JOINT STATE OFFICE

October 15, 2014

Air Resources Board
1001 I St.
Sacramento, CA 95814

Re: Technology and Fuels Assessment Workshop

The California Refuse Recycling Council (CRRC) appreciates the opportunity to comment on the California Air Resources Board (CARB) Technology and Fuels Assessment Workshop presentations.

The CRRC is a statewide trade association comprised of businesses engaged in all aspects of solid waste handling and recycling. CRRC membership includes more than 100 refuse and recycling companies, 60 material recovery facilities (MRF), 62 transfer stations, 22 composting facilities, 60 construction and demolition facilities, 25 e-waste collection facilities, and 12 landfills. We also operate over 500 clean fuel vehicles on California's roads.

CRRC regulatory staff attended CARB's **Technology and Fuels Assessments Workshops** in Sacramento and Diamond Bar (09/02/14 – 09/03/1 and 10/09/14) and was pleased to hear that CARB plans to take a portfolio approach in tackling California's complicated criteria pollutant and greenhouse gas (GHG) emission issues. We also noted that the waste and recycling industry was a focus for emerging heavy-duty truck technologies and consequently submit the following comments to foster a thorough analysis as CARB moves forward with the SIP, air quality plans, On-Road/Off-Road and portable equipment regulations, and a statewide freight strategy as it pertains to our industry.

CRRC staff also participated in CARB's October 9th Incentive Program Advisory Group at the SQAQMD. We were encouraged to hear discussion of incentives for Off-Road equipment and portable equipment, which is significant in the waste industry. Along with stakeholders, we seek to identify funding opportunities for research, equipment and facility modernization. Significant developments are being made in anaerobic digestion/RNG development projects which requires collaboration with regulators to complete this effort. The Carl Moyer program, Proposition 1B, Enhanced Fleet Modernization, Air Quality Improvement Program (AQIP), Low Carbon Transportation investments, the Greenhouse Gas Reduction Fund (GGRF), and AB 118 funding are all central components to meet the policy objectives. We appreciate this collaboration and strategic planning being contemplated by stakeholders.

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Unique Demands of Refuse Hauling Trucks

While there are promising technologies identified for refuse hauling trucks, especially in terms of hybrids, there are unique demands for our industry that should be considered in your assessment.

As mentioned in the workshop, refuse trucks tend to have high start/stop duty cycles while driving in urban and rural/intercity conditions. They are incredibly energy intensive and require power to operate components that include hydraulic arms, hydraulic blades, packing mechanisms, etc. Per load, the average truck will pick up refuse at 650 homes and then haul this material to a MRF, transfer station or landfill at varying distances and sometimes in heavy traffic conditions. These trucks also tend to be on the road a full eight hours a day. Given the number of stops, repetitive equipment use, time on the road, and driving conditions, refuse trucks must be highly reliable to perform necessary tasks.

In addition to energy use and reliability, weight and size restrictions are crucial factors to consider in terms of truck use and GHG emission goals. As our industry is making the move from diesel to CNG, we are losing around 2000lbs of capacity; a truck that once carried 25,000lbs of refuse now carries 23,000lbs. The 2000lb differential means that roughly 65 less stops occur per truck load. While an individual hybrid truck may produce less emissions from a wheel-to-well perspective, this does not take into account the actual number of trucks necessary to complete the task of collection. The weight penalty of a heavier truck means that less refuse will be collected per load, thereby resulting in more trucks on the road to collect the same amount of refuse. Not only will this limit route efficiency and greatly increase capital costs, it could potentially create more GHG emissions as two trucks may be necessary to perform the task of one.

Fleet Economics

Our industry has made significant advancement and investments in our truck fleets as we continue to purchase clean fuel vehicles and support criteria pollutant and GHG emission reductions in California and our local air districts. As CARB moves forward with achieving more stringent reduction goals, increased funding opportunities will become even more crucial.

Workshop presentations forecasted 2020 costs of $39,000 and $30,000 for parallel electric hybrid and parallel hydraulic hybrid Class 8 refuse hauling trucks respectively. While the projected cost assumes a 47% cost reduction by 2020 from current costs, these hybrid

technologies currently cost upwards of $650,000. Thus, the estimated five year break-even cost analysis time period for these trucks is unrealistic. We encourage CARB to utilize more conservative cost estimates and to consider that amortization of our fleets will require a longer time horizon due to the number of vehicles needed, the cost of purchasing vehicles, varied duty cycles and new fueling infrastructure requirements.

Fuel Investment and Availability

In addition to fleet reform, our industry has and continues to invest billions of dollars in diesel, CNG, LNG, and RNG fueling infrastructure and development. We see potential for further development and investment in cleaner Off-Road and portable equipment, as well as anaerobic digestion to create energy and renewable natural gas. In order to reach these ambitious development targets, we require more research, equipment, and facility modernization funding that directly benefits our industry.

We acknowledge that there are gaps in low carbon fuel availability, and that this gap will increase with time. For this reason, state incentives for in-state RNG development and the purchasing of near zero-emission vehicles remains crucial.

Stakeholder Process

To ensure that we reach California's critical goal for GHG emission and criteria pollutant reduction, we request a stakeholder process that engages CARB, local air districts, CalRecycle and the waste and recycling industry. In collaboration we can ensure greater success and set the appropriate standards that remain technology neutral, permitting the industry to determine the best methods to economically, efficiently and environmentally meet our statewide goals.

We look forward to continue working with you during this process and will follow up with you in the near future. Please do not hesitate to contact us.

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