

Open Solicitation

Kettle Foods 112 kW Photovoltaic Project

June 18, 2003

Purpose

Kettle Foods proposes to install a 112 kilowatts Photovoltaic (PV) system a on their food processing plant in Salem, Oregon. They are customer of Portland General Electric.

To support the installation, Kettle Foods has requested \$112,000 from the Energy Trust through the Open Solicitation Program. This paper documents staff's review of the proposal. As part of the review, staff seeks comments from the Renewable Advisory Council.

Background

The proposed project will generate approximately 120,000 kWh of electricity per year, providing about 2% of the plant's annual electricity requirements. The solar electric system will be a rack mounted installation on the southern portion of the plant roof, having 100% solar access year round. Expected project completion is September 2003.

Kettle Foods is a highly visible local food products manufacturer. They purchase green power and are looking to take the "next step" to producing their own clean energy. The size of their proposed solar electric system is equivalent to 100 average residential PV systems. When completed, the project will become the largest PV installation in the Pacific Northwest.

Relation to Strategic Plan/Action Plan/Budget

This project meets Strategic Goal 2, by providing 120,000 kilowatt hours of energy per year from a renewable resource; Goal 3, by reaching a commercial food industry business of a type that historically has seldom participated in on-site renewable energy programs; and Goal 5, by helping demonstrate a large scale solar energy application.

The project addresses the renewable resources Open Solicitation Program element, Action Plan IIA. The results of the demonstration will be useful as we continue to develop the commercial elements of our solar electric program, Action Plan IIC. Funds for the project are included in the approved FY '03 budget, within the amount set aside to fund proposals through the Open Solicitation Program.

Technical Analysis

The project consists of 605, 185-watt Sharp modules in 55 sub arrays of 11 modules each, on a flat roof 190' by 120'. The panels are warrantied for 25 years.

There is no shading, so the solar fraction is 100%. The sub arrays are wired in series, combined in circuit combiners on the roof and then fed via conduit to a Xantrex Phase Inverter inside the building. The inverter is warrantied for 5 years and has a typical commercial life of 20 years.

The inverter is installed inside the warehouse under the array, where the main power panel and distribution system is located. The inverter is also connected to a 100 kVA isolation transformer to raise the voltage to 480V . A preliminary review by Christopher Dymond of the Oregon Office of Energy indicated that the described system configuration was sound. The proposed system will provide

about 120,000 kWh per year for use in the plant (adjusted for location, system characteristics, installation and the plant's demand). While major components have life expectancies for greater than 20 years, staff analyzed the system for a standard 20-year economic life.

For all but six days per year, all of the system's production will be absorbed by the processing plant's own demand. During the six days the plant is closed, 45% - 90% of the power generated by the system will be absorbed by the plant. The remaining power will be spilled. There is a potential that the small amount of excess generation could be net metered. However, a net metering arrangement with PGE is not final and staff did not credit the system for power not absorbed by the plant.

Benefits

The project would demonstrate the viability of very large commercial PV systems in Oregon. Since it is twice the size the next largest system in the Northwest, it would attract attention both to viability of solar in Oregon and to the Energy Trust's Solar Electric Program. To the extent a net metering arrangement could be structured, it would create new opportunities for larger systems in the state and test the integration of large scale PV installations into the utility power grid.

Over the first 20 years of the project, the clean power produced will help avoid 1,680 tons of CO₂ emissions. To sequester this much carbon would require planting 33 acres of trees.

It is possible that the project's output could lower demand charges for the plant during peak times of day. This has not been factored into the analysis, but could be a benefit worth measuring and evaluating as a case study for other, future projects. If the project is approved, staff will explore using it as one of the test measuring sites for solar monitoring.

Cost Analysis

Staff based their analysis on a system life of 20 years. The proposal indicated that the project could be financed. The table below summarizes the comparison of project costs and market values. It shows two cases for the analysis, representing a range of uncertainty for certain variables in the analyses.

	High	Low
Total Project Costs with financing	\$767,798	\$767,798
NPV Energy Output	94,962	67,847
NPV BETC	197,156	138,009
NPV ITC	67,502	62,793
NPV Depreciation	193,349	193,349
NPV Uncovered Costs	\$214,828	\$305,800
ETO Incentive	\$112,000	\$112,000
Share of above market NPV	17%	16%
Share of Uncovered Costs	52%	37%

Notes:

- Installed costs for the system are \$675,000. Staff assumed financing would be done at rates similar to the state's energy loan program: 6.0% for a ten-year term. Financing costs are estimated net of tax effects due to deductability for income and business taxes.

2. The high value for energy output assumes the net retail rates the plant currently pays, inflated over time at 2.5%. The low value is the result of model runs using the Northwest Power Planning Council's Aurora and ProCost models.
3. The lower value for the state's Business Energy Tax Credit recognizes that federal tax liability may increase due to lower net payments of state taxes from BETC.
4. The range around the Federal Investment Tax Credit is the result of varying the assumption around when a tax credit is taken. If it can be deducted immediately, then the full value is realized. If it is deducted at the end of the year, the lower value applies.
5. State and Federal depreciation is well defined.

The Energy Trust's maximum contribution represents about 17% of the above market costs. The Energy Trust's contribution represents as much as 52% of the costs not covered through tax policies and the value of the energy.

Kettle Foods proposes that the Energy Trust will receive all the green tags from the project for the first 15 years. Kettle foods will assume the risk of the BETC and all other tax benefits. The Energy Trust would pay upon an accepted system schematic, project completion, inspection of the solar electric system and proof of local building code approval.

Committee/Public Review

Staff analyzed the project early in June 2003. It met the criteria established in the application process. Staff seeks input and review by the Renewable Energy Advisory Council (RAC) on June 18, 2003. Staff would like to bring the proposal to the Board for approval in July.

Recommendation

Kettle Foods met with Bonneville Environmental Foundation to enlist support for the project. Staff also met with BEF to talk about possible coordination. Staff contacted PGE management to see if they would also like to participate.

Kettle Foods has expressed a strong interest in getting a determination from the Energy Trust and proceeding quickly. It is quite conceivable that the total contribution from the Energy Trust could be reduced from the amount requested, as Energy Trust enlists other partners. However, staff's recommendation assumes the Energy Trust will be the only contributor or outside funds.

The total amount requested exceeds the cap for commercial installations for the separate solar program. In that program the cap was set to assure up to 15 different installations. Since that program is just starting, it is too early to begin re-allocating funds. The amount requested by Kettle Foods also represents nearly all the funds available for medium-scale demonstration projects within the Solar Electric Program. Staff believes the project should be evaluated on its merits within the Open Solicitation Program.

The project has a standard life of 20 to 25 years. Kettle Foods proposes that the Energy Trust receive green tags for the first 15 years of the project. This represents 60% to 75% of the tags from the project. Energy Trust's contribution is about 17% of the above market costs, and covers between 38% and 52% of the uncovered costs of the project.

Staff supports this project and recommends it be accepted as a project under the Open Solicitation Program.