

US EPA ARCHIVE DOCUMENT

Maine Department of Environmental Protection

Model Energy Audit Request For Proposals

Request for Proposals to Conduct Wastewater Facility Energy Evaluation For _____

INVITATION

The _____ is requesting proposals from qualified energy consultants to provide professional services for the preparation of an Energy Evaluation that will provide recommendations to reduce the energy cost and usage at its administrative buildings, wastewater facilities and pump stations. Proposals should include provision for evaluation of suitability of existing process systems and potential modifications or alternatives to equipment and operational modifications within the existing process.

If interested, please present _____ copies of your proposal to _____ by _____ P.M., (*date*) Proposals will not be opened prior to that time and proposals received after that time will not be considered.

BACKGROUND

(Insert General Facility Description)

QUALIFICATIONS

The Energy Consultant (*Consultant*) will have the following minimum qualifications:

1. The consultant must have performed at least 2 water/wastewater facility energy and process evaluations. Provide a list of these facilities along with a list of the energy projects identified and the calculated savings.
2. The Consultant must possess or have access to field testing equipment to perform power, flow and pressure measurements
3. Consultant shall have at least 5 years experience with water/wastewater process systems
4. The Consultant must have experience in obtaining funding for energy projects from utility programs, government programs or other funding sources.
5. The Consultant must provide other energy related qualifications and experience and a minimum of two references for energy evaluation work.

SCOPE OF SERVICES

Site Visits/Data Collection

To properly evaluate all facility process and HVAC systems, the Consultant is expected to perform a detailed review of facility equipment and systems with staff, collect energy usage and equipment data, and develop cost savings recommendations. At a minimum, the site visit(s) will include the following:

- Detailed facility review with plant operator.
- Collection of equipment nameplate data.
- Performing equipment efficiency tests on large equipment. This may include pressure, flow and electrical measurements (plant electrician will be available to assist).
- Installation of data loggers on selected equipment as needed to develop equipment use profiles.

The Owner will provide the following information for the Consultant to review:

- Facility O&M manuals & plant drawings.
- Specification data for all major equipment (i.e. pumps curves, performance data).
- Recent engineering facility evaluations/reports.
- 12 months of facility operating reports
- 12 months energy bills (electric, natural gas and fuel oil).

Energy Analysis and Report Development

The energy analysis is expected to include the following tasks:

Review Energy Use and Rates

- Energy billing evaluation of facility energy use (electric, oil, natural gas)
- Rate structure evaluation
- Alternative energy generation procurement options
- Evaluation of demand response programs

Energy Balance

To determine how energy is used within the facility, the Consultant is expected to develop an energy balance of the facility. This will include the following tasks:

- Develop inventory of all energy use equipment grouped by process
- Use a portable power meter, data loggers and available SCADA data to verify energy use and hours of major equipment.
- Comparison of energy balance with annual energy bills to verify data.
- Develop fuel oil/natural gas energy balance to benchmark facility process systems.
- Use the EPA Portfolio Manager Tool to benchmark facility efficiency, if applicable.

Pump Systems Evaluations

Since pumping equipment is significant energy user at water/wastewater facilities, pump equipment testing performed by the Consultant will include the following:

- Collect field data for each pump that includes flow, suction and discharge pressure and a power measurement (amperage and/or kW measurement) to determine pump operating point.
- Determine the system static head value to develop pump system curves.
- Compare existing pump system operation with the original design parameters.
- Compare existing efficiency with other pump manufacturers.
- Review pump efficiency improvements such as pump replacement or rebuilding.
- Evaluate the potential savings of installing variable frequency drives and premium efficiency motors.
- Evaluate hydraulic and operational improvements that may improve efficiency. Pumping System Assessment Tool (PSAT) may be used, if applicable.

Process Systems Evaluations

The Owner will provide operational data for the Consultant to evaluate the efficiency of each facility process system. Analysis will include:

- Benchmarking each process system based on facility process flows and loads.
- Use of process models to evaluate potential energy saving improvements.
- Evaluation of potential alternatives to technologies currently in use at the facility for each process (for example improved DO monitoring, SCADA, substitution of fine or ultra fine bubble aeration, dewatering and solids management alternatives).

Energy savings for process measures shall be based on facility's previous 12 months of operating data.

Cost/Benefit Analysis

Proposed energy saving projects will include:

- Conceptual cost estimate based on industry data and quotes from manufacturers.
- Detailed energy saving calculations that include baseline development from SCADA data, instantaneous electrical measurements, equipment performance curves and data loggers to determine how equipment energy use varies.
- Identification of utility incentives.

Evaluation Format

Energy evaluation reports will include the following sections:

- Executive Summary
- Energy related process and HVAC system review
- Energy use profile of utility bills
- Presentation of each cost savings opportunities as:
 - Operational Measures (OMs)
 - Energy Conservation Measures (ECMs)
 - Energy Supply Measures (ESMs)
- Appendices
 - Energy calculations/equipment specifications/cost estimate for each recommendation.
 - Copy of utility rate schedules

As noted above, evaluation is expected to include three categories of cost saving projects. Operational Measures (OMs) will be for improvements that can be done at minimal cost, or for improvements that cannot be directly quantified (i.e. setting up an energy management team). Energy Conservation Measures (ECMs) will include all energy saving projects, which require an investment to realize savings, and Energy Supply Measures (ESMs) will include projects for alternative energy sources or utility rate schedule adjustments. Energy conservation measures shall provide enough detailed information to be suitable for submitting directly to the electric/gas utility to determine if they qualify for incentives.

PROPOSAL

Proposals shall be limited to 8 pages (8-1/2” by 11” sheet), and shall include the following sections:

1. Project approach and understanding, along with the Consultant’s vision of the key issues related to this project.
2. The proposed project team with the proposed project manager and key project staff.
3. Consultant’s related energy evaluation wastewater and water treatment plant, pump station energy experience, along with specific energy evaluation project examples.
4. Consultant’s proposed project completion schedule and fee schedule.

A table of estimated effort by individual and discipline, and up to 2 pages of references for similar projects, and project team resumes shall be allowed as an attachment to the letter proposal, and may be in addition to the 8 pages.

SELECTION PROCEDURE

A selection committee will review proposals from responding firms. The firm selected to do the work will be expected to enter into a contract with the _____. A draft copy of the contract is included in this package. Please note in the proposal any exceptions you may have with the contract.

A firm will be selected based on the following criteria:

1. Project approach and understanding along with the Consultant’s vision of key issues related to this project. (33%)
2. Project team’s related wastewater and water treatment plant experience with energy conservation and alternate energy projects. (33%)
3. Estimated fees and costs for the work. (33%)

GENERAL

The _____ reserves the right to evaluate the submitted proposals, waive any irregularity therein, and to select any firm, which submits a proposal to do the work and/or reject any or all proposals should it, be deemed in the best interest of the _____.

All questions related to this proposal should be directed to _____.