



June 13, 2023

Matthew Harrison
Manager, Short-Lived Climate Pollutant Policy Section
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

RE: Opportunities to Increase Methane Capture and Beneficial Use via the use of Automated Control Technologies

(Comment submitted electronically)

Dear Mr. Harrison,

On behalf of Loci Controls, Inc. (“Loci”), I am writing to provide comments relating to the issues raised at the Public Workshop on Potential Improvements to the Landfill Methane Regulation (“LMR”). Specifically, this comment focuses on the benefits of the California Air Resources Board (“CARB”) developing a strategic plan to integrate advanced real-time landfill gas monitoring and collection systems (“Advanced LFG Control Systems”) into the LMR while also leveraging the economic benefits of the Low Carbon Fuel Standard program (“LCFS”) to speed industry adoption and begin capturing short-lived climate pollutant (“SLCP”) reductions even before the future LMR’s effective date. Loci recognizes CARB’s ground-breaking work in quantifying fugitive methane emissions, and in deploying policy strategies to maximize the capture and beneficial use of biogas which will displace CO₂ emissions downstream of landfills. We also appreciate that CARB recognizes that there are significant opportunities to reduce methane and other harmful gas emissions from the emission source itself, landfills. We appreciate the opportunity to provide this comment.

Loci’ Technology

Loci is a world leader in the development and deployment of Advanced LFG Control Systems. Loci’s patented cloud-connected real time data and automated gas collection control platform is comprised of four components: the Controller, the Sentry, WellWatcher® control dashboard, and Liquid Level Management. Loci’s Advanced LFG Control System provides landfill gas collection system operators with data to improve operations, increase methane capture, and reduce landfill gas emissions. In 2021, the American Carbon Registry (“ACR”) affirmed the environmental value of Loci’s Advanced LFG System with the approval of a methodology which enables landfills to go beyond existing regulations to prevent the release of methane and other gases into the atmosphere, thereby offering the potential for hundreds of millions of tons of additional emission reductions over the next decade.¹ Because Loci’s technology goes beyond

¹ “Methodology for the Quantification Monitoring, Reporting and Verification of Greenhouse Gas Emissions Reductions and Removals from Landfill Gas Destruction and Beneficial Use Projects, version 2.0,” available at https://americancarbonregistry.org/carbon-accounting/standards-methodologies/landfill-gas-destruction-and-beneficial-use-projects/lfg-methodology-v2-f_2021-05-05.pdf , press release with quote at

current regulatory requirements, its deployment offers additional, real-world reductions of LFG emissions.

Current Shortfall in Projected Landfill Gas Methane Reductions

As stated in the Final 2022 Scoping Plan:

“Due to the multidecadal time frame required to break down landfilled organic material, the emissions reductions from diverting organic material in one year are realized over the course of several decades. For example, one year of waste diversion in 2030 is expected to avoid 8 MMTCO₂e of landfill emissions, cumulatively, over the lifetime of that waste’s decomposition. Near-term diversion efforts are critical to avoid locking in future landfill methane emissions. (...)

While reducing organic waste disposal is the most effective means of achieving reductions in waste sector methane, strategies to reduce emissions from waste already in place in landfills also will play a role in achieving near-term reductions. As Figure 4-16 shows, the total degradable carbon (a measure of the amount of waste with potential to generate methane) that is accumulated from waste deposited in previous years is over 20 times greater than the amount added each year. This illustrates that even if we were able to entirely phase out landfilling of organic waste today, the existing waste in place at landfills would continue to generate methane for decades into the future.

Through a combination of improvements in operational practices, use of lower permeability covers, advanced landfill gas collection systems, and increased monitoring to detect and repair leaks, it is estimated that a direct emission reduction of 10 percent is achievable across the state’s landfills by 2030. Technologies to utilize landfill gas efficiently can contribute further emission reductions in the energy sector.²

Landfill Gas Reduction Potential in California

The largest landfills in California have been reporting gas collection operating performance annually for twenty years or more pursuant to measurement requirements and methodologies established by EPA Greenhouse Gas Reporting Program. This public data base provides a reliable benchmark for gas collection operations using industry standard manual wellfield tuning. An independent peer review of four landfills which utilized Loci’s Advanced LFG Control System found an increase in methane capture of 13-24% compared to the landfill’s previously documented LFG capture performance. Utilizing a representative estimate of average performance improvement of 15% for implementation of Loci’s Advanced LFG System would result in the following decreases in methane emissions from California landfills.

<https://americancarbonregistry.org/news-events/program-announcements/acr-approves-new-methodology-to-reduce-methane-emissions-from-large-landfills>

² California Air Resources Board, “2022 Scoping Plan for Achieving Carbon Neutrality,” (November 16, 2022), from Landfill Methane section at p. 233-234 (emphasis supplied, footnotes omitted), available at <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp.pdf>

Year	% of California Landfill AGCCS Adoption (methane inventory basis)	Emissions Reduction Annually from Landfills with AGCCS - in metric tons/year CO ₂ e	% reduction of Estimated CA Landfill Emissions relative to 2019 estimated baseline
2024	3%	163,400	2%
2025	6%	245,100	3%
2026	9%	408,500	5%
2027	12%	571,900	7%
2028	15%	653,600	8%
2029	18%	817,000	10%
2030	21%	898,700	11%
2031	25%	1,143,800	14%
2032	30%	1,307,200	16%
2033	35%	1,552,300	19%
2034	40%	1,797,400	22%
2035	45%	2,042,500	25%

Proposal to Speed Implementation of Advanced LFG Control Systems in California

Per the discussion at the recent LMR workshop, CARB is currently holding a series of informal workshops with stakeholders to inform the development of future landfill methane regulations. Subsequently, CARB will proceed to develop the proposed regulations, and prepare the necessary analyses that are necessary to support the review and approval of future landfill methane regulations. Due to the nature of the rulemaking process and complexity of the issues, it is anticipated that the updated regulations will take effect in 2025.

At this stage, while CARB has indicated that it recognizes the methane emission reduction impact that could be achieved through use of Advanced LFG Control Systems. However, the nature and extent of the regulations are uncertain including critical details such as: 1) the type of advanced landfill methane emissions monitoring and control equipment that will be required, and 2) the timeframe for the installation of equipment at the wide range of landfills that exist in California. During this period of regulatory uncertainty, most landfill operators can reasonably be expected to defer investments in advanced landfill methane emissions monitoring and control equipment until the program specifics are conclusively determined by CARB and approved by the Governing Board.

Fortuitously, CARB’s existing LCFS program provides a market signal to incentivize the deployment of Advanced LFG Control Systems even before the landfill methane regulations are proposed to the Governing Board, and likely years before future regulatory mandates will require large-scale deployment of Advanced LFG Systems. Unfortunately, due to the nature of LCFS program crediting, the establishment of mandated installation of advanced landfill methane emissions monitoring and control equipment is likely to undercut that LCFS market signal. Specifically, the LCFS program structure provides incentives for reductions to the carbon intensity (“CI”) of transportation fuels based on a California regulatory baseline. In other words,

while the use of RNG or electricity derived from non-mandatory methane capture would provide a recognizable CI reduction under the LCFS, the use of the same RNG or electricity from mandated methane capture would not.

This hurdle could be overcome by the establishment of a safe-harbor LCFS crediting provisions for enhanced landfill gas monitoring and collection systems. This approach was established by SB 1383 for the dairy and swine manure pathways and for qualified organics diversion, and such crediting is protected for a 10-year period by §95488.9(f)(3) even if CARB approves mandated methane control in the dairy sector or diversion of organic material from landfill disposal.³ To the extent that CARB seeks to extend comparable treatment for landfill gas, §95488.9(f) of the LCFS could be amended to establish a 10-year crediting period for projects that capture biomethane that would otherwise be released to the atmosphere from the landfill and that commence prior to the establishment of any law, regulation, or legally binding mandate requiring Advanced LFG Control Systems.

Conclusion

We would welcome the opportunity to provide any further information that would be value to CARB on this subject.

Respectfully,



Graham Noyes
Representing Loci Controls, Inc.

³ See LCFS Regulation entitled “Special Circumstances for Fuel Pathway Applications at §95488.9(f)(3) that provides for 10-year crediting periods for avoided methane emissions for dairy and swine manure pathways and for landfill-diversion pathways.