

SUBJECT: AUTHORIZATION TO ADVERTISE FOR PROFESSIONAL SERVICES – ELECTRICAL POWER GENERATION ALTERNATIVES

SOURCE: Public Works Department – Wastewater Treatment Facility

COMMENT: The City of Porterville Wastewater Treatment Facility (WWTF) is scheduled to replace three (3) internal combustion (IC) engines with three (3) electric blowers in FY 2013/2014.

The combustion engines use natural gas and treatment plant generated methane gas as a fuel source. The hot water produced by these engines heat the anaerobic digesters which in turn stabilize the organic solids generated in the treatment process and produce methane gas.

Electric blowers are a cleaner source of power and will significantly improve the performance of the biological treatment process. Electric blowers eliminate emissions that are generated by the IC engines, but unfortunately, the electrical cost associated with running electric blowers is expensive.

To offset the added electrical costs associated with the electric blowers and to provide a hot water source for the digesters, staff is considering four alternatives for onsite power generation.

Alternative I: Convert Existing Waukesha Engine Blower to an Electrical Generator

The City will use one of the existing 20 year old Waukesha engines to drive a generator to produce power. Additional equipment will be needed to condition and blend the digester gas. Control equipment will also be needed to optimize generator performance and comply with SCE's Rule 21. All of the power generated will be used onsite. Estimated cost of the project - \$3,000,000

Alternative II: Purchase New Engine/Generator

Similar to Alternative I but with the added cost of a new engine/generator.

Estimated cost \$3,500,000 to \$4,000,000.

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Item No. 6

Alternative III: Solar Power

Design and construct solar panel farm and locate it in the vicinity of the westerly section of the Corporation Yard.

Estimated Cost - \$3,000,000

Power Purchase Agreement

Through a Power Purchase Agreement (PPA), electricity is sold to the WWTF at rates typically lower than public energy sources. Methane is used as fuel to generate electricity to power the electric blowers and the heat captured from the unit is reused in the WWTF process. It should be noted that the treatment plant does not produce enough methane gas to power all three electric blowers. There will still be a need to purchase some power from Edison but at a reduced consumption rate.

The PPA provider assumes all of the expense and risk of installing combined heat and power equipment at the facility. The PPA provider pays for all the equipment, design expenses, installation and ongoing operating expenses. The City's obligation is to purchase the electricity generated from the system at the agreed upon rates for the life of the agreement, typically 15 years. In addition, the City must execute a land lease agreement with the PPA to maintain proper on-site liabilities.

Estimated Cost - \$100,000 for miscellaneous expenses.

The budget numbers and short summary of each alternative is staff's understanding of the expected work. A consultant experienced in the various elements associated with small scale power generation should be retained to analyze and weigh each option. Estimated cost for this analysis is \$45,000. If Alternative I, II or III is selected as the best option, the same consultant should be retained to prepare plans and specifications to construct said alternative. The estimated cost for the preparation of plans and specifications is \$90,000.

Wastewater Treatment Facility Reserve is the funding source for this project as approved in the 2013/2014 Annual Budget.

RECOMMENDATION: That City Council:

1. Authorize staff to advertise for consultant services to analyze electric power generation alternatives at the Wastewater Treatment Facility, and if necessary, prepare plans and specifications to incorporate the desired alternative into the treatment plant layout;

2. Authorize the Public Works Director to conduct oral interviews if, in the opinion of the Public Works Director, interviews are necessary; and
3. Direct the Public Works Director to prepare a staff report for a subsequent Council meeting identifying the proposers and their respective rankings.