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Energy and Telecommunications Interim Committee

64th Montana Legislature

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June 15, 2016

To: Energy and Telecommunications Interim Committee (ETIC) members
From: Sonja Nowakowski, ETIC staff
Re: Hydroelectric Feasibility Report

Attached is the hydroelectric feasibility report submitted by the Department of Natural Resources and Conservation (DNRC).

Title 85-1-501, MCA requires the DNRC, prior to the end of each interim, to update the ETIC, as well as the Water Policy Interim Committee, on studies it has done to review the economic and environmental feasibility of constructing and operating small-scale hydroelectric power generating facilities on each of the water projects under its control.

During the July meeting, ETIC members will review the hydroelectric feasibility report from the DNRC and receive a brief overview.

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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

Prepared by
Montana Department of Natural Resources and Conservation
Water Resources Division
State Water Projects Bureau
Hydropower Section

June, 2016

BACKGROUND

Pursuant to 85-1-501 MCA, the Department is reporting on past and current studies conducted to assess the feasibility of establishing hydroelectric power generating projects at state-owned dams. In 2012 Kleinschmidt was contracted by the Montana Department of Natural Resources & Conservation (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 in order 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.

RECENT EVENTS

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 is valid for three years. The Permit can be extended for cause.

Work to conduct more extensive feasibility studies on the Tongue River site is dependent upon availability of funding for consultants and in-house staff availability to perform the appropriate level of contract management. DNRC is currently considering different funding options with the goal of continuing this effort.

Ruby Dam

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 over two years ago and has not had further contact. A review of the FERC e-library indicates that there have been no additional updates on the Hydrodynamics permit application since then. Hydrodynamics has been filing the required 6-month status reports.

Broadwater-Missouri Project (Toston Dam)

The Broadwater-Missouri Dam and Hydroelectric 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 power rating is 10 Megawatts (MW). Annually, our power generation averages approximately 6 MW, depending on actual river flow. Net revenue from the sales of power is deposited into our Rehabilitation Hydro Account and is used for rehabilitation efforts at DNRC water storage projects across the state. Depending on production, recent annual net proceeds have varied from \$1.5M to \$2.5M.

On September 22, 2012, the rubber spillway gate in Bay 6 (there are a total of 7 bays) developed a leak at one of its seams around 9:30 A.M. and the reservoir partially drained. Engineers concluded that all seven of the 23-year old rubber bladders had reached the end of their useful lives and replacement gates should be installed in all seven bays. (Each bladder is 51 feet long and 11.5 feet tall when installed, and weighs nearly 8 tons.) Construction on the installation of replacement gates started in February 2014 and was completed in late June 2014. The replacement gates have been operated without difficulty since they were installed. Funding for the rehabilitation project was from a \$3,000,000 Renewable Resource Emergency Loan from the Conservation and Resource Development Division of the DNRC. Loan repayment is being made from the net proceeds of power sales through our Rehabilitation Hydro Account.

Significant effort is currently being directed toward improvement of Project documentation and the upgrading or replacement of equipment, much of which is in excess of 25-years old. This effort is expected to extend for a number of years in the future.

FUTURE RECOMMENDATIONS

Pending availability of staffing and funding, a detailed analysis of the Tongue River Dam system is necessary to determine if this site can be developed. As Federal and FERC regulatory guidelines change with time and/or power rates change significantly, other projects such as the Ruby Dam and others will warrant further review and analysis.

A thorough feasibility assessment is required to develop confidence sufficient to proceed with Tongue River Project development. This assessment will address geotechnical, land ownership and right-of-way, electrical interconnection, hydraulic, or other questions. We anticipate that consultant costs to conduct the necessary assessment will range from \$150,000 to \$300,000. On top of the fiscal costs, in-house staffing requirements to manage the contract will be substantial. Work conducted by in-house staff includes time to set up and administer the contract, coordinate with interested organizations and regulatory agencies, compile technical information, determine relevant assumptions, conduct regularly scheduled review meetings, and review the final product. Typically the work conducted by in-house staff equates to $\frac{1}{3}$ to $\frac{1}{2}$ of an FTE. The outcome of this effort will be a complete evaluation of economic, technical, and regulatory feasibility, plus a cost estimate for final engineering design and construction.

Based on the referenced studies, no other sites are proposed for detailed review at this time.