October 1, 2014

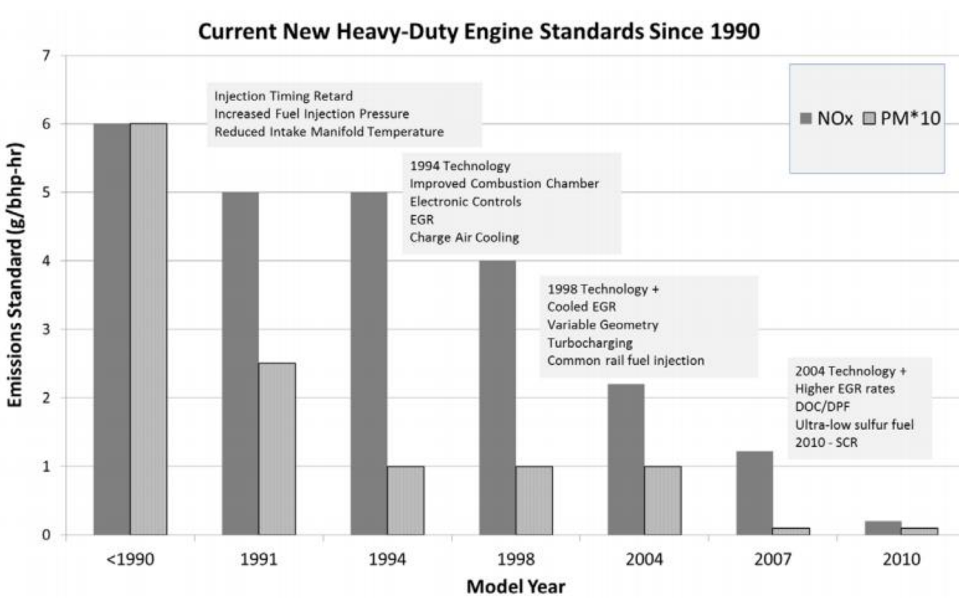
Air Resources Board
1001 I St.
Sacramento, CA 95814

RE: Sustainable Freight Technology Assessment

Thank you for the opportunity to comment on the Air Resources Board's (ARB) Technology Assessments as part of it's Sustainable Freight Initiative.

The California Trucking Association (CTA) and the American Trucking Associations (ATA) are, respectively, the largest state and national organizations representing the trucking industry in the country.

Recognition of Major Progress



We'd first like to thank you for recognizing the tremendous progress made since 1990 by the industry in meeting and exceeding increasingly stringent criteria pollutant standards which have led to huge reductions in both PM2.5 and NOx, with particulate matter having been virtually eliminated by today's diesel particulate filter.

For instance, emission factors from 2013+ MY engines are 99.4% lower[1] than those used to characterize risk in the Diesel Risk Reduction Plan[2]. Emission standards for tier 4 non-road

[1] http://www.arb.ca.gov/msei/msab_oct_workshop_10_07_2013_final.pdf
[2] http://www.arb.ca.gov/diesel/documents/rrpapp7.PDF *Table 7: Distribution Center Risk*

engines for 50HP TRUs are 97.1% lower than those used to characterize risk. These reductions far exceed the plan's original 85% diesel PM reduction goal.

We hope that discussions about further criteria pollutant reductions in the Sustainable Freight Initiative keep this historical context firmly in mind.

Principles for Future Standards

The following are adapted from recommendations of the American Trucking Associations' Fuel Efficiency Advisory Committee (FEAC), which was formed to offer perspectives and provide guidance to ATA staff on the upcoming Phase II EPA/NHTSA Greenhouse Gas & Fuel Consumption Standards for Medium and Heavy-Duty Trucks (Phase II).

Many of these principles apply to technology advancement as considered by ARB:

- New Greenhouse Gas (GHG) and Criteria Pollutant Standards Should Be Economically Sustainable and Based Upon Sound Science
- ARB Should Harmonize with 50-State Federal EPA Standards
- Return on Capital Investments Should not Exceed 18 Months and Should be Based on Real World Benefits
- Standards Should Reflect Real-World Benefits Through Test Methods and Input Variables that Most Accurately Replicate Real-World Duty-Cycles
- New Standards Should not Result in Unintended Consequences Involving Safety or Increases in Emissions of Other Pollutants such as Nitrogen Oxides (NOx)
- New NOx Standards Should not Compromise Carbon Reduction and Fuel Consumption Targets
- Ensure OEM and Fleets Maintain Flexibility In Technology Paths and Equipment Purchase Choices
- Provide OEM's Sufficient Lead Time and Stability for Research and Development
- Ensure OEM's Maintain Flexibility in Accumulating, and Utilizing Compliance Credits
- OEM's Should be Permitted to Use Alternative-Fueled Vehicles and Any Respective Greenhouse Gas/Petroleum Fuel Reductions as Credits in Achieving Phase II Targets

Role of Enhanced Inspection and Maintenance

Both the ATA and CTA are working with the ARB to better understand the role of improved inspection and maintenance procedures could have on statewide emissions. This is especially important in the context of accurate emissions modeling.

We strongly recommend that ARB staff review the role of inducements in its calculation of tampering, malfunction and mal-maintenance rates. ARB staff has performed analysis of inducements for SCR equipped engines and have concluded that systems tampering, and diesel exhaust fluid contamination or depletion would trigger "significant engine power derate" that would render a truck virtually unusable.[3]

Test Vehicle 2 performed as expected with the vehicle operating within its respective NOx Not-To-Exceed (NTE) standard under normal vehicle operation and under the DEF Depletion Cycle until DEF was fully depleted. Once DEF had completely depleted, the NOx emissions did increase but the driver was experiencing a significant engine power derate (approximately 40 percent less power) that would not be tolerated by any vehicle operator. The same power derate inducement conditions also occurred under the DEF Contamination and DEF System Tampering Cycles. ***The lack of power experienced under these test cycles with the subsequent 5 mph limited speed event will force the operator to have these issues remedied immediately.***

These inducements should clearly carry significant weight in determining how the ARB characterizes emissions deterioration in its modeling.

Also, because deterioration rates are applied across the entire EMFAC vehicle population, this creates the impression that the entire fleet is, in fact, experiencing an increased emission factor. This is, as you know, not an accurate characterization as high emitters with emission controls that are malfunctioning or have been tampered with contribute a disproportionate share of emissions compared to the fleet as a whole.

By not identifying these high emitters in EMFAC-HD, cost-effective control strategies may be overlooked. We would recommend that the ARB explore how the model, in conjunction with reasonable inspection and maintenance program, could identify and resolve issues stemming from high emitters.

Fueling Infrastructure Needs

The ARB's analysis of needs for vehicles and technologies requiring separate fueling or charging infrastructures is lacking. Market penetration of these vehicles will be severely limited by the availability of such infrastructure.

An analysis by Tiax LLC on behalf of the San Pedro Bay Ports Technology Advancement Program[4] suggested that both hydrogen and electric charging infrastructure build-out would be costly. How these types of cost will be paid for should be included in the analysis.

Likewise, stranded capital asset costs resulting from shifts away from diesel and natural gas as preferred technologies should also be analyzed.

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[3] Field Evaluation of Heavy Duty Diesel NOx Control Strategies (January, 2013): http://www.arb.ca.gov/msprog/cihd/resources/reports/scrreportfinal.pdf

[4] http://www.cleanairactionplan.org/civica/filebank/blobdload.asp?BlobID=2522

Table 4. Estimated charging infrastructure costs

Charging Facilities	Chargers (per site)	Charger Costs (per site)	Utility Upgrade Costs (per site)	Construction Costs (per site)	Total (all sites)
1	360	$14,400,000	$7,200,000	$4,800,000	$26,400,000
4	90	$3,600,000	$2,400,000	$1,600,000	$30,400,000

Table 5. Estimated hydrogen refueling infrastructure costs

Number of Refueling Facilities	Minimum Dispensers (per site)	Combined Construction and Equipment Costs (per site)	Total (all sites)
1	8	$122,500,000	$122,500,000
4	2	$35,000,000	$140,000,000

Natural gas fueling infrastructure is arguably the most built-out of diesel alternatives; however, stations are still mostly concentrated in Southern California. Recent work by UC Davis also suggests that long-term profitability of the existing natural gas fueling network is at question[5]. The analysis should consider this existing fueling infrastructure network in order to identify areas of complimentary or competing fueling infrastructure.

Approaches dependent on wayside power will also face similar, if not greater, challenges. For examples, on-highway catenary infrastructure will be bounded by the rate at which highway infrastructure projects are delivered, which can take up to 15-20 years per project.

Battery Electric Presentation

We have several questions and observations about staff's heavy-duty battery-electric presentation.

- On Slide 32, there are 10 Class 8 "other trucks" listed as having been funded by HVIP. We are unaware of any such Class 8 BEV technologies.
- Given range limitations of 75-100 miles per charge, HD BEVs would be limited to approximately 19-26,000 miles yearly. It is unlikely you could create a business case based on this limited range as ability to generate revenue, while taking advantage of any fuel cost advantage that exists for electricity, would be minimized.
- Charging infrastructure needs not addressed.
- Battery replacement costs not addressed
- Weight penalties not addressed, especially in context of battery size contribution to range

If you have any questions, please feel free to contact us.

[5] http://www.energy.ca.gov/2014_energypolicy/documents/2014-06-23_workshop/presentations/12_Jaffe_Dominguez_ITS_Amy_Rosa_2014-06-23.pdf

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