

September 8, 2025

**PUBLIC DOCUMENT**

Mike Bull  
Interim Executive Secretary  
Minnesota Public Utilities Commission  
121 7th Place East, Suite 350  
St. Paul, Minnesota 55101-2147

RE: **PUBLIC** Comments of the Minnesota Department of Commerce  
Docket No. E,G002/D-23-356

Dear Mr. Bull:

Attached are the **PUBLIC** comments of the Minnesota Department of Commerce (Department) in the following matters:

*The Petition of Northern States Power Company for Approval of its 2024 Annual Review of Transmission, Distribution, and General Depreciation Certification,*

and

*The Petition of Northern States Power Company for Approval of the 2024 Electric and Gas Production and Gas Storage Facilities Annual Review of Remaining Lives*

The Petitions were filed by Northern States Power Company, doing business as Xcel Energy, on September 9, 2024 and October 7, 2024, respectively.

The Department requests that the Company provide additional information in reply comments, and is available to answer any questions the Minnesota Public Utilities Commission may have.

Sincerely,

/s/ Dr. SYDNIE LIEB  
Assistant Commissioner of Regulatory Analysis

CA/ad  
Attachment



**Before the Minnesota Public Utilities Commission**  
**PUBLIC Comments of the Minnesota Department of Commerce**

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Docket No. E,G002/D-23-356

**I. INTRODUCTION**

Between September 9, 2024 and January 31, 2025, Northern States Power Company, doing business as Xcel Energy (Xcel Energy or the Company) made multiple filings with the Minnesota Public Utilities Commission requesting approval of changes to depreciation parameters and rates for its production facilities and its transmission, distribution, and general plant accounts. For its production facilities, the Company has proposed a passage-of-time adjustment to the lives of most of its plants, as well as other more significant life adjustments for several plants, as discussed in detail below. In addition, the Company completed a new dismantling study for its production plants and is requesting approval of updated net salvage rates for its production facilities based on cost estimates from a new dismantling study.

For its transmission, distribution, and general (TD&G) plant accounts, the Company is requesting approval of new depreciation rates reflecting the average service lives and salvage rates approved in the Company's most recent comprehensive TD&G depreciation study (Docket No. E,G002/D-22-299, or "the 2022 Depreciation Study), but that have been updated to reflect plant activity (additions, retirements, etc.).

The Company's filings also include several other requests related to, among other things, reserve reallocations, the creation of new plant accounts and other changes pursuant to FERC Order 898, and the timing of future depreciation filings.

**II. PROCEDURAL BACKGROUND**

September 9, 2024	The Company filed two depreciation petitions: the Annual Review of Remaining Lives and Depreciation Rates for Transmission, Distribution and General Accounts (the TD&G Petition), and the 2024 Annual Review of Remaining Lives and Depreciation Rates Electric and Gas Production and Gas Storage Facilities, which incorporated a preliminary dismantling study as the new, final dismantling study was not yet completed.
October 7, 2024	The Company filed a Modified Petition for its 2024 Annual Review of Remaining Lives and Depreciation Rates Electric and Gas Production and Gas Storage Facilities (the Modified Production Petition) that includes certain information inadvertently omitted from the initial filing.

September 9, 2024	Xcel Energy made its TD&G depreciation filing and an ARL Production filing based on a preliminary July 2024 dismantling study. The Company noted that its comprehensive Dismantling study would be available in February 2025, at which time the Company would be able to calculate final net salvage rates.
October 7, 2024	Xcel Energy filed a modified ARL Production depreciation study in which it provided certain information it had inadvertently failed to include in its Sept. 9, 2024 ARL Production filing. The modified filing included Attachment K – Total Life of Plants, and relevant information for Blue Lake Units 9-11, new assets expected to go in service in December 2025.
January 31, 2025	Xcel Energy filed a Supplement to its Modified Production Petition (Production Petition Supplement) with a final comprehensive Dismantling Study for its non-nuclear production and gas storage facilities, with updated net salvage rates.

### III. DEPARTMENT ANALYSIS

#### A. COMPLIANCE WITH DEPRECIATION STATUTES, RULES, FILING REQUIREMENTS, AND PRIOR COMMISSION ORDERS

Minn. Stat. § 216B.11 (2024) and Minn. R. 7825.0500-7825.0900 require public utilities to seek Commission approval of their depreciation rates and methods. Utilities must file comprehensive depreciation studies at least once every five years and use straight-line depreciation unless the utility can justify a different method. Once certified by Commission Order, utility depreciation rates remain in effect until the next certification. The Rules also include a number of filing requirements for depreciation petitions. Based on its review, the Department concludes that the Company's TD&G Petition, Modified Production Petition, and Production Petition Supplement satisfy all filing requirements.

In addition, the Department reviewed Xcel Energy's prior depreciation proceedings for additional filing requirements imposed by Commission order or committed to by the Company. The Department is not aware of any such filing requirements the Company's Petitions did not satisfy.

#### B. TD&G DEPRECIATION PROPOSALS

##### B.1. Passage of Time and Plant Activity Adjustment

In its TD&G Petition, Xcel Energy proposed to maintain the average service lives, retirement curves, and net salvage rates approved in the 2022 Depreciation Docket and to update remaining lives and depreciation rates of all plant accounts to reflect the passage of time and plant activity (additions, retirements, transfers, etc.) The Department concludes that Xcel Energy's proposal is reasonable, but notes that during its review of the Company's Petition, it found two small calculations errors, and in response to information requests about the errors, the Company identified a third error.

In its TD&G Petition, the Company applied a 15-year average service life to Electric Account 370 Meters – AGIS. However, in the 2022 TD&G Docket, the Commission approved a 20-year average service life for that account.<sup>1</sup> In its response to Department Information Request 21, the Company confirmed that the proposed average service life and the resulting depreciation rate reflected in the TD&G Petition were incorrect and proposed to correct the error by retaining the depreciation rate approved in the 2022 TD&G Docket.<sup>2</sup> This change results in a reduction in annual depreciation expense of approximately \$2.1 million.<sup>3</sup> The Department concludes that the Company’s proposed correction is reasonable.

In addition, the remaining lives proposed in the TD&G Petition for Electric Account 390 – Structures and Improvements and Common Account 390 – Structures and Improvements (which include buildings that are depreciated on a group basis, rather than on an individual basis) were calculated incorrectly, causing estimated depreciation expense to be overstated by approximately \$0.7 million.<sup>4</sup> Department Attachment 1 contains corrected depreciation schedules.

Reflecting these correction, the Company’s proposed depreciation rates are expected to result in an increase of approximately \$6.8 million per year,<sup>5</sup> or roughly \$2.8 million less than initial estimate of a \$9.6 million per year increase as reflected in the Company’s September 9, 2024 TD&G Petition.<sup>6</sup>

#### *B.2. Account 390 – New Service Centers*

As described in the TD&G Petition, the Company depreciates buildings with a gross plant value of \$10 million or greater individually, as required by Commission order.<sup>7</sup> In the TD&G Petition, the Company identified four new service centers that will meet the threshold to be depreciated individually, and requested approval to depreciate the buildings based on expected service lives of 50 years and net salvage rates of negative 25 percent. As noted by the Company, these life and salvage assumptions are consistent with its other individually depreciated service centers. Based on this, the Department concludes that the Company’s proposal is reasonable.

#### *B.3. New Energy Storage Equipment Accounts, 351 (Transmission) and 363 (Distribution)*

In the 2022 TD&G Docket, the Company proposed to establish depreciation parameters and rates for two new property accounts, 351 – Energy Storage Equipment – Transmission, and 363 – Energy Storage Equipment – Distribution. The Company had no property booked to the accounts and no planned installations, but requested to establish depreciation rates in anticipation of possible future

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<sup>1</sup> As originally approved in Docket No. E,G002/D-20-635.

<sup>2</sup> Department Attachment 1.

<sup>3</sup> In the TD&G Petition, the Company estimated annual depreciation expense of \$7.94 million for Account 370 Meters AGIS based on a 20-year average service life; in its response to Department IR 21 (Department Attachment 1), the Company estimated annual depreciation expense of \$5.86 million based on an ASL of 15 years, a difference of \$2.08 million.

<sup>4</sup> Department Attachment 2.

<sup>5</sup> Department Attachment 1.

<sup>6</sup> TD&G Petition at 5.

<sup>7</sup> TD&G Petition at 7.

acquisitions. The Commission, however, declined to approve the Company's proposed depreciation rates due concerns about the lack of support, particularly for the proposed net salvage rates of zero. The Commission found it would be more reasonable to revisit the issue once the Company had more information related to such assets.

Xcel Energy did not discuss these accounts in the text of its TD&G Petition, but did include proposed depreciation parameters for them in Schedule A, with a note indicating that the Company still has no property booked to these accounts.

Because the Company provided no additional information related to these accounts addressing the concerns raised by the Department and the Commission in the 2022 TD&G Docket, the Department recommends that the Commission deny the Company's request for approval of the proposed depreciation rates for Accounts 351 and 363 shown in Attachment A of the Company's TD&G Petition.

*C. PRODUCTION AND STORAGE DEPRECIATION PROPOSALS*

*C.1. Two-Year Passage of Time Adjustment*

For most of its production plant accounts (all plant accounts other than those addressed specifically below), the Company requested a two-year passage of time adjustment to reflect the two years in between the effective date of the depreciation rates approved in the 2022 Depreciation Docket (January 1, 2023) and the requested effective date for depreciation rates approved in this Docket (January 1, 2025). For these production facilities, the proposed remaining lives reflect previously established anticipated retirement years. With the exception of the production facilities addressed individually below, the Department concludes that the Company's proposed two-year passage of time adjustment is reasonable.

*C.2. Non-Passage of Time Adjustments*

For certain of Xcel Energy's production facilities, the Company proposed life extensions, which the Department addresses below. In addition, and consistent with the outcome of the Company's most recent integrated resource plan proceeding (Docket No. E002/RP-24-67, the 2024 IRP), the Department proposes to extend the remaining lives Company's two nuclear production facilities and to shorten the remaining lives of its Allen S. King and Sherco 3 coal facilities.

*C.3. Refuse Derived Fuel (RDF) Production Facilities*

In the 22-299 Depreciation Docket, the Commission approved remaining lives for the Company's RDF production facilities (Red Wing and Wilmarth) based on anticipated retirement years of 2027. In its ARL Production Petition, the Company proposed to extend the retirement dates for both plants by 10 years, to 2037.

The Company also proposed to extend the lives of both plants by 10 years in the 2024 IRP. The Commission approved the extension in the resource plan proceeding, stating:

The Commission is persuaded that operations at the Red Wing and Mankato RDF plants should be extended to 2037. The plants are firm dispatchable resources, which are important for system reliability, particularly as increasing amounts of intermittent solar and wind generation are added to the system. The plants also provide benefits to their host communities and the state and are a preferable alternative to landfilling according to the MPCA's Waste Management Hierarchy. The Commission agrees with Xcel that there have been adequate opportunities for stakeholders to comment on the proposal, and the vast majority of comments strongly supported extending the plants. Further, the Commission balances the need for reliability with impacts to ratepayers and the environment, and is persuaded that the most reasonable course of action based on the record is to extend the lives of the plants. For these reasons, the Commission will extend the lives of the Red Wing and Mankato RDF plants to 2037.<sup>8</sup>

Based on the Commission's decision to approve the extensions in the Company's resource plan proceeding, the Department concludes that the Company's proposal to extend the depreciation lives of the Red Wing and Wilmarth RDF plants is reasonable.

### *C.3.1. Hennepin Island and Upper Dam*

In its Modified Production Petition, the Company proposed to extend the remaining lives of its Hennepin Island and Upper Dam Hydro facilities (St. Anthony Falls) by 40 years. With only a passage-of-time adjustment, the remaining life of both facilities would be 9.2 years, based on a retirement year of 2034, which corresponds with units' Federal Energy Regulatory Commission (FERC) license.<sup>9</sup> The Company instead is proposing a remaining life 49.2 years. The proposed extension is based on the Company's stated plans to pursue a 40-year license extension, expected to be issued in 2034. In addition, the Company described certain capital projects it plans to undertake at the facility, and stated that "other capital projects" to maintain the facility are planned for the next 15 years.

The Department generally prefers to base depreciation life extensions on resource planning decisions, completed or imminent life-extending capital projects, or operational data indicating that a plant can operate longer in its current condition than reflected in its current depreciation life.

As indicated in Attachment F of the Modified Production Petition, the Company's most recent resource plan assumed the St. Anthony Falls facility will retire in 2034. Therefore, the Company's resource plan does not support a life extension at this time. In addition, the Company provided a tentative schedule

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<sup>8</sup> In the Matter of Xcel Energy's 2024–2040 Upper Midwest Integrated Resource Plan and In the Matter of Xcel Energy's Competitive Resource Acquisition Process for up to 800 Megawatts of Firm Dispatchable Generation, MPUC Docket Nos. E-002/RP-24-67 and E-002/CN-23-212, ORDER APPROVING SETTLEMENT AGREEMENT WITH MODIFICATIONS (Apr. 21, 2025) (eDocket No. [20254-217941-01](#)).

<sup>9</sup> Modified Production Petition at 7.

of planned capital projects which indicates that the capital projects planned for the facility, if they are undertaken, are not expected to be placed in-service for at least two years, and many are much farther in the future.<sup>10</sup> The Department concludes that the planned capital projects could support a life extension in the future, but do not support one now. Finally, the Company provided no operational data about the facility indicating that its current approved life does not reflect its current physical condition.

In addition, the Department concludes that an expected license extension, the process for which the Company has not yet started, and which is not expected to be granted until 2034, does not support a life extension at this time.

Based on these multiple factors, the Department recommends that the Commission deny the Company's request to extend the depreciation lives of the Hennepin Island and Upper Dam Hydro facilities, and instead approve a remaining life of 9.2 years, based on the current expected retirement year of 2034.

#### *C.3.2. St. Croix Falls*

In its Modified Production Petition, the Company proposed to extend the remaining life of its St. Croix Falls Hydro facility by 20 years, from an expected retirement year of 2027 to 2047. As described in the Petition, St. Croix Falls is a hydro production plant located on the St. Croix River on the border between Minnesota and Wisconsin.<sup>11</sup> Northern States Power Company-Wisconsin owns a large majority of the facility, including the production facility, while the Company owns only the small portion located on the Minnesota side of the river.

The Modified Production Petition contains no explanation of why the Company is proposing a life extension for St. Croix Falls. In addition, the Modified Production Petition states that while St. Croix Falls has a permit from the Department of the Army, it does not have a FERC license. The Department notes that this contradicts information provided in testimony in a prior rate case, in which a Company witness stated that St. Croix Falls has a FERC operating license expiring in 2027.<sup>12</sup> In response to an information request, the Company affirmed that St. Croix Falls does not have a FERC operating license. Based on this, the Department assumes that the Facility has a permit from the Department of the Army that expires in 2027.

The Company's 2024 IRP assumed a retirement year of 2027 for St. Croix Falls. In its response to Department IR 8, the Company provided a schedule of completed and planned capital projects at the facility which shows that while significant projects are planned for 2027 and beyond, very little investment was made in the facility from 2000-2025 (less than \$1 million over 25 years). In the Department's view, these factors weigh against a life extension for St. Croix Falls at this time.

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<sup>10</sup> Department Attachment 3.

<sup>11</sup> ARL Production Petition at 8.

<sup>12</sup> Direct Testimony of Lisa Perkett in Docket No. E002/GR-15-826 at 39.

However, the Department notes that NSPW sought and received a life extension for the portion of the facility it owns with the Public Service Commission of Wisconsin (PSCW) in 2022.<sup>13</sup> Given the small portion of the facility owned by the Company relative to the much larger portion owned by NSPW, and the small impact on depreciation expense the extension will have, the Department concludes that it is reasonable to align the remaining life for the Minnesota portion of the facility with the remaining life of the Wisconsin portion of the facility, as approved by the Public Service Commission of Wisconsin. Therefore, the Department recommends that the Commission approve the proposed life extension for St. Croix Falls.

### *C.3.3. Black Dog Unit 5*

In its Modified Production Petition, the Company proposed to extend the expected retirement year of Black Dog Unit 5 from 2031 to 2042. The Company stated it now has evidence that this type of installation is lasting upwards of 40 years or more, which aligns with other similar installations at the Company's Riverside and High Bridge facilities, which are both assumed to have 40-year life spans. The Company, however, did not describe this evidence in its Modified Production Petition.

The 2024 IRP assumed Black Dog Unit 5 would retire in 2031, consistent with the current depreciation life,<sup>14</sup> and the Company did not describe any significant recent or imminent capital improvements at the unit which would be expected to extend its operational life, both of which weigh against a life extension at this time. In its response to Department IR 11, the Company noted that rotor life is a significant piece of data informing a plant of this type's life, and that Black Dog Unit 5's rotor is currently at 77,000 operating hours after 23 years of operations and has a normal life of 150,000 operating hours, which weighs in favor of a life extension.

Based on the approved 40-year lives for the Company's similar production plants and the operational data provided by the Company, the Department concludes that the proposed life extension for Black Dog Unit 5 is reasonable.

### *C.3.4. Inver Hills Units 1-6*

The Company proposed to extend the life of Inver Hills Units 1-6 from the currently approved date of December 2026 to December 2029. The Company stated:

**[TRADE SECRET DATA HAS BEEN EXCISED]<sup>15</sup>**

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<sup>13</sup> PSCW Docket No. 4220-DU-111.

<sup>14</sup> Department Attachment 4.

<sup>15</sup> Modified Production Petition at 9.

This extension is consistent with the Company's proposals in and the outcome of the 2024 IRP. Therefore, the Department concludes that it is reasonable.

#### *C.3.5. Border Winds and Pleasant Valley Wind*

The Company proposed to extend the lives of its Border Winds and Pleasant Valley Wind facilities. These wind production facilities are two of four that the Company recently repowered (along with its Grand Meadow and Nobles wind facilities). The repowering projects for Grand Meadow and Nobles were completed earlier and their lives were extended accordingly in the Company's 2022 Depreciation Docket. The repowering projects for Border Winds and Pleasant Valley Wind have since been completed, making a life extension appropriate at this time.

The proposed life extensions are consistent with those approved for Grand Meadow and Nobles in the 2022 Depreciation Docket, as well as other repowered wind production facilities. Therefore, the Department concludes the Company's proposed extensions are reasonable.

#### *C.3.6. Sherco Solar Unit 1 and Unit 2*

The Company proposed to establish remaining lives of 35 years for its new Sherco Solar Units 1 and 2. The Department notes that this assumed operational life is consistent with the life assumption used in the acquisition process reviewed in Docket No. E002/M-20-891 in which the Units were selected and conditionally approved. In addition, in response to Department IR 14, the Company provided information from U.S. Department of Energy and Burns & McDonnell Engineering Company, Inc. with additional support for the assumed 35-year life.<sup>16</sup> Based on the information provided, the Department concludes that Xcel Energy's proposed remaining lives for Sherco Solar Units 1 and 2 are reasonable.

#### *C.3.7. Sherco Battery*

In its Modified Production Petition, the Company proposed to establish a 10-year remaining life for its Sherco Battery facility, a long-duration energy-storage pilot project at the Sherco site. However, the Company's Petition contains no explanation of or justification for that life assumption.

The proposed 10-year life is consistent with the assumptions made in Docket No. E002/M-23-119, in which the Commission initially approved the Sherco Battery project. However, the Department notes that in the 2024 IRP Xcel Energy assumed a 15-year life for generic long-duration battery storage systems based on a white paper by Form Energy, the developer of the Sherco Battery facility.<sup>17</sup> In addition, certain research institutes and trade publications have discussed the potential for batteries of the same type as the Sherco Battery to operate for 30 years.<sup>18</sup> Both of these estimates weigh in favor of a longer remaining life the Sherco Battery facility.

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<sup>16</sup> Department Attachment 5.

<sup>17</sup> Department Attachment 6.

<sup>18</sup> Department Attachment 7.

In response to Department IRs, the Company explained that the 15-year life assumed for generic long-duration storage batteries is a reasonable assumption for larger projects developed in the future and assumes improvements in research and development as well as manufacturing.<sup>19</sup> The Company, however, stated that the 15-year life is not appropriate for the Sherco Battery project because it is a smaller demonstration project. The Company also stated that it is aware that the technology underlying the Sherco Battery project has the potential to exceed a 10-year lifetime, but stated that while a longer life may be possible, given newness of the project and lack of industry experience with storage systems of this type, the Company prefers to establish a more conservative remaining life assumption initially.<sup>20</sup>

The Company stated that its proposed 10-year life is the result of **[TRADE SECRET DATA HAS BEEN EXCISED]**<sup>21</sup> and that the 10-year life reflects **[TRADE SECRET DATA HAS BEEN EXCISED]**.<sup>22</sup>

Based on the Company's explanation of risks associated with the novelty of the technology and other relevant factors, the Department concludes that the proposed 10-year remaining life is reasonable.

#### *C.3.8. Blue Lake Units 9-11*

The Company proposed to establish a 40-year remaining life for its new Blue Lake Units 9-11. They stated that the proposed life is consistent with the 40-year life approved for Blue Lake Units 7&8, but provided no other information specific to the new units, such as warranty periods or life estimates from the supplier of the units.

While Blue Lake Units 9-11 will be a different type of generator (reciprocating internal combustion engines) than Blue Lake Units 7&8 (combustion turbines), the Department agrees that the remaining life for Units 7&8 is generally instructive with respect to the remaining life for Units 9-11. In addition, the Department has supported 40-year remaining lives for relatively new fossil units in the past based on data and analysis from the Energy Information Administration.<sup>23</sup> Therefore, the Department concludes that the proposed 40-year remaining life for Blue Lake Units 9-11 is reasonable.

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<sup>19</sup> Department Attachment 6.

<sup>20</sup> Department Attachment 7.

<sup>21</sup> Department Attachment 6.

<sup>22</sup> Department Attachment 7. *See also* the Company's Petition in Docket No. E002/M-23-119, Attachment A at 36.

<sup>23</sup> See the Department's Comments in Docket No. E,G002/D-12-151 in which the Department supported life extensions for both the High Bridge and Riverside plants. The Commission initially approved 30-year lives for both units in Docket Nos. E,G002/D-08-189 and E,G002/D-09-160, respectively, but then extended both lives to 40 years shortly thereafter, in Docket No. E,G002/D-12-151.

*C.3.9. Department Proposal to Extend the Lives of the Monticello and Prairie Island Nuclear Plants*

As discussed in the Direct Testimony of Department witness Holly Jones in the Company's pending electric rate case (Docket No. E002/GR-24-320), the Department proposes to extend the lives of the Company two nuclear plants, Monticello and Prairie Island, by 10 and 20 years, respectively. Monticello and Prairie Island Units 1 & 2 currently have remaining lives based on retirement years of 2040 and 2034, respectively. However, in the 2024 IRP, the Commission approved the extensions of both plants' operating lives for planning purposes to 2050 and 2054, respectively.<sup>24</sup> The Department recommends that the Commission align the depreciation lives of both facilities with the approved IRP lives.

*C.3.10. Department Proposal to Shorten the Lives of Sherco 3 and Allen S. King*

In the same Order in which it approved the life extensions for Monticello and Prairie Island the Commission affirmed its prior decisions to approve the retirement of Xcel Energy's Allen S. King Plant (King) and Sherco 3 in 2028 and 2030, respectively. The current depreciation remaining lives for King and Sherco 3 are based on retirement years of 2037 and 2034, respectively. As discussed in the Direct Testimony of Department witness Holly Jones in the Company's current rate case, the Department also recommends aligning the depreciation lives of King and Sherco 3 with the approved IRP lives and approve remaining lives based on retirement years of 2028 and 2030, respectively.

*D. NET SALVAGE RATES FOR PRODUCTION AND STORAGE FACILITIES*

*D.1. Updated Net Salvage Rates Based on New 2024 Dismantling Study*

As discussed in the Company's Modified Production Petition and in its Production Petition Supplement, the Company's new dismantling study was not yet ready at the time it filed its Modified Production Petition. In place of the new dismantling study, the Company used the results of its 2019 Dismantling Study filed in Docket No. E,G002/D-19-723, escalated by 28.8 percent in total (or 4.88 percent annually) to adjust for inflation since 2019. After completing its new, full dismantling study (the 2024 Dismantling study), the Company filed the Production Petition Supplement with updated depreciation schedules reflecting the 2024 Dismantling Study's results.

For the Company's fossil and hydro plants, the net decommissioning cost estimates derived in the 2024 Dismantling Study we quite close to the escalated 2019 Dismantling Study estimates. As a result, the net salvage rates proposed in the Jan. 31 Supplement are not significantly different from those proposed in the Modified Production Petition.

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<sup>24</sup> *Order Approving Settlement Agreement with Modifications*, Docket No. E002/RP-24-67 (Apr. 21, 2025).

For the Company's wind farms, however, the updated decommissioning cost estimates in the 2024 Dismantling Study were notably lower than the estimates in the escalated 2019 Study. The differences in the estimates are largely attributable to a few specific dismantling activities whose costs are primarily non-labor, including "Backfill of below grade voids" and "Landscaping with topsoil."<sup>25</sup>

The Department reviewed the 2024 Dismantling Study and the Company's updated net salvage rate calculations shown in Attachment I of the Jan. 31 Supplement and concludes that the Company's proposals are reasonable.

*D.2. New Salvage Rates*

*D.2.1. Sherco Battery Net Salvage Rate*

The Company proposed to establish a net salvage rate of negative 18.4 percent for the Sherco Battery facility. However, neither the Modified Production Petition nor the Production Petition Supplement contains any explanation of or support for that net salvage rate.

In its response to a Department IR, the Company explained that the proposed net salvage rate is based on an estimate of total net decommissioning costs of **[TRADE SECRET DATA HAS BEEN EXCISED]** provided by the project's developer (Form Energy).<sup>26</sup> In the same response, the Company provided a derivation of the proposed salvage rate, which the Department reproduces below.

**Table 1**  
**Derivation of Proposed Net Salvage Rate for**  
**Sherco Battery**

**[TRADE SECRET DATA HAS BEEN EXCISED]**

The Department notes that the Company calculated the proposed net salvage rate as **[TRADE SECRET DATA HAS BEEN EXCISED]**.

The Department agrees that at this time it is reasonable to rely on the net decommissioning cost estimate provided by the vendor to determine a net salvage rate for the Sherco Battery facility. However, the Department is concerned that the Company's calculation of the proposed negative 18.4 percent salvage rate is inconsistent with how the net salvage rate will actually be applied and used in calculating depreciation expense going forward if approved. Specifically, **[TRADE SECRET DATA HAS BEEN EXCISED]**.

The Department requests that the Company clarify in reply comments whether the calculation of the negative 18.4 percent net salvage rate, as shown in Table 1 above, is correct and will result in the desired depreciation accruals.

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<sup>25</sup> Production Petition Supplement, Attachment J at 127-128.

<sup>26</sup> Department Attachment 8.

### *D.3. Sherco Solar Net Salvage Rates*

In its Modified Production Petition, the Company initially proposed to establish net salvage rates of zero for both Sherco Solar Units 1 and 2. However, in its Production Petition Supplement, the Company proposed to establish net salvage rates for its new Sherco Solar Units 1 and 2 of *positive* 1.9 percent and 2.0 percent, respectively. Neither filing contained any explanation of the proposed salvage rates. However, in respond to Department Information Request 15, the Company explained that the net salvage rates proposed in the Production Petition Supplement are based on information from the Decommissioning Plan provided in Docket No. E002/GS-21-191, the Permit Application proceeding for Sherco Solar.<sup>27</sup>

The Department agrees that it is reasonable to use the estimates from decommissioning plan from the Permit Application until Sherco Solar Units 1 and 2 are examined in a future dismantling study.

#### *D.3.1. Blue Lake Units 9-11 Net Salvage Rate*

The Company proposed to establish a net salvage rate of negative 10 percent for Blue Lake Units 9-11. The Units were not included in the Company's dismantling study, and neither of the Company's production and storage filings contained any discussion of the proposed net salvage rate. However, in response to a Department IR, the Company explained that its proposed net salvage rate is based on the proposed salvage rate of negative 12.0 percent for Blue Lake Units 7&8, with a small conservative adjustment in favor of ratepayers.<sup>28</sup>

The Department agrees that it is reasonable to temporarily use the net salvage rate for Blue Lake Units 7&8, with a small conservative adjustment, until the Company's next dismantling study is completed.

### *E. UPDATE ON PLANT REMOVAL COSTS AND PROPOSED RESERVE REALLOCATIONS*

The Commission's September 2, 2021 Order in Docket No. E,G002/D-19-723 required the Company to provide updates on the facilities listed below until retirement or removal is completed, with impact on depreciation reserves and a final true-up. The Company provided the required updates in its Modified Production Petition, as summarized below.

#### *E.1. Black Dog Units 3 & 4*

In its Modified Production Petition, the Company stated:

As of today, the Unit 4 turbine, generator, and boiler have been removed. The ash ponds have been dredged, filled, and covered. The original coal stacks for Units 2 and 3 and the tall common stack have been removed and the coal yard remediation has been completed.

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<sup>27</sup> Department Attachment 9.

<sup>28</sup> Department Attachment 10.

The Department notes, that this language is identical to the language included in the Company's prior Production Petition from the 2022 Depreciation Docket. Attachment H to the Modified Production Petition similarly seems to indicate that little removal work has been completed over the past two years. In addition, in the Company's Petition in Docket No. E,G002/D-19-723, it stated, "[t]he Unit 3 turbine, the boiler for Units 2 and 3, and related plant equipment are planned for removal in 2021-2025."<sup>29</sup> In its current Petition, however, the Company described the same work as "planned for removal in future years."<sup>30</sup> In response to a Department information request, the Company stated that it now plans to remove this equipment when it removes Black Dog Units 5 & 6 (for which the Company is proposing in this Docket to extend the expected retirement year from 2031 to 2042).<sup>31</sup>

Relatedly, the Company has changed its allocation of Black Dog's net decommissioning cost estimate between Units 3&4, Unit 5, and Unit 6. In its dismantling studies, the Company develops a single decommissioning cost estimate for the Black Dog facility as a whole, which it used to allocate between Black Dog – Steam and Black Dog – Other. The expected decommissioning costs associated with steam-related plant were then accrued via depreciation expense for steam-related plant, and expected decommissioning costs of other-related plant were accrued via depreciation expense for other-related plant. In the Company's Petition in Docket No. E,G002/D-19-723, for example, approximately 40 percent (\$20 million) of the total Black Dog dismantling costs were allocated to Black Dog – Steam.

The only depreciation activity remaining for Black Dog – Steam is the continuing amortization of expected costs for removal and remediation of ash ponds and the facilities coal pile.<sup>32</sup> The Company has kept that amortization process separate from the rest of Black Dog – Steam's decommissioning accruals. Thus, to the extent the cost of removal balances for Black Dog – Steam accounts are less than expected decommissioning expense, the Company would likely have to immediately record a depreciation expense accrual to cover the difference. By reallocating all Black Dog decommissioning expense to Black Dog – Other, the Company will avoid doing so.

In its response to Department IR 3, the Company stated that because net salvage costs are recovered in depreciation expense, and only facilities currently in-service are depreciated, it is reasonable to attribute all expected Black Dog decommissioning expense to the units (5 and 6) that are still currently operating.<sup>33</sup> The Department notes, however, that ideally, Black Dog Units 3 & 4 would have accrued a large enough cost of removal balance to cover their expected costs of decommissioning, and there would be no need to reallocate steam-related costs to other production units.

The Department requests that the Company provide in Reply Comments a more detailed discussion of the completed and remaining removal work at Black Dog – Steam, its best estimates of the costs of that work, and an explanation of why it is reasonable to accrue decommissioning expense necessary to cover the remaining costs via depreciation expense for Black Dog – Other. In addition, given the

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<sup>29</sup> E,G002/D-19-723, Aug. 18, 2020 Petition at 16.

<sup>30</sup> Oct. 7 ARL Production Petition at 17.

<sup>31</sup> Department Attachment 11.

<sup>32</sup> See Docket No. E,G002/D-13-1158.

<sup>33</sup> Department Attachments 11, 12, and 13.

apparent need to recover additional decommissioning expense for Black Dog – Steam via Black Dog – Other, the Department requests that the Company explain further in reply comments why its proposal to transfer \$8.4 million in depreciation reserves from Black Dog – Steam to Minnesota Valley, as discussed below.

*E.2. Minnesota Valley*

In its Modified Production Petition, the Company reported that the power-house demolition project at its Minnesota Valley Plant is closed, and that it removed a previously closed ash landfill at the property in 2024. Attachment H of the Modified Production Petition indicates that removal work at Minnesota Valley was expected to be completed by the end of 2024, and that upon completion of the work, the plant was expected to have an unrecovered cost of removal balance of \$8.4 million.

Although not discussed in the text of its Modified Production Petition, the Petition’s Attachments indicate that the Company is proposing to reallocate \$8.4 million of reserves from Black Dog - Steam accounts to Minnesota Valley to cover the shortfall.<sup>34</sup> Because the Minnesota Valley plant has no remaining life, absent this reallocation, the Company would have to record a one-time \$8.4 million expense to cover the shortfall. By transferring reserves from Black Dog to Minnesota Valley, the Company will record that incremental \$8.4 million of depreciation expense over Black Dog’s remaining life.

*E.3. Key City and Granite City*

The Company reported that all removal work at its Key City and Granite City plants is complete.<sup>35</sup> Attachment H to the Modified Production Petition indicates that Key City and Granite City had excess cost of removal balances of \$3.4 and \$3.8 million, respectively. Although not discussed in the text of its Modified Production Petition, the attachments indicate that the Company is proposing to reallocate those excess reserves to its remaining Other Production plants, which, all else equal, will marginally reduce depreciation expense for those plants going forward.<sup>36</sup>

*E.4. Removal of the Luverne Wind2battery System*

In Docket No. E002/GR-21-630, Xcel Energy’s 2021 Rate Case, the Commission approved a reserve reallocation of \$2.14 million from Account 344 Generators to Account 348 Energy Storage to cover of a reasonable cost to dismantle, dispose of, and fully restore the site associated with the Luverne Wind2Battery System.<sup>37</sup> The Commission also required the Company to reverse this reallocation if

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<sup>34</sup> In its pending rate case, the Company did state that it was proposing to “perform reserve reallocations for Minnesota Valley, Key City, Granite City and Black Dog Units 3 & 4” but did not specifically describe the reallocation from Black Dog to Minnesota Valley. See the Nov. 1, 2024 Direct Testimony of Allison M. Johnson in Docket No. E002/GR-24-320 at 44.

<sup>35</sup> Oct. 7 ARL Production Petition at 18 and Schedules 11 and 12

<sup>36</sup> The Company did not discuss this proposal in the text of its Oct. 7, ARL Production Petition, but the reallocations are reflected in the Attachments. The Company did discuss the proposal in its pending rate case. See the Nov. 1, 2024 Direct Testimony of Allison M. Johnson in Docket No. E002/GR-24-320 at 42-45.

<sup>37</sup> Petition at 19; Docket No. E002/GR-21-630 Order, Order Point 19; Direct Testimony of Xcel Energy witness David Moeller in Docket No. E002/GR-21-630 at 46.

actual costs turned out to be lower than \$2.14 million. In its Petition, the Company stated that the removal project is complete, and that its current estimate of total costs was \$1.21 million, or \$0.93 million less than the initial \$2.14 million estimate. As a result, the Company proposed to reallocate \$0.9 million from Account 348 back to Account 344.<sup>38</sup>

Although the project was complete at the time the Company filed its Petition, final actual costs had not yet been determined, and the Company stated that it would update any differences between the \$1.21 million estimate and actuals when it received final actual costs, expected September 30, 2024. The Department requests that the Company provide an update regarding final actual costs in reply comments.

Subject to its review of final costs when available, the Department concludes that the Company's proposal is reasonable.

#### *F. FERC ORDER 898*

FERC Order 898, which became effective January 1, 2025, amended the Uniform System of Accounts for public utilities in ways that are relevant to the Company's depreciation schedules. Specifically, the Order created new property accounts for wind, solar and other renewable generating assets; a new functional class for energy storage accounts; and new accounts within existing functions for computer hardware, software, and communication equipment. Prior to the implementation of FERC Order 898, the utilities booked non-hydro renewables to the same "Other Production accounts" used for non-steam fossil plant, and there was not a uniform accounting treatment of certain types of equipment associated with renewable production facilities.<sup>39</sup>

In its TD&G and Production Petitions, the Company proposed certain changes to comply with FERC Order 898.

##### *F.1. Production Plant Accounts*

For its production plant accounts, the Company did not describe the specific changes anticipated, nor did it provide depreciation schedules documenting the proposed changes. However, the Company stated, "for the impacted production-related assets (wind and solar), we request the Commission to approve the proposed remaining lives and net salvage percentages that align with the Order 898 changes. This action will not change the depreciation amounts filed, only the "geography" and the numbering of the impacted FERC accounts."<sup>40</sup> Any plant transferred to a new property account will retain the same approved depreciation parameters and rates.

Because the production plant account changes will affect only "geography" and not depreciation parameters or expense, the Department concludes that it is reasonable to approve the Company's request at this time. The Department will review the actual changes in future filings.

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<sup>38</sup> Docket E002/GR-24-320, Johnson Direct at 44 and Schedule 12.

<sup>39</sup> See FERC Order 898.

<sup>40</sup> Modified Production Petition at 22.

*F.2. TD&G Plant Accounts*

For its TD&G plant accounts, the Company stated three accounts will be affected by FERC Order 898: 303- software, 391-network equipment, and 397-communication equipment.<sup>41</sup> The Company proposed no changes to the depreciation groups associated with FERC accounts 303 and 391 and stated that property booked to these accounts will be transferred to new accounts within other functional classes, but will retain current (and proposed) depreciation parameters.<sup>42</sup> Thus, the changes for these accounts will have no impact on depreciation expense.

For Account 397 – Communication Equipment, however, the Company stated that the changes it is proposing will result in a change in depreciation expense.<sup>43</sup> The Company stated that Account 397 currently has four depreciation subgroups, but that it is proposing to retain only the two largest groups, along with their proposed depreciation parameters, pursuant to its initial implementation of FERC Order 898. The Company stated that Attachment I to its TD&G Petition presented the relevant changes, but this appears to have been an error, as Attachment I to its Petition is a summary Account 390 – Buildings.

The Department requests that the Company provide in reply comments the attachment that presents the changes to Account 397 proposed pursuant to FERC Order 898 and an explanation of the proposed treatment of property currently booked to the two depreciation groups the Company is proposing to eliminate. The Department will provide a final recommendation after reviewing this information.

*G. REQUEST TO MODIFY FILING REQUIREMENTS FOR PRODUCTION/STORAGE AND TD&G DEPRECIATION FILINGS*

The Company requested to modify its existing requirements to file Production/Storage and TD&G depreciation filings annually. Instead, the Company proposes to file depreciation studies only with major rate cases. The Company stated that this change would align authorized revenue requirements and customer bills with depreciation parameters and rates, and reduce the administrative burden of depreciation filings.

As described in Department Testimony in the Company's current rate case, the Department has no objections to this change, but recommends that the Commission require the Company file depreciation studies 90 days prior to any future rate case filing, and also continue to file depreciation studies at least once every five years in the absence of a rate case.

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<sup>41</sup> TD&G Petition at 9.

<sup>42</sup> TD&G Petition at 9.

<sup>43</sup> TD&G Petition at 9.

#### IV. DEPARTMENT RECOMMENDATIONS

The Commission recommends that the Commission:

- Deny the Company's request to establish depreciation parameters for Accounts, 351 – Energy Storage Equipment – Transmission, and 363 – Energy Storage Equipment – Distribution;
- Approve the Company's proposed depreciation parameters and rates for all other transmission, distribution, and general plant accounts as amended in Attachment 1 to these Comments to correct:
  - the average service life for Electric Account 370 Meters – AGIS;
  - the remaining lives for Electric Account 390 – Structures and Improvements and Common Account 390 – Structures and Improvements;
- Deny the Company's proposal to extend the lives of its Hennepin Island and Upper Dam hydro facilities and instead approve remaining lives of 9.2 years for both facilities based on their currently approved retirement years of 2034;
- Deny the Company's proposed remaining lives for its Monticello and Prairie Island Units 1 & 2 nuclear plants and instead approve remaining lives for the plants based on expected retirement years of 2050 and 2054, respectively;
- Deny the Company's requested remaining lives for its Allen S. King and Sherco 3 generating facilities, and instead approve remaining lives for the plants based on retirement years of 2028 and 2030, respectively;
- Approve all other remaining lives proposed by the Company for its Production and Storage facilities;
- Approve all of the Company's proposed net salvage rates for its Production and Storage facilities, except for the net salvage rates proposed for Sherco Battery and Black Dog Units 5 and 6 (the Department will provide final recommendations on the salvage rates for these facilities after reviewing the Company's reply comments);
- Approve the Company's proposed modifications to its accounting for its production and storage accounts pursuant to FERC Order 898; and
- Approve the Company's request to modify the filing requirements for its depreciation filings to align with its rate case filings.

In addition, the Department emphasizes the Commission's determination in depreciation proceedings is for accounting purposes only and is not a determination for purposes of rates.

The Department requests that the Company provide in reply comments:

- Clarification of whether its proposed net salvage rate of negative 18.4 percent for its Sherco Battery facility is correct and will result in the desired depreciation accruals;
- Additional explanation of the Company's proposals related to decommissioning costs, net salvage rates, and reserve reallocations from Black Dog plant accounts, as described above; and
- an update regarding final actual costs for Decommissioning the Luverne Wind2battery System, and the final amounts of any reserve reallocations.

The Department will provide a final set of recommendations to the Commission after it reviews the information provided in the Company's reply comments.

## Attachments

- Not-Public Document – Not For Public Disclosure
- Public Document – Not-Public Data Has Been Excised
- Public Document

Xcel Energy Information Request No. 21  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Elec Account 370 Meters – AGIS Remaining Life  
Reference(s): 9/9/2024 TD&G Petition

In Docket No. E,G002/D-20-635, Xcel Energy requested, and the Commission approved, an Average Service Life of 20 years for Elec Account 370 Meters – AGIS. However, in the Excel file “23-0356 DOC-001 TDG Schedule A, B, C & I.xlsx”, provided in response to DOC IR 1 in this Docket, the remaining life for this account appears to have been calculated assuming a 15-year remaining life. See the tab “Elec Distribution Amort,” column L.

Please either provide support for the 15-year remaining life, or provide an updated depreciation rate/accrual (with all supporting calculations, similar to the calculations provided in “23-0356 DOC-001 TDG Schedule A, B, C & I.xlsx”) assuming a 20-year ASL for this account.

Response:

During the preparation of the updated TD&G study, we mistakenly proposed a 15-year service life for Elec Account 370 Meters – AGIS. After correcting this to the approved 20-year service life, we are now proposing no change to the depreciation rates from the previous case.

Attached are Revised Schedules A, B, C, H reflecting the corrections to Elec Account 370 Meters – AGIS, as well as the corrections for both Elec 390 - Structures and Improvements and Comm 390 Structures and Improvements. Please see our response to DOC-22 for more information on the corrections to Elec 390 - Structures and Improvements and Comm 390 Structures and Improvements. We also provide below, a Revised Table 1 from our TD&G filing reflecting these changes.

**Table 1 (Revised)**  
**Depreciation Expense Impact**

	Estimated Change to Depreciation before allocations	Common Utility allocations	Estimated Change to Depreciation after allocations
Electric Utility	\$ 2,300,660	\$ 2,683,440	\$ 4,984,100
Gas Utility	\$ 1,642,146	\$ 199,795	\$ 1,841,941
Common Utility	\$ 2,883,235	\$ (2,883,235)	\$ -
Total Estimated Impact	\$ 6,826,041	\$ -	\$ 6,826,041

1.27% Percentage increase (decrease) in expense

We additionally note that we will outline this correction in our Reply Comments in this docket, and also incorporate these changes into Rebuttal Testimony in the Minnesota Electric Rate Case in Docket No. E002/GR-24-320.

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Preparer: Michele Kietzman  
 Title: Sr. Mgr., Capital Asset Rec Acct  
 Department: Capital Asset Accounting  
 Telephone: 612-216-8257  
 Date: June 23, 2025

Northern States Power Company

Docket No. E,G002/D-23-356  
 DOC Information Request No. 21  
 Schedule A Revised - Page 1 of 3

## Northern States Power Company - Minnesota: Transmission, Distribution & General

### Schedule A - Proposed Depreciation Rates

**Xcel Energy**  
 Proposed Depreciation Rates  
**Electric Utility**

FERC Account	Account Description	Proposed	
		Annual Rate	Notes
Intangible Plant - Total Company			
	302 Franchise and Consents	5.00%	(1)
	303 Computer Software 3 Year	36.89%	
	303 Computer Software 5 Year	22.51%	
	303 Computer Software 7 Year	15.18%	
	303 Computer Software 10 Year	10.27%	
	303 Computer Software 15 Year	6.67%	(3)
Transmission - Total Company			
	351 Energy Storage Equipment	10.00%	(3)
	352 Structures and Improvements	1.82%	
	353 Station Equipment	2.18%	
	354 Towers and Fixtures	2.11%	
	355 Poles and Fixtures	2.61%	
	356 Overhead Conductors and Devices	2.09%	
	357 Underground Conduit	1.44%	
	358 Underground Conductor and Devices	2.16%	
	359 Roads and Trails	1.68%	
Distribution - MN Only			
	361 Structures and Improvements	2.29%	
	362 Station Equipment	2.64%	
	363 Energy Storage Equipment	10.00%	(3)
	364 Poles, Towers, and Fixtures	5.48%	
	365 Overhead Conductors and Devices	3.56%	
	366 Underground Conduit	1.99%	
	367 Underground Conductor and Devices	2.42%	
	368 Line Transformers	3.29%	
	368 Line Capacitors	3.97%	
	369 Overhead Services	5.00%	
	369 Underground Services	2.62%	
	370 Meters	5.82%	
	370 Meters - AGIS	5.02%	
	371 Cust Prem-EV Equip	10.10%	
	373 Street Lighting and Signal Systems	5.18%	
General - Total Company			
	390 Structures and Improvements	2.18%	(5)
	390 Structures and Improvements - Leasehold Improvements	Note (2)	(2)
	391 Office Furniture and Equipment	5.03%	
	391 Network Equipment	17.19%	
	392 Automobiles	9.19%	
	392 Light Trucks	9.17%	
	392 Trailers	7.88%	
	392 Heavy Trucks	8.00%	
	393 Stores Equipment	5.06%	
	394 Tools, Shop, and Garage Equipment	6.70%	
	395 Laboratory Equipment	9.87%	
	396 Power Operated Equipment	7.53%	
	397 General Communication Equipment	13.59%	
	397 Communication Equipment - Two Way	9.82%	
	397 Comm. & Telecomm. Equipment - AES	10.70%	
	397 Comm. & Telecomm. Equipment - EMS	6.69%	
	397 Communication Equipment - Smart Grid	4.62%	
	398 Miscellaneous Equipment	6.66%	

Northern States Power Company

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 DOC Information Request No. 21  
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## Northern States Power Company - Minnesota: Transmission, Distribution & General

### Schedule A - Proposed Depreciation Rates

**Xcel Energy**

Proposed Depreciation Rates

**Gas Utility**

FERC Account	Account Description	Proposed	
		Annual Rate	Notes
Intangible Plant - Total Company			
	302 Franchise and Consents	5.00%	(1)
	303 Computer Software 3 Year	35.08%	
	303 Computer Software 5 Year	21.91%	
	303 Computer Software 7 Year	15.20%	
	303 Computer Software 10 Year	9.99%	
	303 Computer Software 15 year	6.67%	(3)
Transmission - MN Only			
	366 Structures and Improvements	1.23%	
	367 Mains	1.70%	
	369 Measure and Regulating Station	2.61%	
Distribution - MN Only			
	375 Structures and Improvements	2.06%	
	376 Mains - Metallic	2.20%	
	376 Mains - Plastic	2.37%	
	378 Measure & Regulating- General	2.73%	
	379 Measure & Regulating- City Gate	2.31%	
	380 Services - Metallic	2.45%	
	380 Services - Plastic	2.95%	
	381 Meters	4.93%	
	381 Telemetry (Fully Amortized)	0.00%	
	383 House Regulators (Old)	0.00%	(3)
General - Total Company			
	390 Structures and Improvements	2.00%	
	391 Office Furniture and Equipment	4.55%	
	391 Network Equipment	19.44%	
	392 Automobiles	8.35%	
	392 Light Trucks	9.12%	
	392 Trailers	7.42%	
	392 Heavy Trucks	7.79%	
	393 Stores Equipment	4.39%	
	394 Tools, Shop, and Garage Equipment	6.47%	
	395 Laboratory Equipment	10.00%	(3)
	396 Power Operated Equipment	6.17%	
	397 Communication Equipment	29.47%	
	397 Communication Equipment - Two Way	9.40%	
	397 Comm. & Telecomm. Equipment - AES	6.35%	
	397 Comm. & Telecomm. Equipment - EMS	6.50%	
	398 Miscellaneous Equipment	7.21%	

Northern States Power Company

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## Northern States Power Company - Minnesota: Transmission, Distribution & General

### Schedule A - Proposed Depreciation Rates

#### Xcel Energy

#### Proposed Depreciation Rates

#### Common Utility

FERC Account	Account Description	Proposed	
		Annual Rate	Notes
Intangible Plant - Total Company			
301	Intangible Organization Costs	0.00%	(4)
302	Franchise and Consents	5.00%	(1)
303	Computer Software 3 Year	34.94%	
303	Computer Software 5 Year	20.36%	
303	Computer Software 7 Year	14.49%	
303	Computer Software 10 Year	10.16%	
303	Computer Software 15 year	6.80%	
General - Total Company			
390	Structures and Improvements	2.57%	(5)
390	Structures and Improvements - Leasehold Improvements	Note (2)	(2)
391	Office Furniture and Equipment	4.84%	
391	Network Equipment	17.06%	
392	Automobiles	9.62%	
392	Light Trucks	9.42%	
392	Trailers	9.43%	
392	Heavy Trucks	7.52%	
393	Stores Equipment	4.83%	
394	Tools, Shop, and Garage Equipment	6.67%	
395	Laboratory Equipment	10.00%	(3)
396	Power Operated Equipment	7.52%	
397	Comm. & Telecomm. Equipment	10.06%	
397	Communication Equipment - Two Way	Note (6)	(6)
397	Communication Equipment - Smart Grid	5.13%	
398	Miscellaneous Equipment	Note (6)	(6)

(1) Account 302 is amortized over the terms of the franchise agreements or license, which is typically 20 years. The Company is including Account 302 in all schedules for completeness.

(2) Depreciated over lease term.

(3) Currently there is no balance in these accounts. In the event plant is added to these accounts, the Company is requests authorization to use the depreciation rate proposed based on the proposed parameters for each account.

(4) Account 301 is not amortized. The Company is including Account 301 in all schedules for completeness.

(5) Account 390-Structures and Improvements includes several specific locations that have distinct remaining lives. Please refer to Schedule I.

(6) These accounts are fully depreciated. The company is not requesting a depreciation rate change.

Northern States Power Company

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 Schedule B Revised- Page 1 of 3

Northern States Power Company - Minnesota: Transmission, Distribution & General  
 Schedule B - Comparison of Present and Proposed Accruals

Xcel Energy

Comparison of Present and Proposed Accruals  
 Electric Utility

FERC Account	Account Description	Plant Balance 1/1/2024	Fully Accrued	Adjusted Plant 1/1/2024	Present			Proposed			Proposed Less
					Annual Rate	Note	Annual Accrual	Annual Rate	Note	Annual Accrual	Present Accrual
Intangible Plant - Total Company											
302	Franchise and Consents	\$ 275,265,526	\$ -	\$ 275,265,526	5.00%	(1)	\$ 13,763,276	5.00%	(1)	\$ 13,763,276	\$ -
303	Computer Software 3 Year	4,036,408	-	4,036,408	33.54%		1,353,816	36.89%		1,489,179	135,362
303	Computer Software 5 Year	171,988,232	113,390,398	58,597,834	20.47%		11,993,347	22.51%		13,192,037	1,198,690
303	Computer Software 7 Year	14,107,089	-	14,107,089	14.29%		2,015,298	15.18%		2,140,838	125,540
303	Computer Software 10 Year	50,052,775	-	50,052,775	10.05%		5,032,676	10.27%		5,138,210	105,534
303	Computer Software 15 Year	-	-	-	6.67%	(3)	-	6.67%	(3)	-	-
	Total Intangible Plant	\$ 515,450,030	\$ 113,390,398	\$ 402,059,632			\$ 34,158,413			\$ 35,723,540	\$ 1,565,126
Transmission - Total Company											
352	Structures and Improvements	169,263,206	-	169,263,206	1.80%		3,038,467	1.82%		3,085,402	46,935
353	Station Equipment	1,587,179,442	-	1,587,179,442	2.19%		34,705,582	2.18%		34,660,137	(45,445)
354	Towers and Fixtures	127,675,938	-	127,675,938	2.12%		2,708,150	2.11%		2,700,138	(8,011)
355	Poles and Fixtures	1,685,276,225	-	1,685,276,225	2.62%		44,081,230	2.61%		43,935,727	(145,503)
356	Overhead Conductors and Devices	764,363,246	-	764,363,246	2.11%		16,135,033	2.09%		15,976,112	(158,922)
357	Underground Conduit	32,181,582	-	32,181,582	1.44%		463,946	1.44%		463,907	(38)
358	Underground Conductor and Devices	35,616,310	-	35,616,310	2.15%		767,154	2.16%		768,705	1,551
359	Roads and Trails	3,157,183	-	3,157,183	1.67%		52,620	1.68%		52,970	351
	Total Transmission	\$ 4,404,713,132	\$ -	\$ 4,404,713,132			\$ 101,952,181			\$ 101,643,099	\$ (309,083)
Distribution - MN only											
361	Structures and Improvements	59,753,263	-	59,753,263	2.29%		1,370,357	2.29%		1,370,450	92
362	Station Equipment	712,330,293	-	712,330,293	2.65%		18,875,670	2.64%		18,797,458	(78,211)
364	Poles, Towers, and Fixtures	637,964,110	-	637,964,110	5.53%		35,310,197	5.48%		34,979,389	(330,808)
365	Overhead Conductors and Devices	618,815,589	-	618,815,589	3.61%		22,328,969	3.56%		22,017,135	(311,834)
366	Underground Conduit	378,341,672	-	378,341,672	1.99%		7,540,539	1.99%		7,522,867	(17,671)
367	Underground Conductor and Devices	1,282,520,480	-	1,282,520,480	2.45%		31,451,653	2.42%		31,085,805	(365,848)
368	Line Transformers	473,460,150	-	473,460,150	3.30%		15,614,447	3.29%		15,593,153	(21,295)
368	Line Capacitors	28,502,148	8,548,235	19,953,913	4.42%		881,672	3.97%		792,102	(89,570)
369	Overhead Services	95,548,692	-	95,548,692	5.11%		4,878,164	5.00%		4,773,875	(104,289)
369	Underground Services	300,820,092	-	300,820,092	2.66%		7,997,688	2.62%		7,885,385	(112,303)
370	Meters	65,205,513	12,909	65,192,604	5.82%		3,794,210	5.82%		3,794,210	-
370	Meters - AGIS	116,750,063	-	116,750,063	5.02%		5,860,853	5.02%		5,860,853	-
371	Cust Prem-EV Equip	12,879,192	-	12,879,192	10.33%		1,330,296	10.10%		1,300,556	(29,740)
373	Street Lighting and Signal Systems	91,312,820	-	91,312,820	5.30%		4,837,974	5.18%		4,729,290	(108,684)
	Total Distribution - MN only	\$ 4,874,204,077	\$ 8,561,145	\$ 4,865,642,932			\$ 162,072,689			\$ 160,502,527	\$ (1,570,162)
General - Total Company											
390	Structures and Improvements	51,678,342	-	51,678,342	2.18%		1,124,918	2.18%		1,124,918	-
390	Structures and Improvements (Specific) Structures and Improvements - Leasehold	45,600,790	-	45,600,790	(5)	(5)	761,760	(5)	(5)	780,435	18,675
390	Improvements	1,075,433	-	1,075,433	(F)	(2)	(F)	(F)	(2)	(F)	(F)
391	Office Furniture and Equipment	29,942,767	136,076	29,806,691	4.94%		1,471,831	5.03%		1,498,938	27,107
391	Network Equipment	102,560,638	10,158,019	92,402,619	16.54%		15,286,763	17.19%		15,883,921	597,158
392	Automobiles	7,255,331	109,900	7,145,431	9.34%		667,739	9.19%		656,386	(11,353)
392	Light Trucks	58,343,986	15,523,282	42,820,705	8.73%		3,738,850	9.17%		3,925,570	186,719
392	Trailers	30,551,911	6,839,262	23,712,649	7.00%		1,660,662	7.88%		1,868,696	208,034
392	Heavy Trucks	152,128,358	30,288,120	121,840,239	7.42%		9,039,366	8.00%		9,748,378	709,012
393	Stores Equipment	1,949,332	8,157	1,941,175	4.92%		95,468	5.06%		98,300	2,832
394	Tools, Shop, and Garage Equipment	150,904,082	4,333,548	146,570,533	6.62%		9,697,423	6.70%		9,819,671	122,248
395	Laboratory Equipment	2,965,830	611,972	2,353,858	9.87%		232,357	9.87%		232,221	(136)
396	Power Operated Equipment	70,779,263	19,389,826	51,389,437	6.14%		3,157,622	7.53%		3,871,547	713,925
397	General Communication Equipment	5,901,262	348,392	5,552,870	9.99%		554,525	13.59%		754,866	200,341
397	Communication Equipment - Two Way	62,815,745	94,599	62,721,146	9.93%		6,229,476	9.82%		6,157,594	(71,882)
397	Comm. & Telecomm. Equipment - AES	7,071,726	3,901,342	3,170,384	6.47%		205,015	10.70%		339,278	134,263
397	Comm. & Telecomm. Equipment - EMS	79,385,751	37,602	79,348,149	6.62%		5,249,933	6.69%		5,305,855	55,922
397	Communication Equipment - Smart Grid	73,540,105	-	73,540,105	5.00%		3,673,571	4.62%		3,395,154	(278,418)
398	Miscellaneous Equipment	1,888,674	115,217	1,773,457	6.64%		117,717	6.66%		118,049	331
	Total General	\$ 936,339,325	\$ 91,895,314	\$ 844,444,011			\$ 62,964,998			\$ 65,579,776	\$ 2,614,779
	Total Electric Utility	\$ 10,730,706,563	\$ 213,846,856	\$ 10,516,859,707			\$ 361,148,281			\$ 363,448,942	\$ 2,300,660

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Northern States Power Company - Minnesota: Transmission, Distribution & General  
 Schedule B - Comparison of Present and Proposed Accruals

Xcel Energy  
 Comparison of Present and Proposed Accruals  
 Gas Utility

FERC Account	Account Description	Plant Balance 1/1/2024	Fully Accrued	Adjusted Plant 1/1/2024	Present		Proposed		Proposed Less Present Accrual		
					Annual Rate	Note	Annual Accrual	Annual Rate		Note	Annual Accrual
Intangible Plant - Total Company											
302	Franchise and Consents	\$ 56,567	\$ -	\$ 56,567	5.00%	(1)	\$ 2,828	5.00%	(1)	\$ 2,828	\$ -
303	Computer Software 3 Year	194,911	25,000	169,911	36.65%		62,275	35.08%		59,607	(2,668)
303	Computer Software 5 Year	6,557,173	3,764,946	2,792,227	20.97%		585,564	21.91%		611,863	26,299
303	Computer Software 7 Year	15,790,860	-	15,790,860	14.29%		2,255,837	15.20%		2,400,423	144,586
303	Computer Software 10 Year	3,657,984	-	3,657,984	10.00%		365,798	9.99%		365,537	(261)
303	Computer Software 15 year	-	-	-	6.67%	(3)	-	6.67%	(3)	-	-
	Total Intangible Plant	26,257,495	3,789,946	22,467,549			3,272,303			3,440,259	167,956
Transmission - MN Only											
366	Structures and Improvements	932,907	-	932,907	1.22%		11,419	1.23%		11,440	20
367	Mains	114,313,235	-	114,313,235	1.69%		1,935,279	1.70%		1,941,140	5,861
369	Measure and Regulating Station	18,494,341	-	18,494,341	2.63%		486,572	2.61%		481,844	(4,728)
	Total Transmission - MN only	133,740,483	-	133,740,483			2,433,270			2,434,423	1,153
Distribution - MN Only											
375	Structures and Improvements	877,065	-	877,065	2.06%		18,046	2.06%		18,035	(11)
376	Mains - Metallic	343,537,266	-	343,537,266	2.17%		7,451,130	2.20%		7,551,325	100,196
376	Mains - Plastic	664,487,201	-	664,487,201	2.36%		15,705,235	2.37%		15,735,032	29,797
378	Measure & Regulating- General	28,821,030	-	28,821,030	2.69%		774,666	2.73%		786,860	12,194
379	Measure & Regulating- City Gate	1,665,478	-	1,665,478	2.37%		39,518	2.31%		38,394	(1,125)
380	Services - Metallic	12,955,047	-	12,955,047	2.40%		310,804	2.45%		317,954	7,150
380	Services - Plastic	374,417,557	-	374,417,557	2.79%		10,449,583	2.95%		11,055,899	606,316
381	Meters	162,082,288	25,532,318	136,549,971	4.95%		6,757,140	4.93%		6,731,407	(25,733)
381	Telemetry (Fully Amortized)	36,778	36,778	-	12.50%		-	0.00%		-	-
383	House Regulators (Old)	-	-	-	0.00%	(3)	-	0.00%	(3)	-	-
	Total Distribution - MN only	1,588,879,709	25,569,096	1,563,310,613			41,506,122			42,234,907	728,785
General - Total Company											
390	Structures and Improvements	8,715,810	-	8,715,810	1.99%		173,382	2.00%		174,718	1,336
391	Office Furniture and Equipment	1,143,129	7,138	1,135,991	4.33%		49,159	4.55%		51,731	2,572
391	Network Equipment	1,486,762	101,379	1,385,384	11.08%		153,456	19.44%		269,282	115,825
392	Automobiles	633,975	45,380	588,595	7.99%		47,056	8.35%		49,120	2,064
392	Light Trucks	17,145,772	3,777,410	13,368,362	8.25%		1,102,489	9.12%		1,218,634	116,144
392	Trailers	2,967,811	596,926	2,370,885	6.48%		153,540	7.42%		175,829	22,290
392	Heavy Trucks	20,884,370	4,942,098	15,942,272	6.96%		1,109,374	7.79%		1,242,322	132,948
393	Stores Equipment	10,091	-	10,091	4.27%		431	4.39%		443	13
394	Tools, Shop, and Garage Equipment	12,402,136	-	12,402,136	6.15%		762,752	6.47%		801,953	39,201
395	Laboratory Equipment	-	-	-	10.00%	(3)	-	10.00%	(3)	-	-
396	Power Operated Equipment	5,243,339	426,743	4,816,596	5.61%		270,137	6.17%		296,964	26,827
397	Communication Equipment	57,289	-	57,289	8.14%		4,662	29.47%		16,881	12,219
397	Communication Equipment - Two Way	1,245,451	-	1,245,451	9.49%		118,145	9.40%		117,088	(1,058)
397	Comm. & Telecomm. Equipment - AES	25,563,361	-	25,563,361	5.35%		1,367,482	6.35%		1,624,547	257,065
397	Comm. & Telecomm. Equipment - EMS	9,252,091	-	9,252,091	6.32%		584,996	6.50%		601,468	16,472
398	Miscellaneous Equipment	14,215	-	14,215	4.85%		689	7.21%		1,025	335
	Total General	106,765,602	9,897,074	96,868,529			5,897,752			6,642,005	744,253
	Total Gas Utility	\$ 1,855,643,289	\$ 39,256,115	\$ 1,816,387,174			\$ 53,109,447			\$ 54,751,593	\$ 1,642,146

Northern States Power Company

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Northern States Power Company - Minnesota: Transmission, Distribution & General  
 Schedule B - Comparison of Present and Proposed Accruals

Xcel Energy  
 Comparison of Present and Proposed Accruals  
 Common Utility

FERC Account	Account Description	Plant Balance 1/1/2024	Fully Accrued	Adjusted Plant 1/1/2024	Present		Proposed			Proposed Less Present Accrual	
					Annual Rate	Note	Annual Accrual	Annual Rate	Note		Annual Accrual
Intangible Plant - Total Company											
301	Intangible Organization Costs	\$ 100,608	\$ -	\$ 100,608	0.00%	(4)	\$ -	0.00%	(4)	\$ -	\$ -
302	Franchise and Consents	-	-	-	5.00%	(1)	-	5.00%	(1)	-	-
303	Computer Software 3 Year	20,754,219	11,734,906	9,019,313	34.48%		3,109,941	34.94%		3,151,641	41,700
303	Computer Software 5 Year	265,689,256	80,272,060	185,417,196	20.53%		38,069,310	20.36%		37,746,311	(322,999)
303	Computer Software 7 Year	120,024,884	-	120,024,884	14.41%		17,292,065	14.49%		17,385,947	93,882
303	Computer Software 10 Year	89,505,378	43,551,532	45,953,846	10.36%		4,758,985	10.16%		4,668,379	(90,606)
303	Computer Software 15 year	192,577,110	-	192,577,110	6.77%		13,031,585	6.80%		13,099,662	68,078
	Total Intangible Plant	\$ 688,651,455	\$ 135,558,497	\$ 553,092,957			\$ 76,261,886			\$ 76,051,940	\$ (209,946)
General - Total Company											
390	Structures and Improvements	90,148,718	-	90,148,718	2.57%		2,320,955	2.57%		2,320,955	-
390	Structures and Improvements (Specific) Structures and Improvements - Leasehold	181,033,716	-	181,033,716	(5)	(5)	3,820,674	(5)	(5)	4,888,069	1,067,394
390	Improvements	18,120,375	-	18,120,375	(F)	(2)	(F)	(F)	(2)	(F)	(F)
391	Office Furniture and Equipment	24,494,944	123,920	24,371,024	4.84%		1,179,319	4.84%		1,179,150	(170)
391	Network Equipment	225,023,354	118,971	224,904,383	16.21%		36,465,792	17.06%		38,365,984	1,900,192
392	Automobiles	2,013,946	491,489	1,522,457	8.90%		135,433	9.62%		146,531	11,098
392	Light Trucks	6,085,251	1,437,786	4,647,465	8.71%		404,640	9.42%		437,728	33,088
392	Trailers	1,416,432	869,014	547,418	6.49%		35,519	9.43%		51,637	16,117
392	Heavy Trucks	6,140,343	1,297,766	4,842,577	6.87%		332,616	7.52%		363,991	31,375
393	Stores Equipment	246,162	-	246,162	4.85%		11,929	4.83%		11,895	(33)
394	Tools, Shop, and Garage Equipment	15,000,073	79,013	14,921,060	6.54%		976,180	6.67%		995,103	18,923
395	Laboratory Equipment	-	-	-	10.00%	(3)	-	10.00%	(3)	-	-
396	Power Operated Equipment	1,746,769	411,158	1,335,611	6.76%		90,222	7.52%		100,484	10,261
397	Comm. & Telecomm. Equipment	1,070,213	129,361	940,851	9.66%		90,852	10.06%		94,649	3,797
397	Communication Equipment - Two Way	76,870	-	76,870	9.47%		7,282	9.47%	(6)	7,282	-
397	Communication Equipment - Smart Grid	887,229	-	887,229	5.00%		44,361	5.13%		45,499	1,137
398	Miscellaneous Equipment	44,888	20,819	24,069	3.86%		928	3.86%	(6)	928	-
	Total General Plant	\$ 573,549,284	\$ 4,979,297	\$ 568,569,987			\$ 45,916,702			\$ 49,009,883	\$ 3,093,180
	Total Common Utility	1,262,200,739	140,537,795	1,121,662,944			122,178,588			125,061,823	2,883,235
	Total All Utilities	\$ 13,848,550,591	\$ 393,640,766	\$ 13,454,909,825			\$ 536,436,317			\$ 543,262,358	\$ 6,826,041

(1) Account 302 is amortized over the terms of the franchise agreements or license, which is typically 20 years. The Company is including Account 302 in all schedules for completeness.  
 (2) Depreciated over lease term.

(3) Currently there is no balance in these accounts. In the event plant is added to these accounts, the Company is requests authorization to use the depreciation rate proposed based on the proposed parameters for each account.  
 (4) Account 301 is not amortized. The Company is including Account 301 in all schedules for completeness.  
 (5) Account 390-Structures and Improvements includes several specific locations that have distinct remaining lives. Please refer to Schedule I.  
 (6) These accounts are fully depreciated. The company is not requesting a depreciation rate change.

Northern States Power Company

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Northern States Power Company - Minnesota: Transmission, Distribution & General  
 Schedule C - Depreciation and Amortization Rate Calculations

Xcel Energy

Summary of Annual Depreciation and Amortization Accruals

Electric Utility

Excluding Fully Accrued Assets

FERC Account	Account Description	Adjusted Plant 1/1/2024	Depreciation Reserve 1/1/2024	Est. Future Net Salvage		Unaccrued Balance	Proposed Average Remaining Life (Yrs)	Annual Accrual	Depreciation/Amortization Rate	Reserve Ratio	Approved (1)		Notes
				%	Amount						Average Remaining Life (Yrs)	Change (Yrs)	
Intangible Plant - Total Company													
302	Franchise and Consents	\$ 275,265,526	\$ 143,139,934	0%	-	\$ 132,125,592	Note (1)	\$ 13,763,276	5.00%	52.00%	Note (1)	Note (1)	(1)
303	Computer Software 3 Year	4,036,408	1,770,884	0%	-	2,265,524	1.52	1,489,179	36.89%	43.87%	2.50	-0.98	
303	Computer Software 5 Year	58,597,834	28,610,698	0%	-	29,987,136	2.27	13,192,037	22.51%	48.83%	2.85	-0.58	
303	Computer Software 7 Year	14,107,089	1,152,933	0%	-	12,954,155	6.05	2,140,838	15.18%	8.17%	0.00	6.05	
303	Computer Software 10 Year	50,052,775	2,423,249	0%	-	47,629,526	9.27	5,138,210	10.27%	4.84%	8.50	0.77	
303	Computer Software 15 Year	-	-	0%	-	-	0.00	-	6.67%	0.00%	0.00	0.00	(3)
	Total Intangible Plant	402,059,632	177,097,699		-	224,961,933		35,723,540					
Transmission - Total Company													
352	Structures and Improvements	169,263,206	30,382,818	-15%	(25,389,481)	164,269,868	53.24	3,085,402	1.82%	17.95%	54.01	-0.77	
353	Station Equipment	1,587,179,442	404,355,523	-20%	(317,435,888)	1,500,259,807	43.28	34,660,137	2.18%	25.48%	43.62	-0.33	
354	Towers and Fixtures	127,675,938	85,496,141	-50%	(63,837,969)	106,017,766	39.26	2,700,138	2.11%	66.96%	40.72	-1.46	
355	Poles and Fixtures	1,685,276,225	405,081,457	-55%	(926,901,924)	2,207,096,693	50.23	43,935,727	2.61%	24.04%	51.11	-0.87	
356	Overhead Conductors and Devices	764,363,246	134,416,399	-40%	(305,745,298)	935,692,145	58.57	15,976,112	2.09%	17.59%	58.66	-0.10	
357	Underground Conduit	32,181,582	6,618,783	-5%	(1,609,079)	27,171,877	58.57	463,907	1.44%	20.57%	60.52	-1.95	
358	Underground Conductor and Devices	35,367,310	10,367,506	-5%	(1,780,816)	27,029,620	35.16	768,705	2.16%	29.11%	36.84	-1.68	
359	Roads and Trails	3,157,183	19,901	0%	-	3,137,282	59.23	52,970	1.68%	0.63%	0.00	59.23	
	Total Transmission	4,404,713,132	1,076,738,529		(1,642,700,455)	4,970,675,058		101,643,099					
Distribution - MN Only													
361	Structures and Improvements	59,753,263	19,406,487	-40%	(23,901,305)	64,248,081	46.88	1,370,450	2.29%	32.48%	47.57	-0.69	
362	Station Equipment	712,330,293	242,383,245	-30%	(213,699,088)	683,646,135	36.37	18,797,458	2.64%	34.03%	36.41	-0.04	
364	Poles, Towers, and Fixtures	637,964,110	321,541,181	-135%	(861,251,549)	1,177,674,478	33.67	34,979,389	5.48%	50.40%	32.17	1.50	
365	Overhead Conductors and Devices	618,815,589	151,070,191	-30%	(185,644,677)	653,390,075	29.68	22,017,135	3.56%	24.41%	29.06	0.62	
366	Underground Conduit	378,341,672	95,135,376	-30%	(113,502,502)	396,708,798	52.73	7,522,867	1.99%	25.15%	52.53	0.20	
367	Underground Conductor and Devices	1,282,520,480	434,792,190	-20%	(256,504,096)	1,104,232,386	35.52	31,085,805	2.42%	33.90%	35.72	-0.19	
368	Line Transformers	193,491,248	193,491,248	-5%	(23,673,007)	303,641,909	19.47	15,593,153	3.29%	40.87%	19.32	0.16	
368	Line Capacitors	19,953,913	9,071,117	-10%	(1,995,391)	12,878,187	16.26	792,102	3.97%	45.46%	16.19	0.06	
369	Overhead Services	95,548,692	68,026,090	-100%	(95,548,692)	123,071,295	25.78	4,773,875	5.00%	71.20%	24.27	1.51	
369	Underground Services	300,820,092	112,350,323	-10%	(30,082,009)	218,551,778	27.72	7,885,385	2.62%	37.35%	26.78	0.93	
370	Meters	65,192,604	23,946,731	-5%	(3,259,630)	44,505,503	8.48	5,247,219	5.82%	36.73%	0.00	8.48	
370	Meters - AGIS	116,750,063	4,654,735	0%	-	112,095,328	19.12	5,863,458	5.02%	3.99%	17.78	1.33	
371	Cust Prem-EV Equip	12,879,192	1,043,400	0%	-	11,835,791	9.10	1,300,556	10.10%	8.10%	7.50	1.60	
373	Street Lighting and Signal Systems	91,312,820	27,317,851	-50%	(45,656,410)	109,651,379	23.19	4,729,290	5.18%	29.92%	23.27	-0.08	
	Total Distribution - SD only	\$ 4,865,642,932	\$ 1,704,230,165		\$ (1,854,718,357)	\$ 5,016,131,124		\$ 161,958,141					
General - Total Company													
390	Structures and Improvements	51,678,342	8,824,389	-20%	(10,335,668)	53,189,621	46.79	1,136,732	2.18%	17.08%	44.00	2.79	
390	Structures and Improvements (Specific)	45,600,790	22,446,653	-20%	(9,120,158)	32,274,295	Note (5)	780,435	Note (5)	49.22%	Note (5)	Note (5)	(5)
390	Structures and Improvements - Leasehold Improvements	1,075,433	1,075,433	0%	-	(0)	Note (2)	-	Note (2)	100.00%	Note (2)	Note (2)	(2)
391	Office Furniture and Equipment	29,806,691	17,129,525	0%	-	12,677,166	8.46	1,498,938	5.03%	57.47%	8.54	-0.09	
391	Network Equipment	92,402,619	28,972,381	0%	-	63,430,238	3.99	15,883,921	17.19%	31.35%	3.34	0.66	
392	Automobiles	7,145,431	3,986,655	6%	428,726	2,730,050	4.16	656,386	9.19%	55.79%	6.13	-1.97	
392	Light Trucks	42,820,705	12,197,198	12%	5,138,485	25,485,022	6.49	3,925,570	9.17%	28.48%	5.43	1.06	
392	Trailers	23,712,649	8,780,626	15%	3,556,897	11,375,125	6.09	1,868,696	7.88%	37.03%	5.40	0.68	
392	Heavy Trucks	121,840,239	51,744,141	10%	12,184,024	57,912,074	5.94	9,748,378	8.00%	42.47%	5.54	0.40	
393	Stores Equipment	1,941,175	1,125,578	0%	-	815,597	8.30	98,300	5.06%	57.98%	7.22	1.08	
394	Tools, Shop, and Garage Equipment	146,570,533	60,770,579	0%	-	85,799,955	8.74	9,819,671	6.70%	41.46%	8.25	0.48	
395	Laboratory Equipment	2,353,858	1,377,715	0%	-	976,143	4.20	232,221	9.87%	58.53%	4.18	0.02	
396	Power Operated Equipment	51,389,437	14,558,996	25%	12,847,359	23,983,082	6.19	3,871,547	7.53%	28.33%	4.25	1.94	
397	General Communication Equipment	5,552,870	2,698,939	0%	-	2,853,931	3.78	754,866	13.59%	48.60%	8.71	-4.93	
397	Communication Equipment - Two Way	62,721,146	39,660,491	0%	-	23,060,655	3.75	6,157,594	9.82%	63.23%	5.77	-2.02	
397	Comm. & Telecomm. Equipment - AES	3,170,384	2,017,523	0%	-	1,152,860	3.40	339,278	10.70%	63.64%	3.54	-0.14	
397	Comm. & Telecomm. Equipment - EMS	79,348,149	28,516,659	0%	-	50,831,491	9.58	5,305,855	6.69%	35.94%	8.26	1.32	
397	Communication Equipment - Smart Grid	73,540,105	13,183,434	0%	-	60,356,671	17.78	3,395,154	4.62%	17.93%	9.08	8.69	
398	Miscellaneous Equipment	1,773,457	689,955	0%	-	1,083,502	9.18	118,049	6.66%	38.90%	10.21	-1.03	
	Total General	844,444,011	319,756,870		14,699,664	509,987,477		65,591,590					
	Total Electric Utility	\$ 10,516,859,707	\$ 3,277,823,263		\$ (3,482,719,148)	\$ 10,721,755,592		\$ 364,916,370					

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 Schedule C - Depreciation and Amortization Rate Calculations

Xcel Energy

Summary of Annual Depreciation and Amortization Accruals

Gas Utility

Excluding Fully Accrued Assets

FERC Account	Account Description	Adjusted Plant 1/1/2024	Depreciation Reserve 1/1/2024	Est. Future Net Salvage		Unaccrued Balance	Proposed Average Remaining Life (Yrs)	Annual Accrual	Depreciation/Amortization Rate	Reserve Ratio	Approved (1)	
				%	Amount						Average Remaining Life (Yrs)	Change (Yrs)
Intangible Plant - Total Company												
302	Franchise and Consents	\$ 56,567	\$ 35,152	0%	\$ -	\$ 21,415	Note (1)	\$ 2,828	5.00%	47.14%	Note (1)	Note (1) (1)
303	Computer Software 3 Year	194,911	92,345	0%	-	102,566	1.50	68,378	35.08%	47.38%	0.50	1.00
303	Computer Software 5 Year	2,792,227	2,219,189	0%	-	573,039	0.94	611,863	21.91%	79.48%	2.25	-1.32
303	Computer Software 7 Year	15,790,860	2,334,909	0%	-	13,455,951	5.61	2,400,423	15.20%	14.79%	0.00	5.61
303	Computer Software 10 Year	3,657,984	550,920	0%	-	3,107,064	8.50	365,537	9.99%	15.06%	0.00	8.50
303	Computer Software 15 year	-	-	0%	-	-	0.00	-	6.67%	0.00%	0.00	0.00 (3)
	Total Intangible Plant	22,492,549	5,232,513		-	17,260,036		3,449,029				
Transmission - MN Only												
366	Structures and Improvements	932,907	584,611	-5%	(46,645)	394,941	34.52	11,440	1.23%	62.67%	36.29	-1.76
367	Mains	114,313,235	25,559,796	-25%	(28,578,309)	117,331,748	60.44	1,941,140	1.70%	22.36%	60.16	0.29
369	Measure and Regulating Station	18,494,341	7,374,161	-35%	(6,473,019)	17,593,199	36.51	481,844	2.61%	39.87%	37.16	-0.65
	Total Transmission - MN only	133,740,483	33,518,569		(35,097,973)	135,319,888		2,434,423				
Distribution - MN Only												
375	Structures and Improvements	877,065	203,107	-5%	(43,853)	717,812	39.80	18,035	2.06%	23.16%	41.79	-1.99
376	Mains - Metallic	343,537,266	74,939,142	-35%	(120,238,043)	388,836,166	51.49	7,551,325	2.20%	21.81%	51.28	0.21
376	Mains - Plastic	664,487,201	225,531,961	-30%	(199,346,160)	638,301,400	40.57	15,735,032	2.37%	33.94%	39.38	1.18
378	Measure & Regulating- General	28,821,030	5,777,940	-25%	(7,205,258)	30,248,348	38.44	786,860	2.73%	20.05%	34.42	4.02
379	Measure & Regulating- City Gate	1,665,478	568,490	-10%	(166,548)	1,263,535	32.91	38,394	2.31%	34.13%	35.20	-2.29
380	Services - Metallic	12,955,047	11,122,178	-45%	(5,829,771)	7,662,639	24.10	317,954	2.45%	85.85%	24.44	-0.34
380	Services - Plastic	374,417,557	156,464,611	-20%	(74,883,511)	292,836,457	26.49	11,055,899	2.95%	41.79%	28.45	-1.97
381	Meters	136,549,971	51,052,513	-5%	(6,827,499)	92,324,956	13.72	6,731,407	4.93%	37.39%	12.21	1.51
381	Telemetering (Fully Amortized)	-	-	0%	-	-	0.00	-	0.00%	0.00%	0.00	0.00 (3)
383	House Regulators (Old)	-	-	0%	-	-	0.00	-	0.00%	0.00%	0.00	0.00 (3)
	Total Distribution - MN only	1,563,310,613	525,659,944		(414,540,643)	1,452,191,312		42,234,907				
General - Total Company												
390	Structures and Improvements	8,715,810	455,884	-10%	(871,581)	9,131,507	52.26	174,718	2.00%	5.23%	48.04	4.22
391	Office Furniture and Equipment	1,135,991	685,613	0%	-	450,377	8.71	51,731	4.55%	60.35%	9.90	-1.20
391	Network Equipment	1,385,384	193,268	0%	-	1,192,115	4.43	269,282	19.44%	13.95%	1.70	2.73
392	Automobiles	588,595	385,670	6%	35,316	167,610	3.41	49,120	8.35%	65.52%	4.59	-1.18
392	Light Trucks	13,368,362	4,347,874	12%	1,604,203	7,416,284	6.09	1,218,634	9.12%	32.52%	6.64	-0.55
392	Trailers	2,370,885	905,970	15%	355,633	1,109,282	6.31	175,829	7.42%	38.21%	7.12	-0.81
392	Heavy Trucks	15,942,272	5,304,725	10%	1,594,227	9,043,320	7.28	1,242,322	7.79%	33.27%	7.40	-0.12
393	Stores Equipment	10,091	6,766	0%	-	3,325	7.50	443	4.39%	67.05%	9.50	-2.00
394	Tools, Shop, and Garage Equipment	12,402,136	4,636,364	0%	-	7,765,772	9.68	801,953	6.47%	37.38%	9.16	0.52
395	Laboratory Equipment	-	-	0%	-	-	0.00	-	10.00%	0.00%	0.00	0.00 (3)
396	Power Operated Equipment	4,816,596	2,044,888	25%	1,204,149	1,567,559	5.28	296,964	6.17%	42.46%	6.75	-1.47
397	Communication Equipment	57,289	(13,358)	0%	-	70,647	4.18	16,881	29.47%	-23.32%	3.23	0.96
397	Communication Equipment - Two Way	1,245,451	570,382	0%	-	675,070	5.77	117,088	9.40%	45.80%	7.21	-1.44
397	Comm. & Telecomm. Equipment - AES	25,563,361	12,346,180	0%	-	13,217,181	8.14	1,624,547	6.35%	48.30%	6.02	2.11
397	Comm. & Telecomm. Equipment - EMS	9,252,091	3,052,601	0%	-	6,199,490	10.31	601,468	6.50%	32.99%	10.80	-0.49
398	Miscellaneous Equipment	14,215	10,628	0%	-	3,587	3.50	1,025	7.21%	74.77%	4.91	-1.41
	Total General	96,868,529	34,933,457		3,921,947	58,013,125		6,642,005				
	Total Gas Utility	\$ 1,816,412,174	\$ 599,344,482		\$ (445,716,669)	\$ 1,662,784,360		\$ 54,760,364				

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Xcel Energy

Summary of Annual Depreciation and Amortization Accruals

Common Utility

Excluding Fully Accrued Assets

FERC Account	Account Description	Adjusted Plant 1/1/2024	Depreciation Reserve 1/1/2024	Est. Future Net Salvage %	Est. Future Net Salvage Amount	Unaccrued Balance	Proposed Average Remaining Life (Yrs)	Annual Accrual	Depreciation/Amortization Rate	Reserve Ratio	Approved (1) Average Remaining Life (Yrs)	Change (Yrs)
Intangible Plant - Total Company												
301	Intangible Organization Costs	\$ 100,608	\$ -	0%	\$ -	\$ 100,608	Note (4)	\$ -	0.00%	0.00%	Note (4)	Note (4)
302	Franchise and Consents	-	-	0%	-	-	Note (1)	\$ -	5.00%	0.00%	Note (1)	Note (1)
303	Computer Software 3 Year	9,019,313	3,400,613	0%	-	5,618,700	1.78	3,151,641	34.94%	37.70%	1.42	0.36
303	Computer Software 5 Year	185,417,196	89,720,972	0%	-	95,696,225	2.54	37,746,311	20.36%	48.39%	2.70	-0.16
303	Computer Software 7 Year	120,024,884	24,825,253	0%	-	95,199,631	5.48	17,385,947	14.49%	20.68%	5.50	-0.02
303	Computer Software 10 Year	45,953,846	7,494,179	0%	-	38,459,667	8.24	4,668,379	10.16%	16.31%	4.67	3.57
303	Computer Software 15 year	192,577,110	74,150,550	0%	-	118,426,560	9.04	13,099,662	6.80%	38.50%	10.12	-1.07
	Total Intangible Plant	553,092,957	199,591,568		-	353,501,390		76,051,940				
General - Total Company												
390	Structures and Improvements	90,148,718	23,182,550	-25%	(22,537,180)	89,503,348	38.48	2,325,783	2.57%	25.72%	38.00	0.49
390	Structures and Improvements (Specific)	181,033,716	27,928,828	-25%	(45,258,429)	198,363,317	Note (5)	4,888,069	Note (5)	15.43%	Note (5)	Note (5)
390	Structures and Improvements - Leasehold Improvements	18,120,375	8,817,878	0%	-	9,302,498	Note (2)	-	Note (2)	48.66%	Note (2)	Note (2)
391	Office Furniture and Equipment	24,371,024	11,401,017	0%	-	12,970,007	11.00	1,179,150	4.84%	46.78%	11.24	-0.24
391	Network Equipment	224,904,383	82,853,890	0%	-	142,050,493	3.70	38,365,984	17.06%	36.84%	3.68	0.02
392	Automobiles	1,522,457	725,256	5%	76,123	721,078	4.92	146,531	9.62%	47.64%	4.04	0.88
392	Light Trucks	4,647,465	1,355,166	10%	464,747	2,827,552	6.46	437,728	9.42%	29.16%	5.70	0.76
392	Trailers	547,418	39,193	20%	109,484	398,742	7.72	51,637	9.43%	7.16%	7.41	0.31
392	Heavy Trucks	4,842,577	1,611,889	15%	726,387	2,504,301	6.88	363,991	7.52%	33.29%	7.05	-0.17
393	Stores Equipment	246,162	131,192	0%	-	114,971	9.67	11,895	4.83%	53.29%	11.67	-2.00
394	Tools, Shop, and Garage Equipment	14,921,060	3,794,150	0%	-	11,126,910	11.18	995,103	6.67%	25.43%	10.44	0.74
395	Laboratory Equipment	-	-	0%	-	-	0.00	-	10.00%	0.00%	0.00	0.00
396	Power Operated Equipment	1,335,611	361,582	15%	200,342	773,688	7.70	100,484	7.52%	27.07%	5.79	1.91
397	Comm. & Telecomm. Equipment	940,851	136,469	0%	-	804,383	8.50	94,649	10.06%	14.50%	5.57	2.93
397	Communication Equipment - Two Way	76,870	76,870	0%	-	(0)	2.50	(0)	Note (6)	100.00%	4.50	-2.00
397	Communication Equipment - Smart Grid	887,229	-	0%	-	887,229	19.50	45,499	5.13%	0.00%	0.00	19.50
398	Miscellaneous Equipment	24,069	24,069	0%	-	0	7.91	0	Note (6)	100.00%	1.19	6.72
	Total General	568,569,987	162,439,999		(66,218,527)	472,348,515		49,006,502				
	Total Common Utility	1,121,662,944	362,031,566		(66,218,527)	825,849,905		125,058,441				
	Total - All Utilities	\$ 13,454,934,825	\$ 4,239,199,312		\$ (3,994,654,344)	\$ 13,210,389,857		\$ 544,735,175				

(1) Account 302 is amortized over the terms of the franchise agreements or license, which is typically 20 years. The Company is including Account 302 in all schedules for completeness.

(2) Depreciated over lease term.

(3) Currently there is no balance in these accounts. In the event plant is added to these accounts, the Company is requests authorization to use the depreciation rate proposed based on the proposed parameters for each account.

(4) Account 301 is not amortized. The Company is including Account 301 in all schedules for completeness.

(5) Account 390-Structures and Improvements includes several specific locations that have separate remaining lives. Please refer to Schedule I.

(6) These accounts are fully depreciated. The company is not requesting a depreciation rate change.

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<b>Description</b>	<b>Table</b>
No plant change impact (hypothetical)	2

<b>Business Segment</b>	<b>FERC Account</b>	<b>Account Description</b>	<b>Proposed Less Present Accrual</b>	<b>Table</b>
Common General	391	Network Equipment	1,900,192	3
Common Intangible	303	Computer Software 5 Year	(322,999)	4
Electric Intangible	303	Computer Software 5 Year	1,198,690	5
Electric Distribution	367	Underground Conductor and Devices	(365,848)	6
Gas Distribution	380	Services - Plastic	606,316	7
Gas Distribution - Amortization	381	Meters	(25,733)	8
Total			<u>2,990,617</u>	

<b>Description</b>	<b>Table</b>
Relationship mapping	9

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**Table 2 - No Plant Change (Hypothetical)**

2023 Calc (Approved)				
	Vintage	Plant	Age	Remaining Life (RL)
(h)	2023	-		5
(i)	2022	25,000,000	0.5	4.5
(j)	2021	20,000,000	1.5	3.5

Net Salvage Rate	5% (a)
ASL	5 (b)
Data as of Year-End	2020
Unaccrued Plant	34,675,000 (c) = (d) * (1 - (a)) - (e)
Plant Balance	45,000,000 (d) = sum of plant
Reserve Balance	8,075,000 (e) = [(h)(Plant) * (h)(Age) + (i)(Plant) * (i)(Age) + (j)(Plant) * (j)(Age)] * (1 - (a)) / (b)
Annual Depreciation Expense	8,550,000 (f) = (c) / (l)
Annual Depreciation Rate	19.00% (g) = (f) / (d)
Amount * RL	182,500,000 (k) = [(h)(Plant) * (h)(RL) + (i)(Plant) * (i)(RL) + (j)(Plant) * (j)(RL)]
Average Remaining Life	4.0556 (l) = (k) / (d)

2022 Calc (Approved)				
	Vintage	Plant	Age	Remaining Life (RL)
(h2)	2021	-		4.5
(i2)	2020	25,000,000	1.5	3.5
(j2)	2019	20,000,000	2.5	2.5

Net Salvage Rate	5% (a2)
ASL	5 (b2)
Data as of Year-End	2021
Unaccrued Plant	26,125,000 (c2) = (d2) * (1 - (a2)) - (e2)
Plant Balance	45,000,000 (d2) = sum of plant
Reserve Balance	16,625,000 (e2) = [(h2)(Plant) * (h2)(Age) + (i2)(Plant) * (i2)(Age) + (j2)(Plant) * (j2)(Age)] * (1 - (a2)) / (b2)
Annual Depreciation Expense	8,550,000 (f2) = (c2) / (l2)
Annual Depreciation Rate	19.00% (g2) = (f2) / (d2)
Amount * RL	137,500,000 (k2) = [(h2)(Plant) * (h2)(RL) + (i2)(Plant) * (i2)(RL) + (j2)(Plant) * (j2)(RL)]
Average Remaining Life	3.0556 (l2) = (k2) / (d2)

	Variations	
Annual Depr Expense @ Approved Depr Rate	8,550,000 (m) = (d2) * (g)	
Annual Depr Expense @ Proposed Depr Rate	8,550,000 (n) = (d2) * (g2)	
Increase/(Decrease)	-	(o) = (n) - (m)
Current Average Remaining Life	4.0556 (l)	
Proposed Average Remaining Life	3.0556 (l2)	
Increase/(Decrease)	(1.0000)	(p) = (l2) - (l)
Approved Depreciation Rate	19.00% (g)	
Proposed Depreciation Rate	19.00% (g2)	
Increase/(Decrease)	0.00%	(q) = (g2) - (g)

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**Table 3 - Driver of Common Utility Depreciation Expense Increase**

	Business Segment FERC Account Account Description	Common General 391 Network Equipment	
Amounts are in whole dollars unless otherwise specified			Commentary
(a)	Approved Net Salvage (Rate)		0% per Schedule C in Docket No. E,G002/D-22-299
(b)	Approved Average Remaining Life (Yrs)		3.68 per Schedule C calculated average remaining life
(c)	Prior Approved Year Ending Plant	146,440,286	per Schedule D Plant In-Service Rollforward
(d)	Fully Reserved Assets - Ending 2021	(26,667)	per Schedule B ending balances
(e) = (c) + (d)	Adjusted Ending 2021 Plant	146,413,618	Schedule B ending balances
(f) = - (d)	Reverse Fully Reserved Assets - Beginning 2023	26,667	
(g)	Additions	114,860,409	per Schedule D Plant In-Service Rollforward two year passage of time
(h)	Retirements	(36,277,341)	per Schedule D Plant In-Service Rollforward two year passage of time
(i)	Transfers & Adjustments	-	per Schedule D Plant In-Service Rollforward two year passage of time
(j)	Fully Reserved Assets - Year-end 2023	(118,971)	per Schedule B
(k) = (e) + (f) + (g) + (h) + (i) + (j)	End Plant	<b>224,904,383</b>	per Schedule C
(l)	Proposed Average Remaining Life (Yrs)		3.70 per Schedule C
(m) = (b) - (l)	Increase (decrease) in average remaining life		0.02 combination of additions and retirements will drive average remaining life up above the default 1 year decrease
(n)	Prior Approved Year Ending Reserve	59,032,025	per Schedule E Reserve Rollforward
(o) = (d)	Fully Reserved Assets - Ending 2021	(26,667)	per Schedule B ending balances
(p) = (n) + (o)	Adjusted Ending 2021 Reserve	59,005,357	Schedule B ending balances
(q) = (f)	Reverse Fully Reserved Assets - Beginning 2023	26,667	
(r)	Provision	60,292,236	per Schedule E Reserve Rollforward two year passage of time
(s)	Gross Salvage	-	per Schedule E Reserve Rollforward two year passage of time
(t)	Cost of Removal	-	per Schedule E Reserve Rollforward two year passage of time
(u) = (h)	Retirements	(36,277,341)	per Schedule E Reserve Rollforward two year passage of time
(v)	Transfers/Other	(74,058)	per Schedule E Reserve Rollforward two year passage of time
(w) = (j)	Fully Reserved Assets - Year-end 2023	(118,971)	per Schedule B
(x) = (p) + (q) + (r) + (s) + (t) + (u) + (v) + (w)	End Reserve	<b>82,853,890</b>	per Schedule C
(y) = (k) - (e)	Net Plant Change	<b>78,490,765</b>	
(z) = (x) - (p)	Net Reserve Change	<b>23,848,533</b>	
if (y) > (z), then TRUE, otherwise FALSE	Net Plant Change > Net Reserve Change	<b>TRUE</b>	this will increase the unaccrued balance
(aa) = (e) - [(c) * (a)] - (p)	Beginning Unaccrued Balance	87,408,261	
(ab) = (k) - [(k) * (a)] - (x)	Ending Unaccrued Balance	142,050,493	
(ac) = (ab) - (aa)	Change in Unaccrued Balance	<b>54,642,232</b>	increasing due to net plant change > net reserve change
(ad) = (aa) / (b)	Annual Depreciation Expense (Approved)	23,739,371	
(ae) = (ab) / (l)	Annual Depreciation Expense (Proposed)	38,365,984	
(af) = (ad) / (e)	Annual Depreciation Rate (Approved)	16.21%	
(ag) = (ae) / (k)	Annual Depreciation Rate (Proposed)	17.06%	
(ah) = (ag) - (af)	Increase/(Decrease)	<b>0.84%</b>	increasing due to and
(ai) = (af) * (k)	Annual Depreciation Expense at Approved Rate	36,465,792	
(aj) = (ag) * (k)	Annual Depreciation Expense at Proposed Rate	38,365,984	
(ak) = (aj) - (ai)	Increase/(Decrease)	<b>1,900,192</b>	increasing due to depreciation rate increasing

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**Table 4 - Driver of Common Utility Depreciation Expense Decrease**

	Business Segment	Common Intangible
	FERC Account	303
	Account Description	Computer Software 5 Year
Amounts are in whole dollars unless otherwise specified		
(a)	Approved Net Salvage (Rate)	0% per Schedule C in Docket No. E,G002/D-22-299
(b)	Approved Average Remaining Life (Yrs)	2.70 per Schedule C calculated average remaining life
(c)	Prior Approved Year Ending Plant	297,397,118 per Schedule D Plant In-Service Rollforward
(d)	Fully Reserved Assets - Ending 2021	(115,403,593) per Schedule B ending balances
(e) = (c) + (d)	Adjusted Ending 2021 Plant	181,993,525 Schedule B ending balances
(f) = - (d)	Reverse Fully Reserved Assets - Beginning 2023	115,403,593
(g)	Additions	42,218,815 per Schedule D Plant In-Service Rollforward two year passage of time
(h)	Retirements	(101,044,903) per Schedule D Plant In-Service Rollforward two year passage of time
(i)	Transfers & Adjustments	27,118,226 per Schedule D Plant In-Service Rollforward two year passage of time
(j)	Fully Reserved Assets - Year-end 2023	(80,272,060) per Schedule B
(k) = (e) + (f) + (g) + (h) + (i) + (j)	End Plant	<u>185,417,196</u> per Schedule C
(l)	Proposed Average Remaining Life (Yrs)	2.54 per Schedule C
(m) = (b) - (l)	Increase (decrease) in average remaining life	(0.16) combination of additions and retirements will drive average remaining life up above the default 1 year decrease
(n)	Prior Approved Year Ending Reserve	196,599,623 per Schedule E Reserve Rollforward
(o) = (d)	Fully Reserved Assets - Ending 2021	(115,403,593) per Schedule B ending balances
(p) = (n) + (o)	Adjusted Ending 2021 Reserve	81,196,029 Schedule B ending balances
(q) = (f)	Reverse Fully Reserved Assets - Beginning 2023	115,403,593
(r)	Provision	73,854,552 per Schedule E Reserve Rollforward two year passage of time
(s)	Gross Salvage	- per Schedule E Reserve Rollforward two year passage of time
(t)	Cost of Removal	- per Schedule E Reserve Rollforward two year passage of time
(u) = (h)	Retirements	(101,044,903) per Schedule E Reserve Rollforward two year passage of time
(v)	Transfers/Other	583,761 per Schedule E Reserve Rollforward two year passage of time
(w) = (j)	Fully Reserved Assets - Year-end 2023	(80,272,060) per Schedule B
(x) = (p) + (q) + (r) + (s) + (t) + (u) + (v) + (w)	End Reserve	<u>89,720,972</u> per Schedule C
(y) = (k) - (e)	Net Plant Change	3,423,672
(z) = (x) - (p)	Net Reserve Change	8,524,942
if (y) > (z), then TRUE, otherwise FALSE	Net Plant Change > Net Reserve Change	FALSE this will increase the unaccrued balance
(aa) = (e) - [(c) * (a)] - (p)	Beginning Unaccrued Balance	100,797,495
(ab) = (k) - [(k) * (a)] - (x)	Ending Unaccrued Balance	95,696,225
(ac) = (ab) - (aa)	Change in Unaccrued Balance	<u>(5,101,271)</u> increasing due to net plant change > net reserve change
(ad) = (aa) / (b)	Annual Depreciation Expense (Approved)	37,366,372
(ae) = (ab) / (l)	Annual Depreciation Expense (Proposed)	37,746,311
(af) = (ad) / (e)	Annual Depreciation Rate (Approved)	20.53%
(ag) = (ae) / (k)	Annual Depreciation Rate (Proposed)	20.36%
(ah) = (ag) - (af)	Increase/(Decrease)	<u>-0.17%</u> increasing due to unaccrued balance increasing and plant balance increasing
(ai) = (af) * (k)	Annual Depreciation Expense at Approved Rate	38,069,310
(aj) = (ag) * (k)	Annual Depreciation Expense at Proposed Rate	37,746,311
(ak) = (aj) - (ai)	Increase/(Decrease)	<u>(322,999)</u> increasing due to depreciation rate increasing

Northern States Power Company

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**Table 6 - Driver of Electric Utility Depreciation Expense Increase**

	Business Segment	Electric Intangible
	FERC Account	303
	Account Description	Computer Software 5 Year
Amounts are in whole dollars unless otherwise specified		
(a)	Approved Net Salvage (Rate)	0% per Schedule C in Docket No. E,G002/D-22-299
(b)	Approved Average Remaining Life (Yrs)	2.85 per Schedule C from 2021 year approval calculated average remaining life minus one year for passage of time
(c)	Prior Approved Year Ending Plant	180,748,055 per Schedule D Plant In-Service Rollforward
(d)	Fully Reserved Assets - Ending 2021	(89,413,350) per Schedule B ending balances
(e) = (c) + (d)	Adjusted Ending 2021 Plant	91,334,705 Schedule B ending balances
(f) = - (d)	Reverse Fully Reserved Assets - Beginning 2023	89,413,350
(g)	Additions	7,932,914 per Schedule D Plant In-Service Rollforward two year passage of time
(h)	Retirements	(16,692,737) per Schedule D Plant In-Service Rollforward two year passage of time
(i)	Transfers & Adjustments	- per Schedule D Plant In-Service Rollforward two year passage of time
(j)	Fully Reserved Assets - Year-end 2023	(113,390,398) per Schedule B
(k) = (e) + (f) + (g) + (h) + (i) + (j)	End Plant	<u>58,597,834</u> per Schedule C
(l)	Proposed Average Remaining Life (Yrs)	2.27 per Schedule C
(m) = (b) - (l)	Increase (decrease) in average remaining life	(0.58) combination of additions and retirements will drive average remaining life up above the default 1 year decrease
(n)	Prior Approved Year Ending Reserve	127,432,672 per Schedule E Reserve Rollforward
(o) = (d)	Fully Reserved Assets - Ending 2021	(89,413,350) per Schedule B ending balances
(p) = (n) + (o)	Adjusted Ending 2021 Reserve	38,019,323 Schedule B ending balances
(q) = (f)	Reverse Fully Reserved Assets - Beginning 2023	89,413,350
(r)	Provision	31,261,160 per Schedule E Reserve Rollforward two year passage of time
(s)	Gross Salvage	- per Schedule E Reserve Rollforward two year passage of time
(t)	Cost of Removal	- per Schedule E Reserve Rollforward two year passage of time
(u) = (h)	Retirements	(16,692,737) per Schedule E Reserve Rollforward two year passage of time
(v)	Transfers/Other	- per Schedule E Reserve Rollforward two year passage of time
(w) = (j)	Fully Reserved Assets - Year-end 2023	(113,390,398) per Schedule B
(x) = (p) + (q) + (r) + (s) + (t) + (u) + (v) + (w)	End Reserve	<u>28,610,698</u> per Schedule C
(y) = (k) - (e)	Net Plant Change	<b>(32,736,871)</b>
(z) = (x) - (p)	Net Reserve Change	<b>(9,408,625)</b>
if (y) > (z), then TRUE, otherwise FALSE	Net Plant Change > Net Reserve Change	<b>FALSE</b> this will increase the unaccrued balance
(aa) = (e) - [(c) * (a)] - (p)	Beginning Unaccrued Balance	53,315,383
(ab) = (k) - [(k) * (a)] - (x)	Ending Unaccrued Balance	29,987,136
(ac) = (ab) - (aa)	Change in Unaccrued Balance	<u>(23,328,247)</u> increasing due to net plant change > net reserve change
(ad) = (aa) / (b)	Annual Depreciation Expense (Approved)	18,693,673
(ae) = (ab) / (l)	Annual Depreciation Expense (Proposed)	13,192,037
(af) = (ad) / (e)	Annual Depreciation Rate (Approved)	20.47%
(ag) = (ae) / (k)	Annual Depreciation Rate (Proposed)	22.51%
(ah) = (ag) - (af)	Increase/(Decrease)	<u>2.05%</u> increasing due to unaccrued balance increasing and plant balance increasing
(ai) = (af) * (k)	Annual Depreciation Expense at Approved Rate	11,993,347
(aj) = (ag) * (k)	Annual Depreciation Expense at Proposed Rate	13,192,037
(ak) = (aj) - (ai)	Increase/(Decrease)	<u>1,198,690</u> increasing due to depreciation rate increasing

Northern States Power Company

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**Table 5 - Driver of Electric Utility Depreciation Expense Decrease**

	Business Segment	Electric Distribution
	FERC Account	367
	Account Description	Underground Conductor and Devices
Amounts are in whole dollars unless otherwise specified		
(a)	Approved Net Salvage (Rate)	-20% per Schedule C in Docket No. E,G002/D-22-299
(b)	Approved Average Remaining Life (Yrs)	35.72 per Schedule C calculated average remaining life
(c)	Prior Approved Year Ending Plant	1,172,802,711 per Schedule D Plant In-Service Rollforward
(d)	Fully Reserved Assets - Ending 2021	- per Schedule B ending balances
(e) = (c) + (d)	Adjusted Ending 2021 Plant	1,172,802,711 Schedule B ending balances
(f) = - (d)	Reverse Fully Reserved Assets - Beginning 2023	-
(g)	Additions	113,728,405 per Schedule D Plant In-Service Rollforward two year passage of time
(h)	Retirements	(4,210,258) per Schedule D Plant In-Service Rollforward two year passage of time
(i)	Transfers & Adjustments	199,623 per Schedule D Plant In-Service Rollforward two year passage of time
(j)	Fully Reserved Assets - Year-end 2023	- per Schedule B
(k) = (e) + (f) + (g) + (h) + (i) + (j)	End Plant	<u>1,282,520,480</u> per Schedule C
(l)	Proposed Average Remaining Life (Yrs)	35.52 per Schedule C
(m) = (b) - (l)	Increase (decrease) in average remaining life	(0.19) combination of additions and retirements will drive average remaining life up above the default 1 year decrease
(n)	Prior Approved Year Ending Reserve	380,133,712 per Schedule E Reserve Rollforward
(o) = (d)	Fully Reserved Assets - Ending 2021	- per Schedule B ending balances
(p) = (n) + (o)	Adjusted Ending 2021 Reserve	380,133,712 Schedule B ending balances
(q) = (f)	Reverse Fully Reserved Assets - Beginning 2023	-
(r)	Provision	57,595,552 per Schedule E Reserve Rollforward two year passage of time
(s)	Gross Salvage	6,164,883 per Schedule E Reserve Rollforward two year passage of time
(t)	Cost of Removal	(4,894,831) per Schedule E Reserve Rollforward two year passage of time
(u) = (h)	Retirements	(4,210,258) per Schedule E Reserve Rollforward two year passage of time
(v)	Transfers/Other	3,132 per Schedule E Reserve Rollforward two year passage of time
(w) = (j)	Fully Reserved Assets - Year-end 2023	- per Schedule B
(x) = (p) + (q) + (r) + (s) + (t) + (u) + (v) + (w)	End Reserve	<u>434,792,190</u> per Schedule C
(y) = (k) - (e)	Net Plant Change	<b>109,717,770</b>
(z) = (x) - (p)	Net Reserve Change	<b>54,658,478</b>
if (y) > (z), then TRUE, otherwise FALSE	Net Plant Change > Net Reserve Change	<b>TRUE</b> this will increase the unaccrued balance
(aa) = (e) - [(c) * (a)] - (p)	Beginning Unaccrued Balance	1,027,229,540
(ab) = (k) - [(k) * (a)] - (x)	Ending Unaccrued Balance	1,104,232,386
(ac) = (ab) - (aa)	Change in Unaccrued Balance	<u>77,002,846</u> increasing due to net plant change > net reserve change
(ad) = (aa) / (b)	Annual Depreciation Expense (Approved)	28,761,010
(ae) = (ab) / (l)	Annual Depreciation Expense (Proposed)	31,085,805
(af) = (ad) / (e)	Annual Depreciation Rate (Approved)	2.45%
(ag) = (ae) / (k)	Annual Depreciation Rate (Proposed)	2.42%
(ah) = (ag) - (af)	Increase/(Decrease)	<u>-0.03%</u> increasing due to unaccrued balance increasing and plant balance increasing
(ai) = (af) * (k)	Annual Depreciation Expense at Approved Rate	31,451,653
(aj) = (ag) * (k)	Annual Depreciation Expense at Proposed Rate	31,085,805
(ak) = (aj) - (ai)	Increase/(Decrease)	<u>(365,848)</u> increasing due to depreciation rate increasing

Northern States Power Company

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**Table 7 - Driver of Gas Utility Depreciation Expense Increase**

	Business Segment	Gas Distribution
	FERC Account	380
	Account Description	Services - Plastic
Amounts are in whole dollars unless otherwise specified		
(a)	Approved Net Salvage (Rate)	-20% per Schedule C in Docket No. E,G002/D-22-299
(b)	Approved Average Remaining Life (Yrs)	28.45 per Schedule C calculated average remaining life
(c)	Prior Approved Year Ending Plant	347,809,635 per Schedule D Plant In-Service Rollforward
(d)	Fully Reserved Assets - Ending 2021	- per Schedule B ending balances
(e) = (c) + (d)	Adjusted Ending 2021 Plant	347,809,635 Schedule B ending balances
(f) = - (d)	Reverse Fully Reserved Assets - Beginning 2023	-
(g)	Additions	31,469,082 per Schedule D Plant In-Service Rollforward two year passage of time
(h)	Retirements	(4,861,160) per Schedule D Plant In-Service Rollforward two year passage of time
(i)	Transfers & Adjustments	- per Schedule D Plant In-Service Rollforward two year passage of time
(j)	Fully Reserved Assets - Year-end 2023	- per Schedule B
(k) = (e) + (f) + (g) + (h) + (i) + (j)	End Plant	<u>374,417,557</u> per Schedule C
(l)	Proposed Average Remaining Life (Yrs)	26.49 per Schedule C
(m) = (b) - (l)	Increase (decrease) in average remaining life	(1.97) combination of additions and retirements will drive average remaining life below the default 1 year decrease
(n)	Prior Approved Year Ending Reserve	141,175,731 per Schedule E Reserve Rollforward
(o) = (d)	Fully Reserved Assets - Ending 2021	- per Schedule B ending balances
(p) = (n) + (o)	Adjusted Ending 2021 Reserve	141,175,731 Schedule B ending balances
(q) = (f)	Reverse Fully Reserved Assets - Beginning 2023	-
(r)	Provision	20,679,822 per Schedule E Reserve Rollforward two year passage of time
(s)	Gross Salvage	(62,338) per Schedule E Reserve Rollforward two year passage of time
(t)	Cost of Removal	(467,444) per Schedule E Reserve Rollforward two year passage of time
(u) = (h)	Retirements	(4,861,160) per Schedule E Reserve Rollforward two year passage of time
(v)	Transfers/Other	- per Schedule E Reserve Rollforward two year passage of time
(w) = (j)	Fully Reserved Assets - Year-end 2023	- per Schedule B
(x) = (p) + (q) + (r) + (s) + (t) + (u) + (v) + (w)	End Reserve	<u>156,464,611</u> per Schedule C
(y) = (k) - (e)	Net Plant Change	26,607,922
(z) = (x) - (p)	Net Reserve Change	15,288,880
if (y) > (z), then TRUE, otherwise FALSE	Net Plant Change > Net Reserve Change	TRUE this will increase the unaccrued balance
(aa) = (e) - [(c) * (a)] - (p)	Beginning Unaccrued Balance	276,195,831
(ab) = (k) - [(k) * (a)] - (x)	Ending Unaccrued Balance	292,836,457
(ac) = (ab) - (aa)	Change in Unaccrued Balance	<u>16,640,626</u> increasing due to net plant change > net reserve change
(ad) = (aa) / (b)	Annual Depreciation Expense (Approved)	9,706,985
(ae) = (ab) / (l)	Annual Depreciation Expense (Proposed)	11,055,899
(af) = (ad) / (e)	Annual Depreciation Rate (Approved)	2.79%
(ag) = (ae) / (k)	Annual Depreciation Rate (Proposed)	2.95%
(ah) = (ag) - (af)	Increase/(Decrease)	<u>0.16%</u> increasing due to unaccrued balance increasing and plant balance increasing
(ai) = (af) * (k)	Annual Depreciation Expense at Approved Rate	10,449,583
(aj) = (ag) * (k)	Annual Depreciation Expense at Proposed Rate	11,055,899
(ak) = (aj) - (ai)	Increase/(Decrease)	<u>606,316</u> increasing due to depreciation rate increasing

Northern States Power Company

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**Table 8 - Driver of Gas Utility Depreciation Expense Decrease**

	Business Segment	Gas Distribution - Amortization
	FERC Account	381
	Account Description	Meters
Amounts are in whole dollars unless otherwise specified		
(a)	Approved Net Salvage (Rate)	-5% per Schedule C in Docket No. E,G002/D-22-299
(b)	Approved Average Remaining Life (Yrs)	12.21 per Schedule C calculated average remaining life
(c)	Prior Approved Year Ending Plant	133,374,226 per Schedule D Plant In-Service Rollforward
(d)	Fully Reserved Assets - Ending 2021	(24,244,995) per Schedule B ending balances
(e) = (c) + (d)	Adjusted Ending 2021 Plant	109,129,231 Schedule B ending balances
(f) = - (d)	Reverse Fully Reserved Assets - Beginning 2023	24,244,995
(g)	Additions	38,776,104 per Schedule D Plant In-Service Rollforward two year passage of time
(h)	Retirements	(10,068,042) per Schedule D Plant In-Service Rollforward two year passage of time
(i)	Transfers & Adjustments	- per Schedule D Plant In-Service Rollforward two year passage of time
(j)	Fully Reserved Assets - Year-end 2023	(25,532,318) per Schedule B
(k) = (e) + (f) + (g) + (h) + (i) + (j)	End Plant	<u>136,549,971</u> per Schedule C
(l)	Proposed Average Remaining Life (Yrs)	13.72 per Schedule C
(m) = (b) - (l)	Increase (decrease) in average remaining life	1.51 combination of additions and retirements will drive average remaining life up above the default 1 year decrease
(n)	Prior Approved Year Ending Reserve	74,132,633 per Schedule E Reserve Rollforward
(o) = (d)	Fully Reserved Assets - Ending 2021	(24,244,995) per Schedule B ending balances
(p) = (n) + (o)	Adjusted Ending 2021 Reserve	49,887,638 Schedule B ending balances
(q) = (f)	Reverse Fully Reserved Assets - Beginning 2023	24,244,995
(r)	Provision	12,822,011 per Schedule E Reserve Rollforward two year passage of time
(s)	Gross Salvage	28,921 per Schedule E Reserve Rollforward two year passage of time
(t)	Cost of Removal	(330,692) per Schedule E Reserve Rollforward two year passage of time
(u) = (h)	Retirements	(10,068,042) per Schedule E Reserve Rollforward two year passage of time
(v)	Transfers/Other	- per Schedule E Reserve Rollforward two year passage of time
(w) = (j)	Fully Reserved Assets - Year-end 2023	(25,532,318) per Schedule B
(x) = (p) + (q) + (r) + (s) + (t) + (u) + (v) + (w)	End Reserve	<u>51,052,513</u> per Schedule C
(y) = (k) - (e)	Net Plant Change	27,420,739
(z) = (x) - (p)	Net Reserve Change	1,164,875
if (y) > (z), then TRUE, otherwise FALSE	Net Plant Change > Net Reserve Change	TRUE this will increase the unaccrued balance
(aa) = (e) - [(c) * (a)] - (p)	Beginning Unaccrued Balance	65,910,304
(ab) = (k) - [(k) * (a)] - (x)	Ending Unaccrued Balance	92,324,956
(ac) = (ab) - (aa)	Change in Unaccrued Balance	<u>26,414,652</u> increasing due to net plant change > net reserve change
(ad) = (aa) / (b)	Annual Depreciation Expense (Approved)	5,400,231
(ae) = (ab) / (l)	Annual Depreciation Expense (Proposed)	6,731,407
(af) = (ad) / (e)	Annual Depreciation Rate (Approved)	4.95%
(ag) = (ae) / (k)	Annual Depreciation Rate (Proposed)	4.93%
(ah) = (ag) - (af)	Increase/(Decrease)	<u>-0.02%</u> increasing due to unaccrued balance increasing and plant balance increasing
(ai) = (af) * (k)	Annual Depreciation Expense at Approved Rate	6,757,140
(aj) = (ag) * (k)	Annual Depreciation Expense at Proposed Rate	6,731,407
(ak) = (aj) - (ai)	Increase/(Decrease)	<u>(25,733)</u> increasing due to depreciation rate increasing

Northern States Power Company

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**Table 9 - Relationship of Factors Affecting Depreciation Expense**

Business Segment	FERC Account	Account Description	Table	Additions (vintage)	Retirements (vintage)	Plant Balance	Depreciation Reserve	Net Change in Plant	Unaccrued Balance	Average Remaining Life	Annual Depreciation Rate	Annual Depreciation Expense
								less Net Change in Reserve				
Common General	391	Network Equipment	3	Yes (newer)	Yes (older)	Increase	Increase	Increase	Increase	Increase	Increase	Increase
Common Intangible	303	Computer Software 5 Year	4	Yes (newer)	Yes (older)	Increase	Increase	Decrease	Decrease	Decrease	Decrease	Decrease
Electric Intangible	303	Computer Software 5 Year	5	Yes (newer)	Yes (older)	Decrease	Decrease	Decrease	Decrease	Decrease	Increase	Increase
Electric Distribution	367	Underground Conductor and Devices	6	Yes (newer)	Yes (older)	Increase	Increase	Increase	Increase	Decrease	Decrease	Decrease
Gas Distribution	380	Services - Plastic	7	Yes (newer)	Yes (older)	Increase	Increase	Increase	Increase	Decrease	Increase	Increase
Gas Distribution - Ar	381	Meters	8	Yes (newer)	Yes (older)	Increase	Increase	Increase	Increase	Increase	Decrease	Decrease



Preparer: Michele Kietzman  
Title: Sr. Mgr., Capital Asset Rec Acct  
Department: Capital Asset Accounting  
Telephone: 612-216-8257  
Date: June 23, 2025

- Not-Public Document – Not For Public Disclosure  
 Public Document – Not-Public Data Has Been Excised  
 Public Document

Xcel Energy Information Request No. 12  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Hennepin Island and Upper Dam Life Extensions

Reference(s): 9/9/2024 Petition at 7-8

- a. Please provide the current anticipated completion dates and costs for the following capital projects for St. Anthony falls identified in the Petition at 7:
  - Horseshoe dam flashboard system replacement
  - New trash rack raker
  - Tailrace project
  - Stabilize downstream riverbank
- b. The Petition at 7 states there are other capital projects planned in the next 15 years to maintain Hennepin Island and Upper Dam Hydro facilities as a functioning generating facilities. Please provide an overview of those planned projects and their expected costs.
- c. What life was assumed for the Hennepin Island and Upper Dam hydro facilities in Xcel Energy's most recent IRP (Docket No. E002/RP-24-67)? Please provide citations to specific documents in which the facility's life assumptions were discussed.
- d. If the retirement year assumed in the IRP is different than the retirement year proposed in the depreciation Petition, please explain the difference and why it is reasonable.

Response:

- a. Please see Attachment A presenting project costs and completion dates for St. Anthony Falls.
- b. Please see Attachment A presenting planned projects to maintain Hennepin Island and Upper Dam Hydro Facilities.
- c. Please see Attachment F – Resource Plan Comparison MODIFIED as filed in our Modified Petition in this docket on October 7, 2024.
- d. Please see our response to part c above.

Preparer: Andrew Akervik  
Title: Accounting Consultant  
Department: Xcel Energy Services Inc.  
Telephone: 715-737-2407  
Date: June 23, 2025

Northern States Power Company  
 2024 ARL Depreciation Study  
 St Anthony Falls Projects

Docket No. E,G002/D-23-356  
 DOC Information Request No. 12  
 Attachment A - Page 1 of 1

12 (a)

Project Name	Start	In Service	Completion	2000-2025 (Prev Yrs)	2026	2027	2028	2029	2030	TOTALS
HNI0-Replace Horseshoe Flashboards	3/2/2018	9/30/2027	12/29/2027	\$1,903,617	\$2,750,001	\$2,750,000				\$7,403,618
HNI0-Replace Trash Rack Raker	7/3/2028	9/5/2030	12/3/2030				\$70,000	\$476,000	\$854,000	\$1,400,000
HNI0-Replace Tailrace	9/1/2026	11/4/2027	2/1/2028		\$200,000	\$2,580,000	\$20,000			\$2,800,000
HNI0-Stabilize Downstream Bank	1/2/2025	11/15/2027	1/10/2028	\$132,432	\$52,432	\$2,312,432	\$2,703			\$2,500,000
				<u>\$2,036,049</u>	<u>\$3,002,433</u>	<u>\$7,642,432</u>	<u>\$92,703</u>	<u>\$476,000</u>	<u>\$854,000</u>	<u>\$14,103,618</u>

12 (b)

Project Name-Not yet in EPM	Estimated Budget in 10+years	Est Start Year	Est Completion Year
Trash Rack Replacement	2,000,000	2045	2047
Replace Wall on Horseshoe dam	10,000,000	2037	2042
Gen Rewinds Units 1-5	3,750,000	2042	2050
Roof Replacement in '40	400,000	2040	2040
Replace Draft tubes Units 1-4	2,000,000	2039	2042
Replace Camel back transitions 1-4 or install cavitation prevention	1,000,000	2037	2040
Plant Controls Upgrade	1,000,000	2030	2032
U5 HPU	300,000	2031	2033
Replace Gate Positioners U1 - 4	320,000	2031	2033
Breakers all units	750,000	2040	2042
Intake Stop log	800,000	2035	2037
Intake Stop Log Hoist and Structure	600,000	2035	2037
Replace/Abandment of Power Canal Sluic	2,500,000	2037	2039
Deicing System Replacement	100,000	2031	2031
	<u>25,520,000</u>		

- Not-Public Document – Not For Public Disclosure  
 Public Document – Not-Public Data Has Been Excised  
 Public Document

Xcel Energy Information Request No. 11  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Black Dog Unit 5 Life Extension

Reference(s): 9/9/2024 Petition at 9

- a. The Petition states that Xcel Energy has evidence that installations like Black Dog Unit 5 are lasting upwards of 40 or more. Please provide that evidence.
- b. Please provide any engineering studies/data/information the Company has that supports the proposed life extension for Black Dog Unit 5.
- c. Has the Company recently completed any major capital projects at Black Dog Unit 5 that would be expected to extend the plant's operational life?
- d. Is the Company planning any major capital projects at the Black Dog Unit 5 over the next five years that would be expected to extend the plant's operational life?
- e. Will Black Dog Unit 5 require any overhauls, rebuilds, or other significant capital projects in order for it to operate through 2042?
- f. What life was assumed for Black Dog Unit in Xcel Energy's most recent IRP (Docket No. E002/RP-24-67)? Please provide citations to specific documents in which the facility's life assumptions were discussed.
- g. If the life assumed for Black Dog Unit 5 in Xcel Energy's most recent IRP is different than the proposed life, please explain the difference and why the proposed depreciation life is reasonable.

Response:

- a. The Company has similar facilities, including the High Bridge Combined Cycle plant in St. Paul with a 40-year lifespan.
- b. We regularly assess and maintain our plants, including Black Dog Unit 5. Its current general health, based on performance and routine inspections of major components (gas turbine / generator, steam turbine / generator, heat recovery steam boiler, circulating water pumps, cooling pumps), suggests that Unit 5/2 and its auxiliaries can continue to operate well beyond 2032. One of the more significant pieces of data informing a plant of this type's life is the rotor life on

Unit 5; it is currently at approximately 77,000 operating hours after approximately 23 years of operation – with a normal life of approximately 150,000 operating hours.

- c. The Unit 5 gas turbine, Unit 2 steam turbine, and plant auxiliaries continue with planned and routine inspections (O&M) and hardware replacements (capital) consistent with normal maintenance practices for continued operation.
- d. There are no projects planned specifically to adjust lifespan, but rather, continuation of routine inspections and hardware replacements for continued operation.
- e. Yes, the units and auxiliaries will require periodic inspections and maintenance to continue operation beyond 2032. As noted in part d above, none of that work is expected in the next five years.
- f. The assumed life for Black Dog 5/2 in the 2024 IRP in Docket No. E002/RP-24-67 is December 2031, which is reflected as “2032” – the first year the facility is not included in the plan in Table H-3: Existing Natural Gas and Oil Resources on page 4 of 15 of Appendix H to the IRP. Black Dog 5/2 is also referenced on page 15 of 327 of Appendix AA: 2022 Electric Utility Annual Report with a projected plant retirement year of 2031; as discussed on page 14 of 327, this date stems from the 2020 Review of Remaining Lives (Docket No. E,G002/D-19-723) and is subject to change, pending the outcome of future Remaining Lives filings and subsequent Resource Plans.
- g. The Black Dog Unit 5 life in the 2024 IRP (December 2031) is different than proposed in this proceeding (December 2042). The proposed depreciable life of 2042 is reasonable based on similar Company installations with 40-year remaining lives. This difference between the two filings should have been noted in Attachment F (Resource Plan Comparison) to our initial Petition. We therefore provide a revised Attachment F as Attachment A to this response, and we will also submit it with our Reply Comments to ensure the record in this proceeding is complete.

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Preparer: Andrew Akervik  
Title: Consultant  
Department: Capital Asset Accounting  
Telephone: 715-737-2407  
Date: July 2, 2025

Northern States Power Company  
 Integrated Resource Plan Comparison  
 Electric Utility

Docket No. E,G002/D-23-356  
 DOC IR No. 11  
 Attachment A - Page 1 of 1

Northern States Power Company  
 Integrated Resource Plan Comparison  
 Electric Utility

Docket No. E,G002/D-23-356 Modified  
 2024 Elec Gas Production Gas Storage ARL  
 Revised Attachment F - Page 1 of 1

Electric Production Plant Facility	Proposed Retirement Date per Remaining Life Petition	Resource Planning/Modeling End of Life Docket No. E002/RP-24-67 Reference Plan	Rationale for Difference Between Depreciation Life and Resource Planning Period
Nuclear Monticello	2040	2050	Although the Minnesota Public Utilities Commission approved the ten year extension, the Nuclear Regulatory Commission (NRC) has not ruled on this proposal.
Nuclear Prairie Island	2033 & 2034	2053 & 2054	Although the Minnesota Public Utilities Commission approved the ten year extension, the Nuclear Regulatory Commission (NRC) has not ruled on this proposal.
Black Dog Unit 5	2042	2031	Identified conducting plant remaining life interviews, post IRP development.
Hydro Hennepin Island	2074	2034	Identified conducting plant remaining life interviews, post IRP development.
Hydro St Croix Falls	2047	2027	Identified conducting plant remaining life interviews, post IRP development.
Hydro Upper Dam	2074	2034	Identified conducting plant remaining life interviews, post IRP development.
Sherco Solar Unit 3	2026	2025	Extended duration of the Site and Route Permit regulatory approval process for Scherco Solar 3 delayed the start of the construction from Q2 to Q4 2024. The impact caused the delay in the in-service-date (ISD).

- Not-Public Document – Not For Public Disclosure  
 Public Document – Not-Public Data Has Been Excised  
 Public Document

Xcel Energy Information Request No. 14  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Sherco Solar Units 1 & 2

Reference(s): 9/9/2024 Petition at 10-11

- a. Please provide support (e.g., engineering studies, information from manufacturers, etc.) for the proposed 35-year lives for Sherco Solar Units 1 and 2.
- b. The proposed remaining life for Sherco Solar Unit 1 per Table 6 of the Petition is 35.0 years, with an implied retirement date of October 2059 (35 years after Sherco Solar Unit 1's in-service date of October 31, 2024). However, Attachment G at 9 indicates a 34.0-year remaining life for Sherco Solar Unit 1 as of Jan. 1, 2025, which implies a retirement date of Jan. 1, 2059. Please explain the discrepancies in the remaining lives indicated in Table 6 and Attachment G.
- c. What is Sherco Solar Unit 2's current expected in-service date?
- d. Table 6 of the Petition indicates a 35-year remaining life for Sherco Solar Unit 2 with an expected retirement date of October 2060. However, Attachment G at 9 indicates a 33.0-year remaining life as of Jan. 1, 2025, which implies a retirement date of Jan. 1, 2058, or nearly three years earlier. Please explain the discrepancy.

Response:

- a. The Company relied on several sources to inform its proposed 35-year lives for Sherco Solar Units 1 and 2. These include information published by the U.S. Department of Energy on their website: Solar Energy Technologies Office > Solar Energy Research Areas > Photovoltaics, article End-of-Life Management for Solar Photovoltaics states and link below:

End-of-life management for photovoltaics (PV) refers to the processes that occur when solar panels and all other components are retired from operation. There are millions of solar installations connected to the grid in the United States, which means there are hundreds of millions of PV panels in use. Most PV systems are young—approximately 70% of solar energy systems in existence have been installed since 2017.

The estimated operational lifespan of a PV module is about 30-35 years, although some may produce power much longer. While few systems are entering the waste stream right now, more systems will come to the end of their useful life in the next few decades.

*[End-of-Life Management for Solar Photovoltaics | Department of Energy](#)*

Additionally, the Company considered information from Burns & McDonnell Engineering Company, Inc (1898 & Co.) listing the lives of numerous individual solar projects that are generally 35 and 40 years. We also considered industry information, for example, a Berkeley Lab study, which supports the 35-year life. The Company continues to believe that a 35-year life is reasonable. We provide the 1898 & Co report and the Berkeley Lab study as Attachments A and B, respectively, to this response.

- b. Table 6 and Attachment A of our filing that present the estimated retirement date of October 2059 are accurate. Attachment G of our filing is incorrect. We provide a revised Attachment G as Attachment C to this response, and note that we will also include the revised Attachment G as part of our Reply Comments to ensure the record in this proceeding is accurate; our revisions are shaded grey. We appreciate the Department pointing out this inconsistency.
- c. Sherco Solar Unit 2 is currently expected to go into service in October 2025.
- d. Table 6 and Attachment A of our filing that present the estimated retirement date of October 2060 are accurate. As also noted in part b above, please see Attachment C to this response for the revised Attachment G that properly reflects the October 2060 retirement date for Sherco Solar Unit 2.

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Preparer: Andrew Akervik  
Title: Consultant  
Department: Capital Asset Accounting  
Telephone: 715-737-2407  
Date: July 2, 2025

### Solar Useful Life Summary

Project Pro Forma Data			
Name	COD	Size Range (AC)	Useful Life (yrs)
Project 1	Q2 2024	250 - 500 MW	35
Project 2	Q4 2028	100 - 150 MW	35
Project 3	Q4 2028	10 - 50 MW	35
Project 4	Q4 2028	10 - 50 MW	35
Project 5	Q1 2029	50 - 100 MW	35
Project 6	2025	100 - 150 MW	35
Project 7	Q2 2026	50 - 100 MW	35
Project 8	Q2 2027	250 - 500 MW	35
Project 9	Q1 2027	50 - 100 MW	35
Project 10	Q1 2028	50 - 100 MW	35
Project 11	Q1 2028	50 - 100 MW	35
Project 12	Q1 2028	10 - 50 MW	35
Project 13	Q1 2028	50 - 100 MW	35
Project 14	Q1 2027	250 - 500 MW	35
Project 15	Q1 2027	250 - 500 MW	35
Project 16	Q3 2022	50 - 100 MW	40
Project 17	Q2 2024	150 - 250 MW	40
Project 18	Q2 2024	250 - 500 MW	40
Project 19	Q4 2019	1 - 10 MW	40
Project 20	Q4 2016	1 - 10 MW	40
Project 21	Q1 2018	1 - 10 MW	40
Project 22	Q4 2022	1 - 10 MW	40
Project 23	Q2 2017	1 - 10 MW	40
Project 24	Q4 2022	1 - 10 MW	40
Project 25	Q1 2018	1 - 10 MW	40
Project 26	Q1 2020	1 - 10 MW	40
Project 27	Q1 2020	1 - 10 MW	40
Project 28	Q4 2021	1 - 10 MW	40
Project 29	Q3 2018	1 - 10 MW	40
Project 30	Q3 2021	10 - 50 MW	40
Project 31	Q3 2017	1 - 10 MW	40
Project 32	Q3 2017	1 - 10 MW	40
Project 33	Q4 2016	1 - 10 MW	40
Project 34	Q4 2022	1 - 10 MW	40
Project 35	Q4 2022	1 - 10 MW	40
Project 36	Q2 2018	1 - 10 MW	40
Project 37	Q3 2019	1 - 10 MW	40
Project 38	Q4 2017	1 - 10 MW	40
Project 39	Q4 2020	10 - 50 MW	40
Project 40	Q2 2019	1 - 10 MW	40
Project 41	Q2 2022	10 - 50 MW	40
Project 42	Q3 2023	1 - 10 MW	40
Project 43	Q3 2023	1 - 10 MW	40
Project 44	Q3 2023	1 - 10 MW	40
Project 45	Q3 2023	1 - 10 MW	40
Project 46	Q3 2023	1 - 10 MW	40

Useful Life Summary			
	30 Years	35 Years	40 Years
% of data	0%	33%	67%



June 2020

## Benchmarking Utility-Scale PV Operational Expenses and Project Lifetimes:

### Results from a Survey of U.S. Solar Industry Professionals

*Ryan Wiser, Mark Bolinger, and Joachim Seel, Lawrence Berkeley National Laboratory*

This paper draws on a survey of solar industry professionals and other sources to clarify trends in the expected useful life and operational expenditure (OpEx) of utility-scale photovoltaic (PV) plants in the United States.

Solar project developers, sponsors, long-term owners, and consultants have increased project-life assumptions over time, from an average of ~21.5 years in 2007 to ~32.5 years in 2019. Current assumptions range from 25 years to more than 35 years depending on the organization; 17 out of 19 organizations surveyed or reviewed use 30 years or more.

Levelized, lifetime OpEx estimates have declined from an average of ~\$35/kW<sub>DC</sub>-yr for projects built in 2007 to an average of ~\$17/kW<sub>DC</sub>-yr in 2019. Across 13 sources, the range in average lifetime OpEx for projects built in 2019 is broad, from \$13 to \$25/kW<sub>DC</sub>-yr. Operations and maintenance (O&M) costs—one component of OpEx—have declined precipitously in recent years, to \$5-8/kW<sub>DC</sub>-yr in many cases. Property taxes and land lease costs are highly variable across sites, but on average are—together—of similar magnitude. Other OpEx line items include security, insurance, and asset management.

Given 2007-2009 values for not only project life and OpEx but also other drivers of the levelized cost of energy (LCOE, excluding the investment tax credit), the LCOE for utility-scale PV projects built from 2007 through 2009 averaged \$305/MWh. Using 2019 values for all parameters yields an average LCOE of \$51/MWh. The decline in LCOE from \$305/MWh to \$51/MWh was predominantly caused by reductions in up-front expenditures (and, to a much lesser extent, by changes in capacity factors, financing costs, and tax rates), but 9% (\$22/MWh) of the overall decline is due to improvements in project life and OpEx. Project life extensions and OpEx reductions have had similarly sized impacts on LCOE over this period, at \$11/MWh each. Had project life and OpEx not improved over the last decade, LCOE in 2019 would have instead been \$73/MWh—43% higher.

Given the limited quantity and comparability of previously available data on these cost drivers, the data and trends presented here may inform assumptions used by electric system planners, modelers, and analysts. The results may also provide useful benchmarks to the solar industry, helping developers and assets owners compare their expectations for project life and OpEx with those of their peers.

## Methods

The findings in this paper draw in part from a brief survey of U.S. solar project developers, sponsors, financiers, and consultants. We distributed the survey in December 2019. Responses were received from seven organizations. Additionally, we conducted a review of the annual financial reports from some of the large, publicly traded solar project developers and owners, yielding a number of additional sets of project-



life assumptions.<sup>1</sup> Ultimately, we assembled 19 different time-series estimates of useful project life.<sup>2</sup> For OpEx estimates, in addition to seven survey responses, we synthesized data from seven literature sources, leading to 14 different time-series estimates.<sup>3</sup>

With respect to project life, our interest was in better understanding how expectations for useful life have changed over time, as the industry has grown and matured. We focus on 'useful' life, defined here to mean the period of time in which the expected costs and revenues of a project are assessed to determine its economic viability. Typically, an asset with a useful life of, for example, 30 years is expected to earn ongoing operating profits during those 30 years (ongoing revenue > ongoing costs). At the end of year 30, however, either decommissioning or full project repowering would be expected. A longer assumed project life may enhance the expected long-term profitability of a project, assuming any resulting increase in O&M is kept within reasonable bounds. Moreover, longer depreciation terms reduce annual book depreciation from an accounting perspective, thereby boosting net income in the near term. From a planning and modeling perspective, longer lifetimes may enable lower LCOE by recovering up-front capital costs (and, potentially, any component replacement or refurbishment costs) over additional years of electricity production. We specifically sought insights into assumptions most-commonly used by developers and sponsors for project life when considering the lifetime profitability of a project, pitching projects to financiers, and establishing power purchase agreements during the development and financing process. We asked about current assumptions, and how those assumptions have changed over time.

With respect to OpEx, our interest was in total all-in operational expenditures and how expectations for OpEx have changed over time. We define OpEx to include scheduled and unscheduled maintenance, operations personnel, land lease costs, property taxes, and any other ongoing operations costs; some studies focus solely on O&M, but our interest was total OpEx. We sought levelized estimates considering the full expected lifetime of utility-scale PV plants. We asked respondents to report data in  $\$/kW_{DC}\text{-yr}$ , and requested elaboration on any variations that might exist depending on whether a project is fixed-tilt vs. tracking, whether a project is located in a region with heavy soiling (requiring frequent washing) or vegetation growth (requiring vegetation management), or other project characteristics. We supplement the survey results with estimates from other literature. Much of the available literature does not report all-in OpEx (instead reporting only O&M, or ignoring certain costs); in many cases, coverage and even units are unclear. We therefore adjust literature estimates (and some survey responses) as necessary to ensure greater comparability based on total OpEx, but admit that judgement was required in this process.

For both project life and OpEx, we focused on expectations from project developers, sponsors, and long-term owners because these are the entities most likely to be thinking about the full lifecycle of a project. We also included major consultancies, including those that provide due diligence services to the solar industry. The organizations from which we sourced data have likely been engaged in more than half of all utility-scale PV projects built in the United States since 2007.

<sup>1</sup> In some cases, project-life assumptions that derive from financial reports reflect depreciation- or accounting-based lives, which may in theory differ from useful-life assumptions used by developers and sponsors. However, a review of our results indicates no such bias in the estimates reported later in this paper, as the distribution of responses is generally similar for both sources of data.

<sup>2</sup> These estimates come from staff and annual reports from: NextEra, EDPR, RES, FirstSolar, EDF, Enel, Pattern, 8point3, Southern Power, PSE&G, BNEF, Lazard, Cypress Creek, Recurrent, Macquarie Capital, Norton Rose Fulbright, MAP, DNV GL, NRG.

<sup>3</sup> These estimates come from staff and literature from: RES, BNEF, NREL, FirstSolar, EDF, MAP, NRG, sPower, Lazard, DNV GL, GTM, Wood Mackenzie, IHS Markit.



### Estimated Project Lifetimes

Project developers, sponsors, long-term owners, and consultancies now most-commonly assume 30-year or greater useful project lives, as depicted in Figure 1. Current assumptions range from 25 years to more than 35 years depending on the organization; 17 out of 19 organizations use 30 years or more. Modules are now typically warranted for 25- or even 30-years, and are generally expected to have some useful life after warranties expire. Project life expectations from developers, sponsors and owners often exceed, by 5 to 10 years, these module warranty durations.

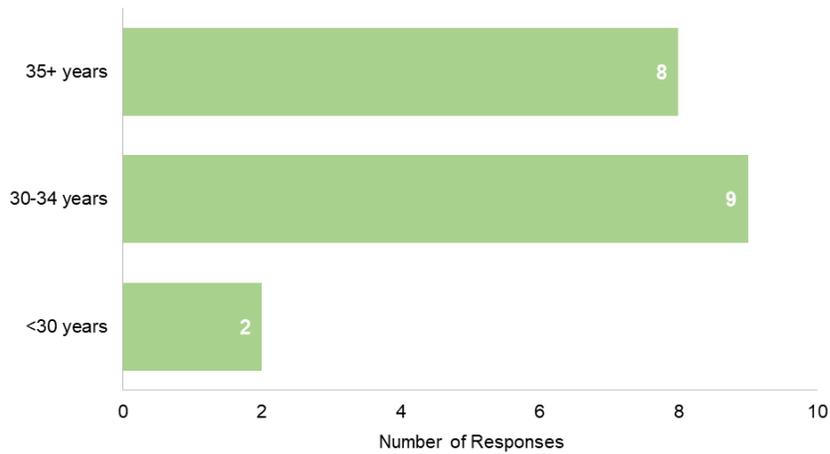


Figure 1. Current Project Life Expectations for Utility-Scale PV

Expectations for the useful life of utility-scale PV projects vary by respondent, but have consistently increased over time—from an average value of ~21.5 years in 2007 to ~32.5 years in 2019 (Figure 2). Directionally, this tracks the increase over time of the typical duration of module warranties.

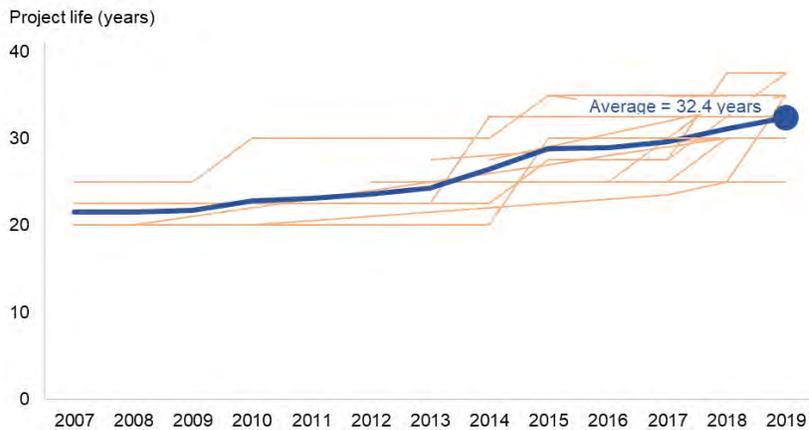


Figure 2. Project Life Expectations for Utility-Scale PV, over Time



One respondent noted a link between project life expectations and the cost of finance. Specifically, the cost of capital is, at present, very low, leading to lower discounting of possible profits in the long term. Previously, with a higher cost of capital, discounting meant that project life beyond 25 years was largely unimportant. The same respondent also noted that as project life expectations have increased, so too has the length of the “merchant tail”—the remaining operational period expected after a fixed-price sales agreement has ended. Expectations for a profitable merchant tail (which may or may not ultimately be fulfilled) helps enable aggressive pricing for initial power sales agreements.

### Anticipated Operational Expenditures

Levelized, lifetime OpEx estimates have declined with time, though various sources report different numerical values. Across all sources, lifetime OpEx estimates averaged ~\$35/kW<sub>DC</sub>-yr for projects built in 2007, declining to ~\$17/kW<sub>DC</sub>-yr for projects built in 2019 (Figure 3).<sup>4</sup> The results derived from the industry survey are comparable to the broader literature, as shown by the blue and grey lines in Figure 3. They also generally align with the trend of declining annual solar operations costs reported by regulated utilities, which decreased from an average of \$30/kW<sub>DC</sub>-yr in 2011 to \$15/kW<sub>DC</sub>-yr in 2018.<sup>5</sup>

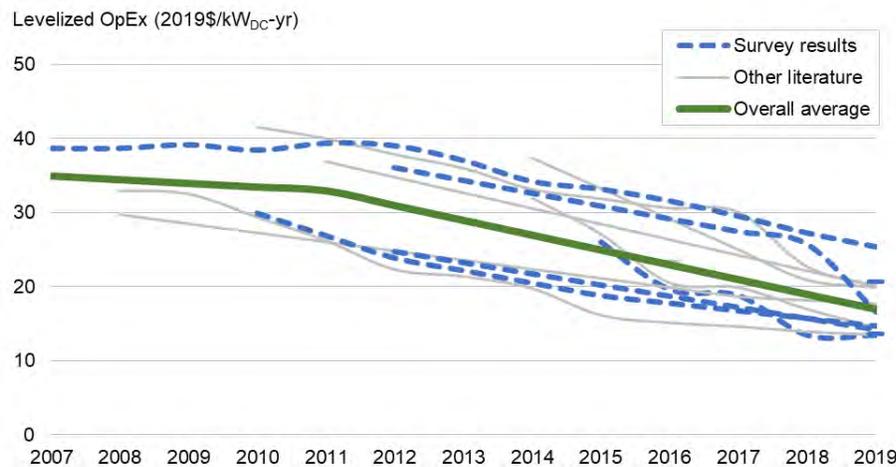


Figure 3. Lifetime OpEx Expectations for Utility-Scale PV, over Time

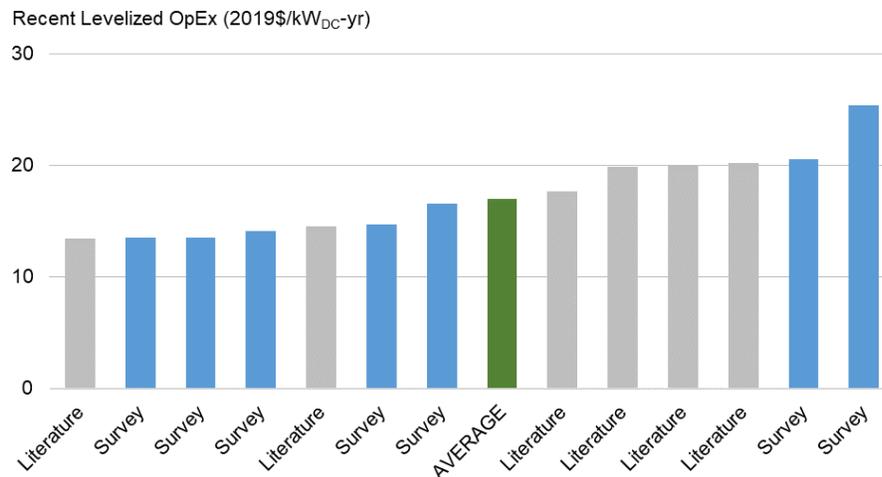
Variations in estimated lifetime OpEx for the most recent projects are depicted in Figure 4, and span a range of \$13 to \$25/kW<sub>DC</sub>-yr. Survey-based responses are again broadly comparable to other literature-based estimates. Note that because respondents provided data on average costs, often for large project

<sup>4</sup> OpEx costs for tracking PV projects are slightly higher than for fixed tilt, by ~\$1/kW<sub>DC</sub>-yr. The costs reported in this section are for average projects that reflect a mix of tracking and fixed tilt.

<sup>5</sup> See data summarized in Bolinger, M., J. Seel and D. Robson. 2019. *Utility-Scale Solar: Empirical Trends in Project Technology, Cost, Performance, and PPA Pricing in the United States*. Lawrence Berkeley National Laboratory. The underlying FERC Form 1 OpEx data includes operational costs of supervision and engineering, maintenance, rents, and training (and therefore excludes payments for property taxes, insurance, land royalties, performance bonds, various administrative and other fees, and overhead). Focusing only on 2018 operating expenses, utilities report a range from \$6/kW<sub>DC</sub>-yr to \$32/kW<sub>DC</sub>-yr.



fleets, the costs reported here are a range across fleets; the range across individual projects is larger still, with one respondent noting that costs as high or higher than  $\$30/\text{kW}_{\text{DC}}\text{-yr}$  are possible in some regions.



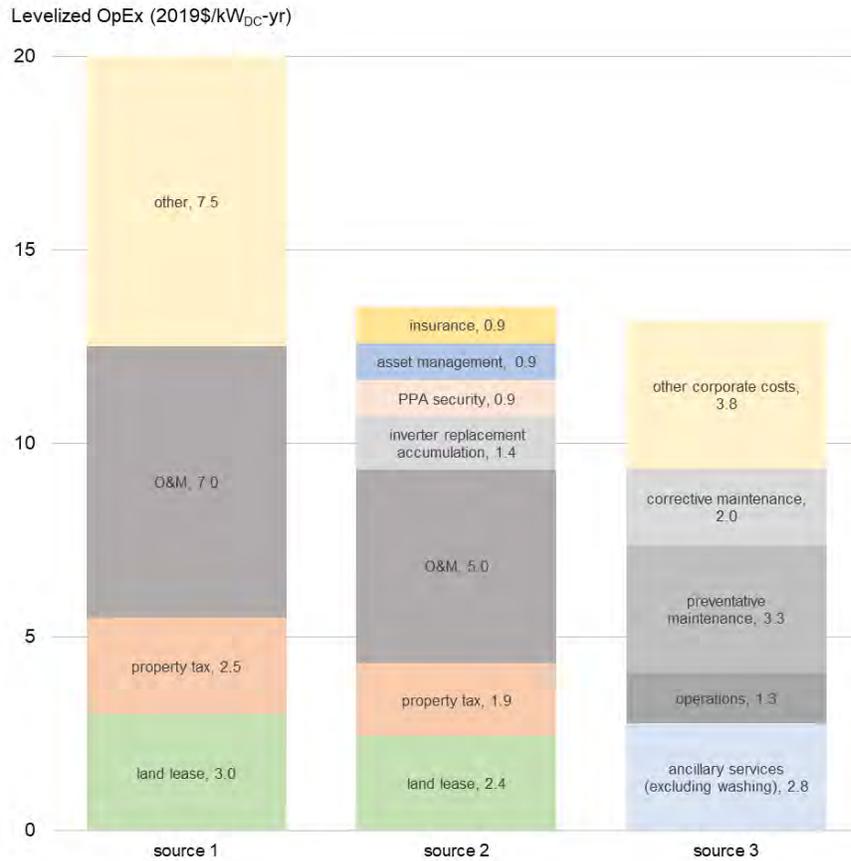
**Figure 4. Recent Lifetime OpEx Expectations for Utility-Scale PV**

While we primarily focused on all-in OpEx, some respondents broke out OpEx into its constituent parts, albeit using different categories of costs (Figure 5).

Operations and maintenance (O&M) costs—inclusive of scheduled and unscheduled maintenance—represent the single largest component of overall PV plant OpEx, as well as a primary source of OpEx reductions over the last decade. Current levelized O&M cost expectations range from  $\$5\text{--}8/\text{kW}_{\text{DC}}\text{-yr}$  in many cases. One respondent focused on trends in the cost of initial 5-year O&M contracts (excluding module cleaning and vegetation management, which might add  $\sim\$1/\text{kW}_{\text{DC}}\text{-yr}$ ), citing a decline in cost from  $\sim\$15/\text{kW}_{\text{DC}}\text{-yr}$  in 2010 to  $\$4.5/\text{kW}_{\text{DC}}\text{-yr}$  in 2019. This same respondent indicated that actual OpEx costs for older PV projects may be lower than expectations that existed at the time of initial commercial operation, as these older projects have been able to avail themselves of lower-priced O&M contracts as their original contracts have expired and been renewed.

Property taxes and land lease costs are highly variable across sites. One respondent cited a range in property taxes of  $\$2$  to  $\$4/\text{kW}_{\text{DC}}\text{-yr}$  depending on location. That same respondent cited lease costs of  $\$1$  to  $\$8/\text{kW}_{\text{DC}}\text{-yr}$ , impacted by the cost of land in a region and site layout—sites in complex terrain often result in more land needing to be leased for a project of a fixed size.<sup>6</sup> Module cleaning and vegetation management were also cited as being variable depending on site needs. Other notable OpEx line-items include security, insurance, and asset management. Fleet size was mentioned as impacting OpEx, with owners benefitting when able to share fixed costs across nearby projects.

<sup>6</sup> Utility-scale PV projects do not generally own the land on which they are placed. Instead, the project owner leases the land from the original landowner or a third party that purchases the land. In the latter case, a third party purchases the land from the original owner, and then leases the land to the project owner. Which lease arrangement is used (from landowner or an intermediary) depends on site and region. Either way, the project owner incurs land costs in the form of an annual lease. For analysts, it is important to take care not to double count costs by including them both as up-front (presuming ownership) and ongoing (presuming ongoing lease) expenditures.



**Figure 5. Recent Lifetime OpEx Expectations by Component**

Reductions in OpEx over time have, in part, been motivated by the low power sales prices now common in the sector, requiring focused attention on lowering OpEx. Related, owners are asking for fewer services than in the past. As a result, overall costs are declining partly due to per-service cost reductions (as one example, via automated panel washing) and partly due to a smaller number of services being procured (as one example, owners realizing that field-level inspections of electrical wiring and equipment are not required every year).

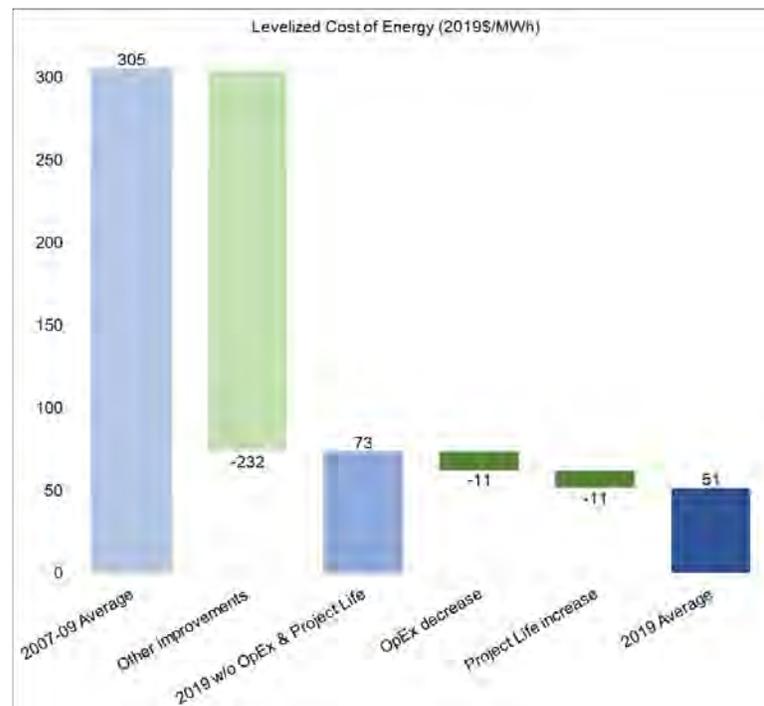
However, one respondent noted that they anticipated that all-in OpEx could rise in the future, as developers may be underestimating certain costs in new markets. O&M is now offered at rock-bottom prices, with relatively few opportunities for further reductions. Land costs, meanwhile, may increase as landowners become increasingly savvy and competition for sites intensifies. Counties may offer fewer property tax abatements as the industry matures. Finally, as projects move closer to population centers, full-time onsite security staff may be required—something not needed for remotely located projects. A consultant echoed some of these themes, postulating that some developers and owners may be underestimating long-term costs.



## Impacts on Levelized Cost of Energy<sup>7</sup>

The levelized cost of energy (LCOE) of solar plants is driven by five primary parameters: upfront capital expenditures, project performance, financing and tax assumptions, OpEx, and project life. Project life extensions and OpEx reductions therefore represent two potential levers for LCOE improvement.

Applying 2007-2009 values for not only project life and OpEx but also other drivers of LCOE, the LCOE for utility-scale PV projects built from 2007 through 2009 averaged \$305/MWh, excluding the federal investment tax credit (ITC). Using 2019 values for all parameters yields an average LCOE of \$51/MWh in 2019, again excluding the ITC (Figure 6). The decline in LCOE from \$305/MWh to \$51/MWh was predominantly caused by reductions in up-front capital expenditures (and, to a much lesser extent, by changes in capacity factors, financing costs, and tax rates), but 9% (\$22/MWh) of the overall decline is due to improvements in project life and OpEx. Project life extensions and OpEx reductions had similarly sized impacts on LCOE over this period, at \$11/MWh each. Had project life and OpEx not improved over the last decade, LCOE in 2019 would have instead been \$73/MWh—43% higher.



**Figure 6. Impact of Project Life and OpEx Improvements on LCOE**

Clearly, OpEx and project life can be important drivers for LCOE trends over time.

<sup>7</sup> Assumptions derive in part from Bolinger, M., J. Seel and D. Robson. 2019. *Utility-Scale Solar: Empirical Trends in Project Technology, Cost, Performance, and PPA Pricing in the United States*. Lawrence Berkeley National Laboratory.

For projects built from 2007-2009, assumptions include: \$5.5/W<sub>DC</sub> installed cost, 17.6% DC capacity factor, 6.36% weighted average cost of capital, 40% combined tax rate, \$34.5/kW<sub>DC</sub>-yr OpEx, and 21.6 year project life. For projects built in 2019, assumptions include: \$1.1/W<sub>DC</sub> installed cost, 17.9% DC capacity factor, 5.94% weighted average cost of capital, 27% combined tax rate, \$17/kW<sub>DC</sub>-yr OpEx, and 32.4-year project life.



## Acknowledgements

We especially thank each of the solar industry professionals who thoughtfully responded to our questions. For additional data, we thank David Feldman with the National Renewable Energy Laboratory. For their support of this work, we thank the entire DOE Solar Energy Technologies Office team. This material is based upon work funded by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) under Solar Energy Technologies Office (SETO) Agreement Number 34158 and Contract No. DE-AC02-05CH11231. The authors are solely responsible for any omissions or errors contained herein.

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Northern States Power Company  
 Historical Comparison of Changes to Remaining Lives

Docket No. E,G002/D-23-356  
 DOC IR No. 14  
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Northern States Power Company  
 Historical Comparison of Changes to Remaining Lives  
 Elec Steam Production

Docket No. E,G002/D-23-356  
 Supplemental Filing  
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Revisions are shaded yellow

Account	Description	Current Approved Remaining Life 01/01/23 (Yrs)	Proposed Remaining Life 01/01/25 (Yrs)	Current Approved Net Salvage 01/01/23 (%)	Proposed Net Salvage 01/01/25 (%)	Latest Life Change (Docket #)	Life Change (Yrs)	Latest Net Salvage Change (Docket #)	Net Salvage Change (%)	Number of Life Changes in the Last Five Years	Number of Net Salvage Changes in the Last Five Years
<b>Allen S. King</b>											
E311	Structures & Improvements	14.5	12.5	-9.2	-11.3	EG002-D-07-251	-2.0	EG002-D-19-743	-2.1	0	1
E312	Boiler Plant Equipment	14.5	12.5	-9.2	-11.3	EG002-D-07-251	-2.0	EG002-D-19-743	-2.1	0	1
E314	Turbogenerator Units	14.5	12.5	-9.2	-11.3	EG002-D-07-251	-2.0	EG002-D-19-743	-2.1	0	1
E315	Accessory Electric Equipment	14.5	12.5	-9.2	-11.3	EG002-D-07-251	-2.0	EG002-D-19-743	-2.1	0	1
E316	Miscellaneous Power Plant Equipment	14.5	12.5	-9.2	-11.3	EG002-D-07-251	-2.0	EG002-D-19-743	-2.1	0	1
<b>Red Wing</b>											
E311	Structures & Improvements	5.0	13.0	-23.5	-25.7	EG002-D-15-46	8.0	EG002-D-19-743	-2.2	0	1
E312	Boiler Plant Equipment	5.0	13.0	-23.5	-25.7	EG002-D-15-46	8.0	EG002-D-19-743	-2.2	0	1
E314	Turbogenerator Units	5.0	13.0	-23.5	-25.7	EG002-D-15-46	8.0	EG002-D-19-743	-2.2	0	1
E315	Accessory Electric Equipment	5.0	13.0	-23.5	-25.7	EG002-D-15-46	8.0	EG002-D-19-743	-2.2	0	1
E316	Miscellaneous Power Plant Equipment	5.0	13.0	-23.5	-25.7	EG002-D-15-46	8.0	EG002-D-19-743	-2.2	0	1
<b>Sherco Unit 1</b>											
E311	Structures & Improvements	3.0	1.0	-15.1	-15.1	EG002-D-15-46	-2.0	EG002-D-19-743	0.0	0	1
E312	Boiler Plant Equipment	3.0	1.0	-15.1	-15.1	EG002-D-15-46	-2.0	EG002-D-19-743	0.0	0	1
E314	Turbogenerator Units	3.0	1.0	-15.1	-15.1	EG002-D-15-46	-2.0	EG002-D-19-743	0.0	0	1
E315	Accessory Electric Equipment	3.0	1.0	-15.1	-15.1	EG002-D-15-46	-2.0	EG002-D-19-743	0.0	0	1
E316	Miscellaneous Power Plant Equipment	3.0	1.0	-15.1	-15.1	EG002-D-15-46	-2.0	EG002-D-19-743	0.0	0	1
<b>Sherco Unit 2</b>											
E311	Structures & Improvements	-	-	-15.1	-15.1	EG002-D-15-46	0.0	EG002-D-19-743	0.0	0	1
E312	Boiler Plant Equipment	-	-	-15.1	-15.1	EG002-D-08-189	0.0	EG002-D-19-743	0.0	0	1
E314	Turbogenerator Units	-	-	-15.1	-15.1	EG002-D-08-189	0.0	EG002-D-19-743	0.0	0	1
E315	Accessory Electric Equipment	-	-	-15.1	-15.1	EG002-D-08-189	0.0	EG002-D-19-743	0.0	0	1
E316	Miscellaneous Power Plant Equipment	-	-	-15.1	-15.1	EG002-D-08-189	0.0	EG002-D-19-743	0.0	0	1
<b>Sherco Unit 3</b>											
E311	Structures & Improvements	12.0	10.0	-7.9	-17.1	EG002-D-14-181	-2.0	EG002-D-19-743	-9.2	0	1
E312	Boiler Plant Equipment	12.0	10.0	-7.9	-17.1	EG002-D-14-181	-2.0	EG002-D-19-743	-9.2	0	1
E314	Turbogenerator Units	12.0	10.0	-7.9	-17.1	EG002-D-14-181	-2.0	EG002-D-19-743	-9.2	0	1
E315	Accessory Electric Equipment	12.0	10.0	-7.9	-17.1	EG002-D-14-181	-2.0	EG002-D-19-743	-9.2	0	1
E316	Miscellaneous Power Plant Equipment	12.0	10.0	-7.9	-17.1	EG002-D-14-181	-2.0	EG002-D-19-743	-9.2	0	1
<b>Wilmarth</b>											
E311	Structures & Improvements	5.0	13.0	-25.8	-27.0	EG002-D-15-46	8.0	EG002-D-19-743	-1.2	0	1
E312	Boiler Plant Equipment	5.0	13.0	-25.8	-27.0	EG002-D-15-46	8.0	EG002-D-19-743	-1.2	0	1
E314	Turbogenerator Units	5.0	13.0	-25.8	-27.0	EG002-D-15-46	8.0	EG002-D-19-743	-1.2	0	1
E315	Accessory Electric Equipment	5.0	13.0	-25.8	-27.0	EG002-D-15-46	8.0	EG002-D-19-743	-1.2	0	1
E316	Miscellaneous Power Plant Equipment	5.0	13.0	-25.8	-27.0	EG002-D-15-46	8.0	EG002-D-19-743	-1.2	0	1

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 Nuclear Production

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Account	Description	Current Approved Remaining Life 01/01/23 (Yrs)	Proposed Remaining Life 01/01/25 (Yrs)	Current Approved Net Salvage 01/01/23 (%)	Proposed Net Salvage 01/01/25 (%)	Latest Life Change (Docket #)	Life Change (Yrs)	Latest Net Salvage Change (Docket #)	Net Salvage Change (%)	Number of Life Changes in the Last Five Years	Number of Net Salvage Changes in the Last Five Years
<b>Monticello</b>											
E302	Franchises & Consents	17.8	15.8	0.0	0.0	E002-M-20-855	-2.0	N/A	N/A	1	N/A
E321	Structures & Improvements	17.8	15.8	0.0	0.0	E002-M-20-855	-2.0	N/A	N/A	1	N/A
E322	Reactor Plant Equipment	17.8	15.8	0.0	0.0	E002-M-20-855	-2.0	N/A	N/A	1	N/A
E323	Turbogenerator Units	17.8	15.8	0.0	0.0	E002-M-20-855	-2.0	N/A	N/A	1	N/A
E324	Accessory Electric Equipment	17.8	15.8	0.0	0.0	E002-M-20-855	-2.0	N/A	N/A	1	N/A
E325	Miscellaneous Power Plant Equipment	17.8	15.8	0.0	0.0	E002-M-20-855	-2.0	N/A	N/A	1	N/A
<b>Monticello - Interim Storage Facility</b>											
E321	Structures and Improvements	17.8	15.8	0.0	0.0	E002-M-20-855	-2.0	N/A	N/A	1	N/A
E322	Reactor Plant Equipment	17.8	15.8	0.0	0.0	E002-M-20-855	-2.0	N/A	N/A	1	N/A
<b>Prairie Island</b>											
E302	Franchises & Consents	11.3	9.3	0.0	0.0	EG002-D-11-144	-2.0	N/A	N/A	0	N/A
E321	Structures & Improvements	11.3	9.3	0.0	0.0	EG002-D-11-144	-2.0	N/A	N/A	0	N/A
E322	Reactor Plant Equipment	11.3	9.3	0.0	0.0	EG002-D-11-144	-2.0	N/A	N/A	0	N/A
E323	Turbogenerator Units	11.3	9.3	0.0	0.0	EG002-D-11-144	-2.0	N/A	N/A	0	N/A
E324	Accessory Electric Equipment	11.3	9.3	0.0	0.0	EG002-D-11-144	-2.0	N/A	N/A	0	N/A
E325	Miscellaneous Power Plant Equipment	11.3	9.3	0.0	0.0	EG002-D-11-144	-2.0	N/A	N/A	0	N/A
<b>Prairie Island - Interim Storage Facility</b>											
E321	Structures and Improvements	11.3	9.3	0.0	0.0	EG002-D-11-144	-2.0	N/A	N/A	0	N/A
E322	Reactor Plant Equipment	11.3	9.3	0.0	0.0	EG002-D-11-144	-2.0	N/A	N/A	0	N/A

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Account	Description	Current Approved Remaining Life 01/01/23 (Yrs)	Proposed Remaining Life 01/01/25 (Yrs)	Current Approved Net Salvage 01/01/23 (%)	Proposed Net Salvage 01/01/25 (%)	Latest Life Change (Docket #)	Life Change (Yrs)	Latest Net Salvage Change (Docket #)	Net Salvage Change (%)	Number of Life Changes in the Last Five Years	Number of Net Salvage Changes in the Last Five Years
<b>Hennepin Island</b>											
E302	Franchises & Consents	11.2	49.2	0.0	0.0	EG002-D-05-288	38.0	EG002-D-19-743	N/A	0	1
E331	Structures & Improvements	11.2	49.2	-26.7	-28.4	EG002-D-05-288	38.0	EG002-D-19-743	-1.7	0	1
E332	Reservoirs, Dams & Waterways	11.2	49.2	-26.7	-28.4	EG002-D-05-288	38.0	EG002-D-19-743	-1.7	0	1
E333	Water Wheels, Turbines & Generators	11.2	49.2	-26.7	-28.4	EG002-D-05-288	38.0	EG002-D-19-743	-1.7	0	1
E334	Accessory Electric Equipment	11.2	49.2	-26.7	-28.4	EG002-D-05-288	38.0	EG002-D-19-743	-1.7	0	1
E335	Miscellaneous Power Plant Equipment	11.2	49.2	-26.7	-28.4	EG002-D-05-288	38.0	EG002-D-19-743	-1.7	0	1
<b>St. Croix Falls</b>											
E331	Structures & Improvements	5.0	23.0	-15.0	-38.9	E002/GR-15-826	18.0	EG002-D-19-743	-23.9	0	1
E332	Reservoirs, Dams & Waterways	5.0	23.0	-15.0	-38.9	E002/GR-15-826	18.0	EG002-D-19-743	-23.9	0	1
<b>Upper Dam</b>											
E332	Reservoirs, Dams & Waterways	11.2	49.2	-26.7	-28.4	EG002-D-05-288	38.0	EG002-D-19-743	-1.7	0	1
E335	Miscellaneous Power Plant Equipment	11.2	49.2	-26.7	-28.4	EG002-D-05-288	38.0	EG002-D-19-743	-1.7	0	1

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Account	Description	Current Approved Remaining Life 01/01/23 (Yrs)	Proposed Remaining Life 01/01/25 (Yrs)	Current Approved Net Salvage 01/01/23 (%)	Proposed Net Salvage 01/01/25 (%)	Latest Life Change (Docket #)	Life Change (Yrs)	Latest Net Salvage Change (Docket #)	Net Salvage Change (%)	Number of Life Changes in the Last Five Years	Number of Net Salvage Changes in the Last Five Years
<b>Angus C. Anson Unit 2 &amp; 3</b>											
E341	Structures & Improvements	22.4	20.4	-6.5	-15.0	EG002-D-19-161	-2.0	EG002-D-19-743	-8.5	1	1
E342	Fuel Holders, Producers & Accessories	18.0	16.0	-11.2	-7.9	EG002-D-19-161	-2.0	EG002-D-19-743	3.3	2	1
E343	Prime Movers	18.0	16.0	-11.2	-7.9	EG002-D-19-161	-2.0	EG002-D-19-743	3.3	2	1
E344	Generators	18.0	16.0	-11.2	-7.9	EG002-D-19-161	-2.0	EG002-D-19-743	3.3	2	1
E345	Accessory Electric Equipment	18.0	16.0	-11.2	-7.9	EG002-D-19-161	-2.0	EG002-D-19-743	3.3	2	1
E346	Miscellaneous Power Plant Equipment	18.0	16.0	-11.2	-7.9	EG002-D-19-161	-2.0	EG002-D-19-743	3.3	2	1
<b>Angus C. Anson Unit 4</b>											
E341	Structures & Improvements	22.4	20.4	-6.5	-15.0	EG002-D-19-161	-2.0	EG002-D-19-743	-8.5	1	1
E342	Fuel Holders, Producers & Accessories	22.4	20.4	-6.5	-15.0	EG002-D-19-161	-2.0	EG002-D-19-743	-8.5	1	1
E343	Prime Movers	22.4	20.4	-6.5	-15.0	EG002-D-19-161	-2.0	EG002-D-19-743	-8.5	2	1
E344	Generators	22.4	20.4	-6.5	-15.0	EG002-D-19-161	-2.0	EG002-D-19-743	-8.5	1	1
E345	Accessory Electric Equipment	22.4	20.4	-6.5	-15.0	EG002-D-19-161	-2.0	EG002-D-19-743	-8.5	1	1
E346	Miscellaneous Power Plant Equipment	22.4	20.4	-6.5	-15.0	EG002-D-19-161	-2.0	EG002-D-19-743	-8.5	1	1
<b>Black Dog Unit 5</b>											
E341	Structures & Improvements	35.3	33.3	-10.3	-20.6	EG002-D-19-161	-2.0	EG002-D-19-743	-10.3	1	1
E342	Fuel Holders, Producers & Accessories	9.0	18.0	-7.2	-12.9	EG002-D-02-214	9.0	EG002-D-19-743	-5.7	0	1
E343	Prime Movers	9.0	18.0	-7.2	-12.9	EG002-D-18-162	9.0	EG002-D-19-743	-5.7	1	1
E344	Generators	9.0	18.0	-7.2	-12.9	EG002-D-02-214	9.0	EG002-D-19-743	-5.7	0	1
E345	Accessory Electric Equipment	9.0	18.0	-7.2	-12.9	EG002-D-02-214	9.0	EG002-D-19-743	-5.7	0	1
E346	Miscellaneous Power Plant Equipment	9.0	18.0	-7.2	-12.9	EG002-D-02-214	9.0	EG002-D-19-743	-5.7	0	1
<b>Black Dog Unit 6</b>											
E341	Structures & Improvements	35.3	33.3	-10.3	-20.6	EG002-D-18-162	-2.0	EG002-D-19-743	-10.3	1	1
E342	Fuel Holders, Producers & Accessories	35.3	33.3	-10.3	-20.6	EG002-D-18-162	-2.0	EG002-D-19-743	-10.3	1	1
E343	Prime Movers	35.3	33.3	-10.3	-20.6	EG002-D-18-162	-2.0	EG002-D-19-743	-10.3	1	1
E344	Generators	35.3	33.3	-10.3	-20.6	EG002-D-18-162	-2.0	EG002-D-19-743	-10.3	1	1
E345	Accessory Electric Equipment	35.3	33.3	-10.3	-20.6	EG002-D-18-162	-2.0	EG002-D-19-743	-10.3	1	1
E346	Miscellaneous Power Plant Equipment	35.3	33.3	-10.3	-20.6	EG002-D-18-162	-2.0	EG002-D-19-743	-10.3	1	1
<b>Blazing Star I Wind (1)</b>											
E340.1	Wind Rights	32.3	30.3	0.0	0.0	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	2	0
E341	Structures & Improvements	32.3	30.3	-11.6	-11.9	EG002-D-22-299	-2.0	EG002-D-19-743	-0.3	2	1
E342	Fuel Holders, Producers & Accessories	32.3	30.3	-11.6	-11.9	EG002-D-22-299	-2.0	EG002-D-19-743	-0.3	2	1
E343	Prime Movers	32.3	30.3	-11.6	-11.9	EG002-D-22-299	-2.0	EG002-D-19-743	-0.3	2	1
E344	Generators	32.3	30.3	-11.6	-11.9	EG002-D-22-299	-2.0	EG002-D-19-743	-0.3	2	1
E345	Accessory Electric Equipment	32.3	30.3	-11.6	-11.9	EG002-D-22-299	-2.0	EG002-D-19-743	-0.3	2	1
E346	Miscellaneous Power Plant Equipment	32.3	30.3	-11.6	-11.9	EG002-D-22-299	-2.0	EG002-D-19-743	-0.3	2	1

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Account	Description	Current Approved Remaining Life 01/01/23 (Yrs)	Proposed Remaining Life 01/01/25 (Yrs)	Current Approved Net Salvage 01/01/23 (%)	Proposed Net Salvage 01/01/25 (%)	Latest Life Change (Docket #)	Life Change (Yrs)	Latest Net Salvage Change (Docket #)	Net Salvage Change (%)	Number of Life Changes in the Last Five Years	Number of Net Salvage Changes in the Last Five Years
<b>Blazing Star II Wind (2)</b>											
E340.1	Wind Rights	33.1	31.1	0.0	0.0	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	2	0
E341	Structures & Improvements	33.1	31.1	-10.5	-11.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.5	2	1
E342	Fuel Holders, Producers & Accessories	33.1	31.1	-10.5	-11.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.5	2	1
E343	Prime Movers	33.1	31.1	-10.5	-11.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.5	2	1
E344	Generators	33.1	31.1	-10.5	-11.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.5	2	1
E345	Accessory Electric Equipment	33.1	31.1	-10.5	-11.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.5	2	1
E346	Miscellaneous Power Plant Equipment	33.1	31.1	-10.5	-11.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.5	2	1
<b>Blue Lake Units 1 thru 4</b>											
E341	Structures & Improvements	22.4	20.4	-12.7	-12.0	EG002-D-19-161	-2.0	EG002-D-19-743	0.7	1	1
E342	Fuel Holders, Producers & Accessories	3.0	1.0	-30.6	-30.6	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	3	1
E343	Prime Movers	3.0	1.0	-30.6	-30.6	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	3	1
E344	Generators	3.0	1.0	-30.6	-30.6	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	3	1
E345	Accessory Electric Equipment	3.0	1.0	-30.6	-30.6	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	3	1
E346	Miscellaneous Power Plant Equipment	3.0	1.0	-30.6	-30.6	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	3	1
<b>Blue Lake Units 7 &amp; 8</b>											
E341	Structures & Improvements	22.4	20.4	-12.7	-12.0	EG002-D-19-161	-2.0	EG002-D-19-743	0.7	1	1
E342	Fuel Holders, Producers & Accessories	22.4	20.4	-12.7	-12.0	EG002-D-19-161	-2.0	EG002-D-19-743	0.7	1	1
E343	Prime Movers	22.4	20.4	-12.7	-12.0	EG002-D-19-161	-2.0	EG002-D-19-743	0.7	2	1
E344	Generators	22.4	20.4	-12.7	-12.0	EG002-D-19-161	-2.0	EG002-D-19-743	0.7	1	1
E345	Accessory Electric Equipment	22.4	20.4	-12.7	-12.0	EG002-D-19-161	-2.0	EG002-D-19-743	0.7	1	1
E346	Miscellaneous Power Plant Equipment	22.4	20.4	-12.7	-12.0	EG002-D-19-161	-2.0	EG002-D-19-743	0.7	1	1
<b>Border Winds</b>											
E340.1	Wind Rights	18.0	25.0	0.0	0.0	EG002-D-15-46	7.0	EG002-D-19-743	0.0	1	0
E341	Structures & Improvements	18.0	25.0	-9.5	-10.1	EG002-D-15-46	7.0	EG002-D-19-743	-0.6	1	1
E342	Fuel Holders, Producers & Accessories	18.0	25.0	-9.5	-10.1	EG002-D-15-46	7.0	EG002-D-19-743	-0.6	1	1
E343	Prime Movers	18.0	25.0	-9.5	-10.1	EG002-D-18-162	7.0	EG002-D-19-743	-0.6	1	1
E344	Generators	18.0	25.0	-9.5	-10.1	EG002-D-15-46	7.0	EG002-D-19-743	-0.6	1	1
E345	Accessory Electric Equipment	18.0	25.0	-9.5	-10.1	EG002-D-15-46	7.0	EG002-D-19-743	-0.6	1	1
E346	Miscellaneous Power Plant Equipment	18.0	25.0	-9.5	-10.1	EG002-D-15-46	7.0	EG002-D-19-743	-0.6	1	1
<b>Community Wind North</b>											
E340.1	Wind Rights	23.0	21.0	0.0	0.0	EG002-D-19-743	-2.0	EG002-D-19-743	0.0	2	0
E341	Structures & Improvements	23.0	21.0	-10.5	-11.8	EG002-D-19-743	-2.0	EG002-D-19-743	-1.3	2	1
E342	Fuel Holders, Producers & Accessories	23.0	21.0	-10.5	-11.8	EG002-D-19-743	-2.0	EG002-D-19-743	-1.3	2	1
E343	Prime Movers	23.0	21.0	-10.5	-11.8	EG002-D-19-743	-2.0	EG002-D-19-743	-1.3	2	1
E344	Generators	23.0	21.0	-10.5	-11.8	EG002-D-19-743	-2.0	EG002-D-19-743	-1.3	2	1
E345	Accessory Electric Equipment	23.0	21.0	-10.5	-11.8	EG002-D-19-743	-2.0	EG002-D-19-743	-1.3	2	1
E346	Miscellaneous Power Plant Equipment	23.0	21.0	-10.5	-11.8	EG002-D-19-743	-2.0	EG002-D-19-743	-1.3	2	1

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Account	Description	Current Approved Remaining Life 01/01/23 (Yrs)	Proposed Remaining Life 01/01/25 (Yrs)	Current Approved Net Salvage 01/01/23 (%)	Proposed Net Salvage 01/01/25 (%)	Latest Life Change (Docket #)	Life Change (Yrs)	Latest Net Salvage Change (Docket #)	Net Salvage Change (%)	Number of Life Changes in the Last Five Years	Number of Net Salvage Changes in the Last Five Years
<b>Courtenay Wind</b>											
E340.1	Wind Rights	28.9	26.9	0.0	0.0	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	2	0
E341	Structures & Improvements	28.9	26.9	-10.4	-10.8	EG002-D-22-299	-2.0	EG002-D-19-743	-0.4	2	1
E342	Fuel Holders, Producers & Accessories	28.9	26.9	-10.4	-10.8	EG002-D-22-299	-2.0	EG002-D-19-743	-0.4	2	1
E343	Prime Movers	28.9	26.9	-10.4	-10.8	EG002-D-22-299	-2.0	EG002-D-19-743	-0.4	2	1
E344	Generators	28.9	26.9	-10.4	-10.8	EG002-D-22-299	-2.0	EG002-D-19-743	-0.4	2	1
E345	Accessory Electric Equipment	28.9	26.9	-10.4	-10.8	EG002-D-22-299	-2.0	EG002-D-19-743	-0.4	2	1
E346	Miscellaneous Power Plant Equipment	28.9	26.9	-10.4	-10.8	EG002-D-22-299	-2.0	EG002-D-19-743	-0.4	2	1
<b>Crowned Ridge Wind</b>											
E340.1	Wind Rights	33.0	31.0	0.0	0.0	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	2	0
E341	Structures & Improvements	33.0	31.0	-10.5	-11.5	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
E342	Fuel Holders, Producers & Accessories	33.0	31.0	-10.5	-11.5	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
E343	Prime Movers	33.0	31.0	-10.5	-11.5	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
E344	Generators	33.0	31.0	-10.5	-11.5	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
E345	Accessory Electric Equipment	33.0	31.0	-10.5	-11.5	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
E346	Miscellaneous Power Plant Equipment	33.0	31.0	-10.5	-11.5	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
<b>Dakota Range Wind (2)</b>											
E340.1	Wind Rights	34.1	32.1	0.0	0.0	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	2	0
E341	Structures & Improvements	34.1	32.1	-10.5	-8.0	EG002-D-22-299	-2.0	EG002-D-19-743	2.5	2	1
E342	Fuel Holders, Producers & Accessories	34.1	32.1	-10.5	-8.0	EG002-D-22-299	-2.0	EG002-D-19-743	2.5	2	1
E343	Prime Movers	34.1	32.1	-10.5	-8.0	EG002-D-22-299	-2.0	EG002-D-19-743	2.5	2	1
E344	Generators	34.1	32.1	-10.5	-8.0	EG002-D-22-299	-2.0	EG002-D-19-743	2.5	2	1
E345	Accessory Electric Equipment	34.1	32.1	-10.5	-8.0	EG002-D-22-299	-2.0	EG002-D-19-743	2.5	2	1
E346	Miscellaneous Power Plant Equipment	34.1	32.1	-10.5	-8.0	EG002-D-22-299	-2.0	EG002-D-19-743	2.5	2	1
<b>Foxtail Wind</b>											
E340.1	Wind Rights	32.0	30.0	0.0	0.0	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	2	0
E341	Structures & Improvements	32.0	30.0	-9.1	-10.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
E342	Fuel Holders, Producers & Accessories	32.0	30.0	-9.1	-10.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
E343	Prime Movers	32.0	30.0	-9.1	-10.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
E344	Generators	32.0	30.0	-9.1	-10.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
E345	Accessory Electric Equipment	32.0	30.0	-9.1	-10.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
E346	Miscellaneous Power Plant Equipment	32.0	30.0	-9.1	-10.0	EG002-D-22-299	-2.0	EG002-D-19-743	-0.9	2	1
<b>Freeborn Wind</b>											
E340.1	Wind Rights	33.4	31.4	0.0	0.0	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	2	0
E341	Structures & Improvements	33.4	31.4	-10.5	-12.3	EG002-D-22-299	-2.0	EG002-D-19-743	-1.8	2	1
E342	Fuel Holders, Producers & Accessories	33.4	31.4	-10.5	-12.3	EG002-D-22-299	-2.0	EG002-D-19-743	-1.8	2	1
E343	Prime Movers	33.4	31.4	-10.5	-12.3	EG002-D-22-299	-2.0	EG002-D-19-743	-1.8	2	1
E344	Generators	33.4	31.4	-10.5	-12.3	EG002-D-22-299	-2.0	EG002-D-19-743	-1.8	2	1
E345	Accessory Electric Equipment	33.4	31.4	-10.5	-12.3	EG002-D-22-299	-2.0	EG002-D-19-743	-1.8	2	1
E346	Miscellaneous Power Plant Equipment	33.4	31.4	-10.5	-12.3	EG002-D-22-299	-2.0	EG002-D-19-743	-1.8	2	1

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<b>Grand Meadow Wind</b>											
E340.1	Wind Rights	20.9	18.9	0.0	0.0	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	1	0
E341	Structures & Improvements	20.9	18.9	-12.5	-19.8	EG002-D-22-299	-2.0	EG002-D-19-743	-7.3	1	1
E342	Fuel Holders, Producers & Accessories	20.9	18.9	-12.5	-19.8	EG002-D-22-299	-2.0	EG002-D-19-743	-7.3	1	1
E343	Prime Movers	20.9	18.9	-12.5	-19.8	EG002-D-22-299	-2.0	EG002-D-19-743	-7.3	2	1
E344	Generators	20.9	18.9	-12.5	-19.8	EG002-D-22-299	-2.0	EG002-D-19-743	-7.3	1	1
E345	Accessory Electric Equipment	20.9	18.9	-12.5	-19.8	EG002-D-22-299	-2.0	EG002-D-19-743	-7.3	1	1
E346	Miscellaneous Power Plant Equipment	20.9	18.9	-12.5	-19.8	EG002-D-22-299	-2.0	EG002-D-19-743	-7.3	1	1
<b>High Bridge</b>											
E341	Structures & Improvements	25.4	23.4	-4.3	-4.9	E002-GR-10-971	-2.0	EG002-D-19-743	-0.6	0	1
E342	Fuel Holders, Producers & Accessories	25.4	23.4	-4.3	-4.9	E002-GR-10-971	-2.0	EG002-D-19-743	-0.6	0	1
E343	Prime Movers	25.4	23.4	-4.3	-4.9	EG002-D-18-162	-2.0	EG002-D-19-743	-0.6	1	1
E344	Generators	25.4	23.4	-4.3	-4.9	E002-GR-10-971	-2.0	EG002-D-19-743	-0.6	0	1
E345	Accessory Electric Equipment	25.4	23.4	-4.3	-4.9	E002-GR-10-971	-2.0	EG002-D-19-743	-0.6	0	1
E346	Miscellaneous Power Plant Equipment	25.4	23.4	-4.3	-4.9	E002-GR-10-971	-2.0	EG002-D-19-743	-0.6	0	1
<b>Inver Hills</b>											
E341	Structures & Improvements	4.0	5.0	-19.4	-20.6	EG002-D-10-173	1.0	EG002-D-19-743	-1.2	0	1
E342	Fuel Holders, Producers & Accessories	4.0	5.0	-19.4	-20.6	EG002-D-10-173	1.0	EG002-D-19-743	-1.2	0	1
E343	Prime Movers	4.0	5.0	-19.4	-20.6	EG002-D-18-162	1.0	EG002-D-19-743	-1.2	1	1
E344	Generators	4.0	5.0	-19.4	-20.6	EG002-D-10-173	1.0	EG002-D-19-743	-1.2	0	1
E345	Accessory Electric Equipment	4.0	5.0	-19.4	-20.6	EG002-D-10-173	1.0	EG002-D-19-743	-1.2	0	1
E346	Miscellaneous Power Plant Equipment	4.0	5.0	-19.4	-20.6	EG002-D-10-173	1.0	EG002-D-19-743	-1.2	0	1
<b>Jeffers Wind</b>											
E340.1	Wind Rights	23.0	21.0	0.0	0.0	EG002-D-19-743	-2.0	EG002-D-19-743	0.0	1	0
E341	Structures & Improvements	23.0	21.0	-10.5	-15.3	EG002-D-19-743	-2.0	EG002-D-19-743	-4.8	1	1
E342	Fuel Holders, Producers & Accessories	23.0	21.0	-10.5	-15.3	EG002-D-19-743	-2.0	EG002-D-19-743	-4.8	1	1
E343	Prime Movers	23.0	21.0	-10.5	-15.3	EG002-D-19-743	-2.0	EG002-D-19-743	-4.8	1	1
E344	Generators	23.0	21.0	-10.5	-15.3	EG002-D-19-743	-2.0	EG002-D-19-743	-4.8	1	1
E345	Accessory Electric Equipment	23.0	21.0	-10.5	-15.3	EG002-D-19-743	-2.0	EG002-D-19-743	-4.8	1	1
E346	Miscellaneous Power Plant Equipment	23.0	21.0	-10.5	-15.3	EG002-D-19-743	-2.0	EG002-D-19-743	-4.8	1	1
<b>Lake Benton II Wind</b>											
E340.1	Wind Rights	31.9	29.9	0.0	0.0	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	2	0
E341	Structures & Improvements	31.9	29.9	-10.8	-9.7	EG002-D-22-299	-2.0	EG002-D-19-743	1.1	2	1
E342	Fuel Holders, Producers & Accessories	31.9	29.9	-10.8	-9.7	EG002-D-22-299	-2.0	EG002-D-19-743	1.1	2	1
E343	Prime Movers	31.9	29.9	-10.8	-9.7	EG002-D-22-299	-2.0	EG002-D-19-743	1.1	2	1
E344	Generators	31.9	29.9	-10.8	-9.7	EG002-D-22-299	-2.0	EG002-D-19-743	1.1	2	1
E345	Accessory Electric Equipment	31.9	29.9	-10.8	-9.7	EG002-D-22-299	-2.0	EG002-D-19-743	1.1	2	1
E346	Miscellaneous Power Plant Equipment	31.9	29.9	-10.8	-9.7	EG002-D-22-299	-2.0	EG002-D-19-743	1.1	2	1

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<b>Mower Wind</b>											
E340.1	Wind Rights	23.3	21.3	0.0	0.0	EG002-D-19-743	-2.0	EG002-D-19-743	0.0	1	0
E341	Structures & Improvements	23.3	21.3	-10.5	-7.4	EG002-D-19-743	-2.0	EG002-D-19-743	3.1	1	1
E342	Fuel Holders, Producers & Accessories	23.3	21.3	-10.5	-7.4	EG002-D-19-743	-2.0	EG002-D-19-743	3.1	1	1
E343	Prime Movers	23.3	21.3	-10.5	-7.4	EG002-D-19-743	-2.0	EG002-D-19-743	3.1	1	1
E344	Generators	23.3	21.3	-10.5	-7.4	EG002-D-19-743	-2.0	EG002-D-19-743	3.1	1	1
E345	Accessory Electric Equipment	23.3	21.3	-10.5	-7.4	EG002-D-19-743	-2.0	EG002-D-19-743	3.1	1	1
E346	Miscellaneous Power Plant Equipment	23.3	21.3	-10.5	-7.4	EG002-D-19-743	-2.0	EG002-D-19-743	3.1	1	1
<b>Nobles Wind</b>											
E340.1	Wind Rights	22.9	20.9	0.0	0.0	EG002-D-22-299	-2.0	EG002-D-19-743	0.0	1	0
E341	Structures & Improvements	22.9	20.9	-8.5	-16.6	EG002-D-22-299	-2.0	EG002-D-19-743	-8.1	1	1
E342	Fuel Holders, Producers & Accessories	22.9	20.9	-8.5	-16.6	EG002-D-22-299	-2.0	EG002-D-19-743	-8.1	1	1
E343	Prime Movers	22.9	20.9	-8.5	-16.6	EG002-D-22-299	-2.0	EG002-D-19-743	-8.1	2	1
E344	Generators	22.9	20.9	-8.5	-16.6	EG002-D-22-299	-2.0	EG002-D-19-743	-8.1	1	1
E345	Accessory Electric Equipment	22.9	20.9	-8.5	-16.6	EG002-D-22-299	-2.0	EG002-D-19-743	-8.1	1	1
E346	Miscellaneous Power Plant Equipment	22.9	20.9	-8.5	-16.6	EG002-D-22-299	-2.0	EG002-D-19-743	-8.1	1	1
<b>Northern Wind</b>											
E340.1	Wind Rights	35.0	33.1	0.0	0.0	EG002-D-22-299	-1.9	EG002-D-22-299	0.0	1	0
E341	Structures & Improvements	35.0	33.1	-10.5	-8.2	EG002-D-22-299	-1.9	EG002-D-22-299	2.3	1	1
E342	Fuel Holders, Producers & Accessories	35.0	33.1	-10.5	-8.2	EG002-D-22-299	-1.9	EG002-D-22-299	2.3	1	1
E343	Prime Movers	35.0	33.1	-10.5	-8.2	EG002-D-22-299	-1.9	EG002-D-22-299	2.3	1	1
E344	Generators	35.0	33.1	-10.5	-8.2	EG002-D-22-299	-1.9	EG002-D-22-299	2.3	1	1
E345	Accessory Electric Equipment	35.0	33.1	-10.5	-8.2	EG002-D-22-299	-1.9	EG002-D-22-299	2.3	1	1
E346	Miscellaneous Power Plant Equipment	35.0	33.1	-10.5	-8.2	EG002-D-22-299	-1.9	EG002-D-22-299	2.3	1	1
<b>Pleasant Valley Wind</b>											
E340.1	Wind Rights	18.0	25.0	0.0	0.0	EG002-D-15-46	7.0	EG002-D-19-743	0.0	0	0
E341	Structures & Improvements	18.0	25.0	-11.7	-12.4	EG002-D-15-46	7.0	EG002-D-19-743	-0.7	0	1
E342	Fuel Holders, Producers & Accessories	18.0	25.0	-11.7	-12.4	EG002-D-15-46	7.0	EG002-D-19-743	-0.7	0	1
E343	Prime Movers	18.0	25.0	-11.7	-12.4	EG002-D-18-162	7.0	EG002-D-19-743	-0.7	1	1
E344	Generators	18.0	25.0	-11.7	-12.4	EG002-D-15-46	7.0	EG002-D-19-743	-0.7	0	1
E345	Accessory Electric Equipment	18.0	25.0	-11.7	-12.4	EG002-D-15-46	7.0	EG002-D-19-743	-0.7	0	1
E346	Miscellaneous Power Plant Equipment	18.0	25.0	-11.7	-12.4	EG002-D-15-46	7.0	EG002-D-19-743	-0.7	0	1
<b>Riverside</b>											
E341	Structures & Improvements	26.2	24.2	-13.2	-15.1	E002-GR-10-971	-2.0	EG002-D-19-743	-1.9	0	1
E342	Fuel Holders, Producers & Accessories	26.2	24.2	-13.2	-15.1	E002-GR-10-971	-2.0	EG002-D-19-743	-1.9	0	1
E343	Prime Movers	26.2	24.2	-13.2	-15.1	EG002-D-18-162	-2.0	EG002-D-19-743	-1.9	1	1
E344	Generators	26.2	24.2	-13.2	-15.1	E002-GR-10-971	-2.0	EG002-D-19-743	-1.9	0	1
E345	Accessory Electric Equipment	26.2	24.2	-13.2	-15.1	E002-GR-10-971	-2.0	EG002-D-19-743	-1.9	0	1
E346	Miscellaneous Power Plant Equipment	26.2	24.2	-13.2	-15.1	E002-GR-10-971	-2.0	EG002-D-19-743	-1.9	0	1

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<b>Rock Actna</b>											
E340.1	Wind Rights	0.0	0.0	0.0	0.0	EG002-D-22-299	0.0	EG002-D-22-299	0.0	1	0
E341	Structures & Improvements	26.2	33.0	-10.5	-11.3	EG002-D-22-299	6.8	EG002-D-22-299	-0.8	1	1
E342	Fuel Holders, Producers & Accessories	26.2	33.0	-10.5	-11.3	EG002-D-22-299	6.8	EG002-D-22-299	-0.8	1	1
E343	Prime Movers	26.2	33.0	-10.5	-11.3	EG002-D-22-299	6.8	EG002-D-22-299	-0.8	1	1
E344	Generators	26.2	33.0	-10.5	-11.3	EG002-D-22-299	6.8	EG002-D-22-299	-0.8	1	1
E345	Accessory Electric Equipment	26.2	33.0	-10.5	-11.3	EG002-D-22-299	6.8	EG002-D-22-299	-0.8	1	1
E346	Miscellaneous Power Plant Equipment	26.2	33.0	-10.5	-11.3	EG002-D-22-299	6.8	EG002-D-22-299	-0.8	1	1
<b>Sherco Solar (Unit 1)</b>											
E341	Structures & Improvements	0.0	34.8	0.0	1.9	N/A	34.8	N/A	1.9	0	0
E342	Fuel Holders, Producers & Accessories	0.0	34.8	0.0	1.9	N/A	34.8	N/A	1.9	0	0
E343	Prime Movers	0.0	34.8	0.0	1.9	N/A	34.8	N/A	1.9	0	0
E344	Generators	0.0	34.8	0.0	1.9	N/A	34.8	N/A	1.9	0	0
E345	Accessory Electric Equipment	0.0	34.8	0.0	1.9	N/A	34.8	N/A	1.9	0	0
E346	Miscellaneous Power Plant Equipment	0.0	34.8	0.0	1.9	N/A	34.8	N/A	1.9	0	0
<b>Sherco Solar (Unit 2)</b>											
E341	Structures & Improvements	0.0	35.8	0.0	2.0	N/A	35.8	N/A	2.0	0	0
E342	Fuel Holders, Producers & Accessories	0.0	35.8	0.0	2.0	N/A	35.8	N/A	2.0	0	0
E343	Prime Movers	0.0	35.8	0.0	2.0	N/A	35.8	N/A	2.0	0	0
E344	Generators	0.0	35.8	0.0	2.0	N/A	35.8	N/A	2.0	0	0
E345	Accessory Electric Equipment	0.0	35.8	0.0	2.0	N/A	35.8	N/A	2.0	0	0
E346	Miscellaneous Power Plant Equipment	0.0	35.8	0.0	2.0	N/A	35.8	N/A	2.0	0	0
<b>Blue Lake Units 9-11</b>											
E341	Structures & Improvements	0.0	40.0	0.0	-10.0	N/A	-	N/A	-10.0	0	0
E342	Fuel Holders, Producers & Accessories	0.0	40.0	0.0	-10.0	N/A	-	N/A	-10.0	0	0
E343	Prime Movers	0.0	40.0	0.0	-10.0	N/A	-	N/A	-10.0	0	0
E344	Generators	0.0	40.0	0.0	-10.0	N/A	-	N/A	-10.0	0	0
E345	Accessory Electric Equipment	0.0	40.0	0.0	-10.0	N/A	-	N/A	-10.0	0	0
E346	Miscellaneous Power Plant Equipment	0.0	40.0	0.0	-10.0	N/A	-	N/A	-10.0	0	0
<b>Wind-to-Battery System</b>											
E348.1	Fuel Holders, Producers & Accessories	0.0	0.0	0.0	-29.1	EG002-D-19-743	0.0	EG002-D-19-743	-29.1	1	1
<b>Sherco Battery Storage</b>											
E348.1	Fuel Holders, Producers & Accessories	0.0	-	0.0	-18.4	N/A	0.0	N/A	-18.4	1	0

Northern States Power Company  
 Historical Comparison of Changes to Remaining Lives

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 Gas Production

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Revisions are shaded yellow

Account	Description	Current Approved Remaining Life 01/01/23 (Yrs)	Proposed Remaining Life 01/01/25 (Yrs)	Current Approved Net Salvage 01/01/23 (%)	Proposed Net Salvage 01/01/25 (%)	Latest Life Change (Docket #)	Life Change (Yrs)	Latest Net Salvage Change (Docket #)	Net Salvage Change (%)	Number of Life Changes in the Last Five Years	Number of Net Salvage Changes in the Last Five Years
<b>Maplewood</b>											
G305	Structures & Improvements	19.0	17.0	-87.7	-17.7	EG002-D-22-299	-2.0	EG002-D-19-743	70.0	1	1
G311	LP Gas Equipment	19.0	17.0	-87.7	-17.7	EG002-D-22-299	-2.0	EG002-D-19-743	70.0	1	1
G320	Other Equipment	19.0	17.0	-87.7	-17.7	EG002-D-22-299	-2.0	EG002-D-19-743	70.0	1	1
<b>Sibley</b>											
G305	Structures & Improvements	19.0	17.0	-41.1	-16.2	EG002-D-22-299	-2.0	EG002-D-19-743	24.9	1	1
G311	LP Gas Equipment	19.0	17.0	-41.1	-16.2	EG002-D-22-299	-2.0	EG002-D-19-743	24.9	1	1
G320	Other Equipment	19.0	17.0	-41.1	-16.2	EG002-D-22-299	-2.0	EG002-D-19-743	24.9	1	1

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 Historical Comparison of Changes to Remaining Lives  
 Gas Storage

Docket No. E,G002/D-23-356  
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 Revised Attachment G - Page 11 of 11

Revisions are shaded yellow

Account	Description	Current Approved Remaining Life 01/01/23 (Yrs)	Proposed Remaining Life 01/01/25 (Yrs)	Current Approved Net Salvage 01/01/23 (%)	Proposed Net Salvage 01/01/25 (%)	Latest Life Change (Docket #)	Life Change (Yrs)	Latest Net Salvage Change (Docket #)	Net Salvage Change (%)	Number of Life Changes in the Last Five Years	Number of Net Salvage Changes in the Last Five Years
<b>Wescott</b>											
G361	Structures & Improvements	19.0	17.0	-19.6	-13.4	EG002-D-22-299	-2.0	EG002-D-19-743	6.2	1	1
G362	Gas Holders	19.0	17.0	-19.6	-13.4	EG002-D-22-299	-2.0	EG002-D-19-743	6.2	1	1
G363	Purification Equipment	19.0	17.0	-19.6	-13.4	EG002-D-22-299	-2.0	EG002-D-19-743	6.2	1	1
G363.1	Liquefaction Equipment	19.0	17.0	-19.6	-13.4	EG002-D-22-299	-2.0	EG002-D-19-743	6.2	1	1
G363.2	Vaporizing Equipment	19.0	17.0	-19.6	-13.4	EG002-D-22-299	-2.0	EG002-D-19-743	6.2	1	1
G363.3	Compressor Equipment	19.0	17.0	-19.6	-13.4	EG002-D-22-299	-2.0	EG002-D-19-743	6.2	1	1
G363.4	Measuring & Regulating Equipment	19.0	17.0	-19.6	-13.4	EG002-D-22-299	-2.0	EG002-D-19-743	6.2	1	1
G363.5	Other Equipment	19.0	17.0	-19.6	-13.4	EG002-D-22-299	-2.0	EG002-D-19-743	6.2	1	1

**PUBLIC DOCUMENT  
NOT-PUBLIC DATA EXCISED**

- Not-Public Document – Not For Public Disclosure
- Public Document – Not-Public Data Has Been Excised
- Public Document

Xcel Energy Information Request No. 18  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Sherco Battery Storage remaining life  
Reference(s): 9/9/2024 Petition at 13-14

The Department understands that the proposed 10-year remaining life for the Sherco Battery Storage facility is based on information provided by Form Energy, provided in the Company’s Petition in Docket No. E002/M-23-119 (see Petition at 10 and Attachment A at 24).

However, in Xcel Energy’s most recent integrated resource plan, the Company assumed a 15-year life for generic long-duration battery storage systems. The assumed costs for that generic resource were based on a whitepaper produced by GRE and Form Energy, the developer of the Sherco Battery Storage facility.

- (a) Is the 15-year life for generic long-duration battery storage systems in the IRP also based on the GRE/Form Energy whitepaper?
- (b) Please explain why the assumed 15-year life from the IRP is not appropriate for the Sherco Battery Project.

Response:

- a) We provide the Form Energy white paper as Attachment A to this response. Please see page 4, which outlines and discusses cost and performance metrics that Form maintains are achievable over the next decade through Form’s investments in research and development, manufacturing automation and scale, and performance improvements of their iron-air technology. The 15-20 year life is for the enclosure at scale. The project we have underway with Form is a demonstration project.
- b) The Sherco Battery system by Form Energy is an early version of Form Energy’s Multiday Storage product that the Company is deploying as a demonstration project. **[PROTECTED DATA BEGINS**

**PUBLIC DOCUMENT  
NOT-PUBLIC DATA EXCISED**

**PROTECTED DATA ENDS].** Regardless, there is potential that the battery system could continue to operate and meet performance requirements beyond the 10-year term. A life extension may be possible if performance of the pilot warrants and Form Energy could continue to support the pilot product version in terms of maintenance, parts, and contractually. Form Energy’s ultimate goal is for future products to have a 20-year usable life. Form intends to use the performance data from this pilot, as well as other data they obtain, support updates of the product to achieve this goal.

Portions of this response is marked “Not-Public” as it contains information the Company considers to be trade secret data as defined by Minn. Stat. § 13.37(1)(b). The information contains confidential data that derives an independent economic value from not being generally known or readily ascertainable by others who could obtain economic value or a financial advantage from its disclosure or use. The Company takes efforts to protect this information from public disclosure. Thus, Xcel Energy excises this information as protected data pursuant to Minn. Rule 7829.0500.

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Preparer: Andrew Akervik  
Title: Consultant  
Department: Capital Asset Accounting  
Telephone: 715-737-2407  
Date: July 2, 2025



Energy Storage For a Better World

# Recommended Approaches for Modeling Utility Electric Grids with Multi-Day Energy Storage

For use in resource planning studies

## About Form Energy

Form Energy, Inc. ("Form") is a U.S. energy storage technology and manufacturing company that is commercializing a rechargeable, iron-air battery capable of continuously discharging electricity for 100 hours at a system cost less than 1/10th the cost of lithium-ion battery technology. Form's multi-day battery will enable a clean electric grid that is reliable and cost-effective year-round, even in the face of multi-day weather events. With over 400 employees, Form has offices in Somerville, MA; the San Francisco Bay Area; and the Greater Pittsburgh area.

Form has raised over \$820M of venture capital to date and aims to deploy GWs of energy storage by 2030. Form's team is actively pursuing partners for projects to come online in 2025 and 2026. Form's first full-scale battery manufacturing facility, sited in Weirton, West Virginia, will come online in 2024 ramping to an expected annual capacity of up to 500 MW / 50 GWh. With a target operational date in 2024, Form's first commercial project will be deployed in Minnesota with our utility partner Great River Energy, and this demonstration will be followed by a series of additional projects in 2025, including two deployments with Xcel Energy.

## Recommended Approaches Overview

This document highlights modeling techniques that are critical for accurately capturing the dynamics of multi-day energy storage technologies (MDS) as they operate in utility electric systems, particularly as they move toward higher penetrations of renewable energy. These recommendations suggest that capacity optimization modeling should:

- Use a chronology that includes all 8,760 hours of the year;
- Include scenarios that capture periods of real grid stress, such as multi-day lulls in renewable energy generation or periods of high commodity prices;
- Develop weather-correlated load and renewable generation profiles; and
- Model multiple weather years covering a diversity of weather conditions, including periods of extreme weather.

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Further, this document describes Form's recommended technical specifications for modeling multi-day energy storage technologies in utility capacity planning, production cost, and valuation exercises. These recommendations extend to all classes of storage that can cycle over multiple days, including, but not limited to, iron-air batteries and hydrogen storage.

### Technological specifications

Various long-duration storage technologies are still in early stages of development. These early generation technologies are subject to substantial cost uncertainty, presenting a challenge for resource planners seeking to quantify the need for and value of energy storage technologies with different durations. We recommend using one of two separate approaches, reflecting that some organizations prefer to model broad resources classes in a technology-neutral manner (Option 1), and other organizations prefer to model technology-specific parameters (Option 2).

#### **Option 1: Model a >24 hour duration storage archetype as "multi-day energy storage"**

For organizations that prefer to model broad long-duration and multi-day energy storage resource classes, Form recommends that resource planning studies instead group all technology types with a dispatch duration at rated capacity of greater than 24 hours as part of a "multi-day storage" (MDS) asset class and include this asset class as a resource in applicable analyses.<sup>1</sup>

The Long Duration Energy Storage Council, in collaboration with McKinsey & Company, authored a report on the role of LDES technologies in electric power systems.<sup>2</sup> As part of this report, the LDES Council surveyed member companies for cost and performance data relating to their technologies. Data were grouped into two archetypes: those that are 8-24 hours in duration and those with >24 hours of duration.<sup>3</sup> Cost data from this benchmarking effort for these LDES and MDS resource archetypes are shown in Figure 1 below. Form participated in this benchmarking effort and provided data for our 100-hour iron-air battery.

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<sup>1</sup> Grouping individual technologies into "asset classes" by duration may help to limit the problem size and speed model simulation times.

<sup>2</sup> [LDES Council. November 2021. \*Net-zero power: Long duration energy storage for a renewable grid.\*](#)

<sup>3</sup> Some jurisdictions (e.g. the commonwealth of Massachusetts) have defined LDES as having a minimum 10-hr duration. Form recommends that policy makers define "long-duration energy storage" as resources that can discharge at rated capacity for at least 8 or 10 hours, and up to 24-hours, in contrast to the "multi-day storage" class defined above.

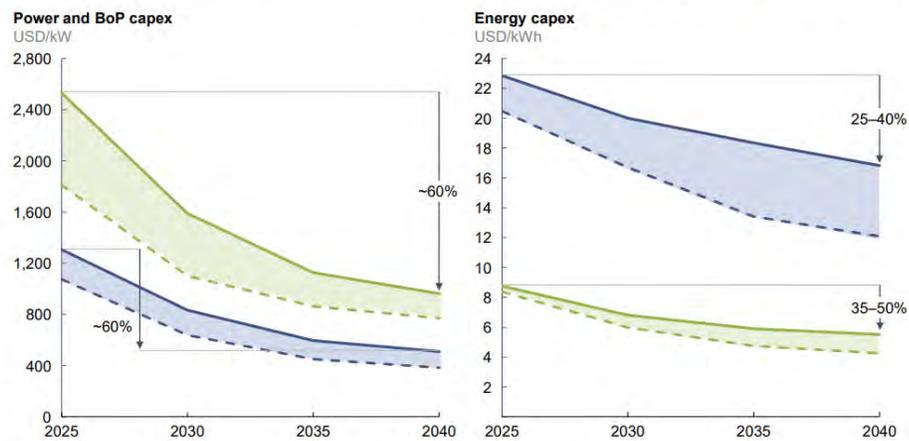
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Figure 1. LDES Council’s cost data representing a 24+ hour duration asset class

Exhibit 22

LDES power and energy capex trajectories

— Central (conservative learning rate) - - Progressive (ambitious learning rate) ■ 8–24 hour archetype ■ 24+ hour archetype



Source: LDES Council member technology benchmarking

Each technology type that falls into the MDS archetype will have different costs for power and for energy; thus Form recommends that data for the MDS archetype, shown above in Figure 1, are used to represent the multi-day storage asset class as a whole in resource planning studies rather than attempting to adjust these costs to represent individual technology types based on duration. For example, it would not be reasonable to linearly scale the energy component of the capex costs for the MDS storage archetype to estimate the costs of a 100-hour battery.

**Option 2: Technology-specific parameters for iron-air batteries of 100-hour duration**

Form is commercializing a rechargeable iron-air battery capable of continuously discharging electricity for 100 hours at system costs competitive with legacy power plants. Made from iron, one of the most abundant materials on Earth, this front-of-the-meter battery will enable a cost-effective, 100% renewable grid.

The active components of Form’s iron-air battery are some of the safest, cheapest, and most abundant materials on the planet – low-cost iron, water, and air. The basic principle of operation is reversible rusting: while discharging, the battery breathes in oxygen from the air and converts iron metal to rust; while charging, the application of an electrical current converts the rust back to iron and the battery breathes out oxygen. Each individual battery module is about the size of a

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side-by-side washer/dryer set. These battery modules are grouped together with auxiliary systems in weatherized, factory-assembled enclosures. Hundreds of these modules make up modular, megawatt-scale power blocks.

In Table 1 below, we present a range of cost and performance characteristics that are achievable by 2030 at the gigawatt manufacturing scale.<sup>4</sup> These cost and performance targets are achievable through Form’s investments in optimizing the full iron-air battery production supply chain, from iron processing to cell chemistry and design to final enclosure assembly. Like all new clean energy technologies, the costs for Form’s first projects will be higher than what is stated below. The cost and performance metrics reflected in Table 1 are achievable over the next decade through Form’s investments in research and development, manufacturing automation and scale, and performance improvements of our iron-air technology. These cost and performance parameters do not require fundamental technological breakthroughs and are fully within Form’s control.

**Table 1. Iron-air cost and performance at gigawatt manufacturing scale (~2030)**

Discharge duration at full rated capacity	100 hours
All-in installed capital cost (\$/kWh)*	\$15 - \$20
Fixed O&M (\$/kW-year, Yr 1 dollars)	\$15 - \$20
Round trip efficiency**	40 - 45%
Charge efficiency	69% - 73%
Discharge efficiency	58% - 62%
Annual discharge throughput limit	1,500-2,000 equivalent hours at full power
Enclosure lifetime	15 - 20 yrs
Power Degradation	0%/yr
Energy Capacity Degradation	2%/yr
Energy Efficiency Degradation	0.5%/yr

\* Landed costs of the AC modular power block at ~100 MW scale, inclusive of EPC, developer costs, and grid interconnection costs

\*\* AC-AC round trip efficiency, full charge and full discharge at rated power, inclusive of losses from power conversion and auxiliary loads.

For modeling beyond 2030, Form anticipates further declines in capital costs for iron-air, with learning rates in line with other similar technologies. While future Form products may feature shorter or longer durations, the specifications shown above are specific to Form’s 100-hour iron-air battery.

<sup>4</sup> Assumptions included are for planning purposes only and do not constitute a firm quote.

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**U.S. Investment Tax Credit Assumptions**

Form’s multi-day storage projects are expected to qualify for the storage investment tax credit (ITC) under the Inflation Reduction Act (IRA) passed in 2022. The investment tax credit (ITC) can be up to 50% of the project capital cost, depending on the specific project. This benefit is **not** included in the pricing shown in Table 1 and would decrease the ultimate cost to the project owner. This ITC begins stepping down in 2032. Table 2 below outlines the factors determining ITC assumptions for a given project.<sup>5</sup>

**Table 2. Standalone storage project ITC calculation**

Base	6%
Bonus: Meets labor requirements	24%
Bonus: Meets domestic content requirements <i>(2% bonus is available for projects that don't meet labor requirements)</i>	10%
Bonus: Sited in "Energy Community" <i>(2% bonus is available for projects that don't meet labor requirements)</i>	10%
<b>Total Possible</b>	<b>50%</b>

**Form Deployment Capacity 2026-2030**

Form’s first full-scale manufacturing facility, sited in Weirton, WV, will come online in 2024 to begin manufacturing for broad commercialization. Once fully ramped, the facility is targeting an annual manufacturing capacity of 500 MW / 50 GWh. Following Form’s commercial demonstration projects in 2024 and 2025, Form plans to deploy projects 10-50+ MW in size with commercial operation dates starting in 2026.

<sup>5</sup> Implementation of the Inflation Reduction Act is still under review by the US Treasury Department. Assumptions included are for planning purposes only and do not constitute a representation or warrant of Form Energy technology’s eligibility.

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## Approaches to accurately model multi-day energy storage

**Recommendation: Capacity optimization modeling should use a chronology that includes all 8,760 hours of the year, rather than a “typical day” or “typical week” methodology. Modeling 8,760 hours captures the dynamics of long-duration and multi-day storage state-of-charge, as well as realistic variation in demand and renewables production.**

Historically, capacity optimization models used for resource planning analyses have relied on a simulation chronology that takes a sample of representative days or relies on a “typical week” or an “on- and off-peak day.” Models build resources to meet demand during these sampled periods, and combine representative days together to simulate dispatch over the entire year. Such sampling methods fail to capture the variability in renewable generation and storage dispatch across longer time scales, and thus fail to accurately value resources that can provide flexibility across these time scales, such as long-duration and multi-day storage technologies.

Form recommends that optimized resource portfolios be constructed using a modeled chronology of 8,760 hours in the year in order to accurately capture the ability of MDS to shift energy over multi-day, multi-week, and seasonal horizons. We recognize that this is computationally intensive and that certain trade-offs might need to be made within a model to accomplish this goal, such as aggregating individual generating units into a block according to fuel type, or modeling resource builds in a single year as opposed to over a period of ten years or more. This may require a multi-step modeling process, in which the capacity optimization step is performed over all 8,760 hours in a specific future year, and resulting resource builds are locked down in that year before optimizing the builds in the remaining years.

While many models today can perform 8,760-hour capacity expansion modeling, not all can. In that case, Form recommends an approach that allows for the use of representative days for most grid assets while still representing the full 8,760 hours of the year (or longer) for tracking long-duration storage state-of-charge.<sup>6</sup> This approach meets the minimum requirement of representing the state-of-charge of long-duration storage over a long enough time period to accurately capture its value in shifting energy on a weekly and seasonal basis.<sup>7</sup> However, this approach can still be misleading if an insufficient number of representative days are used, and we encourage sensitivity testing to investigate this choice. The higher the levels of renewables on the system modeled, the larger the number of representative days needed to sufficiently

<sup>6</sup> Leander Kotzur, Peter Markewitz, Martin Robinius, Detlef Stolten, “Time series aggregation for energy system design: Modeling seasonal storage”, Applied Energy, Volume 213, 2018, Pages 123-135, <https://doi.org/10.1016/j.apenergy.2018.01.023>. (<https://www.sciencedirect.com/science/article/pii/S0306261918300242>)

<sup>7</sup> For further explanation of this approach, see:

[https://genxproject.github.io/GenX/dev/long\\_duration\\_storage/#Long-Duration-Storage](https://genxproject.github.io/GenX/dev/long_duration_storage/#Long-Duration-Storage). See also: regulatory filings by consulting firm E3 provide an overview of this approach, beginning on slide 29; available at <https://efiling.energy.ca.gov/GetDocument.aspx?tn=242516>

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capture the weather patterns that can cause reliability problems.

**Recommendation: Include scenarios that capture periods of real grid stress, such as multi-day lulls in renewable energy generation or periods of high commodity prices.**

Given the incorporation of time sampling methodologies in most industry-standard modeling tools, as described above, many energy system modeling approaches do not capture multi-day lulls in renewable energy generation and do not consider the implications of such events on resource builds, energy prices, grid reliability, etc. Daily - and often weekly - sampling techniques fail to include 24+ hour periods of correlated wind and solar outages. The magnitude of such solar and wind lulls is expected to increase as regional electricity supply shifts toward renewable energy technologies. Therefore, it is critical that resource planning models rely on renewable generation profiles that include lull periods, such as the National Renewable Energy Laboratory (NREL) System Advisor Model (SAM) data,<sup>8</sup> and evaluate how MDS can mitigate the threats to system reliability posed by such multi-day renewable energy lulls.

NREL's SAM data has specific features that distinguish it from other data sets:

- It includes weather data from a publicly validated source such as National Oceanic and Atmospheric Administration (NOAA) or the European Center for Medium-range Weather Forecasts (ECMWF);
- The model outputs have been corrected for known errors and biases, i.e. solar irradiance; and
- The operation of renewable generators are modeled accurately to reflect real-world characteristics.

However, SAM does have only a limited number of weather years with coincident wind and solar data (2007 – 2014). We recommend that system modelers include as many unique weather years as possible in policy-related studies, recognizing that computation time and expense increases as more weather years are modeled.

**Recommendation: Weather-correlated load profiles and renewable generation profiles should be used as input assumptions to capacity optimization modeling.**

System load and renewable generation can often be anticorrelated, meaning that system load is high in hours in which renewable output is low, and is often driven by weather conditions over a given time period. These periods are a driver of system need for firm capacity, making weather-driven input assumptions for load and renewable generation particularly important in energy system analysis of high renewable grids.

Weather affects profiles for both load and renewable generation. Form, in conjunction with consulting firm Energy and Environmental Economics (E3), demonstrated the importance of utilizing weather-correlated profiles in an analysis that examines the future of long duration and

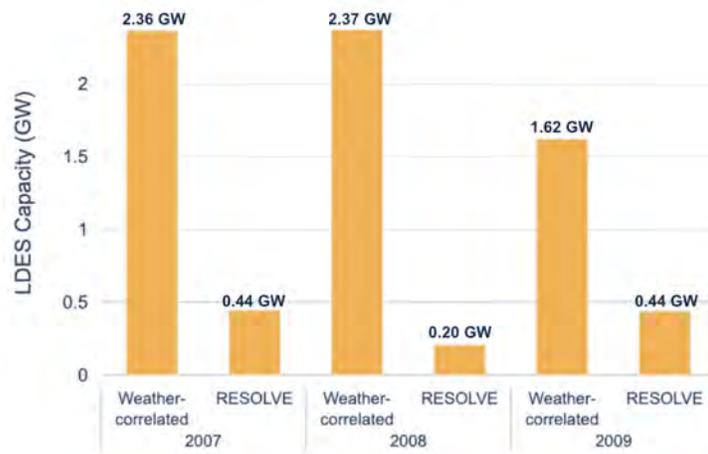
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<sup>8</sup> Available at: <https://sam.nrel.gov/download.html>

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multi-day storage technologies in CAISO. Form’s modeling shows up to a tenfold increase in adoption of long-duration energy storage (LDES) technologies, defined in this study as having a duration of >12 hours when weather-correlated profiles are used. When weather-correlated inputs from the 2008 weather year were used, for example, 2.37 GW of long-duration storage resources were selected by the optimization model, compared to the 0.2 GW of LDES selected when renewable generation profiles from the 2008 weather year are not correlated with the modeled load profile.<sup>9</sup> Figure 2 below details the difference in amount of LDES the model selects using either weather-correlated profiles or non-correlated profiles (labeled in Figure 2 as “RESOLVE”).

**Figure 2. Impact of weather-correlated inputs on LDES adoption in CAISO (2045)**



**Recommendation: Storage build and dispatch should be modeled over multiple weather years, and should capture periods of grid stress caused by extreme weather events**

Industry-standard modeling often builds an optimal resource mix designed to meet the average annual peak load, with an established reserve margin, under typical weather conditions. However, weather can vary significantly from year to year, which has major impacts on the requirements of the energy system. Research has shown that modeling only one weather year or only typical conditions underestimates the benefits of flexibility resources like storage.<sup>10</sup> Form strongly recommends that the study models MDS resource builds and operations across multiple historical weather years. This modeling approach will produce results which are robust against interannual variability in weather patterns.

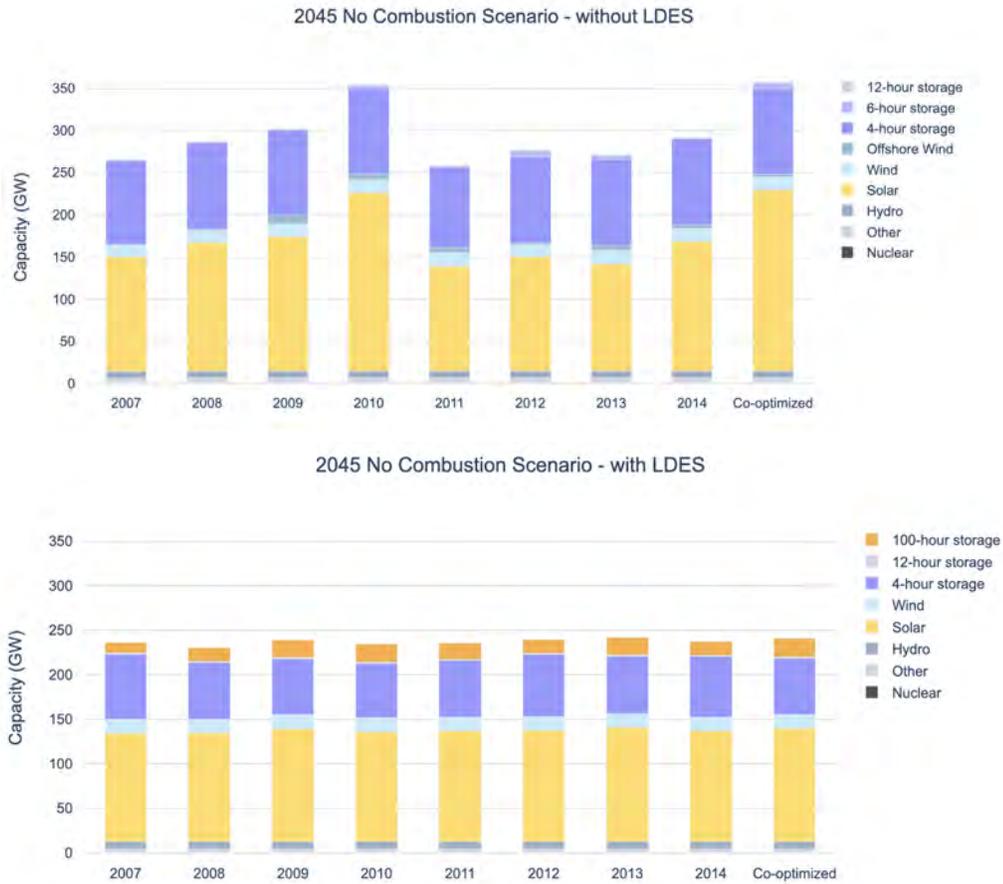
<sup>9</sup> CEC EPC-19-056, “Assessing the Value of Long Duration Energy Storage.” Project overview available at: <https://www.energy.ca.gov/sites/default/files/2020-12/E3%20Presentation.pptx>.

<sup>10</sup> Dowling et al., 2020. Role of Long-Duration Energy Storage in Variable Renewable Electricity Systems. Joule; 4: 1907-1928, <https://doi.org/10.1016/j.joule.2020.07.007>.

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Results from the joint Form/E3 study of CAISO highlight the importance of modeling multiple weather years. Figure 3, below, displays capacity expansion results for individual weather years, as well as co-optimized resource needs across all 2007-2014 weather years.<sup>11</sup> The upper plot displays results for when LDES is excluded from the capacity expansion model while the lower plot displays results that include LDES. We observe that when LDES is excluded from the resource selection, there is significant variation in portfolios, with total nameplate capacity ranging from 260-350 GW. In contrast, when LDES is included resource variance is minimal, with total nameplate capacity ranging from 230-240 GW.

**Figure 3. Variation in CAISO capacity expansion results across weather years**



<sup>11</sup> CEC EPC-19-056, "Assessing the Value of Long Duration Energy Storage." Project overview available at: <https://www.energy.ca.gov/sites/default/files/2020-12/E3%20Presentation.pptx>.

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Modeling a single, typical weather year also neglects the potential for extreme weather events that lead to grid stress. These events challenge both the reliability and resiliency of the regional electric grid, and they are increasing in frequency and severity as a result of climate change. Therefore, Form recommends that the study models MDS in extreme weather scenarios, such as a multi-day winter storm, evaluating the reliability and resiliency benefits that MDS can provide during these catastrophic events.

**Legal Disclaimer**

Form provides the above recommended approaches and supporting data (including future projections of estimated costs, manufacturing capacity, etc.) based on information currently known to Form. Form reserves the right to update, modify, or alter any and all recommendations and underlying data as appropriate, within its sole discretion. Nothing herein constitutes a representation or warrant by Form.

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Xcel Energy Information Request No. 19  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Sherco Battery Storage remaining life

Reference(s): 9/9/2024 Petition at 13-14

At the Commission’s May 22, 2025 agenda meeting, when considering Xcel Energy’s 2025 Renewable Energy Standard Rider, Commissioner Ham referenced evidence he had found that batteries like the Sherco Battery Storage facility could have up to a 30-year life. The Department found a reference to a potential 30-year life on the website of the [Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT](#).

- (a) Has the Company evaluated this or other information/studies/etc. and the possibility that the Sherco Battery Storage’s expected life may be longer than 10 years?
- (b) If so, please discuss that evaluation and explain generally why the Company believes its proposed 10-year life is reasonable.

Response:

- a) Please see our response to DOC-18. The Company has evaluated studies regarding the potential life of battery projects and is aware that the technology underlying the Sherco Battery Storage system has the potential to exceed a 10-year lifetime. The Company expects longer lifetimes from the technology to be viable as Form and other manufacturers learn from early deployments and continue to evaluate performance data and develop future versions of the product.
- b) For a demonstration project with an emerging technology like this, the Company considers the 10-year term that it and Form agreed are appropriate as the proper timeframe to gather performance data, develop operational experience, and allow for Form Energy and its technology to mature.

While the Company holds the Fraunhofer Institute and others like it in high regard and values their assessments, it is essential to recognize that long-term

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performance and useful life of emerging technology poses a significant risk, because there is no substitute accumulating significant hours of operation and maturation of manufacturing capabilities. The Company conducts regular discussions with Form Energy on technology progress and has conducted multiple site visits to their facilities. The multi-day storage project has modest complexity with multiple systems working together. It is not clear that the Fraunhofer Institute has had this level of exposure to the product and hence their projections of useful life may have been made without detailed knowledge of the integrated systems, many of which are protected as intellectual property. The Company is impressed with the Form Energy team and is optimistic about their ability to deliver a product that has a longer life than 10 years. **[PROTECTED DATA BEGINS...**

**...PROTECTED DATA ENDS]**. When reviewing assessments from government-academic entities, it is also important to recognize that they often do not account for commercial aspects of technology, like contracts and warranties. Our approach is to balance valuable technical assessments like the one referenced, regular interaction with the technology developer, and account for practical aspects (contracts, warranties, etc.) to arrive at an appropriate projection to use in grid planning. Lastly, we expect that future projects with Form Energy that would be larger in scale to have a useful life beyond 10 years.

Portions of this response are marked “Not-Public” as it contains information the Company considers to be trade secret data as defined by Minn. Stat. § 13.37(1)(b). The information contains confidential data that derives an independent economic value from not being generally known or readily ascertainable by others who could obtain economic value or a financial advantage from its disclosure or use. The Company takes efforts to protect this information from public disclosure. Thus, Xcel Energy excises this information as protected data pursuant to Minn. Rule 7829.0500.

---

Preparer: Andrew Akervik  
Title: Consultant  
Department: Capital Asset Accounting  
Telephone: 715-737-2407  
Date: July 2, 2025

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Xcel Energy Information Request No. 17  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Sherco Battery Storage Salvage Rate

Reference(s): 1/31/2025 Petition, Attachment I at 7

Attachment I states that the salvage rate proposed for the Sherco Battery Storage facility is from the “2024 Final Dismantling Study for Sherco Battery Storage.” Please either provide specific page number references where in Attachment J (the Final Dismantling Study) the cost estimates are located, or provide all support the Company relied on to determine the proposed -18.4 percent net salvage rate.

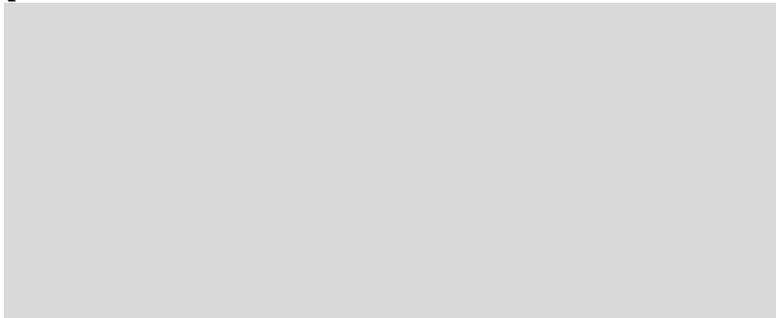
Response:

The references to the Final Dismantling Study for Sherco Battery Storage in Attachment I were inadvertently copied from the sections above in that schedule. We apologize for any confusion our inadvertent action created.

Please see the calculation of the Sherco Battery Storage net salvage rate below. The decommissioning plan removal estimates used in this calculation were provided by the vendor as discussed in our response to DOC-19. We also note that the decommissioning costs for this project are presented on page 12, Section I.A.4 Purchase and Installation Costs of the Trade Secret version of the Company’s March 6, 2023 Petition in Docket No. E002/M-23-119.

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**[PROTECTED DATA BEGINS**



**PROTECTED DATA ENDS]**

A portion of this response is marked “Not-Public” as it contains information the Company considers to be trade secret data as defined by Minn. Stat. § 13.37(1)(b). The information contains confidential data that derives an independent economic value from not being generally known or readily ascertainable by others who could obtain economic value or a financial advantage from its disclosure or use. The Company takes efforts to protect this information from public disclosure. Thus, Xcel Energy excises this information as protected data pursuant to Minn. Rule 7829.0500.

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Preparer: Andrew Akervik  
Title: Consultant  
Department: Capital Asset Accounting  
Telephone: 715-737-2407  
Date: July 2, 2025

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Xcel Energy Information Request No. 15  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Sherco Solar Units 1 & 2 Salvage Rates

Reference(s): 1/31/2025 Petition, Attachment I at 7-8

- (a) Attachment I states that the salvage rate proposed for Sherco Solar Unit 1 is from the “2024 Final Dismantling Study for Sherco Solar (Unit 1).” Please either provide specific page number references where in Attachment J (the Final Dismantling Study) the cost estimates are located, or provide all support the Company relied on to determine the proposed 1.9 percent net salvage rate.
- (b) Attachment I states that the salvage rate proposed for Sherco Solar Unit 2 is from the “2024 Final Dismantling Study for Sherco Solar (Unit 2).” Please either provide specific page number references where in Attachment J (the Final Dismantling Study) the cost estimates are located, or provide all support the Company relied on to determine the proposed 2.0 percent net salvage rate.

Response:

The references to the Final Dismantling Study for Sherco Solar Units 1 and 2 in Attachment I were inadvertently copied from the sections above in that schedule. We apologize for any confusion our inadvertent action created.

We determined the net salvage amount and associated net salvage calculation for Sherco Solar Units 1 and 2 from the Decommissioning Plan included as Appendix H to the Company’s April 20, 2021 Permit Application filing in Docket No. E002/GS-21-191 combined with the Plant Balance information contained in Attachment B to our Petition. We provide the Sherco Solar 1 and 2 Decommissioning Plan from our Site Permit Application with this response as Attachment A.

To determine the amounts presented in our Petition, we used the total decommissioning cost numbers outlined on page 5 of the Decommissioning Plan and derived the split between Sherco Solar Unit 1 and Sherco Solar Unit 2 using nameplate capacity (MW). We outline our calculations in Table 1 below.

**Table 1**  
**Net Salvage Calculation for Sherco Solar Units 1 and 2**

	[a] <u>Plant</u> <u>Balance</u>	<u>% of Total</u> <u>(MW)</u>	[b] <u>Removal</u>	[c] <u>Salvage</u>	[d]=[b]-[c] <u>Net Salvage</u>	[e]=[d]/[a] <u>Net Salv %</u>
Sherco Solar 1	343,901,602	48%	16,959,946	23,388,941	(6,428,995)	1.9%
Sherco Solar 2	341,543,297	52%	18,040,392	24,878,950	(6,838,558)	2.0%
			<u>35,000,338</u>	<u>48,267,891</u>	<u>(13,267,553)</u>	

Note: The total Removal and Salvage Costs are directly from page 5 of the Sherco Solar 1 and 2 Decommissioning Plan provided as Attachment A to this response. We derived the split of the removal and salvage utilizing nameplate capacity (MW) to allocate the totals to each unit. Sherco Solar 1 and Sherco Solar 2 nameplate capacity (MW) are 222.9 MW (48 percent) and 237.1 MW (52 percent) respectively, for a total of 460 MW which is noted on page 12 section C.5 of the Annual Review of Remaining Lives Modified Petition. The calculation is presented above to arrive at the positive 1.9 percent and 2.0 percent net salvage rates.

---

Preparer: Andrew Akervik  
 Title: Accounting Consultant  
 Department: Xcel Energy Services Inc.  
 Telephone: 715-737-2407  
 Date: June 25, 2025

Northern States Power Company  
Appendix H - Decommissioning Plan

Docket No. E,G002/D-23-356  
DOC Information Request No. 15  
Attachment A - Page 1 of 20

# **Appendix H**

## **Decommissioning Plan**

DECOMMISSIONING REPORT FOR  
**Sherco Solar Project**

Sherburne County, Minnesota

March 26, 2021



Prepared For:  
**Xcel Energy**

Prepared By:

**Westwood**

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## **1.0 Executive Summary**

At the request of Xcel Energy and National Grid Renewables, Westwood Professional Services (“Westwood”) has prepared this “Decommissioning Plan” for the proposed up to 460 megawatt (“MW”) alternating current (“AC”) Sherco Solar project (“Project”) located in Sherburne County, Minnesota. The Decommissioning Plan describes the procedures for, and estimated costs associated with decommissioning the Project and restoring the Project site in accordance with applicable professional engineering and industry standards. The goals for the Decommissioning Plan are to provide the plan and process for restoring the site so that it can be utilized for agricultural uses, or other economical land uses, after the project ceases to operate. The Decommissioning Plan describes procedures and estimated costs for the Project. The anticipated decommissioning costs for the below-ground systems are similar and therefore described conjunctively.

Decommissioning and restoration activities will adhere to the requirements of appropriate governing authorities, and will be in accordance with applicable federal, state, and local permits, including the Site Permit issued by the Minnesota Public Utilities Commission. The decommissioning and restoration process comprises removal of above-ground structures and foundations; grading, to the extent necessary; restoration of topsoil (if needed); and tilling, restoration to farmable condition, and seeding, if the soil will not be used for row crop agriculture. The process of removing structures involves evaluating and categorizing all components and materials into categories of recondition and reuse, salvage, recycling, and/or disposal. The Project consists of numerous materials that can be recycled, including steel, aluminum, glass, copper, and plastics. In the interest of increased efficiency and minimal transportation impacts, components and material may be stored on site until the bulk of similar components or materials are ready for transport. The components and material will be transported to the appropriate facilities for reconditioning, salvage, recycling, or disposal. Above-ground structures include panels, racks, inverters, pads, and fences. Below-ground structures include the foundations and electrical collection system. The above-ground and below-ground structures are collectively referred to herein as the “Project Components.”

Solar modules from name brand manufactures that are functioning have value in the resale market, as companies such as We Recycle Solar are working to capture. Therefore the estimate uses the assumption that the majority of the panel will be sold and reused on other projects. In future revisions of the decommissioning plan the options for resale, recycling, and disposal will be evaluated to

determine the most economical disposition of the modules.

For resale, modules will be inspected for physical damage, tested for functionality, and disconnected and removed from racking. Functioning modules will be packed and shipped to an offsite facility for reuse or resale. Non-functioning modules will be packed, palletized and shipped to the manufacturer or a third party for recycling or disposal. To estimate the Project's decommissioning costs and salvage revenues, input was utilized from contractors, landfills, salvage yards, and recycling facilities located in proximity of the Project area and RS Means cost data.

All racking and fencing material will be broken down into manageable units, removed from the facility, and sent to a metal recycler. All racking posts driven into the ground will be pulled and removed. Following decommissioning activities, the sub-grade material and topsoil from affected areas, such as access roads and substation areas, will be de-compacted and restored to a density and depth consistent with the surrounding areas if the areas exhibit densities indicative of significant compaction. All areas will be tilled to an agriculture ready condition. The affected areas will be inspected and thoroughly cleaned, and all construction-related debris will be removed. Disturbed areas not anticipated for agricultural use will be seeded to promote re-vegetation of the area, unless the area is to be immediately redeveloped. In all areas restoration will include, as reasonably required, leveling, terracing, mulching, and other necessary steps to prevent soil erosion, ensure establishment of suitable grasses and forbs if the area will not be converted back to row crop agriculture, and control noxious weeds and pests.

The decommissioning costs also include an estimate of transportation and restoration costs.

The estimated decommissioning costs and salvage revenues are expressed in present-day dollars and do not account for inflation or other future changes in costs or salvage values.

Beginning in year fifteen of the Project's operational life, Xcel Energy will either create a reserve fund, enter into a surety bond agreement, create an escrow account, or provide another form of security that will ultimately fund decommissioning and site restoration costs after Project operations cease, to the extent that the salvage value does not cover decommissioning costs.

The exact amount to be allocated for decommissioning will be determined by a third-party study in year fourteen that will assess the difference between estimated decommissioning costs and the salvage value.

**Decommissioning Estimate**

The estimated cost to decommission the Project and restore the Project site was determined by subtracting the estimated salvage revenue of approximately \$48,300,000 from the estimated decommissioning and site restoration costs of approximately \$35,000,000 which results in a surplus of \$13,200,000 to decommission the Project and restore the Project site (approximately surplus \$28,700 per megawatt). The salvage revenue is based upon the resale and scrap values of salvaged materials including material salvaged from the solar panels, racking systems, and electrical equipment rather than the sale and reuse of the equipment in other solar farm projects or other installations. The scrap market, which is impacted by macro-economic events, is difficult to predict and will certainly swing cost estimates.

The tabulated summary is below.

\*Based upon a preliminary project design of 110 power blocks.

Decommissioning Activities	Decommissioning Costs	Salvage Value	Net Cost	Net Cost/MW
Mobilization/ Demobilization/ Permitting	\$1,911,400	\$0	\$1,911,400	\$4,137
PV Site - Civil Infrastructure	\$2,004,208	\$43,042	\$1,961,166	\$4,245
PV Site - Structural Infrastructure	\$6,661,722	\$8,444,387	-\$1,782,665	-\$3,859
PV Site - Electrical Collection System	\$15,617,871	\$39,666,278	-\$24,048,408	-\$52,053
Overhead Transmission Lines	\$192,079	\$0	\$192,079	\$416
PV Site - Restoration	\$2,272,232	\$0	\$2,272,232	\$4,918
Substation - Transformer Removal	\$92,623	\$110,246	-\$17,623	-\$38
Substation - Demolition/Disposal of	\$48,246	\$3,938	\$44,308	\$96
Substation - Site Gravel Removal and Site Restoration	\$273,690	\$0	\$273,690	\$592
Project Management	\$868,000	\$0	\$868,000	\$1,879
<b>Construction Totals</b>	<b>\$29,942,070</b>	<b>\$48,267,891</b>	<b>-\$18,325,820</b>	<b>-\$39,666</b>
Contingency	\$4,204,601	\$0	\$4,204,601	\$9,101
County Administration Costs	\$853,667	\$0	\$853,667	\$1,848
<b>Totals</b>	<b>\$35,000,338</b>	<b>\$48,267,891</b>	<b>-\$13,267,553</b>	<b>-\$28,718</b>

## **2.0 System Description**

For the purposes of this decommissioning plan and estimate, the project is assumed to consist of the following components:

- 110 inverters
- NEXTracker™ racking system
- (12,129) 78-module rows
- (3,151) 52-module rows
- 187,166 Foundation Posts (Array Bearing, Motor, Inverter Skid)
- Access roads to the arrays – 16' wide of gravel base, with curved sections being up to 45' wide
- 152,102 linear feet – 6'-high array security fence
- 140,493 linear feet – Medium voltage underground electrical collection cables
- 2 electrical collector substations (The substations may not be decommissioned with the rest of the Project if they are repurposed for future projects, but are included in the cost estimate.)
- 2 HVTL Lines totaling approximately 4.9 miles (The HVTLs may not be decommissioned with the rest of the Project if they are repurposed for future projects, but they are included in the costs estimate)

Note that the above lists of components and estimated quantity of each component is based upon the Project's preliminary design to date. Final design and construction of the Project may result in quantities that vary from the figures given above.

## **2.1 Decommissioning**

Upon the end of the Project's life or the expiration of the site permit, the decommissioning and site-restoration process detailed in this plan would begin and be completed within approximately 40 weeks; see section 3.3 below for schedule information. The following general decommissioning and site restoration process would occur:

- Removing the solar arrays, transformers, electrical collection system, fencing, lighting, and substations.
- Removal of below-ground electrical cables to a depth of four feet (cables buried below four feet may be left in place).
- Removal of buildings and ancillary equipment to a depth of four feet.

- Removal of surface road material and restoration of the roads to substantially the same physical condition that existed immediately before construction. If the Solar Project is decommissioned and the land sold to a new owner, Xcel Energy would retain any access roads the new landowner requested be retained.
- Grading, adding or re-spreading topsoil, and reseeded according to the Natural Resources Conservation Service (NRCS) technical guide recommendations and other agency recommendations, areas disturbed by the construction of the facility or decommissioning activities, grading and soil disturbance activities will be kept to the minimum necessary to restore areas where topsoil was stripped in construction, topsoil in decommissioned roads and compaction only in areas that were compacted during decommissioning activities so that the benefits to the soil that were achieved over the life of the Project are not counteracted by decommissioning.
- Standard decommissioning practices would be utilized, including dismantling and repurposing, salvaging/recycling, or disposing of the solar energy improvements, and restoration.

## **2.2 Trigger Resulting in Decommissioning**

Decommissioning of solar panels must occur upon the expiration of the Site Permit, without renewal of said permit.

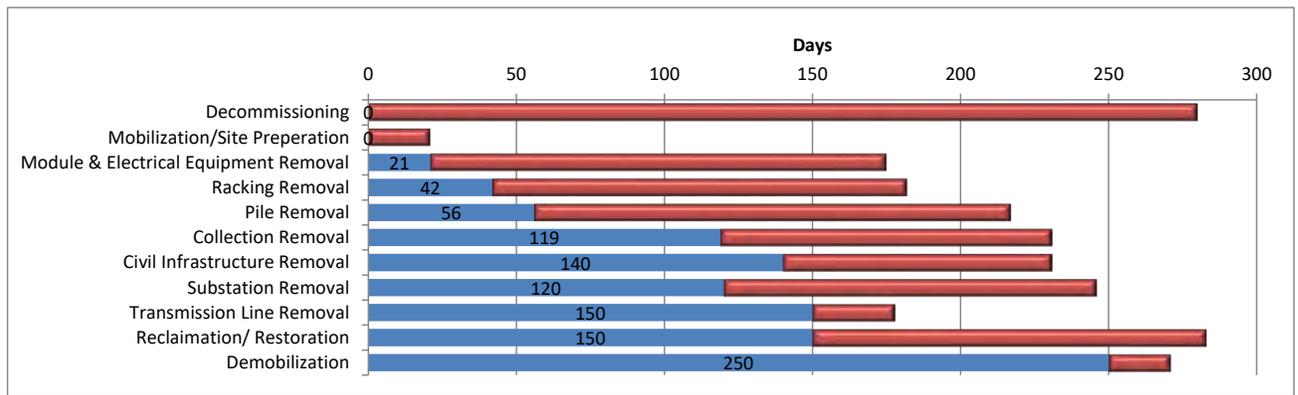
## **2.3 Schedule**

The decommissioning process will likely take place over an approximately 40 week period. Depending on the timing and the requirements for revegetation, it's possible revegetation monitoring and maintenance efforts could extend into the next year after all other decommissioning tasks are complete. This timeline is based on the assumption that the removal of the modules, racking system, and pile foundations will take approximately the same duration to remove them as it did to install them for each individual item, and that the crew numbers can be increased as the schedule requires. Approximately three (3) weeks are needed for site mobilization and demobilization for decommissioning. It is also assumed that no decommissioning work will be performed during a portion of winter months or during times of inclement weather (high winds, heavy rains).

The representative Project schedule, shown below, is an estimated timeline of the

decommissioning activities for each phase of demolition, West and East, which can be done concurrently. This schedule is subject to change based on actual business conditions, labor availability, field conditions, weather conditions, and any unforeseen conditions.

**Representative Project Schedule**



*\*Some tasks may be completed concurrently depending upon scheduling and methods of the contractor.*

*\*\*Schedule shows duration total in calendar days and is subject to delays/changes based on weather conditions, winter and unforeseen conditions.*

**2.4 Project Facilities Removal and Site Restoration**

Prior to decommissioning, participating landowners will be consulted to determine their desired future land use across the site. Some Project infrastructure such as access roads and collection lines may be left in place if agreed to by the landowner. The removal and disposal details of the Project components are found below.

- Modules: Modules inspected for physical damage, tested for functionality, and removed from racking. Functioning modules packed and stored for reuse (functioning modules may produce power for another 25 years or more). Non-functioning modules packaged and sent to the manufacturer or a third party for recycling or other appropriate disposal method. Modules sent for disposal will be sampled and tested using accepted test methods to determine whether they must be managed as a RCRA Hazardous Waste;
- Racking: Racking uninstalled, processed (cut) to size for recycling, and sent to metal recycling facility;

- Steel Pier Foundations: Steel piles will be removed to a minimum depth of 4 feet and may be removed to full depth, processed to size for recycling, and sent to a recycling facility;
- Wire: Below-ground wire may be abandoned in place at depths greater than lease requirements for removal (four feet). All other wire will be removed and packaged for recycling or disposal; overhead wire for the gen-tie lines is included for removal in the cost estimate for the decommissioning of this project. It is possible that the overhead lines will be reused, like the substations, for future projects, and will remain in place after the other project facilities are decommissioned.
- Conduit: Above-ground conduit, if any, will be disassembled onsite and sent to recycling facility;
- Junction boxes, combiner boxes, external disconnect boxes, etc.: Will be sent to electronics recycler;
- Inverter/Transformer: Will be shipped to a transformer recycler;
- Concrete pad(s): Will be broken into pieces onsite and sent to a landfill for disposal.
- Fence: Fence will be sent to metal recycling facility and wooden posts for the agricultural fence will be properly disposed;
- Substations: This cost estimate includes the decommissioning of the substations, but the substations may remain in service and be used for future projects. Main Power Transformers will be drained of oil, disassembled, and the metals will shipped to a transformer recycling facility; the oil will be sold for recycling; the capacitors, switchgear, buses and other electrical equipment will be disassembled and shipped to an electronics recycler; the structural steel frames will be disassembled and taken to a metal recycler; the concrete foundations will be broken into pieces onsite disposed of at a landfill; the crushed rock surfacing and aggregate base will be removed and transported to a landfill where it can be disposed of as "daily cover"; and
- Computers, monitors, hard drives, and other components: Sent to electronics recycler. Functioning parts can be reused, but the salvage or resale value is not included in the cost estimate.

### **2.4.1 Solar Array**

Decommissioning of the solar array consists of dismantling, processing, and transporting solar components off the Project site. The dismantling will entail disassembly of the array into the component parts: modules, racking components, foundation pile, and inverter skids. Cutting and sorting of scrap material from the array components will proceed in parallel. This processing includes draining fluid (panels contain no fluids, specific to transformers), cutting, disconnecting, and dismantling the equipment. Selling usable equipment for reuse is the highest priority, followed by recycling, then disposing. With the exception of the solar modules, during the early life of the project, no resale value of the components has been calculated. This assumption is conservative for the purpose of determining the amount of financial security that will be required.

Considering the abundance of raw materials that are built into the entire array, it is assumed that most of the components can be sold for scrap metal and recycled. The racking components, foundation pile, cables, and other electrical equipment are considered scrap metal, and will be sorted by material type (e.g., steel, copper, and aluminum). The modules are also able to be recycled and sold as salvageable items. The remaining unsalvageable materials will be processed and transported to local landfills. All modules will be removed from the site via semi-trucks.

### **2.4.2 Electrical Collection System**

The collector system is installed using AC and DC collection system cables. The AC collection cables will consist of medium voltage cable consisting of three cables buried per below-ground line with a copper-clad steel conductor. The DC system cables are anticipated to consist of a positive and negative phase in each cable tray (CAB) or buried below-ground line with a copper clad steel conductor. These cable configurations are identified as a circuit, and are used to identify the circuit cable length. The cables consist of an aluminum conductor, polyethylene insulation, a copper metallic shield, and an outer polymer jacket.

As part of decommissioning, underground cables will be removed from the ground to the depth of four feet. Underground cables deeper than four feet may be left in place. DC cables, if installed above-ground, will be removed from the CAB system, unburied at the combiner and inverter locations and either re-spooled or cut into recyclable sections. The cost estimate herein

conservatively assumes that all cable will be removed. The removal includes reeling cable for transportation off of the site.

### **2.4.3 Roads**

The Project estimates that the total length of Project roads will be about 178,264 linear feet. They will approximately be 16 feet wide. The access road width flares at intersections with connecting public roads and internal intersections. The construction of the access roads will include the surfacing of an aggregate base. Some roads may consist of a cement stabilized subgrade, which will be comprised of native soil mixed with cement. On this subgrade, aggregate surfacing is applied. It is possible that in some locations geotextile fabric may be placed on the subgrade before the aggregate surfacing is applied to the road.

Following decommissioning of the portions of the Project served by each access road (power block), access road decommissioning will start with the removal and transportation of the aggregate materials to a nearby site. Usually clean aggregate can be disposed of at a landfill for at no cost, where it is used as “daily cover”. The local townships may accept this material without processing to use on their local roads. The access road removal will proceed from the onsite area to township/county roads to limit tracking and provide consistent access during removal activities.

### **2.4.4 Substation**

Removal of Project Substations is included in the decommissioning cost estimate. The electrical collection substation decommissioning requires the deconstruction of the control house/switchgear, main power transformers, breakers, bus work, ground grid, steel supports, foundations, and yard rock base as well as reclamation of the substation site.

Additionally, any permanent storm water treatment facilities will be removed. Topsoil will be reapplied to match surrounding grade and maintain existing drainage patterns. The topsoil will be de-compacted and tilled to a farmable condition or re-vegetated depending upon the location and land use at the time of decommissioning.

The cost estimate is based on the assumption that the equipment is scrapped and recycled,

including the main power transformers, and the remaining materials disposed of. The substation's steel, copper ground grid, aluminum bus, and copper wire can also be salvaged for scrap and recycled.

#### **2.4.5 O&M Building**

No O&M building is necessary for the Project as the Project will utilize existing infrastructure to service the facility.

#### **2.5 Waste Disposal**

It is assumed that the materials will be sold as scrap and recycled, or disposed of rather than be sold for re-use in another location. It has also been assumed that the scrap materials will be transported off-site to recycling facilities, salvage yards, or a landfill. The following landfills and salvaged material yards have been identified near the Project.

##### **Landfills**

- Vonco II Waste Management Campus - 15301 Sherburne Ave, Becker, MN 56308, approximately 8 miles from the Project site

##### **Salvage Yards (metals)**

- EMR Northern Metal Recycling- 12432 Energy Drive, Becker, MN 55308, approximately 3 miles from the Project site

These particular facilities may not be operating at the time of decommissioning, but expect facilities in the area will be. When the decommissioning plan is updated, the locations of facilities with the required certifications and scale to process the materials will be identified.

Modules sent for disposal will be sampled and tested using accepted test methods to determine whether they must be managed as a RCRA Hazardous Waste.

#### **2.6 Site Restoration**

All rutted land will be restored to a condition as close as practicable to its original condition. All unexcavated areas compacted by equipment and activity during the decommissioning work will be de-compacted to a depth as needed to ensure proper density of topsoil consistent and

compatible with the surrounding area and land use. Two passes for decompaction will be made across any planned agricultural land. To the extent practicable, all ripping and disking will be done at a time when the soil is dry enough for normal tillage operations to occur.

Any cement-stabilized subgrade material will be processed in place by adding topsoil, fertilizer, and other required additives determined and dictated by the soil sample test results. The subgrade cement-stabilized layer will be returned to a mix of native soils. Following removal of the road aggregate and processing of any cement-stabilized subgrade, the road area will be decompacted and graded and topsoil will be reapplied to the disturbed area. The elevations of the finished area will match the surrounding grade to maintain existing drainage patterns. The topsoil will be de-compacted and tilled to a farmable condition or re-vegetated depending upon the location and land use at the time of decommissioning.

During any excavation and backfill, soil segregation will occur to ensure that topsoil and subsoil is maintained. If necessary, soil additives will supplement local soils to ensure continued soil productivity. Excavated areas will be backfilled and compacted, dependent on soil conditions. Areas will likely be tilled as a part of the greater area of disturbance per the specifications in the paragraph above following completion of excavation activities.

The following rock removal procedures only pertain to rocks found in the uppermost 12 inches of soil which were exposed or brought to the site as a result of decommissioning:

- A. Before replacing any topsoil, every effort will be taken to remove all rocks greater than 5 inches in any dimension.
- B. As topsoil is replaced, all rocks greater than 5 inches in any dimension will be removed from the topsoil.
- C. If trenching, blasting, or boring operations are required through rocky terrain, precautions will be taken to minimize the potential for oversized rocks to become interspersed with adjacent soil material.

Following soil preparation and decompaction, areas not to returned to agricultural use or another use specified by participating landowner will be seeded and revegetated to their pre-Project condition. These areas will be monitored until acceptable vegetated conditions, per

permit requirements, are obtained.

## **2.7 Erosion and Sediment Control**

During decommissioning of the Project, erosion and sediment control Best Management Practices (BMPs) will be implemented, if necessary, to minimize potential for sedimentation of surface waters and waters of the state. BMPs will meet the current Minnesota Pollution Control Agency requirements for stormwater permitting. Given that the construction and operation of the project includes detailed erosion and sediment control measures, it is not expected that additional measures will be necessary during decommissioning, unless new ground disturbance is undertaken. Potential BMPs are described below.

Disturbed Area Stabilization: All disturbed areas, unless being returned to agricultural use, and without permanent impermeable or gravel surfaces will be vegetated for final stabilization. All slopes steeper than 3H:1V will be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes, as practical. All slopes 3H:1V or flatter will be restored by seeding and mulching.

Project Phasing/Design BMP: Project phasing will minimize exposure of soils at any given time and allow for concurrent stabilization of soils following decommissioning activities.

Silt Fence BMP or Fiber Logs: Silt fences or fiber logs will be used as needed for perimeter controls down gradient from exposed soils during decommissioning to capture suspended sediment particles on site to the extent possible. The standard silt fence or fiber logs will also be used in smaller watershed areas where the contributing flow areas are typically less than ¼ acre of drainage per 100 feet of standard silt fence or fiber logs. The standard silt fence or fiber logs will also be used for stockpiles which are at least 8 feet high and have 3:1 or steeper side slopes, if the stockpiles are not already contained within perimeter controls. The silt fence or fiber logs should provide adequate protection if placed 3 – 5 feet from the toe of the stockpile. The standard silt fence or fiber logs will not be used in areas of highly erodible soils.

Rock Entrance/Exit Tracking Control BMP: Rock construction entrances will be installed where access to a decommissioning area is needed to minimize sediment tracking and may be used at

the access roads, substation, and elsewhere.

Slope Protection: Erosion-control blankets (North American Green SC150BN or equivalent) may be used as temporary stabilization for areas of steep slopes (steeper than 3H:1V), where needed or practical. Seed will be applied in these areas with the blanket for temporary and/or permanent vegetative growth as necessary. Placed stone may be installed in cleared areas where slopes are a maximum 1H:1V. Slopes less than 3H:1V will be stabilized by seeding and mulching the exposed soils.

Surface Roughening: Surface roughening or track walking is the act of running a dozer or other heavy tracked equipment perpendicular to the grade of disturbed slopes with a grade of 3:1 and steeper with a continuous length of 75 feet or greater. The tracks will provide a rough surface to decrease erosion potential during an interim period until a smooth grade, seed, and erosion-control blanket can be applied.

Temporary Mulch Cover and Seed BMP: Temporary mulch cover (hay mulch or equivalent) will be applied in some instances to provide temporary erosion protection of exposed soil areas with slopes flatter than or equal to 3:1. Seed will be applied with the mulch for temporary and/or permanent vegetative growth as necessary. Temporary mulch is used for all soil types where slopes are flatter than 3:1 and no significant concentrated flows are present. The mulch is disc-anchored to the soil to keep it from blowing away.

The mulch inhibits the ability of rain drops to dislodge soil and subsequently carry soil away during sheet drainage. In sandy soils, the use of tackifier may be used to assist the disc anchoring if the mulch cannot be secured.

Soil Stockpiles: Topsoil and base materials that are stripped from the site will be stockpiled on site. Stockpiles will be located in areas that will not interfere with decommissioning, and will be located away from roads, site drainage routes, or other areas of concentrated flow. Stockpiles will also be located away from wetlands and surface waters. Perimeter controls such as silt fence will be installed around all stockpiles if not placed within existing silt fences or other sediment control where the potential exists for material to be eroded and transported to sensitive natural resources. Soils that are stockpiled for longer durations will be

temporarily seeded and mulched, or stabilized with bonded fiber polymer emulsion (DirtGlue™ or equal).

Permanent Seed and Temporary Mulch and/or Erosion Control Blanket BMP: In non-agricultural areas of final grade, permanent seed will be applied to promote vegetative cover for permanent erosion control.

Removal of Ditch Crossing BMP: Ditch crossing locations may be removed. Perimeter controls (such as silt fence) will be used at crossing locations to minimize runoff from exposed soils and removal activities. Crossing removal will be done during dry conditions, or if the streams are wet/flowing, alternative BMPs such as a temporary dam and bypass pump to remove the crossing in dry conditions will be implemented.

Dewatering: If dewatering is needed, a temporary pump and rock base may be used to dewater an area of accumulated water. If a rock base cannot be used, pump intake will be elevated to draw water from the top of the water column to limit sedimentation. Energy dissipation (riprap) will be applied to the discharge area of the pump hose. Water will be discharged to a large flat vegetated area for filtration/infiltration prior to flowing into receiving waters of conveyances/ditches. If discharge water is turbid, dewatering bags, temporary traps, and rock weepers or other adequate BMPs will be used to control sediment discharge.

Diversion Berms/Swales/Ditches: It may be necessary to direct diverted flow toward temporary settling basins via berms, swales, or ditches. If these are deemed necessary for decommissioning activities, they must be stabilized by installing temporary mulch and seeding, erosion control blankets, or riprap to protect the channel from erosive forces.

Stone Check Dams: It may be necessary to install temporary check dams within swales or ditches that may convey stormwater from areas disturbed by decommissioning activities. Stone check dams are effective for velocity control, sediment control, and to augment temporary stabilization of channels. In these situations, filter fabric can be utilized to help filter the flow, minimize the scour of the soil under the rock, and facilitate removal of the check

dams once permanent stabilization is achieved. Dam height will be at least 2 feet and spacing depends upon slope; the placement of the subsequent rock check dams will have the top elevation at the same elevation as the bottom of the previous (up-slope) rock check.

Hay Bale Check Dams: Hay bale check dams may be used for velocity control within swales of the project to slow the water runoff within the drainage channels/swales. The bales will be 3 feet in length and anchored into the soil. The midpoint elevation of the top of the bale (i.e. ponding height) must be lower than the terminal end points of the bale where the bale meets the ground elevation to prohibit water from flowing around the bales, causing erosion and scour. If the bales cannot be applied properly in the field, the use of rock checks as a replacement is recommended.

Temporary Sedimentation Basins: Sedimentation basins serve to remove sediment from runoff from disturbed areas of the site. The basins allow runoff to be detained long enough to allow the majority of the sediment to settle out prior to discharge. The location and size of temporary sedimentation basins, if any are necessary, will be verified in accordance with NPDES permit requirements at the time of decommissioning.

## **2.8 Permitting**

All decommissioning and restoration activities will comply with federal and state permit requirements at the time of decommissioning. Decommissioning activity that will disturb more than one acre of soil may trigger the NPDES Construction General Permit process. A Storm Water Pollution Prevention Plan ("SWPPP") will be developed prior to filing a Notice of Intent. Permit(s), if required, shall be applied for and received prior to commencing with decommissioning activity.

If permanent crossings are not removed and no discharge of dredged or fill material takes place, neither a Section 404 permit from the U.S. Army Corps of Engineers (COE) nor a Wetland Conservation Act ("WCA") permit will not be necessary for decommissioning. The Army Corps of Engineers and the local governmental unit implementing the WCA will be notified in advance of the decommissioning work to verify the need for Section 404 or WCA permitting. If Section 404 permitting is required, a state Water Quality Certification permit will

be required as well.

State of Minnesota air quality rules will also be reviewed at the time the work is scheduled to determine if an air quality permit will be required. Should any interim permits become needed, they will be closed out with documentation of compliance after decommissioning.

### **2.9 Estimated Decommissioning Costs**

To estimate the Project's decommissioning costs and salvage revenues, Westwood utilized cost data from RS Means to obtain an industry-standard, November 2020 Midwest Costs Price for scrap metals, landfills, salvage yards, and recycling facilities in 563 Sherburne County, MN, a proxy for the Project area. The salvage revenue in the decommissioning cost estimate is based upon the scrap value of salvaged materials including material salvaged from the solar array, inverter, transformers, and other equipment rather than the sale and reuse of the equipment. Future salvage revenue from resale or reuse of all array equipment is an unknown. The estimated decommissioning costs and salvage revenues are expressed in present-day dollars and do not account for inflation or other future changes in costs or salvage values.

For the purposes of the estimate, \$187.50 per metric ton was used as the value of scrap steel, \$0.89 per pound was used for the value of aluminum wire, \$1.57 per pound was used for the value of copper wire, and \$0.35 per pound was used for the value of copper transformer scrap; these values were obtained from [www.scrapmonster.com](http://www.scrapmonster.com) in November 2020.

### **3.0 Conclusion and Summary of Decommissioning Costs**

The estimated cost to decommission the Project and restore the Project site is a surplus of \$13,100,000 in present-day dollars. This total was determined by subtracting the estimated salvage revenue of \$48,300,000 from the estimated decommissioning and site restoration cost of \$35,200,000. Division of this estimated cost by the anticipated 460 megawatts ("MW") in the project results in a surplus of approximately \$28,400 per MW.

The salvage revenue in the decommissioning cost estimate is based upon the scrap value of salvaged materials, including material salvaged from the inverters, transformers, and other equipment, rather than the sale and reuse of the equipment in other solar farm projects or other installations. The estimated decommissioning costs and salvage revenues are expressed

Northern States Power Company  
Appendix H - Decommissioning Plan

Docket No. E,G002/D-23-356  
DOC Information Request No. 15  
Attachment A - Page 20 of 20

in present day dollars and do not account for inflation or other, future changes in costs or salvage values. Beginning in year 14 of operation, the Decommissioning Plan shall be reviewed every 5 years to make changes to estimated costs, removal methods, or disposal methods as applicable based on new or updated information.

Beginning in year fifteen of the Project's operational life, Xcel Energy will either create a reserve fund, enter into a surety bond agreement, create an escrow account, or provide another form of security that will ultimately fund decommissioning and site restoration costs after Project operations cease, to the extent that the salvage value does not cover decommissioning costs. The exact amount to be allocated for decommissioning will be determined by a third-party study in year fourteen that will assess the difference between estimated decommissioning costs and the salvage value. The financial assurance shall be kept in place until such time as the decommissioning work has been completed.

- Not-Public Document – Not For Public Disclosure
- Public Document – Not-Public Data Has Been Excised
- Public Document

Xcel Energy Information Request No. 20  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Blue Lake Units 9-11 Proposed Salvage Rate

Reference(s): 1/31/2025 Petition, Attachment I at 7

Attachment I states that the salvage rate proposed for Blue Lake Units 9-11 is from the “2024 Final Dismantling Study for Blue Lake Units 9-11.” Please either provide specific page number references where in Attachment J (the Final Dismantling Study) the cost estimates are located, or provide all support the Company relied on to determine the proposed -10.0 percent net salvage rate.

Response:

The reference to the Final Dismantling Study for Blue Lake Units 9-11 in Attachment I was inadvertently copied from the sections above in that schedule. We apologize for any confusion our inadvertent action created.

We determined the proposed net salvage amount for Blue Lake Units 9-11 based on the 2024 Final Dismantling Study net salvage results for Blue Lake Units 7 & 8. It is a common practice to base proposed salvage rates for new facilities on existing facilities. In this case, Blue Lake Units 9-11 are scheduled to go into service in December 2025, so were not part of the 2024 Preliminary or Final Dismantling Study – thus we used Blue Lake Units 7&8 as a point of reference to inform our proposal. The actual and proposed net salvage rates for Blue Lake Units 7 & 8 are *minus* 12.7 and *minus* 12.0 respectively. We proposed *minus* 10.0 percent for Blue Lake Units 9-11, which reflects a small amount of conservatism (lower cost to customers) to the estimate until such time as Blue Lake Units 9-11 is studied along with all of our other generating facilities that are in service at the time of the study.

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Preparer: Andrew Akervik  
Title: Accounting Consultant  
Department: Xcel Energy Services Inc.  
Telephone: 715-737-2407  
Date: June 25, 2025

- Not-Public Document – Not For Public Disclosure  
 Public Document – Not-Public Data Has Been Excised  
 Public Document

Xcel Energy Information Request No. 2  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Black Dog Steam Removal

Reference(s): 9/9/24 Petition at 17; Docket 19-723 Petition at 15

In its Petition in Docket No. E,G002/D-19-723, the Company provided an update on removal costs of Black Dog Units 3 and 4. The Company stated on page 15 of that Petition “[t]he Unit 3 turbine, the boiler for Units 2 and 3, and related plant equipment are planned for removal in 2021-2025.”

In its Petition in Docket No. E,G002/D-22-299, the Company stated, “[t]he Unit 3 turbine, the boiler for Units 2 and 3, and related plant equipment are planned for removal in future years.” The Company’s current Petition repeats the same language. Attachment H to the current Petition indicates that no removal work is planned for Black Dog in 2025-2027, and that work was 100% complete as of 12/31/2024.

- (a) Is the removal activity shown in Attachment H of the current Petition specific to Black Dog Steam (*i.e.*, Units 3 and 4) as opposed to Black Dog Other (*i.e.*, Units 5 and 6)?
- (b) Please explain how removal work could be considered 100% complete given that the removal of the Unit 3 turbine, the boiler for Units 2 and 3, and related plant equipment is not complete?
- (c) Please explain why the removal of the Unit 3 turbine, the boiler for Units 2 and 3, and related plant equipment has been delayed.
- (d) When does the Company expect to remove the boiler for Units 2 and 3, and related plant equipment, and complete any other removal work associated with Black Dog Steam?
- (e) Did Xcel Energy evaluate the potential for cost increases due to inflation that may result from delaying removal work associated with Black Dog Units 3 and 4? If so, please provide all analysis the Company completed.

Response:

- a. Yes, the removal activity in Attachment H of our filing is related to Black Dog Steam.

- b. The initial planned removal for the steam related assets, such as coal yard, external ash systems / ponds, and stack are removed and considered 100 percent complete as of December 31, 2024. Some of the equipment inside the plant has been removed; some assets, including the Unit 3 turbine and the boiler for Units 2 and 3, were abandoned in place and will be removed at a later date, aligned with the removal of Black Dog Other, as noted below in part d.
- c. The removal of the remaining plant equipment at Unit 3 was not part of the initial planned removal. This is primarily due to the efficiency of removing those elements later when other larger portions of the plant will also be removed; it is also due to the complexity or risk to current operations if we attempt to isolate and remove some of those features while adjacent equipment remains in service.
- d. The timing of removal for the remaining Black Dog Steam assets will align with removal of Black Dog Other (Units 5 & 6).
- e. The work was not delayed. As stated in part c above, the removal of the remaining plant equipment at Unit 3 was not part of the initial planned removal.

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Preparer: Andrew Akervik  
Title: Consultant  
Department: Capital Asset Accounting  
Telephone: 715-737-2407  
Date: July 1, 2025

- Not-Public Document – Not For Public Disclosure  
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Xcel Energy Information Request No. 3  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

Question:

Topic: Black Dog Steam Removal

Reference(s): 1/31/25 Petition Attachments I and J; Docket 19-723 Petition Attachments I and J

As demonstrated in the table below, in Docket No. E,G002/D-19-723, Xcel Energy allocated \$19.6 million of the total removal cost for Black Dog from the Dismantling Study (\$48.7 million) to Black Dog Units 3 & 4 (i.e. Black Dog Steam). In the current Docket, the Company appears to be allocating 100% of the Black Dog total removal estimate to Black Dog Units 5 and 6 (i.e., Black Dog Other).

Summary of Black Dog Removal Cost Allocations

(\$)

	19-723	23-356
Black Dog Unit 5 (Attachment I)	14,146,139	28,680,636
Black Dog Unit 6 (Attachment I)	14,972,128	30,355,290
Black Dog Total per Dismantling Study (Att. J)	48,729,657	59,035,926
Implied for Black Dog Units 3 & 4:	19,611,390	Zero

Please explain why it is reasonable to allocate a significant amount of removal work for Steam production plant to Other production plant.

Response:

Please see our response to DOC-2 as relevant background information for this response. The Company provided third-party dismantling estimates for production facilities at the site location and unit levels. The recovery of proposed removal and salvage costs or “net salvage” is through depreciation expense as a net salvage percentage. This means the asset or production facility is currently in service and able to recover proposed net salvage via depreciation expense. Black Dog Other (Units 5 & 6) is currently in-service and book depreciating, whereas, the remaining steam related assets are abandoned in place and awaiting final removal. The remaining removal work for Black Dog Steam is planned to align with removal of Black Dog

Other, as noted in our response to DOC-2. For these reasons, the allocation of removal work from Steam production plant to Other production plant is reasonable.

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Preparer: Andrew Akervik  
Title: Consultant  
Department: Capital Asset Accounting  
Telephone: 715-737-2407  
Date: July 1, 2025

- Not-Public Document – Not For Public Disclosure
- Public Document – Not-Public Data Has Been Excised
- Public Document

Xcel Energy Information Request No. 4  
Docket No.: E,G002/D-23-356  
Response To: Minnesota Department of Commerce  
Requestor: Michael Bologna, Craig Addonizio  
Date Received: June 13, 2025

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Question:

Topic: Black Dog Steam 311 Reserve Balance

Reference(s): 19-723, 22-299 and current depreciation Petitions

Black Dog Steam E311's reserve balance went from \$3.5 million 1/1/2021 (est.) in 19-723 to negative \$12.0 million on 1/1/2023 (est.) in 22-299 to negative \$30.1 million on 1/1/2025 (est.)

- (a) Please describe the activity that is driving these decreases.
- (b) Please explain how the Company expects to resolve this negative reserve balance.

Response:

- a. Please see Attachment A to this response, which presents the Company's Monthly Depreciation Reserve Activity report, starting January through December 2024. This report provides a total view of the Black Dog Steam function depreciation reserve, representing all depreciation groups. The driver of the decreases for account E311 is most of the actual removal work was booked to depreciation group MN01-311000-Str & Impr-Black Dog for a negative \$30.1 million ending reserve balance. In totality, the Steam function has a positive balance of approximately \$6.6 million, which reconciles back to Attachment H of our Petition, with Black Dog COR Ending Reserve amount of \$6.6 million in this proceeding (slight difference due to not a full 12 months of actuals at time of filing). Notably the \$2.2 million Black Dog Remediation amortization amount in Attachment A to this response (MN01-182-Stm Blk Dg Remed Reg), along with remaining depreciation groups more than offset the negative \$30.1 million for a total December 2024 ending reserve balance of \$6.6 million.
- b. In this proceeding, the Company proposed a reserve reallocation of \$8.4 million, a net positive reserve amount (which includes the negative \$30.1 million offset) from Black Dog steam to MN Valley steam, to eliminate and clean-up the remaining negative reserve balance at MN Valley, which is currently no longer in service. The

reserve reallocation resolves the negative reserve balance in Black Dog E311 and closes the books on MN Valley.

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Preparer: Andrew Akervik  
Title: Consultant  
Department: Capital Asset Accounting  
Telephone: 715-737-2407  
Date: July 1, 2025

Northern States Power Company  
 2024 Depreciation Reserve Report

Docket No. E,G002/D-23-356  
 DOC IR No. 4  
 Attachment A - Page 1 of 1

Monthly Depreciation Reserve Activity

Xcel Energy

Starting Month: 01/2024  
 Ending Month: 12/2024

Set of Books Company Depr Summary2 Depr Group	Beginning Reserve	Provision	Retirements	Cost of Removal	Salvage and Other Credits	Transfers and Adjustments	Impairments and (Gain) / Loss	Ending Reserve
5-Minnesota								
NSP-Minnesota								
Electric Production								
MN01-182-Stm Bk Dg Remed Reg	\$24,310,000.23	\$2,210,000.04	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$26,520,000.27
MN01-311000-Str & Impr-Black Dog	(\$30,086,773.61)	\$0.00	\$0.00	\$0.00	\$0.00	(\$8,262.03)	\$0.00	(\$30,095,035.64)
MN01-311000-Str & Impr-Black Dog #2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MN01-312000-Blr Plt Eq-Black Dog	\$4,226,159.86	\$0.00	\$0.00	\$0.00	\$0.00	(\$17,199.85)	\$0.00	\$4,208,960.01
MN01-312000-Blr Plt Eq-Black Dog #2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MN01-314000-Turbo Gen-Black Dog	\$2,859,150.33	\$0.00	\$0.00	\$0.00	\$0.00	(\$19,793.56)	\$0.00	\$2,839,356.77
MN01-314000-Turbo Gen-Black Dog #2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MN01-315000-Acc EI Eq-Black Dog	\$2,732,147.50	\$0.00	\$0.00	\$0.00	\$0.00	(\$3,390.96)	\$0.00	\$2,728,756.54
MN01-315000-Acc EI Eq-Black Dog #2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MN01-316000-Pwr Pl Eq-Black Dog	\$360,511.61	\$0.00	\$0.00	\$0.00	\$0.00	(\$465.57)	\$0.00	\$360,046.04
MN01-316000-Pwr Pl Eq-Black Dog #2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Depr Summ2 Subtotal:	\$4,401,195.92	\$2,210,000.04	\$0.00	\$0.00	\$0.00	(\$49,111.97)	\$0.00	\$6,562,083.99
Company Subtotal:	\$4,401,195.92	\$2,210,000.04	\$0.00	\$0.00	\$0.00	(\$49,111.97)	\$0.00	\$6,562,083.99
Grand Total:	\$4,401,195.92	\$2,210,000.04	\$0.00	\$0.00	\$0.00	(\$49,111.97)	\$0.00	\$6,562,083.99

## **CERTIFICATE OF SERVICE**

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

**Minnesota Department of Commerce  
Public Comments**

**Docket No. E, G002/D-23-356**

Dated this **8<sup>th</sup>** day of **September 2025**

**/s/Sharon Ferguson**

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
1	Matthew	Brodin	mbrodin@allete.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	23-356D-23-356
2	Mike	Bull	mike.bull@state.mn.us		Public Utilities Commission	121 7th Place East, Suite 350 St. Paul MN, 55101 United States	Electronic Service		Yes	23-356D-23-356
3	James	Canaday	james.canaday@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	Suite 1400 445 Minnesota St. St. Paul MN, 55101 United States	Electronic Service		No	23-356D-23-356
4	John	Coffman	john@johncoffman.net	AARP		871 Tuxedo Blvd. St. Louis MO, 63119-2044 United States	Electronic Service		No	23-356D-23-356
5	Generic	Commerce Attorneys	commerce.attorneys@ag.state.mn.us		Office of the Attorney General - Department of Commerce	445 Minnesota Street Suite 1400 St. Paul MN, 55101 United States	Electronic Service		Yes	23-356D-23-356
6	George	Crocker	gwillc@nawo.org	North American Water Office		5093 Keats Avenue Lake Elmo MN, 55042 United States	Electronic Service		No	23-356D-23-356
7	John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance		2720 E. 22nd St Institute for Local Self-Reliance Minneapolis MN, 55406 United States	Electronic Service		No	23-356D-23-356
8	Sharon	Ferguson	sharon.ferguson@state.mn.us		Department of Commerce	85 7th Place E Ste 280 Saint Paul MN, 55101-2198 United States	Electronic Service		No	23-356D-23-356
9	Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP		Suite 1750 220 South Sixth Street Minneapolis MN, 55402-1425 United States	Electronic Service		No	23-356D-23-356
10	Matthew B	Harris	matt.b.harris@xcelenergy.com	XCEL ENERGY		401 Nicollet Mall FL 8 Minneapolis MN, 55401 United States	Electronic Service		Yes	23-356D-23-356
11	Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association		4300 220th St W Farmington MN, 55024 United States	Electronic Service		No	23-356D-23-356
12	Annete	Henkel	mui@mnuutilityinvestors.org	Minnesota Utility Investors		413 Wacouta Street #230 St.Paul MN, 55101 United States	Electronic Service		No	23-356D-23-356
13	Michael	Hoppe	lu23@ibew23.org	Local Union 23, I.B.E.W.		445 Etna Street Ste. 61 St. Paul MN, 55106 United States	Electronic Service		No	23-356D-23-356

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
14	Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law		2950 Yellowtail Ave. Marathon FL, 33050 United States	Electronic Service		No	23-356D-23-356
15	Richard	Johnson	rick.johnson@lawmoss.com	Moss & Barnett		150 S. 5th Street Suite 1200 Minneapolis MN, 55402 United States	Electronic Service		No	23-356D-23-356
16	Sarah	Johnson Phillips	sjphillips@stoel.com	Stoel Rives LLP		33 South Sixth Street Suite 4200 Minneapolis MN, 55402 United States	Electronic Service		No	23-356D-23-356
17	Michael	Krikava	mkrikava@taftlaw.com	Taft Stettinius & Hollister LLP		2200 IDS Center 80 S 8th St Minneapolis MN, 55402 United States	Electronic Service		No	23-356D-23-356
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20	Stacy	Miller	stacy.miller@minneapolismn.gov	City of Minneapolis		350 S. 5th Street Room M 301 Minneapolis MN, 55415 United States	Electronic Service		No	23-356D-23-356
21	David	Moeller	dmoeller@allete.com	Minnesota Power			Electronic Service		No	23-356D-23-356
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23	David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency		220 South Sixth Street Suite 1300 Minneapolis MN, 55402 United States	Electronic Service		No	23-356D-23-356
24	Carol A.	Overland	overland@legalelectric.org	Legalelectric - Overland Law Office		1110 West Avenue Red Wing MN, 55066 United States	Electronic Service		No	23-356D-23-356
25	Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	1400 BRM Tower 445 Minnesota St St. Paul MN, 55101-2131 United States	Electronic Service		Yes	23-356D-23-356
26	Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy		26 E Exchange St, Ste 206 St. Paul MN, 55101-1667 United States	Electronic Service		No	23-356D-23-356
27	Peter	Scholtz	peter.scholtz@ag.state.mn.us		Office of the Attorney General - Residential	Suite 1400 445 Minnesota Street St. Paul MN,	Electronic Service		No	23-356D-23-356

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
					Utilities Division	55101-2131 United States				
28	Christine	Schwartz	regulatory.records@xcelenergy.com	Xcel Energy		414 Nicollet Mall, MN1180-07-MCA Minneapolis MN, 55401-1993 United States	Electronic Service		Yes	23-356D-23-356
29	Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.		76 W Kellogg Blvd St. Paul MN, 55102 United States	Electronic Service		No	23-356D-23-356
30	Byron E.	Starns	byron.starns@stinson.com	STINSON LLP		50 S 6th St Ste 2600 Minneapolis MN, 55402 United States	Electronic Service		No	23-356D-23-356
31	James M	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered		150 S 5th St Ste 700 Minneapolis MN, 55402 United States	Electronic Service		No	23-356D-23-356
32	Carla	Vita	carla.vita@state.mn.us	MN DEED		Great Northern Building 12th Floor 180 East Fifth Street St. Paul MN, 55101 United States	Electronic Service		No	23-356D-23-356
33	Joseph	Windler	jwindler@winthrop.com	Winthrop & Weinstine		225 South Sixth Street, Suite 3500 Minneapolis MN, 55402 United States	Electronic Service		No	23-356D-23-356
34	Kurt	Zimmerman	kwz@ibew160.org	Local Union #160, IBEW		2909 Anthony Ln St Anthony Village MN, 55418-3238 United States	Electronic Service		No	23-356D-23-356
35	Patrick	Zomer	pat.zomer@lawmoss.com	Moss & Barnett PA		150 S 5th St #1200 Minneapolis MN, 55402 United States	Electronic Service		No	23-356D-23-356