

California Wastewater Climate Change Group

April 30, 2010

Mr. Dennis Roberts
San Joaquin Valley Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, CA 93726

Dear Mr. Roberts:

Draft Best Performance Standard for Gaseous Fuel-Fired Boilers

The California Wastewater Climate Change Group (CWCCG)'s mission is to address climate change policies, initiatives, and challenges through a unified voice representing California wastewater community perspectives. CWCCG's members (including several agencies in the San Joaquin Valley) provide an essential public service by treating over 90% of the municipal wastewater in California. We have reviewed the proposed Best Performance Standard (BPS) for high pressure boilers and wish to offer the following comments. We believe this BPS could have state-wide or even national implications, and therefore we want to ensure that time is taken to get it right and address all stakeholder viewpoints.

The Proposed BPS is Technically and Economically Infeasible for Many Facilities

Only the most careful reading of the proposed BPS reveals that the desired efficiency metrics can only be achieved under a very narrow range of operating conditions. The literature provided to support the claim that this BPS is "achieved in practice" assumes very optimistic operating scenarios such as continuous operation at full load, ignoring start-up/shut-down inefficiencies, a near unlimited supply of cold water and a productive use for excess hot economizer water. At this time, we are unaware of any boilers that have achieved the proposed BPS in-practice. We respectfully request that the SJVAPCD provide listings of actual installations with source test and as-built thermodynamic efficiency measurements demonstrating the proposed BPS has been achieved.

Additionally, the SJVAPCD Final Staff Report, Addressing Greenhouse Gas Emissions Impacts under the California Environmental Quality Act mentions that the proposed BPS should meet an economic feasibility test¹. The documents provided for this BPS do not include this calculation, nor has the District, as of yet, defined what "economic feasibility" means in this context. We request that the District address this vital issue before implementing this (or any other) BPS.

¹ See SJVAPCD Fact Sheet on Stationary Source Projects, "Best Performance Standard for Stationary Source Projects is...Achieved-In-Practice means of reducing or limiting GHG emissions from a GHG emissions source, that is also economically feasible per the definition of achieved-in-practice." Also, see Governing Board Agenda Item 7, p.4 and Final Staff report, p.272, comments 16 and 17, "The District acknowledges the recommendation to consider cost effectiveness when establishing BPS."

The Proposed BPS Should Not Apply to Biogas Fired Boilers

Boilers combusting carbon-neutral fuels² like sewage digester gas and landfill gas face unique operational and technical challenges, and cannot achieve the thermal efficiencies of natural gas boilers.

Contaminants not normally found in natural gas can frustrate achieving high thermodynamic efficiencies from combusting landfill/sewage biogases. Siloxane contaminants, nearly ubiquitous in these gases, can foul most heat recovery surfaces such as fins on the economizers. Additionally, landfill and sewage digester gases are often saturated with moisture that must be removed prior to combustion. Both water removal and costly siloxane pretreatment would be required to sustain maximum thermal efficiency. The presence of this energy-intensive conditioning equipment would further erode process efficiencies gained from installing two-stage economizers, etc., thus the comparison to the baseline natural gas unit is moot.

Additionally, simple thermodynamics dictates that biogas fuels, which, pre-combustion, contain 30 to 50% bio-generated carbon dioxide, cannot achieve the same flame temperatures as natural gas. A major driver of boiler efficiency is the temperature differential between the flame front and the temperature of the steam generated. This differential is lower when biogases are combusted in place of fossil fuels, and thus the thermodynamic efficiency is decreased proportionally.

Finally, the proposed BPS efficiency metric of 95% has not been achieved-in-practice for biogas fuels. Based on supporting documentation provided with the BPS, the expected emissions reductions of 7% were clearly calculated from a natural gas boiler baseline, hence the proposed BPS should not be applicable to biogas fired boilers. We ask that the District concur with this analysis and state more clearly that the proposal does not apply to biogases.

Biogas Displacement of Fossil Fuels Should Be an Alternative Strategy in the BPS

The SJVAPCD Final Staff Report, Addressing Greenhouse Gas Emissions Impacts under the California Environmental Quality Act recognizes that renewable fuels reduce GHG emissions when they displace fossil-fuels. Furthermore, in the California Low Carbon Fuel Standard life-cycle analysis of alternative fuels, landfill gas [CNG] has the lowest carbon intensity value of nearly every other fuel³. Accordingly, we respectfully request that SJVAPCD consider the use of renewable fuels as a potential alternative BPS for boilers.

The Final Staff Report (p. 84) mentions that biogas combustion in lieu of fossil fuels could be considered an alternate approved technology. However, it also mentions that this option has not been achieved-in-practice. There are at least two installations combusting landfill gas in high pressure boilers at the Puente Hills and Palos Verdes Landfills, and a long history of

² Please see pages 92-99 of *Final Staff Report Addressing Greenhouse Gas Emissions Impacts Under The California Environmental Quality Act, dated December 17, 2009* including on p. 97, "anaerobic treatment would [generate] large quantities of methane, which can be used as a renewable energy source to replace fossil fuel use."

³ Please see the ARB's lookup table for carbon intensity values: http://www.arb.ca.gov/fuels/lcfs/121409lcfs_lutables.pdf. The closest to sewage digester gas is probably dairy digester which has the second lowest (behind landfill gas) intensity value.

biogas combustion in many devices such as LP boilers, engines, turbines, etc. We suggest that the District keep an open mind when reviewing these projects and recognize that these devices, though they may not achieve the same thermodynamic efficiency as their fossil fuel cousins, will result in radically lower GHG emissions due to the nature of the fuel.

The BAU Mandate Should Not be Impossibly Difficult to Achieve

The requirement to achieve a 29% reduction from the business as usual (BAU) condition prior to 2020 is inappropriate when the District's own analysis shows that even today's "best" performing technology can only achieve a 7% reduction. Such a requirement for the BAU condition would push every project that cannot meet the proposed BPS into an EIR. Moreover, the AB 32 Scoping Plan does not require 29% reduction from each and every sector; different sectors will reduce more, some less⁴. Since the District's own analysis demonstrates that these boilers cannot approach this goal, it should investigate flexible alternatives for lead agencies.

Also, it is not clear to us how GHG credits could be used to mitigate a project's GHG emissions below significance if neither the BPS or BAU standards can be met. Unless it has completely netted-out its emissions, no lead agency could ever be assured that they have fully mitigated below significance⁵. Unlike other proposals such as that advanced by the SCAQMD, it is not clear if there is a mitigation off-ramp to avoid a significance determination. We ask that the District demonstrate how the use of emission reduction credits, such as those held in their Rule 2301 bank, could be used by lead agencies to potentially mitigate below a level of significance.

Conclusion

The proposed BPS has not been demonstrated in practice for landfill or sewage biogas, and the thermodynamic efficiency targets are unachievable due to technical limitations not shared with natural gas units. We therefore respectfully request that SJVAPCD's BPS for HP boilers clarify that it applies only to natural gas and thus categorically exclude biogas boilers as they have done with their co-generation proposal. We also suggest that the District consider the use of biogas as a BPS alternative to displace fossil fuels. Finally, we ask that the District adopt and demonstrate more flexible alternatives in allowing lead agencies to fall below significance.

⁴ See p. 22 of the Change Scoping Plan, December, 2008, "ARB recognizes due to several factors...actual reductions from individual measures aimed at achieving the 2020 target may be higher or lower than current estimates."

⁵ See the Final Staff Report, p.55, "ARB does not support a zero threshold, nor does the District."

We thank you again for the opportunity to provide written comments on this draft BPS, and we look forward to working with your staff on future BPS development. Please contact me if you have any questions at (510) 587-7709 or jkepke@ch2m.com.

Sincerely,



Jackie Kepke, P.E.
Program Manager
California Wastewater Climate Change Group

cc: Martin Keast, SJVAPCD
Ray Arthur, City of Fresno
Vicki Fry, CVCWA
Patrick Griffith, LACSD