

Open Solicitation

Swalley Irrigation District 750 kW Hydropower

July 18, 2007

Summary

Swalley Irrigation District proposes to install a hydropower project totaling 750 kilowatts (kW) below an existing diversion in Bend. The project is expected to be completed in mid-2008.

To support this installation, Swalley Irrigation District requires up to \$916,386 through Energy Trust's Open Solicitation Program. This briefing paper documents the Energy Trust staff's review of the proposal. As part of our review, we seek input from the Renewable Advisory Council (RAC).

Recommendation

Staff supports this project and recommends it be accepted as a project under the Open Solicitation Program for up to \$916,386 in funding. This recommendation is contingent on Swalley Irrigation District being approved for a loan from the State Energy Loan Program and raising an additional \$1,000,000 in funding for the project. Part or all of the \$1,000,000 could come from bids that are lower than estimated costs.

Background

The Swalley Irrigation District owns an open canal that runs for 12 miles from its screened diversion at the Deschutes River to a point south of Redmond. As part of the project, the district is piping five miles of the canal (from the diversion point in the city of Bend to a point 5.1 miles northwest of Bend) to allow more water to be returned to the stream. The closed pressurized pipe will allow the district to use 81 cfs of water, and return 27 cfs of water to the Deschutes River for the benefit of the watershed and associated wildlife, and as a permanent in-stream water right.

The District is proposing to install a 750 kW turbine that will run during the 200 day irrigation season from April 1 through October 31. The project is expected to generate 2,752 megawatt-hours (MWh) of electricity per year.

The total project cost is \$10,436,585. Because of the project's watershed benefits, Swalley has successfully secured commitments for seven grants totaling \$4,228,865 from agencies and organizations including the Oregon Watershed Enhancement Board, Deschutes River Conservancy, and the National Fish and Wildlife Foundation. The rest of the project's funding would come from a loan, a BETC pass-through, and the additional fundraising or cost-savings mentioned above.

The project would be Energy Trust's first hydropower project developed by an irrigation district. We are expecting others to follow because of new state legislation allowing an expedited process for secondary use of an existing water right at an existing diversion under certain conditions and the fact that many of these projects at existing diversions qualify for an exemption from regular Federal Energy Regulatory Commission (FERC) licensing requirements.

Relation to Strategic Plan/Action Plan/Budget

This project meets Strategic Goal 3, by providing 2,752 megawatt-hours (MWh) of energy per year from a renewable resource and Strategic Goal 5, by expanding participation in use of renewable energy by the municipal sector. Funds for the project are included in the approved budget for Pacific Power for the Open Solicitation Program (OSP). It would be our second, approved, hydro project serving as another good example for the market and further demonstrate our willingness to expand our support for small-scale renewables.

Technical Analysis

The piped canal will serve as the project's penstock, running five miles from the diversion point in Bend to the intersection of Fort Thompson Lane and Highway 97 northwest of Bend. The penstock diameter will vary from 36" to 54". The average annual flow rate is 81 cfs and net head is 200 feet.

The project consists of a cross flow Francis horizontal turbine with induction 480 VAC 3 phase generator manufactured by Canyon Hydro, a leader in the hydropower industry.

Swalley Irrigation District expects the system to generate 2,752 megawatt-hours (MWh) annually based on a capacity factor of 90% and availability of 46.5%.

Benefits

Over the first 20 years of the project, the clean power produced by the project will help avoid over 33,000 tons of CO₂ emissions. To sequester this much carbon would require planting 112 acres of trees.

In addition to the quantifiable benefits of the project, staff believes this project will benefit Energy Trust in the following ways.

- The project will help develop our relationship with irrigation districts and open the door to other hydropower projects.
- The project allows the Energy trust to fund hydroelectric generation in a safe, fish friendly fashion.
- Because of its benefits for in-stream flows, water quality, the watershed and associated fish and wildlife, the project serves an example of a multi-partner/multi-benefit project in a water-challenged part of the state and sets the stage for other such cooperative endeavors.

Economic Analysis

The table below summarizes our comparison of project revenues and costs. We base our analysis on a system life of 20 years.

NPV Revenue	<u>\$1,577,836</u>
Minus	
NPV Equity	\$454,486
NPV Expense	\$1,014,776
NPV Principal payments	<u>\$641,041</u>
NPV Net above-market costs	\$ (532,467)

Energy Trust's incentive of \$916,386 will be paid on production over 15 years, giving it a net present value of \$530,754. The incentive payment schedule was structured to follow the 15-year loan term

expected from SELP and helps Swalley reach the debt service coverage ratio required by SELP. Energy Trust will pay 99% of the above-market costs and own all tags for the project.

Committee/Public Review

Staff analyzed the project in June and July of 2007. It met the criteria established in the application process.

Staff seeks input and review by the RAC on July 18, 2007. Staff would like to bring the proposal to the Board for approval in August, 2007.