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DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

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California Air Resources Board
Clerk of the Board
1001 I Street
Sacramento, CA 95814

COMMENTS ON THE DRAFT ADVANCED CLEAN FLEETS REGULATION

Los Angeles County Public Works is pleased to provide comments to the California Air Resources Board (CARB) on the Advanced Clean Fleet (ACF) Proposed Regulations.

In January 2022, Public Works sent an informal comment letter on the draft ACF regulations commending CARB for its ACF, Advanced Clean Trucks, Low Carbon Fuel Standards; and other transportation sector programs in addressing greenhouse gas emissions, achieving air quality benefits, reducing petroleum dependency, and decreasing the carbon intensity of California's transportation fuel.

In the January 2022 letter, Public Works also expressed the need to identify and include low-carbon, negative carbon, and renewable alternatives along with electrification of the transportation sector in order to immediately meet emissions reductions targets mandated by statutes, policies, and executive orders. Public Works provided examples of how several state mandates could be simultaneously achieved by utilizing carbon negative Renewable Natural Gas (RNG) derived from organic waste processing. Unfortunately, CARB Staff has not considered the past comments made by Public Works and many other local government agencies implementing Senate Bill (SB) 1383 (Lara, 2016) legislation and regulations to immediately reduced Short Lived Climate Pollution. Instead, CARB has ignored many explanations for why RNG derived from organic waste should be used to the full extent possible to immediately get polluting diesel off the road while both the heavy-duty Zero Emission Vehicles technology and electrification infrastructure improve and expand.

When adopting the Proposed ACF regulations, Public Works respectfully asks that CARB Board Members consider the following collaborative, complementary, and comprehensive regulatory concepts that have not been incorporated in the draft regulations.

1. Align ACF regulations with SB 1383 regulations to help the State meet its carbon neutrality goals
2. Support existing markets for RNG to immediately replace highly polluting diesel engines
3. Distinguish SB 1383 compliant RNG from fossil natural gas
4. Synchronize the electrification infrastructure and heavy-duty Zero Emission Vehicle targets
5. Simplify the exemption process

Details on how these recommendations can help achieve several State mandates simultaneously are enclosed.

We look forward to working with CARB and other agencies to help the State achieve its air quality, greenhouse gas reduction, carbon neutrality, and sustainability goals.

If you have any questions, please contact Mr. Christopher Sheppard at (626) 458-3502 or csheppard@pw.lacounty.gov, Monday through Thursday, 7 a.m. to 5:30 p.m.

Very truly yours,

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Collaborative, Complementary, and Comprehensive Regulatory Frameworks

Align ACF regulations with SB 1383 regulations to help the State meet its carbon neutrality goals.

California Air Resources Board (CARB) must consider the important contributions that SB 1383 compliant renewable natural gas (RNG) could make towards achieving the State's emissions reductions goals for both the transportation and waste management sectors. The adopted advance clean fleets (ACF) regulation is expected to address not only tail pipe emissions but also methane produced from organic waste decaying in landfills. Methane, a short-lived climate pollutant (SLCP) is 86 times more damaging to the climate than Carbon dioxide (CO_2) over a 20-year period.[1]

Senate Bill (SB) 1383 calls for a 40 percent reduction in methane and a 50 percent reduction in anthropogenic black carbon by 2030 and requires local jurisdictions to reduce disposal of organic waste by 75 percent of 2014 levels by 2025.

SB 1383 helps to achieve the State's greenhouse gas emission reduction goals by: Diverting organic waste from landfills disposal, where it would have created harmful methane.

1. Including market development for beneficial products from organic waste processing such as RNG generated from biomethane gas.
2. Requiring jurisdictions to procure this RNG. SB 1383 compliant.

In the Low Carbon Fuel Standard (LCFS) Program, CARB has compared the Carbon Intensity (CI) score of each type of fuel, including electricity and RNG produced from organic waste processing compared to gasoline and diesel. The lowest CI fuels are biofuels derived from organic waste and, in many cases, several times lower than grid electricity.[2] SB 1383 compliant RNG procured by refuse fleets is carbon negative because it reduces:

1. Methane emissions from landfills.
2. CO_2 emissions from fossil fuels such as diesel, gasoline, and natural gas.

California's Department of Resources Recycling and Recovery (CalRecycle) noted the following findings in their SB 1383 regulations and related documentation:

- Organic materials that are discarded make up approximately 67 percent of the total waste stream sent for disposal each year.
- Organic waste decomposing in landfills accounts for the second largest emission of methane at 21 percent of the total methane generated in California.[3]

[1] Intergovernmental Panel on Climate Change, Climate Chane 2014 Synthesis Report, 2015.
[2] California Air Resources Board, Carbon Intensity Values of Certified Pathways, September 29, 2022.
[3] California Air Resources Board, California Methane Inventory for 2000-2018, October 15, 2020.

- Approximately 27 million tons of organic material including edible food will need to be diverted from landfills by 2025 to meet the SB 1383 reduction goal. Recovered organic materials sent to anaerobic digestion facilities create RNG and hydrogen.[4]

Support existing markets for RNG to immediately replace highly polluting diesel engines

To reduce methane emitted from decaying organic waste in landfills, SB 1383 requires local jurisdictions throughout California to work with private developers to design build and operate organic waste processing infrastructure to reduce the amount of organic waste being disposed in landfills. Based on recent capacity planning analyses, Los Angeles County needs an additional five million tons per year of organic waste processing capacity.[5] CalRecycle estimated that the Statewide cost of implementing the regulations would be between $20 and $40 billion, including $4 billion for infrastructure.[6] Identifying sites in urban areas is a significant challenge and each facility can take three to four years to develop and construct.[7]

In the SB 1383 regulations, CalRecycle developed a procurement target for each local jurisdiction based on population to support collection programs, processing facilities, and markets for recovered organic waste products. As processing facilities are built to meet SB 1383 organic waste processing requirements, SB 1383 compliant RNG will be produced. To meet the target, local jurisdictions can purchase products such as compost, mulch, and SB 1383 compliant RNG that can be used for vehicle fuel or injected in utility gas pipelines. The SB 1383 compliant biomethane gas or RNG can be used to generate electricity or hydrogen. Carbon negative RNG used by vehicles that run on compressed natural gas replaces fossil fuels, especially diesel and can remove 84 million tons per year of CO_2 from the atmosphere to help the State achieve its Carbon Neutrality goals by mid-century.[8]

In CARBs Initial Statement of Reasons (ISOR) page 110, CARB staff made the claim that the limited availability of California made RNG can be directed towards harder to decarbonize sectors than transportation, or as a feedstock for energy and materials. The ISOR claims that the California Public Utility Commission (CPUC)'s decision implementing SB 1440 (Hueso 2018) directs RNG away from the transportation sector and creates RNG procurement targets for the four investor-owned utilities in California. This claim by CARB is partially misleading. ZEVs have zero greenhouse gas emissions at the tail pipe but the upstream electricity from the grid must also be generated from renewable resources. Electricity generated from carbon negative RNG, such as SB 1383 compliant RNG, could replace the portion of the electricity generated from fossil natural

[4] CalRecycle, Analysis of the Progress Toward the SB 1383 Waste Reduction Goals, August 18, 2020.

[5] Los Angeles County Department of Public Works, Countywide Organic Waste Management Plan 2019 Annual Report, August 2020.

[6] CalRecycle, Analysis of the Progress Toward the SB 1383 Waste Reduction Goals, August 18, 2020.

[7] Successes, challenges mount as California launches organic waste recycling program – San Gabriel Valley Tribune (sgvtribune.com)

[8] Lawrence Livermore National Lab, Getting to Neutral: Options for Negative Carbon Emissions in California, January 2020.

gas helping the State's electrical grid become 100 percent renewable by 2030. Furthermore, many electricity providers such as the Los Angeles Department of Water and Power will not be able to participate in the SB 1440 Decision. The State will need Infrastructure to convert RNG derived from organic waste processing into electricity.

A recent study of RNG supply estimated that by 2024 there will be 9.6 million diesel gallon equivalents of SB 1383 compliant RNG produced annually that can be used to offset diesel fuel.[9] This number is expected to increase as more organic waste processing facilities come online. CARB's ACF regulations along with the LCFS program can support the procurement of SB 1383 compliant RNG by sending a strong economic signal that there are current transportation markets for RNG. This market for RNG will assist local jurisdictions with achieving SB 1383 procurement requirements, transition the transportation sector to 100 percent renewable fuels, increase energy resiliency, and create in-state infrastructure and local jobs.

Distinguish SB 1383 compliant RNG from fossil natural gas

In the ISOR on pages 114 and 258, CARB Staff cites a 2021 International Council on Clean Transportation (ICCT) report which states that natural gas vehicles are more harmful to the climate and human health than diesel trucks because they emit more Nitrogen Oxide (NOx) and Particulate Matter (PM). In summary, the 2021 report states that NOx and PM effect on human health and climate change are worse than CO_2; diesel trucks produce more CO_2 and natural gas trucks produce less CO_2 but more NOx and PM.[10] In September 2021, CARB adopted the Heavy-Duty Omnibus regulation requiring manufacturers to comply with more stringent exhaust emissions standards for NOx and PM and other emissions control requirements for 2024 model year and newer heavy-duty engines.

However, according to the Environmental Protection Agency's webpage on RNG generated from biomethane, replacing traditional diesel or gasoline with RNG can significantly reduce emissions of NOx and PM, resulting in local air quality benefits.[11] RNG is comprised primarily of methane; compared to fossil natural gas, RNG contains zero to very low levels of constituents, such as ethane, propane, butane, pentane or other trace hydrocarbons. In summary, pipeline natural gas is a complex mixture of the above-mentioned constituents, while processed biogas or biomethane is simply methane with little or no trace constituent issues of concern.[12]

[9] "An Assessment: California's In-State RNG Supply For Transportation 2020 -2024", Gladstein, Neandross & Associates, July 2020.
[10] International Council on Clean Transportation, 2019 Annual Report, 2019 (The International Council on Clean Transportation Annual Report 2019).
[11] United States Environmental Protection Agency, Renewable Natural Gas, March 20, 2022 (https://www.epa.gov/lmop/renewable-natural-gas)
[12] United States Environmental Protection Agency, Renewable Natural Gas, March 20, 2022 (https://www.epa.gov/lmop/renewable-natural-gas)

CARB also ignored to mention additional comments in the 2021 ICCT report about electric vehicles. The ICCT report states that the overall health impacts of electric vehicles are determined by the electricity source and its proximity to population centers. The health impacts would be balanced to some degree by the fact that each electric vehicle displaces the tailpipe emissions that would be emitted by a diesel or natural gas vehicle. In addition, the climate impacts will depend heavily on the CI of the grid. California's grid mix is currently 44percent renewables.[13] To lower the grid's CI, SB 1383 compliant RNG can be used directly in trucks or to generate electricity. Either way, SB 1383 compliant RNG produces less NOx and PM than fossil natural gas, which is currently being used to generate almost 50percent of the State's electricity.[14] Disadvantaged communities are impacted disproportionately by harmful emissions at generation stations, which burn nonrenewable fossil fuels including natural gas.

In the LCFS program, CARB has compared the CI score of each type of fuel, including electricity and RNG produced from organic waste processing compared to gasoline and diesel. As previously stated, the lowest CI fuels are biofuels derived from organic waste and, in many cases, several times lower than grid electricity. Beginning on page 190 of the ISOR, CARB states that RNG LCFS credits are typically claimed by the fuel producer and used to offset the higher cost of RNG. Therefore, the net cost to the fleet owner using RNG is essentially the same as fossil-based natural gas. Indeed, producing RNG is currently more expensive than extracting fossil natural gas. However, SB 1383 compliant RNG is and will continue to be a product derived from much needed organic waste processing. This is exactly why various jurisdictions implementing SB 1383 want to have a pathway for RNG in the ACF and LCFS regulations. The Solid Waste Service Providers and Wastewater Treatment Plants own and operate anaerobic digestion facilities that produce SB 1383 compliant RNG from sanitary waste and organic waste. Many refuse fleets are currently running on RNG generated from biomethane gas produced from anaerobic digesters at Wastewater Treatment Plants. These fleet operators will benefit from procuring the SB 1383 compliant RNG and simultaneously help jurisdictions meet their procurement targets established by CalRecycle. Moreover, the RNG fueling infrastructure is already built and ready for certain heavy-duty fleets such as solid waste refuse trucks to use.

In the Proposed ACF regulation for the Local Government Fleets and the Heavy-Duty Fleets, "Internal combustion engine vehicle (ICEV)" is defined as a vehicle with a powertrain powered by gasoline, diesel, natural gas, propane, or other fuel where the sole source of power is from the combustion of the on-board fuel to provide motive power. Vehicles powered with SB 1383 compliant RNG should not be grouped with other ICEV that run on diesel, gasoline, or fossil natural gas. These fuels, not RNG, should be discouraged.

<u>Synchronize the electrification infrastructure and heavy-duty ZEV targets</u>

[13] California Energy Commission, 2021 Total System Electric Generation. (2021 Total System Electric Generation (ca.gov))

[14] California Energy Commission, 2021 Total System Electric Generation. (2021 Total System Electric Generation (ca.gov))

Public Works urges CARB to work closely other State agencies such as California Energy Commission and the California Public Utilities Commission to ensure electric grid reliability and to develop publicly accessible charging infrastructure aligned with the transition schedule to full ZEVs.

Public Safety shut offs and unscheduled blackouts due to wildfires, heat waves, and other incidents will impact the electric grid reliability and charging. During September's extreme heat wave, the California power grid relied on natural gas for almost half of its electricity generation to meet peak demand. For brief periods in September 2022, natural gas accounted for up to 60percent of the California Independent System Operator fuel mix.[15] Solar and wind generation in California was at this point far ahead of storage capacity and the excess energy had to be jettisoned.[16] In some cases, the solar and wind generation stations were not sited near adequate transmission lines. Millions of Californians received alerts on their cellphones during the September heatwaves to conserve energy to avoid power interruptions.

California's transportation should be mostly ZEVs, but the sector cannot be 100 percent ZEVs. According to the ISOR, $49 billion in electric system upgrades are planned by 2032. However, actual construction of the upgrades could take longer. Batteries and transmission lines are not only costly to build but finding suitable sites to build them can be challenging. Furthermore, California needs to maintain fueling alternatives especially for emergency vehicles. In addition to private charging depots, publicly accessible widespread charging network are needed for public and private service vehicles to respond to emergencies, especially in remote locations. Public Works fleets and contracted fleet operators are often activated as second responders or for disaster recovery. Public Works responds to fires, flooding, mud and debris flows, roads slope failures, water and sanitary sewer main breaks, hazardous material spills, and other public infrastructure damage. Local ordinances and State regulations require refuse haulers to pick up refuse sometimes daily depending on the type of business and cannot be disrupted by electric vehicle charging failures. Multiple service vehicles responding to a disaster, post disaster recovery, or other urgent service incidents cannot vie to charge their vehicles. These fleets need reliable charging facilities in advance of ZEV purchase targets and in many cases, it is better to charge with hydrogen or RNG, while the electric grid and charging infrastructure become more reliable.

<u>Simplify the exemption process</u>

Manufactures implementing the Advanced Clean Trucks and Fleet operators implementing the Advanced Clean Fleet Regulations should strive to meet the ZEVs milestone or model year targets. However, certain class of vehicles cannot find a one-to-one replacement of an ICEV. The ISOR on page 258 makes an inaccurate claim that refuse vehicles operate in and around neighborhoods with a duty cycle and usage

[15] United States Energy Information Administration, California fuel mix changes in response to September heat wave, September 21, 2022.

[16] https://www.washingtonpost.com/us-policy/2022/09/21/california-is-awash-renewable-energy-except-when-its-most-needed/

pattern conducive to using a ZEV powertrain, e.g., low speed, frequent breaking, and returning to base at night. On the contrary, the best current driving range of a "commercially available" ZEV refuse collection vehicle is 170 miles or less with payload losses up to 7,000 lbs.[17] This would require a two to one replacement, doubling costs for both vehicle infrastructure and labor needs.

Currently, ZEV batteries are heavy and increase the payload of solid waste hauling trucks. Charging the batteries takes hours, which makes it extremely difficult for many fleet operators to fuel quickly while on specific duties. In addition, many of these operators of these ZEV service vehicles may find themselves in remote areas where they are unable to charge the vehicle due to a lack of charging infrastructure

To address these concerns, CARB's proposed ACF regulations provided a host of exemptions including an unavailable exemption, in which fleet operators will have to demonstrate that variables, such as payload, power take off, duty cycle, and milage range of these ZEVs is not comparable to the same ICEV and does not meet the fleet's daily needs. ZEV unavailability exemption allows fleet owners to purchase a new ICE vehicle if no ZEV nor near zero emission vehicle of the needed configuration is commercially available. CARB will maintain a list of commercially unavailable vehicles and a list of vehicle configurations for each class of trucks that are eligible for exemptions. However, CARB does not define "commercially available" in the proposed ACF regulations.

Under the unavailable exemption, fleet operators can continue to purchase ICEVs that run on fossil fuels. State, local government, and private fleet operators need to wane away from ICEVs that run on diesel as soon as possible. To immediately encourage taking diesel off the road, we suggest that CARB allow trucks that run on RNG to be treated the same as ZEVs or near zero emission vehicles. When ZEV for a particular class of vehicle does not exist, is delayed, or does not meet the duty cycle or if the electrification/charging infrastructure is not ready, the fleet operator should be allowed to purchase trucks that run on reliable carbon negative SB 1383 compliant RNG.

The ACF proposed regulations can immediately support emission reductions in the transportation sector by integrating these SB 1383 requirements with both decades of investments in natural gas vehicles that can run on RNG, and new investments in grid infrastructure that converts the RNG to renewable electricity.

[17] CARB's Presentation on Proposed Advanced Clean Fleets (ACF) Regulation Provisions Workgroup July 26, 202 Pg 45 (https://ww2.arb.ca.gov/sites/default/files/2022-07/220726acfpres_ADA_0.pdf)