APPENDIX AIR-4

Revised Superior Falls Exhibit A

Superior Falls Hydroelectric Project
FERC No. 2587

Revised Exhibit A
Description of Project

Final License Application

Prepared for

Northern States Power Company
a Wisconsin Corporation

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TABLES

APPENDICES[1]

[1] All Appendices are located in *Volume 3 of 4, Appendices*.

LIST OF ABBREVIATIONS

AC ....alternating current
cfs.................................cubic feet per second
FERC............................Federal Energy Regulatory Commission
FLA...............................Final License Application
hp ....horsepower
kV ....kilovolt
kVA...............................kilovolt-amperes
kW ....kilowatt
NGVD...........................National Geodetic Vertical Datum 1929
NSPW...........................Northern States Power Company, a Wisconsin corporation
O&M ....Operation and management
Project ....Superior Falls Hydroelectric Project
RCP..............................reinforced concrete pipe
rpm ....revolutions per minute
USGS ....United States Geological Survey
WDNR ....Wisconsin Department of Natural Resources

1. Introduction

Northern States Power Company, a Wisconsin corporation (NSPW), is the Licensee for the Superior Falls Hydroelectric Project (FERC No. 2587). The Superior Falls Dam is located approximately 0.4 miles upstream of the Montreal River's confluence with Lake Superior in the town of Saxon in Iron County, Wisconsin and Ironwood Township in Gogebic County, Michigan. The Project is located approximately 14 miles northwest of the neighboring cities of Hurley, Wisconsin and Ironwood, Michigan and approximately 23 miles east of the city of Ashland, Wisconsin. **Appendix A-5** of this application includes a map showing the general location of the Project. **Appendix A-6** presents an aerial photograph showing the Project's primary facilities. The Project includes a reservoir, dam, powerhouse, conduit, surge tank, penstocks, tailrace, transmission equipment, and appurtenant equipment. These features are described in the following paragraphs.[2]

2. Description of Dam Structures

The dam is 240 feet long, 30 feet wide at its base, and 28.5 feet high. From right to left looking downstream[3], the main structures of the dam consist of a non-overflow section with intake, right gate section, middle overflow section, left gate section, and left overflow weir section. In addition to the main dam structures, a right earthen embankment is located on the right side of the dam that extends upstream of the non-overflow section for 213.1 feet.

2.1 Non-Overflow Section and Intake Structure

The non-overflow section of the dam is approximately 70 feet long, 17.6 feet wide at its base, and 25.2 feet high. It is a concrete wall with buttresses on the downstream end.[4] The intake structure for the reinforced concrete pipe (RCP) conduit is 29.25 feet high, 30 feet wide at its base, and 23 feet long and included in the non-overflow section. The intake includes a 15.25-foot wide by 24-foot high (measured on incline[5]) metal trash rack with one-inch spaced vertical bars; a mechanical trash rake for maintenance; a mechanically operated steel headgate that is approximately 10 feet wide and 10.83 feet high; an air shaft, which also acts as an accessway; and a concrete collar connecting the intake to the 84-inch-diameter RCP conduit. A walkway with handrails is located on the upstream and downstream sides along the length of the non-overflow section.

2.2 Spillway

The spillway is divided into four components: the right gate section, the middle overflow section, the left gate section, and the left overflow weir section.

[2] Unless otherwise cited, all Superior Falls Project facility description attributes are from the Supporting Technical Information Document dated March 22, 2014 (NSPW, 2014).
[3] Direction of left or right, when describing facilities, is given looking downstream.
[4] In the Pre-Application Document, the Right Non-overflow Section was further described as having three sections. In order to be consistent across documents, in this exhibit the Right Non-overflow Section is described as it is described in the STID and shown in the Exhibit F drawings.
[5] The top of the trash rack is angled downstream 12 degrees from vertical with a bar thickness of 0.1875 inches. The top of the rack is exposed at the minimum required elevation of 739.7 feet NGVD. It is supported by the dam structure on the top, two 1.25-foot-high horizontal supports across the middle, and a 0.66-foot-high notch in the concrete base at the bottom. There are no other vertical frame supports. The spacing of the bars is held in place by twelve horizontal, 1-inch high tie bars welded to the downstream side of the 0.1875-inch vertical trash rack bars. However, only ten of the horizontal tie bars restrict flow beyond the restrictions provided by the other supports. The effective vertical height of the trash rack is 21.5 feet at the minimum reservoir elevation of 730.7 feet NGVD (without the obstruction of the 0.66-foot-high vertical notch at the bottom) minus 3.33 feet or 18.16 feet. The effective width is 15.25 feet minus 2.34 feet or 12.91 feet total effective width. This results in an effective opening of approximately 230 square feet.

2.2.1 Right Gate Section

The right gate section is separated from the non-overflow section by a 5.0-foot-wide concrete pier (Pier 1) and consists of two 16-foot-wide by 18-foot-high radial-type steel gates with a crest elevation of 740.2 feet National Geodetic Vertical Datum (NGVD) and a sill elevation of 722.2 feet NGVD.[6] These two gates replaced the original wooden radial-type gates as part of the 1999 rehabilitation and are separated by a 6.0-foot-wide concrete pier (Pier 2). A hydraulic cylinder hoist system is used to raise the radial-type gates. The hoist is located on a steel frame with wheels and is moved along a concrete bridge with steel tracks between the two large bays. This section is approximately 43.0 feet long, 35 feet wide at its base, and 27 feet high when measuring from top of bedrock to the operator's bridge.

2.2.2 Middle Overflow Section

Separated from the right gate section by a 5.0-foot-wide concrete pier (Pier 3), the middle overflow section was added as part of the 1999 spillway rehabilitation and replaced a portion of the original wooden radial-type gates. This section is approximately 20.5 feet long, 30 feet wide at its base, and 27.1 feet high when measuring from top of bedrock to the operator's bridge. It was constructed by filling the old Ambursen-type dam with mass concrete and extending the crest to the normal pool elevation of 740.2 feet. The overflow section has a width of 15.5 feet. The crest is an ogee shape and has two small trash gates. The right trash gate within the section is a vertical slide gate with a hand-winch operator.[7] The left trash gate or minimum flow gate within the section is also used to release the minimum flow. It is a sluice-type gate with a handwheel and threaded stem operator.[8]

2.2.3 Left Gate Section

The left gate section is separated from the middle overflow section by a 4-foot-wide concrete pier (Pier 4) and with consists of an 18-foot-wide by 15-foot-high radial-type steel gate with a gate sill elevation of 726.2 feet and a gate crest elevation of 741.2 feet. It was installed in 1999 between the new middle overflow section and the existing left overflow weir section. A concrete pier 4 feet wide (Pier 5, which is integral to Pier 6) forms the left side of the left gate section. This section is approximately 22 feet long, 30 feet wide at its base, and 27.1 feet high when measuring from top of bedrock to the operator's bridge.

2.2.4 Left Overflow Weir Section

A 3-foot-wide concrete pier (Pier 6, which is integral to Pier 5) forms the right (east) side of the left overflow weir section and consists of three concrete bulkhead overflow weir bays which are referenced as Bay 6, Bay 7, and Bay 8. Each bay is 12 feet wide with a crest elevation of 740.7 feet and is separated from the adjacent bay with a 3-foot-wide concrete pier (Piers 7 and 8). A steel beam and grafting walkway with handrails spans Bays 6 and 7. There is a concrete walkway with handrails spanning Bay 8. The section is approximately 45 feet long, 9 feet wide at its base, and 28.5 feet high when measuring from top of bedrock to the concrete walkway.

[6] All elevations in this document are referenced in the 1929 National Geodetic Vertical Datum (NGVD).
[7] The right sluice-type gate is 4.0 feet wide and 2.0 feet high with a top of gate elevation of approximately 740.2 feet NGVD and a crown sill elevation of 738.2 feet NGVD.
[8] The left vertical slide gate is 5.0 feet wide and 2.5 feet high covering a 21-inch inside diameter pipe with a top elevation of 738.2 feet NGVD. The gate sill elevation is approximately 736.1 feet NGVD.

Immediately adjacent to the left overflow weir section is the left concrete abutment which is 3 feet wide and 24 feet long.

2.3 Right Earthen Embankment

The right earthen embankment was installed in 2019 to replace the existing jersey barriers that were temporarily used to prevent water from overflowing through the operations and maintenance buildings and the relatively flat wooded area to the right of the dam. The right earthen embankment has a top elevation of 745.01 feet NGVD, it is 213 feet long and 23.6 feet wide at the base.[9] It is 4.9 feet high (at elevation 744.91) and 22 feet wide at the concrete abutment for the non-overflow and intake section.

3. Description of Reservoir

The reservoir encompasses an area approximately 16.3 acres with a gross storage capacity of 78.2 acre-feet at a reservoir elevation of 740.2 feet. It has a maximum depth of 18 feet near the dam and average depth of 4.8 feet (NSPW, 1991). The substrate consists of 70% sand and 30% muck (WI Department of Natural Resources, n.d.).

4. Description of Conveyance Systems

Conveyance systems at the Project consist of a conduit, surge tank, and penstocks.

4.1 Conduit

The conduit conveys water from the intake structure to the surge tank along and above the steep riverbank for hydropower use. The conduit is a buried 84-inch-diameter RCP and is approximately 1,697 feet long. The conduit makes three small 7.5-degree bends near the intake and one large 45-degree bend just upstream of the surge tank. The conduit was installed in 1972 and replaced the original wood-stave structure.

4.2 Surge Tank

The surge tank is an 18-foot-diameter steel tank with a concrete base, a 15-foot-high concrete lower section and a steel upper section that extends 28 feet above the concrete section. It reduces pressure variation (including water hammer) by storing or releasing water at a location near the turbine during changing or transient flow conditions. The 84-inch-diameter concrete conduit enters the surge tank on the upstream end and two 54-inch-diameter steel penstocks exit the surge tank on the downstream end and extend to the powerhouse. The conduit and penstocks are anchored to the surge tank structure with reinforced concrete collars. The surge tank was installed in 1972 and the interior and exterior were painted in 1987.

4.3 Penstocks

Two 54-inch steel penstocks extend down the steep, 100-foot-high riverbank from the surge tank to the powerhouse. Each penstock is 207 feet long from the surge tank to the concrete thrust block located adjacent to the upstream wall of the powerhouse.[10] Each penstock has a concrete collar at the surge tank

[9] Height and width from typical north south profile (along the reservoir).
[10] Length from Exhibit F4.

and an expansion joint located a short distance downstream of the surge tank. The penstocks are suspended approximately 3 feet above the ground from a series of steel frames. Each frame is oriented perpendicular to the pipe axis and consists of steel wide-flange columns, double channel beams, and a 1.25-inch-diameter U-shaped hoop around a flat ring girder on each penstock. The steel columns are founded on concrete footings keyed into the exposed bedrock. The penstocks were installed in 1964 and their exteriors were painted in 1987. The embedded steel liners and surrounding concrete thrust blocks were replaced in 1987.

5. Description of Powerhouse

The powerhouse is located in the State of Michigan approximately 207 feet downstream of the surge tank and 1,800 feet downstream of the dam. It is a reinforced concrete building measuring 32 feet long, 62 feet wide, and 43 feet high. The building features a generating room, a lower level, two tailpits and tailraces, and conical steel draft tubes. There is 135 feet of head at the dam with 127 feet of net operating head.

The tailpits and tailraces are located below the powerhouse and are rectangular in shape with an upstream wall, side piers, and a base slab. They direct the vertical flow from the draft tube downstream. In 1987, the pier walls were armored with steel plates near the waterline in conjunction with concrete repairs to the piers.

5.1 Turbines

The powerhouse contains two horizontal shaft, Francis-type turbines. Each turbine has a rated capacity of 1,250 horsepower (hp) at an operating head of 127 feet and a speed of 600 revolutions per minute (rpm). The turbines have a minimum hydraulic capacity (one unit) of 25 cfs, and a combined maximum hydraulic capacity of 220 cfs.

5.2 Generators

The Project contains two generator units with original capacities of 660 kilowatts (kW) each. They were both rewound in 1954 and 1957 and each now has the capability to produce 825 kW at unity power factor for a maximum plant capacity of 1,650 kW at unity power factor.

6. Tailrace

The tailrace is approximately 55 feet wide at the powerhouse and extends downstream from the dam for approximately 80 feet to its confluence with the Montreal River.[11]

7. Transmission Equipment

There is a 200 foot-long, three phase overhead 2/0 wire 2.4 kV transmission line extending from the powerhouse to the non-project distribution substation, which serves as the point of interconnection. The 2.4 kV transmission line is isolated from the generators by 400A generator breakers. The equipment required to transmit the electrical generation to the non-project, looped 34.5 kV electrical grid contains a three phase, 2,000 kVA, 2.4/34.5 kV step-up transformer. NSPW is the entity receiving the Project generation.

[11] Length and width of tailrace measured via Google Earth.

The substation is also part of the looped 34.5 kV grid that also supports a 34.5 kV transmission line that is connected to Ironwood, Michigan via the Saxon Falls substation. The Superior Falls substation also has a non-project 500 kVA 34.5 kV/12.4 kV step-down transformer that supports a 12.4 kV distribution feeder to Little Girl's Point. The 2,000 kVA, 2.4/34.5 kV step-up transformer only serves the Superior Falls Project and is the interconnection point with the looped 34.5 kV grid. NSPW also owns and maintains the non-project substation, the non-project 34.5 kV transmission line, and the non-project 12.4 kV distribution feeder.

8. Appurtenant Equipment

Appurtenant equipment includes, but is not limited to, a log boom upstream of the intake, bearing lubrication systems, generator ventilation systems, switchboards, additional gate hoist equipment, switchgear, protective devices, and metering devices.

9. Project Operation

The Project operates in a run-of-river mode where discharge measured immediately downstream of the Project tailrace approximates the sum of inflows to the Project reservoir. This operation mode protects fish spawning in the Project impoundment, riparian vegetation above and below the Project, and recreation opportunities.

To ensure run-of-river operation, the Licensee maintains a reservoir water surface elevation at a minimum of 739.7 feet (NGVD)[12] as measured immediately upstream from the dam. A minimum flow of 8 cfs is required to be released into the bypass reach of the Montreal River from the Saturday before Memorial Day through October 15 for enhancement of scenic resources. A minimum flow of 20 cfs is required to be released into the bypass reach from 8 am to 8 pm on weekends and holidays during the same timeframe, also for the enhancement of aesthetic resources.

Under the proposed operation, just prior to spring runoff, the Applicant may need to deviate from the maximum reservoir elevation (by no more than an increase of 0.5 feet) to remove ice from the downstream side of the radial-type gate for dam safety purposes.[13] The duration of the deviation shall be no longer than necessary (normally less than a few days) to remove the ice and will be conducted as a planned deviation under the requirements outlined in Section 5.9 of Exhibit E.

The Project is operated in conjunction with the Saxon Falls Project located approximately 3.5 miles upstream. Two operators are assigned to oversee the daily operation and routine maintenance of both Projects. Eight-hour coverage is provided five days a week, Monday-Friday. An operator for the facility is on call 24 hours per day, seven days per week. The plant is manually operated with controls installed for automatic shutdown in case of operational emergencies. Whenever a plant shutdown occurs or if high or low water alarms are activated (reservoir elevation greater than 741.5 feet or lower than 739.75 feet NGVD), the continually staffed control center at the Licensee's Wissota Hydro Project is automatically

[12] The current license lists the elevations in mean sea level, which is not a true survey datum. NGVD 1929 was created to approximate mean sea level. Therefore, for the purposes of listing the elevations in a true survey datum, all elevations are listed in NGVD 1929.
[13] The radial gate in the left gate section has a downstream enclosure that is heated to allow for winter operation.

notified. The high and low water conditions are monitored with the existing headwater monitor. Readings are taken every quarter hour at all times.

The trash rack is manually raked, and the material cleaned from the trash rack is collected, garbage removed and properly disposed of, and flushed downstream. Raking occurs at least weekly during the spring season, after storms during the summer season, and at least weekly during the fall season. Raking is not normally required during the winter season. Large woody debris is also sluiced downstream.

For emergency operation of the facility, an operator is available 24 hours a day and can be supported by the Licensee's White River Hydro operator, local line crews, the Ashland Bay Front Plant maintenance staff, and personnel from the NSPW's Hydro Maintenance Department in Chippewa Falls, Wisconsin.

NSPW is not proposing any changes to Project operations.

10. Safe Management, Operation, and Maintenance

NSPW has a robust Owners Dam Safety Program that incorporates all dam safety inspection components, monitoring responsibilities, and communications required for this dam classification. It also assures adequate resources are allocated for fulfillment of Federal Energy Regulatory Commission (FERC) dam safety requirements. The current Owners Dam Safety Program was revised and submitted to FERC on June 28, 2019 (NSPW, 2019).

NSPW developed a public safety plan in consultation with the FERC. The plan is reviewed on an annual basis to determine if changes are necessary. The plan was last updated in 2015 (NSPW, 2015).

As a result of a July 2016 flood incident, NSPW improved communication at the facility by installing cell phone boosters in the Superior Falls Dam Office. In addition, cell phone coverage has improved in the general locale. The rating curves for Gates 1 and 2 were updated and submitted to the Commission on May 31, 2017.[14]

11. Average Annual Generation

Annual generation for the Superior Falls Project averaged approximately 11,436.4 Megawatt-hours (MWh) for the five-year period ending in 2021.

12. River Flow Characteristics

Streamflow information from the United States Geological Survey (USGS) gaging station No. 04029990 (Saxon Falls powerhouse) was used to develop flow duration curves for the Montreal River. According to the National Water Information System Web Interface, daily discharge values were provided by NSPW from the gage location at Latitude 46.53689°N, Longitude -90.37990°W (US Geological Survey, n.d.).[15] The gage location has a drainage area of 262 square miles. The drainage basin for the Project is 264

[14] Accession No. 20170531-5159.
[15] Since flow data is provided by NSPW, there is no physical gage in this location.

square miles. Based on streamflow data for the period of October 1, 1986 to December 31, 2021[16], the average annual calendar year flow at the Project is 316 cfs; the maximum annual calendar year flow was 609 cfs in 2016; and the minimum annual calendar year flow was 156 cfs in 1987.

Streamflow duration data shows the percentage of time a given flow is equaled or exceeded. Monthly flow duration curves and the annual exceedance table are based on data collected for the period of record from October 1, 1986 to December 2021 and are included in **Appendix A-7. Table A-1** shows the monthly minimum, mean, median, and maximum flows at the Project. Daily inflows exceed the minimum hydraulic capacity of 25 cfs 99.98% of the time and exceed the maximum hydraulic capacity of 220 cfs 34.6% of the time.

Table A-1 Monthly Minimum, Mean, Median, and Maximum Flow at the Project

Month	Minimum Flow (cfs)	Mean Flow (cfs)	Median Flow (cfs)	Maximum Flow (cfs)
January	60	164	168	484
February	55	174	168	1,713
March	64	403	207	4,131
April	86	998	633	8,907
May	60	541	262	8,585
June	40	280	202	3,537
July	40	268	171	10,076
August	25	164	121	2,569
September	17	155	101	1,461
October	30	241	155	5,240
November	53	235	190	2,902
December	48	192	168	1,511
Calculated using mean daily flow data				

13. Estimated Project Cost

The Project is an existing, FERC licensed facility. As of December 31, 2021, net book value (net investment) was calculated at $294,773 and the gross book value was estimated at $2,561,284. This figure includes land and land rights, structures and improvements, waterway improvements, generating equipment, accessories, and miscellaneous equipment.

14. Estimated Costs of Proposed Environmental Measures

The estimated capital and estimated annual Operation and Management (O&M) costs for proposed environmental measures in 2022 dollars are outlined in **Table A-2**.

[16] There is no available flow data prior to October 1, 1986. The flow duration curves use data from October 1, 1986 to December 31, 2021. USGS data was used from October 1, 1986 to September 30, 2015. Data from October 1, 2015 to December 31, 2021 was provided by NSPW as operational data.

Table A-2 Estimated Capital and Annual O&M Costs for Proposed Environmental Measures in 2022 Dollars

<table>
<tr><th colspan="2">Item</th><th>Capital Cost</th><th>O&M Cost</th></tr>
<tr><td colspan="2">Develop Aquatic and Terrestrial Species Plan and conduct biennial invasive species surveys</td><td>$40,000</td><td>$35,000*</td></tr>
<tr><td colspan="2">Develop Historic Resources Management Plan and conduct shoreline erosion surveys every 5 years</td><td>$20,000</td><td>$15,000*</td></tr>
<tr><td colspan="2">Develop an Operations Monitoring Plan</td><td>$25,000</td><td>$5,000</td></tr>
<tr><td rowspan="2">Superior Falls Canoe Portage Take-out Improvements</td><td>Remove existing canoe portage take-out signage along State Hwy 122; establish a new put-in access/canoe portage take-out site a short distance upstream of the dam to improve safety for users; and establish a gravel parking area with a capacity for up to six vehicles</td><td>$50,000</td><td>$3,000</td></tr>
<tr><td>Install new Part 8 signage to meet current FERC standards, as well as directional signage and regulatory signage</td><td>$2,000</td><td>$400</td></tr>
<tr><td rowspan="2">Superior Falls Scenic Overlook Improvements</td><td>Conduct maintenance of parking area and portable toilet</td><td>$3,000</td><td>$0 Additional Cost</td></tr>
<tr><td>Replace weathered informational signage at parking area</td><td>$500</td><td>$0 Additional Cost</td></tr>
<tr><td rowspan="2">Superior Falls Tailwater Fishing Area</td><td>Conduct routine maintenance (i.e., mowing, litter removal, trail maintenance) over term of new license</td><td>$0</td><td>$0 Additional Cost</td></tr>
<tr><td>Replace weathered safety signage</td><td>$2,000</td><td>$0 Additional Cost</td></tr>
<tr><td>Bald Eagle Measures</td><td>Review WDNR Natural Heritage Inventory for presence of bald eagle nests within 660 feet of proposed ground disturbing activities at recreation sites and schedule activities to occur between August 1 and January 15 (outside the nesting season) for any work within 660 feet of any eagle nest.</td><td>$0</td><td>$0**</td></tr>
<tr><td>NLEB and Tricolored Bat Measures</td><td>Restrict tree removal activities (>3” diameter) outside of the NLEB pup season (i.e., June 1 to July 31) and to follow the current USFWS NLEB and Tricolored Bat guidance. No bats will be removed from structures without prior consultation with USFWS.</td><td>$0</td><td>$0**</td></tr>
<tr><td>Erosion and Siltation</td><td>Install erosion and sediment control BMPs prior to beginning any ground disturbing activities at recreation sites. Disturbed soils will be permanently stabilized with mulching, seeding, and/or rock upon completion of the work.</td><td>$0</td><td>$0**</td></tr>
<tr><td>Saxon Falls Whitewater Release</td><td>Conducting the whitewater releases at Saxon Falls as proposed, will increase the generation at Superior Falls from 4,569 MWh/year to 4,586 MWh/year for a dry season (2012 model year), from 6,902 MWh/year</td><td>$NA</td><td>$(246)[18]</td></tr>
</table>

[18] This value is based upon 9 MWH of lost generation per normal year and replacement value of power of $27.32/MWH as stated in Exhibit H of the Final License Application for the Superior Falls Hydroelectric Project (FERC Project No. 2587) and Accession No. 20221230-5395. NSPW is reporting these costs at the request of the Commission.

Item		Capital Cost	O&M Cost
	to 6,911 MWh/year for a normal season (2003 model year), and from 10,446 MWh/year to 10,457 MWh/year for a wet season (2016 model year).[17]		
Saxon Falls Increased Aesthetic Flow	Increasing the aesthetic flow as proposed[19], will decrease the generation at Superior Falls from 4,569 MWh/year to 4,510 MWh/year for a dry season (2012 model year), from 6,902 MWh/year to 6,857 MWh/year for a normal season (2003 model year), and from 10,446 MWh/year to 10,411 MWh/year for a wet season (2016 model year).[20]	$0	$1,229[21]
Total Cost		**$142,500**	**$59,383**

*cost per survey event

**Cost of these measures are already included in current O&M expenses and costs and will not result in additional capital or O&M costs.

15. Purpose of the Project

The purpose of the Project is to generate renewable hydroelectric energy. NSPW is a public utility that produces, purchases, transmits, and distributes power to retail customers. The power generated by the Superior Falls Project is delivered to NSPW's system for sale to customers.

16. License Application Development Costs

The costs for NSPW to relicense under the Traditional Licensing Process through the filing of the FLA are estimated to be $272,656.

17. Estimated Value of On-Peak Power and Off-Peak Power

The Project operates in a run-of-river mode of operation; therefore, this section is not applicable.

18. Average Annual Increase or Decrease in Project Generation and Value of Power Due to Changes in Project Operations

NSPW is not proposing any changes that would have a material effect on power generation at the Superior Falls Project. The average annual amount and value of project power for the term of the new license is projected to remain the same.

[17] This information was calculated using the preliminary Reservoir Flow Routing Model filed with the Commission on August 18, 2023 as Appendix E-28 of the Final License Application for the Gile Flowage Storage Reservoir Project (FERC Project #: 15055). See Accession # 20230818-5101.
[19] Change releases at Saxon Falls only from the period each year of Saturday before Memorial Day to October 15 where 5 cfs is released 24 hours per day to releasing an additional 5 cfs between 8 am and 8 pm on the weekends.
[20] This information was calculated using the preliminary Reservoir Flow Routing Model filed with the Commission on August 18, 2023 as Appendix E-28 of the Final License Application for the Gile Flowage Storage Reservoir Project (FERC Project #: 15055). See Accession # 20230818-5101.
[21] This value is based upon 45 MWH of lost generation per normal year and replacement value of power of $27.32/MWH as stated in Exhibit H of the Final License Application for the Superior Falls Hydroelectric Project (FERC Project No. 2587) and Accession No. 20221230-5395. NSPW is reporting these costs at the request of the Commission.

19. Remaining Undepreciated Net Investment, or Book Value of the Project

The undepreciated net investment of the Project is $294,773 (book cost of $2,561,284 less accumulated depreciation of $2,266,511).

20. Annual Operation and Maintenance Costs

The average annual cost to operate and maintain the Superior Falls Project for the period 2017-2021 is $518,034. These costs are outlined in **Table A-3** and include general O&M expenses, insurance, taxes, and depreciation. A breakdown of the individual components of the general O&M expense category is shown in **Table A-4**.

Table A-3 Annual Operation and Management Costs

Item	Cost
General O & M Expenses (5-year average)	$273,288
Insurance	N/A[22]
2021 Property Taxes	$85,485
2021 Depreciation	$159,261
Average Annual O & M Cost	**$518,034**

Table A-4 Cost Breakdown of General O&M Expense Category[23] (2017 to 2021)

Cost	2017	2018	2019	2020	2021	2017-2021 Mean
Employee Expenses	$4,705	$5,371	$3,778	$5,195	$23,034	$8,416
Labor	$159,168	$182,838	$158,382	$155,016	$228,535	$176,788
Materials & Commodities	$17,105	$15,335	$17,379	$22,435	$24,745	$19,400
IT Costs	$55	$33	-	-	-	$44
Miscellaneous	$58,617	$61,595	$37,922	$36,725	$36,174	$46,207
Outside Services	$11,217	$23,936	$18,842	$273	$58,031	$22,460
Total General O&M Costs	**$250,867**	**$289,108**	**$236,303**	**$219,646**	**$370,519**	**$273,288**

21. One-Line Diagram of Electric Circuits

The One-line Diagram of Electrical Circuits is shown in **Appendix A-8**.

22. Lands of the United States

There are no federally owned lands within the Project boundary.

[22] NSPW pays a lump sum for insurance costs per operating company (i.e., NSPW, NSPM), therefore there are no insurance costs specific to the Superior Falls Project
[23] Includes administrative costs

23. Public Utilities Regulatory Policy Act

NSPW is not seeking benefits under the Public Utility Regulatory Policies Act (PURPA) as it pertains to the Project.

24. Supporting Design Report

The supporting design report is considered Critical Energy Infrastructure Information and has been filed as such as a separate document.

25. Works Cited

NSPW. (1991). *Application for a License for a Minor Water Power Project, Superior Falls Hydroelectric Project, FERC Project No. 2587.* December 17,1991.

NSPW. (2014). *Superior Falls Hydroelectric Project, FERC No. 2587, Supporting Technical Information Document.* March 22, 2014.

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WI Department of Natural Resources. (n.d.). *WDNR Lakes Pages-Superior Falls Flowage*. Retrieved September 19, 2019, from https://dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=2940600&page=facts.