

SAGERENEWABLES

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Proposal for Renewable Energy Consulting Services

Mr. Williams,

We are pleased to present the following proposal for renewable energy consulting services for the Las Gallinas Valley Sanitary District (LGVSD). Based on our visit on December 1, 2011, and subsequent discussions, we have broken the work into three tasks:

1. Wholesale renewable energy generation feasibility study
2. Net-metered renewable energy alternatives review
3. Biogas alternatives study

Scope of Services

Task 1: Wholesale Renewable Energy Generation Feasibility Study

Based on initial discussions, the District would like to explore wind generation potential on their property, with an end goal of selling the energy to a local utility, such as the Marin Energy Authority (MEA). The District has two hundred acres of pasture land currently used for summertime irrigation with secondary effluent. The District is currently in the process of constructing a recycled water treatment plant. This will likely reduce or eliminate the need to utilize the irrigation pastures for summertime discharge. The District is exploring the potential to store treated water in the current irrigation area.

To explore the feasibility of wholesale wind generation, Sage recommends an initial desktop level study. The study would include:

- a review of readily available data sources for local wind information
- a review of available Feed-In-Tariffs (FITs) with MEA & PG&E
- conceptual sizing and siting of turbines
- high level estimate of capital cost to develop the project
- for likely wind regimes in the area:
 - perform a review of potential annual generation
 - calculate the value of energy produced under the most beneficial FIT
 - produce a high level financial analysis to determine return on investment
- a discussion of the considerations and steps involved to implement a project, including wind resource, regulations, environmental studies, public relations, etc.
- a review of funding options, including self-funding, private development with land lease, and public-private partnerships

Wind projects are difficult to implement. Based on our initial site visit and work on wind projects within Marin County, there are several potential hurdles with developing a wind project at LGVSD. These include potentially insufficient wind resource to make the project pencil financially, Marin County WECs code, significant avian populations in the area, viewshed and noise issues, and grid tie-in costs. We would address each of these issues in a desktop study and, where feasible, build them into a high level financial model.

Based on the large amount of land the District owns and some of the risks with implementing wind, we recommend exploring wholesale solar photovoltaic (PV) generation in the same study to provide a side-by-side comparison with wind. The solar PV component would add little additional cost to the feasibility study. While we realize the District would like to reserve the option to store water in the current irrigation area, the study could assume a portion of the area be made available for solar PV and a separate portion be diked-off for water storage. Our experience has been that solar PV is much easier to fund, implement and maintain in comparison with wind projects, particularly with the marginal wind resources and challenging permitting in Marin County.

This feasibility study would be a desktop analysis. With an aim towards keeping initial fees low during this exploratory phase, no environmental data would be developed during this study, however readily available data will be reviewed. The study will also outline the next steps involved in exploring wholesale generation. The following table outlines the steps that would follow a desktop study. Each phase assumes that a decision to move forward with the project has been made after the previous task. This table will be expanded upon in the desktop study:

Next Steps for a Wholesale Generation Project following the Desktop Feasibility Study

Investment Grade Study	Following a decision to move forward after the initial desktop study, more detailed resource and financial modeling would be performed to produce an investment grade report & conceptual design.
Planning, Permitting, Financing, and Interconnect	This phase includes environmental studies, initial permitting, interconnect applications with the utility, and exploration of financing options and FITs. In addition, public outreach should begin and continue throughout the project.
Secure Interconnect Agreement, FIT, Permits, and Financing	This phase is more of a milestone, however has been called out separately because the project cannot proceed without these items: (1) an interconnect agreement with PG&E, (2) a signed Feed-in-Tariff, (3) permits from the agencies with jurisdiction over the development, and (4) financing. Additionally, public and stakeholder buy-in is key.
RFP & Vendor Selection	Develop a Request for Proposal to solicit design-build or design-build-operate bids for the facility.
Construction & Commissioning	Construction should include a Construction Manager and Commissioning agent.
Project Operation	Ongoing operation will require an O&M contract, management of agreements/revenue from sale of energy. O&M is generally much more significant on wind projects in comparison with solar projects.

Task 2: Net-metered renewable energy alternatives review

Based on our discussions, we have proposed the following three tasks to address net-metering of renewable generated electricity for the District:

2.1 – Explore tariff options for offsetting remote meters with existing excess PV generation

The District currently has a large solar PV array which is net-metered through the main electrical meter for the plant. Due to recent efficiency improvements, the system is currently overproducing with regard to cost offset, however is not producing enough electricity for the District to sell the excess generation back to the utility. This task involves modeling an alternative tariff option for the District which may allow for crediting a portion of remote metered accounts with the excess generation from the existing PV system.

2.2 – Review all District electrical utility meters and assess the potential for onsite renewable generation and net metering at each location.

This task would catalog each of the District’s electrical utility accounts, review past usage, review available land at each site and recommend potential onsite renewable generation, including wind and solar PV options. This would include conceptual siting, sizing and high level financial modeling. For sites without sufficient resource or footprint for renewable generation, we will tie in with the study outlined under Task 2.1 to assess crediting remote meters from existing or augmented generation at the existing PV array.

2.3 – Review planned facility upgrades and subsequent changes in electrical consumption to assess how current PV generation will offset future usage.

This task involves working with the District and the District’s consultants to estimate future electrical consumption with planned upgrades and the new recycled water facility. Based on this future usage, Sage will model bill offset with all improvements implemented to determine whether the existing PV installation will zero the District’s electrical bill. This information will help the District plan for potentially augmenting the existing system and/or using the existing system to credit other District owned meters.

Next Steps for Net-Metered Alternatives Following the Alternatives Study

Meter Aggregation	Should the meter-aggregation tariff modeling indicate the District can save money with this alternative, implement this tariff
Conceptual Design of Additional RE Facilities	Develop conceptual designs for additional net-metered RE systems based on preferred alternatives from the initial study
RFP & Vendor Selection	Develop a Request for Proposal to solicit design-build bids for the additional facilities.
Construction & Commissioning	Construction should include a limited scope Construction Manager and Commissioning agent.
Project Operation	Ongoing operation should include an O&M contract, performance guarantees, performance monitoring, and management of RECs

Task 3: Review Biogas Usage Alternatives

The District currently operates a combustion generator to generate electricity with the biogas from their digesters. Due to emission regulations, the current generator must be phased out. This task would review the alternatives available to the District for making use of the biogas from their digesters. Options that would be explored include scrubbing technologies and end-use alternatives such as pipeline injection, vehicle fuel and electricity conversion. Electricity generation options would include combustion technologies and fuel cells, as well as usage of waste heat from those processes to operate the digesters and design-build-operate scenarios. The study would provide high level financial and environmental analysis.

At the District’s option, Sage would collect gas samples from the digester and submit these to a laboratory to benchmark the composition of the digester gas. Up to four samples would be collected at different times of the day and year to assess annual variation. Sage would coordinate with the District and District’s process consultant to determine the appropriate times to sample. This information would help with selection of scrubbing equipment and with determining potential end uses for the gas.

Next Steps for Biogas Alternatives Following the Alternatives Study

Preferred Alternative	Select a preferred Alternative
Conceptual Design	Develop conceptual design(s) for the biogas system
RFP & Vendor Selection	Develop a Request for Proposal to solicit design-build or design-build-operate bids for the biogas facility.
Construction & Commissioning	Construction should include a limited scope Construction Manager and Commissioning agent.
Project Operation	Ongoing operation may include an O&M contract, performance guarantees, performance monitoring, and management of RECs. This is dependent on the end use of the gas and the operating arrangement.

Deliverables

Sage will provide the following deliverables:

- Task 1: A memorandum detailing the wholesale generation feasibility study, including recommended next steps.
- Task 2: A memorandum outlining the net-metering options and recommendations, including conceptual sizing and siting for Task 2.2.
- Task 3: A memorandum outlining scrubbing and biogas usage alternatives. At the District’s option for biogas sampling, the deliverable would include a summary of laboratory analysis results from the sampling.

In addition to the above deliverables, Sage will present the findings of the various studies to the District.

Project Schedule

From notice to proceed, each of the above tasks is expected to require the following timeframes to complete:

Task 1, Wholesale Feasibility Study	6 weeks
Task 2, Net-Metering Study	4 weeks
Task 3, Biogas Alternatives Study	4 weeks (several months if gas samples collected)

Sage will work to meet an alternative schedule should the District require a quicker turn-around.

Fee Schedule

Fees for each task are as follows:

Task 1, Wholesale Feasibility Study	\$15,000
Task 2, Net-Metering Study	Tasks 2.1 & 2.3 \$5,000 total Task 2.2 \$1,500 for each electrical meter
Task 3, Biogas Alternatives Study	No sampling: \$4,000 With sampling: \$6,000 plus laboratory analysis fees