



California Natural Gas Vehicle Coalition

September 30, 2015

Yachun Chow
Manager, Zero Emission Truck & Bus Section
Mobile Source Control Division
Sacramento, CA 95812
Via Email – yachun.chow@arb.ca.gov

RE: California Air Resources Board - Advanced Clean Transit Regulation Discussion Document

Dear Ms. Chow,

The California Natural Gas Vehicle Coalition appreciates the opportunity to provide comments on ARB's Advanced Clean Transit Regulation Discussion Document. The natural gas transportation industry has been a strong supporter of and partner with California transit agencies for decades. We strongly support efforts to improve and expand public transit service.

In the Discussion Document and related workshops in May ARB laid out a vision for a "zero emission" California transit fleet by 2040. ARB proposes that this would be achieved by requiring transit agencies to start purchasing "zero emission" buses starting in 2018. As pointed out at the workshops all new bus purchases would need to be "zero emission" starting in about 2028. From the discussion document it seems that ARB's sees the 2040 California transit bus fleet as only battery electric and fuel cell powered.

With the recent ARB certification of the Cummins Westport (CWI) 8.9L engine at .01g NO_x/bhp-hr we believe ARB must reevaluate this "zero emission" transit fleet vision and consider alternative approaches that achieve similar or better emissions benefits sooner and for significantly lower cost.

We use quotations around 'zero emission' above because these vehicles may have zero tailpipe emissions but if full life cycle emissions are considered they are not zero emission. Battery electric vehicles typically have power plant emissions associated with the production of the electricity to charge the batteries. Fuel Cell vehicles typically have emissions associated with the production of the hydrogen used in the fuel cells.

The South Coast AQMD has characterized ARB's optional low-NO_x standard of .02g NO_x/bhp-hr as "power plant equivalent" because of the level of emissions they calculate would be generated by the power plants providing electricity to charge battery electric vehicles. The CWI 8.9L engine

which is commonly used in transit buses was certified to half that standard or .01g NOx. That is 50% better than “power plant equivalent”.

Timing is very important in general but especially in discussions about pollution reductions and related health impacts. As discussed at the ARB workshops for the vision of a “zero emission” California transit fleet to be realized by 2040: the transit agencies would need to begin purchasing only zero emission buses in about 2028, there would need to be significant technology and performance improvements between now and then, and ARB would need to provide very significant incentive support (more on this below) to bring down the costs of the zero tailpipe emission buses. An alternative approach using new natural gas low-NOx engines could begin as early as next year (2016) and with fewer incentives one can envision a California transit fleet with at least 90% lower NOx emissions by 2030, a full decade ahead of ARB’s vision “zero emission” transit fleet.

ARB is already considering full life cycle emissions for some sources and needs to do the same for all sources including transit especially if new regulations are being considered. Life cycle emissions should be considered for all the fuels and technologies currently being used by California transit agencies. It is important to note that many transit agencies using natural gas are already using some if not a lot of renewable natural gas (aka biomethane) which has very low carbon intensity compared to other fuels including electricity and hydrogen. We expect the production and use of renewable natural gas to grow significantly over the next decade. As noted in the Discussion Document ARB is already considering incentives and regulations to increase the use of renewable natural gas in the transit sector. We believe incentives are the best approach particularly in the near-term. More on this below.

Even with significant support from the federal government transit agencies continue to struggle to deliver affordable, reliable service to increasing populations over expanded service areas. All of these challenges make transit agencies extremely cost sensitive. Thus it was not surprising to hear several transit agencies express serious concerns about costs at the May workshops. We share the concerns expressed and believe ARB’s cost projections are overly optimistic. Even ARB’s optimistic estimates forecast electric and fuel cell buses costing 60%-100% more than natural gas buses a decade from now. Again as pointed out by some transit agencies at the workshops these cost forecasts are further complicated by performance questions; specifically will an electric bus be able to carry the same passenger load the same distances or will transit agencies need to plan for 1.5 or 2 electric buses to replace each natural gas or diesel bus.

The anticipated higher costs associated with ARB’s vision raises another question that ARB should analyze as part of considering the best path forward. If transit agencies spent their limited funds on purchasing new low-NOx buses and thus had more funding available to expand service what would be the value of the additional congestion and air quality benefits from reduced car trips?

ARB seems to be planning to help transit agencies cover higher bus costs with greenhouse gas reduction funding. With thousands of transit buses operating in California and the large incremental cost for battery electric or fuel cell buses one can quickly get to incentive funding needs in the billions of dollars. As part of the analysis of options for an incentive or regulatory program for California transit agencies ARB needs to take a step back and consider what level of incentive dollars should be targeted to the transit sector compared to other transportation sectors.

ARB's current thinking also includes a proposal to minimize emissions from conventional fleets starting in 2017 by requiring transit agencies to purchase the cleanest available engines as soon as they are available as well as requiring the use of renewable fuels. We strongly encourage ARB to use incentives as the best way to achieve these goals. Our members are very concerned that if low-NOx engines were required in the near-term it could dramatically impact the ability of transit agencies to use vehicle incentives which are essential to an accelerated deployment of these engines. Similarly if renewable natural gas were required and this impacted the ability of fuel providers to generate Low Carbon Fuel Standard credits it could have a devastating impact on the supply of renewable natural gas in California.

We seriously question whether the 'zero emission' fleet in 2040 approach is needed in addition to the strategy of incentivizing best available engines and more renewable fuels soon. Put another way if ARB focused on providing incentives to deploy low-NOx natural gas engines in the transit sector that will overtime run on an increasing amount of renewable natural gas is there any measurable benefit of "zero-emission" buses between now and 2040?

In sum we believe the availability of a .01g NOx heavy-duty engine fundamentally changes the landscape and requires ARB to reevaluate what is truly the best approach for public health and transit service in California.

Sincerely,

A handwritten signature in cursive script that reads "Tim Carmichael".

Tim Carmichael
President