EnergyTrust of Oregon, Inc.

Open Solicitation
Juniper Ridge 3.27 MW Hydropower

January 23, 2008

Summary

Central Oregon Irrigation District (COID) proposes to install a hydropower project totaling 3.27 megawatts (MW) approximately seven miles north of downtown Bend. The project is expected to be completed in April, 2010.

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.

Recommendation

Staff supports this project and recommends it be accepted as a project under the Open Solicitation Program for up to $1,000,000 in funding.

Background

Central Oregon Irrigation District's Pilot Butte Canal is an open canal runs for 22 miles from Bend north to the Terrebonne area. As part of the project, COID is piping approximately 2.25 miles of the canal. COID is proposing to install a 3.27 megawatt (MW) hydroelectric project at the terminus of the pipe seven miles north of Bend. The project site is owned by the Oregon Parks Department, but the department has agreed to sell the site to COID. The project will run for 180 days during the irrigation season from mid-April to mid-October.

The project, scheduled for completion in April of 2010, is expected to generate 13,435 megawatt-hours (MWh) of electricity per year, which will be sold to Pacific Power under a standard QF contract.

The total project cost is $22,305,593. Because the piping portion of the project carries watershed benefits beyond the ability to generate hydropower, COID has $7 million in grants either pending or secured in support of the project from sources including the city of Bend and the Oregon Watershed Enhancement Board. The piping will eliminate water loss through the canal and place over 20 cfs of water permanently in the Deschutes River. This additional water will benefit the river habitat and the ESA listed steelhead recently reintroduced downstream from Bend. Increased river flows will also enhance water quality conditions of concern to the Department of Environmental Quality under the Clean Water Act.

Relation to Strategic Plan/Action Plan/Budget

This project meets Strategic Goal 3, by providing 13,435 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 fourth approved hydro project serving as another good example for the market and further demonstrating our willingness to expand our support for small-scale renewables.

Technical Analysis

The project consists of a Wasserkraft Volk AG turbine with a gross power output of 3,637 kW and 91.8% peak efficiency. The piped canal will serve as the project's penstock. It will be 108 inches in diameter and run for13,523 feet ending seven miles north of Bend approximately 1 mile south of the intersection of Hwy 97 and Deschutes Market junction. The average annual flow rate is 325 cfs and net head is 107 feet. COID expects the system to generate a net 13,435 megawatt-hours (MWh) annually based on an availability factor of 93.69% for the 50% of the year there are sufficient water flows (during the irrigation season).

Benefits

Over the first 20 years of the project, the clean power produced by the project will help avoid over 288,853 tons of CO_2 emissions. To sequester this much carbon would require planting 963 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 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 as another example of a multi-partner/multi-benefit project in a water-challenged part of the state.
- The project further develops Energy Trust's relationship with irrigation districts to promote more projects.

Economic Analysis

Capital and installation costs for the project are expected to total $22,305,593. We based our analysis on a system life of 20 years and assumed the project will qualify as a commercial project eligible for a BETC pass-through of $6,365,000. The net capital requirement is also reduced by $7,000,000 in grants.

COID is planning to finance the remaining upfront costs with a 15-year loan for $3,772,930 and $5,167,663 in equity financing from its own sources.

The table below summarizes our comparison of project revenues and expenses and calculation of above-market costs.

NPV Revenue	$9,081,810
Minus	
NPV Equity	$5,167,663
NPV Project Expense*	$3,735,200
NPV Principle Payments	$1,533,672
NPV Net above-market costs	***($1,354,725)***

**O & M, interest on debt, recurring permit fees, insurance, and spare parts fund*

Energy Trust's incentive of $1,000,000 will cover 73.8% of the above-market costs of the project. The incentive will be paid upon project commissioning. Energy Trust will take title to the first 75% of the tags for the project over 20 years.

Committee/Public Review

Staff analyzed the project in the summer and fall of 2007. It met the criteria established in the application process.

Staff seeks input and review by the RAC on January 23, 2008.