decision to begin the Monticello Project. Xcel must also produce evidence showing that all of the subsequent decisions were prudent, and that the costs resulting from those decisions were reasonable; such a showing could be referred to as "implementation prudence."

[81] Ibid, page 34

Xcel witness Mr. Alders framed the issue of implementation prudence by asking, "As we encountered new circumstances along the way, did the company properly think through what its options were and to what extent did the company respond to those changed circumstances in a prudent fashion?"

It is not enough for Xcel to simply present the final costs of the Project and request recovery. The Minnesota Supreme Court has stated that a utility "does not necessarily meet its burden of demonstrating that [its costs are] just and reasonable" by "merely showing that it has incurred, or may hypothetically incur, expenses." Rather, to satisfy its burden, Xcel must produce affirmative evidence showing that the costs of the project were both prudent and reasonable, and that Xcel acted reasonably at every step of the way.

In its 1985 rate case, Xcel argued that once it produced evidence on a particular issue, it had created a "'rebuttable presumption of reasonableness" that could only be overcome by competent evidence in rebuttal." As noted by the Minnesota Supreme Court, the Commission "rejected that contention" because "the company had at all times the burden of proving the proposed rate change." The Supreme Court agreed with the Commission, and stated:

> If there ever existed in this state a presumption to be applied in ratemaking, enactment of Minn. Stat. § 216B.16, subd. 4 (1986) effectively removed any presumption, and placed on the petitioning utility the burden of proving the proposed rate is fair and reasonable ...

In Minnesota, a utility does not create a presumption of recovery merely by producing evidence. Minn. Stat. § 216B.16, subd. 4, places the burden of proof on the utility, and *only* on the utility.

Neither is a utility guaranteed recovery simply because public agencies or other interveners are unable to identify the precise costs that should be disallowed. For example, in Xcel's 2008 rate case the OAG and the Department challenged Xcel's method of allocating costs from its service company. The public agencies determined that Xcel's general allocator was inaccurate and unreasonable, and that its application had resulted in excess costs being allocated to Minnesota ratepayers. The Department was unable to review each work order individually, so instead recommended a proxy reduction of one-half of the costs. In response, Xcel argued that the public agencies had not met their burden because the Department had recommended a proxy adjustment to hundreds of work orders after it had identified problems in only two or three. The Commission disagreed.

The Commission specifically rejected Xcel's argument that the Department, or other public agencies, had to produce evidence after demonstrating that the Company's request was unreasonable. The Commission recognized that the Department and OAG had demonstrated a "significant incidence of over-allocation," even though they had been unable to precisely determine the total amount. Rather than allowing the Company to be shielded by the lack of precision, the Commission found that it was necessary to accept the Department's proxy recommendation because "setting rates that overcharge ratepayers," in the absence of detailed information, "[was] not an acceptable alternative." The Commission further stated:

> [U]ncertainty about how much the ratepayers are being overcharged in cost allocation does not trump the Commission's duty to do something about it. And the burden of proof lies with the Company – under Minn. Stat. § 216B.03, any doubt as to the reasonableness of any rate must be resolved in favor of the consumer.
>
> For that reason, the Commission cannot concur in the ALJ's observation that "[t]he ALJ cannot conclude based on the record that the recommended disallowances are either necessary or more reasonable than the costs proposed by Xcel." The OES is not obligated to prove that the disallowances are necessary or reasonable; Xcel is obligated to prove that it has adequately remedied the cost misallocations that the OES has demonstrated both exist and harm Minnesota ratepayers.

The same burden of proof applies in every rate proceeding before the Commission. A utility is not protected by any presumption of recovery simply by filing a request to increase rates. In order to recover any costs, the utility must produce sufficient evidence to prove that the rates it has requested are just and reasonable. If the utility fails to do so, then the costs must be disallowed; equally, if a public agency or other intervener demonstrates that costs are unreasonable or imprudent, then they must be disallowed as well.

Witness Credibility

The OAG suggests that Mr. Sparby's testimony should be considered in light of his direct financial interest in the outcome of this case. Mr. Sparby agreed during the evidentiary hearing that his compensation package from Xcel may be affected by the outcome of this case. The Administrative Law Judge doubts that that fact affected Mr. Sparby's testimony significantly. He appeared to testify truthfully.

However, Mr. Sparby appeared quite nervous and unsure while giving testimony at the hearing. It appeared that his direct knowledge of the management and problems of the LCM/EPU Project was limited. From 2009 to 2011, he was the Chief Financial Officer of Xcel's parent company, Xcel Energy, Inc. He did not directly manage or oversee the LCM/EPU Project. Mr. Sparby's testimony about the Company's prudence or the reasonableness of the costs is of limited value.

Mr. O'Connor presented testimony in this matter as the Chief Nuclear Officer. But Mr. O'Connor did not join Xcel until 2007, well into the planning process for the Monticello Project. And Mr. O'Connor did not become the Chief Nuclear Officer until recently.

Other of Xcel's witnesses reflected some credibility issues as well. While Mr. Alders provided testimony about the forecasting and modeling done to support the Monticello Project, he did not actually perform the modeling himself; rather, he was available to "address the questions" of the people who actually did the modeling. Mr. Weatherby did not provide any testimony about the prudence of the Project; instead, "the focus of [Mr. Weatherby's] testimony was on the costs [Xcel] actually recorded." Mr. Stall and Mr. Sieracki were consultants hired by Xcel to provide testimony for the Company. These outside witnesses seemed to have a degree of sympathy for

Xcel's problems that detracted from the credibility of their testimony. It also appeared that a few of the numbers in some of the testimony were inconsistent or were tailored to fit the issue being addressed.

The Department and OAG witnesses were more believable.

Department witnesses Mr. Crisp and Dr. Jacobs were very credible and their testimony was believable. Obviously they submitted bids for the opportunity to be paid to investigate and provide expert testimony in this matter. But neither of them showed personal prejudice or bias. Their knowledge of the construction and operation of nuclear plants was extensive, their factual findings were believable, and their interpretations and conclusions were based on facts logically drawn and persuasive. They admitted when they had difficulty determining precise facts and did not extend their opinions beyond what they could prove.

The evidence produced by Xcel in this matter was not sufficient to demonstrate that the costs incurred for the LCM/EPU Project were prudently incurred and reasonable. A significant amount of the overruns was caused by Xcel's poor management, and therefore should not be recovered from ratepayers. The disallowance method recommended by the Department should be adopted by the Commission.

Xcel Energy and Xcel Large Industrials – Exceptions to the ALJ Report

Both parties once again repeated and reargued their position on various subjects that have been previously discussed. Both also recommended edits and/or clarifications to the ALJ Report that would make it consistent with their positions. Since listing such edits would be rather voluminous, that information has not been repeated here.

Department of Commerce – Exceptions to the ALJ Report

The Department did not file exceptions to the ALJ.

Office of Attorney General – Exceptions to the ALJ Report

The OAG also repeated and reargued its position on various subjects that have been previously discussed. It also recommended edits and/or clarifications to the ALJ Report that would make it consistent with their positions and *most* of those are not repeated here. The OAG focus on the following ALJ Conclusions does warrant additional discussion:

8. The cost overruns for the feedwater heater, the 13.8 kV distribution system, and the installation costs totaling at least $261 million were caused by Xcel's imprudent management. They are unreasonable and should be denied.[82]

[82] ALJ Report, page 31

The OAG had previously incorporated the cost $261 million overrun into its recommended disallowance and noted that, despite this conclusion, the ALJ did not incorporate the disallowance into his final recommendation[83].

The OAG took exception to the fact that the $261 million disallowance was not included in the ALJ's final recommendation and noted that the ALJ made a conclusion of law that "at least $261 million" for the feedwater heater, the 13.9 kV distribution system, and the installation costs "were caused by Xcel's imprudent management," and stated that the costs "are unreasonable and should be denied." The OAG added that, following this conclusion, the Commission must disallow at least $261 million because rates cannot be just and reasonable if they include costs that were caused by Xcel's imprudent management. Furthermore, to the extent that there is any doubt about whether allowing recovery of costs caused by imprudent management is just and reasonable, Minnesota law requires the Commission to resolve "any doubt as to reasonableness . . . in favor of the consumer."[84]

Based on this information, the OAG recommended that the Commission remove Conclusions 15 and 16 and include a new Conclusion immediately preceding Conclusion 17:

> Because the $261 million in cost overruns for the installation costs, 13.8 kV electric distribution system, and feedwater heaters were caused by Xcel's imprudent management, the costs must be disallowed.[85]

In conclusion, the OAG reaffirmed its previous recommendations and added that the Commission must go further than the ALJ's recommendation to protect the interests of ratepayers and ensure that Xcel's rates are just and reasonable. At the very least, the Commission must take action on the ALJ's explicit finding that "at least $261 million [in cost overruns] *were caused by Xcel's imprudent management*," and that those costs "were unreasonable and *should be denied*."[86]

Xcel Energy – Reply Exceptions to the ALJ Report

Other than to reply to the $261 million disallowance highlighted by the OAG above, Xcel's other information in this filing repeats previous positions and is not repeated here.

Xcel addressed the $261 million disallowance by stating that, while the ALJ states that "cost overruns for the feedwater heater, the 13.8 kV distribution system, and the installation costs totaling at least $261 million were caused by Xcel's imprudent management," the $261 million represents 100% of the installation cost increases for the entire Program. The Company noted that the OAG fails to disclose that the total installation cost increases for the whole Program include a substantial portion of the 13.8 kV system and feedwater heater cost increases. Thus the $261 million is not, as the OAG Exceptions now characterize it, some calculated amount that is

[83] Office of Attorney General, Exceptions to ALJ Report, page 4
[84] Ibid, page 6
[85] Ibid, page 7
[86] Ibid, page 16

tailored to specific unnecessary cost overruns. Instead, it is a blunt conclusion that inaccurately attributes all installation cost increases to imprudence.[87]

Department of Commerce and Office of Attorney General – Reply Exceptions to the ALJ Report

Both the Department and the OAG repeated positions previously discussed and, therefore, they are not included here.

Staff Analysis

In a prudence review, staff agrees with the Department, OAG and XLI and believes the Company bears the burden of proof. Staff found it surprising that Xcel provided minimal information regarding the decision alternatives it faced as the LCM/EPU Project progressed. In order to satisfy prudence on all major cost overrun items, Staff expected Xcel to provide four specific pieces of information for each: 1) identify the modification that caused the overrun, 2) provide a discussion of the available alternatives at the time, 3) provide the cost of each alternative, and 4) provide the reason for the chosen alternative.[88] Other than the one item discussed below, the Company failed to satisfy the second and last requirement consistently.

Instead of providing any of this information, Xcel chose to assert and reaffirm, without providing backup, that its decisions were prudent. Staff believes Xcel's approach to lack the transparency necessary for the Commission to rule in its favor.

Based on the record, Staff was able to identify only one instance – the addition to the electrical distribution system of a higher-capacity 13.8 kV system - in which Xcel satisfied the four item requirement to prove prudence: 1) the modification was the 13.8 kV system, 2) the Company's alternatives - a 4 kV, a 6.9 kV, or a 13.8 kV system – were discussed, 3) the cost alternatives – all essentially would have had similar costs – were provided, and 4) Xcel chose the 13.8 kV because it not only accommodated the new electric load associated with the uprate but it also will support additional loads for the next 20 years[89]. Despite the fact that costs for this particular item increased from $20.9 million to $119.5 million, Staff found Xcel's "forward-thinking" reasoning to be sound. Since the cost difference of the three alternatives was minimal, Xcel's decision to install the 13.8 kV system balanced the needs and costs at the time with future needs and costs.

Staff also shares the concerns raised by the OAG and XLI that the Department's recommendation deviates from past Commission practices and that the DOC's recommendation effectively trues-up Xcel's cost recovery to what the next-best alternative would have been in 2008.

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[87] Xcel Energy, Reply Exceptions to ALJ Report, pages 32-33

[88] Staff believes these questions are generally consistent with the analytical framework for establishing proof of reasonableness as outlined by the parties in response to Xcel. For example, see the OAG's initial brief, pp. 10-12.

[89] O'Connor Direct Testimony, page 33

Based on the record, Xcel's 2008 CN $346 million costs (without AFUDC) would represent $453 million (with AFUDC) in 2014.[90] Staff believes that the $453 million represents the floor amount that Xcel should be allowed to recover in this prudence review.

Based on the Staff's discussion and analysis above, Staff, in the following table, introduces a different disallowance alternative for the Commission to consider:

Staff recommendation, in millions[91]

Xcel's 2008 CN costs adjusted to 2014 dollars	$453.0
Plus: 13.8 kV cost overrun	$98.6
Total meeting burden of proof	$551.6
Xcel's total Project costs	$748.1
Staff's recommended disallowance	$196.5

Finally, Staff points out that, in its current rate case, Xcel's Minnesota projected income (prior to any approved increase) is approximately $400 million. Staff does not share the same concerns expressed by the Department that a higher disallowance may impair the Company's financial condition. Staff points out (but does not recommend) that, even if the Commission were to take the most extreme action and disallow all overrun costs, the overrun amount essentially represents only one year's worth of Xcel's Minnesota income. While Staff is certain that Xcel would find such an action to be onerous, staff does not believe that is a justification for relieving Xcel of its responsibility for its actions. Staff also does not believe that it would financially impair the Company to the extent that it would be unable to operate.

Decision Alternatives

1. ALJ Report

   A. Adopt the ALJ's Report and recommendation in its entirety.

   B. Adopt the ALJ's Report and recommendation with modification to one or more of the following issues and only to the extent the ALJ's Report is consistent with the decisions made by the Commission in this docket.

2. Prudency of Xcel Energy's handling of the Monticello Life-Cycle Management/Extended Power Uprate Project

   A. Find that Xcel's handling of the Monticello LCM/EPU Project was not prudent. (ALJ, DOC, OAG, XLI)

   B. Find that Xcel's handling of the Monticello LCM/EPU Project was prudent. (Xcel)

[90] Alders Surrebuttal Testimony, page 15
[91] Minnesota jurisdiction

3. Xcel's request for recovery of Monticello LCM/EPU Project cost overruns

   A. Find that Xcel's request for recovery of the Monticello LCM/EPU Project cost overruns is reasonable. (Xcel)

   B. Find that Xcel's request for recovery of the Monticello LCM/EPU Project cost overruns is not reasonable. (ALJ, DOC, OAG, XLI)

4. Cost allocation between the LCM & EPU parts of the Project

   A. Find that the appropriate LCM/EPU allocation to be used in this prudence review should be 58.4% LCM and 41.6% EPU. (Xcel)

   B. Find that the appropriate LCM/EPU allocation to be used in this prudence review should be 14.3% LCM and 85.7% EPU. (ALJ, DOC, OAG, XLI)

   C. Find that the appropriate LCM/EPU allocation to be used in this prudence review should be 78% LCM and 22% EPU. (Xcel alternative)

5. Disallowance remedy

   A. Find that no disallowance is necessary in this prudence review. (Xcel)

   B. Find that a disallowance of $84.445 million ($71.42 million on a Minnesota jurisdictional basis) is appropriate in this prudence review. (ALJ, DOC)

   C. Find that a disallowance of $321 million and that no return should be allowed on the remaining $107 million overrun is appropriate in this prudence review. (OAG)

   D. Find that no disallowance is necessary in this prudence review; however, do not allow a return on the cost overrun. (XLI)

   E. Find that no disallowance is necessary in this prudence review; however, reduce the Company's return on equity for the overall investment by a specified number of basis points for the remainder of the Project's life. (Xcel alternative)

   F. Find that no disallowance is necessary in this prudence review; however, only allow the Company to earn only a weighted short-term and long-term debt return (no equity). (Xcel alternative)

   G. Find that a disallowance of $196.5 million on a Company basis is appropriate in this prudence review. (Staff)