



COLORADO

**Colorado Water
Conservation Board**

Department of Natural Resources

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TO: Colorado Water Conservation Board Members

FROM: Jonathan Hernandez, P.E., Project Manager
Kirk Russell, P.E., Finance Section Chief

DATE: November 16-17, 2016 Board Meeting

AGENDA ITEM: 14c. Water Project Loans
Grand Valley Water Users Association - Grand Valley Power Plant Rehabilitation

Introduction

The Grand Valley Water Users Association (Association) is applying for a loan for the Grand Valley Power Plant Rehabilitation (Project). The Association is working with the Orchard Mesa Irrigation District (District) to complete this Project. The goal of the Project is to bring the Grand Valley Power Plant (GVPP) up to a sustainable operating condition and meet current electric and safety standards. Preliminary designs show the rehabilitation could increase the maximum power generation output from 2.75 MW to 4.1 MW. The Association is requesting a loan from the CWCB for approximately 92% of its share of Project cost. The District is concurrently seeking a CWCB loan to help cover its share of Project cost (see November 2016 Agenda Item 14b). Combined, these two CWCB loans would cover approximately 65% of the total Project cost. See attached Project Data Sheet for a location map and Project summary.

Staff Recommendation

Staff recommends the Board approve a loan not to exceed \$1,717,000 (\$1,700,000 for Project costs and \$17,000 for the 1% service fee) to the Grand Valley Water Users Association, for costs related to the Grand Valley Power Plant Rehabilitation Project, from the Construction Fund. The loan terms shall be 30 years at the hydroelectric interest rate of 2.0% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.



Background

The Association is the managing entity of the Bureau of Reclamation (Reclamation) owned Grand Valley Project. The Grand Valley Project facilities include the Roller Dam, the 55-mile-long Government Highline Canal, 150 miles of project-operated laterals, 100 miles of drainage ditches, and the Grand Valley Power Plant (GVPP). The Association was established to deliver water for the purpose of irrigating farm land which carries water rights appurtenant to the land.

The GVPP was built in the early 1930s and was operated by Public Service Company of Colorado (Xcel Energy) in conjunction with the Cameo coal power plant until 2010. When the Cameo coal power plant was decommissioned, Xcel Energy decided to cease operations at the GVPP as well. As the continued operation of the GVPP is important for river flows in a stretch of the Colorado River known as the "15-Mile Reach," Reclamation encouraged the Association and District to operate and maintain the GVPP. At the end of 2010, a Lease of Power Privilege (LOPP) was entered into between Reclamation and the Association and District. Under this LOPP, the Association and District equally split GVPP operational and maintenance cost. Starting in 2011, the Association and District entered into a 10-year Power Purchase Agreement (PPA) with Xcel Energy, with revenues being equally split as well. The District operates the GVPP and invoices the Association for half its cost. Reclamation remains the owner of the GVPP and its hydropower water right.

Very little work has occurred on the GVPP since its construction in the 1930s with the exception of minimal maintenance. The turbines, generator, and electrical panels are more or less as they were originally constructed and rely on 1930s technology. It is believed this may be the last remaining hydroelectric power plant that manually syncs to the power grid. Due to the worn and now outdated condition of the plant, most of the major plant components require replacement or upgrades if the plant is to operate for more than a few remaining years.

Loan Feasibility Study

The Association and District together prepared the Loan Feasibility Study titled, "Grand Valley Hydroelectric Power Plant Rehabilitation Project Loan Feasibility Study," dated October 1, 2016. This study relied on a 2015 Feasibility Study prepared by Sorenson Engineering, Inc. titled "Grand Valley Power Plant Feasibility Study." The feasibility study was prepared in accordance with CWCB guidelines and includes an analysis of alternatives, preliminary engineering design, and construction cost estimates.

Borrower - Grand Valley Water Users Association

The Association is a non-profit corporation formed in 1905 to manage the Bureau of Reclamation's Grand Valley Project. There are 1,754 shareholders in the Association's service area. Water is allocated to the land through "Subscription for Stock" agreements. These agreements were entered into by the Association and owners of irrigable lands in the early 1900s and were recorded with the Mesa County Clerk and Recorder's office. When land ownership changes, water rights remain with the land and cannot be sold separately.

Assessments are billed annually based on allotments for individual parcels of land. Each parcel is assessed a fee per acre, plus an additional assessment of \$100 per account to cover the additional costs incurred from work on the Roller Dam, laterals, and other entities. Revenues are primarily derived from these assessments, but the Association also receive funds from Reclamation per a salinity control cost sharing agreement, and from the sale of electricity generated by the GVPP.

The Association is governed by an eleven-member board of directors. The board has the authority to make and levy all assessments, and has the power to enforce collection of assessments by ceasing

water deliveries to delinquent shareholders, issuing liens on the shares (which become a lien on the land), and the eventual foreclosure and sale of said lands. It also has the power to make and enforce all rules and regulations concerning the distribution of water within the system. The board has the authority to enter into debt without shareholder approval for maintenance and repair projects.

Water Rights

The water right associated with the GVPP is shown in Table 1. The United States, through Reclamation, is the owner of the hydropower water right, as well as the other water rights associated with the Grand Valley Project.

TABLE 1: GVPP WATER RIGHT

Name	Amount	Appropriation Date	Adjudication Date	Water Court Case No.
Grand Valley Project (Hydropower)	400 CFS (irr. season) 800 CFS (non-irr. season)	2/27/1908	7/25/1941	CA5812

The GVPP water right is a part of the "Cameo Call" which is a call comprised of a series of water rights on the Colorado River owned by five entities: the Association, the District, the Grand Valley Irrigation Company, the Palisade Irrigation District, and the Mesa County Irrigation District. This call is important because it assists the state in complying with its obligations under the Colorado River Compact, and in maintaining acceptable lake levels in Lake Powell.

Project Description

The goal of the Project is to bring the GVPP up to a sustainable operating condition and meet current electric and safety standards. Under current operations, the "water-to-wire" efficiency is approximately 54% with a maximum generation output of 2.5 MW. Calculations show as much as 4.1 MW production should be feasible based on flow rate and available head. The Association and District received engineering proposals and feasibility studies for plant rehabilitation. Based on the received proposals, Sorenson Engineering was selected to be the design-build engineer.

Alternative 1 - No Action: This alternative was not selected because the GVPP is projected to be operable for only a few more years if not rehabilitated. In addition to being a revenue source for the Association, the GVPP serves an important role in providing water to the "15-Mile Reach" which has been designated by the Upper Colorado River Endangered Fish Recovery Program as critical habitat where in-stream flows are crucial by being directly responsible for providing up to 400 cfs of water throughout the critical base flow period.

Alternative 2 - Rehabilitate without Upgraded Production: The PPA is for power production to 3.5 MW. Accordingly, the engineer presented an alternative to design upgrades and efficiencies to only provide to the current PPA limit. However, this alternative was not selected because the capital cost to generate up to 4.1 MW is very low and provides additional generation potential if the current PPA is amended, or when the PPA expires in 5 years. Additionally, any power produced above 3.5 MW can currently be sold at the avoided cost rate.

Alternative 3 - Rehabilitate with Upgraded Production: Project components of this alternative include: (1) recoat two 78" diameter penstocks, scroll case and draft tubes; (2) replace turbine components, disassemble and rewind generators; and (3) replace existing controls, switchgear, and substation with equipment that meets current NESC clearances and standards. This alternative will

increase “water-to-wire” efficiency from 54% to 82.5% and the maximum generation output from 2.5 MW to 4.1 MW without requiring additional flows.

The cost associated with this alternative is \$5,200,000 as shown in Table 2. The Association and District have a current PPA with Xcel Energy at a rate of \$0.04 per kWh up to a production level of 3.5 MW. The PPA is set to expire on December 31, 2020 though it is hoped the PPA can be renegotiated and extended prior to expiration. The current avoided cost rate for Xcel is \$0.03 per kWh and this lower value was conservatively used to analyze the economic feasibility for year 2021 onward, though at the higher 4.1 MW production level.

TABLE 2: PROJECT COST

Task	Cost
Phase 1 75% Engineering Design	\$540,000
Phase 2 100% Engineering Design Equipment Order Rewind Generators Substation/Electrical Work	\$2,075,000
Phase 3 Penstocks Equipment Install Equipment Startup	\$1,980,000
Xcel Energy Review Cost	\$50,000
Subtotal	\$4,645,000
Contingency	\$555,000
TOTAL	\$5,200,000

Permitting: The GVPP is permitted through an existing Lease of Power Privilege (LOPP) between Reclamation and the Association and District. Reclamation owns the GVPP and the underlying land and will thus take the lead to ensure compliance with the National Environmental Policy Act (NEPA), National historic Preservation Act (NHPA), and Endangered Species Act (ESA). Compliance issues are not anticipated as this is a plant rebuild.

Schedule: Phase 1 is scheduled to be completed by January 2017, Phase 2 by January 2018, and Phase 3, with GVPP being fully operational, by July 2018.

Financial Analysis

The Project qualifies for the hydroelectric interest rate of 2.0% for a 30-year term. The Association is requesting a loan to cover 92% of its share of Project cost that are not otherwise covered by alternate sources of funds. Currently, the Association and District have secured \$1,500,000 in alternate funds composed of a grant commitment from the Upper Colorado River Recovery Program. The Association and District are seeking to secure a CWCB loan for the remaining construction cost to ensure the Project is fully funded, but will continue to seek additional sources of grant funds to reduce the final loan amount. Other sources of funds that will be explored include: a WSRF grant from the CWCB, a Species Conservation Trust Fund grant from CWCB (\$400k currently approved but not yet contracted), a

WaterSmart grant from Reclamation, and using LOPP Accumulated lease payments as a credit towards the Project. As of now, at least \$1,500,000 in alternate funds are committed and the Association and District are each committed for \$150,000 each out of its restricted repair and replace fund.

TABLE 3: FINANCIAL SUMMARY

Total Project Cost	\$5,200,000
Alternate Funding Sources	\$1,500,000
District's Contribution (Pending \$1.7M CWCB Loan)	\$1,850,000
Association Cash Contribution	\$150,000
Association CWCB Loan Amount	\$1,700,000
CWCB Loan Amount (Including 1% Service Fee)	\$1,717,000
CWCB Annual Loan Payment	\$76,664
CWCB Annual Loan Obligation (1 st Ten Years)	\$84,330
Annual Loan Obligation per annual kilowatt hours (17 M kWh/year)	\$0.005
Project Cost per Megawatt (4.1 MW Facility)	\$1,268,293

Creditworthiness: The Association has no existing long-term debt but was recently approved for a \$151,500 loan for the Government Highline Canal Lining Project at the September 2016 CWCB Board Meeting. This will result in an annual payment of \$6,353 if the loan is fully disbursed but will be paid from assessments and not GVPP revenue. The financial analysis in Table 4 looks at total revenues and expenses of the GVPP itself, and does not take into account non-GVPP business aspects of the Association or District. This analysis shows the GVPP is self sustaining during average years.

TABLE 4: GVPP FINANCIAL RATIOS

Financial Ratio	Past 3 Years	Future w/ Project
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	199% (strong) \$545K/\$274K	100% (average) \$505K/\$503K
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	NA	101% (strong) (\$505K-\$334K) \$169K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	111% (Strong) \$304K / \$274K	11% (weak) ¹ \$54K / \$503K

¹Does not assume accumulations of the \$50,000 per year reserve account for Repair/Replace

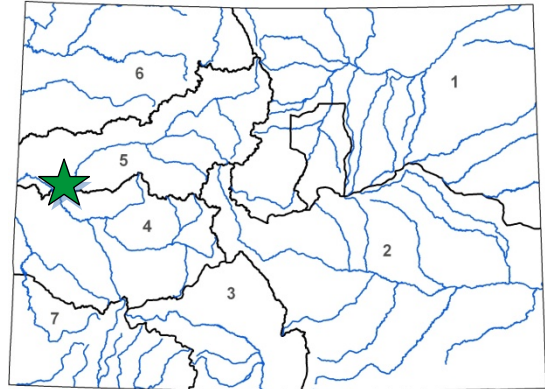
Collateral: Security for this loan will be a pledge of the Associations' assessment revenues backed by an assessment covenant, and will provide annual financial reporting. This is in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Mark Harris, General Manager, Grand Valley Water Users Association
Jennifer Mele, Colorado Attorney General's Office

Attachment: Water Project Loan Program - Project Data Sheet



L O A N D E T A I L S	
Project Cost:	\$5,200,000
CWCB Loan (with Service Fee):	\$1,717,000
Loan Term and Interest Rate:	30 Years @ 2.0%
Funding Source:	Construction Fund
B O R R O W E R T Y P E	
Hydropower	
P R O J E C T D E T A I L S	
Project Type:	Hydroelectric
Average Annual Power Production:	17M kWh



L O C A T I O N			
County:	Mesa		
Water Source:	Colorado River		
Drainage Basin:	Colorado		
Division:	5	District:	72

The Grand Valley Water Users Association (Association) and Orchard Mesa Irrigation District (District) are each seeking a loan to cover its cost share for the Grand Valley Power Plant (GVPP) Rehabilitation Project. The GVPP is owned by the Bureau of Reclamation and originally operated by Public Service Company of Colorado (Xcel Energy) in conjunction with the Cameo coal fired power plant. The Association and District took operational control of the plant when Xcel decided to cease its operations. The Association and District equally split costs and revenues from the GVPP under a Lease of Power Privilege with Reclamation and a Power Purchase Agreement with Xcel. In addition to being a revenue source, the GVPP serves an important role in providing water to the "15-Mile Reach" which has been designated by the Upper Colorado River Endangered Fish Recovery Program as critical habitat. The non-consumptive hydropower water right ensures continued flows for this important stretch of river.

The goal of the Project is to bring the GVPP up to a sustainable operating condition and meet current electric and safety standards. The GVPP was built in the early 1930s and has seen no major upgrades or modernization to date. Under current operations, the "water-to-wire" efficiency is approximately 54% with a maximum generation output of 2.5 MW. Calculations show as much as 4.1MW production should be feasible based on flow rate and available head.

