From:	Todd Trauman
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Subject:	ARB Alternative Fuel Proposal Comments from CarbonBlu, LLC.
Date:	Tuesday, September 10, 2013 12:31:53 PM
Attachments:	Emission Comparison Final Gasoline 09052013TT.xlsx

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Hi Craig,

Can you please revise my earlier comments to represent "CarbonBlu, LLC." and not "ECO, Inc."? The copy of the comments are included here as well.

Best regards,

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Hi Craig,

We really appreciate you taking the time along with Jackie, Mike, and Tony to speak with us regarding the new CARB proposal for alternative fuel conversions and how it might affect the in-use vehicle conversion market in California. As requested, we've readied our comments and included them here.

In our experience, the "in-use" and "new vehicle" conversion markets are serviced by two entirely different types of companies, with very different levels of engineering resources, budgets, timelines, and business strategies. The "new vehicle" converters (think BAF/Westport, Impco, Landi, and Roush) have deeper pockets and the in-house engineering experience/resources and wherewithal to develop and test CARB compliant OBD systems. They are typically, with some minor exceptions, interested in targeting new vehicles and fleets with high new-vehicle purchasing turnover. These companies have good relationships with the OEM's and can procure hardware, software calibrations, and premature certification applications necessary to submit timely and complete applications of their own.

The "in-use" converters (think AutoGas, ICOM, Altech, AAF, or the dozens of other outfits) have very limited engineering experience/resources and rely on slave-style control systems because they don't have the financial assets or established relationships with the OEM's required to recalibrate the OEM and utilize the OEM controller. They are exclusively 49-state and they chase municipalities, taxi fleets, delivery vans, etc.

The first group was well represented during the ARB workgroup meetings, and is why the many members of the first group are happy with the proposal. The

significantly reduced demonstration procedures will help them introduce more of their already mature products into the state. However, the second group was not well represented, if at all. The slave-style systems require an actual *regulation* change as opposed to *demonstration* change, and the proposal contains zero regulation change, which will continue to eliminate them from the California market.

The issue prohibiting these systems is completely isolated to the continuous component monitoring sections in 1968.2, as well as the requirement that monitors are calibrated to 1.5 times the applicable standard. Slave control systems are not capable of communicating back and forth with the OEM controller, and as such cannot force the OEM controller to record faults or directly monitor circuit shorts or continuity of the alternative fuel system electrical components. As a result, most slave systems come with diagnostics of their own and often monitor fuel pressure and other inputs and will sound an alarm and shut-down (dedicated fuel systems) or default to gasoline (dual-fuel systems) if a problem is encountered. No OBD monitors are diluted or calibrated out from the OEM system.

While a slave style system cannot be recalibrated to meet a 1.5 times the applicable standard for every monitor, many of our in-use conversion manufacturer clients cannot understand why the EPA's methodology (not the same thing as "test protocol") is not agreeable to the ARB. For example, the current EPA catalyst demonstration methodology involves incrementally increasing a fault on gasoline until a MIL is set (therefore finding what level of degradation translates to 1.5x), then performing the conversion, and running and emissions test on the alternative fuel with the same fault implanted. If emission levels are at or less than 1.5 times the applicable standard, the test is considered a pass. While the test protocol may be crude and require refinement (ie. drilling a larger hole through a catalyst brick), the methodology seems sound. The same can be said for the other major emissions-related monitors.

There was also a comment made about how the ARB doesn't necessarily agree that CNG/LNG and LPG are cleaner-burning fuels, however, publically available data published from the EPA Verify system and emissions results on CARB EO's are to the contrary. Out of the 19 emissions tests that resulted in all 2012 model year CNG certifications, 17 were cleaner in one or more regulated pollutant. 6 of 10 were cleaner for LPG. This analysis is attached, but please consider it highly confidential to ECO, Inc.

While it is not in our expertise to judge what size the respective in-use conversion vs. new vehicle turnover market segments are, we believe that the in-use market is significant, judging from the alternative fuel heavy-duty markets which are not yet subject to the strenuous OBD regulations.

In summary, we believe that the new regulations proposed will have little influence on the current state of affairs in California's in-use market, and further, considering the emissions and economic impact of allowing alternative fuels to proliferate, it should be in the ARB's best interest to pursue this further by conducting research to accurately define slave-style OBD deficiencies and confirm the claims above that the major roadblocks are only related to CCM's, ECM communication, and threshold calibration. Once completed, 1968.2, or other proposed language can be easily adjusted/created. We also suggest that a representative sample of high-mileage in-use emissions data on vehicles that have accumulated their full useful life on the alternative fuel would help solidify the industry's claims that their systems are

durable.

Feel free to contact us directly with any questions or comments, or if you would like to schedule another call.