



COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

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Mr. Pramod Kulkarni
California Energy Commission
Energy Analysis Office
Electricity Supply Analysis Division
1516 Ninth Street, MS-20
Sacramento, California 95814

Dear Mr. Kulkarni:

Comments on CEC's Draft Report: Combined Heat and Power Potential at California's Wastewater Treatment Plants

We appreciate the opportunity to comment on the CEC's draft report on the potential for POTWs to further generate green power from their facilities.

The Los Angeles County Sanitation Districts (LACSD) provides environmentally sound, cost-effective wastewater and solid waste management for about 5.3 million people in Los Angeles County. In the process, LACSD converts wastes into valued resources such as reclaimed water, energy, and usable recycled materials. LACSD has advanced effective and innovative energy recovery systems and sustainable waste management technologies to maximize the potential for resource utilization for decades. Our efforts to that end have been recognized by the EPA as one of the nation's top 20 "Green Power Partners."

Our goal in this response is to highlight restrictive regulations that may frustrate the implementation of CHP at wastewater treatment plants. We also wish to point out other economical and technical constraints that we hope to see addressed in the CEC's final report.

Comments on the Paper:

- **Executive Summary (page 2):** We agree with most of the report's conclusions and recommendations. We agree, for example, that regrettably shortsighted regulations such as SCAQMD Rule 1110.2 have driven some wastewater agencies away from productive uses of their digester gas

towards non-productive flaring. Most significantly, however, is our belief that inclusion of these facilities in the state's developing cap and trade program, could limit development of CHP at publicly owned treatment works (POTWs). Under a declining emissions cap, POTW managers will be focused on minimizing emissions and keeping funds in reserve for allowance purchases, not on expanding CHP potential with its attendant emissions increases. Additionally, the significant offset generation potential of those projects would be lost despite the fact that the fuels generated by these facilities are largely carbon-neutral (as of this writing, CARB is threatening to treat biogenic and anthropogenic emissions the same). **We ask that the CEC Executive Summary lead off with a recommendation that POTWs be kept out of cap and trade in order to enhance CHP development wherever possible.**

- **Resource Assessment: CHP Potential From Existing and New Bio-Wastes (page 8):** It is misleading to say that only 23 California wastewater treatment plants were producing power using CHP (page 8) without also mentioning that other POTWs are finding other productive uses for their gas such as unit process heating. The statement on page 8 leaves the impression that a vast, untapped potential exists that may not be the case. Also, not every POTW has digestion on-site nor do they need it. According to the 2004 EPA Clean Watershed Needs Survey, 80% of the POTWs in the United States are < 1.000 MGD, so small that they probably do not engage in energy recovery for economy of scale reasons. In another permutation, LACSD operates several interconnected treatment plants in a "Joint Outfall System" where the sludges from one facility are treated at a downstream terminal facility with centralized solids handling capability for more economical processing. By "out-sourcing" digestion, these upstream facilities have room for advanced treatment, but often they forgo the on-site potential to generate digester gas.

- **Potential for CHP from New Resources (page 9):**

We deeply appreciate the report's acknowledgment of the regulatory constraints restricting the expanded use of digester gas combustion devices. For example, although permits can be modified to allow increased capacity, such action could trigger New Source Review requiring offsets, and BACT (Best Available Control Technology) that may result in considerable capital and on-going O&M expenditures.

Additionally, a brief listing of the air regulatory hurdles includes:

1. SB1298 (Bowen, 2000) dealing with unpermitted electrical generating equipment and fallout regulations in the South Coast for permitted equipment ensuing from SB1298 have made distributed generation very difficult to implement in California. Cost efficient reciprocating engines have essentially been removed from the prime mover selection list.
2. Expensive and increasingly elusive criteria pollutant offsets may need to be purchased. In the South Coast Air Basin (SCAB), asking prices for PM and NO_x credits have hit in excess of \$300,000 per lb/day and \$128,000 per lb/day respectively. Moreover, the time is fast approaching in the SCAB when there may not be enough credits available in the SCAQMD credit bank to support all the projects scrambling for offsets. [We understand that the bulk of the Scoping Plan's 4000 MW of CHP goal is envisioned to be large cogeneration works that may rapidly deplete what little privately-held credits remain. The CEC needs to address the dearth of ERCs in California as one of its highest priorities.]
3. Emissions increases may suddenly cause a facility to become a major source under the federal Clean Air Act (CAA) Title V program, triggering extensive record-keeping, reporting and monitoring requirements, and placing that facility at increased risk of citizen-based lawsuits.
4. There can be potential conflicts with the goal of reducing GHGs while simultaneously reducing criteria pollutant emissions as we pointed out in several AB 32 Scoping Plan comment letters. One example cited was increasingly stringent NO_x emissions and their negative effect on boiler efficiency, for example, thereby increasing GHGs per unit of fuel consumption.
5. Facilities currently pay annual emissions fees for each ton of criteria pollution. In the SCAB, fees for NO_x and VOCs for major facilities are nearly \$724 per ton and \$1,260 per ton respectively¹.
6. Punitive federal CAA fees per Section 185 could soon be assessed in non-attainment areas. Annual emission fees paid by major

¹ SCAQMD Rule 301, Table III

stationary sources will surge by an additional \$9,300 for each ton of NOx and VOCs² over a baseline.

7. Nitrous oxide emissions from increased fuel combustion could require the purchase of greenhouse gas allowances.
 8. Facilities may have to publicly notify the community that they are “significantly” increasing emissions. This publicity could delay or frustrate permitting, akin to the difficulties that many entities are currently having permitting any size fossil fuel generation plant in the SCAB.
 9. The facility may become subject to the state’s mandatory greenhouse gas reporting threshold, which does not yet exempt emissions from carbon-neutral fuels like digester gas.
 10. New or upgraded equipment would need to be source-tested and, if the rating is increased significantly, these may be pushed into increased monitoring and testing requirements like those required under SCAQMD’s Rules 1110.2 and 1146.
 11. Downstream impacts of increasing feed to digesters include more emissions from solids processing and more residual (post-digestion) biosolids to dispose of. For example, ammonia and VOC emissions during composting³ will increase if solids throughput increases, necessitating increased emissions fees, offset purchases, regulatory and public scrutiny, etc. For those who haul biosolids to remote areas, there will be increased trucking emissions.
- **Potential for CHP from New Resources (page 10):** Providing a benchmark for comparative purposes would highlight any gas production gains from supplementing POTW digesters with other bio-wastes. It would be helpful to understand if the report’s comparisons are based on the same total mass loading, same volatile solids loading or something else. An increase based on just adding more feed to a test digester may not provide a valid comparison. We suggest the results be normalized to loading and reactor volume, i.e., lb VS loading/ft³-reactor/day.

² SCAQMD Draft Staff Report Proposed Amended Rule 317 – Clean Air Act Non-Attainment Fees, p. 21.

³ SCAQMD Rule 1133.2 requires 80% reduction in NH₃ and VOC emissions from biosolids composting.

- **Wastewater Treatment Plants and the Use of Dairy Waste (page 10)**

1. **Regulatory Burdens:** We don't dispute that water and air regulatory restrictions frustrate additional [dairy] digester development, nor do we fully understand the regulatory hurdles dairy operations face. However, our understanding of the restrictions faced by dairy operations is that many are in the form of "best management practices," and that dairymen are relatively new arrivals to the regulatory arena⁴. POTWs, in contrast, have faced a long history of increasingly stringent regulations. We are pleased to see throughout the paper an acknowledgment of this regulatory environment, but we caution against presuming that POTWs are less burdened than dairies. We also question the factual basis behind the statement that "obtaining additional permits for dairy manure treatment and sludge disposal may not be as formidable an issue for a wastewater treatment plant as it is for a dairy." Any new waste stream taken into an existing POTW can be controversial especially if the POTW is a Title V facility.

Any amount of dairy waste mixed with biosolids would be tightly regulated under Title 40 Rule 503 part C, the EPA biosolids regulation. This regulation restricts the land application of biosolids unless processing requirements and pathogen and metals content restrictions are met. We are not clear if digested dairy manures without biosolids face comparable restrictions.

2. **Growth Potential:** The paper reports that very few dairies (12 out of 2700) employ digesters. Just as the expansion of many POTWs is often limited by available space, the addition of dairy digesters may be limited by area and by access to a companion POTW to treat the post-digestion high-strength liquid wastes. Since pipelines are expensive, we assume the high strength liquid waste would be trucked to a POTW. Such a limitation should be addressed in the report.
3. **Financial Constraints:** Capital investment for dairy digestion infrastructure construction could be hard to secure if the requests were viewed as discretionary and not mandated by regulation. The capital investment would be significant, covering items such as: truck unloading facilities, pre-digestion dairy waste processing (i.e. screening out inorganic materials, etc.), dairy waste storage facilities, dairy waste conveyance system (e.g., necessary pipes,

⁴ SB 700 removed the exemption for agricultural operations from air pollution regulations effective January 1, 2004.

pumps, valves, etc.) to convey dairy waste from storage to digesters, odor control systems, process control system modifications, potential construction of additional digesters, etc. This is a costly proposition. The demonstration digester in "eastern Los Angeles County" (actually at the Inland Empire Utilities Agency in San Bernardino County) was shut down in part because of the cost of the operation.

The use of offsets to enhance the economics is frustrated by complicated protocols, and POTWs may be categorically prevented from generating offsets if they are captured under cap and trade. These offsets will be needed to help financially support these projects.

Facilities less than 1 MW are hard to justify economically when there are competing needs for the money. Cost curves such as those found in EPA's "Estimating Sludge Management Costs Handbook" are more vertical for low throughputs (meaning more dollars per ton processed), than for high throughputs where the curves approach the horizontal. Stated in other words, economies of scale are an important factor to any business person.

- **Addition of Waste Oil/Grease from Food Establishments (page 11) and Co-Digesting Bio-Wastes (page 17):** The assumed "excess" digestion capacity available to accept these wastes may prove difficult to exploit. Typical anaerobic digester designs at POTWs are over-sized to accommodate foam that occasionally plagues these facilities. The ability to accommodate significant seasonal variations in flow and other flow surges are often built into the digesters. Finally, since these capital projects are expected to last for decades, many digesters are over-sized for *today's* capacity but that "excess" capacity may be needed for future growth. Even if one assumes that a POTW could build new units, that expansion may not be possible for many facilities located in densely urbanized areas where the needed footprint is unavailable, or where neighboring communities oppose further plant expansions with citizen-based suits or CEQA challenges. Finally, food waste and oil and grease odors may be difficult to control in a highly urbanized area.

Comments on the Survey to POTW Managers:

- **Cogeneration Potential Assessment (page A-3):** LACSD's solids management model (Joint Outfall System) is not unique. Perhaps a question should be added addressing whether or not sludges are treated at that facility or are sent elsewhere for digestion/dewatering, etc.
- **Cogeneration Potential Assessment (page A-3, question 16):** The capacity could be limited by factors beyond the design rating of gas burning equipment such as permit conditions or the desire to remain below emission thresholds, etc.
- **Cogeneration Potential Assessment (page A-4, question 27):** The survey could ask about important design features as well, such as if the digesters are rectangular, circular, egg-shaped, multi-staged, floating cover, operating temperature, etc.
- **Survey in General:** The survey could ask what is the volatile solids loading (lb-VS/CF/day) to the digesters and the hydraulic retention time as well since there are operational limits to these parameters.

Thank you for the opportunity to comment on this proposed rule, please do not hesitate to contact Mr. Patrick Griffith at (562) 908-4288, extension 2117.

Very truly yours,
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