



2302 Great N. Drive
Fargo, North Dakota 58102
dave.sederquist@xcelenergy.com

July 17, 2019

- Via Email -

Steven M. Kahl, Executive Director
North Dakota Public Service Commission
600 East Boulevard, Dept 408
Bismarck, ND 59505-0480

RE: INFORMATIONAL LETTER ON NUCLEAR DECOMMISSIONING ACCRUAL
CASE NO. PU-07-776

Dear Mr. Kahl:

Per provisions of the Settlement Agreement approved by the North Dakota Public Service Commission in its *Order Adopting Settlement* dated December 31, 2008 (Case No. PU-07-776), Northern States Power Company provides here its compliance filing submitted to the Minnesota Public Utilities Commission (MPUC) regarding the Company's Nuclear Decommissioning Accrual.

On July 15, 2019 the Company submitted a compliance filing to the MPUC in response to their January 7, 2019 Order Approving Decommissioning Study, Decommissioning Accrual, and Taking Other Action. The Order approved an Annual End of Life Nuclear Fuel Accrual of \$2.0 million to take effect in 2020, and an Annual Decommissioning Accrual of \$44.4 million to take effect in 2020. The MPUC also noted, however, that the increased accrual was subject to possible revision based on a subsequent filing from the Company that will update inputs and consider the possible implications of:

- (1) Department of Energy continuing refunds for dry cask storage during the decommissioning process;
- (2) the use of the SAFSTOR decommissioning method; and
- (3) the possible use of third-party contractors for nuclear decommissioning.

Each of these issues is addressed in this filing. Additionally, the End of Life Nuclear Fuel accrual was specific to the year 2019 and was not calculated on the basis of a 2020 effective date. The Company therefore proposes a slight update to the End of Life Nuclear Fuel accrual to reflect this passage of time.

We provide this informational filing electronically but would be happy to provide paper copies of the full report if requested by the Commission or Staff. Please contact me at 701-241-8632, if you have any questions regarding this submission.

Sincerely,

A handwritten signature in blue ink that reads "David H. Sederquist". The signature is written in a cursive style with a prominent initial "D".

DAVID H. SEDERQUIST
Sr. Consultant, Regulation & Finance

Enclosure



414 Nicollet Mall
Minneapolis, MN 55401

July 15, 2019

—Via Electronic Filing—

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

RE: COMPLIANCE FILING
NUCLEAR DECOMMISSIONING ACCRUAL
DOCKET NO. E002/M-17-828

Dear Mr. Wolf:

Northern States Power Company, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission the enclosed Compliance Filing in response to Order Points 2(A) and 2(B) of the Commission's January 7, 2019 Order Approving Decommissioning Study, Decommissioning Accrual, and Taking Other Action.

We have electronically filed this document with the Minnesota Public Utilities Commission, and copies have been served on the parties on the attached service list. Please contact Amber Hedlund at amber.r.hedlund@xcelenergy.com or (612) 337-2268 or me at bria.e.shea@xcelenergy.com or (612) 330-6064 if you have any questions regarding this filing.

Sincerely,

/s/

BRIA E. SHEA
DIRECTOR, REGULATORY & STRATEGIC ANALYSIS

Enclosures
c: Service List

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Dan Lipschultz	Commissioner
Valerie Means	Commissioner
Matthew Schuenger	Commissioner
John A. Tuma	Commissioner

IN THE MATTER OF THE PETITION OF
NORTHERN STATES POWER COMPANY
FOR APPROVAL OF THE 2019-2021
TRIENNIAL NUCLEAR DECOMMISSIONING
STUDY AND ASSUMPTIONS

DOCKET NO. E002/M-17-828

COMPLIANCE FILING

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission this Compliance Filing in response to Order Points 2(A) and 2(B) of the Commission's January 7, 2019 Order Approving Decommissioning Study, Decommissioning Accrual, and Taking Other Action.

Order Point 2(A) approved an Annual End of Life Nuclear Fuel Accrual of \$2.0 million to take effect in 2020. Order Point 2(B) approved an Annual Decommissioning Accrual of \$44.4 million to take effect in 2020. The Commission also noted, however, that the increased accrual in Order Point 2(B) was subject to possible revision based on a subsequent filing from the Company that updates inputs and considers the possible implications of (1) Department of Energy continuing refunds for dry cask storage during the decommissioning process; (2) the use of the SAFSTOR decommissioning method; and (3) the possible use of third-party contractors for nuclear decommissioning. We address each of these issues in this filing. Additionally, we note that the End of Life Nuclear Fuel accrual in Order Point 2(A) was specific to the year 2019 and was not calculated on the basis of a 2020 effective date. The Company therefore proposes a slight update to the End of Life Nuclear Fuel accrual to reflect this passage of time.

As we explained during the November 29, 2018 hearing in this docket, the Company retained an independent consultant in late 2018 to evaluate our NDT accrual and the possibility of modifying our traditional accrual analysis based on one or more of the

issues or inputs identified above. Since that time, we have worked closely with our consultant, Adam Levin of AHL Consulting, who has met with several Company employees responsible for decommissioning planning, analyzed the Company's overall method in planning for decommissioning and calculating an annual accrual, and recommended a change in the way we factor future Department of Energy reimbursements into our analysis.

Upon retaining AHL Consulting, the Company began to more closely consider the three trends first discussed in our July 2, 2018 Reply Comments in this docket—namely, the continuation of DOE reimbursements during decommissioning, the SAFSTOR alternative to immediate decommissioning, and the use of third-party decommissioning firms. We analyzed decommissioning trends across the industry and discussed those trends with our consultant; we had discussions with representatives from multiple third-party decommissioning firms; and we evaluated the legal basis underlying our DOE settlements, as well as other settlement outcomes associated with DOE reimbursements for dry fuel storage, all with guidance from Mr. Levin.

Through this work, we arrived at the conclusion that it was reasonable to pursue additional analyses regarding the continuation of DOE reimbursements into and through decommissioning. We are therefore providing a report from AHL Consulting that is focused on the DOE reimbursement issue. Based on that report—along with our own analysis that incorporates updated earnings projections for our NDT—we are recommending that the Commission reduce the accrual to approximately \$22.8 million. AHL Consulting's report is attached to this filing as Attachment A, and we discuss the report's analysis and findings in greater detail below.

At the same time, we concluded that—while we should continue monitoring trends related to SAFSTOR and the use of third-party decommissioning firms—it is still premature to draw any firm planning decisions or make accrual recommendations based on these trends today. We believe the use of third-party firms, in particular, has the potential to drive efficiencies in decommissioning that could reduce the overall cost to decommission our nuclear fleet, but we also recognize that this industry remains in a nascent stage and that it is too early to draw any firm conclusions regarding its success or ability to reduce costs in the long term. We nevertheless provide a discussion of both SAFSTOR and third-party decommissioning firms later in this filing.

Finally, we note that our 2019 Integrated Resource Plan (IRP) includes a 10-year extension of our Monticello plant from 2030 to 2040 as part of the Preferred Plan. If approved, this extension could put additional downward pressure on our accrual calculation by extending the time for collecting an accrual during the plant's operation while allowing the NDT to earn returns during the 10 additional years of operation.

We simply note this as another factor to be mindful of as we plan for decommissioning, and we certainly recognize that our IRP was just filed with the Commission and that many federal and state regulatory approvals will be required before extended operation at Monticello becomes certain.

In summary, we believe it is reasonable in light of Mr. Levin’s conclusions and our own analysis to set the accrual at a level that is substantially below the \$44.4 million established in the 2017 Triennial docket. And while our experience with the DOE has been that we recover in excess of 90% of qualifying costs, we believe it is prudently conservative to select an accrual near the midpoint of the 90% and 75% outcomes. We are therefore recommending an accrual of \$22.8 million, with an approximate unit split as shown in Table 1 below.

Table 1

	2020 Accrual w/ 75% of DOE funds	Allocation based on 75% accrual	Allocation of Proposed Accrual
Monticello	8,507,110	31%	7,074,153
Prairie Island Unit 1	12,399,703	45%	10,311,069
Prairie Island Unit 2	6,511,608	24%	5,414,778
TOTAL	27,418,421	100%	22,800,000

To be sure, we also recognize there is a range of reasonable outcomes with respect to calculating the specific accrual that would be consistent with our analysis and Mr. Levin’s conclusions. We believe this includes the \$14 million currently reflected in rates, which the Commission could determine to be sufficient until our next Triennial in 2020, given our now-ongoing IRP and our proposal to extend Monticello until 2040. Likewise, we believe the Commission could also reasonably move closer to the 75% scenario for DOE reimbursements and set the accrual approximately \$27 million.

BACKGROUND

In Docket No. E002/D-86-604, the Commission ordered the Company to review nuclear decommissioning financial parameters, funding methodology, NRC external funding percentages, and cost estimates every three years. The accrual amount of approximately \$14 million that is current reflected in Minnesota rates was approved in a 2015 Commission Order in response to the Company’s 2014 Triennial Petition (Dkt. No. E002/D-14-761).

On December 1, 2017, the Company filed its 2019-2021 Triennial Petition. In that Petition, the Company analyzed a number of decommissioning scenarios and calculated a number of different accruals corresponding to each scenario, ranging from negative \$16 million for scenarios involving life extensions of our plants to positive \$115.9 million for scenarios involving the early retirement of our plants by five years. We provided these different scenarios in light of our then-upcoming 2019 Integrated Resource Plan, which would address the long-term future of our plants through a comprehensive baseload study. We also noted during the course of that Triennial docket that three trends in the nuclear industry—continued DOE reimbursements through decommissioning, SAFSTOR, and third-party decommissioning firms—had the potential to put downward pressure on decommissioning estimates and/or accrual calculations. Based on these trends and the proximity of the Triennial docket to the 2019 IRP, we recommended that the Commission maintain the accrual at the approximately \$14 million level until at least the conclusion of our 2019 IRP filing.

We noted in our Triennial filing, however, that accrual calculations had generally risen compared to the 2014 Triennial Petition. This was driven almost entirely by lower forward-looking expected returns, which in turn are largely driven by the lower current treasury interest rate relative to the interest rate expected from the 2014 Petition valuation. And we explained that the accrual calculation for 2019 would be approximately \$45 million if we assumed immediate decommissioning following the end of each plant license, consistent with our 2014 Petition.

Upon reviewing our Petition, the Department ultimately recommended that the Commission set the total NDT accrual at \$44.4 million based on the immediate decommissioning scenario for each plant beginning at the end of each current operating license. The Commission agreed with the Department’s recommendation, finding that the increased accrual was the “most conservative and reasonable approach.”¹ However, the Commission noted that:

[The] \$44.4 million Annual Decommissioning Accrual [is] subject to possible revision based on a subsequent accrual filing to be made on July 15, 2019, that updates inputs and considers the possible implications of:

- Department of Energy continuing refunds for dry cask storage during the decommissioning process;
- The use of the SAFSTOR decommissioning method;

¹ January 7, 2019 Order in E-002/M-17-828 at p. 7.

- The possible use of third-party contractors for nuclear decommissioning.²

We submit this filing in response to the Commission’s 2018 Order.

DISCUSSION

A. SAFSTOR & Third-Party Decommissioning Firms

As noted in our Triennial Reply Comments, we have observed that most of the retiring plants across the country have used the SAFSTOR³ option—at least for some period of time. SAFSTOR allows the plants’ decommissioning funds to earn additional return while a large majority of the decommissioning expenditures are pushed out into the future. The result is smaller annual accruals—and thus, rates—during operation, which are offset by compounding returns after a plant’s retirement. There are currently seven plants in active DECON⁴ and, with the exception of the San Onofre Nuclear Generating Station in California (SONGS 1 and 2), all began using the SAFSTOR alternative for at least some period of time. There are another 13 plants currently sitting in SAFSTOR. At the same time, however, we are observing an opposite trend involving the growth of third-party contractors who specialize in decommissioning nuclear plants and are able to achieve efficiencies that reduce the overall cost of decommissioning. The emergence of these third-party firms has resulted in a number of plants transitioning out of SAFSTOR and into immediate decommissioning, often years or decades earlier than planned.

The Zion plant in Illinois has been going through decommissioning under the responsibility of third-party contractor, EnergySolutions (*i.e.*, ZionSolutions), which began decommissioning the plant in 2010. We understand that EnergySolutions is expected to complete the decommissioning process on-time and on-budget and that it expects to release the site in 2020. These results are significant because Zion’s operating utility—Exelon—previously assumed that a decades-long SAFSTOR period would be required for its decommissioning trust to grow and become fully funded. Thus, the growth of third-party firms could actually reduce the prevalence of

² *Id.*

³ SAFSTOR is defined by the NRC as, “[a] method of decommissioning in which a nuclear facility is placed and maintained in a condition that allows the facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use.”

⁴ DECON is defined by the NRC as, “[a] method of decommissioning in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed and safely buried in a low level radioactive waste landfill or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations.”

SAFSTOR if plants are able to decommission at a cost that is less than previously anticipated.

Entergy announced plans to sell its Vermont Yankee plant to a third-party decommissioning firm, NorthStar Group Services. Like Exelon, Entergy had originally planned to enter a decades-long SAFSTOR period to allow its decommissioning trust funds to grow to a level sufficient to decommission the plant, but NorthStar stated that it can begin decommissioning immediately and complete it by 2030 and possibly as early as the mid-2020s. As we understand the transaction, NorthStar has taken over ownership of the plant and corresponding decommissioning trust. It will use the trust funds to decommission the plant and retain any unspent funds as profit from the transaction. In other words, NorthStar believes it can fully decommission the Vermont Yankee plant for less than Entergy anticipated when it originally planned to manage the decommissioning, and it was willing to take the risk associating with achieving these savings. The NRC approved the license transfer in October of 2018 and the Vermont Public Utility Commission issued an order approving the sale in December. The sale to NorthStar was completed in January of this year.

Holtec International (Holtec) has also emerged as a significant firm in the decommissioning industry. In August of 2018, Exelon announced that it was selling its Oyster Creek nuclear power plant to Holtec in a deal aimed at speeding the decommissioning process. Using this process, Holtec believes it can decommission Oyster Creek within eight years. Holtec International's subsidiaries completed the ownership transfer and acquisition of the Oyster Creek Plant on July 1, 2019. This follows the recent approval by the Nuclear Regulatory Commission (NRC) to transfer the plant's operating license to Holtec subsidiaries Oyster Creek Environmental Protection, LLC, as owner, and Holtec Decommissioning International, LLC, as operator, for decommissioning.

Also in August of 2018, Entergy announced plans to sell its Pilgrim and Palisades plants to Holtec in similar transactions. Like Oyster Creek, Holtec expects to decommission the Pilgrim plant in approximately 8 years, though the NRC is still reviewing the license transfer application and expects to make a decision on Pilgrim in the near future. Holtec is still developing a timeline for the Palisades decommissioning process, as the plant is not scheduled to retire until 2022.

Holtec then announced an agreement in April 2019 to acquire Entergy's Indian Point nuclear power plant units for expedited decommissioning. Under that agreement, Entergy will sell Units 1, 2, and 3⁵ to a Holtec subsidiary, transferring licenses, spent fuel, decommissioning liability, and nuclear decommissioning trusts for the units.

⁵ Unit 1 was retired in 1974. Unites 2 and 3 are scheduled to retire in April of 2020 and April of 2021, respectively.

Finally, last month, Duke Energy Florida announced they would ask regulators for permission to begin active decommissioning of the Crystal River Nuclear Plant. The plant was shut down in 2009 for containment repairs, and Duke announced in 2013 it would be permanently shut down. Since that time, the plant has remained in SAFSTOR. The utility finalized a contract with Accelerated Decommissioning Partners to do the decommissioning work at a cost of approximately \$540 million. They now expect the plant to be decommissioned by 2027 with only the dry cask storage facility remaining thereafter.

With all of that said, we recognize that potentially transferring decommissioning responsibility to a third party would be a very significant decision for the Company, our stakeholders, and the Commission. Likewise, we believe any decision to plan for a period of SAFSTOR would represent a very significant change in course for the same parties and the State of Minnesota. After surveying the industry and taking account of the regulatory processes and stakeholder outreach necessary to adopting either strategy, we have concluded that it is premature to plan for decommissioning on the basis of either SAFSTOR or the use of a third-party decommissioning firm. Moreover, after carefully evaluating the industry and talking to numerous industry experts, we have come to the conclusion that it is too early to judge the success of the third-party decommissioning industry. While several agreements have been announced, only one plant (Zion) has actually gone through a significant portion of the decommissioning process using a third-party firm. And it remains to be seen how that project will conclude and what the final financial picture will be when EnergySolutions ultimately releases the site in 2020.

Likewise, because the success of the decommissioning industry appears likely to have a direct impact on the prevalence of SAFSTOR, we view the strategic landscape for decommissioning as in a state of flux. To be clear, we see positive trends playing out in real time in the decommissioning industry, and we remain optimistic that the growth of third-party decommissioning firms and the corresponding economies of scale they can bring to these efforts could significantly decrease the costs associated with decommissioning nuclear facilities over the next decade. Fortunately, Xcel Energy is well-positioned to monitor these trends as part of upcoming Triennial filings and IRPs as we move into and through the 2020s, and we can refine our decommissioning planning strategy as additional projects are completed and the decommissioning industry matures and hopefully proves sustainable. At this time, however, we are not prepared to make any recommendations with respect to changing the way we plan for decommissioning as a result of either the SAFSTOR alternative or the emergence of third-party firms.

B. DOE Reimbursements

We have concluded, however, that it is reasonable to change the way we plan for decommissioning when it comes to DOE reimbursements for dry fuel storage costs. After working closely with our consultant and analyzing both our legal rights relative to the DOE and the industry landscape, we believe it is reasonable to assume that Xcel Energy will continue to receive DOE reimbursement of its dry fuel storage costs into and through decommissioning. We have drawn this conclusion on the basis of several factors.

First, we looked to the Standard Contract underlying our potential legal claims and settlements with the DOE. It states that:

The term of this contract shall be from the date of execution until such time as DOE has accepted, transported from the Purchaser's site(s) and disposed of all [spent nuclear fuel] and/or [high-level radioactive waste] of domestic origin from the civilian nuclear power reactor(s) specified in appendix A.⁶

Similarly, the section of the contract defining scope states:

The services to be provided by DOE under this contract shall begin, after commencement of facility operations, not later than January 31, 1998 and shall continue until such time as all [spent nuclear fuel] and/or [high-level radioactive waste] from the civilian nuclear power reactors specified in appendix A . . . has been disposed of.

Thus, nothing in the Standard Contract limits the DOE's responsibility for disposing of spent fuel only during the operational period of the plant. In fact, the contract explicitly applies *until* all such spent fuel has been disposed of—meaning that DOE's obligations under the contract persist through plant retirement and decommissioning. The Standard Contract is included here as Attachment B.

Second, we have monitored other nuclear operators going through the decommissioning process and confirmed that they have continued to seek and receive reimbursements from the DOE for incurred dry cask storage costs pursuant to settlement agreements with the Department of Energy. These include both the Oyster Creek and Fort Calhoun plants, as noted by Mr. Levin at page 4 of his report. In other

⁶ Both Prairie Island and Monticello are specified in Appendix

words, these plants' dry cask storage costs are being covered by the DOE reimbursements rather than the plants' NDTs, which has provided additional assurance to the Company that the DOE understands its obligation under the Standard Contract consistent with our own interpretation.

Third, we have relied on the expertise and experience of Mr. Levin, who has advised the Company that it is reasonable in light of his experience and judgment to assume that it will continue to receive reimbursements from the Department of Energy for dry fuel storage costs into and through the decommissioning process. Moreover, should the Department of Energy—for some reason—elect not to renew Xcel Energy's settlement agreement at some point in the future, Mr. Levin notes that the Department of Justice (representing the Department of Energy) has failed to meaningfully prevail in actual litigation over the Standard Contract and, in fact, has often been required to pay more in damages than it agrees to reimburse through its various settlement agreements.⁷ Thus, absent continuing settlements with the DOE, we believe the Company would continue to receive reimbursement of its dry fuel storage costs (in the form of damages) through litigated resolutions. And while a litigated outcome may result in additional delay in receiving reimbursement of dry fuel storage costs, these outcomes may actually result in a higher recovery percentage, which would at least partially offset the costs of delay and litigation.

This is a significant development. Indeed, a substantial portion of our decommissioning cost estimate is comprised of dry cask storage costs that are eligible for reimbursement (or potentially recoverable through damages) from the DOE. To date, we have been reluctant to assume the continuation of DOE refunds into and through the decommissioning process because we have long taken a conservative approach to ensuring that we are well-positioned to decommission our plants at the conclusion of operations. Today, in light of recent developments and our expert's conclusions, we are recommending a change to that approach while nevertheless hewing to our belief that conservatism is warranted when planning for decommissioning of our nuclear facilities. To that end, we asked Mr. Levin to run accrual scenarios based on a 90% and 75% recovery of dry fuel storage costs from the DOE. We currently recover more than 90% of our annual dry fuel storage costs, after the DOE adjusts our reimbursement request to disallow certain costs it deems outside the relevant contractual obligations. For purposes of planning for decommissioning many years into the future, however, we are recommending a more conservative approach. Specifically, we believe the Commission should look to the 75% and 90% scenarios as guideposts in this process.

⁷ Levin Report at 4-5.

Mr. Levin's calculations are based on the same assumptions we used in the 2017 Triennial filing in order to give the Commission an apples-to-apples comparison between an accrual calculated on the basis of assuming continuation of the DOE reimbursements and one that is not (*i.e.*, the \$44.4 million ordered by the Commission in January 2019). Using these inputs, Mr. Levin calculates an accrual of \$6.9 million using the 90% recovery assumption and \$11.6 million using the 75% recovery assumption. That said, consistent with the Commission's direction to update our inputs in this filing, we have also calculated the NDT accrual using the 90% and 75% DOE assumptions from Mr. Levin's report in conjunction with updated earnings projections from our Investment Advisor (Goldman Sachs Asset Management). This updated analysis yields accruals of \$18.2 million (90%) and \$27.4 million (75%) respectively. These increased accrual calculations are due to lower earnings projections as of May of 2019, compared to our projections in December of 2017, when we filed our 2017 Triennial. These lower earnings projections are largely due to decreasing real interest rates during this period, which put downward pressure on expected portfolio returns. We provide these updated accrual calculations as Attachment C and a list of our updated earnings assumptions and inputs as Attachment D.

We believe an accrual calculation at the midpoint of these updated calculations is reasonable and conservative. That results in an accrual of \$22.8 million. That said, we believe there is a range of reasonable conclusions with respect to setting the accrual. We believe this includes the \$14 million currently reflected in rates, which the Commission could determine to be sufficient until our next Triennial in 2020, given our now-ongoing IRP and our proposal to extend Monticello until 2040. Likewise, we believe the Commission could also move closer to the 75% scenario for DOE reimbursements and set the accrual approximately \$27 million. That said, we believe our middle approach and an accrual of \$22.8 million reflects an appropriate balance between conservatively planning for decommissioning while being mindful of intergenerational equities and maintaining reasonable customer rates. Alternatively, the Commission could consider a one-year extension of its prior decision and retain the accrual at its current level (\$14 million), pending additional review of all issues addressed in this filing.

C. End of Life Nuclear Fuel Accrual

The End of Life Nuclear Fuel Accrual provides funding for the unused nuclear fuel in the reactor at the end of the plants license. Since the fuel is amortized as it is burned, this remaining unused/unburned fuel would be subject to write-off and would result in ratepayers at the end of license being disproportionately burdened with this expense. The End of Life Nuclear Fuel accrual avoids this burden by spreading the expense over the life of the units. A more thorough explanation of the accrual is available in the 2017

triennial filing⁸. The submittal uses a sinking fund formula to calculate the accrual, which takes into account the remaining life of the plant and the amount already collected. Since the proposed lower 2019 nuclear fuel accrual was deferred to 2020, a higher amount was accrued for in 2019. Additionally, the sinking fund calculation results in increasing accruals year-over-year which means calculating the accrual as of 2020 instead of 2019 will have a small impact on the amount as well. As a result, the Company believes it is appropriate to update the 2020 nuclear fuel accrual to show the small net increase resulting from having accrued more than was assumed in the proposed 2019 calculation and preparing the calculation as of 2020. The Company submits Attachment E in order to complete the record in this regard, and proposes the 2020 accrual be updated to a Minnesota Retail jurisdictionalized amount of \$2,029,394 as reflected in the attached.

D. Proposed Rulemaking on Use of NDT Funds Prior to Plant Retirement

Finally, at the Commission's April 18, 2019 hearing in Docket Nos. E002/M-15-1089 and E002/M-17-828, the Company committed to providing an update on a pending Petition for Rulemaking at the NRC related to pre-shutdown disbursement of NDT funds for decommissioning purposes. The Company—both independently and through its membership in the Nuclear Energy Institute (NEI)—has been closely monitoring this proceeding. The petition was filed on February 22, 2019 by EnergySolutions, LLC, and requests that the NRC revise its regulations (specifically 10 CFR part 50, §§ 50.2 and 50.82) to allow access to NDT funds for the removal of major radioactive components before the permanent cessation of operations at a facility. The petition was docketed at the NRC as Docket No. PRM-50-119, and the NRC has requested public comments on the petition, which are due by August 26, 2019. A summary of the proposed rules from the Federal Register is included as Attachment F.

The Company generally supports EnergySolution's petition, as we believe the revised rules will result in greater optionality as plants approach and plan for decommissioning. We are currently working with NEI and other nuclear operators to discuss an approach to providing comments in response to the NRC's request for public comments. We anticipate that the rulemaking will be pending at the NRC for some time and will provide updates to the Commission in future Triennial and other NDT filings.

Dated: July 15, 2019

Northern States Power Company

⁸ Attachment H to the initial petition filed by the Company in docket E-002/M-17-828

Evaluation of Alternative Decommissioning Funding Profiles For Monticello and Prairie Island

Xcel Energy (Xcel) has submitted a Petition¹ to the Minnesota Public Utilities Commission (MPUC), updating the amount necessary to recover from ratepayers, to fund decommissioning of Monticello and Prairie Island Units 1 & 2 nuclear units. In its Petition, Xcel noted that in general, due primarily to falling expected long-term returns on investments, increased funding would be required to satisfy decommissioning liability funding requirements.

Xcel requested AHL Consulting (AHL) review Xcel's conclusions in this petition and initially using one decommissioning scenario – DECON 60-year spent nuclear fuel (SNF) on site, with no “re-casking” – determine how the Department of Energy (DOE) reimbursement of SNF management costs might affect decommissioning revenue requirements. Given the results of the Monticello and Prairie Island DECON 60-year SNF on site with no “re-casking” investigation, a short discussion of extending this analysis to other Monticello and Prairie Island decommissioning scenarios is also provided.

Xcel's supporting documentation² identified the revenue requirements for decommissioning annuities would increase from \$14,030,831 to \$45,593,406 for Monticello and Prairie Island. The following analysis shows that by incorporating the assumption that a reasonable probability exists for Xcel to receive reimbursements from DOE for SNF storage after retirement, the current annuity of \$14,030,831 is enough to provide reasonable assurance of full decommissioning funding using Xcel's Annuity Model as provided in Schedule F.02 of its 2017 Triennial Filing in Docket No. E-002/M-17-828.

I. Current Assumptions for the Selected Monticello and Prairie Island Decommissioning Scenarios

Recent decommissioning cost estimates for Monticello and Prairie Island have been prepared by TLG Services, Inc.^{3,4} The suite of decommissioning scenarios analyzed included Scenario 2, DECON with 60-year DFS (Dry Fuel Storage) for both plants. Upon retirement, all SNF is moved into DFS and the balance of the plant is decommissioned per NRC and other requirements. The timeline assumes SNF remains on site for a period of 60 years after shutdown, before all of it has been accepted by DOE for interim storage or disposal.

¹ *In the Matter of the Petition of Northern States Power Company for Approval of the 2019-2021 Triennial Nuclear Decommissioning Study & Assumptions*, Docket No. E002/M-17-828, December 1, 2017.

² Docket No. E002/M-17-828, Schedule F.02, “Accruals 2019 DECON (60-Year).”

³ Docket No. E002/M-17-828, Schedule L, “Decommissioning Cost Analysis for the Monticello Nuclear Generating Plant,” Document X01-1725-002, Rev. 0, TLG Services, Inc., October 2017.

⁴ Docket No. E002/M-17-828, Schedule M, “Decommissioning Cost Analysis for the Monticello Nuclear Generating Plant,” Document X01-1725-002, Rev. 0, TLG Services, Inc., October 2017.

The TLG estimate includes 100% of the total costs to decommission Monticello and Prairie Island. Based upon the electrical power demand of Minnesota Retail customers, Xcel estimates that Minnesota’s usage of the plants is 73.4886 percent. The remaining 26.5114 percent of the decommissioning financial obligations reside with Wisconsin, North Dakota and South Dakota Retail customers.

Goldman Sachs Asset Management (GSAM) has provided escalation and portfolio return-on-investment analyses^{5,6} in support of Xcel’s Petition, which Xcel has used to project funding requirements for the current triennial proceeding. Regarding the return on investments Xcel may expect, GSAM has suggested the following after-tax returns⁷ for the Nuclear Decommissioning Trust (NDT) funds:

Nuclear Unit	After-Tax Return on NDT Investments During Operations	After-Tax Return on NDT Investments During Decommissioning
Monticello	5.01%	4.43%
Prairie Island 1	4.99%	4.15%
Prairie Island 2	5.04%	4.09%

GSAM has projected decommissioning cost escalation, based upon Labor and Non-Labor costs, and suggests the following for both plants:

Labor Cost Escalation	Non-Labor Cost Escalation
4.05%	2.85%

Xcel has provided tax-adjusted NDT fund balances as of June 30, 2017 to be \$623,672,182, \$374,367,055 and \$420,208,967, for Monticello, Prairie Island Unit 1 and Prairie Island Unit 2, respectively. Using these starting fund balances and the GSAM projected cost escalation and return on investments, Xcel has determined the revenue requirements for decommissioning annuities to be \$45,593,406 for the nuclear fleet.⁸

⁵ Docket No. E002/M-17-828, Schedule C, “Escalation Analysis.”

⁶ Docket No. E002/M-17-828, Schedule D, “Portfolio Analysis.”

⁷ GSAM notes that the composite effective tax rate (Federal plus State) for the NDTs is 27.84 percent.

⁸ Docket No. E002/M-17-828, Schedule F.02, “Accruals 2019 DECON (60-Year).”

II. Reimbursement of SNF Management Expenses

A. DOE Standard Contract and DOE's Failure to Begin Performance Removing SNF from Commercial Nuclear Power Plants

Congress enacted the Nuclear Waste Policy Act⁹ (NWPA) assigning the responsibility for disposal of the spent nuclear fuel created by the operation of commercial nuclear power reactors to the DOE. The NWPA authorized the DOE to enter into contracts for such disposal – which came to be called “Standard Contracts” – with parties possessing SNF, and such contracts were effectively made mandatory for nuclear utilities. The Standard Contract established January 31, 1998 as the date DOE would begin performance accepting SNF for disposal.

As the 1998 DOE Start Date passed without DOE performance, title holders of SNF petitioned the United States Court of Appeals for the D.C. Circuit, directly under the Act, to compel performance. The D.C. Circuit held that there was an unconditional statutory obligation on the part of DOE to commence performance by January 31, 1998 but stopped short of granting mandamus relief or compelling the DOE to commence acceptance of SNF. The D.C. Circuit held that there was a potentially adequate alternative remedy for the utilities, namely damages for breach of contract. With the SNF accumulating at reactor sites, utilities began to incur substantial costs for storage and management of the waste. The first SNF damages lawsuits were filed in the U.S. Court of Federal Claims in 1998, and by 2004 every utility with SNF in dry cask storage in the country had filed such a lawsuit.¹⁰

B. Exelon Settlement Agreement Framework

DOE's settlement agreements with the commercial nuclear power industry began with the agreement between Exelon Corporation (Exelon) and the DOJ in 2004. The intent behind these settlements is to ensure utilities are compensated for costs they are incurring due to DOE's failure to perform. The Exelon settlement resolved all pending SNF litigation brought against the Government by Exelon and its subsidiaries. Under the Exelon Settlement Agreement, the Federal Government is to reimburse Exelon for the actual incurred costs of spent fuel storage directly attributable to the Government's failure to begin accepting spent fuel by January 31, 1998. Reimbursements are to be made only after actual incurred costs have been verified by DOE as being both allowable and reasonable, as defined in the agreement, and would be reimbursed on an annual basis.

The Exelon Settlement Agreement established acceptance rates, i.e., rates at which the delay damages are calculated under the Agreement, that were significantly lower - 900 metric tonnes uranium (MTU) per year through 2014 and 2,100 MTU per year thereafter - than the 3,000 MTU planned by the DOE for steady-state repository operations. It is this provision in the Settlement Agreement that allows the DOE eventually to "catch up" on acceptance and to terminate payments under the Settlement Agreement. Exelon will incur reimbursable costs for spent fuel storage until the DOE has caught up on the backlog of

⁹ "Nuclear Waste Policy Act of Amendments," U.S. Department of Energy's Office of Civilian Radioactive Management, 1982.

¹⁰ Fagg, Brad, "Spent Nuclear Fuel Damages Cases: A Chronological 'Cheat Sheet' of Some Key Decisions by the United States Court of Appeals for the Federal Circuit", Morgan, Lewis & Bockius, LLP, April 2012.

spent fuel that has accumulated as a result of the delay in beginning acceptance and is picking up Exelon's fuel on time according to the acceptance schedule. Six utilities utilized the Exelon Settlement Agreement framework.¹¹

C. New Framework Settlement Agreement

In March 2011, the DOJ offered to all remaining SNF litigants a New Framework settlement agreement. Among other things, the New Framework settlement agreement provides that the Government's performance liability is to be calculated utilizing the acceptance rates included in the 1987 Draft Mission Plan Amendment¹² rather than the acceptance rates utilized in the Exelon Settlement Agreement framework. Under this acceptance rate, there is no "crossover point" as described in Exelon Settlement Agreement. Rather, the Government's liability for SNF storage costs will continue until the SNF is removed from the reactor sites covered by the new agreement. The DOJ determined that it will apply these revised terms and conditions to all future settlement agreements.¹³

The DOJ offers the New Framework Settlement Agreement to SNF title holders in three-year tranches. That is, every three years, DOJ and SNF title holders must renew the agreements. DOE's Office of Standard Contract Management continues to align all New Framework Settlement Agreement signatories to update their agreement at roughly the same time. These agreements have been consistently renewed at the end of 2013, 2016, and now anticipated to be renewed at the end of 2019.

In 2011, Northern States Power Company (NSP) entered into a New Framework Settlement Agreement with DOJ for Monticello and Prairie Island. Upon Xcel's assumption of title to SNF at Monticello and Prairie Island, Xcel has assumed NSP's New Framework Settlement Agreement with the DOJ, to compensate Xcel for costs incurred due to DOE's failure to begin removing SNF from commercial nuclear power plant sites nationwide, beginning in January 1998. DOE's partial breach of the Standard Contract resulted in Xcel continuing to move SNF into dry cask storage during plant operations, and it is projected that Xcel will have to move all SNF into dry cask storage upon shutdown beginning in 2030, 2033 and 2034, from Monticello, Prairie Island Unit 1 and Prairie Island Unit 2, respectively.

D. Future Reimbursement of SNF Expenses Incurred

As of this date, there has been no nuclear plant retirement which has a settlement agreement with terms similar to Xcel's New Framework Settlement Agreement. However, other nuclear plants with Exelon Settlement Agreement frameworks (Oyster Creek and Fort Calhoun) appear to continue utilizing their settlement agreements into plant retirement. DOE seems to desire continuing the reimbursement process for nuclear plant owners for DOE's failure to perform, through settlement agreement arrangements rather than through litigation.

¹¹ Memorandum, U.S. Government Department of Energy, to Owen F. Barnwell, Acting Chief Financial Officer from David K. Zabransky, Director, Office of Standard Contract Management, October 26, 2011, pp. 3-6.

¹² "OCRWM Mission Plan Amendment," DOE/RW-0128, Office of Civilian Radioactive Waste Management, U.S. Department of Energy, Washington, D.C., June 1987.

¹³ Op. Cit., Memorandum, U.S. Government Department of Energy, to O. Barnwell from D. Zabransky, pg. 6.

Based upon my professional experience and judgement, my interactions with DOE and DOJ during the Exelon Settlement Agreement negotiations, and my observations of DOJ’s continuing failure to prevail in U.S. Court of Federal Claims litigation, I believe it is reasonable to assume that Xcel will continue its Settlement Agreement arrangement and reimbursements, post retirement, for its nuclear units. I believe DOE will continue to pursue settlement as a method of meeting contractual obligations, rather than facing the time and cost associated with litigating Standard Contract claims, where DOJ has not prevailed in any meaningful way (they have typically lost more in reimbursement costs, than the amounts I have assumed in this study that Xcel would potentially receive through a settlement agreement).

If for some reason or another, if either of the parties determine they prefer litigation to settlement in the future, it is my expectation that while there will be litigation costs incurred, and court-ordered reimbursements will not occur in as timely a fashion as settlement agreement payments, based upon litigation history to date, Xcel is likely to prevail with similar or greater reimbursements than contemplated by this study.

E. Assumed DOE Performance

Xcel’s Settlement Agreement provides compensation for SNF management costs based upon how DOE would have performed had they began accepting SNF for disposal in January 1998. The basis for compensation is the amount of Allocations (MTU) that would have been accepted by DOE from the plants, based upon DOE’s “Oldest Fuel First” policy, at rates set forth in DOE’s 1987 Mission Plan. The following table has been assembled, using historical (through June 2013)¹⁴ and AHL-projected future SNF discharges from Monticello and Prairie Island, through shutdown.

Table 1
Settlement Agreement Projected Allocations, MTUs per Year

Year	Annual Rate Across Industry	Monticello	Prairie Island 1	Prairie Island 2
1998	1200	41.8	0.0	0.0
1999	1200	51.9	29.8	16.0
2000	1200	3.7	16.1	14.0
2001	1200	1.5	16.4	16.0
2002	1200	27.2	0.0	16.1
2003	2000	19.2	32.0	16.5
2004	2650	64.7	31.1	31.2
2005	2650	0.0	24.1	34.8
2006	2650	46.0	15.0	32.7
2007	2650	0.0	13.5	16.1
2008	3000	22.7	19.4	19.0
2009	3000	24.2	17.6	16.1

¹⁴ “Nuclear Fuel Data Survey Form GC-859,” Energy Information Administration, U.S. Department of Energy, June 30, 2013.

Table 1 (cont.)
Settlement Agreement Projected Allocations, MTUs per Year

Year	Annual Rate Across Industry	Monticello	Prairie Island 1	Prairie Island 2
2010	3000	22.8	19.0	15.4
2011	3000	19.4	14.7	0.0
2012	3000	24.8	17.5	17.5
2013	3000	22.0	15.9	17.0
2014	3000	0.0	17.1	15.7
2015	3000	24.7	17.2	16.8
2016	3000	17.7	0.0	21.1
2017	3000	22.6	17.1	19.6
2018	3000	25.0	15.8	0.0
2019	3000	0.0	16.8	16.8
2020	3000	24.8	0.0	19.6
2021	3000	28.8	19.7	17.2
2022	3000	0.0	17.2	16.8
2023	2660	25.8	15.8	18.7
2024	1800	0.0	0.0	0.0
2025	3000	26.5	20.6	17.6
2026	3000	0.0	17.9	17.6
2027	3000	27.0	17.9	17.6
2028	3000	27.0	17.9	17.6
2029	3000	0.0	17.9	0.0
2030	3000	27.0	17.9	17.6
2031	3000	27.0	0.0	17.6
2032	3000	27.0	17.9	17.6
2033	3000	0.0	17.9	17.6
2034	3000	27.0	17.9	17.6
2035	3000	27.0	35.7	17.6
2036	3000	84.4	0.0	17.6
2037	3000	0.0	17.9	17.6
2038	3000	0.0	17.9	17.6
2039	3000	0.0	43.2	17.6
2040	3000	0.0	0.0	42.6
2041	3000	0.0	0.0	0.0

F. SNF Management Cost Scenarios

Notwithstanding the small variations which may occur in future SNF discharges, it is important to note that based upon the Settlement Agreement, Monticello, Prairie Island Unit 1 and Prairie Island Unit 2 would have all the Allocations required to cover all SNF management costs beginning in 2037, 2040 and

2041, respectively. Using this information, a “90% Minimum” DOE cost reimbursement cash flow model was developed which assumed:

- Beginning in 2037, Xcel would recover 90% of the total costs for managing SNF at the Monticello site until DOE accepted all of it for disposal by 2091.
- Beginning in 2040, Xcel would recover 90% of the total costs for managing SNF at the Prairie Island 1 site until DOE accepted all of it for disposal by 2078.
- Beginning in 2041, Xcel would recover 90% of the total costs for managing SNF at the Prairie Island 2 site until DOE accepted all of it for disposal by 2078.

A “90% Pool-to-Pad and O&M” cash flow was developed, which not only included potential DOE cost reimbursements for operations and maintenance from 2037 and beyond (the “90% Minimum” scenario), but also included 90% DOE cost reimbursements for moving all SNF remaining in the spent fuel pool upon shutdown from each unit, into dry cask storage. In order to estimate what long-term operation and maintenance costs, and what costs for “pool-to-pad” (the transfer of all SNF remaining in the spent fuel pools upon shutdown into dry cask storage) might be recoverable under the Settlement Agreement, the TLG decommissioning cost estimate cash flows were relied upon.^{15,16}

Another cash flow was developed – a “75% Minimum” – which follows the 90% Minimum scenario described above. Rather than assuming a 90% DOE cost reimbursement for moving SNF from “pool-to-pad” and long-term operation and maintenance costs, the 75% Minimum cash flow assume a 75% DOE cost reimbursement. The 75% cost reimbursement is considered a reasonable floor for recoveries under Xcel’s Settlement Agreement.

G. “90% Minimum” Scenario SNF Management Costs

The “90% Minimum” scenario identifies costs incurred for potential reimbursement under the Xcel Settlement Agreement, related to long-term operations and maintenance of the Independent Spent Fuel Storage Installation (ISFSI) at each plant site. In the decommissioning scenario under consideration here, the balance of the plant has already been decommissioned.

1. Monticello SNF Operations and Maintenance Costs

Referring to a more detailed breakdown of Monticello SNF management costs during these periods,¹⁷ the following cost categories and breakdown of costs may be found:

¹⁵ Docket No. E002/M-17-828, Schedule L, Table 3.2, beginning page 81 of 236.

¹⁶ Docket No. E002/M-17-828, Schedule M, Table 3.3 and Table 3.4, beginning page 87 of 325.

¹⁷ Docket No. E002/M-17-828, Schedule A.17, “Spent Fuel Costs.” For example, Year 2061.

Monticello Spent Fuel Management Cost Element	Annual Cost (\$, thousands)
Emergency Planning Fees	150
ISFSI Operating Costs	119
Security Staff Cost	4,485
Utility Staff Cost	1,137
Insurance	793
Property Taxes	698
NRC ISFSI Fees	245
Fixed Overhead	286
Railroad Track Maintenance	133

From the TLG decommissioning cost estimate for Monticello, in Table 3.2, during years when there are little operations and maintenance activities other than storage, the Labor costs are conservatively \$5.9 million per year, and the Non-Labor costs are conservatively \$2.1 million per year. In the costs tabulated above, the Security Staff Cost, Utility Staff Cost and Fixed Overhead account for the Labor cost component (\$5.9 million), and the balance contribute to the Non-Labor cost component (\$2.1 million). Based upon language in the Settlement Agreement, AHL considers these costs to have a reasonable assurance of recovery, except for the Railroad Track Maintenance.

The reimbursement of costs is conservatively assumed in the following analyses to be 90%, or \$5.3 million of Labor costs and \$1.9 million of Non-Labor costs. The cash flows found in Schedule F.02¹⁸ are adjusted accordingly for Years 2038 through 2091. (Note that the benefit of the reimbursements is assumed to lag the occurrence of the costs by at least six to twelve months.)

2. Prairie Island Unit 1 and Unit 2 Operations and Maintenance Costs

Referring to a more detailed breakdown of Prairie Island SNF management costs during these periods,¹⁹ the following cost categories and breakdown of costs may be found:

Prairie Island Unit 1&2 Spent Fuel Management Cost Element	Annual Cost (\$, thousands)
Emergency Planning Fees	75
ISFSI Operating Costs	59
Security Staff Cost	2,302
Utility Staff Cost	569
Insurance	281
Property Taxes	1,269
NRC ISFSI Fees	180
Fixed Overhead	175
Railroad Track Maintenance	66

¹⁸ Docket No. E002/M-17-828, Schedule F.02, "Accruals 2019 DECON 60 Years."

¹⁹ Docket No. E002/M-17-828, Schedule A.17, "Spent Fuel Costs." For example, Year 2045.

From the TLG decommissioning cost estimate for Prairie Island Units 1 and Unit 2, in Tables 3.3 and 3.4, during years when there is little operations and maintenance activities other than storage, the Labor costs are conservatively \$3.0 million per year, and the Non-Labor costs are conservatively \$1.9 million per year, for each Unit. Based upon language in the Settlement Agreement, AHL considers these costs to have a reasonable assurance of recovery, except for the Railroad Track Maintenance.

As with Monticello, the reimbursement of costs is conservatively assumed in the following analyses to be 90%, or \$2.7 million of Labor costs and \$1.7 million of Non-Labor costs, for each unit. The cash flows found in Schedule F.02²⁰ are adjusted accordingly for Prairie Island Units 1 and Unit 2, for Years 2041 through 2078, and 2042 through 2078, respectively. (Note that the benefit of the reimbursements is assumed to lag the occurrence of the costs by at least six to twelve months.)

H. “90% Pool-to-Pad and O&M” Scenario SNF Management Costs

In addition to the reimbursed costs identified by the “90% Minimum” scenario above, the “90% Pool-to-Pad and O&M” scenario assumes that 90% of costs incurred post-shutdown, for moving the complement of SNF remaining in the spent fuel pool into dry cask storage (the “pool-to-pad” operations) are reimbursed by DOE. There is a greater likelihood DOE may object to these costs being recovered.

3. Monticello “Pool-to-Pad” Costs

The costs for moving the remaining SNF in the plant out to dry cask storage upon shutdown is reflected in the following lines in the Monticello TLG decommissioning cost estimate, Appendix D:²¹

Monticello Decommissioning Cost Estimate Line Number	Cost (\$, thousands)
1a.3.1	1,404
1b.3.8	417
2a.3.4	15,592
2b.3.4	75,807
2d.3.5	31,120

Costs for “pool-to-pad” operations total \$124.3 million. These costs will be incurred through Period 2d of the TLG decommissioning cost estimate, or September 2035. At shutdown, DOE will have provided enough Allocations to cover 78% of all SNF at the Monticello site. Xcel is likely to perform “pool-to-pad” operations within five years after shutdown, or by the end of 2035. Even though 100% of Monticello’s Allocations are not to be received until 2037, it is assumed here that DOE would reimburse “pool-to-pad” costs based upon all Allocations received and all SNF moved into dry cask storage.

²⁰ Docket No. E002/M-17-828, Schedule F.02, “Accruals 2019 DECON 60 Years.”

²¹ Docket No. E002/M-17-828, Schedule L.

The analysis assumes recovery of 90% of all “pool-to-pad” costs. This recovery rate has been selected to reflect a reasonable view of potential reimbursements. Additionally, DOE reimbursements have been assumed to occur from 2032 through 2036, on a linear basis of \$22.4 million per year. (Note that the benefit of the reimbursements is assumed to lag the occurrence of the costs by at least six to twelve months.)

4. Prairie Island Unit 1 and Unit 2 “Pool-to-Pad” Costs

The costs for moving the remaining SNF in the plant out to dry cask storage upon shutdown is reflected in the following lines in the Prairie Island TLG decommissioning cost estimate, Appendix D:²²

Prairie Island 1 Decommissioning Cost Estimate Line Number	Cost (\$, thousands)
1a.3.1	
1b.3.8	183
2a.3.4	1,698
2b.3.4	468
2c.3.1	82,717
2d.3.5	15,115

Prairie Island 2 Decommissioning Cost Estimate Line Number	Cost (\$, thousands)
1a.3.1	1,411
1b.3.8	426
2a.3.4	375
2b.3.4	6,252
2c.3.1	76,602
2d.3.5	15,115

Costs for “pool-to-pad” operations total \$100.2 million for Unit 1 and \$100. million for Unit 2. These costs will be incurred through Period 2b of the TLG decommissioning cost estimate, or October 2039. At shutdown, DOE will have provided enough Allocations to cover 81% and 82% of all SNF at the Prairie Island Unit 1 and Unit 2, respectively. Xcel is likely to perform “pool-to-pad” operations within five years after shutdown, or by the end of 2039 for both units. Even though 100% of Prairie Islands Allocations are not to be received until 2041, it is assumed here that DOE would reimburse “pool-to-pad” costs based upon all Allocations received and all SNF moved into dry cask storage.

²² Docket No. E002/M-17-828, Schedule M.

I. “75% Minimum” Scenario SNF Management Costs

The “75% Minimum” scenario follows the same logic as the “90% Minimum” SNF management cost recoveries as described above for the “90% Minimum” scenario, with the exception that only 75% of the costs are assumed to be recovered through the Settlement Agreement.

III. Results Using Xcel 2019 Annuity Models

Using Xcel’s Annuity Model as provided in Schedule F.02 of its 2017 Triennial Filing in Docket No. E-002/M-17-828, the financial assumptions put forward by GSAM in Schedule C and Schedule D, and updating the cash flows for the “75% Minimum”, “90% Minimum” and “90% Pool-to-Pad and O&M” assumptions made above, the annual annuity requirements beginning in 2019 were recalculated and are tabulated below.

	Xcel Present Annuity for Decommissioning Funding	Xcel Proposed Annuity for Decommissioning Funding	Annuity Requirements for 75% Minimum Reimbursement Scenario	Annuity Requirements for 90% Minimum Reimbursement Scenario	Annuity Requirements for 90% Pool-to-Pad and O&M Reimbursement Scenario
Monticello	\$13,392,226	\$21,406,585	\$1,721,752	0	0
Prairie Island 1	\$49,264	\$15,064,498	\$7,618,378	\$6,129,153	\$1,553,043
Prairie Island 2	\$589,341	\$9,122,323	\$2,227,789	\$848,882	0
Total Annuity	\$14,030,831	\$45,593,406	\$11,567,918	\$6,978,036	\$1,553,043

(Note: Where the calculation resulted in an annuity requirement of less than zero, the table above reflects a zero value.)

These updated annuity requirements suggest that by using reasonable assumptions regarding recovery of SNF management expenses through the Settlement Agreement, if the current annual annuity of \$14,030,831 were continued in 2019 and beyond, there should be excess funds remaining in the NDTs at the end of decommissioning.

IV. Results Expected for Other Decommissioning Scenarios Using the Xcel 2019 Annuity Models

A similar approach to adjusting TLG decommissioning cost estimate cash flows can be considered for all other Xcel decommissioning scenarios. Depending upon the length of time SNF resides in DFS – which varies substantially across the many scenarios, the effect upon the anticipated annuities required to fully fund decommissioning will also vary substantially. However, a reasonable conclusion can be drawn, based upon how DOE cost recoveries are applied, that in all cases, projected requirements for funding decommissioning across the fleet should decrease for the Xcel 2019 Annuity Models.

AHL CONSULTING

Profile

Adam Levin is a sole proprietor doing business as AHL Consulting, delivering consulting services to the commercial nuclear power industry and the U.S. Department of Energy, providing expertise in all areas of decommissioning and spent nuclear fuel (SNF) management strategy, operations and finances. He retired from the commercial nuclear industry in 2013 after ten years as the Director, Spent Fuel and Decommissioning for Exelon Generation Company (Exelon). While at Exelon, he provided governance and oversight of decommissioning and SNF management for Exelon's nuclear fleet of 17 operational and four (4) retired commercial nuclear reactors in Illinois, Pennsylvania and New Jersey.

During his 16 years with Exelon, he oversaw the development of decommissioning strategies and cost estimating for Exelon, providing the technical and financial guidance necessary to help Exelon meet its more than \$12B decommissioning obligation. He was Exelon's lead project manager and an architect of the agreement with EnergySolutions LLC, to decommission the dual-unit Zion Nuclear Power Station. He led the Exelon financial evaluation team, using Monte Carlo simulations to assess the risks and likelihood of project financial success prior to consummation of the deal. He later served on the Zion Station Project Review Advisory Board established to oversee the \$1B project, until his retirement in 2013.

Mr. Levin's responsibilities at Exelon included the safe management of more than 12,600 MTU of spent nuclear fuel (SNF) and special nuclear material, including governance and oversight of the deployment and operations of eight (8) Independent Spent Fuel Storage Installations (ISFSI)¹ and spent fuel pools at ten (10) operating and one (1) retired site across the Exelon fleet. He regularly supported internal communication activities, including lobbying assistance with SNF-related federal legislative efforts. He assisted with congressional and regulator visits to the sites, and provided appropriate support for Exelon Nuclear Communications including interviews with the public media.

Since the establishment of AHL Consulting in 2013, Mr. Levin been retained to provide consulting engineering services and expert witness testimony to both the public and private sectors on decommissioning and SNF management matters. His expertise in decommissioning and SNF management has been employed by Exelon, Xcel Energy, San Diego Gas & Electric, Duke Energy Florida, Entergy Corporation, Dairyland Power Cooperative, EnergySolutions, LLC, NAC International and the Electric Power Research Institute, among others both domestic and international, to support their decommissioning and SNF management activities. His expertise in utility SNF management has been extensively utilized by the DOE and the national laboratories in

¹ Peach Bottom, Limerick, Oyster Creek, Dresden, Quad Cities, Byron, Braidwood and LaSalle.

their exploration of siting, transportation, construction and operations of an interim storage facility for commercial SNF and high-level radioactive waste.

The Nuclear Energy Institute (NEI) has recently utilized material Mr. Levin authored in the development of decommissioning rulemaking.² He had made policy contributions through testimony representing Exelon before the Nuclear Regulatory Commission (NRC), and in presentations ranging across organizations as varied as the Nuclear Waste Technical Review Board, the Council of State Governments and Vanderbilt University.

Mr. Levin has interacted extensively with the NRC staff on numerous regulatory matters, with state agencies including expert testimony before the California Public Service Commission (CPUC) on behalf of SDG&E, and direct and indirect testimony preparation for the Illinois Commerce Commission and the New Jersey Senate.

² "Analysis of Allowable Uses of Decommissioning Trust Funds," Thomas E. Magette, PricewaterhouseCoopers, and Adam H. Levin, AHL Consulting, as referenced by "Use of the Nuclear Decommissioning Trust Fund," NEI 15-06 Revision 0, April 2015.

U.S. Department of Energy
Contract No.

Contract for Disposal of Spent Nuclear Fuel and/or High-level
Radioactive Waste

THIS CONTRACT, entered into this --- day of - - - 20-- , by and between the UNITED STATES OF AMERICA (hereinafter referred to as the “Government”), represented by the UNITED STATES DEPARTMENT OF ENERGY (hereafter referred to as “DOE”) and - - - - - , (hereinafter referred to as the “Purchaser”), a corporation organized and existing under the laws of the State of - - - - - (add as applicable: “acting on behalf of itself and - - - .”).

Witnesseth that:

Whereas, the DOE has the responsibility for the disposal of spent nuclear fuel and high-level radioactive waste of domestic origin from civilian nuclear power reactors in order to protect the public health and safety, and the environment; and

Whereas, the DOE has the responsibility, following commencement of operation of a repository, to take title to the spent nuclear fuel or high-level radioactive waste involved as expeditiously as practicable upon the request of the generator or owner of such waste or spent nuclear fuel; and

Whereas, all costs associated with the preparation, transportation, and the disposal of spent nuclear fuel and high-level radioactive waste from civilian nuclear power reactors shall be borne by the owners and generators of such fuel and waste; and

Whereas, the DOE is required to collect a full cost recovery fee from owners and generators delivering to the DOE such spent nuclear fuel and/or high level radioactive waste; and

Whereas, the DOE is authorized to enter into contracts for the permanent disposal of spent nuclear fuel and/or high-level radioactive waste of domestic origin in DOE facilities; and

Whereas, the Purchaser desires to obtain disposal services from DOE; and

Whereas, DOE is obligated and willing to provide such disposal services under the terms and conditions hereinafter set forth; and

Whereas, this contract is made and entered into under the authority of the DOE Organization Act (Pub. L. 95-91, 42 U.S.C. 7101 *et seq.*) and the Nuclear Waste Policy Act of 1982 (Pub. L. 97-425, 42 U.S.C. 10101 *et seq.*)

Now, therefore, the parties hereto do hereby agree as follows:

ARTICLE I - DEFINITIONS

As used throughout this contract, the following terms shall have the meanings set forth below:

1. The term *assigned three-month period* means the period that each Purchaser will be assigned by DOE, giving due consideration to the Purchaser's assignment preference, for purposes of reporting kilowatt hours generated by the Purchaser's nuclear power reactor and for establishing fees due and payable to DOE.
2. The term *cask* means a container for shipping bare or canistered spent nuclear fuel assemblies and/or high-level radioactive waste which meet all applicable regulatory requirements.
3. The term *civilian nuclear power reactor* means a civilian nuclear power plant required to be licensed under sections 103 or 104(b) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2133, 2134(b)).
4. The term *Commission* means the United States Nuclear Regulatory Commission.
5. The term *contract* means this agreement and any duly executed amendment or modification thereto.
6. The term *Contracting Officer* means the person executing this contract on behalf of the Government, and any other officer or civilian employee who is a properly designated Contracting Officer of the DOE; and the term includes, except as otherwise provided in this contract, the authorized representative of a Contracting Officer acting within the limits of his authority.
7. The term *delivery* means the transfer of custody, f.o.b. carrier, of spent nuclear fuel or high-level radioactive waste from Purchaser to DOE at the Purchaser's civilian nuclear power reactor or such other domestic site as may be designated by the Purchaser and approved by DOE.
8. The term *disposal* means the emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive waste with no foreseeable intent of recovery, whether or not such emplacement permits recovery of such waste.
9. The term *DOE* means the United States Department of Energy or any duly authorized representative thereof, including the Contracting Officer.
10. The term *DOE facility* means a facility operated by or on behalf of DOE for the purpose of disposing of spent nuclear fuel and/or high-level radioactive waste, or such other facility(ies) to which spent nuclear fuel and/or high-level radioactive waste may be shipped by DOE prior to its transportation to a disposal facility.

11. The term *full cost recovery*, means the recoupment by DOE, through Purchaser fees and any interest earned, of all direct costs, indirect costs, and all allocable overhead, consistent with generally accepted accounting principles consistently applied, of providing disposal services and conducting activities authorized by the Nuclear Waste Policy Act of 1982 (Pub. L. 97-425). As used herein, the term cost includes the application of Nuclear Waste Fund moneys for those uses expressly set forth in section 302 (d) and (e) of the said Act and all other uses specified in the Act.

12. The term *high-level radioactive waste (HLW)* means -

(a) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and

(b) other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation.

13. The term *electricity (kilowatt hours) generated and sold* means gross electrical output produced by a civilian nuclear power reactor measured at the output terminals of the turbine generator minus the normal onsite nuclear station service loads during the time electricity is being generated multiplied by the total energy adjustment factor. For purposes of this provision, the following definitions shall apply:

a. The term *Total Energy Adjustment Factor (TEAF)* means the sum of individual owners' weighted energy adjustment factors.

b. The term *Weighted Energy Adjustment Factor (WEAF)* means the product of an owner's energy adjustment factor times the owner's share of the plant.

c. The term *Owner's Energy Adjustment Factor (OEAF)* means the sum of the individual owner's adjustment for sales to ultimate consumers and adjustment for sales for resale.

d. The term *Owner's Share of the plant (OS)* means the owner's fraction of metered electricity sales, the owner's fraction of plant ownership, or the sponsor company's fixed entitlement percentage of the plant's output. This definition includes joint owners of generating companies or participants in a generation and transmission cooperative.

e. The term *Adjustment for Sales to ultimate Consumer (ASC)* means the owner's fraction of sales to the ultimate consumer multiplied by the owner's sales to ultimate consumer adjustment factor.

f. The term *Fraction of Sales to ultimate Consumer (FSC)* means the owner's fractional quantity of electricity sold to the ultimate consumer relative to the total of electricity sales (sales to ultimate consumers plus the sales for resale).

g. The term *Sales to ultimate Consumer Adjustment Factor (SCAF)* means one minus the quotient of all electricity lost or otherwise not sold for each owner divided by the total electricity available for disposition to ultimate consumers. Electricity lost or otherwise not sold includes:

- (1) Energy furnished without charge;
- (2) Energy used by the company;
- (3) Transmission losses;
- (4) Distribution losses; and
- (5) Other unaccounted losses as reported to the Federal Government 'Annual Report of Major Electric Utilities, Licensees and Others,' Federal Energy Regulatory Commission (FERC) Form No.1; Rural Electrification Administration (REA) Forms 7 and 11 if appropriate; or the 'Annual Electric Utility Report,' Energy Information Administration (EIA) Form EIA-861.

h. The term *Total Electricity Available for Disposition to Ultimate Consumers* means the reporting year's total of all of a utility's electricity supply which is available for disposition, expressed in kilowatt hours, and is equal to the sum of the energy sources minus the electricity sold for resale by the utility.

i. The term *Adjustment for Sales for Resale (ASR)* means the owner's fraction of sales for resale multiplied by the national average adjustment factor.

j. The term *Fraction of Sales for Resale (FSR)* means the owner's fractional quantity of electricity sold for resale by the utility relative to the total of electricity sales.

k. The term *National Average Adjustment Factor (NAF)* means the ratio of the national total of electricity sold to the national total of electricity available for disposition, based on the most recent 3 years of national data provided to the Federal Government, and will be set by the Contracting Officer. This term will be evaluated annually and revised in increments of .005.

l. Pumped storage losses. If the proportion of nuclear generated electricity consumed by a pumped-storage hydro facility can be measured or estimated and if the electricity losses associated with pumped storage facilities can be documented (e.g. based on routine and uniform records of district power data on contributions from different electricity sources), a prorated nuclear share shall be allowed as an offset to gross electricity generation reported on the annex A of appendix G, NWPA-830G form. Specific methodologies for calculating these offsets must be approved by the Contracting Officer in advance.

Instructions to annex A of appendix G, NWPA-830G provide the necessary information to calculate the energy adjustment factors.

14. The term *metric tons uranium* means that measure of weight, equivalent to 2,204.6 pounds of uranium and other fissile and fertile material that are loaded into a reactor core as

fresh fuel.

15. The term *Purchaser's site* means the location of Purchaser's civilian nuclear power reactor or such other location as the Purchaser may designate.

16. The term *quarterly Treasury rate* means the current value of funds rate as specified by the Treasury Fiscal Requirements Manual, Volume 1, Part 6, section 8020.20. This rate is published quarterly in the Federal Register prior to the beginning of the affected quarter.

17. The term *shipping lot* means a specified quantity of spent nuclear fuel or high-level radioactive waste designated by Purchaser for delivery to DOE beginning on a specified date.

18. The term *spent nuclear fuel (SNF)* means fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing.

19. The term *spent nuclear fuel and high-level radioactive waste of domestic origin* means irradiated fuel material used, and radioactive wastes resulting from such use, in nuclear power reactors located only in the United States.

20. The term *year* means the period which begins on October 1 and ends on September 30.

21. The term *acceptance* means the transfer of title to DOE and subsequent transportation to a DOE facility.

22. The term *bare fuel* means SNF that is not contained in a canister or other shielding.

23. The term *canister* means a sealed right-circular cylinder capable of holding multiple SNF assemblies that is designed and licensed for the storage and transport of SNF and may also be licensed for the aging and disposal of SNF.

24. The term *current avoided costs* means those costs not incurred by the Department for the acquisition of TAD-based canisters for transport of Purchaser's SNF at the time DOE accepts Purchaser's SNF in Purchaser-supplied TAD-based canisters.

25. The term *Procedures approved by DOE* means those procedures developed and approved by DOE to specify requirements for Purchaser compliance to implement the Commission's receive and possess requirements.

26. The term *Purchaser's adjusted acquisition cost* means the actual cost of the TAD-based canister to the Purchaser adjusted by the change in the Gross Domestic Product price deflator index from the time of the Purchaser's acquisition of the TAD-based canister to the time of DOE's acceptance of the TAD-based canister for transport.

27. The term *storage overpack* means a component of a canister-based storage system that

provides physical protection of the canister and SNF as well as other functions such as radiation shielding and heat dissipation.

28. The term *storage system* means a canister and a storage overpack certified for dry storage of SNF under 10 CFR Part 72.

29. The term *Storage System Purchase Agreement* means a contractual agreement between Purchaser and a third party to provide SNF dry storage systems.

30. The term *TAD-based canisters* means Transportation, Aging, and Disposal canisters containing multiple SNF assemblies that can provide transport, aging and disposal of SNF.

31. The term *TAD-based Transportation Systems* means TAD-based canisters fitted with transportation overpacks.

32. The term *performance date* means the date that is ten (10) years after the expiration of the original term of the operating license, or the term of any license extension(s), granted by the Commission for the facility named in Appendix A of this contract.

33. The term *final schedule* means the date by which Purchaser shall have completed all activities required to allow for the DOE acceptance and transport of SNF and /or HLW specified by DOE.

ARTICLE II - SCOPE

This contract applies to the delivery by Purchaser to DOE of SNF and/or HLW of domestic origin from civilian nuclear power reactors, acceptance of title by DOE to such SNF and/or HLW, subsequent transportation, and disposal of such SNF and/or HLW and, with respect to such material, establishes the fees to be paid by the Purchaser for the services to be rendered hereunder by DOE. Section 302(a) of the Nuclear Waste Policy Act of 1982, as amended, provides that DOE, beginning not later than January 31, 1998, will dispose of SNF and/or HLW as provided in the Act. DOE will begin the acceptance of any SNF and/or HLW from a nuclear power reactor covered by this contract no earlier than twenty (20) years from the initial discharge date of SNF from that nuclear power reactor. DOE will complete acceptance of all SNF and/or HLW generated by the nuclear power reactor covered by this contract no later than the performance date absent unavoidable delays or Purchaser-caused delays.

ARTICLE III - TERM

The term of this contract shall be from the date of execution until such time as DOE has accepted, transported from the Purchaser's site(s) and disposed of all SNF and/or HLW of domestic origin from the civilian nuclear power reactor(s) specified in appendix A.

ARTICLE IV - RESPONSIBILITIES OF THE PARTIES

A. Purchaser's Responsibilities

1. Discharge Information.

(a) Upon request by DOE, the Purchaser will provide DOE with SNF inventories and projections of discharges, SNF characteristics, and onsite SNF storage capacities. DOE will notify Purchaser of its intent to collect this information at least nine (9) months prior to the requested date of submittal. The required information will be collected on the then current version of the Form RW-859, or a mutually agreed replacement form.

(b) In the event that the Purchaser fails to provide the forecast in the form and content required by DOE, DOE may, in its sole discretion, require a rescheduling of the final schedule in effect.

(c) Purchaser shall notify DOE at least five years in advance of the Purchaser's anticipated needs for onsite dry SNF storage. Within ninety (90) days after such notification, DOE will provide Purchaser with a list of canisters from which Purchaser must select a canister to procure and load for use in onsite dry SNF storage and transfer of such SNF to DOE. DOE agrees to reimburse the Purchaser to the extent the canister's use is consistent with the permissible uses of the Nuclear Waste Fund under the Nuclear Waste Policy Act of 1982, as amended. Purchaser shall procure, fabricate, load, store and maintain such canisters in accordance with any of the Commission's Quality Assurance and licensing requirements imposed upon DOE or the Purchaser and Procedures approved by DOE. Purchaser shall provide DOE with documented evidence that the canisters have been procured, fabricated, loaded, stored and maintained in accordance with these licensing and Quality Assurance requirements.

2. Preparation for Transportation.

(a) The Purchaser shall arrange for, and provide, all preparation, packaging, required inspections, and loading activities necessary for the transportation of SNF and/or HLW to the DOE facility. The Purchaser shall utilize casks and other items identified and provided by DOE for transfer of all SNF and/or HLW from Purchaser to DOE. The Purchaser shall notify DOE of such activities sixty (60) days prior to the commencement of such activities. The preparatory activities by the Purchaser shall be made in accordance with all applicable laws and regulations relating to the Purchaser's responsibilities hereunder. DOE may designate a representative to observe the preparatory activities conducted by the Purchaser at the Purchaser's site, and the Purchaser shall afford access to such representative.

(b) Except as otherwise agreed to by DOE, the Purchaser shall advise DOE, in writing as specified in appendix F, annexed hereto and made a part hereof, as to the description of the material in each shipping lot sixty (60) days prior to scheduled DOE transportation of that shipping lot.

(c) The Purchaser shall be responsible for incidental maintenance, protection and

preservation of any and all property furnished to the Purchaser by DOE for the performance of this contract. The Purchaser shall be liable for any loss of or damage to such DOE-furnished property, and for expenses incidental to such loss or damage while such property is in the possession and control of the Purchaser except as otherwise provided for hereunder. Routine property maintenance, such as scheduled overhauls, shall not be the responsibility of the Purchaser.

B. DOE Responsibilities

1. DOE shall accept title to all SNF and/or HLW, of domestic origin, generated by the civilian nuclear power reactor(s) specified in appendix A, provide subsequent transportation for such material to the DOE facility, and dispose of such material in accordance with the terms of this contract.
2. DOE shall arrange for, and provide, a cask(s) and all necessary transportation of the SNF and/or HLW from the Purchaser's site to the DOE facility. Such cask(s) shall be furnished sufficiently in advance to accommodate scheduled deliveries. Such cask(s) shall be suitable for use at the Purchaser's site, meet applicable regulatory requirements, and be accompanied by pertinent information including, but not limited to, the following:
 - (a) Written procedures for cask handling and loading, including specifications on Purchaser-furnished canisters for containment of failed fuel;
 - (b) Training for Purchaser's personnel in cask handling and loading, as may be necessary;
 - (c) Technical information, special tools, equipment, lifting trunnions, spare parts and consumables needed to use and perform incidental maintenance on the cask(s); and
 - (d) Sufficient documentation on the equipment supplied by DOE.
3. DOE may fulfill any of its obligations, or take any action, under this contract either directly or through contractors.

ARTICLE V - DELIVERY OF SNF AND/OR HLW

A. Description of SNF and HLW

The Purchaser shall deliver to DOE and DOE shall, as provided in this contract, accept the SNF and/or HLW which is described in accordance with Article VI.A. of this contract, for disposal thereof.

B. Scheduling

1. DOE shall develop a proposed shipping schedule for the removal of SNF and/or HLW from Purchaser's facility. Notice of such schedule, which shall include DOE's proposed date for the Purchaser to complete activities necessary for shipment, as well as the quantity and specific characteristics of the SNF and/or HLW to be shipped, shall be provided to Purchaser by DOE no less than five years in advance of the proposed date. Purchaser shall, within 90 days of receipt of DOE's proposed shipping schedule, either agree to DOE's proposed shipping schedule or provide DOE with notice of a proposed alternative schedule. In the event that Purchaser proposes an alternative shipping schedule, DOE shall, within 45 days of receipt of such notice from Purchaser, notify Purchaser whether or not DOE accepts Purchaser's proposed alternative schedule. In the event DOE does not accept Purchaser's proposed alternative schedule, the DOE proposed shipping schedule shall prevail and become the final schedule.

2. DOE shall provide to Purchaser Procedures approved by DOE for the acquisition, loading, storage and maintenance of TAD-based canisters; such procedures shall be provided no later than x months prior to the Purchaser's anticipated date of loading of the TAD-based canisters as identified in Article IV.A.1(c).

3. DOE shall compensate Purchaser at the time of DOE acceptance and transportation for the lesser of DOE's avoided costs, or Purchaser's adjusted acquisition cost, for any DOE-listed TAD-based canister utilized by the Purchaser for expanding onsite spent fuel storage capacity at the time. This provision will not be applicable to any DOE-listed TAD-based canister for which the Purchaser has previously received compensation under either a settlement with the Government or as a result of damages awarded by any Court.

(a) No less than six months prior to the year of DOE's acceptance and transportation of Purchaser's TAD-based canisters, DOE will notify the Purchaser of DOE's avoided costs used in this determination.

(b) In accordance with Article VIII, DOE will compensate Purchaser for its adjusted acquisition cost of its TAD-based canister(s) by authorizing a credit to Purchaser's next quarterly payment or payments to the Nuclear Waste Fund. In the event Purchaser owes no quarterly payment, DOE and the Purchaser will negotiate appropriate means for payment.

ARTICLE VI - CRITERIA FOR DISPOSAL

A. General Requirements

1. Criteria.

(a) Except as otherwise provided in this contract, DOE shall accept hereunder all Purchaser's SNF and/or all Purchaser's HLW which meets the General Specifications for waste as set forth in appendix E, annexed hereto and made a part hereof.

(b) Purchaser shall accurately classify SNF and/or HLW prior to delivery in accordance with paragraphs B and D of appendix E.

2. *Procedures.*

(a) Purchaser shall provide to DOE a detailed description of the SNF and/or HLW to be delivered hereunder in the form and content as set forth in appendix F, annexed hereto and made a part hereof. Purchaser shall promptly advise DOE of any changes in said SNF and/or HLW as soon as they become known to the purchaser.

(b) DOE's obligation for disposing of SNF and/or HLW under this contract also extends to other than standard HLW; however, for any HLW which has been designated by the Purchaser as other than standard HLW, as that term is defined in appendix E, the Purchaser shall obtain delivery and procedure confirmation from DOE prior to delivery. DOE shall determine the technical feasibility of disposing of such HLW on the current final schedule and shall inform the Purchaser of any schedule adjustment within sixty (60) days after receipt of such confirmation request.

B. Acceptance Procedures

1. *Verification of SNF and/or HLW.*

During cask loading and prior to acceptance by DOE for transportation to the DOE facility, the SNF and/or HLW description of the shipping lot shall be subject to verification by DOE. To the extent the SNF and/or HLW is consistent with the description submitted and approved, in accordance with appendices E and F, DOE agrees to accept such SNF and/or HLW for disposal when DOE has verified the SNF and/or HLW description, determined the material is properly loaded, packaged, marked, labeled and ready for transportation, and has taken custody, as evidenced in writing, of the material at the Purchaser's site, f.o.b. carrier. A properly executed off-site radioactive shipment record describing cask contents must be prepared by the Purchaser along with a signed certification which states: "This is to certify that the above-named materials are properly described, classified, packaged, marked and labeled and are in proper condition for transfer according to the applicable regulations of the U. S. Department of Transportation."

2. *Improperly described SNF and/or HLW.*

(a) *Prior to Acceptance* - If SNF and/or HLW is determined by DOE to be improperly described prior to acceptance by DOE at the Purchaser's site, DOE shall promptly notify the Purchaser in writing of such determination. DOE reserves the right, in its sole discretion, to refuse to accept such SNF and/or HLW until the SNF and/or HLW has been properly described. The Purchaser shall not transfer such SNF and/or HLW to DOE unless DOE agrees to accept such SNF and/or HLW under such other arrangements as may be agreed to, in writing, by the parties.

(b) *After Acceptance* - If subsequent to its acceptance DOE finds that such SNF and/or HLW is improperly described, DOE shall promptly notify the Purchaser, in writing, of such finding. In the event of such notification, Purchaser shall provide DOE with a proper designation within thirty (30) days. In the event of a failure by the Purchaser to provide such proper designation, DOE may hold in abeyance any and all deliveries hereunder.

ARTICLE VII – TITLE

Title to all SNF and/or HLW, and if applicable, any canisters provided by the Purchaser, accepted by DOE for disposal shall pass to DOE at the Purchaser's site as provided for in Article VI hereof. DOE shall be solely responsible for control of all material upon passage of title. DOE shall have the right to dispose as it sees fit of any SNF and/or HLW to which it has taken title. The Purchaser shall have no claim against DOE or the Government with respect to such SNF or HLW nor shall DOE or the Government be obligated to compensate the Purchaser for such material.

ARTICLE VIII - FEES AND TERMS OF PAYMENT

A. Fees

1. The Purchaser shall be charged a fee in the amount of 1.0 mill per kilowatt hour (1M/kWh) electricity generated and sold.
2. DOE will annually review the adequacy of the fees and adjust the 1M/KWH fee, if necessary, in order to assure full cost recovery by the Government. Any proposed adjustment to the said fee will be transmitted to Congress and shall be effective after a period of ninety (90) days of continuous session has elapsed following receipt of such transmittal. Any adjustment to the 1M/KWH fee under paragraph A.1. of this Article VIII shall be prospective.

B. Payment

1. For electricity generated and sold by the Purchaser's civilian nuclear power reactor(s), fees shall be paid quarterly by the Purchaser and must be received by DOE not later than the close of the last business day of the month following the end of each assigned 3-month period. The assigned 3-month period, for purposes of payment and reporting of electricity generated and sold shall begin _ _ _ _ .

2. Method of Payment:

(a) Payments shall be made by wire transfer, in accordance with instructions specified by DOE in appendix G, annexed hereto and made a part hereof, and must be received within the time periods specified in paragraph B.1. of this Article VIII.

(b) The Purchaser will complete a Standard Remittance Advice for each assigned three month period payment, and mail it postmarked no later than the last business day of the month following each assigned three month period to DOE at an address to be provided by the Contracting Officer.

3. Any fees not paid on a timely basis or underpaid because of miscalculation will be subject to interest as specified in paragraph C of this Article VIII.

C. Interest on Late Fees

1. Charges for late payments or underpayments will be based on the amount due and calculated to reflect DOE's lost earnings on receipts not received in accordance within the time periods specified in paragraph B.1. of Article VIII. The amount of DOE's lost earnings will be calculated from the date the payment was due to the actual date payment was received by DOE.

2. Following the assessment of a late fee by DOE, payments will be applied against accrued interest first and the principal thereafter.

D. Effect of Payment

Upon payment of all applicable fees, interest and penalties on unpaid or underpaid amounts, the Purchaser shall have no further financial obligation to DOE for the disposal of the accepted SNF and/or HLW.

E. Audit

1. The DOE or its representative shall have the right to perform any audits or inspections necessary to determine whether Purchaser is paying the correct amount under the fee schedule and interest provisions set forth in paragraphs A, B and C above.

2. Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

3. The Purchaser shall furnish DOE with such records, reports and data as may be necessary for the determination of quantities delivered hereunder and for final settlement of amounts due under this contract and shall retain and make available to DOE and its authorized representative examination at all reasonable times such records, reports and data for a period of three (3) years from the completion of delivery of all material under this contract.

ARTICLE IX - DELAYS

A. Unavoidable Delays by Purchaser or DOE

Neither the Government nor the Purchaser shall be liable under this contract for damages caused by failure in performance or initiating performance of its obligations hereunder, if such failure arises out of causes beyond the control and without the fault or negligence of the party failing to perform. In the event circumstances beyond the reasonable control of the Purchaser or DOE - such as acts of God, or of the public enemy, acts of Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and unusually severe weather - cause delay in scheduled delivery, acceptance or transport of SNF and/or HLW, the party experiencing the delay will notify the other party as soon as possible after such delay is ascertained and the parties will readjust their schedules, as appropriate, to accommodate such delay.

B. Avoidable Delays by Purchaser

In the event of any delay in performance or initiating performance of the delivery, acceptance or transport of SNF and/or HLW to or by DOE caused by circumstances within the reasonable control of the Purchaser or its contractors or suppliers, the charges and schedules specified by this contract will be equitably adjusted to reflect any estimated additional costs incurred by DOE.

C. Exclusive Remedy for Delays by DOE

Liquidated damages shall be the sole and exclusive remedy available to Purchaser with respect to the acceptance of any SNF and/or HLW covered by this contract or DOE's noncompliance with any provision relating directly or indirectly to the acceptance of SNF and/or HLW. Such damages shall be available only if DOE does not accept all SNF and/or HLW by the performance date, including any adjustment made pursuant to paragraph 3(b) of Article VI or Paragraph A or B of this Article or any suspension pursuant to Article X or as a result of Purchaser's failure to perform its obligations under this contract. Such damages shall be in the amount of \$5 million per year (in 2008 dollars adjusted for inflation based on the Consumer Price Index), for each year until DOE completes acceptance of all SNF and/or HLW from the nuclear power reactor covered by this contract. Payments pursuant to this Article IX shall be limited to the total amount of payments made by the Purchaser to the Government pursuant to Article VIII of this contract. Such payments shall be made to the Purchaser on an annual basis.

ARTICLE X - SUSPENSION

A. In addition to any other rights DOE may have hereunder, DOE reserves the right, at no cost to the Government, to suspend this contract or any portion thereof upon written notice to the Purchaser within ninety (90) days of the Purchaser's failure to perform its obligations hereunder, and the Purchaser's failure to take corrective action within thirty (30) days after written notice of such failure to perform as provided above, unless such failure shall arise from causes beyond the control and without the fault or negligence of the Purchaser, its contractors or agents. However, the Purchaser's obligation to pay fees required hereunder shall continue unaffected by any suspension. Any such suspension shall be rescinded if and when DOE determines that Purchaser has completed corrective action.

B. The DOE reserves the right to suspend any scheduled deliveries in the event that a national emergency requires that priority be given to Government programs to the exclusion of the work under this contract.

ARTICLE XI - REMEDIES

Nothing in this contract shall be construed to preclude either party from asserting its rights and remedies under the contract or at law.

ARTICLE XII - NOTICES

All notices and communications between the parties under this contract (except notices published in the Federal Register) shall be in writing and shall be sent to the following addressees:

To DOE:

To the Purchaser:

However, the parties may change the addresses or addressees for such notices or communications without formal modification to this contract; provided, however, that notice of such changes shall be given by registered mail.

ARTICLE XIII - REPRESENTATION CONCERNING NUCLEAR HAZARDS INDEMNITY

A. DOE represents that it will include in its contract(s) for the operation of any DOE facility an indemnity agreement based upon Section 170(d) of the Atomic Energy Act of 1954, as amended, a copy of which agreement shall be furnished to the Purchaser; that under said agreement, DOE shall have agreed to indemnify the contractor and other persons indemnified against claims for public liability (as defined in said Act) arising out of or in connection with contractual activities; that the indemnity shall apply to covered nuclear incidents which (1) take place at a contract location; or (2) arise out of or in the course of transportation of source, special nuclear or

by-product material to or from a contract location. The obligation of DOE to indemnify shall be subject to the conditions stated in the indemnity agreement.

B. The provisions of this Article XIII shall continue beyond the term of this contract.

ARTICLE XIV - ASSIGNMENT

The rights, duties and any claims of the Purchaser arising under this contract may be assigned if all of the Purchaser's rights, duties and claims are assigned, are assigned in their entirety, and are assigned with respect to all SNF and/or HLW covered under this contract. The Purchaser shall provide notice of any such assignment to DOE within ninety (90) days of the assignment.

ARTICLE XV - AMENDMENTS

The provisions of this contract have been developed in the light of uncertainties necessarily attendant upon long-term contracts. Accordingly, at the request of either DOE or Purchaser, the parties will negotiate and, to the extent mutually agreed, amend this contract as the parties may deem to be necessary or proper to reflect their respective interests; provided, however, that any such amendment shall be consistent with the DOE final rule published in the Federal Register on April 18, 1983 entitled, "Standard Contract for Disposal or SNF and/or HLW", as the same may be amended from time to time.

ARTICLE XVI – DISPUTES

A. Except as otherwise provided in this contract, all disputes arising under, or relating to, this contract including those related to delays by the Purchaser which are not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Purchaser. The decision of the Contracting Officer shall be final and conclusive unless within ninety (90) days from the date of receipt of such copy, the Purchaser mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Office of Hearings and Appeals (OHA). The decision of the OHA shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith or not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Purchaser shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

B. For Purchaser claims, the Purchaser shall submit with the claim a certification that the claim is made in good faith; the supporting data are accurate and complete to the best of the Purchaser's knowledge and belief; and the amount requested accurately reflects the contract adjustment for which the Purchaser believes the Government is liable. The certification shall be executed by the Purchaser if an individual. When the Purchaser is not an individual, the certification shall be executed by a senior company official in charge at the Purchaser's plant or location involved, or by an officer or general partner of the Purchaser having overall responsibility for the conduct of

the Purchaser's affairs.

C. This DISPUTES clause does not preclude consideration of law questions in connection with decisions provided for in paragraph A above; provided, however, that nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

ARTICLE XVII - OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE XVIII - COVENANT AGAINST CONTINGENT FEES

The Purchaser warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Purchaser for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or in its discretion to increase the contract price or consideration, or otherwise recover, the full amount of such commission, brokerage, or contingent fee.

ARTICLE XIX - EXAMINATION OF RECORDS

The Purchaser agrees that the Comptroller General of the United States or any of his duly authorized representatives shall have access to and the right to examine any directly pertinent books, documents, papers and records of the Purchaser involving transactions related to this contract until the expiration of three years after final payment under this contract.

ARTICLE XX- PERMITS

The Government and the Purchaser shall procure all necessary permits or licenses (including any special nuclear material licenses) and comply with all applicable laws and regulations of the United States, States and municipalities necessary to execute their respective responsibilities and obligations under this contract.

ARTICLE XXI - RIGHTS IN TECHNICAL DATA

A. Definitions.

1. *Technical data* means recorded information regardless of form or characteristic, of a specific or technical nature. It may, for example, document research, experimental, developmental, or demonstration, or engineering work, or be usable or used to define a design or process, or to

procure, produce, support, maintain or operate material. The data may be graphic or pictorial delineations in media such as drawings or photographs, text in specifications or related performance or design-type documents or computer software (including computer programs, computer software data bases, and computer software documentation). Examples of technical data include research and engineering data, engineering drawings and associated lists, specifications, standards, process sheets, manuals, technical reports, catalog item identification, and related information. Technical data as used herein do not include financial reports, cost analyses, and other information incidental to contract administration.

2. *Proprietary data* means technical data which embody trade secrets developed at private expense, such as design procedures or techniques, chemical composition of materials, or manufacturing methods, processes, or treatments, including minor modifications thereof, provided that such data:

- (a) Are not generally known or available from other sources without obligation concerning their confidentiality;
- (b) Have not been made available by the owner to others without obligation concerning its confidentiality; and
- (c) Are not already available to the Government without obligation concerning their confidentiality.

3. *Contract data* means technical data first produced in the performance of the contract, technical data which are specified to be delivered under the contract, or technical data actually delivered in connection with the contract.

4. *Unlimited rights* means rights to use, duplicate, or disclose technical data, in whole or in part, in any manner and for any purpose whatsoever, and to permit others to do so.

B. Allocation of Rights.

1. The Government shall have:

- (a) Unlimited rights in contract data except as otherwise provided below with respect to proprietary data properly marked as authorized by this clause;
- (b) The right to remove, cancel, correct or ignore any marking not authorized by the terms of this contract on any technical data furnished hereunder, if in response to a written inquiry by DOE concerning the proprietary nature of the markings, the Purchaser fails to respond thereto within 60 days or fails to substantiate the proprietary nature of the markings. In either case, DOE will notify the Purchaser of the action taken;
- (c) No rights under this contract in any technical data which are not contract data.

2. Subject to the foregoing provisions of this rights in technical data clause, the Purchaser shall have the right to mark proprietary data it furnishes under the contract with the following legend and no other, the terms of which shall be binding on the Government:

LIMITED RIGHTS LEGEND

This “proprietary data,” furnished under “Contract No. ____” with the U.S. Department of Energy may be duplicated and used by the Government with the express limitations that the “proprietary data” may not be disclosed outside the Government or be used for purposes of manufacture without prior permission of the Purchaser, except that further disclosure or use may be made solely for the following purposes:

- (a) This “proprietary data” may be disclosed for evaluation purposes under the restriction that the “proprietary data” be retained in confidence and not be further disclosed;
- (b) This “proprietary data” may be disclosed to contractors participating in the Government’s program of which this contract is a part, for information or use in connection with the work performed under their contracts and under the restriction that the “proprietary data” be retained in confidence and not be further disclosed; or
- (c) This “proprietary data” may be used by the Government or others on its behalf for emergency work under the restriction that the “proprietary data” be retained in confidence and not be further disclosed. This legend shall be marked on any reproduction of this data in whole or in part; or
- (d) This "proprietary data" may be disclosed to Federal, State or local regulatory bodies as may be necessary for regulatory certifications, permits or the like, and under the restriction that the "proprietary data" be retained in confidence and not be further disclosed.

3. In the event that proprietary data of a third party, with respect to which the Purchaser is subject to restrictions on use or disclosure, is furnished with the Limited Rights Legend above, Purchaser shall secure the agreement of such third party to the rights of the Government as set forth in the Limited Rights Legend. DOE shall upon request furnish the names of those contractors to which proprietary data has been disclosed.

ARTICLE XXII – QUALITY ASSURANCE

The Purchaser shall:

1. Fabricate, load, store, and maintain nuclear fuel and canisters in accordance with the Purchaser’s Commission approved quality assurance program and DOE performance requirements design.
2. Provide DOE or its authorized representative with documentation or access to quality assurance records that demonstrate that nuclear fuel and canisters have been fabricated, inspected, tested, loaded, stored, and maintained in accordance with DOE performance requirements and Purchaser’s Commission approved quality assurance procedures.
3. Provide DOE or its authorized representative access to facilities for the purpose of

verifying compliance with an approved quality assurance program, procedures, and DOE performance requirements.

4. Maintain quality assurance records associated with the fabrication, inspection, testing, loading, storage, and maintenance of the canisters in accordance with the Commission approved quality assurance program and DOE performance requirements.

5. Submit quality assurance records to DOE at time of waste acceptance or title transfer to DOE.

6. Pass down the requirements of this contract to any subcontractors or private storage facilities.

7. HOLD POINT - Notify DOE of the intent to load the first TAD canister at least 30 days prior to actual loading, at which time DOE will notify waste generator or title holder of DOE or its authorized representative's intent to witness this activity. DOE reserves the right to waive this hold point. Any waiver of a hold point will be in writing.

ARTICLE XXIII - ENTIRE CONTRACT

A. This contract, which consists of Articles I through XXIII and appendices A through G, annexed hereto and made a part hereof, contains the entire agreement between the parties with respect to the subject matter hereof. Any representation, promise, or condition not incorporated in this contract shall not be binding on either party. No course of dealing or usage of trade or course of performance shall be relevant to explain or supplement any provision contained in this contract.

B. Nothing in this contract is intended to affect in any way the contractual obligation of any other persons with whom the Purchaser may have contracted with respect to assuming some or all disposal costs or to accept title to SNF and/or HLW.

C . APPENDICES

- A. Nuclear Power Reactor(s) or Other Facilities Covered
- B. Discharge Information (Ten Year; Annual) (Not Utilized)
- C. Delivery Commitment Schedule (Not Utilized)
- D. Final Delivery Schedule (Not Utilized)
- E. Amended
- F. Amended
- G. Standard Remittance Advice for Payment of Fees

In witness whereof, the parties hereto have executed this contract as of the day and year first above written.

United States of America

United States Department of Energy

By:
(Contracting Officer)

Witnesses as to Execution on Behalf of Purchaser

(Name)

(Address)

(Name)

(Address)

(Purchaser's Company Name)

By:

Title:

I, (Name), certify that I am the (Title) of the corporation named as Purchaser herein; that (Name) who signed this document on behalf of the Purchaser was then (Title) of said corporation; that said document was duly signed for and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

In Witness Whereof, I have hereunto affixed my hand and the seal of said corporation this ___ day of __, 20--

(Corporate Seal)

(Signature)

APPENDIX A

Nuclear Power Reactor(s) or Other Facilities Covered

Purchaser
Contract Number/Date - - / - -
Reactor/Facility Name
Location:
Street
City
County/State - - - - /
Zip Code

Capacity (MWE) - Gross

Reactor Type:
BWR
PWR
Other (Identify)

Facility Description

Date of Commencement of Operation (actual or estimated)

NRC License

By Purchaser:

Signature

Title

Date

To be used for DOE planning purposes only and does not represent a firm commitment by Purchaser.

Purchaser

Contract Number/Date - - - - /

Reactor/Facility Name

Location:

Street

City

County/State - - - - /

Zip Code

Type:

BWR

PWR

Other (Identify)

Appendix B

(Appendix B is not utilized for reactors licensed by the Nuclear Regulatory Commission after January 1, 2007.)

APPENDIX C

(Appendix C is not utilized for reactors licensed by the Nuclear Regulatory Commission after January 1, 2007.)

APPENDIX D

(Appendix D is not utilized for reactors licensed by the Nuclear Regulatory Commission after January 1, 2007.)

APPENDIX E

General Specifications

DOE shall accept all HLW covered by this contract that meets DOE's general specifications. Detailed acceptance criteria and general specifications for such HLW will be issued by DOE no later than ten (10) years prior to the first delivery under this contract.

APPENDIX F

Detailed Description of Purchaser's Fuel and Canister(s) For Delivery under Final Delivery Schedule Number ----

A. Purchaser's Fuel

This information shall be provided by Purchaser for each distinct fuel type within a Shipping Lot not later than sixty (60) days prior to the final schedule date.

Purchaser:

Contract Number/Date:

Reactor/Facility Name:

I. Drawings included in generic dossier:

1. Fuel Assembly DWG:
2. Upper & Lower end fittings DWG:

Dossier Number:

DOE Shipping Lot:

Assemblies Described:

BWR:

PWR:

Other:

II. Design Material Descriptions.

Fuel Element:

1. Element type (rod, plate, etc.):
2. Total length (in.):
3. Active length (in.):
4. Cladding material (Zr, s.s., Zirlo, etc.):

Assembly Description:

1. Number of Elements:
2. Overall dimensions: (length) _____ (cross section) _____ (in.)
3. Overall weight:

III. SNF Classification in accordance with Appendix E. Describe any distortions, cladding damage or other damage to the SNF, or nonfuel components within this Shipping Lot which will require special handling procedures. (Attach additional pages if needed.)

IV. Assembly Number:

Shipping Lot:

	Irradiation History Cycle No.				
	1	2	3	4	5
Startup Date (mo/day/yr)					
Shutdown Date(mo/day/yr)					
Cumulative fuel exposure (Mwd/Mtu)					
Average Reactor Power (Mwth)					

Total heat output/assembly (watts) using an approved calculational method:____ as of Date____					
--	--	--	--	--	--

B. Canister(s)

Canister Make and Model:

Canister Serial number:

Data package containing sufficient documentation of canister fabrication quality control records including but not limited to travelers, documentation of inspections during manufacturing including non-destructive examination results for welds, and documentation of material quality and properties, including mechanical and compositional properties such as yield strength and toughness. (Not required for DOE-supplied canisters.)

Data package containing sufficient documentation of operations at Purchaser's site, including but not limited to canister receipt inspections, storage prior to loading, preparation for loading, and operations to load the canister and prepare it for storage or transportation (draining, drying, backfilling, welding, sealing, leak testing, and placement in storage, as applicable) including QA hold-points and approvals. Provide details concerning any anomalies encountered during loading, preparations for storage, and periods of storage (including but not limited to overheating, temperature alarms, and loss or reduction of air flow).

Data package containing sufficient documentation of canister retrieval from storage (as appropriate) and preparation for transport including but not limited to results of any visual inspections including QA hold-points and approvals, and radiological non-fixed contamination survey results.

Data Package containing sufficient documentation on the loaded transportation overpack including but not limited to contact direct gamma and neutron radiation levels.

Any false, fictitious or fraudulent statement may be punishable by fine or imprisonment (U.S. Code, Title 18, Section 1001).

By Purchaser:

Signature:

7.0 CERTIFICATION

I certify that the Total Remittance is true and accurate to the best of my knowledge.

Name:

Date:

Signature:

Title 18 USC 1001 makes it a crime for any person to knowingly and willfully make to any department or agency of the United States any false, fictitious, or fraudulent statements as to any matter within its jurisdiction.

ANNEX A TO APPENDIX G

Form NWP-830G

Standard Remittance Advice For Payment of Fees

Section 1. Identification Information: Please first read the instructions on the back.	Section 2. Net Electricity Generated Calculation				
1.1 Purchaser Information: 1.11 Name: _____ 1.12 Address: _____ 1.13 Attention: _____ 1.14 City: _____ 1.15 State: _____ 1.16 Zip: _____ 1.17 Utility ID Number: ____ ____ 1.2 Contact Person: 1.21 Name: _____ 1.22 Title: _____ 1.23 Phone No.: _____ Ext: _____ 1.3 Station Name: _____ _____ 1.4 Standard Contract Identification No: 1.5 Period Covered (MM/DD/YY): 1.51 From: ____/____/____ To: ____/____/____ 1.52 Date of This Submission: ____/____/____ 1.53 Revision Number: ____ ____	Item	Unit 1	Unit 2	Unit 3	Station Total'
	2.1 Unit ID Code:				
	2.2 Gross Thermal Energy Generated (MWh):				
	2.3 Gross Electricity Generated (MWh):				
	2.4a Nuclear Station Use While At Least One Nuclear Unit Is In Service2 (MWh):				
	2.4b Pumped-Storage Hydro Offset 3 (MWh):				
	2.5 Nuclear Station Use While All Nuclear Units Are Out Of Service2 (MWh):				
	2.6 Net Electricity Generated (MWh) (Item 2.3 minus (Item 2.4a plus Item 2.4b))				
	2.7 Footnote (if any):				
	1 For a nuclear station with more than one reactor and different ownerships for each reactor, a separate Annex A will be required. 2 Utilities unable to meter individual unit use shall report estimated unit use and shall explain in a footnote how the unit data were estimated. 3 Complete this item only if the DOE has approved a methodology for calculating such offsets.				

Section 3. Total Energy Adjustment Factor

3.1 Data Sources: 1. EIA-861; 2. FERC Form No. 1 3. Other (Specify in attachment)								
3.2 Owner's Share Method: <input type="checkbox"/> Contractual Share; <input type="checkbox"/> Prorata Share of Electricity; <input type="checkbox"/> Fixed Entitlement Share								
3.3 Weighted Energy Adjustment Factor Calculation								
Name of Nuclear Station Owner(s)	Data Source	Adjustment for Sales to ultimate Consumer (ASC)		Adjustment for Sales for Resale (ASR)		Owner's Energy Adjustment Fattor (OEAF)	Owner's Share (OS)	Weighted Energy Adj. Factor (WEAF)
		Fraction of Sales to ultimate Consumer (FSC)	Sales to ultimate Consumer Adj. Factor (SCAF)	Fraction of Sales for Resale (FSR)	National average Adjustment Factor (NAF)			
←-----Round Data to 5 Decimal Places -----→								
1.		(. * .) + (. * .) = . * . = .						
2.		(. * .) + (. * .) = . * . = .						
3.		(. * .) + (. * .) = . * . = .						
4.		(. * .) + (. * .) = . * . = .						
5.		(. * .) + (. * .) = . * . = .						
6.		(. * .) + (. * .) = . * . = .						
7.		(. * .) + (. * .) = . * . = .						
8.		(. * .) + (. * .) = . * . = .						
9.		(. * .) + (. * .) = . * . = .						
10.		(. * .) + (. * .) = . * . = .						
11.		(. * .) + (. * .) = . * . = .						
12.		(. * .) + (. * .) = . * . = .						

3.4 Total Energy Adjustment Factor (TEAF = Σ WEAF) Round to 4 Decimal Places →

Section 4. Fee Calculation for Electricity Generated and Sold				
Item	Unit 1	Unit 2	Unit 3	Station Total'
4.1 Total Energy Adjustment Factor (Enter value from Item 3.4 above):				
4.2 Electricity Generated and Sold (items in 4.1 times Items in 2.6):				
---- Current Fee Rate (Dollars):	\$1/MWh	\$1/MWh	\$1/MWh	\$1/MWh
4.3 Current Fee Due (Whole Dollars): (Transfer Station Total to line 3.4 of Appendix G)				

ANNEX B TO APPENDIX G

(Annex B is not utilized for reactors licensed by the Nuclear Regulatory Commission after January 1, 2007.)

2020 ACCRUAL COMPARISON

	<u>Present</u>	<u>Proposed</u>	<u>Difference</u>
Monticello	\$13,392,226	8,507,110	(4,885,116)
Prairie Island Unit 1	49,264	12,399,703	12,350,439
Prairie Island Unit 2	589,341	6,511,608	5,922,267
TOTAL	<u><u>\$14,030,831</u></u>	<u><u>\$27,418,421</u></u>	<u><u>\$13,387,590</u></u>

2020 MN RETAIL SUMMARY

	Remaining Life (yrs)	Operational Earnings Rate	Post-Shutdown Earnings Rate	Market Value Balance 5/31/2019	Book Value 5/31/2019	Unrealized Gain/Loss 5/31/2019	Tax-Effect Adjustment	Tax-Adjusted Fund Balance 5/31/2019	2020-2021 Decommissioning Accrual
Monticello	10.75	4.68%	3.82%	\$744,299,670	\$585,522,973	\$158,776,697	\$44,203,432	\$700,096,238	8,507,110
Prairie Island Unit 1	13.67	4.67%	3.53%	436,511,217	333,329,355	103,181,862	28,725,830	407,785,386	12,399,703
Prairie Island Unit 2	14.83	4.73%	3.44%	490,623,480	374,766,437	115,857,043	32,254,601	458,368,879	6,511,608
TOTAL DECOMMISSIONING ACCRUAL				\$1,671,434,367	\$1,293,618,765	\$377,815,602	\$105,183,864	\$1,566,250,503	\$27,418,421

INPUT DATA

Escalation Rate (Labor)	4.03%
Escalation Rate (Non-Labor)	2.83%
Escalation Rate (PIIC)	0.00%
Jurisdictional Factor	73.0558%
Tax Rate for tax-effect adjustment	27.84%

AMOUNT TO RECOVER

	LABOR			NON-LABOR			PIIC Payment			Total Cost Estimate Nominal \$s	Total Jurisdictional Cost in Nominal \$s	Total Jurisdictional Cost in Future \$s		
	Cost Estimate Nominal \$s	Jurisdictional Cost in Nominal \$s	Escalation Factor	Jurisdictional Cost in Future \$s	Cost Estimate Nominal \$s	Jurisdictional Cost in Nominal \$s	Escalation Factor	Jurisdictional Cost in Future \$s	Cost Estimate Nominal \$s				Jurisdictional Cost in Nominal \$s	Escalation Factor
Monticello														
<i>Factors</i>	<i>2017</i>	<i>73.0558%</i>	<i>4.03%</i>				<i>2.83%</i>					<i>0.00%</i>		
2030	\$21,103,620	\$15,417,418	1.6713	\$25,767,131	\$8,935,561	\$6,527,946	1.4373	\$9,382,617	\$0	\$0	1.0000	\$0		
2031	72,416,242	52,904,265	1.7387	91,984,645	42,961,353	31,385,760	1.4780	46,388,153	0	0	1.0000	0		
2032	78,476,357	57,331,531	1.8088	103,701,272	102,263,189	74,709,191	1.5198	113,543,028	0	0	1.0000	0		
2033	78,663,227	57,468,050	1.8816	108,131,882	100,153,666	73,169,523	1.5629	114,356,647	0	0	1.0000	0		
2034	66,380,423	48,494,749	1.9575	94,928,471	38,894,671	28,414,813	1.6071	45,665,447	0	0	1.0000	0		
2035	86,879,803	63,470,735	2.0364	129,251,805	113,147,091	82,660,512	1.6526	136,604,763	0	0	1.0000	0		
2036	50,307,504	36,752,549	2.1184	77,856,601	20,688,337	15,114,030	1.6993	25,683,271	0	0	1.0000	0		
2037	34,623,126	25,294,202	2.2038	55,745,362	14,196,883	10,371,647	1.7474	18,123,415	0	0	1.0000	0		
2038	23,156,498	18,378,266	2.2926	42,134,013	13,323,979	9,880,051	1.7969	17,753,464	0	0	1.0000	0		
2039	1,300,016	1,095,849	2.3850	2,613,599	612,162	447,220	1.8477	826,329	0	0	1.0000	0		
2040	1,516,203	1,107,674	2.4811	2,748,251	618,018	451,498	1.9000	857,847	0	0	1.0000	0		
2041	1,500,016	1,095,849	2.5811	2,828,495	612,162	447,220	1.9538	873,779	0	0	1.0000	0		
2042	1,500,016	1,095,849	2.6851	2,942,463	612,162	447,220	2.0091	898,510	0	0	1.0000	0		
2043	1,500,016	1,095,849	2.7933	3,061,034	612,162	447,220	2.0659	923,912	0	0	1.0000	0		
2044	1,516,203	1,107,674	2.9059	3,218,791	618,018	451,498	2.1244	959,163	0	0	1.0000	0		
2045	1,500,016	1,095,849	3.0230	3,312,751	612,162	447,220	2.1845	976,952	0	0	1.0000	0		
2046	1,500,016	1,095,849	3.1448	3,446,225	612,162	447,220	2.2463	1,004,591	0	0	1.0000	0		
2047	1,500,016	1,095,849	3.2716	3,585,179	612,162	447,220	2.3099	1,033,034	0	0	1.0000	0		
2048	2,179,888	1,592,505	3.4034	5,419,933	2,608,933	1,905,992	2.3753	4,527,302	0	0	1.0000	0		
2049	1,500,016	1,095,849	3.5406	3,879,962	612,162	447,220	2.4425	1,092,335	0	0	1.0000	0		
2050	2,093,217	2,186,719	3.6833	8,054,341	3,091,796	3,719,831	2.5116	9,342,727	0	0	1.0000	0		
2051	2,093,217	2,186,719	3.8317	8,378,850	3,091,796	3,719,831	2.5827	9,607,207	0	0	1.0000	0		
2052	3,871,994	2,828,650	3.9861	11,275,284	7,685,122	5,614,428	2.6558	14,910,797	0	0	1.0000	0		
2053	4,302,592	3,289,405	4.1468	13,640,503	9,619,891	7,027,889	2.7310	19,193,144	0	0	1.0000	0		
2054	3,208,842	2,344,245	4.3139	10,112,839	5,738,641	4,192,410	2.8082	11,773,127	0	0	1.0000	0		
2055	4,286,967	3,131,878	4.4877	14,054,929	8,973,016	6,555,309	2.8877	18,929,766	0	0	1.0000	0		
2056	4,734,404	3,458,757	4.6686	16,147,552	10,272,622	7,504,746	2.9694	22,284,594	0	0	1.0000	0		
2057	1,483,425	1,083,728	4.8567	5,263,342	562,389	410,858	3.0535	1,254,555	0	0	1.0000	0		
2058	1,483,425	1,083,728	5.0525	5,475,536	562,389	410,858	3.1399	1,290,053	0	0	1.0000	0		
2059	1,483,425	1,083,728	5.2561	5,696,183	562,389	410,858	3.2287	1,326,538	0	0	1.0000	0		
2060	1,499,612	1,095,554	5.4679	5,990,377	568,243	415,136	3.3201	1,378,293	0	0	1.0000	0		
2061	1,483,425	1,083,728	5.6882	6,164,462	562,389	410,858	3.4141	1,402,711	0	0	1.0000	0		
2062	1,483,425	1,083,728	5.9175	6,412,960	562,389	410,858	3.5107	1,442,299	0	0	1.0000	0		
2063	1,483,425	1,083,728	6.1560	6,671,450	562,389	410,858	3.6100	1,483,198	0	0	1.0000	0		
2064	1,499,612	1,095,554	6.4040	7,015,925	568,243	415,136	3.7122	1,541,068	0	0	1.0000	0		
2065	1,483,425	1,083,728	6.6621	7,219,904	562,389	410,858	3.8173	1,568,369	0	0	1.0000	0		
2066	1,483,425	1,083,728	6.9306	7,510,885	562,389	410,858	3.9253	1,612,741	0	0	1.0000	0		
2067	1,483,425	1,083,728	7.2099	7,813,571	562,389	410,858	4.0364	1,658,388	0	0	1.0000	0		
2068	1,499,612	1,095,554	7.5005	8,217,199	568,243	415,136	4.1506	1,723,064	0	0	1.0000	0		
2069	1,483,425	1,083,728	7.8027	8,456,004	562,389	410,858	4.2681	1,753,583	0	0	1.0000	0		
2070	1,483,425	1,083,728	8.1172	8,796,837	562,389	410,858	4.3889	1,803,215	0	0	1.0000	0		
2071	1,483,425	1,083,728	8.4443	9,151,324	562,389	410,858	4.5131	1,854,244	0	0	1.0000	0		
2072	1,499,612	1,095,554	8.7846	9,624,000	568,243	415,136	4.6408	1,926,564	0	0	1.0000	0		
2073	1,483,425	1,083,728	9.1386	9,903,757	562,389	410,858	4.7721	1,990,656	0	0	1.0000	0		
2074	1,483,425	1,083,728	9.5069	10,302,894	562,389	410,858	4.9072	2,016,163	0	0	1.0000	0		
2075	1,483,425	1,083,728	9.8911	10,718,178	562,389	410,858	5.0460	2,073,190	0	0	1.0000	0		
2076	1,499,612	1,095,554	10.2886	11,271,712	568,243	415,136	5.1888	2,154,058	0	0	1.0000	0		
2077	1,483,425	1,083,728	10.7033	11,599,466	562,389	410,858	5.3357	2,192,215	0	0	1.0000	0		
2078	1,961,837	1,433,250	11.1346	15,958,669	1,982,333	1,448,224	5.4867	7,945,969	0	0	1.0000	0		
2079	2,057,543	1,503,154	11.5833	17,411,490	2,209,412	1,657,937	5.6420	9,354,080	0	0	1.0000	0		
2080	1,978,045	1,445,077	12.0501	17,413,318	1,988,167	1,452,471	5.8016	8,426,656	0	0	1.0000	0		
2081	1,961,837	1,433,250	12.5357	17,966,796	1,982,333	1,448,224	5.9658	8,639,813	0	0	1.0000	0		
2082	1,961,837	1,433,250	13.0409	18,690,874	1,982,333	1,448,224	6.1346	8,884,273	0	0	1.0000	0		
2083	2,057,543	1,503,154	13.5665	20,392,546	2,209,412	1,657,937	6.3083	10,458,764	0	0	1.0000	0		
2084	1,978,045	1,445,077	14.1132	20,394,655	1,988,167	1,452,471	6.4688	9,421,889	0	0	1.0000	0		
2085	1,961,837	1,433,250	14.6820	21,042,981	1,982,333	1,448,224	6.6704	9,660,231	0	0	1.0000	0		
2086	1,961,837	1,433,250	15.2737	21,891,036	1,982,333	1,448,224	6.8591	9,933,511	0	0	1.0000	0		
2087	2,057,543	1,503,154	15.8802	23,883,922	2,209,412	1,657,937	7.0532	11,693,761	0	0	1.0000	0		
2088	2,641,689	1,920,097	16.5295	31,900,398	3,379,810	2,906,964	7.2528	21,083,627	0	0	1.0000	0		
2089	1,961,837	1,433,250	17.1957	24,645,743	1,982,333	1,448,224	7.4581	10,800,997	0	0	1.0000	0		
2090	1,674,798	1,223,537	17.8887	21,887,488	1,712,175	819,083	7.6692	6,281,713	0	0	1.0000	0		
2091	2,330,110	1,746,114	18.6096	32,494,485	2,338,010	1,780,453	7.8862	134,699,870	0	0	1.0000	0		
	\$612,869,402	\$447,736,645		\$1,258,481,536	\$578,980,274	\$422,978,671		\$950,216,339	\$0	\$0		\$0		
												\$1,191,849,676	\$870,715,316	\$2,208,697,895

AMOUNT TO RECOVER

Factor	LABOR			NON-LABOR			PIIC Payment			Total Cost Estimate Nominal \$s	Total Jurisdictional Cost in Nominal \$s	Total Jurisdictional Cost in Future \$s			
	Cost Estimate Nominal \$s	Jurisdictional Cost in Nominal \$s	Escalation Factor	Cost Estimate Nominal \$s	Jurisdictional Cost in Nominal \$s	Escalation Factor	Cost Estimate Nominal \$s	Jurisdictional Cost in Nominal \$s	Escalation Factor						
Prairie Island Unit 1															
Factor	2017	73.0558%	4.03%			2.83%			0.00%						
2033	\$22,324,352	\$16,309,234	1.8816	\$30,687,454	\$9,728,959	\$7,107,569	1.5629	\$11,108,420	1,250,000.00	\$913,198	1.0000	\$913,198	\$33,303,311	\$24,330,000	\$42,709,071
2034	63,582,247	46,450,519	1.9575	90,926,891	33,397,619	24,398,898	1.6071	39,211,469	1,250,000	913,198	1.0000	913,198	98,229,866	71,762,614	131,051,537
2035	65,877,290	48,127,182	2.0364	98,006,192	81,239,936	59,350,485	1.6526	98,082,611	1,250,000	913,198	1.0000	913,198	148,367,226	108,390,864	197,002,001
2036	57,759,315	42,196,530	2.1184	89,389,129	65,595,019	47,920,966	1.6993	81,432,097	1,250,000	913,198	1.0000	913,198	124,604,334	91,030,693	171,734,424
2037	38,110,947	27,842,257	2.2038	61,358,766	36,889,671	26,950,044	1.7474	47,092,507	1,250,000	913,198	1.0000	913,198	76,250,618	55,705,499	109,364,471
2038	13,207,914	9,649,147	2.2926	22,121,635	18,994,691	13,876,723	1.7969	24,935,084	1,250,000	913,198	1.0000	913,198	33,452,605	24,439,068	47,969,917
2039	36,035,855	26,326,282	2.3899	62,788,183	76,476,728	55,870,685	1.8477	103,232,265	1,250,000	913,198	1.0000	913,198	113,762,582	83,110,165	166,933,645
2040	31,919,556	23,319,087	2.4811	37,856,987	13,365,606	9,794,350	1.9900	18,552,265	1,250,000	913,198	1.0000	913,198	46,335,162	33,996,635	77,322,450
2041	17,529,536	12,654,228	2.5811	32,661,827	10,929,679	5,859,713	1.9538	11,448,707	1,250,000	913,198	1.0000	913,198	26,592,191	19,427,138	45,023,731
2042	12,531,932	9,155,318	2.6851	24,582,944	10,243,799	7,483,617	2.0091	15,035,335	1,250,000	913,198	1.0000	913,198	24,025,652	17,552,132	40,531,476
2043	6,294,432	4,598,463	2.7933	12,844,886	5,067,672	3,702,229	2.0659	7,648,434	1,250,000	913,198	1.0000	913,198	12,612,125	9,213,889	21,406,517
2044	804,798	587,952	2.9059	1,708,529	514,011	375,515	2.1244	797,743	1,250,000	913,198	1.0000	913,198	2,568,809	1,876,664	3,419,469
2045	796,451	581,854	3.0230	1,758,944	505,298	369,149	2.1845	806,406	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	3,478,547
2046	796,451	581,854	3.1448	1,829,813	505,298	369,149	2.2463	829,220	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	3,572,231
2047	796,451	581,854	3.2716	1,903,592	505,298	369,149	2.3099	852,698	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	3,669,488
2048	804,798	587,952	3.4034	2,003,035	514,011	375,515	2.3753	891,960	1,250,000	913,198	1.0000	913,198	2,568,809	1,876,664	3,860,192
2049	796,451	581,854	3.5406	2,060,111	505,298	369,149	2.4425	901,647	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	3,874,955
2050	796,451	581,854	3.6833	2,143,142	505,298	369,149	2.5116	927,155	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	3,983,494
2051	796,451	581,854	3.8317	2,229,489	505,298	369,149	2.5827	953,402	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	4,096,688
2052	804,798	587,952	3.9861	2,343,634	514,011	375,515	2.6558	997,292	1,250,000	913,198	1.0000	913,198	2,568,809	1,876,664	4,254,123
2053	802,138	651,759	4.1468	2,702,712	792,357	578,862	2.7310	1,580,873	1,250,000	913,198	1.0000	913,198	2,934,495	2,143,818	5,196,783
2054	987,824	721,663	4.3139	3,113,181	1,079,416	788,576	2.8082	2,214,478	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	6,240,856
2055	987,824	721,663	4.4877	3,238,606	1,079,416	788,576	2.8877	2,277,170	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	6,428,973
2056	1,044,014	762,713	4.6686	3,560,801	1,231,639	899,798	2.9694	2,671,860	1,250,000	913,198	1.0000	913,198	3,525,673	2,575,708	7,148,859
2057	939,981	686,711	4.8567	3,335,148	935,887	683,719	3.0355	2,087,737	1,250,000	913,198	1.0000	913,198	3,125,868	2,283,628	6,336,082
2058	1,083,310	791,567	5.0525	3,999,392	1,366,475	998,289	3.1399	3,134,527	1,250,000	913,198	1.0000	913,198	3,699,985	2,703,053	8,047,117
2059	939,981	686,711	5.2561	3,609,420	935,887	683,719	3.2287	2,207,525	1,250,000	913,198	1.0000	913,198	3,125,868	2,283,628	6,730,142
2060	900,484	657,856	5.4679	3,597,900	801,070	585,228	3.3201	1,943,015	1,250,000	913,198	1.0000	913,198	2,951,554	2,156,281	6,453,302
2061	987,824	721,663	5.6882	4,104,962	1,079,416	788,576	3.4141	2,692,276	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	7,710,436
2062	987,824	721,663	5.9175	4,270,439	1,079,416	788,576	3.5107	2,768,453	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	7,952,089
2063	939,981	686,711	6.1560	4,227,391	935,887	683,719	3.6100	2,466,227	1,250,000	913,198	1.0000	913,198	3,125,868	2,283,628	7,608,815
2064	996,170	727,760	6.4040	4,660,575	1,088,129	794,941	3.7122	2,950,980	1,250,000	913,198	1.0000	913,198	3,334,299	2,435,899	8,524,753
2065	987,824	721,663	6.6621	4,807,789	1,079,416	788,576	3.8173	3,010,230	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	8,731,217
2066	939,981	686,711	6.9306	4,759,317	935,887	683,719	3.9253	2,683,804	1,250,000	913,198	1.0000	913,198	3,125,868	2,283,628	8,356,518
2067	987,824	721,663	7.2099	5,203,116	1,079,416	788,576	4.0364	3,183,007	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	9,299,320
2068	996,170	727,760	7.5005	5,458,564	1,088,129	794,941	4.1506	3,299,483	1,250,000	913,198	1.0000	913,198	3,334,299	2,435,899	9,671,244
2069	939,981	686,711	7.8027	5,358,197	935,887	683,719	4.2681	2,918,183	1,250,000	913,198	1.0000	913,198	3,125,868	2,283,628	9,189,577
2070	987,824	721,663	8.1172	5,857,881	1,079,416	788,576	4.3889	3,460,980	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	10,232,058
2071	987,824	721,663	8.4443	6,093,937	1,079,416	788,576	4.5131	3,558,921	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	10,566,055
2072	996,170	727,760	8.7846	6,393,080	1,088,129	794,941	4.6408	3,689,163	1,250,000	913,198	1.0000	913,198	3,334,299	2,435,899	10,995,440
2073	987,824	721,663	9.1386	6,594,987	1,079,416	788,576	4.7721	3,763,162	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	11,271,346
2074	987,824	721,663	9.5069	6,860,775	1,079,416	788,576	4.9072	3,869,698	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	11,643,671
2075	1,319,646	964,078	9.8901	9,534,827	2,074,884	1,515,823	5.0460	7,648,842	1,250,000	913,198	1.0000	913,198	4,644,530	3,393,098	18,096,866
2076	996,170	727,760	10.2886	7,487,631	1,088,129	794,941	5.1888	4,124,790	1,250,000	913,198	1.0000	913,198	3,334,299	2,435,899	12,525,619
2077	987,824	721,663	10.7033	7,725,346	1,079,416	788,576	5.3357	49,613,353	1,250,000	913,198	1.0000	913,198	14,965,749	10,933,347	58,251,896
2078	1,447,287	(1,035,388)	11.1346	(11,528,633)	3,188,063	2,334,178	5.4867	12,806,937	0	0	1.0000	0	1,777,806	1,298,790	1,278,304
	\$395,531,633	\$288,958,799		\$716,229,709	\$405,609,673	\$296,321,391		\$602,364,388	\$56,250,000	\$41,093,888		\$41,093,888	\$857,391,305	\$626,374,077	\$1,359,687,985

AMOUNT TO RECOVER

Prairie Island Unit 2	LABOR			NON-LABOR				PIIC Payment				Total Cost Estimate Nominal \$s	Total Jurisdictional Cost in Nominal \$s	Total Jurisdictional Cost in Future \$s	
	Cost Estimate Nominal \$s	Jurisdictional Cost in Nominal \$s	Escalation Factor	Jurisdictional Cost in Future \$s	Cost Estimate Nominal \$s	Jurisdictional Cost in Nominal \$s	Escalation Factor	Jurisdictional Cost in Future \$s	Cost Estimate Nominal \$s	Jurisdictional Cost in Nominal \$s	Escalation Factor				Jurisdictional Cost in Future \$s
	2017	73.0558%	4.03%		2.83%			0.00%							
2034	\$7,760,265	\$5,669,323	1.9575	\$11,097,701	\$4,479,535	\$3,272,560	1.6071	\$5,259,331	1,250,000.00	\$913,198	1.0000	\$913,198	\$13,489,800	\$9,855,081	\$17,270,230
2035	46,911,429	34,271,520	2.0364	69,790,523	35,601,339	26,008,843	1.6526	42,982,214	1,250,000	913,198	1.0000	913,198	83,762,768	61,193,560	113,685,934
2036	67,514,044	49,322,925	2.1184	104,485,684	86,298,832	63,046,302	1.6993	107,134,581	1,250,000	913,198	1.0000	913,198	155,062,875	113,282,424	212,533,462
2037	70,896,041	51,793,670	2.2038	114,142,889	70,558,163	51,546,831	1.7474	90,072,932	1,250,000	913,198	1.0000	913,198	142,704,204	104,253,698	205,129,018
2038	46,603,528	34,046,581	2.2926	78,055,191	42,782,149	31,254,841	1.7969	56,161,824	1,250,000	913,198	1.0000	913,198	90,635,677	66,214,619	135,130,212
2039	40,663,625	29,707,136	2.3850	70,851,520	37,452,618	27,452,618	1.8277	44,549,572	1,250,000	913,198	1.0000	913,198	119,366,242	87,203,963	176,314,290
2040	37,471,177	27,335,418	2.4811	67,821,906	34,193,501	24,193,501	1.9000	37,701,434	1,250,000	913,198	1.0000	913,198	52,860,679	38,617,792	88,436,538
2041	23,327,583	17,042,152	2.5811	43,987,500	13,070,130	9,548,488	1.9538	18,655,836	1,250,000	913,198	1.0000	913,198	37,647,713	27,503,838	63,536,533
2042	14,400,000	10,525,091	2.6811	28,260,922	8,379,000	6,000,000	2.0911	23,122,627	1,250,000	913,198	1.0000	913,198	31,410,561	22,947,236	52,296,747
2043	11,732,862	8,540,192	2.7933	14,637,428	4,649,942	3,389,942	2.1659	11,544,301	1,250,000	913,198	1.0000	913,198	16,071,004	11,741,458	27,095,017
2044	804,798	587,952	2.9059	1,708,529	514,011	375,515	2.1244	797,743	1,250,000	913,198	1.0000	913,198	2,568,809	1,876,664	3,419,469
2045	796,431	581,854	3.0230	1,758,944	503,298	369,149	2.1845	806,406	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	3,478,547
2046	796,431	581,854	3.1448	1,829,813	503,298	369,149	2.2463	829,220	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	3,572,231
2047	796,431	581,854	3.2716	1,903,592	503,298	369,149	2.3099	852,698	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	3,669,488
2048	804,798	587,952	3.4034	2,001,035	514,011	375,515	2.3753	891,960	1,250,000	913,198	1.0000	913,198	2,568,809	1,876,664	3,806,192
2049	796,431	581,854	3.5406	2,060,111	503,298	369,149	2.4425	901,647	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	3,874,955
2050	796,431	581,854	3.6833	2,143,142	503,298	369,149	2.5116	927,155	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	3,983,494
2051	796,431	581,854	3.8317	2,229,489	503,298	369,149	2.5827	953,402	1,250,000	913,198	1.0000	913,198	2,551,749	1,864,200	4,096,088
2052	804,798	587,952	3.9861	2,343,634	514,011	375,515	2.6558	997,292	1,250,000	913,198	1.0000	913,198	2,568,809	1,876,664	4,254,123
2053	802,138	651,739	4.1468	2,702,712	792,338	578,863	2.7310	1,580,875	1,250,000	913,198	1.0000	913,198	2,934,496	2,143,819	5,196,785
2054	987,828	721,663	4.3139	3,113,181	1,079,416	788,576	2.8082	2,214,478	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	6,240,856
2055	987,828	721,663	4.4877	3,238,606	1,079,416	788,576	2.8877	2,277,170	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	6,428,973
2056	1,044,014	762,713	4.6686	3,560,801	1,231,639	899,798	2.9694	2,671,860	1,250,000	913,198	1.0000	913,198	3,525,673	2,575,708	7,145,859
2057	939,981	686,711	4.8567	3,333,148	1,135,887	883,719	3.0555	2,087,737	1,250,000	913,198	1.0000	913,198	3,125,868	2,283,628	6,336,082
2058	1,083,510	791,567	5.0525	3,999,392	1,306,473	998,289	3.1399	3,134,527	1,250,000	913,198	1.0000	913,198	3,699,985	2,703,053	8,047,117
2059	939,981	686,711	5.2561	3,609,420	1,135,887	883,719	3.2287	2,207,525	1,250,000	913,198	1.0000	913,198	3,125,868	2,283,628	6,730,142
2060	900,484	657,856	5.4679	3,597,990	801,070	585,228	3.3201	1,943,015	1,250,000	913,198	1.0000	913,198	2,951,554	2,156,281	6,453,302
2061	987,828	721,663	5.6882	4,104,962	1,079,416	788,576	3.4141	2,692,276	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	7,710,436
2062	987,828	721,663	5.9175	4,270,439	1,079,416	788,576	3.5107	2,768,453	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	7,952,089
2063	939,981	686,711	6.1560	4,227,391	1,135,887	883,719	3.6100	2,468,227	1,250,000	913,198	1.0000	913,198	3,125,868	2,283,628	7,608,815
2064	996,170	727,760	6.4040	4,660,575	1,088,129	794,941	3.7122	2,950,980	1,250,000	913,198	1.0000	913,198	3,334,299	2,435,899	8,524,753
2065	987,828	721,663	6.6621	4,807,789	1,079,416	788,576	3.8173	3,010,230	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	8,731,217
2066	939,981	686,711	6.9306	4,759,317	1,135,887	883,719	3.9253	2,683,804	1,250,000	913,198	1.0000	913,198	3,125,868	2,283,628	8,356,318
2067	987,828	721,663	7.2099	5,203,116	1,079,416	788,576	4.0364	3,183,007	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	9,299,320
2068	996,170	727,760	7.5005	5,458,564	1,088,129	794,941	4.1506	3,299,483	1,250,000	913,198	1.0000	913,198	3,334,299	2,435,899	9,671,244
2069	939,981	686,711	7.8027	5,358,197	1,135,887	883,719	4.2681	2,918,183	1,250,000	913,198	1.0000	913,198	3,125,868	2,283,628	9,189,577
2070	987,828	721,663	8.1172	5,857,881	1,079,416	788,576	4.3889	3,460,980	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	10,232,058
2071	987,828	721,663	8.4443	6,093,937	1,079,416	788,576	4.5131	3,558,921	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	10,566,055
2072	996,170	727,760	8.7846	6,393,080	1,088,129	794,941	4.6408	3,683,163	1,250,000	913,198	1.0000	913,198	3,334,299	2,435,899	10,995,440
2073	987,828	721,663	9.1386	6,594,987	1,079,416	788,576	4.7721	3,763,162	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	11,271,346
2074	987,828	721,663	9.5069	6,860,775	1,079,416	788,576	4.9072	3,869,698	1,250,000	913,198	1.0000	913,198	3,317,240	2,423,436	11,643,671
2075	1,319,646	964,078	9.8901	9,534,827	2,074,884	1,515,823	5.0460	7,648,842	1,250,000	913,198	1.0000	913,198	4,644,530	3,393,098	10,806,866
2076	996,170	727,760	10.2886	7,487,631	1,088,129	794,941	5.1888	4,124,790	1,250,000	913,198	1.0000	913,198	3,334,299	2,435,899	12,525,619
2077	987,828	721,663	10.7033	7,724,174	1,272,678	929,804	5.3357	4,912,963	1,250,000	913,198	1.0000	913,198	4,965,499	10,933,165	38,250,335
2078	(1,447,248)	(1,035,388)	11.1346	(11,528,633)	(3,193,968)	(2,334,178)	5.4867	(12,806,937)	0	-	1.0000	-	1,777,806	1,298,790	1,278,304
	\$393,239,759	\$287,284,452		\$736,134,908	\$414,428,049	\$302,763,726		\$623,769,548	\$55,000,000	\$40,180,690		\$40,180,690	\$862,667,807	\$630,228,868	\$1,400,085,146
	\$1,401,640,794	\$1,023,979,895		\$2,710,846,134	\$1,399,017,995	\$1,022,063,788		\$2,176,350,295	\$11,250,000	\$81,274,578		\$81,274,578	\$2,911,908,789	\$2,127,318,261	\$4,968,471,026

EXTERNAL FUND CALCULATION

Monticello

	Beginning Balance	Assumed Interest	Decommissioning Payment	Annuity	Ending Balance
2019	\$700,096,238	19,347,661	-	10,044,170	729,488,068
2020	729,488,068	34,339,108	-	8,507,110	772,334,286
2021	772,334,286	36,344,311	-	8,507,110	817,185,706
2022	817,185,706	38,443,357	-	8,507,110	864,136,173
2023	864,136,173	40,640,639	-	8,507,110	913,283,922
2024	913,283,922	42,940,754	-	8,507,110	964,731,786
2025	964,731,786	45,348,514	-	8,507,110	1,018,587,409
2026	1,018,587,409	47,868,957	-	8,507,110	1,074,963,476
2027	1,074,963,476	50,507,357	-	8,507,110	1,133,977,942
2028	1,133,977,942	53,269,234	-	8,507,110	1,195,754,286
2029	1,195,754,286	56,160,367	-	8,507,110	1,260,421,763
2030	1,260,421,763	48,269,976	(35,149,748)	6,380,332	1,279,922,322
2031	1,279,922,322	48,893,033	(138,372,798)	-	1,190,442,557
2032	1,190,442,557	45,474,906	(217,244,301)	-	1,018,673,162
2033	1,018,673,162	38,913,315	(222,488,529)	-	835,097,947
2034	835,097,947	31,900,742	(140,593,917)	-	726,404,772
2035	726,404,772	27,748,662	(265,856,568)	-	488,296,866
2036	488,296,866	18,652,940	(103,539,872)	-	403,409,935
2037	403,409,935	15,410,260	(73,866,777)	-	344,953,417
2038	344,953,417	13,177,221	(59,887,477)	-	298,243,161
2039	298,243,161	11,392,889	(3,439,928)	-	306,196,121
2040	306,196,121	11,696,692	(3,606,097)	-	314,286,716
2041	314,286,716	12,005,753	(3,702,274)	-	322,590,195
2042	322,590,195	12,322,945	(3,840,973)	-	331,072,167
2043	331,072,167	12,646,957	(3,984,946)	-	339,734,178
2044	339,734,178	12,977,846	(4,177,953)	-	348,534,070
2045	348,534,070	13,314,001	(4,289,703)	-	357,558,368
2046	357,558,368	13,658,730	(4,450,816)	-	366,766,282
2047	366,766,282	14,010,472	(4,618,212)	-	376,158,542
2048	376,158,542	14,369,256	(9,947,235)	-	380,580,563
2049	380,580,563	14,538,178	(4,972,297)	-	390,146,444
2050	390,146,444	14,903,594	(17,397,067)	-	387,652,970
2051	387,652,970	14,808,343	(17,986,056)	-	384,475,257
2052	384,475,257	14,686,955	(26,186,080)	-	372,976,132
2053	372,976,132	14,247,688	(32,833,667)	-	354,390,153
2054	354,390,153	13,537,704	(21,885,966)	-	346,041,891
2055	346,041,891	13,218,800	(32,984,695)	-	326,275,997
2056	326,275,997	12,463,743	(38,432,146)	-	300,307,594

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EXTERNAL FUND CALCULATION

2057	300,307,594	11,471,750	(6,517,897)	-	305,261,447
2058	305,261,447	11,660,987	(6,765,589)	-	310,156,846
2059	310,156,846	11,847,992	(7,022,720)	-	314,982,117
2060	314,982,117	12,032,317	(7,368,671)	-	319,645,763
2061	319,645,763	12,210,468	(7,567,172)	-	324,289,059
2062	324,289,059	12,387,842	(7,855,360)	-	328,821,541
2063	328,821,541	12,560,983	(8,154,627)	-	333,227,897
2064	333,227,897	12,729,306	(8,556,993)	-	337,400,209
2065	337,400,209	12,888,688	(8,788,273)	-	341,500,624
2066	341,500,624	13,045,324	(9,123,627)	-	345,422,321
2067	345,422,321	13,195,133	(9,471,958)	-	349,145,496
2068	349,145,496	13,337,358	(9,940,263)	-	352,542,591
2069	352,542,591	13,467,127	(10,209,588)	-	355,800,130
2070	355,800,130	13,591,565	(10,600,052)	-	358,791,643
2071	358,791,643	13,705,841	(11,005,568)	-	361,491,915
2072	361,491,915	13,808,991	(11,550,563)	-	363,750,343
2073	363,750,343	13,895,263	(11,864,413)	-	365,781,194
2074	365,781,194	13,972,842	(12,319,057)	-	367,434,979
2075	367,434,979	14,036,016	(12,791,368)	-	368,679,627
2076	368,679,627	14,083,562	(13,425,771)	-	369,337,418
2077	369,337,418	14,108,689	(13,791,681)	-	369,654,426
2078	369,654,426	14,120,799	(23,904,638)	-	359,870,587
2079	359,870,587	13,747,056	(26,765,570)	-	346,852,073
2080	346,852,073	13,249,749	(25,839,974)	-	334,261,849
2081	334,261,849	12,768,803	(26,606,609)	-	320,424,043
2082	320,424,043	12,240,198	(27,575,147)	-	305,089,094
2083	305,089,094	11,654,403	(30,851,309)	-	285,892,188
2084	285,892,188	10,921,082	(29,816,544)	-	266,996,725
2085	266,996,725	10,199,275	(30,703,213)	-	246,492,788
2086	246,492,788	9,416,024	(31,824,547)	-	224,084,265
2087	224,084,265	8,560,019	(35,577,683)	-	197,066,601
2088	197,066,601	7,527,944	(52,984,025)	-	151,610,520
2089	151,610,520	5,791,522	(35,446,740)	-	121,955,302
2090	121,955,302	4,658,693	(28,169,201)	-	98,444,793
2091	98,444,793	3,760,591	(102,205,385)	-	0

EXTERNAL FUND CALCULATION

Prairie Island Unit 1

	Beginning Balance	Assumed Interest	Decommissioning Payment	Annuity	Ending Balance
2019	407,785,386	11,109,616	-	36,948	418,931,951
2020	418,931,951	19,853,655	-	12,399,703	451,185,309
2021	451,185,309	21,359,887	-	12,399,703	484,944,900
2022	484,944,900	22,936,460	-	12,399,703	520,281,063
2023	520,281,063	24,586,659	-	12,399,703	557,267,425
2024	557,267,425	26,313,922	-	12,399,703	595,981,050
2025	595,981,050	28,121,848	-	12,399,703	636,502,602
2026	636,502,602	30,014,205	-	12,399,703	678,916,510
2027	678,916,510	31,994,934	-	12,399,703	723,311,147
2028	723,311,147	34,068,164	-	12,399,703	769,779,014
2029	769,779,014	36,238,213	-	12,399,703	818,416,931
2030	818,416,931	38,509,604	-	12,399,703	869,326,238
2031	869,326,238	40,887,068	-	12,399,703	922,613,009
2032	922,613,009	43,375,561	-	12,399,703	978,388,273
2033	978,388,273	34,683,739	(42,709,071)	8,307,801	978,670,742
2034	978,670,742	34,547,077	(131,051,557)	-	882,166,262
2035	882,166,262	31,140,469	(197,002,001)	-	716,304,730
2036	716,304,730	25,285,557	(171,734,424)	-	569,855,863
2037	569,855,863	20,115,912	(109,364,471)	-	480,607,304
2038	480,607,304	16,965,438	(47,969,917)	-	449,602,825
2039	449,602,825	15,870,980	(166,933,645)	-	298,540,160
2040	298,540,160	10,538,468	(77,322,450)	-	231,756,177
2041	231,756,177	8,180,993	(45,023,731)	-	194,913,440
2042	194,913,440	6,880,444	(40,531,476)	-	161,262,409
2043	161,262,409	5,692,563	(21,406,517)	-	145,548,455
2044	145,548,455	5,137,860	(3,419,469)	-	147,266,846
2045	147,266,846	5,198,520	(3,478,547)	-	148,986,818
2046	148,986,818	5,259,235	(3,572,231)	-	150,673,822
2047	150,673,822	5,318,786	(3,669,488)	-	152,323,120
2048	152,323,120	5,377,006	(3,806,192)	-	153,893,935
2049	153,893,935	5,432,456	(3,874,955)	-	155,451,435
2050	155,451,435	5,487,436	(3,983,494)	-	156,955,377
2051	156,955,377	5,540,525	(4,096,088)	-	158,399,814
2052	158,399,814	5,591,513	(4,254,123)	-	159,737,204
2053	159,737,204	5,638,723	(5,196,783)	-	160,179,145
2054	160,179,145	5,654,324	(6,240,856)	-	159,592,612
2055	159,592,612	5,633,619	(6,428,973)	-	158,797,258
2056	158,797,258	5,605,543	(7,145,859)	-	157,256,942
2057	157,256,942	5,551,170	(6,336,082)	-	156,472,030

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EXTERNAL FUND CALCULATION

2058	156,472,030	5,523,463	(8,047,117)	-	153,948,376
2059	153,948,376	5,434,378	(6,730,142)	-	152,652,612
2060	152,652,612	5,388,637	(6,453,302)	-	151,587,947
2061	151,587,947	5,351,055	(7,710,436)	-	149,228,566
2062	149,228,566	5,267,768	(7,952,089)	-	146,544,245
2063	146,544,245	5,173,012	(7,608,815)	-	144,108,442
2064	144,108,442	5,087,028	(8,524,753)	-	140,670,717
2065	140,670,717	4,965,676	(8,731,217)	-	136,905,177
2066	136,905,177	4,832,753	(8,356,318)	-	133,381,612
2067	133,381,612	4,708,371	(9,299,320)	-	128,790,662
2068	128,790,662	4,546,310	(9,671,244)	-	123,665,729
2069	123,665,729	4,365,400	(9,189,577)	-	118,841,552
2070	118,841,552	4,195,107	(10,232,058)	-	112,804,601
2071	112,804,601	3,982,002	(10,566,055)	-	106,220,548
2072	106,220,548	3,749,585	(10,995,440)	-	98,974,693
2073	98,974,693	3,493,807	(11,271,346)	-	91,197,154
2074	91,197,154	3,219,260	(11,643,671)	-	82,772,742
2075	82,772,742	2,921,878	(18,096,866)	-	67,597,753
2076	67,597,753	2,386,201	(12,525,619)	-	57,458,335
2077	57,458,335	2,028,279	(58,251,896)	-	1,234,718
2078	1,234,718	43,586	(1,278,304)	-	(0)

EXTERNAL FUND CALCULATION

Prairie Island Unit 2

	Beginning Balance	Assumed Interest	Decommissioning Payment	Annuity	Ending Balance
2019	458,368,879	12,657,615	-	442,006	471,468,500
2020	471,468,500	22,454,460	-	6,511,608	500,434,567
2021	500,434,567	23,824,555	-	6,511,608	530,770,730
2022	530,770,730	25,259,455	-	6,511,608	562,541,793
2023	562,541,793	26,762,226	-	6,511,608	595,815,627
2024	595,815,627	28,336,079	-	6,511,608	630,663,314
2025	630,663,314	29,984,374	-	6,511,608	667,159,296
2026	667,159,296	31,710,634	-	6,511,608	705,381,538
2027	705,381,538	33,518,546	-	6,511,608	745,411,693
2028	745,411,693	35,411,973	-	6,511,608	787,335,273
2029	787,335,273	37,394,958	-	6,511,608	831,241,839
2030	831,241,839	39,471,739	-	6,511,608	877,225,186
2031	877,225,186	41,646,751	-	6,511,608	925,383,545
2032	925,383,545	43,924,641	-	6,511,608	975,819,794
2033	975,819,794	46,310,276	-	6,511,608	1,028,641,678
2034	1,028,641,678	35,478,233	(17,270,230)	5,404,635	1,052,254,316
2035	1,052,254,316	36,197,548	(113,685,934)	-	974,765,931
2036	974,765,931	33,531,948	(212,533,462)	-	795,764,417
2037	795,764,417	27,374,296	(205,129,018)	-	618,009,695
2038	618,009,695	21,259,533	(135,130,212)	-	504,139,017
2039	504,139,017	17,342,382	(176,314,290)	-	345,167,109
2040	345,167,109	11,873,749	(88,436,538)	-	268,604,319
2041	268,604,319	9,239,989	(63,556,533)	-	214,287,775
2042	214,287,775	7,371,499	(52,296,747)	-	169,362,528
2043	169,362,528	5,826,071	(27,095,017)	-	148,093,582
2044	148,093,582	5,094,419	(3,419,469)	-	149,768,532
2045	149,768,532	5,152,038	(3,478,547)	-	151,442,022
2046	151,442,022	5,209,606	(3,572,231)	-	153,079,397
2047	153,079,397	5,265,931	(3,669,488)	-	154,675,841
2048	154,675,841	5,320,849	(3,806,192)	-	156,190,498
2049	156,190,498	5,372,953	(3,874,955)	-	157,688,496
2050	157,688,496	5,424,484	(3,983,494)	-	159,129,486
2051	159,129,486	5,474,054	(4,096,088)	-	160,507,453
2052	160,507,453	5,521,456	(4,254,123)	-	161,774,786
2053	161,774,786	5,565,053	(5,196,785)	-	162,143,053
2054	162,143,053	5,577,721	(6,240,856)	-	161,479,918
2055	161,479,918	5,554,909	(6,428,973)	-	160,605,854
2056	160,605,854	5,524,841	(7,145,859)	-	158,984,836

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EXTERNAL FUND CALCULATION

2057	158,984,836	5,469,078	(6,336,082)	-	158,117,833
2058	158,117,833	5,439,253	(8,047,117)	-	155,509,970
2059	155,509,970	5,349,543	(6,730,142)	-	154,129,370
2060	154,129,370	5,302,050	(6,453,302)	-	152,978,119
2061	152,978,119	5,262,447	(7,710,436)	-	150,530,130
2062	150,530,130	5,178,236	(7,952,089)	-	147,756,278
2063	147,756,278	5,082,816	(7,608,815)	-	145,230,278
2064	145,230,278	4,995,922	(8,524,753)	-	141,701,447
2065	141,701,447	4,874,530	(8,731,217)	-	137,844,761
2066	137,844,761	4,741,860	(8,356,318)	-	134,230,302
2067	134,230,302	4,617,522	(9,299,320)	-	129,548,504
2068	129,548,504	4,456,469	(9,671,244)	-	124,333,729
2069	124,333,729	4,277,080	(9,189,577)	-	119,421,232
2070	119,421,232	4,108,090	(10,232,058)	-	113,297,265
2071	113,297,265	3,897,426	(10,566,055)	-	106,628,636
2072	106,628,636	3,668,025	(10,995,440)	-	99,301,221
2073	99,301,221	3,415,962	(11,271,346)	-	91,445,836
2074	91,445,836	3,145,737	(11,643,671)	-	82,947,902
2075	82,947,902	2,853,408	(18,096,866)	-	67,704,443
2076	67,704,443	2,329,033	(12,525,619)	-	57,507,857
2077	57,507,857	1,978,270	(58,250,335)	-	1,235,793
2078	1,235,793	42,511	(1,278,304)	-	0

2020 ACCRUAL COMPARISON

	Present	Proposed	Difference
Monticello	\$13,392,226	3,082,034	(10,310,192)
Prairie Island Unit 1	49,264	10,452,915	10,403,651
Prairie Island Unit 2	589,341	4,706,356	4,117,015
TOTAL	<u>\$14,030,831</u>	<u>\$18,241,305</u>	<u>\$4,210,474</u>

2020 MN RETAIL SUMMARY

	Remaining Life (yrs)	Operational Earnings Rate	Post-Shutdown Earnings Rate	Market Value Balance 5/31/2019	Book Value 5/31/2019	Unrealized Gain/Loss 5/31/2019	Tax-Effect Adjustment	Tax-Adjusted Fund Balance 5/31/2019	2020-2021 Decommissioning Accrual
Monticello	10.75	4.68%	3.82%	\$744,299,670	\$585,522,973	\$158,776,697	\$44,203,432	\$700,096,238	3,082,034
Prairie Island Unit 1	13.67	4.67%	3.53%	436,511,217	333,329,355	103,181,862	28,725,830	407,785,386	10,452,915
Prairie Island Unit 2	14.83	4.73%	3.44%	490,623,480	374,766,437	115,857,043	32,254,601	458,368,879	4,706,356
TOTAL DECOMMISSIONING ACCRUAL				\$1,671,434,367	\$1,293,618,765	\$377,815,602	\$105,183,864	\$1,566,250,503	\$18,241,305

INPUT DATA

Escalation Rate (Labor)	4.03%
Escalation Rate (Non-Labor)	2.83%
Escalation Rate (PIIC)	0.00%
Jurisdictional Factor	73.0558%
Tax Rate for tax-effect adjustment	27.84%

AMOUNT TO RECOVER

	LABOR				NON-LABOR				PIIC Payment				Total Cost Estimate Nominal \$	Total Jurisdictional Cost in Nominal \$	Total Jurisdictional Cost in Future \$'s
	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$'s	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$'s	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$'s			
Monticello															
<i>Factors</i>	<i>2017</i>	<i>73.0588%</i>	<i>4.03%</i>				<i>2.83%</i>					<i>0.00%</i>			
2030	\$21,103,620	\$15,417,418	1.6713	\$25,767,131	\$8,935,561	\$6,527,946	1.4373	\$9,382,617	\$0	\$0	1.0000	\$0	\$30,039,182	\$21,945,364	\$35,149,748
2031	72,416,242	52,904,265	1.7387	91,984,645	42,961,353	31,385,760	1.4780	46,388,153	0	0	1.0000	0	115,377,595	84,290,025	138,372,798
2032	78,476,357	57,331,531	1.8088	103,701,272	102,263,189	74,709,191	1.5198	113,543,028	0	0	1.0000	0	180,739,546	132,040,721	217,244,301
2033	78,663,227	57,468,050	1.8816	108,131,882	100,155,666	73,169,523	1.5629	114,356,647	0	0	1.0000	0	178,818,892	130,637,572	222,488,529
2034	66,380,423	48,494,749	1.9575	94,928,471	38,894,671	28,414,813	1.6071	45,665,447	0	0	1.0000	0	105,275,094	76,909,562	140,593,917
2035	86,879,803	63,470,735	2.0364	129,251,805	113,147,091	82,660,512	1.6526	136,604,763	0	0	1.0000	0	200,026,894	146,131,248	265,856,568
2036	50,307,504	36,752,549	2.1184	77,856,601	20,688,337	15,114,030	1.6993	25,683,271	0	0	1.0000	0	70,995,841	51,866,579	103,539,872
2037	34,623,126	25,294,202	2.2038	55,743,362	14,196,883	10,371,647	1.7474	18,123,415	0	0	1.0000	0	48,820,010	35,665,849	73,866,777
2038	24,271,478	17,731,722	2.2926	40,651,747	13,208,979	9,649,925	1.7969	17,339,951	0	0	1.0000	0	37,480,457	27,381,648	57,991,697
2039	615,016	449,305	2.3850	1,071,592	297,162	217,094	1.8477	401,125	0	0	1.0000	0	912,178	666,399	1,472,717
2040	631,203	461,130	2.4811	1,144,111	303,018	221,372	1.9000	420,608	0	0	1.0000	0	934,221	682,503	1,564,718
2041	615,016	449,305	2.5811	1,159,701	297,162	217,094	1.9538	424,159	0	0	1.0000	0	912,178	666,399	1,583,860
2042	615,016	449,305	2.6851	1,206,428	297,162	217,094	2.0091	436,164	0	0	1.0000	0	912,178	666,399	1,642,593
2043	615,016	449,305	2.7933	1,255,043	297,162	217,094	2.0659	448,495	0	0	1.0000	0	912,178	666,399	1,703,539
2044	631,203	461,130	2.9059	1,339,999	303,018	221,372	2.1244	470,284	0	0	1.0000	0	934,221	682,503	1,810,282
2045	615,016	449,305	3.0230	1,358,249	297,162	217,094	2.1845	474,243	0	0	1.0000	0	912,178	666,399	1,832,491
2046	615,016	449,305	3.1448	1,412,974	297,162	217,094	2.2463	487,659	0	0	1.0000	0	912,178	666,399	1,900,633
2047	615,016	449,305	3.2716	1,469,946	297,162	217,094	2.3099	501,466	0	0	1.0000	0	912,178	666,399	1,971,412
2048	1,294,848	945,962	3.4034	3,219,486	2,293,953	1,675,866	2.3753	3,980,684	0	0	1.0000	0	3,588,801	2,621,827	7,200,170
2049	615,016	449,305	3.5406	1,590,809	297,162	217,094	2.4425	530,253	0	0	1.0000	0	912,178	666,399	2,121,062
2050	2,108,217	1,540,175	3.6833	5,672,926	4,776,766	3,489,705	2.5116	8,764,743	0	0	1.0000	0	6,884,983	5,029,880	14,437,669
2051	2,108,217	1,540,175	3.8317	5,901,488	4,776,766	3,489,705	2.5827	9,012,861	0	0	1.0000	0	6,884,983	5,029,880	14,914,349
2052	2,986,904	2,182,107	3.9861	8,698,095	7,370,122	5,384,302	2.6558	14,299,629	0	0	1.0000	0	10,357,026	7,566,408	22,997,724
2053	3,617,592	2,642,861	4.1468	10,959,415	9,304,891	6,797,763	2.7310	18,564,690	0	0	1.0000	0	12,922,483	9,440,624	29,524,105
2054	2,323,842	1,697,701	4.3139	7,323,714	5,423,641	3,962,285	2.8082	11,126,888	0	0	1.0000	0	7,747,483	5,659,986	18,450,602
2055	3,401,967	2,485,334	4.4877	11,153,434	8,658,016	6,325,183	2.8877	18,265,231	0	0	1.0000	0	12,059,983	8,810,517	29,418,666
2056	3,849,404	2,812,213	4.6686	13,129,097	9,957,622	7,274,621	2.9694	21,601,258	0	0	1.0000	0	13,807,026	10,086,834	34,730,356
2057	598,425	437,184	4.8567	2,123,272	247,389	180,732	3.0535	551,866	0	0	1.0000	0	845,814	617,916	2,675,138
2058	598,425	437,184	5.0525	2,208,873	247,389	180,732	3.1399	567,481	0	0	1.0000	0	845,814	617,916	2,776,354
2059	598,425	437,184	5.2561	2,297,884	247,389	180,732	3.2287	583,530	0	0	1.0000	0	845,814	617,916	2,881,414
2060	614,612	449,010	5.4679	2,455,140	253,245	185,010	3.3201	614,253	0	0	1.0000	0	867,857	634,020	3,069,393
2061	598,425	437,184	5.6882	2,486,791	247,389	180,732	3.4141	617,038	0	0	1.0000	0	845,814	617,916	3,103,829
2062	598,425	437,184	5.9175	2,587,037	247,389	180,732	3.5107	634,497	0	0	1.0000	0	845,814	617,916	3,221,534
2063	598,425	437,184	6.1560	2,691,306	247,389	180,732	3.6100	652,444	0	0	1.0000	0	845,814	617,916	3,343,749
2064	614,612	449,010	6.4040	2,875,458	253,245	185,010	3.7122	686,795	0	0	1.0000	0	867,857	634,020	3,562,254
2065	598,425	437,184	6.6621	2,912,565	247,389	180,732	3.8173	689,909	0	0	1.0000	0	845,814	617,916	3,602,474
2066	598,425	437,184	6.9306	3,029,949	247,389	180,732	3.9253	709,429	0	0	1.0000	0	845,814	617,916	3,739,377
2067	598,425	437,184	7.2099	3,152,054	247,389	180,732	4.0364	729,508	0	0	1.0000	0	845,814	617,916	3,881,562
2068	614,612	449,010	7.5005	3,367,797	253,245	185,010	4.1506	767,904	0	0	1.0000	0	867,857	634,020	4,135,701
2069	598,425	437,184	7.8027	3,411,217	247,389	180,732	4.2681	771,384	0	0	1.0000	0	845,814	617,916	4,182,601
2070	598,425	437,184	8.1172	3,548,711	247,389	180,732	4.3889	793,216	0	0	1.0000	0	845,814	617,916	4,341,927
2071	598,425	437,184	8.4443	3,691,714	247,389	180,732	4.5131	815,663	0	0	1.0000	0	845,814	617,916	4,507,377
2072	614,612	449,010	8.7846	3,944,371	253,245	185,010	4.6408	858,596	0	0	1.0000	0	867,857	634,020	4,802,967
2073	598,425	437,184	9.1386	3,995,251	247,389	180,732	4.7721	862,473	0	0	1.0000	0	845,814	617,916	4,857,724
2074	598,425	437,184	9.5069	4,156,266	247,389	180,732	4.9072	886,890	0	0	1.0000	0	845,814	617,916	5,043,156
2075	598,425	437,184	9.8901	4,323,795	247,389	180,732	5.0460	911,975	0	0	1.0000	0	845,814	617,916	5,235,770
2076	614,612	449,010	10.2886	4,619,681	253,245	185,010	5.1888	959,982	0	0	1.0000	0	867,857	634,020	5,579,663
2077	598,425	437,184	10.7033	4,679,313	247,389	180,732	5.3357	964,333	0	0	1.0000	0	845,814	617,916	5,643,647
2078	1,076,857	786,706	11.1346	8,759,662	1,667,353	1,218,098	5.4867	6,683,338	0	0	1.0000	0	2,744,210	2,004,804	15,443,000
2079	1,172,543	856,611	11.5833	9,922,378	1,954,412	1,427,811	5.6420	8,055,711	0	0	1.0000	0	3,126,955	2,284,422	17,978,089
2080	1,093,045	798,533	12.0501	9,622,400	1,673,167	1,222,345	5.8016	7,091,558	0	0	1.0000	0	2,766,212	2,020,878	16,713,958
2081	1,076,857	786,706	12.5357	9,861,917	1,667,353	1,218,098	5.9658	7,266,929	0	0	1.0000	0	2,744,210	2,004,804	17,128,845
2082	1,076,857	786,706	13.0409	10,259,361	1,667,353	1,218,098	6.1346	7,472,544	0	0	1.0000	0	2,744,210	2,004,804	17,731,904
2083	1,172,543	856,611	13.5665	11,621,209	1,954,412	1,427,811	6.3083	9,007,061	0	0	1.0000	0	3,126,955	2,284,422	20,628,270
2084	1,093,045	798,533	14.1132	11,269,853	1,673,167	1,222,345	6.4868	7,929,109	0	0	1.0000	0	2,766,212	2,020,878	19,198,962

AMOUNT TO RECOVER

	LABOR				NON-LABOR				PIIC Payment				Total Cost Estimate Nominal \$	Total Jurisdictional Cost in Nominal \$	Total Jurisdictional Cost in Future \$'s
	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$'s	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$'s	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$'s			
2085	1,076,857	786,706	14.6820	11,550,425	1,667,353	1,218,098	6.6704	8,125,200	0	0	1.0000	0	2,744,210	2,004,804	19,675,625
2086	1,076,857	786,706	15.2737	12,015,919	1,667,353	1,218,098	6.8591	8,355,056	0	0	1.0000	0	2,744,210	2,004,804	20,370,975
2087	1,172,543	856,611	15.8892	13,610,858	1,954,412	1,427,811	7.0532	10,070,638	0	0	1.0000	0	3,126,955	2,284,422	23,681,496
2088	1,756,689	1,283,363	16.5295	21,213,352	3,664,101	2,676,838	7.2528	19,414,571	0	0	1.0000	0	5,420,790	3,960,201	40,627,923
2089	1,076,857	786,706	17.1957	13,527,969	1,667,353	1,218,098	7.4581	9,084,696	0	0	1.0000	0	2,744,210	2,004,804	22,612,665
2090	789,798	576,993	17.8887	10,321,659	806,175	588,957	7.6692	4,516,832	0	0	1.0000	0	1,595,973	1,165,951	14,838,492
2091	(3,275,110)	(2,392,658)	18.6096	(44,526,408)	23,065,010	16,850,327	7.8862	132,885,052	0	0	1.0000	0	19,789,900	14,457,669	88,358,645
	\$565,079,402	\$412,823,278		\$984,672,423	\$561,970,274	\$410,551,879		\$898,885,195	\$0	\$0		\$0	\$1,127,049,676	\$823,375,157	\$1,883,557,617

AMOUNT TO RECOVER

	LABOR				NON-LABOR				PIIC Payment				Total Cost Estimate Nominal \$	Total Jurisdictional Cost in Nominal \$	Total Jurisdictional Cost in Future \$'s
	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$'s	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$'s	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$'s			
Prairie Island Unit 1															
<i>Factors</i>	<i>2017</i>	<i>73.0558%</i>	<i>4.03%</i>				<i>2.83%</i>					<i>0.00%</i>			
2033	\$22,324,352	\$16,309,234	1.8816	\$30,687,454	\$9,728,959	\$7,107,569	1.5629	\$11,108,420	1,250,000.00	\$913,198	1.0000	\$913,198	\$33,303,311	\$24,330,000	\$42,709,071
2034	63,582,247	46,450,519	1.9575	90,926,891	33,397,619	24,398,898	1.6071	39,211,469	1,250,000	913,198	1.0000	913,198	98,229,866	71,762,614	131,051,557
2035	65,877,290	48,127,182	2.0364	98,006,192	81,239,936	59,350,485	1.6526	98,082,611	1,250,000	913,198	1.0000	913,198	148,367,226	108,390,864	197,002,001
2036	57,759,315	42,196,530	2.1184	89,389,129	65,595,019	47,920,966	1.6993	81,432,097	1,250,000	913,198	1.0000	913,198	124,604,334	91,030,693	171,734,424
2037	38,110,947	27,842,257	2.2038	61,358,766	36,889,671	26,950,044	1.7474	47,092,507	1,250,000	913,198	1.0000	913,198	76,250,618	55,705,499	109,364,471
2038	13,207,914	9,649,147	2.2926	22,121,635	18,994,691	13,876,723	1.7969	24,935,084	1,250,000	913,198	1.0000	913,198	33,452,605	24,439,068	47,969,917
2039	36,035,855	26,326,282	2.3850	62,788,183	76,476,728	55,870,685	1.8477	103,232,265	1,250,000	913,198	1.0000	913,198	113,762,582	83,110,165	166,933,645
2040	31,919,556	23,319,087	2.4811	57,856,987	13,365,606	9,764,350	1.9000	18,552,265	1,250,000	913,198	1.0000	913,198	46,535,162	33,996,635	77,322,450
2041	16,871,318	12,325,476	2.5811	31,813,287	7,735,873	5,651,504	1.9538	11,041,908	1,250,000	913,198	1.0000	913,198	25,857,191	18,890,178	43,768,392
2042	12,081,952	8,826,567	2.6851	23,700,214	9,958,700	7,275,408	2.0091	14,617,022	1,250,000	913,198	1.0000	913,198	23,290,652	17,015,172	39,230,433
2043	5,844,432	4,269,712	2.7933	11,926,585	4,782,672	3,494,019	2.0659	7,218,295	1,250,000	913,198	1.0000	913,198	11,877,125	8,676,929	20,058,078
2044	354,798	259,201	2.9059	753,211	229,011	167,306	2.1244	355,424	1,250,000	913,198	1.0000	913,198	1,833,809	1,339,704	2,021,832
2045	346,451	253,103	3.0230	765,129	220,298	160,940	2.1845	351,574	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,029,900
2046	346,451	253,103	3.1448	795,957	220,298	160,940	2.2463	361,520	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,070,674
2047	346,451	253,103	3.2716	828,050	220,298	160,940	2.3099	371,756	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,113,003
2048	354,798	259,201	3.4034	882,163	229,011	167,306	2.3753	397,401	1,250,000	913,198	1.0000	913,198	1,833,809	1,339,704	2,192,761
2049	346,451	253,103	3.5406	896,135	220,298	160,940	2.4425	393,096	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,202,429
2050	346,451	253,103	3.6833	932,253	220,298	160,940	2.5116	404,217	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,249,667
2051	346,451	253,103	3.8317	969,813	220,298	160,940	2.5827	415,660	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,298,671
2052	354,798	259,201	3.9861	1,033,199	229,011	167,306	2.6558	444,330	1,250,000	913,198	1.0000	913,198	1,833,809	1,339,704	2,390,727
2053	442,138	323,007	4.1468	1,339,447	507,357	370,653	2.7310	1,012,254	1,250,000	913,198	1.0000	913,198	2,199,495	1,606,858	3,264,899
2054	537,824	392,912	4.3139	1,694,981	794,416	580,367	2.8082	1,629,786	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	4,237,964
2055	537,824	392,912	4.4877	1,763,270	794,416	580,367	2.8877	1,675,925	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	4,352,392
2056	594,014	433,962	4.6686	2,025,993	946,659	691,589	2.9694	2,053,605	1,250,000	913,198	1.0000	913,198	2,790,673	2,038,748	4,992,796
2057	489,981	357,960	4.8567	1,738,502	650,887	475,510	3.0535	1,451,971	1,250,000	913,198	1.0000	913,198	2,390,868	1,746,667	4,103,670
2058	633,510	462,816	5.0525	2,338,377	1,081,475	790,080	3.1399	2,480,772	1,250,000	913,198	1.0000	913,198	2,964,985	2,166,093	5,732,346
2059	489,981	357,960	5.2561	1,881,471	650,887	475,510	3.2287	1,535,280	1,250,000	913,198	1.0000	913,198	2,390,868	1,746,667	4,329,949
2060	450,484	329,105	5.4679	1,799,512	516,070	377,019	3.3201	1,251,740	1,250,000	913,198	1.0000	913,198	2,216,554	1,619,321	3,964,449
2061	537,824	392,912	5.6882	2,234,960	794,416	580,367	3.4141	1,981,430	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	5,129,587
2062	537,824	392,912	5.9175	2,325,055	794,416	580,367	3.5107	2,037,493	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	5,275,745
2063	489,981	357,960	6.1560	2,203,599	650,887	475,510	3.6100	1,716,592	1,250,000	913,198	1.0000	913,198	2,390,868	1,746,667	4,833,389
2064	546,170	399,009	6.4040	2,555,253	803,129	586,732	3.7122	2,178,067	1,250,000	913,198	1.0000	913,198	2,599,299	1,898,938	5,646,517
2065	537,824	392,912	6.6621	2,617,617	794,416	580,367	3.8173	2,215,433	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	5,746,248
2066	489,981	357,960	6.9306	2,480,874	650,887	475,510	3.9253	1,866,521	1,250,000	913,198	1.0000	913,198	2,390,868	1,746,667	5,260,593
2067	537,824	392,912	7.2099	2,832,854	794,416	580,367	4.0364	2,342,592	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	6,088,643
2068	546,170	399,009	7.5005	2,992,766	803,129	586,732	4.1506	2,435,290	1,250,000	913,198	1.0000	913,198	2,599,299	1,898,938	6,341,254
2069	489,981	357,960	7.8027	2,793,051	650,887	475,510	4.2681	2,029,526	1,250,000	913,198	1.0000	913,198	2,390,868	1,746,667	5,735,774
2070	537,824	392,912	8.1172	3,189,342	794,416	580,367	4.3889	2,547,171	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	6,649,711
2071	537,824	392,912	8.4443	3,317,864	794,416	580,367	4.5131	2,619,253	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	6,850,314
2072	546,170	399,009	8.7846	3,505,133	803,129	586,732	4.6408	2,722,906	1,250,000	913,198	1.0000	913,198	2,599,299	1,898,938	7,141,237
2073	537,824	392,912	9.1386	3,590,662	794,416	580,367	4.7721	2,769,568	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	7,273,427
2074	537,824	392,912	9.5069	3,735,372	794,416	580,367	4.9072	2,847,975	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	7,496,544
2075	869,646	635,327	9.8901	6,283,446	1,789,884	1,307,614	5.0460	6,598,219	1,250,000	913,198	1.0000	913,198	3,909,530	2,856,138	13,794,862
2076	546,170	399,009	10.2886	4,105,243	803,129	586,732	5.1888	3,044,435	1,250,000	913,198	1.0000	913,198	2,599,299	1,898,938	8,062,875
2077	537,974	393,021	10.7033	4,206,624	12,442,775	9,090,168	5.3357	48,502,412	1,250,000	913,198	1.0000	913,198	14,230,749	10,396,387	53,622,233
2078	(1,867,257)	(1,364,139)	11.1346	(15,189,145)	2,910,063	2,125,969	5.4867	11,664,557	0	0	1.0000	0	1,042,806	761,830	(3,524,589)
	\$378,431,633	\$276,466,257		\$642,793,354	\$394,779,673	\$288,409,448		\$575,229,692	\$56,250,000	\$41,093,888		\$41,093,888	\$829,461,305	\$605,969,592	\$1,259,116,934

AMOUNT TO RECOVER

	LABOR				NON-LABOR				PIIC Payment				Total Cost Estimate Nominal \$	Total Jurisdictional Cost in Nominal \$	Total Jurisdictional Cost in Future \$	
	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$	Cost Estimate Nominal \$	Jurisdictional Cost in Nominal \$	Escalation Factor	Jurisdictional Cost in Future \$				
Prairie Island Unit 2																
<i>Factors</i>	2017	73.0558%	4.03%				2.83%					0.00%				
2034	\$7,760,265	\$5,669,323	1.9575	\$11,097,701	\$4,479,535	\$3,272,560	1.6071	\$5,259,331	1,250,000.00	\$913,198	1.0000	\$913,198	\$13,489,800	\$9,855,081	\$17,270,230	
2035	46,911,429	34,271,520	2.0364	69,790,523	35,601,339	26,008,843	1.6526	42,982,214	1,250,000	913,198	1.0000	913,198	83,762,768	61,193,560	113,685,934	
2036	67,514,044	49,322,925	2.1184	104,485,684	86,298,832	63,046,302	1.6993	107,134,581	1,250,000	913,198	1.0000	913,198	155,062,875	113,282,424	212,533,462	
2037	70,896,041	51,793,670	2.2038	114,142,889	70,558,163	51,546,831	1.7474	90,072,932	1,250,000	913,198	1.0000	913,198	142,704,204	104,253,698	205,129,018	
2038	46,603,528	34,046,581	2.2926	78,055,191	42,782,149	31,254,841	1.7969	56,161,824	1,250,000	913,198	1.0000	913,198	90,635,677	66,214,619	135,130,212	
2039	40,663,625	29,707,136	2.3850	70,851,520	77,452,618	56,583,630	1.8477	104,549,572	1,250,000	913,198	1.0000	913,198	119,366,242	87,203,963	176,314,290	
2040	37,417,177	27,335,418	2.4811	67,821,906	14,193,501	10,369,176	1.9000	19,701,434	1,250,000	913,198	1.0000	913,198	52,860,679	38,617,792	88,436,538	
2041	23,327,583	17,042,152	2.5811	43,987,500	13,070,130	9,548,488	1.9538	18,655,836	1,250,000	913,198	1.0000	913,198	37,647,713	27,503,838	63,556,533	
2042	13,956,921	10,196,340	2.6851	27,378,192	15,468,640	11,300,739	2.0091	22,704,314	1,250,000	913,198	1.0000	913,198	30,675,561	22,410,276	50,995,704	
2043	6,722,862	4,911,441	2.7933	13,719,128	7,364,042	5,379,860	2.0659	11,114,252	1,250,000	913,198	1.0000	913,198	15,336,904	11,204,498	25,746,577	
2044	354,798	259,201	2.9059	753,211	229,011	167,306	2.1244	355,424	1,250,000	913,198	1.0000	913,198	1,833,809	1,339,704	2,021,832	
2045	346,451	253,103	3.0230	765,129	220,298	160,940	2.1845	351,574	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,029,900	
2046	346,451	253,103	3.1448	795,957	220,298	160,940	2.2463	361,520	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,070,674	
2047	346,451	253,103	3.2716	828,050	220,298	160,940	2.3099	371,756	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,113,003	
2048	354,798	259,201	3.4034	883,163	229,011	167,306	2.3753	397,401	1,250,000	913,198	1.0000	913,198	1,833,809	1,339,704	2,192,761	
2049	346,451	253,103	3.5406	896,135	220,298	160,940	2.4425	393,096	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,202,429	
2050	346,451	253,103	3.6833	932,253	220,298	160,940	2.5116	404,217	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,249,667	
2051	346,451	253,103	3.8317	969,813	220,298	160,940	2.5827	415,660	1,250,000	913,198	1.0000	913,198	1,816,749	1,327,240	2,298,671	
2052	354,798	259,201	3.9861	1,033,199	229,011	167,306	2.6558	444,330	1,250,000	913,198	1.0000	913,198	1,833,809	1,339,704	2,390,727	
2053	442,138	323,007	4.1468	1,339,447	307,358	370,654	2.7310	1,012,256	1,250,000	913,198	1.0000	913,198	2,199,496	1,606,859	3,264,901	
2054	537,824	392,912	4.3139	1,694,981	794,416	580,367	2.8082	1,629,786	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	4,237,964	
2055	537,824	392,912	4.4877	1,763,270	794,416	580,367	2.8877	1,675,925	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	4,352,392	
2056	594,014	433,962	4.6686	2,025,993	946,659	691,589	2.9694	2,053,605	1,250,000	913,198	1.0000	913,198	2,790,673	2,038,748	4,992,796	
2057	489,981	357,960	4.8567	1,738,502	650,887	475,510	3.0535	1,451,971	1,250,000	913,198	1.0000	913,198	2,390,868	1,746,667	4,103,670	
2058	633,510	462,816	5.0525	2,338,377	1,081,475	790,080	3.1399	2,480,772	1,250,000	913,198	1.0000	913,198	2,964,985	2,166,093	5,732,546	
2059	489,981	357,960	5.2561	1,881,471	650,887	475,510	3.2287	1,535,280	1,250,000	913,198	1.0000	913,198	2,390,868	1,746,667	4,329,949	
2060	450,484	329,105	5.4679	1,799,512	516,070	377,019	3.3201	1,251,740	1,250,000	913,198	1.0000	913,198	2,216,554	1,619,321	3,964,449	
2061	537,824	392,912	5.6882	2,234,960	794,416	580,367	3.4141	1,981,430	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	5,129,587	
2062	537,824	392,912	5.9175	2,325,055	794,416	580,367	3.5107	2,037,493	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	5,275,745	
2063	489,981	357,960	6.1560	2,203,599	650,887	475,510	3.6100	1,716,592	1,250,000	913,198	1.0000	913,198	2,390,868	1,746,667	4,833,389	
2064	546,170	399,009	6.4040	2,555,253	803,129	586,732	3.7122	2,178,067	1,250,000	913,198	1.0000	913,198	2,599,299	1,898,938	5,646,517	
2065	537,824	392,912	6.6621	2,617,617	794,416	580,367	3.8173	2,215,433	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	5,746,248	
2066	489,981	357,960	6.9306	2,480,874	650,887	475,510	3.9253	1,866,521	1,250,000	913,198	1.0000	913,198	2,390,868	1,746,667	5,260,593	
2067	537,824	392,912	7.2099	2,832,854	794,416	580,367	4.0364	2,342,592	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	6,088,643	
2068	546,170	399,009	7.5005	2,992,766	803,129	586,732	4.1506	2,435,290	1,250,000	913,198	1.0000	913,198	2,599,299	1,898,938	6,341,254	
2069	489,981	357,960	7.8027	2,793,051	650,887	475,510	4.2681	2,029,526	1,250,000	913,198	1.0000	913,198	2,390,868	1,746,667	5,735,774	
2070	537,824	392,912	8.1172	3,189,342	794,416	580,367	4.3889	2,547,171	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	6,649,711	
2071	537,824	392,912	8.4443	3,317,864	794,416	580,367	4.5131	2,619,253	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	6,850,314	
2072	546,170	399,009	8.7846	3,505,133	803,129	586,732	4.6408	2,722,906	1,250,000	913,198	1.0000	913,198	2,599,299	1,898,938	7,141,237	
2073	537,824	392,912	9.1386	3,590,662	794,416	580,367	4.7721	2,769,568	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	7,273,427	
2074	537,824	392,912	9.5069	3,735,372	794,416	580,367	4.9072	2,847,975	1,250,000	913,198	1.0000	913,198	2,582,240	1,886,476	7,496,544	
2075	609,646	435,327	9.8901	4,283,446	1,789,884	1,307,614	5.0460	6,598,219	1,250,000	913,198	1.0000	913,198	3,909,530	2,856,138	13,794,862	
2076	546,170	399,009	10.2886	4,105,243	803,129	586,732	5.1888	3,044,435	1,250,000	913,198	1.0000	913,198	2,599,299	1,898,938	8,062,875	
2077	537,824	392,912	10.7033	4,205,453	1,244,675	9,090,095	5.3357	48,502,022	1,250,000	913,198	1.0000	913,198	14,230,499	10,396,205	53,620,672	
2078	(1,867,257)	(1,364,139)	11.1346	(15,189,145)	2,910,063	2,125,969	5.4867	(11,664,557)	0	-	1.0000	-	1,042,806	761,830	(3,524,589)	
	\$376,589,759	\$275,120,661		\$663,547,092	\$403,883,049	\$295,059,992		\$597,041,651	\$55,000,000	\$40,180,690		\$40,180,690	\$835,472,807	\$610,361,343	\$1,300,769,433	
	\$1,320,100,794	\$964,410,196		\$2,291,012,869	\$1,360,632,995	\$994,021,320		\$2,071,156,538	\$111,250,000	\$81,274,578		\$81,274,578	\$2,791,983,789	\$2,039,706,093	\$4,443,443,985	

EXTERNAL FUND CALCULATION

Monticello

	Beginning Balance	Assumed Interest	Decommissioning Payment	Annuity	Ending Balance
2019	\$700,096,238	19,347,661	-	10,044,170	729,488,068
2020	729,488,068	34,212,161	-	3,082,034	766,782,264
2021	766,782,264	35,957,530	-	3,082,034	805,821,828
2022	805,821,828	37,784,581	-	3,082,034	846,688,443
2023	846,688,443	39,697,139	-	3,082,034	889,467,616
2024	889,467,616	41,699,204	-	3,082,034	934,248,855
2025	934,248,855	43,794,966	-	3,082,034	981,125,855
2026	981,125,855	45,988,810	-	3,082,034	1,030,196,699
2027	1,030,196,699	48,285,325	-	3,082,034	1,081,564,059
2028	1,081,564,059	50,689,318	-	3,082,034	1,135,335,411
2029	1,135,335,411	53,205,817	-	3,082,034	1,191,623,262
2030	1,191,623,262	45,564,159	(35,149,748)	2,311,526	1,204,349,198
2031	1,204,349,198	46,006,139	(138,372,798)	-	1,111,982,539
2032	1,111,982,539	42,477,733	(217,244,301)	-	937,215,972
2033	937,215,972	35,801,650	(222,488,529)	-	750,529,093
2034	750,529,093	28,670,211	(140,593,917)	-	638,605,387
2035	638,605,387	24,394,726	(265,856,568)	-	397,143,545
2036	397,143,545	15,170,883	(103,539,872)	-	308,774,556
2037	308,774,556	11,795,188	(73,866,777)	-	246,702,967
2038	246,702,967	9,424,053	(57,991,697)	-	198,135,323
2039	198,135,323	7,568,769	(1,472,717)	-	204,231,375
2040	204,231,375	7,801,639	(1,564,718)	-	210,468,295
2041	210,468,295	8,039,889	(1,583,860)	-	216,924,324
2042	216,924,324	8,286,509	(1,642,593)	-	223,568,241
2043	223,568,241	8,540,307	(1,703,539)	-	230,405,009
2044	230,405,009	8,801,471	(1,810,282)	-	237,396,198
2045	237,396,198	9,068,535	(1,832,491)	-	244,632,241
2046	244,632,241	9,344,952	(1,900,633)	-	252,076,560
2047	252,076,560	9,629,325	(1,971,412)	-	259,734,472
2048	259,734,472	9,921,857	(7,200,170)	-	262,456,159
2049	262,456,159	10,025,825	(2,121,062)	-	270,360,923
2050	270,360,923	10,327,787	(14,437,669)	-	266,251,041
2051	266,251,041	10,170,790	(14,914,349)	-	261,507,482
2052	261,507,482	9,989,586	(22,997,724)	-	248,499,344
2053	248,499,344	9,492,675	(29,524,105)	-	228,467,914
2054	228,467,914	8,727,474	(18,450,602)	-	218,744,786
2055	218,744,786	8,356,051	(29,418,666)	-	197,682,172
2056	197,682,172	7,551,459	(34,730,356)	-	170,503,275

External Levelized

EXTERNAL FUND CALCULATION

2057	170,503,275	6,513,225	(2,675,138)	-	174,341,362
2058	174,341,362	6,659,840	(2,776,354)	-	178,224,847
2059	178,224,847	6,808,189	(2,881,414)	-	182,151,622
2060	182,151,622	6,958,192	(3,069,393)	-	186,040,421
2061	186,040,421	7,106,744	(3,103,829)	-	190,043,336
2062	190,043,336	7,259,655	(3,221,534)	-	194,081,457
2063	194,081,457	7,413,912	(3,343,749)	-	198,151,619
2064	198,151,619	7,569,392	(3,562,254)	-	202,158,758
2065	202,158,758	7,722,465	(3,602,474)	-	206,278,748
2066	206,278,748	7,879,848	(3,739,377)	-	210,419,219
2067	210,419,219	8,038,014	(3,881,562)	-	214,575,671
2068	214,575,671	8,196,791	(4,135,701)	-	218,636,760
2069	218,636,760	8,351,924	(4,182,601)	-	222,806,084
2070	222,806,084	8,511,192	(4,341,927)	-	226,975,349
2071	226,975,349	8,670,458	(4,507,377)	-	231,138,430
2072	231,138,430	8,829,488	(4,802,967)	-	235,164,951
2073	235,164,951	8,983,301	(4,857,724)	-	239,290,528
2074	239,290,528	9,140,898	(5,043,156)	-	243,388,271
2075	243,388,271	9,297,432	(5,235,770)	-	247,449,932
2076	247,449,932	9,452,587	(5,579,663)	-	251,322,856
2077	251,322,856	9,600,533	(5,643,647)	-	255,279,743
2078	255,279,743	9,751,686	(15,443,000)	-	249,588,429
2079	249,588,429	9,534,278	(17,978,089)	-	241,144,618
2080	241,144,618	9,211,724	(16,713,958)	-	233,642,384
2081	233,642,384	8,925,139	(17,128,845)	-	225,438,678
2082	225,438,678	8,611,757	(17,731,904)	-	216,318,531
2083	216,318,531	8,263,368	(20,628,270)	-	203,953,629
2084	203,953,629	7,791,029	(19,198,962)	-	192,545,696
2085	192,545,696	7,355,246	(19,675,625)	-	180,225,316
2086	180,225,316	6,884,607	(20,370,975)	-	166,738,949
2087	166,738,949	6,369,428	(23,681,496)	-	149,426,880
2088	149,426,880	5,708,107	(40,627,923)	-	114,507,064
2089	114,507,064	4,374,170	(22,612,665)	-	96,268,569
2090	96,268,569	3,677,459	(14,838,492)	-	85,107,537
2091	85,107,537	3,251,108	(88,358,645)	-	0

EXTERNAL FUND CALCULATION

Prairie Island Unit 1

	Beginning Balance	Assumed Interest	Decommissioning Payment	Annuity	Ending Balance
2019	407,785,386	11,109,616	-	36,948	418,931,951
2020	418,931,951	19,808,198	-	10,452,915	449,193,064
2021	449,193,064	21,221,392	-	10,452,915	480,867,370
2022	480,867,370	22,700,582	-	10,452,915	514,020,867
2023	514,020,867	24,248,850	-	10,452,915	548,722,632
2024	548,722,632	25,869,422	-	10,452,915	585,044,969
2025	585,044,969	27,565,676	-	10,452,915	623,063,560
2026	623,063,560	29,341,144	-	10,452,915	662,857,618
2027	662,857,618	31,199,526	-	10,452,915	704,510,060
2028	704,510,060	33,144,695	-	10,452,915	748,107,670
2029	748,107,670	35,180,704	-	10,452,915	793,741,289
2030	793,741,289	37,311,794	-	10,452,915	841,505,997
2031	841,505,997	39,542,406	-	10,452,915	891,501,318
2032	891,501,318	41,877,187	-	10,452,915	943,831,420
2033	943,831,420	33,440,860	(42,709,071)	7,003,453	941,566,662
2034	941,566,662	33,237,303	(131,051,557)	-	843,752,408
2035	843,752,408	29,784,460	(197,002,001)	-	676,534,866
2036	676,534,866	23,881,681	(171,734,424)	-	528,682,124
2037	528,682,124	18,662,479	(109,364,471)	-	437,980,132
2038	437,980,132	15,460,699	(47,969,917)	-	405,470,913
2039	405,470,913	14,313,123	(166,933,645)	-	252,850,391
2040	252,850,391	8,925,619	(77,322,450)	-	184,453,560
2041	184,453,560	6,511,211	(43,768,392)	-	147,196,379
2042	147,196,379	5,196,032	(39,230,433)	-	113,161,978
2043	113,161,978	3,994,618	(20,058,078)	-	97,098,518
2044	97,098,518	3,427,578	(2,021,832)	-	98,504,263
2045	98,504,263	3,477,200	(2,029,900)	-	99,951,563
2046	99,951,563	3,528,290	(2,070,674)	-	101,409,180
2047	101,409,180	3,579,744	(2,113,003)	-	102,875,920
2048	102,875,920	3,631,520	(2,192,761)	-	104,314,679
2049	104,314,679	3,682,308	(2,202,429)	-	105,794,558
2050	105,794,558	3,734,548	(2,249,667)	-	107,279,439
2051	107,279,439	3,786,964	(2,298,671)	-	108,767,732
2052	108,767,732	3,839,501	(2,390,727)	-	110,216,507
2053	110,216,507	3,890,643	(3,264,899)	-	110,842,250
2054	110,842,250	3,912,731	(4,237,964)	-	110,517,017
2055	110,517,017	3,901,251	(4,352,392)	-	110,065,876
2056	110,065,876	3,885,325	(4,992,796)	-	108,958,406
2057	108,958,406	3,846,232	(4,103,670)	-	108,700,967

External Levelized

EXTERNAL FUND CALCULATION

2058	108,700,967	3,837,144	(5,732,346)	-	106,805,765
2059	106,805,765	3,770,244	(4,329,949)	-	106,246,060
2060	106,246,060	3,750,486	(3,964,449)	-	106,032,096
2061	106,032,096	3,742,933	(5,129,587)	-	104,645,442
2062	104,645,442	3,693,984	(5,275,745)	-	103,063,681
2063	103,063,681	3,638,148	(4,833,389)	-	101,868,440
2064	101,868,440	3,595,956	(5,646,517)	-	99,817,879
2065	99,817,879	3,523,571	(5,746,248)	-	97,595,203
2066	97,595,203	3,445,111	(5,260,593)	-	95,779,721
2067	95,779,721	3,381,024	(6,088,643)	-	93,072,102
2068	93,072,102	3,285,445	(6,341,254)	-	90,016,294
2069	90,016,294	3,177,575	(5,735,774)	-	87,458,095
2070	87,458,095	3,087,271	(6,649,711)	-	83,895,655
2071	83,895,655	2,961,517	(6,850,314)	-	80,006,858
2072	80,006,858	2,824,242	(7,141,237)	-	75,689,863
2073	75,689,863	2,671,852	(7,273,427)	-	71,088,288
2074	71,088,288	2,509,417	(7,496,544)	-	66,101,160
2075	66,101,160	2,333,371	(13,794,862)	-	54,639,669
2076	54,639,669	1,928,780	(8,062,875)	-	48,505,574
2077	48,505,574	1,712,247	(53,622,233)	-	(3,404,413)
2078	(3,404,413)	(120,176)	3,524,589	-	0

EXTERNAL FUND CALCULATION

Prairie Island Unit 2

	Beginning Balance	Assumed Interest	Decommissioning Payment	Annuity	Ending Balance
2019	458,368,879	12,657,615	-	442,006	471,468,500
2020	471,468,500	22,411,765	-	4,706,356	498,586,621
2021	498,586,621	23,694,452	-	4,706,356	526,987,429
2022	526,987,429	25,037,811	-	4,706,356	556,731,595
2023	556,731,595	26,444,710	-	4,706,356	587,882,661
2024	587,882,661	27,918,155	-	4,706,356	620,507,172
2025	620,507,172	29,461,295	-	4,706,356	654,674,822
2026	654,674,822	31,077,424	-	4,706,356	690,458,602
2027	690,458,602	32,769,997	-	4,706,356	727,934,955
2028	727,934,955	34,542,629	-	4,706,356	767,183,939
2029	767,183,939	36,399,106	-	4,706,356	808,289,401
2030	808,289,401	38,343,394	-	4,706,356	851,339,150
2031	851,339,150	40,379,647	-	4,706,356	896,425,153
2032	896,425,153	42,512,215	-	4,706,356	943,643,724
2033	943,643,724	44,745,653	-	4,706,356	993,095,733
2034	993,095,733	34,229,681	(17,270,230)	3,906,275	1,013,961,460
2035	1,013,961,460	34,880,274	(113,685,934)	-	935,155,800
2036	935,155,800	32,169,360	(212,533,462)	-	754,791,698
2037	754,791,698	25,964,834	(205,129,018)	-	575,627,514
2038	575,627,514	19,801,586	(135,130,212)	-	460,298,889
2039	460,298,889	15,834,282	(176,314,290)	-	299,818,881
2040	299,818,881	10,313,769	(88,436,538)	-	221,696,112
2041	221,696,112	7,626,346	(63,556,533)	-	165,765,926
2042	165,765,926	5,702,348	(50,995,704)	-	120,472,569
2043	120,472,569	4,144,256	(25,746,577)	-	98,870,248
2044	98,870,248	3,401,137	(2,021,832)	-	100,249,553
2045	100,249,553	3,448,585	(2,029,900)	-	101,668,237
2046	101,668,237	3,497,387	(2,070,674)	-	103,094,950
2047	103,094,950	3,546,466	(2,113,003)	-	104,528,413
2048	104,528,413	3,595,777	(2,192,761)	-	105,931,429
2049	105,931,429	3,644,041	(2,202,429)	-	107,373,041
2050	107,373,041	3,693,633	(2,249,667)	-	108,817,007
2051	108,817,007	3,743,305	(2,298,671)	-	110,261,641
2052	110,261,641	3,793,000	(2,390,727)	-	111,663,915
2053	111,663,915	3,841,239	(3,264,901)	-	112,240,252
2054	112,240,252	3,861,065	(4,237,964)	-	111,863,353
2055	111,863,353	3,848,099	(4,352,392)	-	111,359,060
2056	111,359,060	3,830,752	(4,992,796)	-	110,197,016

External Levelized

EXTERNAL FUND CALCULATION

2057	110,197,016	3,790,777	(4,103,670)	-	109,884,123
2058	109,884,123	3,780,014	(5,732,346)	-	107,931,791
2059	107,931,791	3,712,854	(4,329,949)	-	107,314,696
2060	107,314,696	3,691,626	(3,964,449)	-	107,041,872
2061	107,041,872	3,682,240	(5,129,587)	-	105,594,525
2062	105,594,525	3,632,452	(5,275,745)	-	103,951,232
2063	103,951,232	3,575,922	(4,833,389)	-	102,693,765
2064	102,693,765	3,532,666	(5,646,517)	-	100,579,914
2065	100,579,914	3,459,949	(5,746,248)	-	98,293,615
2066	98,293,615	3,381,300	(5,260,593)	-	96,414,323
2067	96,414,323	3,316,653	(6,088,643)	-	93,642,333
2068	93,642,333	3,221,296	(6,341,254)	-	90,522,376
2069	90,522,376	3,113,970	(5,735,774)	-	87,900,571
2070	87,900,571	3,023,780	(6,649,711)	-	84,274,640
2071	84,274,640	2,899,048	(6,850,314)	-	80,323,374
2072	80,323,374	2,763,124	(7,141,237)	-	75,945,261
2073	75,945,261	2,612,517	(7,273,427)	-	71,284,351
2074	71,284,351	2,452,182	(7,496,544)	-	66,239,988
2075	66,239,988	2,278,656	(13,794,862)	-	54,723,782
2076	54,723,782	1,882,498	(8,062,875)	-	48,543,404
2077	48,543,404	1,669,893	(53,620,672)	-	(3,407,375)
2078	(3,407,375)	(117,214)	3,524,589	-	(0)

Schedule C – Escalation Rates

The long-term escalation rates used as of 5/31/2019 are as follows

Escalation Component	Trend Projection
Inflation	1.83%
Non-inflation escalation (Non-labor costs)	1.00%
Total escalation (Non-labor costs)	2.83%
Non-inflation escalation (Labor costs)	2.20%
Total escalation (Labor costs)	4.03%

The assumption updates from the 2017 triennial filing to the 5/31/19 analysis are based on changes in market rates. The Long-term expected inflation is assumed to be 1.83 percent, which is estimated from the expected inflation implied in long-term US treasury rates. The long-term risk-free (treasury) rate is observed to be 2.57 percent and the observed long-term Treasury Inflation Protected Securities (TIPS) yield (proxy for assuming the long-term real rate of interest) is 0.74 percent. This implies expected inflation of 1.83 percent. Non-inflation escalation is assumed to be 1.00 percent for non-labor costs, but 2.20% for labor costs.

Schedule D – Investment Assumptions

The following table shows the expected return and volatility assumption inputs:

Long-term Investment Assumptions for 5/31/2019 – Qualified Trust

Asset class	<u>Expected pre-tax</u>		<u>Expected after-tax</u>	
	Arithmetic return	Volatility	Arithmetic return	Volatility
US Large Cap Equity (Passive)	7.15%	14.62%	5.16%	10.55%
US Small Cap Equity (Passive)	7.61%	18.61%	5.49%	13.43%
EAFE Equity (Passive)	7.87%	15.45%	5.68%	11.15%
EAFE Equity (Active)	8.05%	15.83%	5.81%	11.42%
EM Equity	10.64%	20.96%	7.68%	15.12%
IG Fixed Income (10+ yr TIPS constant maturity)	4.89%	10.52%	3.91%	8.41%
High Yield Debt	4.78%	8.86%	3.45%	6.39%
EM Debt	5.20%	9.41%	3.75%	6.79%
Private Equity	10.86%	22.51%	7.83%	16.24%
Private Real Estate	7.53%	17.57%	5.43%	12.68%

These expected return assumptions are based on an assumed long-term risk-free rate of 2.57 percent, consisting of a 0.74 percent real asset return and expected inflation of 1.83 percent, based on market bond rates.

The correlations between the investment returns of different asset classes are important characteristics, in addition to the expected returns and the volatility of returns. Recent and long-term histories are used as a guide to setting these parameters. The table below shows the correlations between asset returns used in the analysis.

Long-Term Investment Return Correlations for 5/31/2019

Asset class	1	2	3	4	5	6	7	8	9	10
1 US Large Cap Equity (Passive)	1.00	0.89	0.85	0.83	0.71	0.19	0.61	0.44	0.85	0.57
2 US Small Cap Equity (Passive)	0.89	1.00	0.75	0.73	0.64	0.13	0.60	0.38	0.81	0.59
3 EAFE Equity (Passive)	0.85	0.75	1.00	0.98	0.81	0.20	0.63	0.50	0.73	0.52
4 EAFE Equity (Active)	0.83	0.73	0.98	1.00	0.81	0.20	0.61	0.48	0.71	0.51
5 EM Equity	0.71	0.64	0.81	0.81	1.00	0.24	0.58	0.50	0.61	0.43
6 IG Fixed Income (10+ yr TIPS constant maturity)	0.19	0.13	0.20	0.20	0.24	1.00	0.19	0.47	0.13	0.31
7 High Yield Debt	0.61	0.60	0.63	0.61	0.58	0.19	1.00	0.57	0.48	0.50
8 EM Debt	0.44	0.38	0.50	0.48	0.50	0.47	0.57	1.00	0.36	0.41
9 Private Equity	0.85	0.81	0.73	0.71	0.61	0.13	0.48	0.36	1.00	0.53
10 Private Real Estate	0.57	0.59	0.52	0.51	0.43	0.31	0.50	0.41	0.53	1.00

Schedule D – Expected Returns

The overall expected portfolio returns for each plant's Qualified Trust are given in the table below:

Expected Returns for the Updated Strategy

Nuclear Unit	60-Year Scenario	
	Operations	Decom.
Monticello	4.68%	3.82%
Prairie Island Unit 1	4.67%	3.53%
Prairie Island Unit 2	4.73%	3.44%

To arrive at the rates of return listed in the table above, the analysis uses different rates of return for bonds and the NDT Growth Portfolio; and the weights assigned to these portfolios change through time. Therefore, expected combined rates of return vary through time; the expected rates included are Single Effective Rates, which are weighted average rates. This expected rate leads to the same final funding level if applied to each of these components that would be obtained by using the actual expected rates.

Disclosure: Long-term Investment return and correlations assumptions reflects GSAM Global Portfolio Solutions strategic assumptions as of March 2019. Strategic long-term assumptions are subject to high levels of uncertainty regarding future economic and market factors that may affect future performance. They are hypothetical indications of a broad range of possible returns. See additional disclosures. Expected returns are estimates of hypothetical average returns of economic asset classes derived from statistical models. There can be no assurance that these returns can be achieved. Actual returns are likely to vary.

Alpha and tracking error assumptions reflect Global Portfolio Solutions' estimates for above-average active managers and are based on a historical study of the results of active management. Expected returns are estimates of hypothetical average returns of economic asset classes derived from statistical models. There can be no assurance that these returns can be achieved. Actual returns are likely to vary. Please see additional disclosures.

The data regarding strategic assumptions has been generated by GPS for informational purposes. As such data is estimated and based on a number of assumptions; it is subject to significant revision and may change materially with changes in the underlying assumptions. GPS has no obligation to provide updates or changes. The strategic long-term assumptions shown are largely based on proprietary models and do not provide any assurance as to future returns. They are not representative of how we will manage any portfolios or allocate funds to the asset classes.

Current Assumptions

ANNUAL ACCRUAL

Generating Plant	Sinking Fund Rate (1)	Remaining Life 1/1/19 (2)	Amount to Recover (3)	Amount Recovered (4)	Annual Accrual (5)
Monticello	6.51%	11.75	\$73,999,696	\$35,490,547	\$2,283,300
Prairie Island	6.51%	15.30	53,047,873	28,082,941	1,000,596
			\$127,047,569	\$63,573,488	\$3,283,896

INPUT DATA

Tax Rate	41.37% (a)		
Rate of Return - Internal	<u>Percent</u>	<u>Cost</u>	<u>Weight</u>
Short-Term	2.14	0.68	0.01
Long-Term	45.30	5.02	2.27
Total Debt	47.44		2.28 (c)
Preferred	0.00	0.00	0.00
Common	52.56	9.83	5.17
Total	100.00		7.45 (d)
After-Tax Rate	6.51% (e)		

NOTES

Input Data
 (e) = (d) - [(c) x (a)]
 (2) = Remaining life based on E,G002/D-15-46
 (3) = Final Core Analysis from 2014 filing

Annual Accrual
 (5) = $\frac{\{(3) - (4)\} \times (1)}{\{(1 + (1))^{(2)} - 1\}}$

End-of-Life Nuclear Fuel Accrual
Present to Proposed Accrual Comparison
Minnesota Retail Jurisdiction
January - December 2020

Docket No. E002/M-17-828
July 15, 2019 Compliance
Attachment E - Page 2 of 4

	<u>Present</u>	<u>Proposed</u>	<u>Difference</u>
EXTERNAL FUND			
Monticello	\$2,394,336	\$996,912	(\$1,397,424)
Prairie Island	1,042,608	1,780,956	738,348
TOTAL (Total Company)	<u>\$3,436,944</u>	<u>\$2,777,868</u>	<u>(\$659,076)</u>
Minnesota Jurisdiction Factor	73.0558%	73.0558%	73.0558%
TOTAL (Minnesota Jurisdiction)	<u><u>\$2,510,887</u></u>	<u><u>\$2,029,394</u></u>	<u><u>(\$481,493)</u></u>

Current Assumptions

ANNUAL ACCRUAL					
Generating Plant	Sinking Fund Rate (1)	Remaining Life 1/1/20 (2)	Amount to Recover (3)	Amount Recovered (4)	Annual Accrual (5)
Monticello	6.81%	10.75	\$73,999,696	\$37,773,847	\$2,394,336
Prairie Island	6.81%	14.30	53,047,873	29,083,537	1,042,608
			<u>\$127,047,569</u>	<u>\$66,857,384</u>	<u>\$3,436,944</u>

INPUT DATA			
Tax Rate		28.11%	(a)
Rate of Return - Internal			
	<u>Percent</u>	<u>Cost</u>	<u>Weight</u>
Short-Term	2.14	0.68	0.01
Long-Term	45.30	5.02	2.27
Total Debt	47.44		2.28 (c)
Preferred	0.00	0.00	0.00
Common	52.56	9.83	5.17
Total	100.00		7.45 (d)
After-Tax Rate		6.81%	(e)

NOTES
Input Data
(e) = (d) - [(c) x (a)]
(2) = Remaining life based on E,G002/D-15-46
(3) = Final Core Analysis from 2014 filing
Annual Accrual
(5) = $\frac{\{(3) - (4)\} \times (1)}{\{(1 + (1))^{(2)} - 1\}}$

Proposed Assumptions

ANNUAL ACCRUAL

Generating Plant	Sinking Fund Rate (1)	Remaining Life 1/1/20 (2)	Amount to Recover (3)	Amount Recovered (4)	Annual Accrual (5)
Monticello	6.81%	10.75	\$52,856,869	\$37,773,847	\$996,912
Prairie Island	6.81%	14.30	70,018,922	29,083,537	1,780,956
			<u>\$122,875,791</u>	<u>\$66,857,384</u>	<u>\$2,777,868</u>

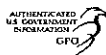
INPUT DATA

Tax Rate	28.11% (a)		
Rate of Return - Internal	<u>Percent</u>	<u>Cost</u>	<u>Weight</u>
Short-Term	2.14	0.68	0.01
Long-Term	45.30	5.02	2.27
Total Debt	47.44		2.28 (c)
Preferred	0.00	0.00	0.00
Common	52.56	9.83	5.17
Total	100.00		7.45 (d)
After-Tax Rate	6.81% (e)		

NOTES

Input Data
 (e) = (d) - [(c) x (a)]
 (2) = Remaining life based on E,G002/D-15-46
 (3) = Final Core Analysis from 2017 filing

Annual Accrual
 (5) = $\frac{\{(3) - (4)\} \times (1)}{\{(1 + (1))^{(2)} - 1\}}$



Proposed Rules

Federal Register

Vol. 84, No. 113

Wednesday, June 12, 2019

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

[Docket No. PRM-50-119; NRC-2019-0083]

Access to the Decommissioning Trust Fund for the Disposal of Large Components

AGENCY: Nuclear Regulatory Commission.

ACTION: Petition for rulemaking; notice of docketing and request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) has received a petition for rulemaking from Gerard P. Van Noordennen on behalf of EnergySolutions, LLC, dated February 22, 2019. The petitioner requests that the NRC revise its regulations to allow access to the decommissioning trust fund for the removal of major radioactive components before the permanent cessation of operations. The petition was docketed by the NRC on March 20, 2019 and has been assigned Docket No. PRM-50-119. The NRC is examining the issues raised in PRM-50-119 to determine whether they should be considered in rulemaking. The NRC is requesting public comment on this petition at this time.

DATES: Submit comments by August 26, 2019. Comments received after this date will be considered if it is practical to do so, but the NRC is able to assure consideration only for comments received on or before this date.

ADDRESSES: You may submit comments by any of the following methods:

- **Federal Rulemaking Website:** Go to <http://www.regulations.gov> and search for Docket ID NRC-2019-0083. Address questions about NRC dockets to Carol Gallagher; telephone: 301-415-3463; email: Carol.Gallagher@nrc.gov. For technical questions contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

- **Email comments to:** Rulemaking.Comments@nrc.gov. If you

do not receive an automatic email reply confirming receipt, then contact us at 301-415-1677.

- **Fax comments to:** Secretary, U.S. Nuclear Regulatory Commission at 301-415-1101.

- **Mail comments to:** Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Rulemakings and Adjudications Staff.

- **Hand deliver comments to:** 11555 Rockville Pike, Rockville, Maryland 20852, between 7:30 a.m. and 4:15 p.m. (Eastern Time) Federal workdays; telephone: 301-415-1677.

For additional direction on obtaining information and submitting comments, see "Obtaining Information and Submitting Comments" in the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: Daniel Doyle, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301-415-3748; email: Daniel.Doyle@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Obtaining Information and Submitting Comments

A. Obtaining Information

Please refer to Docket ID NRC-2019-0083 when contacting the NRC about the availability of information for this action. You may obtain publicly-available information related to this action by any of the following methods:

- **Federal Rulemaking Website:** Go to <http://www.regulations.gov> and search for Docket ID NRC-2019-0083.

- **NRC's Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly-available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by email to pdr.resource@nrc.gov. The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in this document.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One

White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

B. Submitting Comments

Please include Docket ID NRC-2019-0083 in your comment submission.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC will post all comment submissions at <http://www.regulations.gov> as well as enter the comment submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment into ADAMS.

II. The Petitioner and the Petition

The petition was submitted by Gerard P. Van Noordennen on behalf of EnergySolutions, LLC. Gerard P. Van Noordennen is the Vice President of Regulatory Affairs. The petitioner requests that the NRC amend part 50 of title 10 of the *Code of Federal Regulations* (10 CFR) to revise the criteria for decommissioning and allow the use of the decommissioning trust fund for the disposal of major radioactive components before the permanent cessation of operations. The petition may be found in ADAMS at Accession No. ML19079A293.

III. Discussion of the Petition

The petitioner requests that the NRC amend 10 CFR part 50 to revise the definition of decommissioning in § 50.2 and amend § 50.82 to allow access to the decommissioning trust fund before the permanent cessation of operations at nuclear power plants. The petitioner observes that many factors within the nuclear power industry have changed since 2007, when the petitioner submitted a request for petition for rulemaking on similar issues (ADAMS Accession No. ML071570539), which was docketed by the NRC as PRM-50-

88 and later denied. The petitioner suggests that granting the petition will remove unnecessary burden from licensees who store major radioactive components on their sites during plant operations because they cannot use decommissioning funds for disposal of these components. Storing these components on site results in costs to build and maintain storage structures and to monitor for releases and exposures. The petitioner observes that the removal and disposal of components during operations could be considered as activities that would be part of the decommissioning process; therefore, decommissioning funds could be used for disposal of the components before permanent cessation of operations, in cases where excess funds can be shown to exist. The petitioner also observes that onsite storage of major radioactive components leads to unnecessary regulatory burdens for their maintenance and monitoring, including a potential for worker exposure.

IV. Request for Comment

The NRC is requesting public comment on the following specific questions:

1. Licensees currently may use their own internal operating funds to dispose of major radioactive components (*e.g.*, steam generators) during plant operation, or they may choose to wait until decommissioning begins to use funds set aside for decommissioning. What advantages or disadvantages do you see to either approach, which are available under the current regulations? Provide an explanation for your response.

2. Should the NRC revise its regulations to allow a licensee the option to use funds set aside for radiological decommissioning (decommissioning trust fund) to dispose of major radioactive components (*e.g.*, steam generators) while the nuclear power plant is still operating? Provide an explanation for your response.

3. What criteria should the NRC consider for a licensee to be able to use the decommissioning trust fund early for large component disposal? For example, the NRC could require a licensee to provide a site-specific decommissioning cost estimate at the time of a request for early access to funds. The NRC also could require annual reports that funds in the decommissioning trust will be adequate to meet the decommissioning cost estimate. Would such criteria be sufficient to ensure that adequate decommissioning funds will be available during decommissioning?

4. Are there other innovative financial approaches that could be considered by the NRC or a licensee for dispositioning major radioactive components while a nuclear power plant is operating, while still ensuring that sufficient funds will be available for decommissioning? Provide an explanation for your response.

V. Conclusion

The NRC has determined that the petition meets the threshold sufficiency requirements for docketing a petition for rulemaking under 10 CFR 2.803. The NRC is examining the issues raised in PRM-50-119 to determine whether they should be considered in rulemaking.

Dated at Rockville, Maryland, this 6th day of June, 2019.

For the Nuclear Regulatory Commission,
Annette L. Vietti-Cook,
Secretary of the Commission.
[FR Doc. 2019-12342 Filed 6-11-19; 8:45 am]
BILLING CODE 7590-01-P

DEPARTMENT OF HOMELAND SECURITY

Coast Guard

33 CFR Part 165

[Docket Number USCG-2019-0396]

RIN 1625-AA00

Safety Zone; AASCIF Fireworks Display, Lake Erie, Cleveland, OH

AGENCY: Coast Guard, DHS.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Coast Guard is proposing to establish a temporary safety zone for certain waters of Lake Erie during the AASCIF Fireworks display. This action is necessary to provide for the safety of life on these navigable waters near the Great Lakes Science Center, Cleveland, OH, during a fireworks display on July 21, 2019. This proposed rulemaking would prohibit persons and vessels from being in the safety zone unless authorized by the Captain of the Port Buffalo or a designated representative. We invite your comments on this proposed rulemaking.

DATES: Comments and related material must be received by the Coast Guard on or before July 12, 2019.

ADDRESSES: You may submit comments identified by docket number USCG-2019-0396 using the Federal eRulemaking Portal at <https://www.regulations.gov>. See the "Public Participation and Request for Comments" portion of the

SUPPLEMENTARY INFORMATION section for further instructions on submitting comments.

FOR FURTHER INFORMATION CONTACT: If you have questions about this proposed rulemaking, call or email LT Ryan Junod, Chief of Waterways Management, U.S. Coast Guard Marine Safety Unit Cleveland; telephone 216-937-0124, email Ryan.S.Junod@uscg.mil.

SUPPLEMENTARY INFORMATION:

I. Table of Abbreviations

CFR Code of Federal Regulations
DHS Department of Homeland Security
FR Federal Register
NPRM Notice of proposed rulemaking
§ Section
U.S.C. United States Code

II. Background, Purpose, and Legal Basis

On March 4, 2019, the American Association of State Compensation Insurance Funds notified the Coast Guard that it will be conducting a fireworks display from 9:30 p.m. through 9:35 p.m. on July 21, 2019. The fireworks are to be launched from land at position 41°30'26" N and 81°42'11" W near Cleveland, OH. Hazards from firework displays include accidental discharge of fireworks, dangerous projectiles, and falling hot embers or other debris. The Captain of the Port Buffalo (COTP) has determined that potential hazards associated with the fireworks to be used in this display would be a safety concern for anyone within a 350-foot radius of the fireworks launch site.

The purpose of this rulemaking is to ensure the safety of vessels and the navigable waters within a 350-foot radius of position 41°30'26" N and 81°42'11" W before, during, and after the scheduled event. The Coast Guard is proposing this rulemaking under authority in 46 U.S.C. 70034 (previously 33 U.S.C. 1231).

III. Discussion of Proposed Rule

The COTP is proposing to establish a safety zone from 9:15 p.m. through 9:50 p.m. on July 21, 2019. The safety zone would cover all navigable waters within 350 feet of position 41°30'26" N and 81°42'11" W near Lake Erie, Cleveland, OH. The duration of the zone is intended to ensure the safety of vessels and these navigable waters before, during, and after the scheduled 9:30 p.m. through 9:35 p.m. fireworks display. No vessel or person would be permitted to enter the safety zone without obtaining permission from the COTP or a designated representative. The regulatory text we are proposing appears at the end of this document.

CERTIFICATE OF SERVICE

I, Paget Pengelly, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota

xx electronic filing

Docket No. E002/M-17-828

Dated this 15th day of July 2019

/s/

Paget Pengelly
Regulatory Administrator

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
David	Aafedt	daafedt@winthrop.com	Winthrop & Weinstine, P.A.	Suite 3500, 225 South Sixth Street Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_17-828_M-17-828
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	No	OFF_SL_17-828_M-17-828
Sigurd W.	Anderson	mariner@eldinc.com	Engineering Lab Design	30910 716th St Lake City, MN 55041	Electronic Service	No	OFF_SL_17-828_M-17-828
Alison C	Archer	aarcher@misoenergy.org	MISO	2985 Ames Crossing Rd Eagan, MN 55121	Electronic Service	No	OFF_SL_17-828_M-17-828
James J.	Bertrand	james.bertrand@stinson.com	STINSON LLP	50 S 6th St Ste 2600 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828
James	Canaday	james.canaday@ag.state.mn.us	Office of the Attorney General-RUD	Suite 1400 445 Minnesota St. St. Paul, MN 55101	Electronic Service	No	OFF_SL_17-828_M-17-828
John	Coffman	john@johncoffman.net	AARP	871 Tuxedo Blvd. St. Louis, MO 63119-2044	Electronic Service	No	OFF_SL_17-828_M-17-828
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_17-828_M-17-828
Ian	Dobson	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_17-828_M-17-828
Kristen	Eide Tollefson	healingsystems69@gmail.com	R-CURE	28477 N Lake Ave Frontenac, MN 55026-1044	Electronic Service	No	OFF_SL_17-828_M-17-828

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance	1313 5th St SE #303 Minneapolis, MN 55414	Electronic Service	No	OFF_SL_17-828_M-17-828
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_17-828_M-17-828
Edward	Garvey	edward.garvey@AESLconsulting.com	AESL Consulting	32 Lawton St Saint Paul, MN 55102-2617	Electronic Service	No	OFF_SL_17-828_M-17-828
Janet	Gonzalez	Janet.gonzalez@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 55101	Electronic Service	No	OFF_SL_17-828_M-17-828
Thomas P.	Harlan	harlan@mdh-law.com	Madigan, Dahl & Harlan, P.A.	222 South Ninth Street Suite 3150 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828
Kimberly	Hellwig	kimberly.hellwig@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828
Michael	Hoppe	il23@mtn.org	Local Union 23, I.B.E.W.	932 Payne Avenue St. Paul, MN 55130	Electronic Service	No	OFF_SL_17-828_M-17-828
Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law	2265 Roswell Road Suite 100 Marietta, GA 30062	Electronic Service	No	OFF_SL_17-828_M-17-828
Linda	Jensen	linda.s.jensen@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota Street St. Paul, MN 551012134	Electronic Service	No	OFF_SL_17-828_M-17-828
Richard	Johnson	Rick.Johnson@lawmoss.com	Moss & Barnett	150 S. 5th Street Suite 1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Sarah	Johnson Phillips	sarah.phillips@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828
Mark J.	Kaufman	mkaufman@ibewlocal949.org	IBEW Local Union 949	12908 Nicollet Avenue South Burnsville, MN 55337	Electronic Service	No	OFF_SL_17-828_M-17-828
Thomas	Koehler	TGK@IBEW160.org	Local Union #160, IBEW	2909 Anthony Ln St Anthony Village, MN 55418-3238	Electronic Service	No	OFF_SL_17-828_M-17-828
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828
Peder	Larson	plarson@larkinhoffman.com	Larkin Hoffman Daly & Lindgren, Ltd.	8300 Norman Center Drive Suite 1000 Bloomington, MN 55437	Electronic Service	No	OFF_SL_17-828_M-17-828
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_17-828_M-17-828
Peter	Madsen	peter.madsen@ag.state.mn.us	Office of the Attorney General-DOC	Bremer Tower, Suite 1800 445 Minnesota Street St. Paul, Minnesota 551017741	Electronic Service	No	OFF_SL_17-828_M-17-828
Philip	Mahowald	pmahowald@thejacobsonlawgroup.com	Jacobson Law Group	180 East Fifth Street Suite 940 St. Paul, MN 55101	Electronic Service	No	OFF_SL_17-828_M-17-828
Kavita	Maini	kmains@wi.rr.com	KM Energy Consulting LLC	961 N Lost Woods Rd Oconomowoc, WI 53066	Electronic Service	No	OFF_SL_17-828_M-17-828

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_17-828_M-17-828
Joseph	Meyer	joseph.meyer@ag.state.mn.us	Office of the Attorney General-RUD	Bremer Tower, Suite 1400 445 Minnesota Street St Paul, MN 55101-2131	Electronic Service	No	OFF_SL_17-828_M-17-828
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_17-828_M-17-828
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_17-828_M-17-828
Jeff	O'Neill	jeff.oneill@ci.monticello.mn.us	City of Monticello	505 Walnut Street Suite 1 Monticello, Minnesota 55362	Electronic Service	No	OFF_SL_17-828_M-17-828
Carol A.	Overland	overland@legalectric.org	Legalelectric - Overland Law Office	1110 West Avenue Red Wing, MN 55066	Electronic Service	No	OFF_SL_17-828_M-17-828
Jeff	Oxley	jeff.oxley@state.mn.us	Office of Administrative Hearings	600 North Robert Street St. Paul, MN 55101	Electronic Service	No	OFF_SL_17-828_M-17-828
Greg	Padden	gpadden@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369-4718	Electronic Service	No	OFF_SL_17-828_M-17-828
Lisa	Perkett	lisa.h.perkett@xcelenergy.com	Xcel Energy Inc.	Capital Asset Acctg Dept 7th Floor 414 Nicollet Mall Minneapolis, MN 554011993	Paper Service	No	OFF_SL_17-828_M-17-828

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy	26 E Exchange St, Ste 206 St. Paul, MN 551011667	Electronic Service	No	OFF_SL_17-828_M-17-828
Richard	Savelkoul	rsavelkoul@martinsquires.com	Martin & Squires, P.A.	332 Minnesota Street Ste W2750 St. Paul, MN 55101	Electronic Service	No	OFF_SL_17-828_M-17-828
Jessie	Seim	jessie.seim@piic.org	Prairie Island Indian Community	5636 Sturgeon Lake Rd Welch, MN 55089	Electronic Service	No	OFF_SL_17-828_M-17-828
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd St. Paul, MN 55102	Electronic Service	No	OFF_SL_17-828_M-17-828
Byron E.	Starns	byron.starns@stinson.com	STINSON LLP	50 S 6th St Ste 2600 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828
James M	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered	200 S 6th St Ste 470 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_17-828_M-17-828
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_17-828_M-17-828
Thomas	Tynes	jjazynka@energyfreedomcoalition.com	Energy Freedom Coalition of America	101 Constitution Ave NW Ste 525 East Washington, DC 20001	Electronic Service	No	OFF_SL_17-828_M-17-828

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Lisa	Veith	lisa.veith@ci.stpaul.mn.us	City of St. Paul	400 City Hall and Courthouse 15 West Kellogg Blvd. St. Paul, MN 55102	Electronic Service	No	OFF_SL_17-828_M-17-828
Joseph	Windler	jwindler@winthrop.com	Winthrop & Weinstine	225 South Sixth Street, Suite 3500 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	Yes	OFF_SL_17-828_M-17-828
Patrick	Zomer	Patrick.Zomer@lawmoss.com	Moss & Barnett a Professional Association	150 S. 5th Street, #1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-828_M-17-828