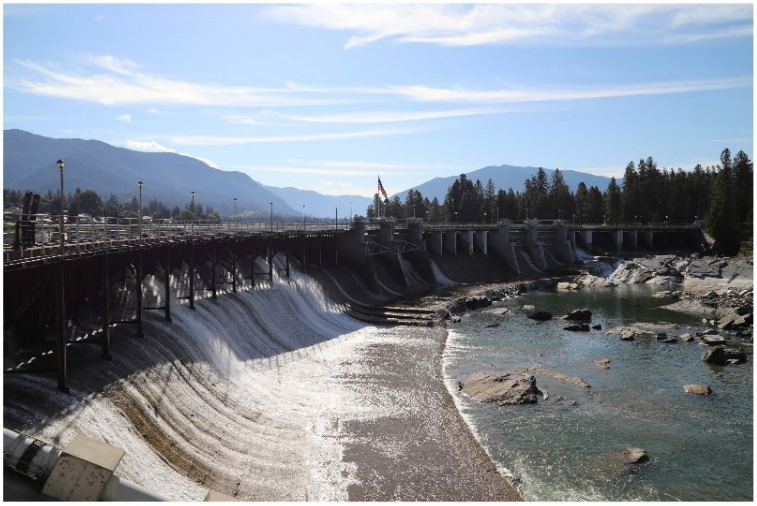
NorthWestern Energy
Delivering a Bright Future

Thompson Falls Hydroelectric Project
FERC Project No. 1869
Final License Application
Volume I of IV (Public)
Exhibit D: Costs and Financing



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List of Abbreviations and Acronyms

ATC	Around-the-Clock
DEC	decrease
EELT	Electrical Energy Producers License
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
INC	increase
kWh	kilowatt hour
M	million
M/yr	million per year
Mid-C	middle Columbia
MW	megawatt
MWh	megawatt hours
NorthWestern	NorthWestern Energy
O&M	operations and maintenance
PM&E	protection, mitigation, and enhancement
Project	Thompson Falls Hydroelectric Project
Thompson Falls Project	Thompson Falls Hydroelectric Project
WET	Wholesale Energy Transaction

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1. Original Cost

NorthWestern Energy (NorthWestern) is not applying for an initial (original) license for the Thompson Falls Hydroelectric Project (No. 1869) (Project, Thompson Falls Project); therefore, a statement of the original cost of Project land or water rights, structures, or facilities is not applicable under 18 Code of Federal Regulations §4.51(e).

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2. Estimated Value

While the Federal Energy Regulatory Commission (FERC) may issue a new license in accordance with Section 15(a) of the Federal Power Act (FPA), under Section 14(a) of the FPA, the federal government may take over any project licensed by the FERC upon the expiration of the original license. If such a takeover were to occur upon expiration of the current license, NorthWestern would have to be reimbursed for the net investment, not to exceed fair value, of the property taken, plus severance damages. To date, no agency or interested party has recommended a federal takeover of the Project pursuant to Section 14 of the FPA.

2.1 Fair Value

The fair value of the Project is dependent on prevailing power values and license conditions, both of which are currently subject to change. One approximation of fair value would likely be the cost to construct and operate a comparable power generating facility. Because of the high capital costs involved with constructing new facilities, transmission congestion, and the increase in fuel costs associated with operation of, for example, a fossil fuel replacement, the fair value would be considerably higher than the net investment amount.

Another approximation of fair value may be made based on prior transactions. In 2014, NorthWestern purchased 11 hydro facilities (and 1 storage facility), including the Project. As part of that transaction, the Project's assets were valued after an acquisition adjustment at $91.6 million (M). Factoring in inflation[1] that would make the Project worth $234.2M in 2023 dollars.

2.2 Net Investment

Northwestern's net investment (book value) in the Project is $137,039,136 as of December 31, 2022. This number includes a capitalized investment of $188,495,716 plus construction work in progress of $661,731 less accumulated depreciation of $52,118,311.

2.3 Severance Damages

In the event of federal takeover, NorthWestern would be entitled to receive severance damages, in addition to its net investment as provided in Section 14 of the FPA. However, applicable principles are uncertain. Such damages should include, among other things, payments for costs incurred in providing new facilities to continue service, payment for additional costs of generation, and

[1] https://www.bls.gov/data/inflation_calculator.htm

payment for diminution of value to the rest of NorthWestern's system. Due to the uncertainty in the generation market, an estimate of severance damages has not been made.

3. Costs of Proposed Development

3.1 New developments

NorthWestern is not proposing any new development at the Project.

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4. Life-cycle Costs

This section is a statement of the estimated life-cycle cost of the Project.

4.1 Cost of Capital (equity and debt)

NorthWestern's historical weighted average cost of capital is 6.92 percent (NorthWestern 2023) based on a capital structure and rate of return as approved by the Montana Public Service Commission.

Cost of Debt:	2.16% = 4.26% interest rate	x	50.62% portion of assets under debt
Cost of Equity:	4.77% = 9.65% return on equity	x	49.38% portion of assets under equity
Historical Weighted Average Cost of Capital:	6.92%		

4.2 Local, State, and Federal Taxes

Montana does not have a general sales, use, or transaction tax. Local property taxes are paid to taxing authorities in Montana. The Montana Department of Revenue determines the enterprise value of NorthWestern Corporation, which includes all real and personal property. A portion of the enterprise value is then allocated to Montana. The Montana value is then apportioned across all Montana counties and local taxing authorities based on the original cost of the property NorthWestern has in each taxing district. The 2022 annual property taxes attributed to the Thompson Falls Project was $2,967,441.

NorthWestern is also subject to the Wholesale Energy Transaction (WET) tax, which is calculated based on generation at a tax rate of $0.15 per megawatt hour (MWh), after allowable MWh deductions. The total 2022 WET taxes attributed to the Project was $61,026 (406,838 MWh x $0.15).

NorthWestern Energy is subject to the Electrical Energy Producers License (EELT) tax, which is calculated based on generation at a tax rate of $0.0002 per kilowatt hour (kWh). The total 2022 EELT taxes attributed to the Project was $99,340.80 (496,704,000 kWh x $0.0002).

NorthWestern Energy is subject to the Hydroelectric Invasive Species fee, which is a quarterly fee that is calculated on the megawatt nameplate capacity. The total 2022 Hydroelectric Invasive Species fee attributed to the Project was $149,602.88 (94 megawatt [MW] x $397.88 x 4).

NorthWestern Corporation's consolidated composite income tax rate is 26.33 percent. This includes the Federal income tax rate of 21 percent and the Montana income tax rate of 6.75 percent.

4.3 Depreciation and amortization

NorthWestern's 2022 depreciation of the Project assets are shown in **Table 4-1**. Table 4-1 does not include any allocation of common hydropower plant or allocation of NorthWestern common/general plant.

Table 4-1: Thompson Falls Project Depreciation of Assets

FERC Accounts	Depreciable Base	SUM
302	$1,760,973.74	$35,219.52
303	$21,908.23	$438.12
331	$28,783,294.78	$397,209.48
332	$23,682,742.96	$355,241.16
333	$26,847,385.92	$375,863.40
334	$7,834,885.80	$126,141.60
335	$4,633,669.00	$89,429.88
336	$102,408.00	$2,119.80
392	$37,496.10	$749.88
394	$98,440.02	$1,968.84
114	$91,579,158.05	$1,831,583.16
	TOTAL	**$3,215,964.84**

4.4 Operation and Maintenance

The Project has a current annual operations and maintenance (O&M) expense cost of approximately $2,431,826 as displayed below. O&M costs have been increasing approximately 4 to 6 percent over the past few years.

NorthWestern's basic O&M budget covers all typical labor, materials, and contracts for day-to-day O&M of the facility. Special maintenance items are expenses for maintenance projects that are in excess of $25,000 per project. The annual fees include FERC administration, headwater payments, land rental, and United States Geological Survey gaging fees. Insurance charges include both physical property and liability coverage. The fees are not specific to the Project, so the cost shown in **Table 4-2** is an estimated allocation of the total hydropower expenses.

Table 4-2: Thompson Falls Project Operation and Maintenance Expenses[2]

Expense	Cost
Basic O&M	$961,962
Special Maintenance	$99,032
Payments / Annual Fees	$746,769
License compliance administration	$300,000
Insurance (estimate 15% allocation)	$324,063
Total	$2,431,826

4.5 Environmental Measures

Estimated costs for proposed PM&E environmental measures are in **Table 4-3**. Costs were estimated to implement the proposed PM&E measures on a recurring annual basis and for one-time capital costs. The capital costs were annualized over a 30-year period and added with the annual costs of implementation resulting in total annualized costs for the Project PM&E as proposed, rounded to the nearest $1,000.

[2] Based on 2024 Budget.

Table 4-3: Estimated costs for proposed PM&E environmental measures.

Environmental Measure	Comments	Capital Cost	Annual Cost	Rounded Total Annualized cost
Fisheries				
Continue to Release 6,000 Minimum Flow from the Project	Cost included on Project O&M	$0	$0	$0
Upstream Passage Measures	Submersible PIT tag arrays - equipment	$100,000		$3,000
	Iterative Fishway Evaluation Program Implementation	$0	$200,000	$200,000
	Data Analysis and Reporting	$0	$25,000	$25,000
Downstream Passage Measures	Efishing equipment, vehicle, fish transport tank	$150,000		$5,000
	Backpack Electrofishing	$0	$60,000	$60,000
	Operate and maintain PIT tag arrays	$0	$65,000	$65,000
	Transport Bull Trout to Lake Pend Oreille	$0	$45,000	$45,000
	Data Analysis and Reporting	$0	$25,000	$25,000
Implement the FOMP	Operate and maintain the ladder	$0	$150,000	$150,000
Drawdown Management Plan - Fisheries Population Monitoring	Fisheries monitoring staffing + equipment	$0	$20,000	$20,000
Engineered Solution for Fish Passage Facility	Cost for modifcations to the Fish Passage Facility to operate under flexible generation (used Alternative 1)	$300,000	$10,000	$20,000
Water Quality				
Implement Thompson Falls Water Quality Monitoring Plan		$0	$40,000	$40,000
Implement the updated TDG Control Plan		$0	$29,900	$30,000
Terrestrial Resources				
Implement annual noxious weed control measures		$0	$35,000	$35,000
Manage the shoreline pursuant to FERC's Standard Land Use Articles.		$0	$25,000	$25,000
Geology				
Develop and implement a Drawdown Management Plan		$28,000	$3,500	$4,000
Recreation				
Implement Recreation Management Plan - Project Management	Periodic Visitor and Site Monitoring	$0	$66,500	$67,000
Power Park Operation and Maintenance		$0	$43,500	$44,000
Cherry Creek Boat Launch Operation and Maintenance		$0	$38,250	$38,000
Cherry Creek Boat Launch Site - boat launch improvements		$125,000	$0	$4,000
Island Park Operation and Maintenance			$54,000	$54,000
South Shore Dispersed Area Operation and Maintenance			$29,000	$29,000
North Shore Parking Area	annual grading + new gravel every third year		$4,500	$5,000
Wild Goose Landing Park Operation and Maintenance			$73,500	$74,000
Wild Goose Landing Park Redevelopment		$4,017,150		$134,000
Cultural Resources				
Implement HPMP			$55,000	$55,000
Total		**$4,720,150**	**$1,097,650**	**$1,256,000**

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5. Value of Power

This section shows how NorthWestern estimates the cost of obtaining capacity and of energy to replace the amounts provided by the Project. For energy, this is based on a 30-year levelized Around-the-Clock (ATC) Middle Columbia (Mid-C) price. For capacity, this was based on current costs of capacity which assumes renewing the Project license rather than having the need for replacement power. **Table 5-1** shows the On-Peak, Off-Peak, and ATC prices at an annual level for 30 years and **Table 5-2** shows the 30-Year levelized value.

Table 5-1: Annual On-Peak, Off-Peak, and Around -the-Clock Prices

Mid-C Energy Prices - Ascend Aug 2023 ($/MWh)	On-Peak	Off-Peak	ATC
2024	$102	$68	$87
2025	$98	$69	$85
2026	$96	$72	$86
2027	$92	$73	$84
2028	$82	$65	$75
2029	$70	$56	$64
2030	$58	$48	$54
2031	$48	$39	$44
2032	$40	$33	$37
2033	$37	$31	$35
2034	$39	$33	$37
2035	$41	$35	$39
2036	$43	$36	$40
2037	$45	$39	$42
2038	$47	$40	$44
2039	$48	$41	$45
2040	$52	$44	$48
2041	$53	$46	$50
2042	$55	$47	$52
2043	$60	$51	$56
2044	$63	$54	$59
2045	$65	$56	$61
2046	$67	$58	$63
2047	$69	$60	$65
2048	$72	$63	$68
2049	$74	$65	$70
2050	$78	$69	$74
2051	$78	$69	$74
2052	$78	$69	$74
2053	$78	$69	$74

***Source*:** Mid-C power price forecasts as of August 27, 2023

Table 5-2: Thompson Falls Project 30-year Levelized Value

Mid-C Energy Prices – Ascend Aug 2023	On-Peak	Off-Peak	ATC
Levelized Price (2024-2053) ($/MWh)	$68	$54	$61

Note: Mid-C = Middle Columbia

6. Financing of Proposed Development

NorthWestern intends to use internally generated cash flows and external sources of financing to meet costs of continued operation of the Project. NorthWestern's annual revenues in the last 3 years were in the $1.2 to $1.5 billion range. In addition, NorthWestern currently has access to $550M of committed lines of credit from banks and frequently issues long-term debt and equity to finance long-term assets. NorthWestern's credit ratings are investment grade and are as follows: S&P – A- (secured) and BBB (unsecured), Moody's – A3 (secured) and Baa2 (unsecured), and Fitch – A3 (secured) and BBB+ (unsecured.)

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7. Cost of Application

The estimated cost to prepare the Final License Application, and subsequent response to FERC's Additional Information Request, is $6,871,327. This number includes expenses through 2025.

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8. On and Off-peak Values of Power

On and off-peak values of power are shown in Table 5-1.

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9. Power Generation from Changes in Operations

NorthWestern proposes that the Project will continue to provide baseflow generation and flexible capacity needs in the new license term. Baseflow generation uses the river inflow by matching reservoir inflows to outflows to generate electricity while maintaining a stable reservoir elevation. The Project has generated an average of 475,379 MWh of energy over the 5-year period of 2018 to 2022. While annual generation is dependent upon river flows and generating unit availability, no change in typical baseflow generation is expected due to future operations. The economic value of baseflow generation over this 5-year period averaged approximately $21M/year based on market rates for power at the Mid-C point of receipt. This value represents the avoided cost of replacement power. The future economic value of baseflow generation from the project is estimated at approximately $29M/year based on a projected Mid-C future flat-rate price of $61/MWh. In addition to baseload generation of electricity, the project provides additional value through the provision of flexible capacity.

Flexible capacity increases (INC) or decreases (DEC) generation from the baseflow, raising or lowering the reservoir elevation as the flow through the units is changed to support flexible capacity needs. Under normal operations, NorthWestern will maintain the reservoir between elevation 2,396.5 and 2,394 feet (2.5 feet below normal full operating level). The units may INC or DEC generation during normal operations within the above defined reservoir elevations. Spill gates may be used to maintain reservoir elevation if needed in times of decreased generation. In general, a minimum flow of the lesser of 6,000 cubic feet per second or inflow will be released from the project during normal operations. The project can currently provide an average annual INC of 8.1 MW and an average annual DEC of 14.7 MW.

The value of flexible capacity (**Table 9-1**) was estimated using recent costs of comparable battery installations at an average $4,332 ($/MW-month per hour). These value estimates limited provision of flexible capacity to a maximum of 10 hours to better align with the battery costing. The current license allows for use of the top 4 feet of reservoir which has an estimated value of $4,107,416 annually (Table 9-1). Operations have more commonly used the top 1.5 feet of the reservoir which has an estimated value of $2.3M. NorthWestern's proposed operation for this Final License Application is the use of the top 2.5 feet of reservoir storage which has an estimated value of $3,391,827.

Table 9-1: Value of Flexible Capacity

Feet of reservoir use	1.5 ft	2.5 ft	4.0 ft
Annual estimated value ($)	$2,271,914	$3,391,827	$4,107,416

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10. Literature Cited

NorthWestern Energy. 2023. Annual Report of NorthWestern Energy Electric Utility. Docket 2023.01.001. to the Public Service Commission, Helena, Montana. 2022-electric-utility-report.pdf (northwesternenergy.com) Accessed June 30, 2023.

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