

**Pensacola Hydroelectric Project
FERC Project No. 1494**

**Exhibit D
Project Cost and Financing**

Final License Application

Prepared for



Prepared by



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LIST OF ABBREVIATIONS

Applicant	Grand River Dam Authority or GRDA
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
FPA	Federal Power Act
GRDA	Grand River Dam Authority
LCOE	levelized cost of electricity
MW	megawatt
MWh	megawatt hour
OM	Operations Model
Pensacola Project	Pensacola Hydroelectric Project
Project	Pensacola Hydroelectric Project
USACE	U.S. Army Corps of Engineers

1. Introduction

The Pensacola Hydroelectric Project (Project) (FERC No. 1494) is located on the Grand Neosho River (Grand River) in Craig, Delaware, Mayes, and Ottawa Counties, Oklahoma. It creates Grand Lake O' the Cherokees, also known as Grand Lake. The Project is owned and operated by Grand River Dam Authority (GRDA, Applicant), which is a non-appropriated agency of the State of Oklahoma, created by the Oklahoma legislature in 1935 to be a "conservation and reclamation district for the waters of the Grand River." As licensed by the Federal Energy Regulatory Commission (FERC), the Project serves multiple purposes, including hydropower generation, water supply, public recreation, and wildlife enhancement. Since the Project's original development, Congress has mandated that the U.S. Army Corps of Engineers (USACE), and not the Commission, regulates the Project for flood control purposes. As directed by Congress under section 7 of the Flood Control Act of 1944, and section 7612 of the National Defense Authorization Act for Fiscal Year 2020, GRDA controls the operation of the Project until the reservoir elevation is expected to exceed 745 feet PD, at which time USACE has exclusive jurisdiction over Project operations for flood control purposes.

The enabling legislation that created GRDA did not provide it with any funding to accomplish its stated mission to develop the resources of the Grand River. It was not until GRDA applied for and received funding from the U.S. Public Works Administration (PWA) that formal planning for construction of the Pensacola Dam began. The PWA provided all the funding for the construction of the Pensacola Dam with 45 percent in the form of grants and the remaining 55 percent as loans.

This exhibit is required under 18 CFR § 4.51(e) and 5.18(a)(5)(iii). The information in this Exhibit D serves the purpose of providing a statement of costs and financing.

2. Original Cost for Initial License

Under 18 CFR § 4.51(e)(1), this section is not applicable because this application is not for an initial (original) license. The Project was originally licensed in 1939.

3. Amount Payable for Section 14 Takeover

The Pensacola Hydroelectric Project is owned and operated by GRDA. GRDA is a non-appropriated agency of the State of Oklahoma and a municipality for purposes of section 3(7) of the Federal Power Act (FPA). Therefore, the Project is not subject to takeover pursuant to Section 14 of the FPA and the takeover cost requirements under 18 CFR § 4.51(e)(2) do not apply.

4. Estimated Cost of New Development

GRDA is not proposing any new development or any expansion of any land or water rights as a consequence of this application. Therefore, the requirements of 18 CFR § 4.51(e)(3) do not apply.

5. Annual Cost of Total Project as Proposed

As required under 18 CFR § 4.51(e)(4), the average annual cost of the Project includes capital and annual operating costs. The annual costs include any costs associated with the proposed protection, mitigation, and enhancement measures.

5.1 Cost of Capital

5.1.1 Existing Project Valuation

As of December 31, 2022, the net book value for the Pensacola Project was calculated at \$78,281,882 and the gross book value was calculated at \$97,630,813. This figure includes land and land rights, structures and improvements, waterway improvements, generating equipment, accessories, and miscellaneous equipment.

5.1.2 Cost of Capital

The last remaining construction bonds for the Pensacola Project were retired in 1961. Since that time, GRDA has issued several revenue bond series for construction of new GRDA generation projects and GRDA system improvements. All outstanding bonds are secured by a pledge of and first lien on all system revenues, including the Pensacola Project. The aggregate principal on all GRDA outstanding bonds as of December 31, 2022 is \$8,631,930. Rates of Series A Bonds ranged from 3.0% to 5.0% and Series B Bonds ranged from 1.804% to 7.155%.

The Project ownership cost is estimated by multiplying the net book value by the cost of capital. Based on a net book value of \$78,281,882 and an estimated cost of capital of 4%, the cost of Project ownership is estimated at \$3,131,275.

5.2 State, Local, and Federal Taxes

As an agency of the State of Oklahoma, GRDA is exempt from most state, local, and federal taxes. GRDA is only subject to nominal taxes such as excise and certain railroad related taxes.

5.3 Depreciation or Amortization

GRDA depreciates the Pensacola Project according to the Uniform System of Accounts for licenses subject to the FPA. As of year-end 2022, the total allocated depreciation for the Pensacola Project was \$1,016,584.

5.4 Operation and Maintenance Expenses

The annual costs of operating the Project for the period of 2018-2022 are presented in **Table 5.4-1**.

Table 5.4-1 Summary of Operating Costs and Expenses for the Pensacola Project 2018-2022

Year	Operation and Maintenance	FERC Fees	Depreciation	Admin and General		Total
2018	\$7,150,975	\$174,989	\$722,048	\$1,454,051		\$9,502,063
2019	\$7,471,522	\$62,060	\$634,978	\$2,047,711		\$10,216,271
2020	\$7,530,976	\$174,320	\$952,132	\$2,545,635		\$11,203,063
2021	\$7,435,097	\$140,138	\$284,000	\$1,271,794		\$9,131,029
2022	\$6,967,532	\$157,383	\$1,016,584	\$1,499,350		\$9,640,849
2018-2022 Average	\$7,311,220	\$141,778	\$721,949	\$1,763,708		\$9,938,655

5.5 Costs for Proposed Environmental Measures

Costs for proposed environmental measures are provided in **Table 5.5-1** below.

Table 5.5-1 Estimated Costs of Proposed Environmental Measures

Measure Number	Proposed Measure	Existing or Proposed	Capital Cost (2023 dollars)	Annual Operations and Maintenance Costs (2023 dollars)	Annual Lost Generation (2023 dollars and megawatt-hours)
1	Shoreline and Vegetation Management Plan Implementation	Existing (Updated)	\$0 ¹	\$200,000	None
2	Continue to Implement the Dissolved Oxygen Mitigation Plan	Existing	\$0	\$0 additional cost	On-Peak MWh: 3,780 ² Off-Peak MWh: 3,780 On-Peak Cost: \$198,714 Off-Peak Cost: \$150,973 ³
3	Implement Construction Stormwater Best Management Practices	Existing	\$0	\$0 additional cost	None
4a	Recreation Signage	Existing	\$10,000 additional cost	\$5,000 additional cost	None
4b	Develop a new Recreation Management Plan	Proposed	\$0 ⁴	\$125,000 of additional cost for future recreation facilities inventory and use study in year 25 of new license. \$35,000 additional cost for updated annual maintenance measures.	None
5	Development and Implementation of Historic Properties Management Plan	Proposed	\$5,100,000 additional cost ⁵	\$250,000 additional cost	None

¹ The capital cost of developing the Shoreline and Vegetation Management Plan has been included in the Section 8 costs to develop the license application.

² The lost generation listed here is for the current license requirements of the Project and it is not expected to increase for the anticipated operation of the Project it has been re-calculated for this version of the application.

³ The on-peak and off-peak costs listed here are based upon an on-peak cost of \$52.57/MWh and an off-peak cost of \$39.94/MWh.

⁴ The capital cost of developing the Recreation Management Plan has been included in the Section 8 costs to develop the license application.

⁵ The capital cost of developing the Historic Properties Management Plan has been included in the Section 8 costs to develop the license application. The cost listed here includes known management measures outlined in the HPMP such as two additional TCP efforts, developing and implementing a management strategy for six additional sites, and additional testing for NRHP-eligible sites (71 areas), and other monitoring.

6. Estimated Value of Project Power

In accordance with 18 CFR § 4.51(e)(5), the annual value of project power is estimated based on the cost of obtaining equivalent power from the lowest cost alternative source. The Pensacola Project provides 122 MW of accredited capacity⁶ and an average annual energy production January 2013 through December 2022 of 464,330 MWh, resulting in a capacity factor of 43.4%.

In 2022, GRDA engaged Black & Veatch Engineering to conduct a levelized cost of electricity (LCOE) analysis for various generation resources for future construction. While the purpose of the LCOE analysis was to determine GRDA's least cost option for constructing a future resource, the analysis also serves to identify the least cost option for hypothetically replacing the capacity and energy provided by the Pensacola Project. Based on the findings of the analysis, the least cost option for replacing Pensacola Project is a new gas-fired combined cycle unit. The LCOE of the new combined cycle option operating at a capacity factor of 43.4% (equivalent to the Project capacity factor) was approximately \$63/MWh. Applying the LCOE of \$63/MWh to the Project's average annual energy production of 464,330 MWh results in an annual replacement value of \$29.26 million.

7. Financing and Annual Revenues Available to Meet Costs

GRDA has annual revenues and financing options to meet its cost of operation for the term of a new license. Financing is available to GRDA through the issuance of revenue bonds. As of December 31, 2022, GRDA has 4 outstanding bond series, of which the total principal is \$8,631,930 related to the Pensacola Project. A breakdown of the outstanding revenue bonds is shown in **Table 7-1**.

Table 7-1 Outstanding GRDA Revenue Bonds

Year	Debt Outstanding	Range of Bond Rates A Series	Range of Bond Rates B Series
2010 Bond Series	\$188,374	N/A	3.71% to 7.155%
2014 Bond Series	\$185,829	3.0% to 5.0%	1.804% to 3.961%
2016 Bond Series	\$7,994,133	3.0% to 5.0%	1.828% to 3.503%
2017 Bond Series	\$263,594	3.0% to 5.0%	N/A
Total	\$8,631,930	N/A	N/A

Annual revenues are provided to GRDA through the sale of electric power and energy and through non-utility operations. The average annual total revenues for the Pensacola Project from the time-period 2018 through 2022 were \$37,768,385.

8. Costs to Develop the License Application

The cost for GRDA to relicense under the Integrated Licensing Process as of March 31, 2023 is \$14,878,420.00

⁶ Accredited Capacity is defined as the maximum net generating capability a unit shall sustain over a four-hour period modified for environmental, seasonal, operational and fuel limitations.

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

The Pensacola Project is a GRDA asset. GRDA is an agency of the State of Oklahoma and is not subject to rate regulation by the Oklahoma Corporation Commission as investor owned, for-profit utility companies are. As shown in **Table 9-1**, the estimated average annual value of on-peak generation and off-peak generation is \$15,518,058 and \$7,647,158, respectively. The average value of both on-peak and off-peak use is \$47.58 per MWh. Values of on-peak and off-peak generation are based on average historical data from 2018-2022 and are shown in **Table 9-1**. The values of each of the columns shown in the table are the average of the 5-year values. Therefore, the average values do not match the product of the energy and the nominal market price. Values can vary depending upon market conditions, and therefore should only be used as an approximation of the value of power.

Table 9-1 Pensacola Project Estimated Average Gross Revenue from On-Peak and Off-Peak Generation (2018-2022)

Description	Energy (MWh)	Nominal Market Price (\$/MWh)	Average Gross Annual Revenue
Average Annual On-Peak Generation ⁷	312,543	\$52.57	\$15,518,058
Average Annual Off-Peak Generation	206,629	\$39.94	\$7,647,158
Average Combined On-Peak and Off-Peak Generation	519,172	\$47.58	\$23,165,216

10. Estimated Change in Project Generation and Value of Project Power Due to Changes in Project Operations

According to GRDA's generation records for the 10-year period spanning January 2013 through December 2022, the Pensacola Project had a gross average annual energy production (output) of 464,330 MWh per year.

According to GRDA's generation records for the 7-year period spanning January 1, 2016, to December 31, 2022 (under the operation of the August 14, 2015, Commission Order or current operation) the Pensacola Project had a gross average annual energy production (output) of 491,510 MWh per year.

As part of the study effort for this license application, an Operations Model (OM) was developed in accordance with the approved study plan. The OM has the ability to model the baseline, current post-2015, and anticipated operation of the Project.

To provide a proper comparison of the estimated change in project generation, the OM estimates an average annual generation for the period (January 1, 2010 to December 31, 2019) under the baseline operation of 392 GWh and 413 GWh under the anticipated operation, with an average annual increase of 21 GWh, or a 5.3% increase over the baseline operation. Of the increased generation, 12.027 GWh was

⁷ As defined under Schedule 1 of the SPP Tariff, Off-Peak days shall be Saturdays and Sundays and all National Electric Reliability Council holidays. All other days shall be On-Peak. All hours during Off-Peak days shall be Off-Peak. On-Peak hours during On-Peak days shall be all hours from HE 0700 through HE 2200 Central Prevailing Time. All other hours during On-Peak days shall be Off-Peak.

produced during on-peak times and 9.149 GWh was produced off-peak. Using the nominal market prices for average On-Peak and Off-Peak generation reported in **Table 9-1**, the value of this average annual power increase is \$997,700.

For the same time period of January 1, 2010 to December 31, 2019, the OM estimates an average annual generation under the current operation in place since 2015 of 394 GWh, with an average annual increase of 2 GWh, or a 0.5% increase over the baseline operation. Of the increased generation, 1.187 GWh was produced on-peak and 0.638 GWh was produced off-peak. Using the nominal market prices for average On-Peak and Off-Peak generation reported in **Table 9-1**, the value of this average annual power increase is \$87,900.

The OM also estimates the operation reflecting the current operation in place since 2015 (January 1, 2016 to December 31, 2019) of 467 GWh for the current operation and 493 GWh for the anticipated operation, with an average annual increase of 26 GWh, or a 5.6% increase over the current operation. Of the increased generation, 15.057 GWh was produced on-peak and 11.193 GWh was produced off-peak. Using the nominal market prices for average On-Peak and Off-Peak generation reported in **Table 9-1**, the value of this average annual power increase is \$1,238,600.