COLORADO
Colorado Water Conservation Board
Department of Natural Resources

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TO: Colorado Water Conservation Board Members

FROM: Joshua Godwin, P.E., Project Manager
Kirk Russell, P.E., Finance Section Chief

DATE: September 18, 2024 Board Meeting

AGENDA ITEM: 6b. Water Project Loans
Rio Blanco Water Conservancy District
Taylor Draw Hydroelectric Turbine Refurbishment

Staff Recommendation

Staff recommends the Board approve a loan not to exceed $2,146,250 ($2,125,000 for project costs and $21,250 for the 1% service fee) to the Rio Blanco Water Conservancy District, acting by and through its water activity enterprise, for costs related to the Taylor Draw Hydroelectric Turbine Refurbishment, from the Severance Tax Perpetual Base Fund. The loan term will be 30 years at an interest rate of 2.00% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.

Introduction

The Rio Blanco Water Conservancy District (District) is applying for a loan at the hydroelectric interest rate to finance the Taylor Draw Hydroelectric Turbine Refurbishment (Project). In the early 1990's, the hydroelectric power generation facility was constructed at Taylor Draw Dam. Routine maintenance has kept the hydroelectric facility operating throughout most of the past 30 years, but events in 2021 and 2022 caused the facility to shut down and undergo unscheduled maintenance. The turbine has reached the end of its scheduled life, and the events of 2021 and 2022 have forced the District to operate the facility at reduced capacity until a complete refurbishment could take place. The reserve funds the District had accrued were originally intended for the turbine refurbishment; however, the events of the past two years diminished those funds and the District wishes to continue on schedule with the turbine refurbishment by funding the Project with a CWCB loan.The total Project cost is estimated to be $2,125,000. See attached Project Data Sheet for a location map and Project summary.

Borrower – Rio Blanco Water Conservancy District
The District was organized for the purposes of developing land and water resources for the greatest beneficial use of water within the District's boundaries. The District was organized by decree of the district court, in Rio Blanco County, Colorado, on November 9, 1990 in Civil Case Number 90CV26. The District has broad statutory powers concerning the conservation and utilization of water resources within its boundaries and is governed by a five member Board of Directors appointed by the Rio Blanco District Court Judge. The District has several assets they are responsible for including, but not limited to: Taylor Draw Dam, Kenney Reservoir and associated recreational amenities, agricultural lands, water decree portfolios, and the Taylor Draw Hydroelectric Enterprise (Enterprise) and hydropower generation facility. The District can assess a mill levy upon residents within the district and the Taylor Draw Hydroelectric Enterprise has a 10 year Power Purchase Agreement (PPA) with Moon Lake Electric Association (Association) that expired in August 2024, but is still effectively in place until a new PPA is executed.

Background
Located about 6 miles east of Rangely, Colorado, Taylor Draw Dam was constructed in the early 1980's and put into service in 1983 creating 13,800 acre-feet of water storage and 615 surface acres in Kenney Reservoir to provide a firm water supply for municipal, agriculture, and industrial uses for the water users within District boundaries. Additionally, Taylor Draw Dam provides needed flood control, recreation, and a source of hydroelectric power. On September 28, 1993, pursuant to Article X, Section 20 of the Colorado Constitution, and Section 39-45-101 et. Seq., C.R.S. 1973, the District Board of Directors created the Enterprise via Board of Directors Resolution 93-07. The creation of the Enterprise included raising the crest of Taylor Draw Dam, construction of the 2.0-megawatt hydroelectric generation facility, associated inlet and outlet works, stilling basins, and electricity distribution equipment for integration into the local power grid. The Taylor Draw Hydroelectric provides electricity to the Association in Western Rio Blanco County. There is high siltation on this stretch of the White River and has eliminated most of the original storage - causing the power generation facility to function as a run-of-the-river operation.

In 2021 the District finalized an unanticipated internal assessment, replacement, and refurbishment of several components including rotor poles in the 2.0 MW generator. In 2022 Taylor Draw Dam experienced another unanticipated non-structural penstock liner failure that forced a shut down and halted hydroelectric generation for nearly 5 months. The damaged liner was removed with the remaining liner secured in place and fully inspected. The events of the past couple years have caused additional wear of the turbine, as well as it having reached the end of its expected life. At present, the hydroelectric facility is running under capacity until the refurbishment of the turbine can take place.

The Enterprise used its own reserve funds to pay for the events from 2021 and 2022 - leading to the District's decision to seek outside funding sources for the turbine refurbishment staying on track with the long-term plan.

The District has selected GE VERNOVA, a subsidiary of General Electric, because it is the original designer, manufacturer, and constructor of the hydroelectric components and facility and the only entity qualified to perform the work.

Loan Feasibility Study
Alden Vanden Brink, with the District, and Thomas O'Brien, with GE VERNOVA, prepared the Loan Feasibility Study titled, "Feasibility of the Taylor Draw Hydroelectric Turbine Assembly Enterprise", dated August 2024. The feasibility study is in accordance with CWCB guidelines and includes an analysis of alternatives, estimated costs, and financial statements prepared by the District.

Water Rights
The District operates under the water rights listed in Table 1.

TABLE 1: PROJECT WATER RIGHTS

Name	Amount	Appropriation Date	Adjudication Date	Case No.
Rangely Power Conduit	620 cfs	07/03/1962	11/21/1982	CA1269
Taylor Draw Reservoir	13,800 AF	10/22/1982	06/24/1982	81CW144
Taylor Draw Reservoir 2nd Filling	13,800 AF	11/20/1980	05/28/1982	82CW022
Taylor Draw Power Conduit	900 cfs	07/03/1962	07/05/1985	82CW383

Project Description
The Purpose of this Project is to refurbish the Taylor Draw hydroelectric turbine so that the District can operate the power generation facility at full capacity.

Alternative 1 – No Action: Taking no action is the least expensive option. However, this option was considered unacceptable since it means the facility would continue to run under capacity and the enterprise could not reliably generate electricity. For these reasons, this alternative was not selected.

Alternative 2 – Permanently Weld the Turbine Blades in Place: The turbine was designed to optimize its power generation by adjusting the blades angle of attack depending on flow conditions. Welding the turbine blades in place would be a cheaper, temporary fix, but would severely reduce the efficiency of the turbine and could cause cavitation - resulting in further damage. This alternative is estimated to cost $250,000, but does not address the other components of the turbine that require inspection and potential maintenance. For these reasons, this alternative was not selected.

Selected Alternative 3 – Refurbish Turbine and Components: This option completely refurbishes the turbine and all of its components. The manufacturer that performed the original design will mobilize to the site, remove the entire turbine assembly, transport it back to the facility for inspection, repair and replace components as necessary, transport the entire assembly back to the site, and reinstall and test the turbine. The total cost of this alternative is $2,125,025 as shown in Table 2.

TABLE 2: PROJECT COST

Tasks	Cost
On-Site Disassembly (Site Work, Management, Engineering, Travel)	$479,000
Off-Site Activities (Engineering, Materials, Refurbishment)	$873,500
On-Site Reassembly (Site Work, Management, Engineering, Travel)	$416,000
On-Site Management (Facilities, Security, Crane, Scaffolding)	$55,000
Bond Counsel	$25,000
Contingency (~15%)	$276,525
TOTAL	**$2,125,025**

Permitting: There are no permits needed for this Project. A notice from the District to the Federal Energy Regulatory Commission 60 days prior to dewatering the penstock. The timeframe of the notice to FERC has all of the necessary permits in place for the Project and does not anticipate additional permitting.

Schedule: Design and planning for the Project are complete. Mobilization to the site for disassembly is expected to occur October 2024 and continue on through November 2024. The Turbine parts will be shipped to an off-site facility, inspected, repaired or replaced (as necessary), and shipped back to the Taylor Draw Hydroelectric Facility April 2025; reassembly of the turbine will then occur. After testing of the assembly, demobilization is expected in the spring of 2025.

Financial Analysis

Table 3 provides a summary of the Project's financial aspects. The District qualifies for a hydroelectric interest rate of 2.00% for a 30-year loan. All interest rate evaluations are per CWCB Financial Policy #7 (Lending Rate Determination). The District and Association have a PPA and Interconnection Agreement that was executed in 2014 and expired August 2024. The present agreement sets a purchase price for the electricity generated at $0.045 per kWh. The previous agreement applies until a new agreement is executed; the Association sent a letter to the District in May of 2023 committing to continue purchasing electricity generated by the District.

TABLE 3: FINANCIAL SUMMARY

Project Cost	$2,125,000
CWCB Loan Amount	$2,125,000
CWCB Loan Amount (Including 1% Service Fee)	$2,146,250
CWCB Annual Loan Payment	$95,830
CWCB Annual Loan Obligation (1st Ten Years)	$105,413
Current price ($/kWh)	0.045[1]
Average Annual Power Output (kWh)	11,433,000
Project Cost ($/kWh)	0.009

1. The PPA expired in August 2024 and the District is currently negotiating with the Association to increase the price the Association purchases power at.

Creditworthiness: The District has no existing debt.

TABLE 4: FINANCIAL RATIOS

Financial Ratio	Past Years	Future w/ Project
Operating Ratio (revenues/expenses) weak: <100% | typical: 100% - 120% | strong: >120%	138% (strong) $485K/$350K	106% (typical) $485K/$455K
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% | typical: 100% - 125% | strong: >125%	N/A	129% (strong) ($485K-$350K) $105K
Cash Reserves to Current Expenses weak: <50% | typical: 50% - 100% | strong: >100%	17% (weak) $59.8K/$350K	13% (weak) $59.8K/$455K

Collateral: Security for this loan will be a pledge of assessment revenues backed by a rate covenant. This security is in compliance with the CWCB financial Policy #5 (Collateral).

cc: Alden Vanden Brink, General Manager, Rio Blanco Water Conservancy District
Jennifer Mele, Colorado Attorney General's Office

Attachments: Water Project Loan Program – Project Data Sheet

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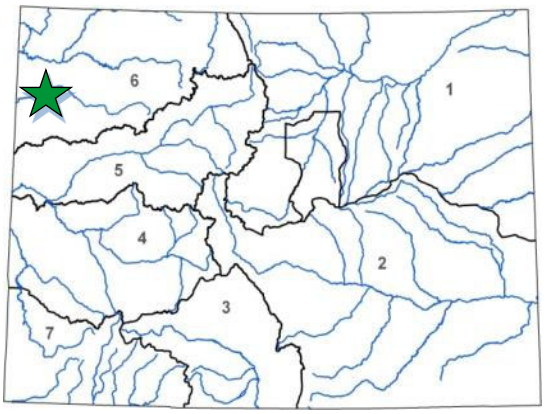
Taylor Draw Hydroelectric Turbine Refurbishment

Rio Blanco Water Conservancy District

September 2024 Board Meeting

LOAN DETAILS	
Project Cost:	$2,125,000
CWCB Loan (with 1% Service Fee):	$2,146,250
Loan Term and Interest Rate:	30 Yrs @ 2.00%
Funding Source:	Severance Tax Perpetual Base Fund
BORROWER TYPE	
Hydroelectric	
PROJECT DETAILS	
Project Type:	Hydroelectric
Average Annual Delivery:	51,430 AF
Average Annual Power Production:	11,433 MWh



LOCATION			
County:			Rio Blanco
Water Source:			White River
Drainage Basin:			Yampa/White/Green
Division:	6	*District:*	43

The Rio Blanco Water Conservancy District (District) was organized in 1990 for conserving and utilizing water resources within the district boundaries. The District serves 2,700 residents in the western portion of the county. The District's Enterprise was created in 1993 to lease the power flow water right from the District, and to use the District's Federal Energy Regulatory Commission license to build, operate, and maintain the hydroelectric project.

The 2.0-megawatt hydroelectric project was constructed on the Taylor Draw Dam at Kenney Reservoir. The dam is a "run-of-the-river" impoundment that provides flood protection and other benefits. The turbine was constructed in 1993 and has been operating since, producing power for approximately 2,000 homes. The turbine has been approaching the end of its life and needs to be refurbished to continue operating efficiently and consistently. The project will include removal of the entire turbine assembly, refurbishment, and reinstallation. Work includes a 3-month lead time for parts acquisition, and approximately 16 weeks of outage. The effort is expected to start in the fall of 2024 and last through the spring of 2025.