



September 21, 2015

Chair Mary Nichols
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Subject: SUPPORT FOR Proposed Revisions To On-Board Diagnostic System Requirements And Associated Enforcement Provisions For Passenger Cars, Light -Duty Trucks, And Medium-Duty Vehicles And Engines

Dear Chair Nichols:

On behalf of the undersigned organizations, we are writing in support of the proposal to ensure the California Air Resources Board is able to monitor and confirm air quality and consumer benefits of new vehicle technologies employed to meet health-protective standards. The ability to monitor and confirm technology benefits is a commonsense approach to protecting against unintended shortfalls in projected benefits.

California's unique and extreme air pollution burdens are recognized as the basis for establishing stringent vehicle emissions and technology standards. Pollution caused by the tens of millions of vehicles on the roads affects all Californians, through direct exposures, poor

regional air quality and increasing climate change effects. We recognize that many communities in California are disproportionately impacted by fossil-fuel based traffic pollutions, refinery operations and gas stations in their communities – these communities stand the most to gain by an overall cleanup of vehicle emissions and reduction in fuel consumption.

Data Stream Parameters

The staff proposal for voluntary participation in tracking and reporting of various OBD data parameters as a means of conducting a check on vehicle emissions and fuel consumption is an important opportunity to ensure that new vehicle technologies launched and marketed to help reduce emissions and improve fuel economy are functioning as intended. As noted in the staff proposal, this voluntary program will allow the ARB to invite a small number of vehicle owners to participate in a program to evaluate more real-world performance of emissions/fuel economy. This voluntary process will allow the ARB to verify that both CO2 and fuel economy claims made in certification of new technologies are yielding the benefits consumers expect. As explained in the staff report:

“As already evidenced by the increased number of instances in the last few years where federal agencies have required vehicle manufacturers to relabel specific vehicle models with lower fuel economy than originally claimed for certification, there will be a continued need for the agencies to be vigilant in verifying CO2 (and fuel economy) performance.”

We support this proposal as it provides the ARB with the ability to identify potential problems early upon release of new vehicles, assuring both consumer and health benefits are realized. Moreover, we support CARB adopting this approach since it will also enhance CARB staffs’ ability in the future to develop: more effective CO2 tailpipe standards that could better ensure real world reductions are achieved; regulations that more accurately reflect the emission performance of plug-in hybrid electric vehicles; and improve GHG inventory models.

Providing the opportunity for voluntary participation in the Air Resources Board’s critical work to protect the public health is a sensible approach to test the claims made by automobile manufacturers related to emissions and fuel economy and ensure that the benefits of California’s vehicle standards are achieved.

Emissions Malfunction Threshold: Particulate Component

As projected by CARB staff in their report accompanying the January 2012 Advanced Clean Cars package and subsequently confirmed by industry statistics and data collated by such groups as the Fuels, Engines and Emissions Research Center at the Oak Ridge National Laboratory, the number of passenger vehicles equipped with gasoline direct injection (GDI) engines is rapidly increasing in the market place. Ironically, while automakers are deploying more GDI-equipped vehicles in order to comply with stricter GHG standards, these cars can emit 5-10 times more

particulate matter than similar vehicle models equipped with port fuel injection engines.¹ Moreover, research in Europe indicates that GDI-equipped vehicles can have particle-number emissions 10-100 times greater than similar vehicles equipped with diesel-particulate filters.² Particulates from GDI-engines are also a source of toxics (such as PAHs and n-PAHs) and are smaller and more varied in size than diesel particulates. The size distribution of GDI-particulate means that many of the particles have the potential to be deposited deep within the lungs thereby posing a greater health risk. While gasoline particulate filters (GPFs) are already in use in vehicles in Europe, and one projection suggests that 65% of passenger vehicles in Europe could be equipped with GPFs in 2020³, we understand that the automakers are hoping to avoid the use of GPFs in California and the U.S. by improving the performance of GDI-engines. During the interim CARB needs to remain cautious and vigilant with regards to the development of GDI-technology in order to ensure that California does not end up developing a large legacy fleet of GDI-equipped vehicles that contribute significantly to the PM inventory at the same time as the state is succeeding to reduce its diesel PM inventory. (GDI engines are projected to have more than 50 percent of the U.S. market share by 2017.⁴) This is further recommended by a recent caution issued by the Consumers Union about the reliability of GDI engines⁵ and CARB's own research indicating that certain downsizing strategies being contemplated by automakers using GDI could lead to even greater emissions when the engines malfunction.

Because the more stringent LEV III PM emissions standards present a greater chance that malfunctions will result in significantly increased PM emissions relative to the LEV III standards – especially technologies such as GDI-engines which might be even more susceptible to a large increase in PM emissions when a fault occurs – staff are proposing that a relatively high absolute PM threshold of 17.5 mg/mi PM be applied for emission threshold monitors in passenger cars, light-duty trucks, and medium-duty passenger vehicles based on current sensor technologies and monitoring strategy capabilities. This threshold is more than 5 times the level of the 3 mg/mile standard and leaves significant room for higher emissions levels to go undetected. We therefore strongly encourage CARB staff to review whether and when the PM threshold can be revised downward as soon as is practical and to review what are appropriate strategies for addressing PM emissions in general; given that the European (Euro 5) Standard of 5mg/km (~3.1mg/mi) took effect in 2009 (with full compliance by 2012) and the Euro 6 particle number standard of 6×10^{12} #/km (roughly equivalent to 3mg/mi on a mass basis) comes into effect this year and requires 6×10^{11} #/km by the end of 2017. We strongly support the staff proposal requiring automakers to provide PM data with all LEV III OBD demonstration data to CARB starting with the 2017 model year.

¹ Storey, J.M. "Changing Urban Particulate Matter: The Convergence of Diesel PM Removal and Increasing Gasoline PM," Presentation to the 2014 Transportation Planning, Land Use, and Air Quality Meeting. Transportation Research Board. Charlotte, NC March 3, 2014.

² Friedrich, Axel. "Road Particle Number measurements from GDI vehicles compared to a Euro 6 Diesel vehicle," Presentation to the 19th ETH Conference on Combustion Generated Nanoparticles. Zurich, June 30, 2015.

³ Pietro Boggia (Frost & Sullivan). "Global Passenger Car Powertrain and Electric Vehicle Market: 2015 Outlook," Presentation to the 2015 Engine Expo, Stuttgart, Germany, June 16, 2015.

⁴ ORNL, Story Tips: Automobiles — Particulate matter paradox. October 1, 2014

⁵ Consumer Reports, "Direct-injection engines improve performance and save fuel, but at a price. Cars with this technology might end up in the repair shop more frequently," February 17, 2015.

As California's particulate matter standard is tightened over time to a 1mg/mile standard, proposed thresholds that would trigger an OBD failure should be tightened to ensure that warning systems for particulate control failure keep pace with the evolving technology developed in response to the standards.

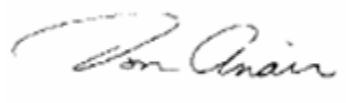
With the acknowledgement of the cautions we have highlighted above we broadly support CARB proceeding with the adoption of the proposed 2015 amendments to the OBD II regulation, which allow California to maintain vehicle emissions requirements which are more comprehensive and stringent than the recently amended federal regulation.

We thank you for the opportunity to comment on the proposed revisions to the OBD II regulations and look forward to working with staff and other stakeholders to implement the revisions. We commend CARB staff for their comprehensive and thoughtful work in preparing the revisions. Please do not hesitate to contact any of us if you have any questions.

Sincerely



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