**WASTE MANAGEMENT**
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May 28, 2020

Richard W. Corey
Executive Officer
California Air Resources Board
1001 I Street, Sacramento CA, 95814
arb.ca.gov/lispub/comm/bclist.php

Re: Comments on Proposed Advanced Clean Trucks Regulation

Dear Mr. Corey,

I want to thank the California Air Resources Board (CARB) for taking the time to review Waste Management's comments pertaining to the Advanced Clean Trucks Regulation. We appreciate the willingness by CARB to listen to stakeholders and to address areas of concern so that necessary changes are made to proposed regulations to facilitate that the desired outcomes are realized.

It is important to highlight that Waste Management (WM) has been an early adopter of clean energy technology since the early 1990s and currently has the largest fleet of natural gas vehicles in our industry. Our 9,142 natural gas collection trucks are the largest heavy-duty natural gas truck fleet of its kind in North America. We support this fleet with our 150 natural gas fueling facilities and 25 public fueling stations. Waste Management is unique in that we are both a producer of, and an end-user of, renewable fuel. We currently fuel over a 45% of our natural gas fleet with renewable natural gas (RNG) produced from landfill biogas at three of our own facilities plus third-party producers. Our long-term and ongoing investments in RNG production facilities, coupled with a natural gas fleet that can operate on RNG, are moving us and others using similar technology closer to a near-zero emissions collection fleet.

While our "last generation" natural gas engines cut smog-producing nitrogen oxide (NOx) emissions by up to 50 percent compared to the cleanest diesels, the latest near-zero-emission natural gas engine (L9N "NZ") is the cleanest heavy-duty engine ever certified by CARB and the US Environmental Protection Agency (EPA). Waste Management helped pioneer this engine with Cummins, and it now provides a 95 percent reduction in NOx emissions compared to the current 0.2 g NOx standard (EPA/CARB 2010) and a 94 percent reduction in NOx compared to the latest diesel engine technology. Additionally, the new engine is already certified at 16 percent below the current GHG emission standard and is 12 percent below the 2027 standard.

In addition to our clean energy fleet, WM's efficient logistics are also an effective way to reduce fleet emissions. The logic is simple: a more efficient route (including payload efficiencies)

means fewer miles traveled and translates into reduced fuel consumption and associated emissions. Since 2017, Waste Management's fleet has reduced miles driven by 2 percent, which equates to an approximate 8.9 million fewer miles a year. Optimizing routes significantly reduces our environmental impact.

As a pioneer in clean energy technologies and as a partner with our local communities and states to meet air quality goals, WM would like to highlight areas where we believe that CARB needs to conduct additional analysis to ensure accuracy in its assumptions and appropriate goals in its regulations. WM and the industry experienced a difficult time in 2008 as the technology that was anticipated did not materialize, forcing WM and the solid waste industry to delay the purchase of needed vehicle replacements as engine and equipment technology did not meet regulations.

Although we believe natural gas is effective, we are also exploring heavy-duty electric vehicles. WM is in the early stages of piloting full electric and hybrid electric class 8 collection vehicles and we are also testing class 4-6 EVs in our large support vehicle fleet where we believe the current technology is better suited. Currently, the largest hurdle with electric vehicles is battery cost, weight and energy capacity. Our collection vehicles consume a significant amount of energy from the collection and compaction work they do and there are still significant technological hurdles to overcome.

The major areas that need additional analysis prior to enacting final regulation regarding heavy duty vehicle electrification are as follows:

1. CARB's current assumptions significantly underestimate costs by more than 300%. WM is concerned that costs will be significantly higher than current CARB projections thus critically increasing the need for municipalities to raise rates to meet regulatory requirements. The current replacement cost for an electrified vehicle is estimated by CARB at approximately $240K per vehicle. As an industry, the current cost of an electrified heavy-duty vehicle is upwards of $720K per vehicle.
2. The current range and weight limitations of heavy-duty electrified vehicles would significantly increase the need for more vehicles, labor costs and traffic on municipal streets. As described previously, routing and payload logistics play a pivotal role in reducing miles traveled, fuel consumption and route efficiency. Current WM pilot projects with heavy-duty electrified vehicles have shown vehicle capabilities and battery life that are nearly 50% lower than those of a near zero RNG vehicle. Once again, cost pressures would significantly increase, resulting in the need for significant rate increases and a substantial burden on municipalities and their constituents.
3. Cost per mile for the maintenance of electrified fleets to date have shown to be higher than that for a comparable RNG fleet. Further, the charging infrastructure that is needed would further burden governmental entities with unfunded capital projects. Current electric infrastructure costs are approximately 3X that of already established CNG infrastructure and currently have no viable back-up plan during outages and or natural disasters (a critical risk item regarding California fire season and energy shutdowns). Significant increases to rates would be needed by rate payers to cover additional regulatory and infrastructure costs.

4. RNG/CNG needs to continue to be one of the preferred options and a bridge to future technologies once these are proven, available and effective. Clean energy is more than just electric, RNG/CNG fleets continue to be a current best in class technology helping the state and municipalities meet their air quality goals.

WM respectfully petitions that CARB consider extending its current timelines and establish additional public sessions where concerns can be discussed and addressed. WM is available and willing to provide insights to CARB regarding our pilot projects, concerns, and to provide additional data for CARB to consider in creating effective public policy and regulation.

Waste Management values the opportunity to submit comments. Please feel free to call me or email me with any questions. I can be reached at aoseguer@wm.com or via phone at 209-327-5017.

Sincerely,

Alex Oseguera
Director of Government Affairs, Waste Management
California, Hawaii