Direct Testimony and Schedule
Pamela Prochaska

STATE OF NORTH DAKOTA
BEFORE THE
NORTH DAKOTA PUBLIC SERVICE COMMISSION

In the Matter of the Application of Northern States Power Company for an Advance Determination of Prudence for the Monticello Nuclear Generating Plant Life Extension

Case No. PU-23-___

Exhibit___(PP-1)

Nuclear Operations

February 3, 2023

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Schedule

Statement of Qualifications Schedule 1

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, OCCUPATION AND JOB RESPONSIBILITIES.

A. My name is Pamela Prochaska. I am the Director, Nuclear Regulatory Policy & Strategy for Xcel Energy. In this role, I am responsible for government relations and regulatory filings with regard to Xcel Energy's fleet of nuclear power reactors. Exhibit___(PP-1), Schedule 1 summarizes my qualifications.

Q. FOR WHOM ARE YOU TESTIFYING?

A. I am testifying on behalf of Northern States Power Company (NSP or the Company).

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I am presenting the Company's plans for extending the life of the Monticello Nuclear Generating Plant (Monticello Plant or the Plant) through 2040, including explanations of the Subsequent License Renewal (SLR) Application for the Plant that NSP submitted to the Nuclear Regulatory Commission (NRC) on January 9, 2023, and the proposed project to add to the existing Independent Spent Fuel Storage Installation (ISFSI). Together, these two investments, along with the Company's expansion of its Aging Management Programs (AMPs), represent a $97 million investment in the continued safe and efficient operation of the Monticello Plant. Continuing to operate the Plant past 2030 will also require continued capital investments in future years as part of the Company's AMPs, which I also describe. My testimony also provides historical context about the Monticello Plant and its importance to NSP's generation fleet.

Q. HOW DOES YOUR TESTIMONY RELATE TO THE DIRECT TESTIMONY PROVIDED BY MR. DREW SIEBENALER AND MS. FARAH MANDICH?

A. My testimony is largely focused on the Plant itself and the projects associated with keeping it in operation through 2040. I do briefly discuss the importance of the Plant to the broader NSP System, but those topics are addressed in more depth by Company witnesses Mr. Andrew Siebenaler and Ms. Farah Mandich.

Q. DO YOU BELIEVE THAT EXTENDING THE LIFE OF THE MONTICELLO PLANT IS PRUDENT AND WILL PROVIDE SUBSTANTIAL BENEFITS TO NORTH DAKOTA CUSTOMERS?

A. Yes. The Monticello Plant is a critical source of baseload power for the Company and provides consistent, clean, and reliable power nearly every day of the year for all NSP customers, including those in North Dakota. The Company has invested substantially in the continued viability of its nuclear fleet over the past 15 years, which has resulted in one of the safest, most reliable, and cost-effective nuclear fleets in the country. As Ms. Mandich explains in her testimony, the Company identified the continued operation of the Monticello Plant past 2030 as part of its approved portfolio in its 2019-2034 Upper Midwest Resource Plan.

Future investments in relicensing, AMPs, and ISFSI remain prudent based on the Company's feasibility analysis while past investments by the Company will continue to provide value past 2030 if NRC renews the Plant's license. In 2006, NRC approved the Monticello Plant's first 20-year license extension. The Company has already undergone the relicensing process for the Monticello Plant and NSP's Prairie Island Nuclear Generating Plant. That experience gives the Company some familiarity with the relicensing process. The investments

the Company has made over the last decade will also reduce the Company's costs associated with relicensing because it has reduced the number of age-related replacements needed to run the Plant past 2030. Of course, continued operation of the plant will require ongoing capital additions, as would be the case for any generating facility kept in operation. However, many of the age-related investments and improvements NSP made during the first license renewal will continue to operate safely and efficiently past 2030, and thus the Company is not expecting that it will need to make substantial additional investment solely to extend the Plant's life.

Extending the life of the Monticello Plant is prudent. Doing so will allow the Company to continue using the Plant to provide clean, reliable, and efficient power for our customers. Importantly, the Company has already made substantial investments to safely operate the Plant past 2030.

Q. PLEASE DESCRIBE HOW YOUR TESTIMONY IS ORGANIZED.

A. I present my testimony in the following sections:

- Section II provides an overview of the Monticello Plant, including a discussion of how the plant operates, historic investments in the Plant, its current operating efficiency, and the Plant's sterling safety record.
- Section III discusses the Subsequent License Renewal (SLR) process that the Company will need to undertake to operate the Plant past 2030. This section will also discuss a feasibility study NSP commissioned to analyze the improvements the Plant will need for relicensing and the proposed budget for the SLR process.
- Section IV expands on the analysis contained in the feasibility study discussing the Company's expansion of its AMPs to extend the Plant's

life past 2030. This section will briefly introduce the Company's current AMPs and then explore the program's planned expansion to accommodate relicensing.

- Section V discusses the ISFSI expansion project and why it will be necessary for the continued operation of the Plant. It explains the nature of the project, describes the steps the Company has taken already to plan for the additional storage, discusses possible alternatives that the Company considered, and presents a projected budget for the remainder of the project.
- Section V concludes the testimony by reiterating the benefits to North Dakota customers of extending the Monticello Plant's life.

II. OVERVIEW OF THE MONTICELLO PLANT

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. In this section, I provide an introduction to the Monticello Plant. I start by providing a general overview of the Plant, how it operates, its value for customers, and its current regulatory status. I next discuss the capital investments the Company has made over the last 15 years to keep the plant operating at a high capacity factor and low marginal cost, including the Life Cycle Management/Extended Power Uprate (LCM/EPU) Program and the Fukushima-related modifications the Company made to improve safety in extreme conditions as required by NRC. Then, I discuss how these capital investments have made the Monticello Plant a leader in safety and efficiency within the nuclear power industry.

A. General Overview

Q. PLEASE PROVIDE A GENERAL OVERVIEW OF THE MONTICELLO PLANT.

A. Monticello is a single-unit, 671-megawatt (MW), nuclear powered, boiling water reactor, electric generating station located in Monticello, Minnesota. For over 50 years, the Plant has played a critical role in the fleet of generating resources NSP uses to serve North Dakota customers, generating over 200 million megawatt-hours (MWh) of carbon-free electricity over its life. The Plant provides base load service; meaning it can operate at full capacity for 24 hours a day, seven days a week for extended periods of time to meet the ongoing, steady- or base-demand for electric power. The Monticello Plant and the Prairie Island Plant are the only generating stations in NSP's system that can provide this level of consistent, reliable, carbon-free energy and capacity.

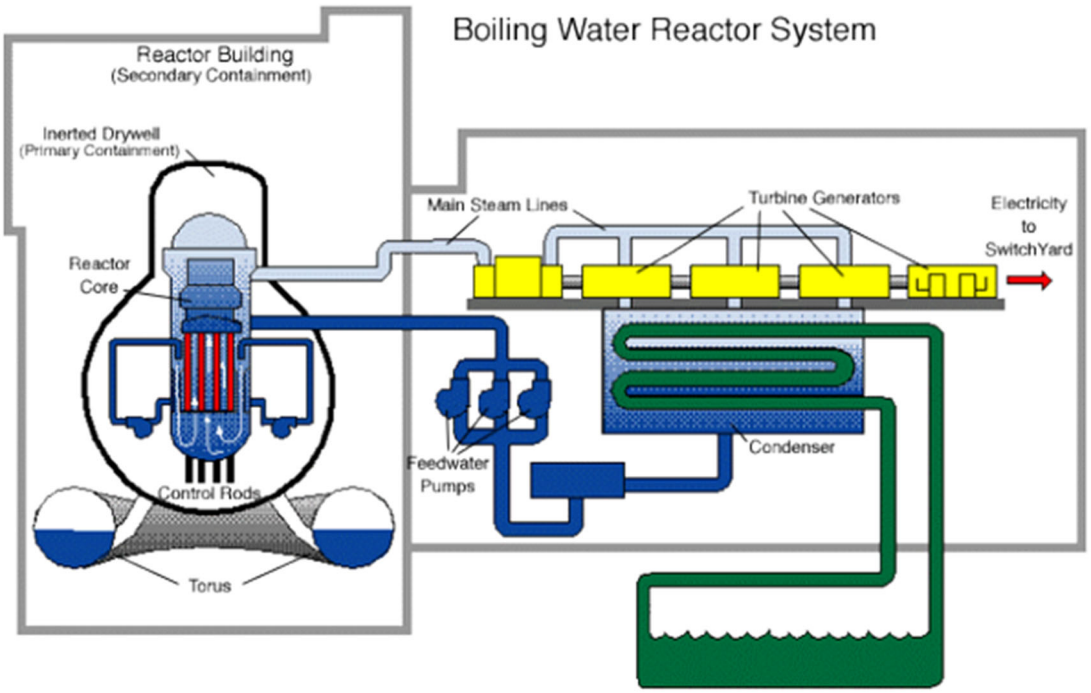
Throughout its life, NSP has operated the Plant safely and efficiently, while also protecting the health and safety of the public, Company employees, and the environment. Along with Prairie Island, the Monticello Plant is among the top-rated nuclear plants in the country as measured by the Institute of Nuclear Power Operations (INPO). Image PP-1 below is a recent picture of the Monticello Plant and its associated facilities.

Image PP-1: The Monticello Nuclear Generating Plant

Q. IN GENERAL, HOW DOES THE MONTICELLO PLANT OPERATE?

A. In a boiling water reactor, such as the Monticello Plant, a nuclear reaction in the reactor core generates heat, which boils water to produce steam inside the reactor vessel, which in turn is directed to turbine generators to produce electrical power. The steam is cooled in a condenser and returned to the reactor vessel to be boiled again. The cooling water is force-circulated by electrically powered feedwater pumps. Emergency cooling water is supplied by other pumps, which can be powered by onsite diesel generators or auxiliary steam from the reactor vessel. Figure PP-1 is a schematic diagram depicting the major components of a nuclear power electric generating plant using a boiling water reactor.

Figure PP-1

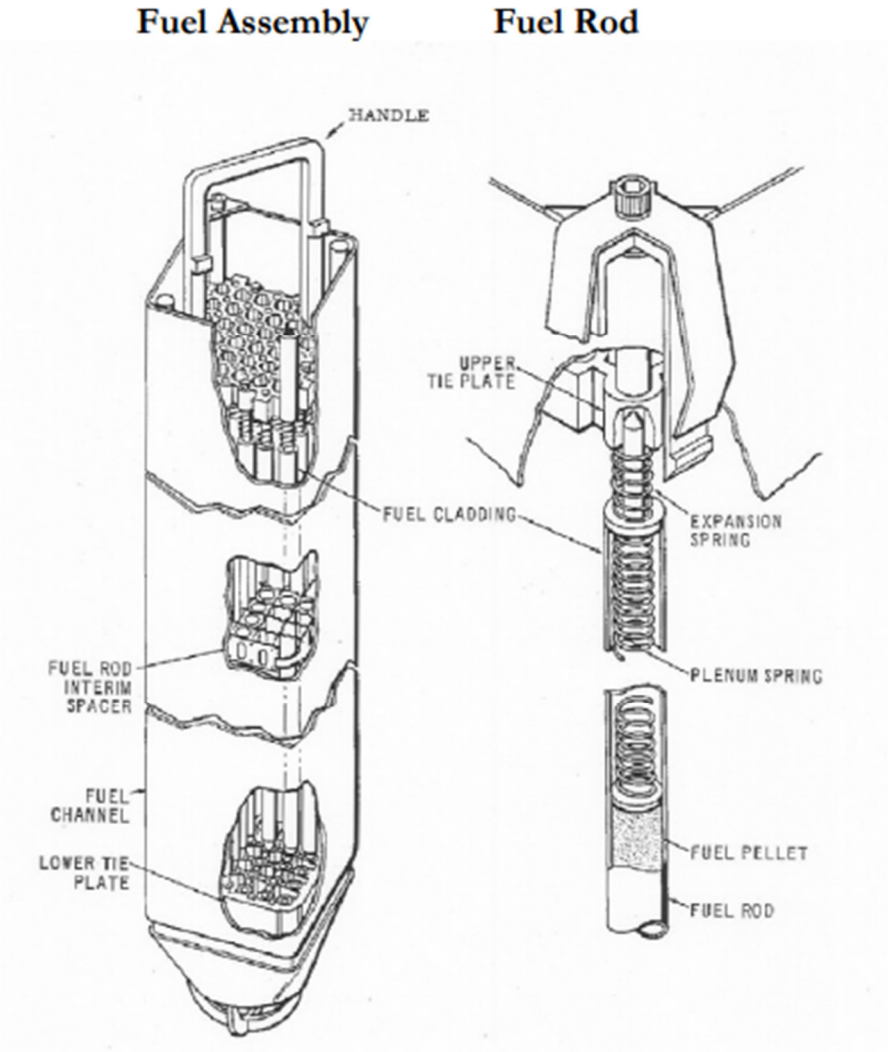


Q. WHAT SORT OF FUEL IS USED IN THE REACTOR CORE AT THE MONTICELLO PLANT?

A. The reactor core, which provides the heat used to boil water, is made up of 484 fuel assemblies, arranged in 121 cells, each containing four fuel assemblies and a control blade. Each fuel assembly contains fuel rods, part-length fuel rods, and water rods. Fuel rods consist of high-density ceramic uranium dioxide fuel pellets, each about the size of a thimble, stacked in a tube made of a special alloy called Zircaloy. The air in the filled tube is evacuated, helium (an inert gas) is backfilled, and the fuel rod is sealed by welding in Zircaloy plugs at each end. Part length rods are fuel rods that extend to an intermediate point in the assembly. Water rods are hollow Zircaloy tubes with several holes located at each end to facilitate water flow through the assembly. Fuel assemblies also contain spacers, springs and other components. A Zircaloy channel encloses

the fuel bundle. The channel provides guidance and a bearing surface for the control rod, permits control of coolant flow, and provides mechanical support and protection during fuel handling operations. Figure PP-2 below depicts a typical fuel assembly used at the Plant.

Figure PP-2



Q. HOW DOES THE FUEL CREATE HEAT?

A. A fission reaction between two particles creates heat. A neutron collides with a Uranium-235 atom in a fuel pellet. That extra neutron creates unstable

Uranium-235 isotopes, which split almost instantly. The splitting of Uranium-235 atoms, or fission, produces heat, and also produces neutrons, which continue the process by colliding with other Uranium-235 atoms. This process results in a chain reaction. Nuclear engineers carefully monitor and control the reaction within the core. To temper the reaction, control rods absorb excess neutrons.

Q. HOW LONG DOES THE FUEL LAST?

A. Each nuclear fuel assembly provides heat over about a six-year period before its output declines to the point that it becomes ineffective. Approximately every two years, NSP shuts down the Plant to refuel the reactor. During each refueling operation, approximately one-third of the fuel assemblies in the reactor core are replaced with new assemblies. As I describe further in Section IV, spent fuel is initially placed into the Spent Fuel Pool and then is later transferred to dry cask containers and the ISFSI for longer-term storage.

Q. WHAT IS THE VALUE PROPOSITION OF THE MONTICELLO PLANT FROM A CUSTOMER PERSPECTIVE?

A. The Monticello Plant offers customers cost-effective, carbon-free, generating capacity that powers hundreds of thousands of homes in the Company's service territory nearly every day of the year. The value proposition for the Plant has several components.

Reliable Energy—The Monticello Plant remains a critical generation source for NSP customers. Over the past three years, the Plant has achieved an average capacity factor of 95 percent, including the last six months of 2022 where capacity factor was just under 100 percent. No other generation source in the

Company's fleet can be as reliable as nuclear generation because plants like Monticello are designed to run at nearly full capacity year-round while other baseload generation resources are not. The Monticello Plant and its sister facility at Prairie Island provide the constant baseload output that remains an important and necessary part of NSP's overall generation portfolio.

Cost-Effective Resource—Our nuclear fleet can deliver carbon-free energy at a competitive cost. In fact, the Monticello Plant's marginal cost per Megawatt-hour (MWh) is at its lowest point in over a decade. Over this same time period, NSP has achieved all-time-high capacity factors at the Plant, further reducing the cost per MWh. Specifically, 2022 marked the nuclear fleet's fourth consecutive year of production costs below $30 per MWh, which represents over a 35 percent decline from 2013. As discussed further in Ms. Mandich's testimony, the Company's economic modeling reflects this reality and shows that extending the life of the Monticello Plant is prudent.

Fuel Diversity—The Company's nuclear facilities also provide the Company and its customers a hedge against changes in resource availability and fossil fuel prices. As demonstrated by the current high cost of traditional fuels, NSP's nuclear fuel prices remain less volatile and provide a consistent cost per MWh. At the Monticello Plant, fuel inserted into the reactor core provides sustainable power for six years. One-third of the fuel in the reactor core is replaced with new fuel every 24 months, and thus minimizes the effect of fuel disruptions on the Company's system. The fuel assemblies in each nuclear unit's reactor contain the equivalent energy of approximately six million tons of coal used to produce electricity.

Clean Energy—The Monticello Plant also plays a role in the Company's carbon reduction initiatives. The Plant is a reliable source of carbon-free energy.

Q. WHAT IS THE CURRENT LICENSURE STATUS OF THE MONTICELLO PLANT?

A. The NRC regulates the operation of nuclear power plants. It granted the Monticello Plant its initial 40-year license in 1970, which allowed the Plant to operate until September 8, 2010. In 2006, NRC approved a 20-year license extension, which expires on September 8, 2030. The Company has determined that it can continue to operate the Plant safely, reliably, and economically beyond 2030. NSP filed an application with the NRC on January 9, 2023 to renew the operating license for the Monticello plant for an additional 20 years. With such an extension, the Plant would be licensed until September 8, 2050.

Q. SINCE THE PLANT HAS ALREADY EXTENDED ITS LICENSE PAST THE INITIAL 40-YEAR PERIOD, WILL NRC IMPOSE ANY ADDITIONAL REGULATORY REQUIREMENTS ON THE PLANT TO FURTHER EXTEND THE LIFE OF THE PLANT?

A. Yes. Section III of my testimony outlines the requirements for extended licenses, including all of the requirements imposed during the first 40 years of operation along with the additional equipment evaluations and equipment replacement frequencies required to mitigate the effects of aging past the initial licensing period.

B. The Life Cycle Management/Extended Power Uprate Program

Q. DID THE COMPANY UNDERTAKE ANY MAJOR CAPITAL PROJECTS IN CONNECTION WITH THE 2006 LICENSE EXTENSION?

A. Yes. The Monticello Life Cycle Management/Extended Power Uprate (LCM/EPU) Program was a complex project undertaken to prepare Monticello

for its extended operating life at an increased capacity of 671 MW—a 71 MW increase from its historical capacity of 600 MW. The Program spanned roughly eight years and involved the replacement of hundreds of components inside the plant. NSP replaced nearly all of the systems that support the reactor and power generation equipment. The LCM/EPU Program was particularly complex to design and implement because the improvements occurred inside an operating nuclear facility, portions of which can only be worked on during refueling outages.

Q. HOW DID THE COMPANY PLAN THE LCM/EPU PROGRAM?

A. The uprate portion of the LCM/EPU Program was planned in conjunction with the 2006 license renewal. At that time, NSP was evaluating and planning investments necessary to ensure the Plant's safe and reliable operations for the Plant's extended life. NSP chose to multi-track the LCM/EPU Program and proceeded with the licensing, design, engineering, and implementation phases simultaneously to meet projected demand, achieve the full value of the projected energy savings, and optimize our life extension investments. The Company recognized that if it did not proceed with these phases concurrently, it would not be able to deploy the additional capacity to meet the then growing power demand within its service territory. The Company began the implementation of the LCM/EPU Program in January 2009.

Q. DID THE LCM/EPU PROGRAM EVOLVE DURING IMPLEMENTATION?

A. Yes. NSP decided to expand the initial Program scope and accelerate other work to ensure adequate safety and operating margins to meet the regulatory requirements anticipated through the useful life of the Plant.

Q. DESCRIBE THE MAJOR PROJECTS CARRIED OUT AS PART OF THE LCM/EPU PROGRAM?

A. The entire program comprised 40 separate work orders or individual projects. However, ten major projects comprised the vast majority of the Program's scope, and those are:

- High-Pressure Turbine Replacement and Low-Pressure Turbine Modifications;
- Power Range Neutron Monitoring System Replacement;
- Condensate Demineralizer System Replacement;
- Main Transformer Upgrades;
- Feedwater Heaters Replacement;
- Reactor Feed Pumps and Motors Replacement;
- Condensate Pumps and Motors Replacement;
- Upgrade of the four-kV Electrical Distribution System to 13.8 kV; and
- NRC Licensing.

The LCM/EPU modifications and improvements to the Plant all came online by 2013. By March 27, 2014, the Company completed its uprate power ascension schedule and achieved generation levels above pre-uprate generation capacity thereby providing increased value for NSP customers in the form of reliable, clean, low-cost energy.

Q. ARE THE PLANT'S SYSTEMS SAFER AND MORE RELIABLE BECAUSE OF THE LCM/EPU PROGRAM INVESTMENTS?

A. Yes. Modifications such as the replacement of the reactor feed pumps and motors with larger, more powerful pumps and motors, and the Company's

addition to the electrical distribution system of a higher-capacity 13.8 kV system, allow the Company to operate the Plant with substantially higher operating and safety margins while providing sufficient capacity to sustain electrical loads for the Plant's useful life.

Q. WILL THE LCM/EPU PROGRAM CONTINUE TO PROVIDE BENEFITS PAST 2030 IF THE COMPANY EXTENDS THE LIFE OF THE MONTICELLO PLANT?

A. Yes. The modifications the Company made to the Plant during the LCM/EPU program will continue to provide benefits throughout the useful life of the Plant. As discussed further in Section III of my testimony, many of these upgrades will also provide ancillary benefits by reducing the cost of aging mitigation measures NRC may impose as a result of the relicensing process. By implementing the LCM/EPU Program, the Company has planned for the long-term future of the Monticello Plant and created a generation facility that can provide cost-effective power at lower operational margins well past its current license expiration date.

C. Fukushima-Related Modifications

Q. HOW HAVE NRC'S REGULATORY REQUIREMENTS CHANGED OVER THE PAST TEN YEARS?

A. In the wake of the Fukushima Daiichi accident, NRC issued two major orders that required modifications to the Monticello Plant—NRC Order EA-12-049, *Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Event*, and Order EA-12-051, *Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation*. Generally speaking, these orders require that nuclear utilities install designated equipment to mitigate an external event beyond the Plant's original emergency reinforcement design. The

Company subsequently undertook several capital projects in conjunction with NRC's regulatory guidance. Since the Company completed these projects in 2018, mandated compliance capital expenditures have reduced substantially.

Q. PLEASE DESCRIBE THE FUKUSHIMA-RELATED MODIFICATIONS THE COMPANY MADE AT THE MONTICELLO PLANT.

A. In response to the NRC Orders, NSP implemented the following projects:

- Installation of enhanced Spent Fuel Pool Instrumentation;
- Installation of modifications to the electrical and mechanical systems to augment plant cooling capability;
- Creation of a program for procedures to integrate changes to plant capabilities with existing plant methods;
- Implementation of Regulatory Affairs support to integrate with NRC oversight;
- Enhancement of Emergency Preparation capabilities to effectively respond to an incident beyond design basis; and
- New management oversight and coordination of the Company's response to the NRC Orders.

NSP implemented the Fukushima-related Modifications between 2014 and 2018. Several of the requirements increased the amount of back-up equipment at the Plant and included the construction of a new building to help ensure vital equipment is protected from environmental hazards. The modifications also included the construction of regional response centers to assist plants in promptly providing pre-staged, off-site equipment to the site on short notice. The Monticello Plant successfully completed its Fukushima-related modifications in less time and at lower cost than the industry norm.

Q. WILL THE FUKUSHIMA-RELATED MODIFICATIONS ALSO PROVIDE ADDITIONAL BENEFITS BEYOND THE MONTICELLO PLANT'S CURRENT LICENSED OPERATING PERIOD?

A. Yes. Like the LCM/EPU program, the Plant's Fukushima-related modifications have substantially improved the Plant's safety and efficiency and implemented programs that allow the Plant to be even more reliable during weather-related emergencies. Because NRC did make substantial changes to its regulations in the wake of the Fukushima incident, the Company also implemented several administrative and programmatic changes that have allowed it to streamline parts of the relicensing process for the Monticello Plant. The Company expects to realize these efficiencies when it undergoes the NRC's relicensing process in the next few years.

D. Current Operating Efficiency

Q. AFTER COMPLETING THE LCM/EPU PROGRAM AND FUKUSHIMA-RELATED INVESTMENTS, HAS THE PLANT CONTINUED ITS ROLE AS A CRITICAL COMPONENT OF THE COMPANY'S GENERATION FLEET?

A. Yes. After the substantial investments the Company made over the last 15 years, the Monticello Plant continues to provide critical and reliable baseload capacity for NSP's customers. The LCM/EPU Program uprated the Plant to is current 671 MW nameplate capacity. Due to its near constant operations, the Plant is one of the system's most dependable generation resources, with a 2022 capacity factor of approximately 98 percent. Bolstered by the Company's capital investments, the Plant recently completed a record 704 days of continuous operation. The Monticello Plant and Prairie Island Nuclear Generating Plant combined comprise more than half of the Company's existing carbon-free generation and approximately 30 percent of the total electric energy NSP's

customers in the Upper Midwest consumed in 2021, making the Monticello Plant a critical component of the overall generation fleet now and into the future.

Q. AFTER THE COMPANY COMPLETED THE LCM/EPU PROGRAM AND THE FUKUSHIMA-RELATED MODIFICATIONS, DID IT SET GOALS TO IMPROVE THE RELIABILITY AND EFFICIENCY OF THE PLANT?

A. Yes. The additional capital investments allowed us to undertake substantial efforts that changed the way the Company approached plant operations, allowing it to deliver newfound benefits to customers. By working with third-party consultants with expertise in both nuclear operations and general cost containment and efficiency strategies—and with INPO and the Nuclear Energy Institute (NEI)—NSP has achieved industry leading results not only in the performance of the Plant, but also in managing the costs it invests to achieve that performance. This multi-faceted strategic outlook has resulted in a nuclear fleet that has never operated on a more consistent, efficient, and safe basis.

Importantly, the Company achieved these operational results without increasing its production costs. In fact, both Operations and Maintenance (O&M) and production costs have decreased in recent years. In terms of production costs per MWh, the Company has achieved a nearly 30 percent decrease between 2015 and 2021, resulting in the lowest production costs at the Plant since NSP implemented the LCM/EPU Program.

Q. CURRENTLY, WHAT IS THE MONTICELLO PLANT'S CAPACITY FACTOR?

A. The Capacity Factor, or operating time, for the Monticello Plant has been at an average of 95 percent for the past three years. This reflects the strong

performance at the Plant based on the capital investments and operational improvements the Company made over the past decade. Importantly, the Plant's increased availability provides substantial customer benefits given the fixed costs associated with nuclear fuel during this period of high inflation. Contributing to these capacity factors were improved performance refueling outages, which were completed on time and on budget. By investing in the continued viability of the Plant, Monticello's capacity factor now places it in the top of the second quartile of performance in the industry. Combined with Prairie Island, the Company is one of the top nuclear fleets in the nation for Capacity Factor at 96.5 percent in 2022.

Q. HAS NSP RECENTLY IMPLEMENTED ANY OTHER INDUSTRY EFFICIENCY MEASURES?

A. Yes. The Company consistently reviews and, where practical, implements industry efficiency innovations. NSP's most recent adoption of an industry efficient innovation is the implementation of the "Transform the Maintaining the Plant Organization" efficiency opportunity as described in NEI Efficiency Bulletin 17-23. The efficiency bulletin moves technical resources from engineering to the "Maintain" organization enabling a unified decision-making strategy for keeping equipment reliable. This model promotes working within the design of existing plans to achieve operational and safety goals rather than making modifications to plants, which in turn leads to greater operational efficiencies while lowering spending. The Company leads the industry on that initiative, and we are being benchmarked by other utilities on our work in this area. Our implementation of this model is one of the factors that led us to achieve exemplary status.

Q. HAVE THERE BEEN ANY OUTAGES AT THE MONTICELLO PLANT IN THE LAST TWO YEARS?

A. The last scheduled Monticello Re-Fueling Outage (RFO) began on April 17, 2021. This outage occurred 704 days after the previous RFO and set a record breaker to breaker generation run for the Plant and the Company's nuclear fleet. The total length of the 2021 RFO was 33 days, six hours, and 14 minutes. Startup commenced on May 20, 2021. The last forced outage was January 24, 2022, and lasted three days, five hours and 21 minutes. This outage occurred approximately eight months after the last scheduled RFO completed. NSP scheduled this shutdown to address a high energy steam leak on a drain line pressure boundary valve. The Company found no nuclear safety issues during the scheduled RFO or in the forced outage. There was one industrial safety issue in the RFO due to a back tweak and no industrial safety issues in the forced outage including no lost time injuries, recordable injuries, first aid cases, or near misses and NSP successfully completed the repair. Due to these efficient and rare shutdowns, the Monticello Plant, along with Prairie Island, is currently industry leading in breaker to breaker runs.

Q. HAS THE MONTICELLO PLANT BEEN RECOGNIZED FOR ITS PERFORMANCE RECORD?

A. Yes. The Monticello Plant has been rated exemplary compared to industry peers for over ten years. The most recent INPO evaluation for the Plant occurred on September 12-16, 2022. The Company received a repeat exemplary rating.

Q. PLEASE PROVIDE AN OVERVIEW OF O&M AND PRODUCTION COSTS AT THE MONTICELLO PLANT OVER THE LAST SEVERAL YEARS.

A. The Monticello Plant has achieved excellent safety and operational results without increasing its production costs and while appropriately managing its O&M expenditures. Table PP-1 and PP-2 below shows a six-year history of O&M spending at the plant.

Table PP-1[1]

	2016	2017	2018	2019	2020	2021
Base Spending	$98,679,841	$92,711,336	$90,357,573	$90,332,756	$86,218,952	$86,838,275
Def & Amort-MT	$22,448,718	[$14,162,770]	$16,705,180	[14,376,876]	$15,425,829	[$10,785,283]
Outage-MT	$1,790,036	$34,510,358	$1,723,449	$31,324,973	$932,213	$24,962,949

Table PP-2[2]

	2016	2017	2018	2019	2020	2021
Base O&M Spend	$98,679,841	$92,711,336	$90,357,573	$90,332,756	$86,218,952	$86,838,275
Amortized Outage O&M	$24,238,754	$20,347,588	$18,428,629	$16,948,097	$16,358,042	$14,177,665
Allocated Fleet Spend (50%)	$9,529,101	$11,077,229	$10,225,655	$10,589,544	$10,621,541	$11,519,160
Fully Allocated Monticello O&M	$132,447,697	$124,136,153	$122,011,857	$117,860,397	$113,198,535	$112,535,100

[1] The numbers in Table PP-1 exclude Nuclear Training expenses and only include direct Monticello Plant costs.
[2] Table PP-2 reflects 50 percent of total nuclear fleet expenses for NSP. The Company allocates these costs evenly between Monticello and Prairie Island when it shows costs by plant.

Tables PP-1 and PP-2 above demonstrate that costs have decreased each year since 2016. Contributing to these results has been the Company's commitment to driving efficiency by focusing on process development and refinement and the integration of technology to achieve efficiencies. Industry experience shows that successful nuclear organizations are highly process and outcome driven and that focused process improvement has the benefit of driving down costs while at the same time improving plant performance. Through the Company's work, it has been able to effectively improve upon several processes and personnel behaviors that has enabled the plant to achieve consistent results with fewer resources.

These levels of economic efficiency are also reflected in our capital additions. Table PP-3 below shows additions at the Plant since 2017. Note that additions in 2020 were significantly lower than in previous years because there was no outage in 2020; outages typically occur at the Monticello Plant during odd years.

Table PP-3

Category	2017	2018	2019	2020	2021
Dry Cask Storage	(59,840)	35,127,221	(158,557)		
Facilities & Other	1,684,193	143,288	536,852	3,223,979	2,236,514
Improvements	2,110,109	1,407,753	2,528,385	1,665,339	9,881,807
Mandated Compliance	20,338,958	17,642,614	460,056	2,799,443	76,890
Reliability	29,315,109	14,005,501	27,596,374	3,903,158	37,473,985
Additions Total:	**53,388,888**	**68,326,377**	**30,963,111**	**11,581,919**	**49,669,196**

Q. DOES THE COMPANY ANTICIPATE THAT O&M AND PRODUCTION COSTS WILL REMAIN LOW FOR THE NEXT SEVERAL YEARS?

A. While the Company cannot completely predict the Plant's operating costs into the future—and there is always some risk of unexpected additional costs (for example, those arising after the Fukushima incident)—we anticipate that the Plant will continue to run safely and efficiently. Due in part to the updates and improvements made to the Monticello Plant, the Company's customers can expect to enjoy low-cost, clean, and reliable power for years to come should the Plant's life be extended.

Q. DOES THE MONTICELLO PLANT HAVE THE ABILITY TO RAMP UP AND DOWN CAPACITY FOR CHANGING DEMAND?

A. Yes. Traditionally, nuclear plants have been considered must-run baseload power and have been run continually at maximum power except during outages. However, the Company has recently prioritized developing a flexible power operations strategy that allows its nuclear facilities, including the Monticello Plant, to reduce power output during periods when other resources are providing large amounts of low-cost energy relative to customer demand such that it would be economically beneficial to run baseload resources at lower levels. The Company has developed operational strategies for its nuclear plants that allow them to maneuver from full output to a level of reduced output. Currently, NSP can safely and efficiently reduce up to 284 MWe of nuclear capacity in a day, with the Monticello Plant accounting for 137 MWe of reduced capacity, in response to market conditions.

E. The Monticello Plant's Safety Record and Additional Advantages of Nuclear Generation

Q. WHO REGULATES SAFETY CONCERNS FOR NUCLEAR FACILITIES?

A. The NRC regulates nuclear power production in the United States to make it one of the safest forms of power production. INPO is an independent nonprofit organization that monitors and evaluates industry and worldwide nuclear plant and human performance. INPO's mission is to promote the highest levels of safety and reliability in commercial nuclear plant operation. Even outside the industry at large, the Company has made it a priority to be an industry leader in safety at both of its nuclear facilities.

Q. AFTER THE RECENT INVESTMENTS IN THE MONTICELLO PLANT, DID THE COMPANY ACHIEVE INDUSTRY-LEADING SAFETY STANDARDS FOR ITS CONTINUED OPERATION?

A. Yes. The NRC Reactor Oversight Process classifies U.S. nuclear reactors into various "Columns," which range from 1 (best) to 5 (worst). After completing the Fukushima-related modifications and other safety investments, the Company set a goal to achieve Column 1 status, without "greater than green" findings or cross cutting issues raised by NRC and without significant operating events.

Q. DID NSP ACHIEVE THAT GOAL?

A. Yes. Currently, NSP has the only nuclear fleet in the industry where all units have earned exemplary industry status, all units remain in NRC Column 1 Status with all green performance indicators, without any NRC Safety Culture Concerns. The Monticello Plant operates at the highest levels of nuclear safety standards, as demonstrated by its operational record and by independent

assessments performed by industry organizations and peers. While no plant can achieve the standards of perfection imposed by NRC at all times over a plant's operational life, Monticello's stellar track record demonstrates the Company's longstanding commitment to nuclear safety. In fact, the Company's nuclear plants were recognized as one of the highest performing fleets in the country according to its nuclear industry peer group and have received the Minnesota Governor's annual safety award 18 times since 2000.

Of course, the operation of the Plant will continue to face strict and continuous oversight by the NRC, and future developments could result in additional or heightened requirements as happened in the aftermath of the Fukushima incident. Moreover, as discussed below, the relicensing process will include both technical and environmental reviews, which are intended to help ensure that monitoring and inspection programs continue to be maintained, ensuring that any operational issues are detected and addressed before they affect Plant safety or reliability.

Q. HOW WILL NSP ENSURE THAT THE PLANT CONTINUES TO OPERATE AT THE HIGHEST LEVELS OF NUCLEAR SAFETY STANDARDS?

A. As previously stated, while no plant can achieve the standards of perfection imposed by NRC at all times, NRC and plant processes require continued evaluation of plant and human performance and correction of issues as they are identified. Every two years, the NRC performs a Problem Identification and Resolution (PI&R) Inspection at all commercial nuclear facilities in the United States. The inspections include evaluating station processes and corrective actions for use of industry and NRC operating experience as well as the effectiveness of the stations' audits and self-assessments. In the last inspections

at both Monticello and Prairie Island, the NRC determined that there was no evidence of challenges to the organization's safety-conscious work environment.

Additionally, Xcel Energy conducts a Nuclear Safety Culture Assessment of our Nuclear organizations at Monticello, Prairie Island, and Corporate with the support of industry peers every couple of years. This assessment is performed in accordance with INPO 12-012, "Traits of a Healthy Nuclear Safety Culture." The team reviews results of the Nuclear Safety Culture Panel assessments that are performed quarterly, they interview employees at all levels of the organization, they evaluate the Company's corrective action program, and they observe meetings throughout the assessment. In 2022, the team identified no weaknesses, three negative observations, two general observations and one positive observation. The assessment team noted that the Xcel Energy Nuclear staff has a safety culture that supports all of the INPO "Traits of a Healthy Nuclear Safety Culture," has a healthy respect for nuclear safety, and assures that nuclear safety is not compromised by production priorities. These two examples are just two of many ways the Company works with the federal government and industry oversight to ensure operation at the highest levels of nuclear safety continue throughout the license of the Plant.

Q. DOES NSP ANTICIPATE ANY HEALTH AND SAFETY RISKS ASSOCIATED WITH THE CONSTRUCTION OF THE ISFSI OR OTHER PLANT INVESTMENTS?

A. Considering that the Monticello Plant is an industrial facility, health and safety impacts to workers could occur. These non-radiological risks include typical industrial-related injuries, including falls, burns, and machinery injuries. The Company's safety programs, however, reduce the impact of these industrial

hazards. Importantly, construction of a second ISFSI pad and the placement of additional spent fuel canisters are not anticipated to increase risks or introduce new risks to plant personnel that are not managed by these safety programs.

Q. DOES THE NRC ALSO REGULATE THE SAFETY OF ISFSI FACILITIES?

A. Yes. The NRC oversees the design, manufacturing, and use of dry casks. This oversight ensures licensees and designers are following safety and security requirements, meeting the terms of their licenses, and implementing quality assurance programs. NRC enforces strict security requirements to protect stored fuel. Security has multiple layers, including the ability to detect, assess, and respond to an intrusion. While the specific requirements for each facility's security plans are not publicly available, the NRC's general security requirements for dry cask storage are in 10 CFR Part 73.

Q. ARE THERE OTHER FACTORS RELEVANT TO THE CONTINUED USEFULNESS OF THE MONTICELLO PLANT?

A. Yes. The continued operation of the Monticello Plant helps the Company maintain a healthy ratio of firm capacity to peak demand during the 2030 through 2040 time period. If the Plant did not keep operating in that period, the Company would likely rely on incremental gas or other, as-yet to be developed, dispatchable resources to provide firm capacity. Alternatively, the Company would have to rely more heavily on variable or use-limited resources supported by the MISO market. The Plant also provides clean carbon-free energy, making it a valuable resource to meet the Company's emission reduction goals. I would also note that the Plant is particularly valuable during extreme

weather events. These issues are discussed in more detail in the Direct Testimonies of Ms. Mandich and Mr. Siebenaler.

Q. HOW DOES THE MONTICELLO PLANT PERFORM IN EXTREME WEATHER CONDITIONS?

A. While the Monticello Plant has always been able to perform in extreme weather events, the Fukushima-related modifications have further improved our ability to safely and efficiently operate it during a wide range of extreme conditions. During major winter storms, the reliability of nuclear generation, and its continued inclusion in the Company's diverse resource mix, has become especially important. For example, the Company's nuclear units performed at a high capacity and low marginal cost throughout the 2019 polar vortex and the February 2021 cold spell (also known as Winter Storm Uri). Two main reasons account for nuclear generation's resiliency. First, nuclear facilities on-site fuel supplies allow the plants to run when other energy resources are interrupted by extreme weather or fuel supply shortages. Second, nuclear plants are built to withstand extreme weather, from even the most severe weather events such as floods, tornados, and earthquakes. Considering the increased frequency of extreme weather events in recent years, it remains critical that the Company maintain a diverse generation mix that helps the Company meet its obligation to provide reliable electric service in all conditions. The Monticello Plant is an important part of that portfolio and a key contributor to the Company's ability to fulfill its service obligations.

Q. HAS NSP DETERMINED THAT IT SHOULD OPERATE THE PLANT PAST 2030?

A. Yes. Given its benefits to the system, including those discussed above and in the testimonies of Mr. Siebenaler and Ms. Mandich, the Company has

determined that it should seek to continue to operate the Monticello Plant beyond 2030.

III. THE SUBSEQUENT LICENSE RENEWAL PROCESS

Q. PLEASE SUMMARIZE THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I first outline the general Subsequent License Renewal (SLR) process and the Company's prior use of the SLR process for both its Prairie Island and Monticello Plants. I then outline a feasibility study the Company commissioned from Enercon that highlights some of the key components of the Monticello Plant's SLR application and the additional Aging Management Programs (AMPs) the Company will implement as part of the Monticello Plant's continued operation. I will conclude by discussing NSP's planned budget for the SLR process and why the feasibility study and the Company determined the continued operation of the Monticello Plant is prudent.

A. The SLR Process

Q. WILL THE COMPANY NEED TO COMPLETE A RELICENSING PROCESS TO OPERATE THE PLANT PAST 2030?

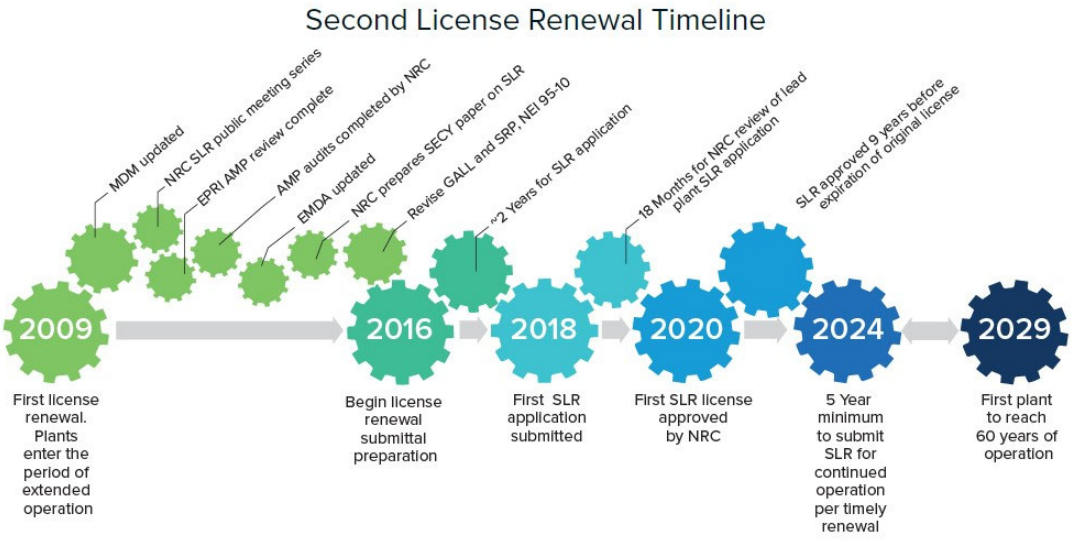
A. Yes. The Company will need to complete a SLR process with the NRC to operate the Plant beyond September 8, 2030.

Q. WHY DOES THE MONTICELLO PLANT REQUIRE A LICENSE RENEWAL?

A As I have previously noted, the Plant's license is set to expire on September 8, 2030. The NRC grants twenty-year license extensions in accordance with Title 10 of the Code of Federal Regulations (CFR) Part 54. The Monticello Plant's

original operating license was set to expire in 2010, but the NRC granted the Plant its initial license renewal in 2006 for an additional 20 years, extending the license to September 8, 2030. The proposed SLR would be the plant's second license renewal and would extend the Plant's life from 60 years to 80 years, with a new expiration date of September 8, 2050. Image PP-2 below, which is from NEI, shows the general SLR process.

Image PP-2: Second License Renewal Timeline



Q. DO OTHER NUCLEAR OPERATORS PLAN TO APPLY FOR A SECOND LICENSE EXTENSION FOR A NUCLEAR GENERATING FACILITY?

A. Yes. Most nuclear plants have already renewed their operating license once and over half of the nation's nuclear power plants will need to obtain a second license extension by 2040. This process, referred to as a Subsequent License Renewal, allows a plant to operate between 60 to 80 years from the date the

plant initially received its license. Five stations will need to obtain an extension by 2030 for continued operation.

Seven other stations have applied for SLRs and three of those stations have already received NRC approval. Three other stations have also formally announced their intention to submit SLR applications.

Q. HAS THE COMPANY EVER SUBMITTED LICENSE EXTENSIONS FOR OTHER NUCLEAR FACILITIES?

A. Yes. The Company also completed an initial license renewal process for its Prairie Island Plant in 2014. Under the renewed licenses, Prairie Island Unit 1 remains operational through August 9, 2033 and Prairie Island Unit 2 remains operational though October 29, 2034. Because the Company has already completed the license renewal process for three separate nuclear units, it expects that the Company's institutional expertise in the relicensing process will help expedite the process for the Monticello Plant's SLR.

Q. WHEN DOES NSP NEED TO FILE THE SLR APPLICATION TO COMPLY WITH FEDERAL REGULATIONS?

A. To comply with NRC timely renewal application rules, the deadline for SLR application would be September 8, 2025. However, NSP filed its SLR application on January 9, 2023. The Company anticipates receiving an approved SLR application in 2025 because the NRC review process typically occurs over an 18 to 24 month period.

Q. GIVEN THESE DEADLINES, WHEN DOES THE COMPANY PLAN TO FILE THE SLR APPLICATION?

A. By filing the SLR application in January 2023, NSP has allowed as much time as possible for commitment implementations the Company will need to make during the SLR process. This early submission also minimizes the potential for changing regulatory expectations from impacting the project.

Q. PLEASE EXPLAIN THE RELICENSING PROCESS.

A. Requirements for extended licenses include all of the requirements imposed during the first 40 years of operation and also include new equipment evaluations and equipment replacement frequencies to mitigate the effects of aging. In response to recent events like Fukushima, the NRC has redefined safe operations. Fortunately, the investments the Company made over the last decade plus will significantly mitigate the scope of future investments NSP will need to make to relicense the Plant. Nonetheless, the needs of tomorrow differ from the needs of today and will require some modifications to the Monticello Plant to adopt best practice and meet future needs.

Q. WILL THE COMPANY NEED TO CONDUCT SPECIFIC TECHNICAL AND SAFETY REVIEWS AS PART OF THE SLR PROCESS?

A. Yes. The SLR process requires the Company to perform and document a technical review of safety issues and an environmental impact review in the SLR application.[3] Detailed evaluation to safely extend the license is based on NRC guidance for acceptable methods to effectively manage aging as described in NRC Regulation (NUREG) 2191 SLR Generic Aging Lesson Learned (GALL).

[3] As required by 10 CFR 51 & 10 CFR 54.

The license extension application documents a detailed analysis of aging and how it will be managed to provide reasonable assurance that passive equipment will perform their intended function for an additional 20 years. This evaluation includes review of system metals; welds and piping; concrete; electrical cables; and reactor pressure vessels. The renewal process also includes an evaluation of potential environmental impacts associated with an additional 20 years of operation. NRC verifies evaluations through inspections and audits, and its review of license renewals is expected to last anywhere between 22 and 30 months.

NRC will review the application in accordance with NUREG 2192, Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants. This plan is an industry standardized process developed by NRC and NEI.

The application process itself is well documented within NRC guidance. NUREG 2191 describes in detail what sections a SLR Application should contain and NUREG 2192 describes how NRC reviews the document. The SLR application consists of an approximately 1500 page safety review and 700 page environmental review. Upon receipt of the application, NRC performs a sufficiency review to ensure all required documents have been provided and then performs an audit of the included documentation. Any requests for additional information will be addressed by the SLR project team. Ultimately, NRC will review the application and its supporting documents; present its Safety Evaluation Report and Supplemental Environmental Impact Statement at an Advisory Committee on Reactors Safeguards meeting; and make a final determination on the SLR application.

Once NRC grants the license, the SLR project team will implement any required licensing basis changes such as procedure changes, aging program management revisions, and inspections.

Q. PLEASE EXPLAIN HOW THE LICENSE REQUIREMENTS DIFFER UNDER THE INITIAL AND RENEWED OPERATING LICENSES.

A. Some of the original equipment at the Plant has an assumed life of 40 years or was qualified for a 40-year life. Those original vendors performed life testing of the equipment to qualify for 40 years of operation. While the Company was able to qualify or replace much of that equipment during its last relicensing process, more work will need to be done to complete a second SLR.

Specifically, NRC now requires a compilation of Aging Management Programs (AMPs) to complete the SLR process. As part of the previous license renewal process, the Company created programs to determine whether existing equipment remains appropriate for the extended life or whether replacement was necessary. Qualification of equipment past 40 years requires material analysis, and increased component inspections as a means to forecast limiting aspects of equipment life. This approach allows continued use of equipment and—when combined with replacements—creates the program for operating in the extended license period.

Q. DOES THE COMPANY EXPECT THAT THE PROGRAMS IT ALREADY IMPLEMENTED DURING THE LAST RELICENSING PROCESS WILL HELP STREAMLINE THE SLR PROCESS THIS TIME?

A. Yes. Because the Company previously undertook the license renewal process for both of its nuclear facilities, it anticipates that much of the same

implementation process can be used again to increase efficiency on the relicensing process here. Specifically, the NRC has worked with NEI and the industry to capture lessons learned from previous and current license renewal applications. The result has improved NUREG 2191 which describes in detail what sections a SLR Application should contain and NUREG 2192 which describes how NRC reviews the document. By keeping updated on the work NEI and the NRC has done on NUREG 2191 and NUREG 2192, the Company has helped mitigate unanticipated issues throughout the relicensing process.

B. Feasibility Study

Q. PLEASE EXPLAIN WHAT STEPS THE COMPANY HAS TAKEN IN PREPARATION FOR UNDERGOING THE SLR PROCESS FOR THE MONTICELLO PLANT.

A. Through Benchmarking and participation in NEI's Subsequent License Working Group, the Company conducted a feasibility study prior to fully committing to the SLR process. The Company's study began to evaluate the Monticello Plant's current AMPs for potential compliance with the latest revision of the NUREG 2191 SLR GALL to determine any gaps or potential vulnerabilities associated with a SLR. The study also began to develop a project plan and schedule to support the SLR. Ultimately, the study determined that an SLR should be technically viable—nothing was identified that would cause the NRC to deny the SLR—and financially prudent. In other words, potentially operating the Plant beyond its current 60-year life appears to be feasible and prudent. Upon completion of the study, the Company decided to continue with the SLR application development.

Q. WHO PREPARED THE FEASIBILITY STUDY FOR THE COMPANY?

A. The study was prepared by Enercon Services, Inc. Enercon is a leading engineering firm that provides consulting services for renewable, gas, and nuclear generation facilities. Enercon is a leader in the nuclear industry and has been successfully evaluated by the Nuclear Procurement Issues Corporation, the U.S. Department of Energy, and various other domestic and international utilities and engineering/construction firms.

Q. PLEASE DESCRIBE THE MAJOR CONSIDERATIONS ENERCON ADDRESSED IN THE FEASIBILITY STUDY.

A. Considerations addressed in the study include:

- Site culture (proactive vs. reactive aging management, AMP owner knowledge and engagement, etc.);
- Modifications to current licensing basis and site;
- Use of Industry and Site operating experience;
- Potential analyses or updates (external scopes) requiring specific Vendor support (e.g., neutron fluence, reactor vessel embrittlement, and thermal fatigue);
- Potential significant modifications (capital expenditures) for replacement or upgrade/update of components (both in the scope of SLR and outside the scope of SLR);
- Current industry and regulatory guidance and expectations; and
- Potential Environmental Impact Statement and Severe Accident Mitigation Alternative (SAMA) impacts.

Q. DID THE FEASIBILITY STUDY IDENTIFY ANY FATAL FLAWS OR TECHNICAL ISSUES THAT WOULD PREVENT OPERATION OF THE PLANT DURING THE SLR PERIOD?

A. No. In fact, the feasibility study identified no fatal flaws or technical issues that would currently prevent the operation of the Plant for another 20 years beyond the current license expiration.

Q. DOES NRC HAVE ANY PENDING SLRS FOR OTHER SIMILARLY SITUATED NUCLEAR FACILITIES THAT NSP CAN USE TO HELP ANTICIPATE LIKELY REQUIREMENTS OF THE SLR PROCESS?

A. Yes. Three SLR applications have been reviewed and fully approved in recent years by the NRC including one application for a plant with a similar design to the Monticello Plant. By applying the lessons learned from the review of these applications, including the related NRC requests for Additional Information, the Monticello Plant's application can be completed in a more predicable manner.

Q. DID THE STUDY IDENTIFY ANY ADVANTAGES FROM THE LCM/EPU PROGRAM FOR THE SLR PROCESS?

A. Yes. To prepare the study, Enercon conducted interviews with program owners who indicated good expertise in their existing programs and outlined a proactive approach to managing the aging of the Plant. In particular, the study suggested that the implementation of existing programs along with previous capital expenditures such as the LCM/EPU Program and other recent initiatives indicated a culture that remains highly supportive of long-term safe operations at the Monticello Plant.

Q. WILL NSP NEED TO CONDUCT ANY TIME-LIMITED AGING ANALYSES (TLAAS) DURING THE SLR PROCESS?

A. Yes. The study indicated generally good margins in its review of TLAAs for the Plant. Nonetheless, the Company does expect to conduct a detailed analysis for some TLAAs, including:

- Reactor vessel embrittlement;
- Neutron fluence effects on the reactor vessel, vessel internal structures in close proximity to the reactor vessel;
- Metal fatigue including environmental effects;
- Rim hold-down bolt vulnerability to stress relaxation and irradiated assisted stress corrosion cracking (a similarly situated SLR applicant was required to make an additional commitment to perform additional analysis, inspection or installation of core plate wedges); and
- Recirculation inlet nozzles and RPV shell-bottom head skirt welds may require fatigue analysis or more detailed cycle projections.

Q. DID THE STUDY IDENTIFY ANY PROJECTS THAT WILL NEED TO BEGIN DURING THE INITIAL SLR APPLICATION PROCESS?

A. Yes. While most process identified above can take place during or even after the Company obtains its license renewal, work on the vessel embrittlement, fluence, and metal fatigue analysis will need to begin during the initial SLR process. To minimize the risk of schedule impacts, the Company expects to contract with specialty vendors early on in the process including identification and resolution of any proprietary information issues.

Q. DID THE STUDY IDENTIFY ANY ENVIRONMENTAL ISSUES THAT WOULD HOLD UP THE SLR PROCESS?

A. No. At this point, the study did not identify any environmental issues that would preclude NRC from issuing the SLR for the Monticello Plant. NSP does anticipate utilizing some mitigation strategies including severe accident mitigation alternatives, cultural resource assessment, environmental justice, and refurbishment; however, these strategies should not delay the SLR application.

Q. DID THE STUDY IDENTIFY ANY DESIGN CHANGES OR EQUIPMENT REPLACEMENTS?

A. No. Due in part to NSP's past capital investments, the study did not identify any design changes, equipment refurbishments, or equipment replacements that NRC would require the Company to obtain for a twenty-year extension of the Plant's operating license.

Q. DID THE STUDY IDENTIFY ANY MAJOR CAPITAL PROJECTS NEEDED TO OPERATE THE PLANT PAST 2030?

A. The only significant capital project identified as being necessary to run the Plant past 2030 will be the ISFSI expansion project discussed below in section IV of my testimony.

Q. HOW LONG DOES THE COMPANY ANTICIPATE THE SLR PROCESS TO TAKE?

A. Preparation and NRC review of the SLR application will likely be straightforward with an overall duration of slightly less than four years.

C. Projected SLR Budget

Q. PLEASE PROVIDE A BREAKDOWN OF THE COSTS AND BUDGET ASSOCIATED WITH THE SLR PROCESS.

A. The Company has projected a total budget for the project of $25 million. Table PP-4 below contains an expected breakdown of total costs associated with the Project by year.

Table PP-4

2020	2021	2022	2023	2024	2025	2026
$0.2M	$4M	$5.2M	$6.3M	$5.4M	$2.6M	$1M

The Project's budget can be broken down into the following categories of costs:

Table PP-5

Vendor Contract Support Fees	$10M
NRC Fees	$7M
NSP Personnel	$7M
Contingency Fund for Unforeseen Project Costs	$1M

Finally, the project budget can also be broken down by phase:

Table PP-6

Study and Application Development	$10M
NRC Review and RAI Support	$12M
Project Implementation (AMPs)	$2M
Contingency Fund for Unforeseen Project Costs	$1M

Q. PLEASE EXPLAIN HOW THE COMPANY DEVELOPED THE COST BREAKDOWN AND BUDGET.

A. The budget was developed based on the Plant's initial license renewal projects, benchmarking other nuclear plants projects, and leveraging the Company's main contract vendor's experience. The NRC fees are estimated based on NRC's published estimated review hours of other nuclear plant SLR applications and the standard NRC billing rate.

Q. DOES THIS BUDGET COMPARE FAVORABLY TO NSP LICENSE RENEWAL BUDGETS FOR THE PRAIRIE ISLAND INITIAL LICENSE RENEWAL AND THE MONTICELLO INITIAL LICENSE RENEWAL?

A. Yes. The $25 million Monticello SLR budget is less than Prairie Island Plant's initial license renewal project cost of approximately $30 million and consistent with the Monticello Plant initial license renewal project cost of approximately $22 million. NSP reached out to other utilities in the process of license renewal in 2019 to benchmark project costs. While other utilities would not share their actual costs, they confirmed Monticello Plant's $25 million SLR estimate aligns with the rest of the industry.

Q. HAS THE COMPANY EXPLORED ALTERNATIVES TO RELICENSING THE MONTICELLO PLANT?

A. Yes. As outlined in Ms. Mandich's testimony, the Company has explored other resource alternatives for meeting a capacity deficit if the Monticello Plant was taken offline in 2030. My understanding is that eliminating the Plant from the Company's resource portfolio would result in a less resource diverse and reliable, higher carbon intensity, and more fuel-volatility exposed power mix.

Q. SO, DESPITE THESE RELICENSING EXPENDITURES, DOES THE CONTINUED OPERATION OF THE MONTICELLO PLANT PAST 2030 RESULT IN COST-EFFECTIVE ENERGY GENERATION FOR NSP CUSTOMERS?

A. Yes. The Company has identified the continued operation of the Monticello Plant as a cost-effective and prudent generation resource past 2030. NSP's experience with the SLR process, its past capital investments, and its efficient operation of the Monticello Plant have made this resource and essential piece of the Company's generation portfolio past 2030. The feasibility study confirmed that relicensing and maintaining the Plant will result in ample customer benefits and minimal capital expenditures because of the Company's prudent operation of the facility over the past several years.

IV. PROJECTED EXPANSION OF AGING MANAGEMENT PROGRAMS

Q. PLEASE SUMMARIZE THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I will provide more detail about NSP's Aging Management Programs (AMPs). I will first describe the Company's existing AMPs and how the company has prudently managed the aging of the plant since the first relicensing process. I will then discuss the Company's plans for expanding AMPs to address Plant aging if the Plant's license is renewed.

Q. PLEASE DESCRIBE THE PLANT'S CURRENT AMPS.

A. NSP implements thirty-six active AMPs at the Monticello Plant, as well as five other existing programs that perform activities that will be credited as AMPs for the SLR. These AMPs manage aging effects for applicable passive and long-lived mechanical, electrical, and structural components to ensure component

intended functions are maintained. Intended functions are those functions that operators rely upon during and following design-basis events or other specific safety analyses.

Q. WHEN DID THE COMPANY FIRST IMPLEMENT ITS CURRENT AMPS?

A. Many of the AMPs were existing programs that required enhancement to meet NRC requirements before they could be considered implemented. Official implementation began after NRC approved the Plant's initial license renewal application with a significant amount of the work being completed between 2008 and 2010. All AMPs were fully implemented prior to entering the period of extended operation in 2010.

Q. HOW DOES THE COMPANY ASSESS THE EFFECTIVENESS OF ITS AMPS?

A. To prepare for the upcoming SLR process, the Feasibility Study reviewed each AMP against the criteria provided in NEI 14-12 (Reference 9.31), which provides a standard approach based on the ten program elements required for each program.

Q. WHAT ARE THE TEN PROGRAM ELEMENTS NEI ANALYZES FOR EACH AMP?

A. NEI analyzes each AMP based on the following criteria:

- **Scope of the Program**—including whether work orders and procedures contain appropriate components and are clearly tied to commitments.
- **Preventative Actions**—aligning the program with preventative actions that will prevent or mitigate applicable aging effects.
- **Parameters Monitored or Inspected**—ensuring that Parameters are linked to the degradation of the particular structure or component's intended function.

- **Detection of Aging Effects**—checking whether detection occurs with sufficient time to implement preventative actions before there is a loss of structure or component-intended function. This criteria includes aspects like technique (i.e. visual, volumetric, surface exam), frequency, sample size, data collection, and timing of new or one-time inspections to ensure timely detection of aging.
- **Monitoring & Trending**—confirming that monitoring and trending provide predictability of the extent of any degradation and timely corrective or mitigative actions.
- **Acceptance Criteria**—verifying that acceptance criteria (i.e. the conditions under which the need for corrective action will be evaluated) ensure that the structure or component-intended functions are maintained under all Current Licensing Basis[4] conditions during the period of extended operation.
- **Corrective Actions**—analyzing whether corrective actions, including cause evaluation and prevention of recurrence, are timely.
- **Confirmation Process**—verifying that the confirmation process ensures adequate preventative actions and tracks whether appropriate corrective actions have been completed and are effective.
- **Administrative Controls**—confirming that each program has a formal review and approval process.
- **Operating Experience**—including following AMP implementation, industry operating experience, plant operating history, and past corrective actions taken.

[4] Current Licensing Basis is the set of NRC requirements applicable to a specific plant and a licensee's written commitments for ensuring compliance with and operation within applicable NRC requirements and the plant-specific design basis—including all modifications and additions to such commitments over the life of the license—that are docketed and in effect.

Q. DOES NEI PROVIDE ANY FURTHER GUIDANCE ON HOW TO JUDGE AMP EFFECTIVENESS?

A. Yes. NEI 14-12 provides and additional five attributes that should be used to determine the effectiveness of each AMP:

- Commitments are managed in accordance with NEI 99-04 (Reference 9.32) and NRC Regulatory Issue Summary 2000-017 (Reference 9.33);
- AMP implementing activities are completed on schedule;
- Industry and site-specific operating experience are routinely evaluated, and program adjustments are made as necessary;
- Self-assessments are conducted, and program adjustments are made as necessary; and
- No significant findings are identified from external assessments or internal audits.

Q. HAS NSP CONDUCTED ANY OF THESE EFFECTIVENESS REVIEWS?

A. Yes. The Company performed its most recent effectiveness review between December 1, 2019 and March 1, 2020. Ultimately, the Company's AMPs were found to be effective in managing age-related degradation in the Feasibility Study. However, to receive a second license renewal, the Feasibility Study identified several AMPs that would need to be expanded and approximately nine new AMPs that the Company would need to implement.

Q. WHICH AMPS DOES THE COMPANY EXPECT TO MODIFY AS PART OF THE SLR PROCESS?

A. The Company expects that most of the existing AMPs will only require minor changes to achieve full compliance with NRC guidance. Nonetheless, some existing programs will likely require more significant changes to fully comply

with the guidance and some will require new inspections before 2030. These changes may include:

- One-time supplemental inspection of five percent of ASME Section XI supports;
- Inspection of submerged bolting and closure bolting on air and gas systems;
- Buried piping inspections and/or upgrades to monitoring and performance of cathodic protection;
- Inspection of components in closed treated water;
- Inspection of components in compressed air systems;
- Additional medium voltage cable testing;
- Additional inspections of fire water piping;
- Additional inspections of fuel oil and condensate storage tanks;
- One-time inspections of components in treated water, lubrication oil, or fuel oil environments;
- Surface examinations of dissimilar metal welds or containment penetrations that may experience cracking;
- Additional inspections for Selective Leaching;
- Adoption of quantitative acceptance criteria for structures monitoring; and
- Increase inspections of external surfaces of piping.

Q. WHICH OF THESE PROGRAMS WILL NEED NEW INSPECTIONS BEFORE 2030?

A. The NRC will require the Company to conduct inspections for approximately 19 AMPs prior to the subsequent period of operation (SPEO) to satisfy SLR requirements.

Q. DOES NSP HAVE A CURRENT TIMELINE FOR WHEN IT WILL EXPAND THESE CURRENT AMPS?

A. Implementation including required AMP changes and inspections will begin following NRC approval of the SLR. The NRC requires all AMPs are to be implemented no later than six months prior to SPEO, or, alternatively, no later than the last refueling outage prior to the SPEO.

Q. PLEASE SUMMARIZE THE NEW AMPS NSP WILL USE TO EXTEND THE LIFE OF THE MONTICELLO PLANT IF RELICENSED.

A. By incorporating NUREG 2191 and NUREG 2192 in its feasibility study as analysis, the Company has anticipated the expansion of its AMPs for the Plant over the extension of its useful life as reasonably as it can based on what is knows today. Specifically, the study anticipates increasing AMPs at the Plant from thirty-six to approximately forty-five depending on the results of the formal aging reviews. For some of these new programs the Plant has existing tasks that can be formalized to meet the new program requirements. New programs identified in the feasibility study include:

- Monitoring and managing the effects of neutron fluence on the reactor vessel and internals;
- Inspection and testing of insulation for low and medium voltage power cables as well as instrumentation cables;
- Testing of fuse holders;
- Inspection of high voltage insulators;
- Inspection of small-bore socket welds;
- Inspections of internal surfaces of piping and ductwork;
- Lubricating oil testing;

- Monitoring and testing the neutron absorbers in the spent fuel racks; and
- Inspection of internal coatings of piping heat exchangers and tanks.

Q. DOES NSP HAVE A CURRENT TIMELINE FOR WHEN IT WILL IMPLEMENT THE OTHER NEW AMPS?

A. As stated above, the NRC requires all AMPs to be implemented no later than six months prior to SPEO, or no later than the last refueling outage prior to the SPEO. The Company will meet these timelines and fully cooperate with the NRC to meet any additional deadlines.

Q. DOES THE COMPANY CURRENTLY HAVE AN EXPECTED BUDGET FOR EXPANDING EXISTING AMPS AND ESTABLISHING NEW ONES AS REQUIRED BY THE NRC?

A. Yes. As shown in Table PP-6, NSP has budgeted $2 million dollars for expanding existing AMPs and establishing new AMPs during the project's implementation phase.

Q. COULD NRC REQUIRE NSP TO ESTABLISH ADDITIONAL AMPS THAT ARE NOT IN THE COMPANY'S FEASIBILITY STUDY?

A. Yes. While the feasibility study identified these nine additional AMPs, NRC could identify further Plant components and systems that would require AMPs as part of the SLR process. However, the Company's study likely identifies the major program components NRC will require to relicense the Monticello Plant.

V. THE INDEPENDENT SPENT FUEL STORAGE INSTALLATION EXPANSION PROJECT

Q. PLEASE SUMMARIZE THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I first describe the basic operational structure of the Monticello Plant and how the Company stores spent fuel. I then discuss why the Plant will need to expand its Independent Spent Fuel Storage Installation (ISFSI). Finally, I will provide a high-level description of the expansion project and the Company's projected budget for the work.

A. Spent Fuel Storage

Q. WHAT IS SPENT FUEL?

A. As I discussed in Section I, the nuclear fuel assemblies in the reactor core provide sufficient heat for about six years, and the Company conducts refueling outages approximately every two years during which it shuts down the Plant and replaces approximately one-third of the fuel assemblies. The fuel assemblies that are removed during an outage are the spent fuel. Initially, they are removed to the spent fuel pool.

Q. WHAT IS THE SPENT FUEL POOL?

A. The spent fuel pool is a water-filled repository located on the refueling floor in the Plant's reactor building. It is filled with storage racks that hold spent fuel assemblies and other irradiated reactor components. The water in the pool has a depth of thirty-seven feet, nine inches. The pool is equipped with redundant cooling systems to remove the heat that the assemblies continue to generate and filtration systems that maintain the pool water chemistry and remove suspended

particles. In addition to its cooling function, the water in the pool also provides shielding from radiation.

Q. HOW MANY SPENT FUEL ASSEMBLIES CAN THE POOL HOLD?

A. The NRC operating license for the Plant allows for storage of up to 2,217 spent fuel assemblies in the current spent fuel storage rack configuration. Eight of the licensed storage spaces cannot be used because they did not meet quality control specifications after their manufacture. That leaves 2,209 storage spaces.

Q. IS SPENT FUEL KEPT IN THE SPENT FUEL POOL INDEFINITELY?

A. No. The Company eventually transfers spent fuel assemblies to the ISFSI for storage in dry, concrete storage modules.

B. The ISFSI

Q. WHAT IS THE ISFSI?

A. The ISFSI is an area of the Plant adjacent to the reactor and turbine building where NSP stores spent fuel in canisters within modular concrete vaults. The ISFSI is approximately 460 feet long and 200 feet wide, approximately 3-1/2 acres in size. The tallest structures in the ISFSI are forty-foot tall light poles. Two fences surround the facility with a monitored, clear zone in between. The modular concrete vaults containing the spent fuel assemblies sit on a reinforced concrete support pad. Concrete approach pads surround the support pad to allow for the placement of vaults and spent fuel canister transfer traffic. The side and the storage vaults are monitored with cameras, other security devices, and temperature sensors. Image PP-3 shows the plant; the ISFSI is the fenced-in area in the foreground.

Image PP-3: Monticello Plant and Existing ISFSI Facilities

Q. HOW ARE SPENT FUEL ASSEMBLIES TRANSFERRED TO THE ISFSI?

A. The transfer is a multi-stage process taking approximately five days. First, a steel canister within a steel transfer cask is placed into the spent fuel pool. Then, the spent fuel assemblies are placed into the canister, and the transfer cask containing the canister is removed from the pool. Next, the canister is dried out, air is removed and replaced with helium, and the canister is welded shut. Finally, the transfer cask is transported to the ISFSI, where the canister is removed from the transfer cask and placed inside the storage module. The Monticello Plant uses a horizontal canister system as depicted in Image PP-4 below.

Image PP-4: Horizontal Canister System in use at Monticello

Q. HOW MUCH FUEL HAS THE PLANT USED SINCE IT BEGAN OPERATION?

A. As of January 9, 2023, 3,940 spent fuel assemblies have been discharged from the Plant's reactor. 1,052 spent fuel assemblies are currently stored in the spent fuel pool and 1830 spent fuel assemblies are stored in the ISFSI, for a total of 2,882 stored at Monticello. In addition, in the 1980s 1,058 spent fuel assemblies were shipped to a General Electric storage pool in Morris, Illinois; however, that facility is no longer receiving additional storage.

Q. IF THE PLANT CONTINUES TO OPERATE PAST 2030, WOULD THERE BE SUFFICIENT SPACE AT THE CURRENT ISFSI FOR SPENT FUEL?

A. No. Additional dry storage for spent fuel rods will be necessary for the Plant to continue operations beyond 2030.

C. The Proposed Expansion Project

Q. PLEASE PROVIDE AN OVERVIEW OF THE PROPOSED ISFSI EXPANSION PROJECT.

A. As currently proposed, the ISFSI Expansion Project involves the construction of a second concrete pad and modular concrete storage system within the existing ISFSI to support additional storage casks, which will store sufficient spent fuel to allow the Monticello Plant to continue operating past 2030.

Currently, the ISFSI contains a single concrete pad. A crucial aspect of the Project is the construction of a second concrete pad. The Company would build this pad within the secure boundaries of the current ISFSI, as it previously sized the facility footprint to allow for additional storage capacity without changing the outer dimensions of the ISFSI. The soil under the area where additional storage could be added was already removed and replaced with engineered soil that can support the weight of an additional pad and storage modules. A new concrete pad will need to be constructed to support the additional casks. Depending on the technology selected for the casks, either new horizontal storage modules will be placed on the new pad or loaded vertical concrete storage casks will be added. No maintenance is required on the canisters or storage modules themselves.

Additional casks would also be purchased to store the fuel rods. The exact number of casks needed will be determined by the specific amount of nuclear fuel required to run the Plant for the remainder of its useful life, how much fuel is loaded each cycle, and the capacity of the casks eventually selected. Although the Company estimates that it will need approximately fourteen additional storage casks, the storage facility and second support pad will be able to

accommodate another thirty-six vaults of the existing design without having to change the security perimeter. The extra space can be used for the existing technology or a different welded canister system, depending on which is selected.

Q. WOULD THE ADDITIONAL CASKS BE THE SAME AS THOSE ALREADY PRESENT AT THE ISFSI?

A. The Company has not selected a specific cask vendor or technology. Instead, it plans to use a competitive procurement process to select the cask vendor and technology. However, regardless of the vendor chosen, the technology will be licensed by the NRC and will consist of welded, sealed canisters for confinement, stored in an overpack (typically concrete construction), that will provide additional radiation shielding and protecting the sealed canister from external hazards.

Q. HAS THE COMPANY BEGUN THE REGULATORY PROCESS TO EXPAND ITS ISFSI FACILITIES?

A. Yes. The Company applied for a certificate of need for additional ISFSI at the Monticello Plant with the Minnesota Public Utilities Commission on September 1, 2021.[5] The Minnesota Department of Commerce issued a final Environmental Impact Statement (EIS) on January 13, 2023, and will hold an evidentiary hearing on April 20-21, 2023. The Administrative Law Judge's report from the hearing is due June 30, 2023 and we anticipate a decision on the certificate of need by the end of 2023.

Q. WHAT IS THE COMPANY'S ESTIMATED COST FOR THE INSTALLATION OF THE ADDITIONAL STORAGE AT THE ISFSI?

A. Based on studies completed in 2020, the Company estimates the installation cost of the additional storage at the ISFSI to be $72 million. Table PP-7 below is a breakdown of the major component costs:

Table PP-7

Category	Estimated Cost
Regulatory Processes	$2.5M
Engineering, Design, and Construction	$9.6M
Canisters/Storage Modules/Loading	$60M
Total	**$72.1M**

[5] *In re Application of Northern States Power Co. d/b/a Xcel Energy for a Certificate of Need for Additional Dry Cask Storage at the Monticello Nuclear Generating Plant Independent Spent Fuel Storage Installation in Wright County*, Docket No. CN-21-668 (Sept. 15, 2021).

Q. ARE THERE ALTERNATIVES TO THE COMPANY'S PROPOSED ISFSI EXPANSION?

A. The Company has examined four off-site storage possibilities for spent nuclear fuel which would obviate the need for the ISFSI expansion: (1) reprocessing spent nuclear fuel, (2) contracting for additional spent fuel storage capacity at an existing offsite spent fuel storage facility, (3) contracting for additional spent fuel storage capacity at an offsite interim spent fuel storage facility in the future, and (4) the availability of a federally-sponsored permanent repository for spent fuel. The DOE is currently managing a Consent Based Siting Program in which consortiums are being awarded grants with the purpose of educating communities throughout the country and beginning a narrative on interim and permanent spent fuel storage. Ultimately, the Company has concluded that none of the four alternatives represent a viable strategy today to support continued operation of the Monticello Plant after it exhausts its current storage capacity. Below, I provide an overview of each alternative and explain why the Company determined they were not viable options.

1. Reprocessing Spent Nuclear Fuel

Reprocessing is a method of recovering unused uranium and plutonium from used nuclear fuel and recycling it for use in new reactor fuel. Reprocessing does not result in elimination of all nuclear wastes and radioactivity, but it does reduce the volume of high-level waste that must be stored. When electric power companies first considered using nuclear energy to generate electricity, they assumed that when the nuclear fuel was used up or "spent," it would be recycled so that useful fuel could be extracted and used again. Approximately 96 percent of spent fuel from nuclear plants in the United States is uranium that could potentially be reprocessed into usable fuel for electricity generation.

In 1977, President Jimmy Carter, concerned about the possibility of nuclear proliferation, banned commercial reprocessing by private companies. As a result, the two private reprocessing facilities then under final construction never came into operation. Although the Federal Government eventually lifted the ban, no private companies have invested in constructing and operating reprocessing facilities. Uncertainty as to whether political leaders and regulators would actually allow for the operation of commercial reprocessing and the economics of reprocessing (as compared to creating new fuel) have hampered the development of reprocessing in the United States. Therefore, reprocessing is not a viable alternative to expanding the ISFSI at the Plant.

2. Existing Off-Site Storage Facilities

The only facility storing spent fuel on a contract basis from commercial nuclear power reactors is the General Electric Morris facility in Morris, Illinois. The Company shipped 1,058 spent fuel assemblies from the Monticello Plant to the Morris facility in the 1980s, where they are currently stored under contract. However, the General Electric Morris facility is no longer accepting additional spent fuel from commercial nuclear power plants and is not a viable alternative to expanding the ISFSI at the Plant.

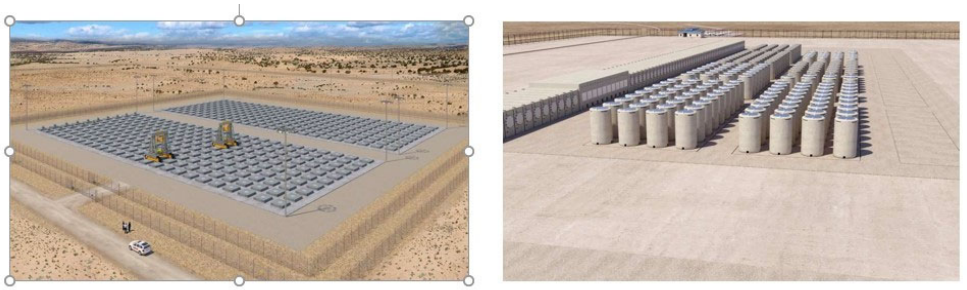
3. Private Centralized Interim Storage

A centralized interim storage project is licensed by the NRC for a site located in Andrews County, Texas, adjacent to Waste Control Specialists' (WCS) existing low-level radioactive waste and hazardous waste storage and disposal facilities. In a March 13, 2018 statement, WCS and Orano USA (formerly Areva Nuclear Materials) announced their intention to form a joint venture, Interim

Storage Partners, to license the facility. The NRC Staff issued a draft Environmental Impact Statement (EIS) and issued a license to the facility to store spent fuel nuclear fuel.[6] However, significant work remains before this facility could become operational, including negotiations with the Department of Energy or other entities that hold title to spent fuel for the facility's business model to begin construction, operate and eventual decommissioning of the site. Considering the extended timeline for the construction of the facility, it is not considered a viable option for the Monticello Plant at this time.

Holtec International has proposed the HI-STORE Centralized Interim Storage Facility for a site located in southeastern New Mexico. Holtec filed an application with the NRC for this facility in March 2017. The NRC published its final EIS for the Holtec facility in July 2022. In the final EIS, NRC Staff recommended issuing the license, subject to a safety review, but a licensing decision is not expected until end of March 2023. Similar to the Andrews facility, significant work remains before this facility could become operational, and it is not considered a viable option at this time. Image PP-5 depicts the Andrews, TX and Holtec interim storage facilities.

Image PP-5: Consolidated Interim Storage Facilities



Holtec
Hobbs, NM

Integrated Storage Partners
Andrews, TX

[6] *Interim Storage Partners, LLC; WCS Consol. Interim Storage Facility*, Issuance of Materials License and Record of Decision, 86 Fed. Reg. 51,926 (Sept. 17, 2021).

4. Yucca Mountain

The application to license the Yucca Mountain permanent repository remains pending before the NRC. The NRC Staff's technical and environmental reviews have been essentially completed, but the adjudicatory hearings on the application before NRC's Atomic Safety and Licensing Board remain suspended pending Congressional appropriations for both DOE and NRC. Given the lack of progress in licensing over the past many years, Yucca Mountain is not considered a viable option at this time. Image PP-6 provides a picture of the Yucca Mountain facility.

Image PP-6: Yucca Mountain

VI. CONCLUSION

Q. DO YOU HAVE ANY FINAL COMMENTS?

A. Yes. The Monticello Plant is a safe, reliable, and efficiently operated generation facility. It plays an important role in the NSP System. The Company's customers, including those in North Dakota, will benefit if it continues to operate until at least 2040.

1 Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

2 A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF NORTH DAKOTA

NORTHERN STATES POWER COMPANY
ADVANCE DETERMINATION OF PRUDENCE
MONTICELLO NUCLEAR PLANT LIFE EXTENSION
APPLICATION

CASE NO. PU-23-___

VERIFICATION

STATE OF MINNESOTA)
) SS.
COUNTY OF HENNEPIN)

Pamela Gorman Prochaska, being first duly sworn on oath, deposes and says that she is Director, Nuclear Regulatory Policy & Strategy for Applicant Northern States Power Company, a Minnesota corporation, in the above-captioned matter, that the testimony submitted in the above-captioned matter under his name was prepared under his direction, that he knows the contents thereof, and that the same is true and correct to the best of his knowledge and belief.

Pamela Gorman Prochaska

Subscribed and sworn to before me on this 23 day of January, 2023

JODY FOSTER
NOTARY PUBLIC - MINNESOTA
My Commission Expires
January 31, 2024

Notary Public
My Commission expires: 1/31/24

Pam Prochaska
Director, Nuclear Fleet Operations
Xcel Energy, 414 Nicollet Mall, Minneapolis, MN 55401

B.S, Mathematics, University of Minnesota, 1989

Xcel Energy, Minneapolis, MN
Director, Nuclear Fleet Operations Strategy & Policy, 2017-2023

- Recommend nuclear policy strategies and direction, including regulatory cost recovery mechanisms, for existing and advanced nuclear operations.
- Develop policy positions for senior management related to regulatory and legislative initiatives at federal and state levels that will impact Xcel Energy's nuclear operations.
- Lead the state filings to extend operations and ensure positive regulatory treatment of the existing Xcel Energy nuclear fleet.
- Drive industry leadership to develop and implement a comprehensive used fuel strategy and solution.

Xcel Energy, Red Wing, MN
Community Relations and Economic Development Manager, 2008-2017

- Build and enhance positive relationships with the communities and customers served in Southern Minnesota. Face of Xcel Energy and the connection between local government and our company operations. Manage company positions and testimony before local government units.
- Inform local communities of company direction, objectives and vision and enhance community health by assisting and participating in economic development organizations.
- Provide strategic direction and leadership on company construction, distribution, and transmission projects throughout SE Minnesota.

Prairie Island Nuclear Plant, Xcel Energy, Welch, MN
Employee Concerns Manager, 2005 - 2008

- Provide interface between federal regulator, Nuclear Regulatory Commission (NRC), and Company to implement the employee concern program successfully and effectively at our nuclear plants.
- Responsible to support safe operation while providing technical, leadership and communication skills that assist and coach executive site leadership.
- Foster plant culture that allows for any safety concern to be heard. Member of plant leadership team reporting to site vice president and contribute to overall strategic direction of plant.

Communications and External Relations Manager, 2001 – 2005

- Responsible for development and implementation of all external and internal communication strategies while operating under the Nuclear Management Company (NMC).

Project Manager, 1999 – 2001

- Perform duties as directed by Site Vice President. Led site initiatives on low value work reduction, drive to excellence, employee engagement, business plan development, and process efficiencies.

Community Relations, (Temp Assignment as needed–kept Operations qualifications), 1994 – 1998

- Functioned as Nuclear Generation liaison on both technical and policy issues.
- Worked routinely with many internal departments such as Legal, Communications, Regulatory Affairs, Federal Affairs, State & Metro Affairs, and Investor Relations and represented the company as nuclear spokesperson to the Public Utilities Commission, state legislature, media interviews and community events such as public debates and NSP Speakers Bureau engagements.

Operations, 1989 – 1999

- Involved with all aspects of day-to-day technical operations of the Prairie Island nuclear plant

PUBLICATIONS

MPUC. Docket No. E002/CN-08-510, "Request for Change in Spent-Fuel Storage Technology Prairie Island Fuel Storage." **P. Gorman Prochaska**, contributor. St. Paul, MN: Minnesota Public Utilities Commission. 2021.

https://efiling.web.commerce.state.mn.us/edockets, Document ID 20214-173680-01, April 30, 2021.

MPUC. Docket No. E002/CN-21-668, "Certificate of Need for Additional Dry Cask Storage at the Monticello Nuclear Generating Plant Independent Spent Fuel Storage Installation." **P. Gorman Prochaska**, contributor. St. Paul, MN: Minnesota Public Utilities Commission. 2021.

https://efiling.web.commerce.state.mn.us/edockets, Document ID 20219-177630-01 through -10.