RAC Project Review Memorandum

Oct 26, 2011

Project Owner:	RES Agriculture, LLC
Program Manager:	Thad Roth

Project Proposal

Technology Type:	Biogas
Capacity:	1 MW
Annual Generation:	7,245 MWh
Total capital cost:	$7.0 million
Date of Commercial Operation:	12/31/2012
Utility:	Pacific Power/ PGE
Power delivery (net-metered, QF):	QF

Project Summary

RES Agriculture, LLC has applied to Energy Trust's Biopower Program for funding of a Biogas project. RES proposes to build, own and operate biogas plants at two host dairies in Oregon. Each site will utilize methane from anaerobic digestion of cow manure to power a 500 kW engine generator resulting in a total capacity of 1 MW and an annual generation of approximately 7,245 MWh. Each site will sell power as a Qualifying Facility. One site will sell power to PGE and the second site will sell power to Pacific Power.

	Proposed Incentive
Evaluation Criteria	
Project Term:	15 Years
Above Market Cost (NPV):	$2.294 million
Proposed Offer	
Total Incentive:	$2 million
Payment Terms:	Four uniform payments of $500,000 beginning with commercial operation, with the remaining three payments made annually based on energy production.
NPV Incentive	**$1.74million, 75% of above market cost**
REC Allocation:	Minimum of 75% of the RECs for term of contract (15 years)

Project Evaluation Narrative

Technical/Operational Review

This project proposal meets Energy Trust's eligibility for funding (utilization of organic residues for energy production delivered to PGE or Pacific Power systems) and supports our strategic goals of expanding development of third party biogas plants in the agricultural sector. RES is one of a small group of third-party developers actively developing projects in the agriculture space in Oregon. This project, in conjunction with the project presently approved for funding, represents 1.8 MW of new generation in this sector. Preliminary analysis has identified 45 MW of capacity in the agriculture sector in Oregon.

This application is the last phase in the development of biogas plants at seven dairies in Oregon by RES Agriculture. The first biogas plant, developed at Lochmead Dairy north of Junction City, has been operational since December of 2010. The power from that project is being sold to Emerald PUD and has not received funding from Energy Trust.

In April 2010 Energy Trust's Board of Directors authorized funding up to $1,766,660 to offset the above market cost of biogas plants located at four dairies in Oregon that will be owned and operated by RES. The total capacity of the four sites is 795 KW. Three of the proposed sites will sell power as a Qualifying Facility (QF) to Pacific Power and the fourth site will sell power as a Qualifying facility to PGE.

The first site covered by the Energy Trust incentive is expected to be commercially operational by the end of November 2011. The remaining three sites under the existing contract are to be completed by the end of 2012.

The proposal presently under review is for the final two sites RES is developing. The business model proposed for this final phase of project sites mirrors the initial five sites. RES will construct, own, and operate the biogas plants and has secured long term leases from the host dairies. The project proposes to use the same digester design (Bio Terre), the same development team, construction group and equipment suppliers that was used in the Lochmead project and the first group of Energy Trust sites.

A technical review of the project application has been completed and the assumptions appear reasonable (feedstock assessment, methane production, costs). The capital cost of the proposed projects has declined on a capacity basis compared to the original four sites by over 25%. This is due to the larger scale of the projects as well as the cost reduction opportunities identified during construction of the two initial projects. Operating and maintenance costs are comparable to other similarly sized biogas plants.

As part of the review of this proposal RES provided Energy Trust performance data from the Lochmead site operation. A review of this information confirms the assumptions concerning the process design and demonstrates successful commissioning and operation.

One of the dairies included in this proposal is located in Emerald PUD's (EPUD) service territory. RES is proposing to wheel the output of this site to Pacific Power as an off system QF. RES has coordinated with EPUD to deliver electricity to EPUD's Powerline substation that is served by Pacific Power transmission facilities and to interconnect with Pacific Power at that point. EPUD is providing final pricing for interconnection and has provided RES with wheeling

costs to move the power across their distribution system. RES has begun discussions with Pacific Power to deliver power to their system.

Above Market Cost Evaluation

Energy Trust's methodology to establish Above Market Cost has been applied to this project. A term of 15 years for project life was selected to match the lease agreements with the dairy farms. An IRR was selected for this project based on our market assessment of a reasonable rate of return for unlevered, privately owned biogas plants. These same terms were used in the first project approved for funding. Based on those criteria the project has an above market cost of $2.31 million.

A total incentive of $2 million for the two combined sites is proposed for this project with payment terms as describe above. The NPV of the incentive is $1.74 million which is 75% of the above market cost. The incentive cost of this project is $2.2 million/aMW which is lower than the existing project at $2.47 million/aMW. This project will receive a 1603 grant in lieu of the Federal Investment Tax Credit (ITC) and bonus depreciation if construction is completed in 2012 as expected. Neither of the sites that make up this project received a BETC. Both sites are eligible to receive the state's Biomass Collector/Producer Tax Credits through 2017.

Based on an incentive of $2 million (NPV $1.74 million) the project achieves an IRR of just under the target rate. The project has opportunities to improve performance in a number of ways. Pricing for both carbon offsets and fiber sales were modeled conservatively. In particular dairy biogas plants in the newly regulated carbon market in California appear to be very attractive. The state Biomass Tax Credit was modeled only for the first two years of operation due to the uncertainty of the program through 2017. This credit alone would bring the project close to the target rate.

<u>Renewable Energy Certificate (REC) Allocation</u>

Based on an incentive of $1.74 million (NPV) the levelized cost of 75% of the 7,245 RECs associated with this project per year over 15 years is $26.00/REC. We estimate the market value for RECs currently to be $7.94/REC levelized. Because our incentive for this project produces a higher value for the prorated portion of RECs than market, we base our allocation on a percentage of the incentive to total above market cost (75%).

Summary of Risk Assessment

Biogas plants in the agriculture sector face three basic risks, feedstock supply, commodity risk associated with co-product sales, and operational risk.

- The project has secured 15 year feedstock contracts for delivery of manure to the biogas plant from each dairy. However if the individual dairies fail and are no longer operational, the project feedstock supply would be at risk. The project has addressed this risk by recruiting dairies with a long term business plan in place and has included a significant financial penalty for early termination.
- This project relies on receiving 35% of its revenue from co-products besides energy sales. There is low risk associated with the energy sales contracts since utilities offer long term contracts at known rates but risks associated with pricing for carbon offsets and fiber would impact the project. As noted above a there is a compliance market developing for carbon offsets in California. To minimize volatility of price the project will lock in price for a portion of the credits.
- Although biogas plant operations are proven in other parts of the world, there is operational risk associated to technologies new to the United States. RES has provided

production data for the Lochmead dairy documenting the methane and electricity production at the facility. This data confirms the forecast gas production and the associated electricity production.

Above Market Cost Evaluation

Project financial summary (NPV basis)

Size (MW)	1 MW
Annual Output (MWh)	7,245 MWh
Evaluated Resource Life (years)	15

Revenues

Power Sales	$ 3,576,999
Additional Revenue	$ 2,056,019
State BETC pass through	
ITC Grant	$ 2,099,664
Other	
Other	
NPV Total Revenue	$ 7,732,682

Costs

Capitalized Cost	$ 6,998,880
Operations Expense	$ 428,714
Maintenance Expense	$ 1,851,912
Other Expense	$584,601
Taxes	$ 447,089
NPV Total Project Cost	$ 10,311,196
Gross Above Market Cost (Total Revenue - Total Project Cost)	$ (2,578,514)
Tax Benefits	$ 1,155,39
Net Above Market Costs	$ (1,423,119)
Above Market Cost After Tax Adjustment	$ (2,308,609)

Next Steps/Schedule
After RAC review present project to Board for funding authorization.

Evaluation Reviewed and approved by:
Elaine Prause

Internal Review Committee:
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