

RECOMMENDATIONS TO INCLUDE IN CALIFORNIA ENERGY COMMISSION'S 2009 INTEGRATED ENERGY POLICY REPORT (IEPR)

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Addressing Regulatory Barriers to Construction of Biomass Facilities in California

Purpose

This document describes renewable energy benefits of biomass facilities such as dairy methane digester systems, identifies permitting and regulatory obstacles faced by entities wishing to construct new methane digester systems in California, suggests areas of research to understand better the identified obstacles, and recommends evaluation of potential policy solutions.

Overview

Past Energy Commission *Integrated Energy Policy Reports* (IEPRs) have recognized that increasing renewable energy to 20 percent of electricity sales by 2010 and 33 percent by 2020 are an essential part of reducing California's greenhouse gas emissions. Despite numerous policies to increase the use of renewable energy in the state, such as the existing Renewable Portfolio Standard, the net metering requirements under Assembly Bill 728, and the Public Utilities Commission's January 2008 approval of feed-in tariffs, only 13% of electricity generation delivered by the investor-owned utilities came from renewable sources in 2008.¹

In 2006, Governor Schwarzenegger issued Executive Order S-06-06 that established targets for the use and production of biopower. These targets include meeting 20% of the State's Renewable Portfolio Standard (RPS) goals by using biomass for electricity. The Governor directed the Energy Commission to report in the IEPR on progress in achieving sustainable biomass development in California.

After initial review of information brought to our attention by Sustainable Conservation, which we understand is also filing comments today, we are concerned that one substantial barrier to meeting more of the State's RPS requirements with biomass technologies may be regulatory in nature. For those biomass facilities that emit criteria pollutants during electricity generation, such as dairy methane digesters, applicants have been unable - or have found it extremely difficult, time-consuming and expensive - to obtain the necessary air permits to construct new facilities.

¹ See CPUC, Renewable Energy Standard Quarterly Report at 3 (July 2009), available for download at <http://www.cpuc.ca.gov/PUC/energy/Renewables/>.

This permitting difficulty stems both from various limitations in California’s air quality statutes and districts’ regulations and policies, as well as from inconsistencies in their implementation.

While it is critically important to reduce emissions of criteria pollutants to attainment levels, it is equally important to consider the full, life-cycle emissions resulting from various choices related to dairy methane management and to strike a balance between control of criteria pollutants and control of greenhouse gases. We intend to study this matter further, and offer a more detailed assessment of this perceived regulatory barrier after consultation with the affected air districts and various stakeholders. However, it is important to bring this matter to the attention of the Energy Commission now, in order to encourage it to undertake its own investigation.

Regulatory Framework for Biomass Facility Permitting

Air District Regulation. All county and regional air districts in California perform new source review for the construction of new stationary emissions sources consistent with applicable federal, state, and air district requirements. Most districts implement new source review requirements based on the “Best Available Control Technology” (BACT).² Although the BACT requirements vary from district to district, each air district’s BACT standards are at least as strict as federal new source review standards. The air districts determine BACT on a case-by-case basis and usually define BACT as the most stringent of two to five possible alternative minimum requirements. The most common formulation of BACT requires an applicant to adopt the most stringent control technology that (1) has been achieved in practice for a similar source (defined usually as the same class or category of source); (2) is technologically feasible and cost-effective or (3) is contained in a State Implementation Plan (SIP) or New Source Performance Standard. Some air districts maintain BACT clearinghouses to record the most recent BACT determinations for various source classes.

Statewide Guidance. The Air Resources Board (ARB) does not have general jurisdiction to regulate stationary sources in California, but does provide guidance to the air districts. The California Air Pollution Control Officers Association (CAPCOA) established a statewide BACT-LAER Clearinghouse to be administered by the ARB. The Clearinghouse is designed to provide centralized BACT and LAER information, promote consistency among air pollution control districts, and provide guidance to the districts in applying BACT and LAER standards.

Under Senate Bill 1298, passed in 2000, the ARB maintains a distributed generation certification program which exempts from district permit requirements certain electrical generation technologies, such as microturbines and fuel cells, that meet specific emission standards and other characteristics. SB 1298 also requires the ARB to develop guidelines for electrical generation technologies that remain subject to district permits, including larger turbines and reciprocating engines. The guidance includes recommended BACT determinations and suggested permit conditions in order to assist air districts in making permitting decisions for these

² Some districts provide new source review requirements in terms of the “Lowest Achievable Emissions Rate” (LAER) instead of, or in addition to, BACT. San Joaquin Valley Air Pollution Control District (SJVAPCD) and Sacramento Metropolitan Air Quality Management District (SMAQMD), two of the districts in which applicants have encountered obstacles in permitting biomass facilities, impose BACT requirements.

technologies. It does not appear that the guidelines have been updated since they were approved in 2001.

Overview of Dairy Methane Digesters and Their Renewable Energy Benefits³

California's dairy industry is the largest in the nation. The industry produces more than \$5 billion in annual sales. The state's 1.7 million dairy cows generate each year more than 67 billion pounds of manure. The manure emits 450,000 tons of methane, a greenhouse gas 20 times more potent than carbon dioxide. Insufficient collection and storage of manure results in surface water contamination from high concentrations of ammonia, organic matter, and phosphorous, and groundwater contamination from high concentrations of salts and nitrates.

During anaerobic digestion, bacteria break down the organic matter contained in manure into biogas, which consists of methane, carbon dioxide, and other gases. If captured after the digestion process, biogas can be used to generate electricity and heat. The ARB's December 2008 AB 32 *Scoping Plan Document* identifies methane capture from dairies as a recommended greenhouse gas reduction measure. The ARB recommends the near-term "encourage[ment of] investment in manure digesters" and in five years the determination whether "the program should be made mandatory by 2020." (Scoping Plan, page 67).

In the Energy Commission April 21, 2009 Joint Committee Workshop in Preparation for the 2009 IEPR, benefits from the installation of on-site dairy methane digesters were identified, including greenhouse gas emissions reductions, increased renewable energy generation, decreased electricity costs for dairies, and reduction in water contamination. Key benefits are:

- Capturing all the methane produced by California dairies would result in greenhouse gas emissions reduction equivalent to removing 2 million vehicles from the road.
- Converting all the easily-captured methane produced by California dairies to electricity could power roughly 120,000 homes with renewable energy.
- Digesting the manure can reduce surface and ground water contamination and creates a net decrease in emissions of some volatile organic compounds (VOCs) and H₂S, a particulate matter precursor.
- Digesting dramatically decreases the volume of manure solids and produces a high quality fertilizer as a byproduct.
- Digesting on-site eliminates the need to transport manure to other facilities by truck.
- Using an on-site methane digester reduces the dairy's electricity demand, its energy costs, and potentially its need for on-site fuels.

³ Although this memorandum focuses on the difficulties in permitting dairy methane digester systems, similar problems are currently being faced for other technologies such as gasification systems that convert solid biomass feedstock into synthetic flammable gas ("syngas"). The problems inherent in the air district permitting process create the possibility that future renewable energy technologies will face undue permitting challenges as well.

The U.S. Environmental Protection Agency (EPA), Region 9 states on its website that “[m]ore efficient management and treatment of dairy manure could improve the quality of soil, air, and water, create jobs and stabilize rural economies, provide a source of renewable energy, and reduce regulatory pressures on dairies.”⁴

The Energy Commission has recognized the potential benefits of increased dairy methane digestion and provided matching grants for projects that turn dairy manure into electricity.

Proposed Actions to Analyze Identified Problems in Permitting Dairy Methane Digesters

Based on an evaluation of methane digester air permitting practices by those air districts in which most of the dairy methane digesters will likely be permitted, we have identified the following significant challenges that applicants face in seeking to obtain construction permits for new dairy methane digesters.⁵ We encourage the Energy Commission to research and analyze these problems in order to develop actions that should be taken by the Energy Commission, by other state agencies, or by the Legislature to address and resolve these concerns.

Inadequate Definitions of Key Terms in Air District Regulations and Policies: Many air districts either have no definitions -- or have inadequate definitions -- of key terms governing BACT requirements, such as “achieved in practice,” “technological feasibility,” “cost effectiveness,” and “class or category of source.” This results in the air district having broad discretion to decide what these terms mean in practice. For example, an air district can ignore certain costs in calculating cost-effectiveness and can select its own emissions baseline upon which the cost-effectiveness calculation depends. This means that biomass facility applicants face considerable regulatory uncertainty and find that district cost-effectiveness determinations are unrealistic when compared to real-world results or to an applicant’s reasonable expectations.

Regulations and Policies Vary Among Air Districts: Although different air districts frequently look to one another in setting BACT for a new source, the governing statutes and district regulations and policies establishing BACT requirements vary substantially among California air districts. This results in regulatory uncertainty and inconsistency. Some prominent inconsistencies are:

- While all air districts have statutory requirements for new source review provided in the Health and Safety Code, the requirements for the South Coast Air Quality Management District (“South Coast” or SCAQMD) are considerably more extensive than those for any other district. *See* Health & Safety Code § 40440 et seq. Other districts therefore have substantially more discretion in setting BACT rules and policies.
- District rules vary considerably in the required parameters for determining a control technology to have been “achieved in practice.” In the South Coast district, for a

⁴ See “Dairy Manure Collaborative”, EPA Region 9 Agricultural Program *available at* <http://www.epa.gov/region09/ag/dairy/basic-info.html>.

⁵ About 75 percent of all dairy cows live in dairies within the boundaries of the San Joaquin Valley Air Pollution Control District and the Sacramento Municipal Air Quality Management District.

technology to be deemed “achieved in practice,” it must be (1) commercially available, (2) “reliable” (demonstrated for at least six months), and (3) effective. *See* SCAQMD BACT Guidelines at 16. The Bay Area Air Quality Management District (“Bay Area” or BAAQMD) provides that a control technique must have been “successfully utilized for at least one year.” *See* BAAQMD Regulation 2, Rule 2-201. Districts such as San Joaquin and Sacramento, on the other hand, establish no concrete parameters for making such a determination, creating increased regulatory uncertainty. San Joaquin provides only that to rely on an “achieved in practice” determination in setting BACT, the rating and capacity of the two units must be approximately the same, the class of source must be the same, and the availability of resources must be approximately the same. *See* SJVAPCD BACT Policy at § V. The Sacramento district allows as BACT those technologies that have been “required or used . . . [unless not] demonstrated to be achievable in practice.” *See* SMAQMD Regulation 2, Rule 202 § 207. Sacramento provides no additional parameters for determining what has been “required or used” or not “achievable in practice.” *See* SMAQMD Rule 206.1.

- District rules establish different required costs and different calculation methodologies for their cost-effectiveness determinations. Thus, even if two districts used the same cost-effectiveness threshold value, a particular control technology may be deemed cost-effective in one district, but not in another. For example, San Joaquin district’s required costs for consideration are listed only as “labor, fuel, maintenance, utilities, etc.” *See* SJVAPCD BACT Policy § X(A). The Bay Area district, on the other hand, allows for consideration of several direct costs (including labor, raw materials, replacement parts, and utilities) and indirect costs (including overhead, property tax, insurance, administrative costs, and capital recovery costs). *See* BAAQMD BACT Guideline § 1. South Coast has an even more extensive list of allowable costs to consider, including taxes, instrumentation, freight, piping, insulation, painting, engineering, performance tests, raw materials, waste treatment/disposal, replacement parts, and several other costs. *See* SCAQMD BACT Guidelines at 31, Table 5. Additionally, unlike some air districts such as San Joaquin, other districts including South Coast consider both an “average” and an “incremental” cost effectiveness, similar to the approach taken by the U.S. EPA for new source review of major sources. *See* SCAQMD BACT Guidelines at 28-29.
- Most air district rules do not ensure public participation in the district’s decisionmaking process for determining that a technology is technologically feasible and cost-effective. Some districts require a public hearing before such determinations can be made. *See, e.g.*, Imperial County Air Pollution Control District Regulation I, Rule 101; Great Basin Unified Air Pollution Control District Regulation II, Rule 209-A.F.1.

Inadequate Updates to BACT Clearinghouses: It does not seem that ARB/CAPCOA has updated its clearinghouse since its publication in 2001. San Joaquin Valley APCD has not consistently updated its clearinghouse quarterly as is required by its rules. This lack of adequate clearinghouse updates results in applicants being unable to access relevant information prior to and during the permitting process.

Inability to Account for Net Environmental Benefits or Life Cycle Effects of Proposed Biomass Facilities: Analysis of district permitting practices for the issuance of permits for dairy methane gas digesters reveals that these permitting processes did not take into account a facility’s potential contribution to surface or groundwater quality, mobile source emission displacement, reduction in emissions from different criteria pollutants and greenhouse gases, or the life cycle emissions effects of energy sources that would be displaced by the biomass facility.

Permit Applicants’ Inability to Use Energy Commission Grants: Many recipients of Energy Commission grants to construct biomass facilities have not been able to use fully the grant funds because the recipients, under new BACT determinations, were unable to obtain air district construction permits or were unable to meet construction deadlines established by the grants.

Proposed Actions to Develop Solutions for the Identified Problems

Based on an evaluation of methane digester air permitting practices and our regulatory experience, we offer proposed actions, as described below, to address the problems discussed above. We recommend that the Energy Commission research and analyze these proposed actions, along with any other potential actions identified by the Commission, to identify those actions that could effectively address and resolve the identified problems.

Consultant Reports: We recommend that the Energy Commission have a consultant prepare reports that:

- Evaluate potential additional revenue streams to make technologically feasible control mechanisms more cost effective for small renewable energy facilities, such as additional state or federal grants, carbon market offsets, or state loans based on the expected value of carbon offsets.
- Examine the processes used by air districts when making BACT determinations for methane digesters and biomass waste gasification systems.
- Determine which air pollution control technologies are technologically feasible for methane digesters and biomass waste gasification systems.

Statewide Guidance: We recommend that the Energy Commission to draw on findings produced in the consultant reports and work with the ARB and air districts to publish statewide guidance documents that:

- Provide clear definitions for key terms used to make BACT determinations such as “achieved in practice” and “technological feasibility,” definitions of “same class or category of source,” and necessary considerations in calculating “cost effectiveness.”
- Create distinct source classifications for dairy methane digester facilities and other biomass facilities that supply electricity to the electric grid to facilitate consistent applications of BACT regulations by and among different air districts.

- Establish reasonable baseline emissions for dairy methane digester facilities and other biomass facilities for purposes of cost-effectiveness calculations to provide predictability for facility applicants.
- Offer comprehensive guidance for BACT determinations specific to biomass facilities, similar in scope to the “Guidance for Power Plant Siting and Best Available Control Technology” approved by the ARB on July 22, 1999, and the “Guidance for the Permitting of Electrical Generation Technologies” approved by the ARB on November 15, 2001.

Legislative Changes: We recommend that the Energy Commission to work with the ARB and air districts to consider the feasibility and suitability of legislative changes that:

- Require all air districts in the state to rely on a single BACT-LAER Clearinghouse, to be maintained by the ARB/CAPCOA, published electronically, and updated promptly upon each new BACT or LAER determination made by an air district.
- Create a state program to streamline the air permitting process for renewable energy facilities, perhaps modeled on the distributed generation streamline process implemented by the ARB under the requirements of Senate Bill 1298.
- Require air districts to include in their permitting decisions, consistent with applicable law, including possible new legislative requirements, the net environmental effects of new sources, such as potential system-wide decreases in criteria pollutant and greenhouse gas emissions.

Conclusion

We encourage the Commission to expand its inquiry in this area, as described in this memorandum. Thank you for the opportunity to offer our comments on this matter.