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2009 Integrated Energy Policy Report – Biopower in California

Comments on Attachment A - Questions for Public Comments

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Biogas

2. Do nitrogen oxide (NOx) emission requirements pose a hurdle to development of new biogas generation? What low-NOx technologies are available and how much do they cost? What can be done to expand the availability and utilization of low-NOx technologies for generating electricity from biogas?

Low NOx emission regulations are a reality in California and the U.S. The EPA lowered the federal ozone standard in 2008. The Air Resource Board Distributed Generation Certification Standard already requires landfill and digester gas generation equipment to be, by 2013, as clean as the BACT natural gas central power plants.

The future NOx emission requirements are achievable for gas turbines and microturbines. Innovative technologies are being developed to reduce the emissions of gas turbines and microturbines without the use of post exhaust treatment.

The availability and utilization of low NOx technologies for generating electricity from biogas can be expanded if the State of California directly supported these innovative technologies through its laws, state energy plan and financial incentive programs. The State of California has allowed the state energy policy to become technology selective instead of incentivizing any clean technology.

The state renewable incentive programs, the Emerging Renewable and the Self Generation Incentive Program only support wind turbines and fuel cells. For biogas in particular, the only technology supported by the state is fuel cells. Thus, the state has essentially told the biogas and clean tech community that it chooses fuel cells. Any other clean technology development which benefits the state biogas initiative and future renewable energy goals is not supported.

The first and largest step which California can take is reaffirming that it supports all biogas clean technologies by financially incentivizing any technology which meets the clean emission requirements standards set by the Air Resource Board.

3. Is electricity generation from landfill gas a technology that still has potential to grow or have many of the best landfill sites been developed already?

The electricity generation from landfill gas has a tremendous potential to grow with the application of technology which can operate continuously and cleanly on ultra-low energy biogas. The landfill sites which are currently categorized as “best” are limited to the selected landfills which have methane contents above 40%. These “best” sites may still be flaring gas which current technologies cannot utilize.

Technologies which extend a landfill's useful renewable energy life are being developed so that potential sites can include landfill gas/biogas with ultra-low energy contents.

Landfill gas to electricity and biogas to electricity projects have the unique characteristic of being able to operate 24/7. These projects have the potential to round out the state renewable energy portfolio with the ability to run at night.

4. There has been a downward trend in the amount of energy generated from biomass and biogas in the last 5 years. What could be the reason behind this? What can be done to reverse this trend?

The decreasing quality of methane is one of the reasons behind the downward trend in the amount of energy generated from biomass and biogas, especially from landfills.

There are examples of long time landfill gas to electricity plants operating at 50% or less capacity, due to decreasing gas quality and quantity at old, closed landfills.

The quality of landfill gas at active landfills is most likely to decrease due to the diversion of waste, especially organic matter, away from the landfills. The AB32 Early Action of "increased landfill methane capture" could also decrease the landfill gas methane content. As the methane quality of these sites decrease, the sites choose flaring over energy generation.

The trend can be reversed if California begins to support technologies which specifically target the lower quality methane landfill/biogas for renewable electricity generation. The trend reversal can occur swiftly if the state begins to clearly support the application of technologies which target energy from low quality landfill gas/biogas and financially incentivizes all parties to produce energy from these renewable energy sources.

5. Capturing methane from dairies and wastewater treatment facilities can help reduce greenhouse gas emissions in California. Assembly Bill 1969 (Yee, Chapter 731, Statutes of 2006) established a feed-in tariff set at the market price referent for public and wastewater treatment facilities; however, no facilities have signed up for this feed-in tariff. Is the feed-in tariff level set too low? Are there other barriers preventing development of new biogas facilities?

The feed-in tariffs only address the price for power part of the generation project. A small generation project requires expertise in engineering, permitting, installation, operation and maintenance. These project costs add up quickly and turn a potential biogas to electricity generation into a flare project.

Selling power to the utility, whether through feed-in tariffs, small renewable generator tariffs or standard biomass contracts is economically challenged for small power projects. Even though these tariffs offer a standard market price, the interconnection and metering costs are equal to those for larger power projects, 10 MW and above. The electrical interconnection is not administered or governed by the simple Rule 21 interconnection, but rather the exporting WDAT which treats a 100 kW generator the same as a 20 MW generator. These interconnection costs which include professional engineering, service drops, easements, additional insurance, CA ISO contracts/agreements, switchgear and metering – all of which add cost to a project.

These project costs add up to be a significant upfront investment while the project revenue is spread out over 20 years. Barriers exist to financing these small power projects due to the high project upfront costs versus revenue timing mismatch.

State financial incentives which promote biogas/landfill gas/waste water treatment digester gas projects would help decrease the project financing costs. Clean project financial incentives such as equipment grants, interconnection costs assistance and operation cost assistance would help eliminate the project financing barrier by reducing the initial upfront project investment costs.

Funds exist in the Emerging Renewable Programs and the Self Generation Incentive Program which could be reassigned to deploying small renewable landfill gas/biogas to electricity projects that export clean renewable power around the clock, provide clean renewable from potentially wasted gas and benefit all Californians with lower emissions and clean renewable electricity.