Report on
Survey of Power Generation Capacity
to
Montana Legislature
Energy and Telecommunications Interim Committee
and
Water Policy Interim Committee
per 85-1-501 MCA

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BACKGROUND

Pursuant to 85-1-501 MCA, the Montana Department of Natural Resources and Conservation (DNRC) is reporting on past and current studies conducted to assess the feasibility of establishing hydroelectric power generating projects at state-owned dams. No new studies have been initiated in the last four years. Our focus is currently on obtaining a new FERC license and acquiring a new Power Purchase Agreement for the Broadwater Power Project.

Kleinschmidt Study

In 2012, Kleinschmidt was contracted by the DNRC to perform an evaluation of the potential for small hydropower project development at three state owned dams in Montana. These dams were the Tongue River Dam in Big Horn County, the Painted Rocks Dam located on the West Fork of the Bitterroot River in Ravalli County, and the Cooney Dam located on Red Lodge Creek in Carbon County. They were selected for study because they had the highest potential for hydropower development. A fourth dam, Ruby Dam in Madison County, was evaluated by URS as part of the overall design and construction project for the rehabilitation of the Ruby Dam Spillway and Outlet Works.

The results of the Kleinschmidt study indicated that Cooney and Painted Rocks Dam developments would not result in a positive cash flow over the debt service. At the Cooney site, the principal cause for this site being uneconomic is the low annual power generation. At the Painted Rocks site, the cost to construct the approximately 15 miles transmission line results in the project revenues not able to support the total development cost. However, the Tongue River site had marginal feasibility under the study assumptions. The study recommended proceeding with a more detailed design to reduce project contingencies, determine actual cost data from equipment suppliers, and develop actual data regarding revenue, to further determine project viability.

Prior to completion of the studies, Federal Energy Regulatory Commission (FERC) Preliminary Permits were applied for and obtained for the Tongue River, Cooney, and Ruby Projects to allow the development of hydropower facilities at these sites if it was determined that it was economically feasible to do so. The purpose of a Preliminary Permit is to grant the permit holder priority to file a license application during the permit term. Based on study results, the DNRC-held Preliminary Permits for Ruby, Cooney, and Tongue River were allowed to lapse.

Immediately after the State allowed its Preliminary Permit to expire, Hydrodynamics, Inc. applied for and secured a FERC Preliminary Permit for the Ruby site. DNRC supplied them with site information, but since there have been no filings since February 2016, it is assumed their Preliminary Permit has expired.

Tongue River Power Project

On March 13, 2014, DNRC made application for a new FERC Preliminary Permit for Tongue River Power Project, a proposed hydroelectric project to be located below the Tongue River Reservoir in Big Horn County, Montana. On May 15, 2014, FERC notified DNRC that our application was accepted and issued a public notice.

The Northern Cheyenne Tribe filed a Notice of Intervention and Motion to Intervene with FERC, with reasons including protection of water quality and protection of the Tribe's water rights. The Tongue River Water Users' Association (TRWUA) filed a Motion to Intervene with FERC with reasons including significant financial obligations to the State and obligations to its members to deliver water from the Dam.

On July 30, 2014, FERC awarded DNRC a Preliminary Permit for the Tongue River Power Project, which was valid for three years. A request was made and granted to extend the permit period by an additional two years to allow completion of studies.

A contract was awarded to McMillen Jacobs Associates in December 2017 to prepare a feasibility study for the development of hydropower at the Tongue River Dam. The work scope included reviewing historical data, developing power generation estimates, determining a suitable turbine/generator, preparing preliminary drawings, developing cost estimates and an economic analysis, developing transmission line plans, assessing FERC compliance issues, assessing environmental impacts, and preparing a Final Report. The conclusion, in a report issued April 2019, was that, based on financial analysis, the project is not feasible. No further work is contemplated at this time. The FERC Preliminary Permit was allowed to lapse.

Painted Rocks Power Project

A Painted Rocks Dam Feasibility Study was initiated to evaluate potential improvements that will allow the Painted Rocks Dam to be operated safely for the foreseeable future. The possibility of adding hydropower was included in this evaluation. The analysis completed in February 2020 showed that adding hydropower to Painted Rocks Dam is not feasible. The key issues continue to be transmission costs along with sustained low energy prices. In addition, a turbine designed to capture the higher flow during peak season would not generate enough power throughout the entire year to justify the cost of installation.

RECENT EVENTS

Broadwater Power Project - Toston Dam

The Broadwater Power Project (Project) is the only state-owned hydroelectric project. The irrigation water diversion dam was completed in 1940 and the powerhouse was completed in 1989. As a run of the river project, power generation is dictated by river flows.

The maximum rated gross power production capacity is 11.11-megawatts (MW). Annually, our power generation averages approximately 6 MW, depending on actual river flow. Net revenue from the sale of power, after supporting Project operations, is deposited into a State Water Project hydroelectric power generation special revenue account (MCA 85-1-220) and is used for rehabilitation efforts for DNRC's State Water Projects.

The original bond for Project construction was paid off in December 2017. Revenue previously devoted to bond payments is being used to improve Project documentation and upgrade or replace equipment, much of which is over 30-years old. This is a multi-year effort. Initial efforts were and are directed toward modernizing the network and control systems, constructing a new Control Room, replacing the exciter, upgrading the cooling water strainers and pumps, replacing the blowers and motors for the rubber gates, and refurbishing the high-pressure oil system.

All the electricity produced at the Project is sold to NorthWestern Energy originally under a 35-year Power Purchase Agreement (PPA) which ran through June 2024. A temporary one-year PPA was negotiated to maintain power sales to NorthWestern Energy while a long term (anticipated to be 20 years) PPA is finalized. Updating the interconnection agreement, a prerequisite for the PPA, will require on-line plant testing to develop the required data. The temporary and new PPAs will have market-based power rates instead of fixed power rates. Revenues remaining after operational costs are used to help finance the rehabilitation of other DNRC-SWPB water projects. For average water flows, Broadwater generates roughly 53 million kilowatt-hours of electricity and typically has earned between $4 million and $5 million in energy and capacity revenue annually. However, this is expected to drop significantly under the new PPA. Ultimately, DNRC is looking for other opportunities to help support State Water Project operations and maintenance needs.

A FERC-mandated five-year Project safety inspection was conducted by an outside consultant in June 2022. Staff are currently working on the 2023 final Owners Dam Safety Program (ODSP) Audit Report recommendations including requesting additional personnel positions for the safe operation at the Project.

The original FERC license of the Project expired in June 2024. FERC regulations require a Notice of Intent (NOI) to relicense and a Pre-Application Document (PAD) to be filed five to five-and-a-half years prior to license expiration; these were filed on February 21, 2019. A required public meeting was held on June 6, 2019. Meetings with resource agencies were held. We completed studies to fill knowledge gaps including a water quality study and a turbine entrainment study. A Draft License Application (DLA) was filed on January 31, 2022, and a Final License Application (FLA) was filed in late June 2022 and incorporated changes based on DLA comments. Staff is responding to FERC questions and data requests. A consulting contract with HDR, Inc. is in place to assist with this effort. These delays have pushed the deadline for the

new license out a year. A new license is anticipated to be issued by June 30, 2025.

FUTURE RECOMMENDATIONS

DNRC will continue with Broadwater Power Project upgrades including mechanical systems, replacement of the jetty separating the Project intake from the irrigation canal intake, refurbishment of the trash rake, inspecting and repairing the spillway concrete, and upgrading powertrain components (turbine, seal, wicket, generator, gearbox, downstream gate).

Additionally, DNRC will continue to take the necessary steps to complete the FERC relicensing of the Broadwater Power Project and finalize a long-term replacement Power Purchase Agreement.

As FERC guidelines change with time and power rates fluctuate, other potential hydroelectric projects may warrant further review and analysis. No other sites are proposed for detailed review at this time.