ACLT Workgroup Meeting Summary
Friday, January 20, 2017, 1:00 PM-4:00 PM
Cal/EPA Headquarters, Sacramento, California

Attendees:

Company	Name
Paul Arneja	California Air Resources Board (CARB)
Tony Brasil	CARB
Joe Calavita	CARB
Patrick Chen	CARB
Craig Duehring	CARB
Kaylin Huang	CARB
Jackie Johnson	CARB
Matt Williams	CARB
Joy Alafia	Western Propane Gas Association
Thomas Allen	Phoenix Motorcars
Bud Beebe	California Hydrogen Business Council
Tim Carmichael	Sempra Utilities
Paul Cort	Earthjustice
Kristian Damkier	Sacramento Metropolitan Air Quality Management District
Kathy Edwards	Wyandotte Services
Sean Edgar	Clean Fleets
Linus Farias	Pacific Gas & Electric
Joshua Goodman	TransPower
Shrayas Jatkar	Coalition for Clean Air
Teddy Johnston	Nohm/Boundary Stone Partners
Jaime Lemus	Sacramento Metropolitan Air Quality Management District
Edward Lovelace	XL Hybrids
Lisa McGhee	San Diego Airport Parking Co.
Urvi Nagrani	Motiv Power Systems
Jimmy O'Dea	Union of Concerned Scientists
David Petitt	Natural Resources Defense Council
Gerald Robbins	Western Area Power Administration - Department of Energy
Jared Sanchez	California Biking Coalition
Ryan Schuchard	CalSTART
Chris Shimoda	California Trucking Association
Michael Tunnell	American Trucking Association
Alyssa Werthman	Ford Motor Company
Warren Williams	Cyber Switching
Vincent Wiraatmadja	BYD/Weideman Group

Meeting Summary:
This is the summary for the first workgroup meeting to discuss the regulatory development to deploy Advanced Clean Local Trucks in California. This meeting was webcast and recorded, and the meeting agenda, materials, and video recording for this

meeting can be found on our website: www.arb.ca.gov/msprog/actruck/actruck.htm. At the meeting, a discussion guide (www.arb.ca.gov/msprog/actruck/170120guide.pdf) was made available and used as an agenda to guide the meeting through the following topics:

- Need for Advanced Clean Local Trucks
- Regulatory Strategies
- Truck Population Inventory Characteristics
- Fleet Operational Characteristics
- Cost Methodology – Total Cost of Ownership
- Related Heavy-duty Electrification Efforts
- Next Steps

Need for Advanced Clean Local Trucks

CARB staff provided an overview of the need for developing an Advanced Clean Local Trucks regulation. This specific strategy is part of a wider statewide strategy to meet the goals set by Senate Bill 32, the Governor's Zero Emission Vehicle Action Plan, the State Implementation Plan, the Mobile Source Strategy, and the Sustainable Freight Action Plan. An Advanced Clean Local Trucks regulation is needed to accelerate the market for vehicles that are capable of zero-emission miles with an early focus on local applications including last mile delivery and other short distance trucking uses.

Regulatory Strategies

CARB staff began the discussion on two regulatory strategies to achieve the State goals for zero emission trucks which are a manufacturer-based requirement similar in concept to Advanced Clean Cars, and an in-use, fleet purchase requirement. These are initial concepts that have been used in California before and each has advantages and disadvantages. CARB staff are willing to consider other alternatives and make adjustments as more information becomes available. A number of concerns were raised about both regulatory strategies, including the following:

- There will be difficulty of defining a manufacturer in the trucking market, how to best generate vehicle credits to achieve emission reduction goals.
- A fleet requirement would disadvantage fleets that are subject and advantage those who are not subject to the requirement.
- If looking at in-use regulations, accelerated turnover should be considered and should include vehicles that support warehouse operations. In-use regulations can also focus on the appropriate market applications where zero emission vehicles make the most sense.
- A question of how cargo bicycles would fit into the regulation was also raised. CARB will look into how cargo bicycles fit into our program and the overall Sustainable Freight Action Plan.

Truck Population Inventory Characteristics

CARB staff provided an overview of the truck population inventory, annual sales, and body type distribution as outlined in the discussion guide graphs and tables. CARB staff also provided an overview of the number of zero-emission and E-PTO trucks already operating in the US. CARB staff is also working with the DMV to get a current data

dump in order to get the most accurate information on truck population. The following are discussion item comments on this information:

- It was pointed out that some datasets are missing class 2B data, and that CARB needs to be careful to include this in its research. Also, CARB should look into quantifying emissions by vehicle class and location.

Fleet Operational Characteristics

CARB staff provided an overview of various fleet operational characteristics of the different truck types based on a recent NREL study that compared daily miles traveled, average speeds, number of stops, etc. CARB staff explained that early zero-emission truck markets are expected to be in fleets that operate locally from a centralized home base where infrastructure investments will be needed. Zero emission vehicles are considerably more efficient than conventional vehicles especially in slow speed operation with lots of stop-and-go driving. CARB is currently collecting data from various sources including NREL studies, the California Vehicle In-Use Survey, and the ARB Freight Hub Data Collection Survey, but a number of these surveys may not be completed for another year.

- Commenters noted that we have to make sure to account for the difference in urban vs. rural driving as there is a large difference in duty cycles and daily range.
- Range extended vehicles were discussed as these vehicles can provide some flexibility in meeting operational needs while pure zero electric technology continues to mature.
- Because of timing and scope on some of the surveys being released, it was suggested CARB establish a separate survey to better understand the daily operations of local trucking fleets to inform early decisions.

Cost Methodology – Total Cost of Ownership

CARB staff discussed the cost methodology it would use to compare the costs of purchasing and operating zero emission trucks with their conventional counterparts. This cost methodology will be based off on Total Cost of Ownership including capital costs for vehicle and infrastructure, operation and maintenance costs including vehicle fueling, vehicle maintenance and infrastructure maintenance. ARB staff presented a a preliminary cost table which outlined the incremental cost to purchase zero-emission technologies and retail fuel costs.

- Commenters noted that fuel can be purchased at or below the retail prices listed by CARB, especially for natural gas. CARB will adjust prices accordingly based on data received from fleets or other stakeholders that is representative for a given fleet.
- When discussing electricity costs, it was recommended that CARB develop an electricity cost calculator with the ability for the user to adjust to seasonal mileage loads that vary by month and need to be reflected in an estimated annual cost.
- On-route charging is not believed to be a priority for most, many local fleets return to their home base and have the opportunity to charge their vehicles overnight.

Related Heavy-Duty Electrification Efforts

CARB staff provided an overview of a variety of initiatives and incentives related to heavy-duty electrification including the recently adopted Innovative Technology Regulation, Heavy-Duty Vehicle Incentive Program (HVIP) funding and its rules for eligibility and the status of heavy-duty charger standardization efforts. Staff also explained that January 20th was the due date for the three major investor owned utilities – Pacific Gas and Electric (PG&E), South Coast Edison, and San Diego Gas and Electric - to turn in their applications to the California Public Utility Commission about proposed plans to remove barriers for transportation electrification.

- Currently, there is no certification procedure for full electric heavy-duty vehicles. CARB is currently developing a procedure to certify medium and heavy duty electric drive systems or vehicles.
- Any regulation or certification standard we implement should have the same minimum standards that conventional vehicles must meet to ensure that early adopters are protected the as they shift to a new technology: information such as range, charger standard/rating, energy usage of the vehicle being available to the purchaser at point-of-sale, non-proprietary OBD information so vehicles can be serviced without the OEM, and a warranty requirement to ensure that manufacturers continue to support their vehicles past the point of sale
- Right now, the HVIP program is oversubscribed and has uncertainty due to the delay in funding for new projects. This makes it difficult to rely on for future purchases.
- A representative from PG&E went over their proposal which covers over $250 million in proposed investments, with a focus on heavy-duty projects. The combined proposals from all three utilities add up to over $1 billion with a focus on medium- and heavy-duty electrification.

Other Questions

- The current timeline for a proposed rulemaking is in 2018 as outlined in the Mobile Source Strategy.

Next Steps

- CARB will summarize topics of the meeting and will send a draft summary for review and comment by members before posting a final version online.
- CARB staff will follow-up on the request to determine which forum is the most appropriate for discussion of transportation via cargo bikes.
- CARB staff will develop an electricity cost calculator that allows the user to evaluate charging costs while accounting for seasonal variations in their operations.
- CARB staff will draft fleet operations survey for discussion at the next workgroup meeting