September 22, 2021

Rajinder Sahota
Deputy Executive Officer
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

RE: 2022 Scoping Plan Update- Short-lived Climate Pollutants Workshop- *CARB should immediately accelerate SLCP reductions by exercising its existing LCFS authority*

(Comment submitted electronically)

Dear Ms. Sahota,

On behalf of Loci Controls, Inc. ("Loci"), I am writing to recommend that due to the urgent necessity of achieving short-lived climate pollutant ("SLCP") emission reductions, the California Air Resources Board ("CARB") should begin fully exercising its existing Low Carbon Fuel Standard ("LCFS") authority. In particular, CARB should exercise its authority to certify Tier 2 pathways that meet the scientific defensibility standard established by §95488.7(b). CARB can utilize this authority to certify innovative SLCP technologies that can be broadly implemented and thereby provide substantial additional reductions of SLCP emissions even before the Scoping Plan process is complete.

As was clearly illustrated by CARB's slide #12 at the SLCP workshop, California is not on track to meet SLCP 2030 emission reduction targets. Currently, California is projected to achieve only about 50% of the methane reduction target. Loci has a fully commercialized technology with an offset protocol certified by the American Carbon Registry that can reduce the forecasted methane reduction shortfall by increasing methane collection at landfills by 13-24%. Loci appreciates the opportunity to present this comment and the immediate opportunity to work with CARB and landfills in California and elsewhere to begin to close the methane reduction gap.

Loci's Technology: Engineers from the Massachusetts Institute of Technology founded Loci in 2013 to develop an integrated system of proven technologies to increase landfill gas (LFG) collection capture, which results in significant reduction of methane emissions from landfills. Loci subsequently developed the Loci Automated Landfill Gas Collection system (the Loci Technology) and has since deployed the Loci Technology on 20 landfills in 11 states. A recent third-party analysis by PTP Informatics of operational data from four operating landfills found that the Loci Technology provided a performance improvement of 13-24% increase in methane

capture or associated landfill gas to energy plant output.[1] In a year-long case study at the Aria landfill in Oklahoma City ending in January 2018, Loci's automated gas collection resulted in an average increase in methane flow of 55% relative to the prior year. Over this same period, the percent methane content of the gas rose by 2.4% to 56.6%, and plant uptime increased by 3.7% to 99.5%.[2]

The American Carbon Registry (ACR) is a leading nonprofit carbon crediting program recognized for its strong standards for environmental integrity and its quest to innovate. ACR operates as an Air Resources Board-approved compliance Offset Project Registry and Early Action Offset Program for the California carbon market. In June of 2021, ACR finalized its approval of a methodology for monitoring, reporting, and verifying methane and other greenhouse gases (GHG) collected using Loci's technology. With ACR approval, large landfills can now create projects using Loci's Automated Control Technology to improve gas collection over standard manual well-field tuning methods that meet regulatory requirements.

LCFS Approval: Despite the remarkable methane reduction that Loci has achieved in the marketplace, the establishment of an approved ACR methodology, and the status of ACR within CARB's Cap-and-Trade program, CARB has provided inconsistent advice to Loci as to whether the agency is willing to review a Tier 2 application from Loci. In the event that CARB declines to review a Tier 2 pathway application submittal from Loci, then the immediate opportunity that the Loci Technology offers to systematically reduce methane emissions from the landfill sector will be delayed indefinitely. The opportunity would be put on hold to await completion of a LCFS rulemaking process that began in October of 2020, has since been indefinitely delayed, and is not likely to yield an updated CA-GREET model that is effective before 2024. In the meantime, California will be losing precious time in its battle to reduce SLCP emissions in line with the targets of SB 1383.

Not only does methane capture and recovery from solid waste management provide methane reduction, it simultaneously improves air quality. As stated in the recent IPCC report:

> *"For example, some short-term 'win-win' policies that simultaneously improve air quality and limit climate change include the implementation of energy efficiency measures, methane capture and recovery from solid waste management and oil and gas industry, zero-emission vehicles, efficient and clean stoves for heating and cooking, filtering of soot (particulate matter) for diesel vehicles, cleaner brick kiln technology,*

[1] This third-party peer reviewed study has previously been made available to CARB, and is available upon request.
[2] Bill Bingham (Loci) and Peter Britton (Aria Energy), "White Paper: Automated Landfill Gas Collection Increases Landfill Gas Flow and Quality at Oklahoma City Landfill," available at https://www.locicontrols.com/perch/resources/aria-white-paper-022119-1.pdf

practices that reduce burning of agricultural waste, and the eradication of burning of kerosene for lighting."[3]

LCFS Regulatory Provisions Support Tier 2 Recognition: A review of the relevant LCFS provisions establishes that the Loci Technology deployed on a landfill is fully within the scope of the Tier 2 pathway classification. Pursuant to §95488.1(d):

- *"The Tier 2 pathway classification shall apply to fuel pathways that the Board's staff has limited experience evaluating and certifying included fuel pathways that not currently in widespread commercial production."*
- *"The Tier 2 classification includes all fuel pathways not included in Tier 1 of the Lookup Table pathways."*
- *"The Tier 2 classification includes, but is not limited to the following fuel pathways: (…) Pathways classified as Tier 1 that cannot be accurately modeled using the Simplified CI Calculators. Such pathways must meet the substantiality requirements of §95488.9(a)."*

In addition, the proposed Tier 2 Loci pathway meets the substantiality and scientific defensibility standards established by the LCFS regulation.

- §95488.9(a)(2)(A)(2), *Substantiality- "For proposed pathway applications with source-to-tank carbon intensities of 20 gCO2e/MJ (absolute value) or less, that source-to-tank carbon intensity must be at least 1 gCO2e/MJ less than the source-to-tank carbon intensity of the reference pathway*."
- §95488.7(b), *Scientific Defensibility*- "*For a proposed Tier 2 pathway to be certifiable by the Executive Officer, the fuel pathway applicant must demonstrate that the life cycle analysis prepared in support of the pathway application is scientifically defensible in the Executive Officer's best engineering and scientific judgment.*

  "*For purposes of this regulation, "scientifically defensible" means the method for calculating the fuel's carbon intensity may rely on, but is not limited to, publication of the proposed pathway in a major, well-established and peer-reviewed scientific journal (e.g., the International Journal of Life Cycle Assessment; The Journal of Cleaner Production, Biomass and Bioenergy)."*

[3] Szopa, S., V. Naik, B. Adhikary, P. Artaxo, T. Berntsen, W.D. Collins, S. Fuzzi, L. Gallardo, A. Kiendler Scharr, Z. Klimont, H. Liao, N. Unger, and P. Zanis, 2021: Short-Lived Climate Forcers. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_06.pdf, at p. 6-91.

CARB is vested with broad general authority to certify pathways: Pursuant to the LCFS regulation, CARB has general authority to evaluate all fuel pathways based on life cycle greenhouse gas emissions using the CA-GREET3.0 model or another model with Executive Officer approval. That general authority is established by §95488.3 entitled "Calculation of Fuel Pathway Carbon Intensities," in subsection (a):

> *"Calculating Carbon Intensities. Fuel pathway applicants and the Executive Officer will evaluate all pathways based on life cycle greenhouse gas emissions per unit of fuel energy, or carbon intensity, expressed in gCO2e/MJ. For this analysis, the fuel pathway applicant must use CA-GREET3.0 model (including the Simplified CI Calculators derived from that model) or another model determined by the Executive Officer to be equivalent or superior to CA-GREET3.0.*"

Conclusion

The Loci Technology offers a unique opportunity for CARB to close California's methane reduction gap by exercising its existing LCFS regulatory authority. We would welcome the opportunity to provide any further information that would be value to ARB on this subject and are hopeful that CARB will agree to consider a Tier 2 pathway application under the LCFS program from Loci in the coming months.

Respectfully,

Graham Noyes
Representing Loci Controls, Inc.

Cc: Richard Corey, Executive Officer
Matt Botill, Assistant Division Chief, Industrial Strategies Division
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