December 10, 2008

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James Goldstene
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Re: Notice Of Public Hearing To Consider The Adoption Of A Proposed Regulation To Reduce Emissions From In-Use On-Road Diesel Vehicles, and Amendments to the Regulations For In-Use Off Road Vehicles, Drayage Trucks, Municipality and Utility Vehicles, Mobile Cargo Handling Equipment, Portable Engines and Equipment, Heavy Duty Engines and Vehicle Exhaust Emissions Standards and Test Procedures and Commercial Motor Vehicle Idling

Dear Mr. Goldstene:

This letter transmits comments prepared by Sierra Research on behalf of Driving Toward a Cleaner California (DTCC) regarding the above-captioned rulemaking. As you are aware, the staff has developed a new methodology that is outside the EMFAC2007 model for use in performing baseline emission inventory and emission benefit calculations for purposes of this regulation. At the request of DTCC, Sierra Research attempted to perform a detailed critical review of this new methodology. That was not possible because CARB staff failed to provide the public in a timely manner with all of the details regarding the methodology required to review, reproduce, or validate the emission inventory and emission benefit calculations performed by CARB staff related to the proposed regulation and regulatory alternatives. It should be noted, as is documented below, that CARB staff did not provide these details until December 9, 2008, which was a week after receiving a direct and explicit request that they be provided. In addition to it being impossible for the public to review the new methodology, it must also be noted that the methodology has not been peer reviewed.

The above notwithstanding, CARB staff's analysis of the baseline inventory and emission benefits of the proposed regulation fails to consider the impacts of the current economic recession. To the extent possible based on the limited information available regarding the new methodology described above, Sierra Research has examined the potential impact of the current economic recession on future heavy-duty-vehicle emissions on baseline emissions. This analysis indicates that the impacts of the recession on the trucking industry may substantially reduce baseline emissions and calls into question the staff's conclusion that the proposed regulation—as opposed to one of the alternatives, including that proposed by DTCC—should be adopted.

Because CARB staff's current assessment of the need for the proposed regulation and its benefits, costs, and cost-effectiveness is flawed due to the lack of any meaningful review of the emissions methodology and due to its reliance on assumptions regarding the current and future economy that are known to be incorrect, it is not appropriate for the Board to rely on that assessment in considering whether to adopt the proposed regulation. Instead, Sierra Research recommends that the Board postpone action on the proposed regulation and direct the staff to perform a transparent re-evaluation of the baseline emission inventory, emission benefits, costs, and economic consequence of its adoption that takes full account of the current economic recession and its future consequences. In performing this re-evaluation, it is critical that CARB staff make all information and data available to the public so that it can be properly examined and reviewed.

Sincerely,

James Lyons
Senior Partner

Attachment

Comments Regarding Notice of Public Hearing to Consider the Adoption Of A Proposed Regulation to Reduce Emissions From In-Use On-Road Diesel Vehicles, and Amendments to the Regulations for In-Use Off Road Vehicles, Drayage Trucks, Municipality and Utility Vehicles, Mobile Cargo Handling Equipment, Portable Engines and Equipment, Heavy Duty Engines and Vehicle Exhaust Emissions Standards and Test Procedures and Commercial Motor Vehicle Idling

Submitted by:
Sierra Research

on behalf of:
Driving Toward a Cleaner California (DTCC)

December 10, 2008

1. **<u>There Has Been No Peer Review of the New Methodology Developed by CARB Staff to Compute the Baseline Emission Inventory and Emission Benefits Estimates, Nor Has CARB Staff Publicly Disclosed the New Methodology</u>**

   As evidenced by numerous statements by CARB staff, the emission inventory and emission benefit estimates for the proposed regulation that being presented to the Board were not developed using CARB's official EMFAC2007 model, which forms the basis for the State Implementation Plan.

   For example, page 45 of the Initial Statement of Reasons (ISOR) states;

   > *The 2007 SIP (ARB, 2007a) was based on the applicable version of ARB's on-road motor vehicle emissions model, EMFAC2007. Staff, in support of this rulemaking, has undertaken comprehensive efforts to update and improve the truck inventory since the SIP was adopted. New data not available at the time of SIP development was used in assessing the costs and benefits of this statewide rulemaking*

   And page G-1 of Appendix G states that:

   > *Since the last EMFAC release, Staff members have conducted a comprehensive re-evaluation of the heavy duty diesel truck emissions inventory. In developing this new analysis, we have integrated new data and assumptions into an expanded methodology that builds upon current modeling in EMFAC2007. With this methodology we incorporate detail for different types of trucking*

operations and truck configurations that referred to as "inventory categories". Emission factors differ from those in EMFAC2007 and reflect our enhanced knowledge of trucking operations and truck configurations that have been developed through this effort.

Despite the fact that the staff freely admits that it has developed a new methodology, based on new data and assumptions, for modeling emissions from heavy-duty Diesel vehicles as well as the benefits of the proposed regulations, this methodology has not been subjected to any form of peer review, as evidenced by the lack of any reference whatsoever to peer review and the complete absence of any peer reviewer comments in the regulatory documents.

In addition to not having been subjected to peer review, CARB staff's new methodology has not been disclosed to the public in general. Unlike the EMFAC2007 model, which, along with its documentation, is publicly available on the CARB website,[1] the only information released about the new calculation methodology used by CARB staff to estimate the baseline emission inventory and emission benefits of the proposed regulation is contained in the regulatory documents, including Appendix G and an Excel spreadsheet[2] posted by CARB staff on the agency website on November 7, 2008. However, neither Appendix G nor the Excel spreadsheet[3] contains the actual data, assumptions, and calculations used by CARB staff to arrive at the baseline emission inventory or the emission benefit estimates for the proposed regulation. In response to a request for disclosure of all details related to the new methodology made on December 2, 2008, CARB staff released a large computer database on December 9, 2008, only one day before the deadline for submission of these comments and two days before the hearing on the regulations.[4] Given CARB's failure to provide information in a timely manner, it has not been possible to conduct a meaningful review of the new methodology.

Without both peer review and timely public disclosure of the new methodology developed by CARB staff specifically to support the proposed regulation, the accuracy of either the baseline inventory or the emission benefit estimates being presented to the Board could not be verified. Given the lack of peer review and public disclosure, the Board must defer action on the proposed regulation until such time that a proper peer review has been conducted and the public has had at least 45 days to review and comment on all of the data, assumptions, and calculations that comprise the staff's new emissions methodology.

[1] See *http://www.arb.ca.gov/msei/onroad/latest_version.htm*
[2] See *http://www.arb.ca.gov/regact/2008/truckbus08/emissinv.xls*
[3] The spreadsheet posted by CARB staff is incomplete as it contains only numeric values and provides no formulas or calculations.
[4] See email correspondence between James Lyons, Sierra Research and CARB staff provided in Attachment A.

2. **CARB Staff's Analysis of Regulatory Alternatives Apparently Relies on the Same Un-Reviewed and Un-Disclosed New Methodology Used for the Baseline Inventory and Emission Benefit Estimates**

Appendix N contains the most detailed discussion of the alternatives to the proposed regulation considered by CARB staff. Although it is not clear, it appears that the staff used either the same new methodology used to develop the baseline inventory and emission benefit estimates for the proposed regulation or a similar methodology. In either case, the methodology used by CARB staff to assess regulatory alternatives was not peer reviewed nor has the methodology used been fully disclosed to the public.[5] Given that no peer review has been conducted and a complete review by the public was not possible given the staff's failure to disclose its methodology in a timely manner, the Board cannot rely on the staff's finding that no alternative is superior to the proposed regulation.

Further, because the complete methodology used by CARB staff was not disclosed in a timely manner during the 45-day comment period, the public was not given the appropriate opportunity to formulate and consider alternatives as it could not properly gauge the relative impact of any particular proposed change to the proposed regulation.

3. **The CARB Staff Analysis of the Baseline Emission Inventory and Emission Benefits Relies on Economic Forecasts That Are Not Publicly Available and Cannot Be Reviewed**

In Appendix G, "Emissions Inventory and Methodology and Results," the development of two models—one to forecast future nationwide truck travel in units of "vehicle miles travelled" (VMT)[6] and the other to forecast future nationwide truck sales[7]—is described in general terms. The former was reportedly used to validate trucking industry VMT growth rates used by CARB staff in its emissions analysis and the latter was reportedly used to modify future-year heavy-duty Diesel vehicle age and VMT distributions. Both trucking industry VMT growth and the modified future-year age and VMT distributions are critical components of the staff's emission inventory and emission benefit analyses.

Both the VMT and nationwide truck sales models are described as relying on forecast value of future "nationwide trucking GDP" and "nationwide transportation GDP." Although it cannot be discerned if these two GDP metrics are the same or different, they are reported to be based on the "the employment in the transportation sector predicted in the State of California Economic Forecast for the Sacramento Forecast Project" and "a UCLA business forecast released in

[5] As of December 10, 2008, the database underlying the methodology has not been posted on the CARB website.
[6] See Page G-46 and Figure 19.
[7] See Pages G-47 to G-52.

July 2007," and references, including internet links that are purported to direct one to the forecast data, are provided.

The link to the "UCLA business forecast" indicates, however, that a minimum fee of $1,500 must be paid to access the forecast.[8] A request to CARB staff for access to view the forecast was reportedly referred to CARB legal staff for review[9]; however, as of this date, access has not been provided. In contrast, neither the link to the Sacramento Forecast Project nor a review of the website performed in December 2008 reveals any data related to "employment in the transportation sector." Again, a request to CARB staff for access to these data was reportedly referred to CARB legal staff, but the data have not been explicitly provided.

To summarize, the economic data used by CARB to forecast both the baseline emission inventory and therefore the benefits of the proposed regulation are not available to the public and therefore can neither be reviewed nor commented on by the public as part of this rulemaking. It is therefore inappropriate for the Board to take action on the proposed regulation until such time all economic data used by CARB staff in its analysis of the proposed regulation have been made available for at least 45 days.

4. **CARB Staff Has Failed to Publish or Provide Upon Request Key Data Related to the Baseline Emission Inventory and Emission Benefit Estimates**

Page G-2 of Appendix G states:

> *The methodology used to develop the proposed rule inventory is based on the following equation:*
>
> $$EMS_{CY} = \sum_{MY,\,C} \left(POP_{MY,\,C} \, X \, AC_{MY,\,C} \, X \, ER_{MY,\,C} \right)$$
>
> *where:* EMS_{CY} *is the emissions calculated in tons per day for a given calendar year CY.*
> $POP_{MY,\,C}$ *is the population of trucks for model year MY within each inventory category C for a given calendar year;*
> $AC_{MY,\,C}$ *is the accrual rate (miles traveled per year) per truck by model year MY and inventory category C in a given calendar year;*
> $ER_{MY,\,C}$ *is the calculated emission rate, in grams pollutant per mile driven, assuming statewide speed travel distributions in EMFAC2007 and category-*

[8] See *http://www.uclaforecast.com/contents/membership/membership.asp*
[9] See email correspondence between James Lyons, Sierra Research and CARB staff provided in Attachment A.

specific cumulative mileage accrual over the life of the truck, by model year MY and inventory category C;

With this new analysis, we developed a population and model year distribution for each vehicle category. We also estimated accrual by model year for the category and cumulative mileage accrual (odometer) by model year. Because trucks can move between categories as they age, we assessed the movement of used trucks between categories in order to develop cumulative mileage accrual estimates that reflect this movement. As a result, cumulative odometer readings by model year will not necessarily be consistent with accrual schedules for each inventory category. We developed emission rates using EMFAC2007 and statewide speed distributions, and we adjusted emission rates for modeled odometer readings by category.

Despite the fact that CARB staff clearly developed the data required to use the above equation, as evidenced by the fact that values for "EMS_{CY}" were published for calendar years 2000 through 2025,[10] CARB staff has publicly disclosed values only for the term "$AC_{MY, C}$."[11] Other than the $POP_{MY, C}$ values that apply for the 2008 model year (but which, according to CARB staff, have been modified for future years to reflect changes in new truck sales and which are presented only in graphical, not tabular, form for the 2008 model year), values used by CARB staff for "$POP_{MY, C}$" and "$ER_{MY, C}$" were not disclosed by CARB staff until December 9, 2008, although a request for them was made a week earlier.[12] Furthermore, the methodology and calculations used by CARB staff to arrive at values for all three parameters on the right side of the emissions equation copied above were also not disclosed until December 9, 2008.

Without timely access to the values of "$POP_{MY, C}$" and "$ER_{MY, C}$" used by CARB staff, the accuracy of both the baseline inventory and the emission benefit estimates that are being presented to the Board could not be verified by the public, and therefore it is not appropriate for the Board to rely upon them in taking action regarding the proposed regulation.

[10] See Figures VII-1 and VII-2 of the Initial Statement of Reasons, Figures 33 to 38 of Appendix G, and *http://www.arb.ca.gov/regact/2008/truckbus08/emissinv.xls*

[11] See data on worksheet labeled "ER and Accrual by Inventory Cat" in *http://www.arb.ca.gov/regact/2008/truckbus08/emissinv*.xls

[12] See attached email correspondence between James Lyons, Sierra Research and CARB staff.

5. **The CARB Staff Analysis Does Not Account for the Impacts of the Current Economic Recession**

CARB's baseline emission inventory analysis and regulatory benefit estimates do not account for the effects of the current economic recession on the trucking industry. Rather, the staff's analysis, which appears to be based on non-public June 2007 economic forecasts from UCLA, assumes that both heavy-duty Diesel vehicle activity and trucking industry revenues will continually increase during the period from 2008 through 2023.[13] Given that this assumption is clearly invalid, it represents a fundamental flaw in CARB staff's analysis of the baseline emission inventory that affects the need for, the benefits of, and the cost and cost-effectiveness of the proposed regulation. In light of this, the Board cannot make an informed decision regarding the adoption of the regulation and should instead defer consideration until such time that CARB staff has performed a proper analysis that reflects current and future economic realities.

In order to demonstrate the possible impact that the current economic recession could have on emissions from on-road, heavy-duty Diesel vehicles and the need for the proposed CARB regulation, Sierra Research performed an analysis based on the assumptions outlined below.

1. Trucking industry revenues fall by 10% in 2008 relative to CARB's estimates and by another 10% in 2009, which, using CARB's methodology (see the equation given in Figure 19 of Appendix G), equates to a 7% reduction in VMT relative to CARB's 2008 assumption and a 14% reduction in 2009, again relative to CARB's 2008 assumption.

2. Trucking industry revenues begin to grow again from 2010 to 2012 such that there is a 1% per year increase in trucking industry VMT, and a 2% per year increase in drayage truck activity in the Los Angeles and San Francisco Bay areas.

3. For 2013 to 2025, trucking industry revenues grow at the same VMT growth rates assumed by CARB as published by CARB in Table 21 of Appendix G.

The actual VMT assumptions used in the analysis are shown in Table 1 as a function of the different vehicle categories embodied in the CARB inventory analysis. Values of 1 across all years in Table 1 indicate that no changes were made to the activity levels assumed by CARB staff for these categories. For example, school bus, other bus, utility vehicle, and agricultural vehicle activity was not assumed to change from CARB staff's estimates in this analysis. It is important to note that the other values indicated in Table 1 are the ratio of VMT in that year relative to CARB staff's 2008 VMT estimate for that category, not the CARB staff estimate for that category in that year.

[13] See Appendix G to the CARB Initial Statement of Reasons and Technical Support Document—in particular, pages G-44 to G-46, Table 21, and Figure 19.

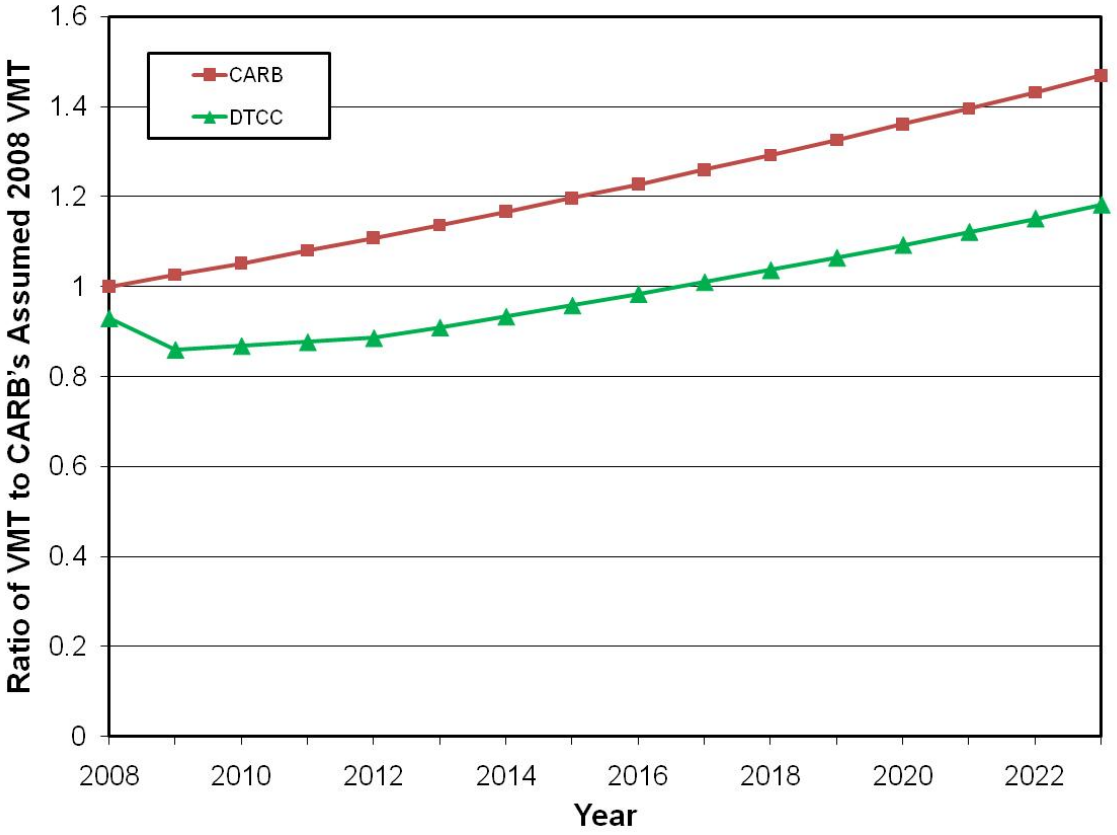
Table 1 - VMT Adjustment Factors Used in DTCC Analysis (See Text for Explanation)

CARB Vehicle Category	YEAR															
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Other Buses	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Power Take Off	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
School Bus	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MHDDT Agriculture	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MHDDT CA International Registration Plan	0.93	0.86	0.87	0.88	0.89	0.90	0.91	0.93	0.94	0.96	0.98	0.99	1.01	1.02	1.04	1.06
MHDDT Instate	0.93	0.86	0.87	0.88	0.89	0.90	0.91	0.93	0.94	0.96	0.98	0.99	1.01	1.02	1.04	1.06
MHDDT Out-of-state	0.93	0.86	0.87	0.88	0.89	0.90	0.91	0.93	0.94	0.96	0.98	0.99	1.01	1.02	1.04	1.06
MHDDT Utility	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
HHDDT Agriculture	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
HHDDT CA International Registration Plan	0.93	0.86	0.87	0.88	0.89	0.91	0.93	0.96	0.98	1.01	1.04	1.06	1.09	1.12	1.15	1.18
HHDDT Non-neighboring Out-of-state	0.93	0.86	0.87	0.88	0.89	0.91	0.93	0.96	0.98	1.01	1.04	1.06	1.09	1.12	1.15	1.18
HHDDT Neighboring Out-of-state	0.93	0.86	0.87	0.88	0.89	0.91	0.93	0.96	0.98	1.01	1.04	1.06	1.09	1.12	1.15	1.18
HHDDT Drayage at Other Facilities	0.93	0.86	0.87	0.88	0.89	0.90	0.91	0.93	0.94	0.96	0.97	0.99	1.00	1.02	1.04	1.05
HHDDT Drayage in Bay Area	0.93	0.86	0.88	0.89	0.91	0.96	1.01	1.07	1.13	1.19	1.25	1.32	1.39	1.46	1.54	1.62
HHDDT Drayage near South Coast	0.93	0.86	0.88	0.89	0.91	0.96	1.00	1.05	1.11	1.16	1.22	1.28	1.34	1.41	1.48	1.55
HHDDT Singleunit	0.93	0.86	0.87	0.88	0.89	0.91	0.93	0.96	0.98	1.01	1.04	1.06	1.09	1.12	1.15	1.18
HHDDT Tractor	0.93	0.86	0.87	0.88	0.89	0.91	0.93	0.96	0.98	1.01	1.04	1.06	1.09	1.12	1.15	1.18
HHDDT Utility	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

A comparison of CARB's VMT assumptions for Heavy-Heavy-Duty Diesel Truck (HHDDT) vehicles engaged in line-haul activity versus those assumed in our analysis is shown in Figure 1. The values assumed here are labeled as "DTCC." As shown, CARB's VMT levels are higher (and imply far greater trucking industry revenues) relative to the DTCC assumptions. By 2023, CARB assumes that trucking industry activity will have increased by 50% relative to its assumed 2008 levels. In contrast, the DTCC values indicate an increase of about 20% in 2023 relative to CARB staff's assumed 2008 activity level.

With respect to Assumption 1, the exact magnitude of the impact of the current economic recession on the trucking industry is not known nor do there appear to be any detailed estimates that are currently available. However, the limited sources of available data provide support for Assumption 1.

Figure 1
Comparison of CARB and DTCC VMT Estimates for HHDDT Used in Line-Haul Service



One source of available data is California taxable Diesel fuel sales volumes published by the California Board of Equalization (BOE). The most recent data are through August 2008,[14] and are provided as Attachment B. As shown in the BOE data, taxable sales of Diesel fuel in California for the period January through August 2008 total 1.89 billion gallons compared to 2.05 billion gallons for the period January through August 2007. This represents a decline of 8% that would be expected to translate directly to 8% lower Diesel vehicle activity in the state. The California Diesel fuel sales drop for the latest month, August, is an even more dramatic 14%. Another source of data are trucking miles logged in California by tractors operated by a major interstate trucking firm, as provided by that firm to the California Trucking Association. As shown in Attachment C, for the period from January to October 2008, total California mileage for this firm was approximately 12% lower than for the period from January to October 2007.

These two sources of data independently indicate that there have been substantial reductions in trucking industry activity in California during 2008 and that those reductions are of the same order as those postulated in Assumption 1. In addition, there seems to be little doubt that the current economic recession will deepen and persist well into, if not throughout, 2009, which also supports Assumption 1.

Using the VMT adjustments from Table 1, the CARB emission inventory spreadsheet was modified to compute adjusted calendar-year VMT estimates for each vehicle category. These adjusted VMT values were then divided by those assumed by CARB staff for purposes of computing the baseline emission inventory, and the resulting ratio was applied to CARB's estimated baseline NOx and PM emission inventories for each category. These category-specific estimates were then summed for each calendar year to arrive at a total inventory value adjusted to reflect the assumed impact of the current economic recession.

The results of the current analysis are summarized in Figures 2 through 4. First, Figure 2 presents CARB's assumed daily on-road heavy-duty Diesel vehicle VMT as well as that resulting from the DTCC assumptions discussed above. As shown, the CARB assumptions, which do not take into account the current economic recession, show a continuous increase in VMT over the entire period from 2008 through 2023. In contrast, the DTCC assumptions show a downturn in VMT in 2008 and 2009, which then levels off and increases thereafter.

The impact on baseline NOx emissions from substituting the DTCC VMT assumptions can be seen in Figure 3, where the DTCC baseline estimates are compared to both the CARB baseline estimates as well as CARB's estimates of NOx emissions with the proposed regulation in place. Baseline cases are denoted as "no regulation" or "NR" in the figure and the "with regulation" case as "WR."

[14] See *http://www.boe.ca.gov/sptaxprog/reports/Diesel_10_Year_Report.pdf*

Figure 2
Comparison of CARB and DTCC Baseline California VMT Assumptions for On-Road HDDVs

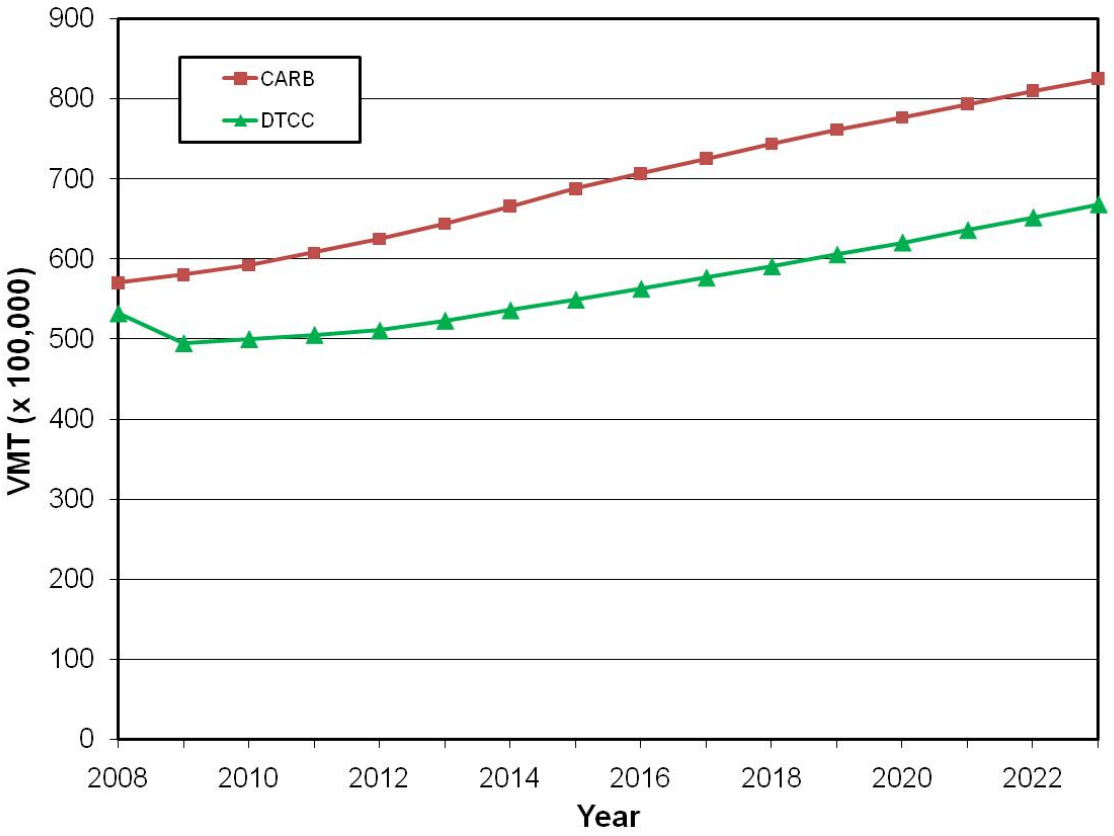


Figure 3
Comparison of Statewide On-Road HDDV NOx Emission Inventories for the CARB Baseline, DTCC Baseline, and CARB With-Regulation Cases

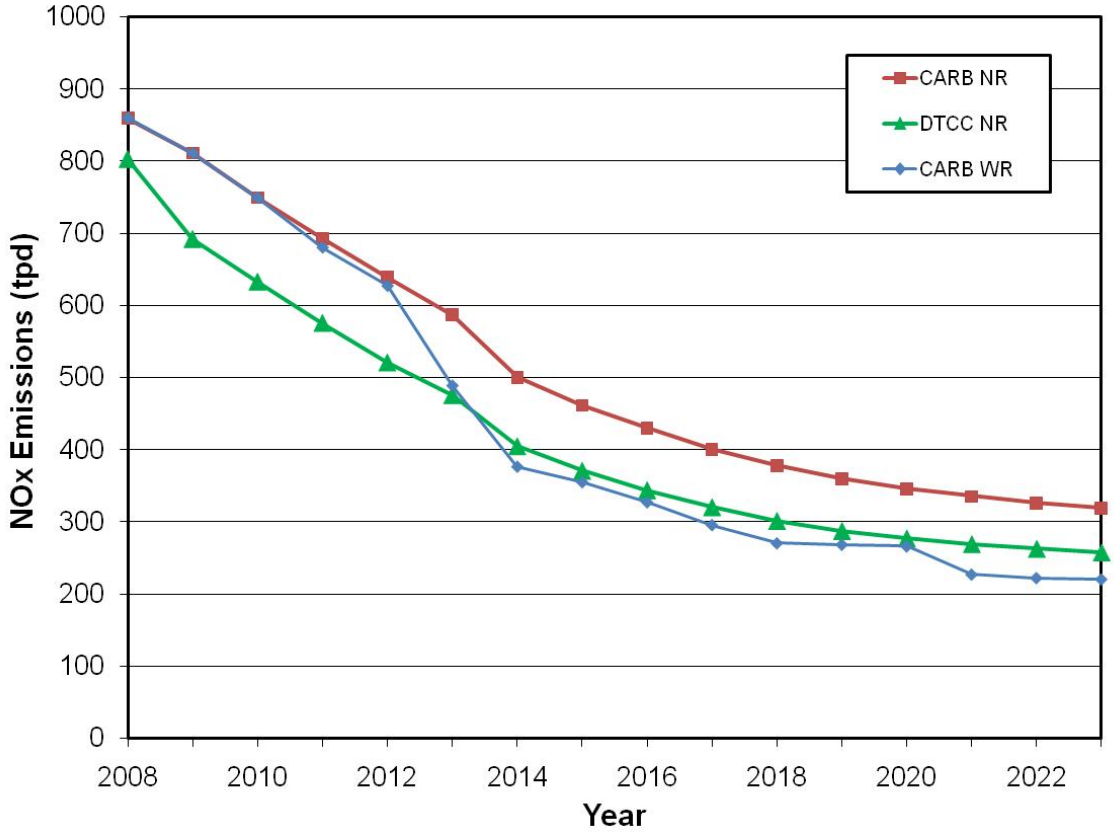
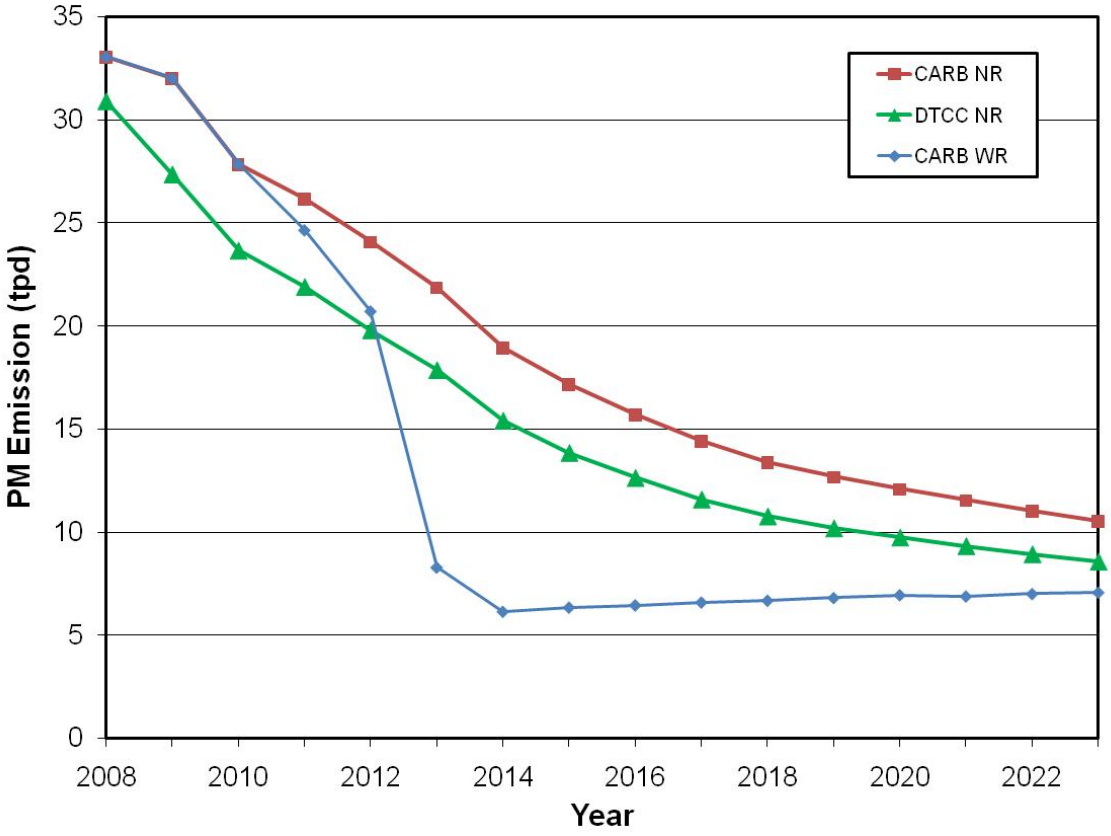


Figure 4
Comparison of Statewide On-Road HDDV PM Emission Inventories for the CARB Baseline, DTCC Baseline, and CARB With-Regulation Cases



As shown and expected, the DTCC baseline falls far below the CARB baseline through the period from 2008 to 2023. As is also shown and perhaps less expected, however, the DTCC baseline falls below CARB's with-regulation inventory until 2013, and after that the difference between the DTCC baseline and the CARB with-regulation inventory is on the order of 20 to 40 tons per day in statewide NOx emissions. In contrast, the difference between the CARB baseline and the CARB with-regulation inventory over this period is on the order of 80 to 125 tons per day of NOx emissions. Further, if one compares the changes in NOx emissions over the period from 2008 to 2023 attributed to the proposed CARB regulation to those resulting only from the DTCC baseline adjustment, one finds that the baseline adjustment leads to total NOx emissions that are 92,000 tons lower than with the proposed regulation based on CARB's staff's analysis. In other words, absolute NOx emissions over the period from 2008 to 2023 are lower under the DTCC baseline than CARB staff currently estimates would be the case with the proposed regulation in place.

Figure 4 presents a similar analysis for PM emissions. As shown, emissions for the DTCC baseline case are considerably lower than those associated with the CARB baseline. In this case, however, PM emissions are reduced further relative to the CARB baseline by the CARB regulation than by the DTCC baseline. However, over the period from 2008 to 2023, the DTCC baseline adjustment alone accounts for more than 50% of the emission reductions currently being attributed by CARB staff to the proposed regulation.

As noted above, the data presented in Figures 1 through 4 are based on one set of assumptions made by Sierra Research. Clearly, other assumptions could be made that could lead to different results. However, it is unlikely that any set of reasonable assumptions would lead to a conclusion different from the one reached by Sierra Research, i.e., that the current economic recession will lead to a baseline heavy-duty Diesel emission inventory that is lower than that contained in the regulatory documents.

First, it must be noted that VMT for any given group of vehicles is determined by the number of vehicles in the group and the number of miles travelled by each individual vehicle. Therefore, a reduction in VMT implies either a reduction in the number of vehicles operating or a reduction in the number of miles travelled by each vehicle, or both. Conversely, an increase in VMT implies either an increase in the number of vehicles in operation, an increase in the number of miles traveled, or both.

As shown above, the available data indicate that the recession is causing a drop in trucking VMT but it is not clear whether one or both of these factors is responsible. Because CARB staff did not release the methodology used to develop the baseline inventory in a timely manner, Sierra has been forced to assume that there is a uniform percentage reduction in VMT across all model years of trucks. This has several implications, the most important of which is that it is likely to disproportionately reduce the VMT attributed to the newest, lowest-

emitting vehicles in the trucking industry, which means that the Sierra analysis likely underestimates the impact of the recession on the trucking industry. In actual practice, it is likely that VMT reductions would preferentially occur in the older, higher-emitting portion of the trucking fleet. Furthermore, once the recession ends and VMT begins to increase, it is likely that the increase will occur through the purchase and operation of new, low-emitting, trucks, rather than through an increase in the use of older trucks. Unfortunately, because of CARB staff's failure to release information related to its emission methodology in a timely manner, neither effect could be modeled by Sierra.

In order for the impact of the recession to lead to higher emissions than CARB staff has modeled for the baseline inventory, either VMT or the average emission rate associated with trucking industry, or both, would have to ultimately increase from the baseline due to the effects of the recession. Why either would be expected is not clear and has not been established, although, as discussed above, there is already evidence that the recession is causing a reduction in trucking VMT.

6. **The Fleet Average Calculator Published by CARB for Use in Evaluating Regulatory Compliance Requirements Contains Errors, and Could Mislead Users Regarding the Actual Regulatory Requirements**

In May 2008, CARB posted an Excel spreadsheet on the agency's website.[15] The website provides the following description of the spreadsheet or "calculator":

> *The Fleet Average Calculator is an Excel file designed to assist fleetowners to determine compliance strategies to meet the optional fleet average requirements or the best available control technology percent limits in the proposed regulation. The calculator allows fleets to experiment with different turnover, repower, and retrofit strategies to understand what the May 2008 version of the proposed in-use on-road diesel vehicle regulation would require.*

Further, the ISOR for the proposed regulation states that:

> *Staff has developed a fleet calculator to assist fleet owners simplify the fleet averaging calculation.*

Clearly, both statements imply that CARB intends for the "calculator" to be used by parties interested and/or affected by the regulation to determine how the regulation could impact them and as a means of investigating alternative compliance strategies. It is reasonable to expect that the participation of these parties and the nature of their comments could be directly affected by their reliance on the calculator to ascertain the impacts of the proposed regulation.

[15] See *http://www.arb.ca.gov/msprog/onrdiesel/calculators.htm*

The errors identified with the calculator are described below.

1. The calculator has a formatting error for the cell in the "inputs" worksheet containing the target year 2012 NOx fleet average. It does not produce bold red text indicating non-compliance when the average is exceeded—this could lead one to assume a fleet is in compliance when, in fact, it is not.

2. The calculator computes/reports target fleet rates on a year-end basis (e.g., the target rate reported for "2010" represents December 31, 2010); the regulation, however, specifically defines compliance with target rates on a year-beginning basis (i.e., January 1). This could lead one to assume a fleet is in compliance when, in fact, it is not.

3. The "Read Me" worksheet incorrectly states the expiration date of the low-mileage NOx exemption as December 31, 2017; in defining compliance for this exemption, however, the computations on the "Inputs" worksheet of the CARB calculator use the correct expiration of December 31, 2020. This inconsistency may cause confusion for users.

4. The calculator does not address retirement credits, as was confirmed with CARB staff (who indicated that this would be corrected in future revisions to the calculator). CARB staff indicated that retired vehicles should be omitted from the calculator; however, in following this approach, any retirement credits would not be properly included in the calculator's compliance evaluation, rendering that evaluation inaccurate.

5. The calculator does not correctly handle hybrid credits in all instances. Whereas the calculator does correctly calculate the hybrid credit for the target PM average and the target NOx average calculations, the calculator incorrectly addresses the hybrid credit for both the %BACT PM and the %BACT NOx calculations.[16]

6. The model-year-specific emission factors contained in the calculator are different from those contained in the regulatory documentation, i.e., the ISOR and the Technical Support Document (TSD). The calculator factors are shown in Figure 5; the TSD emission factors reported in Appendix A are shown in Figure 6. Because the calculator values are higher for the 2010 and 2011 model years than those apparently used in assessing compliance with and the benefits of the regulation in the regulatory documentation, this could again lead to confusion on the part of calculator users in determining the impact of the proposed regulations.

[16] The CARB %BACT PM does not include the hybrid credit in both the numerator and the denominator; the CARB %BACT NOx does not include the hybrid credit in the numerator only.

Figure 5
CARB Calculator Emission Factors

Table A-2 - Engine Emissions Factors (g/mile)

	Greater Than 33,000 lbs (HHD)		Less Than 33,001 lbs (MHD)	
Model Year*	**PM**	**NOx**	**PM**	**NOx**
1900 - 1990	3.36	22.0	1.65	14.2
1991 - 1993	1.25	22.0	0.84	14.2
1994 - 2003	0.81	22.0	0.43	14.2
2004 - 2006	0.81	12.0	0.43	6.7
2007 - 2009	0.11	7.0	0.06	4.0
2010	0.11	4.4	0.06	2.0
2011	0.11	2.5	0.06	1.2
2012 and newer	0.11	1.6	0.06	0.8

* Engine model year emissions standard met.

Figure 6
TSD Emission Factors

APPENDIX A

Table A-1

PM Emissions Factors by Engine Model Year
(g/mile)

Engine Certification Standard Model Year	Medium Heavy-Duty Diesel Vehicle (MHD)	Heavy Heavy-Duty Diesel Vehicle (HHD)
Pre-1991	1.65	3.36
1991-1993	0.84	1.25
1994-2006	0.43	0.81
2007-2009*	0.06	0.11
2010 and newer*	0.06	0.11

* If the engine is not equipped by the manufacturer with a diesel particulate filter, use the emission factor for the 1994-2006 model years

Table A-2

NOx Emissions Factors by Engine Model Year
(g/mile)

Engine Certification Standard Model Year	Medium Heavy-Duty Diesel Vehicle (MHD)	Heavy Heavy-Duty Diesel Vehicle (HHD)
2003 and older	14.2	22.0
2004-2006	6.7	12.0
2007-2009	4.0	7.0
2010 and newer	0.8	1.6

ATTACHMENT A

From: Jim Lyons
Sent: Tuesday, December 02, 2008 12:38 PM
To: 'abrasil@arb.ca.gov'
Subject: Heavy-Duty On Road Inventory Spreadsheet

Tony:

Is it possible to get the version of the spreadsheet which actually has the formulas used in the inventory calculations present in it? Unless I'm missing something, it appears that all that is present in the inventory spreadsheet posted on the website are data values copied in from somewhere else. Obviously, this makes review/verification of the calculations leading to the data values very difficult/tedious if not impossible.

Given the limited time available before the hearing, I hope that you can send the actual inventory spreadsheet today.

Thank you in advance.

James M. Lyons
Sierra Research
1801 J Street
Sacramento, CA 95811
Phone: 916-444-6666
Fax: 916-444-8373
Email: jlyons@sierraresearch.com

From: Jim Lyons
Sent: Tuesday, December 02, 2008 1:14 PM
To: 'tsax@arb.ca.gov'; 'mbenjami@arb.ca.gov'
Cc: 'abrasil@arb.ca.gov'
Subject: FW: Heavy-Duty On Road Inventory Spreadsheet

Todd, Michael - I thought it might quicker to also request this of you directly. Thanks.

mbenjami@arb.ca.gov
-----Original Message-----
From: Jim Lyons
Sent: Tuesday, December 02, 2008 12:38 PM
To: 'abrasil@arb.ca.gov'
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James M. Lyons
Sierra Research
1801 J Street
Sacramento, CA 95811
Phone: 916-444-6666
Fax: 916-444-8373
Email: jlyons@sierraresearch.com

From: Brasil, Tony@ARB [abrasil@arb.ca.gov]
Sent: Tuesday, December 02, 2008 4:38 PM
To: Jim Lyons; Benjamin, Mike
Cc: White, Erik; Sax, Todd
Subject: RE: Heavy-Duty On Road Inventory Spreadsheet

Jim,
I am forwarding your request to the Planning and Technical Support Division who developed the inventory.

Tony Brasil

-----Original Message-----
From: Jim Lyons [mailto:JLyons@sierraresearch.com]
Sent: Tuesday, December 02, 2008 12:38 PM
To: Brasil, Tony@ARB
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Sierra Research
1801 J Street
Sacramento, CA 95811
Phone: 916-444-6666
Fax: 916-444-8373
Email: jlyons@sierraresearch.com

From: Jim Lyons
Sent: Tuesday, December 02, 2008 4:39 PM
To: 'Brasil, Tony@ARB'
Subject: RE: Heavy-Duty On Road Inventory Spreadsheet

Thanks very much.

-----Original Message-----
From: Brasil, Tony@ARB [mailto:abrasil@arb.ca.gov]
Sent: Tuesday, December 02, 2008 4:38 PM
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Cc: White, Erik; Sax, Todd
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Phone: 916-444-6666
Fax: 916-444-8373
Email: jlyons@sierraresearch.com

From: Jim Lyons
Sent: Thursday, December 04, 2008 10:28 AM
To: ' tsax@arb.ca.gov'; 'mbenjami@arb.ca.gov'
Cc: ' ewhite@arb.ca.gov'; 'abrasil@arb.ca.gov'; 'salbu@arb.ca.gov'; 'rcross@arb.ca.gov'
Subject: Heavy-Duty On-Road Diesel Inventory Data
Attachments: FW: Heavy-Duty On Road Inventory Spreadsheet; RE: Heavy-Duty On Road Inventory Spreadsheet

Todd and Michael:

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I look forward to receiving a response to this email, and please do not hesitate to call me if you would like to discuss.

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James M. Lyons
Sierra Research
1801 J Street
Sacramento, CA 95811
916 444-6666

From: Jim Lyons
Sent: Friday, December 05, 2008 11:07 AM
To: Jim Lyons; 'tsax@arb.ca.gov'; 'mbenjami@arb.ca.gov'
Cc: ' ewhite@arb.ca.gov'; 'abrasil@arb.ca.gov'; 'salbu@arb.ca.gov'; 'rcross@arb.ca.gov'
Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

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916 444-6666

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Sent: Friday, December 05, 2008 3:54 PM
To: Jim Lyons; Sax, Todd@ARB
Cc: White, Erik@ARB; Brasil, Tony@ARB; Albu, Steve@ARB; Cross, Bob@ARB; Murchison, Linda@ARB
Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

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Sacramento, CA 95811
916 444-6666

From: Jim Lyons
Sent: Friday, December 05, 2008 4:46 PM
To: 'Benjamin, Michael@ARB'; 'Sax, Todd@ARB'
Cc: 'White, Erik@ARB'; 'Brasil, Tony@ARB'; 'Albu, Steve@ARB'; 'Cross, Bob@ARB'; 'Murchison, Linda@ARB'
Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

Thank you for the confirmation Michael.

From: Benjamin, Michael@ARB [mailto:MBenjami@arb.ca.gov]
Sent: Friday, December 05, 2008 3:54 PM
To: Jim Lyons; Sax, Todd@ARB
Cc: White, Erik@ARB; Brasil, Tony@ARB; Albu, Steve@ARB; Cross, Bob@ARB; Murchison, Linda@ARB
Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

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Sent: Friday, December 05, 2008 11:07 AM
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Thank you.

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To: 'tsax@arb.ca.gov'; 'mbenjami@arb.ca.gov'
Cc: 'ewhite@arb.ca.gov'; 'abrasil@arb.ca.gov'; 'salbu@arb.ca.gov'; 'rcross@arb.ca.gov'
Subject: Heavy-Duty On-Road Diesel Inventory Data

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James M. Lyons
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916 444-6666

From: Jim Lyons
Sent: Monday, December 08, 2008 5:02 PM
To: 'Benjamin, Michael@ARB'; 'Sax, Todd@ARB'
Cc: 'White, Erik@ARB'; 'Brasil, Tony@ARB'; 'Albu, Steve@ARB'; 'Cross, Bob@ARB'; 'Murchison, Linda@ARB'
Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

Michael:

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Sierra Research
1801 J Street
Sacramento, CA 95811
916 444-6666

From: Benjamin, Michael@ARB [MBenjami@arb.ca.gov]

Sent: Monday, December 08, 2008 6:08 PM

To: Jim Lyons

Cc: White, Erik@ARB; Brasil, Tony@ARB; Albu, Steve@ARB; Cross, Bob@ARB; Murchison, Linda@ARB; Terris, Mike@ARB; Sax, Todd@ARB

Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

Jim,

In response to your e-mail request of December 4, 2008, ARB would like to provide you with the analytical database that underlies the final output tables that were posted to the In-Use On-Road Diesel Vehicle website. The analytical database is over 300 MB in size and therefore too large to include as an attachment to this e-mail. We have therefore burned the database to CD and it is available for you to pick up tomorrow morning at the Cal-EPA building at 1001 I Street in Sacramento or we can mail it to you. Please let me know your preference. I can be reached through e-mail or at (916) 323-2915.

Since receipt of your December 4 e-mail, in an effort to be as transparent as possible, staff have been working to put together data that should assist you in better understanding the final output tables that were posted on the ARB website. The database information that we are now providing includes input tables, queries, and interim tables that staff used in deriving the output tables. However, the information now being provided does not include confidential data. We believe that even without the latter information, the provided database, in conjunction with the assumptions and information provided in Appendix G of the Technical Support Document will address your needs and enable you to better understand the previously released output tables.

Michael

From: Jim Lyons [mailto:JLyons@sierraresearch.com]
Sent: Monday, December 08, 2008 5:02 PM
To: Benjamin, Michael@ARB; Sax, Todd@ARB
Cc: White, Erik@ARB; Brasil, Tony@ARB; Albu, Steve@ARB; Cross, Bob@ARB; Murchison, Linda@ARB
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Todd and Michael:

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Again, I hope, in light of the limited time remaining before the hearing, that you can fulfill my request immediately. If you cannot, I would like to at least be informed of that fact and if possible understand the reason(s) why. I also believe that all of the inventory data and calculations related to this rulemaking should be part of the public record, but again, if that is not your position, I would like to understand why you do not believe that to be the case.

On a related note, I see that the economic forecast from UCLA that has been relied upon in preparing the emission inventory (referred to in Appendix G) is not publicly available without subscription. Is a copy of the forecast that you are relying on available for viewing at CARB's offices? If so, who do I need to contact in order to view it?

I look forward to receiving a response to this email, and please do not hesitate to call me if you would like to discuss.

Thank you in advance for your attention to this matter.

James M. Lyons
Sierra Research
1801 J Street
Sacramento, CA 95811
916 444-6666

From: Jim Lyons

Sent: Monday, December 08, 2008 9:34 PM

To: 'B enjamin, Michael@ARB'

Cc: 'White, Erik@ARB'; 'Brasil, Tony@ARB'; 'Albu, Steve@ARB'; 'Cross, Bob@ARB'; 'Murchison, Linda@ARB'; 'Terris, Mike@ARB'; 'Sax, Todd@ARB'

Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

Michael:

Thank you for your reply. I will have one of my staff pick up the CD from your offices tomorrow morning. Are there any special arrangements/contacts that need to be made beforehand?

I would also note for the record, that my initial request was made on December 2, not December 4 and that I still do not know why my request needed to be reviewed by CARB Legal Staff or who on the Legal Staff was involved in that review. Further, as I noted earlier, as a result of the week long delay in release of the data, there will only be about 24 hours between the time I receive the data and the CARB deadline for the submittal of comments on the proposed regulation. Obviously, a thorough review of a 300 MB data base within 24 hours of time is impossible.

With respect to the “confidential data” that you mention, I presume by your response that in your withholding it that it is CARB Legal Staff’s position that the data satisfies the applicable statutory and regulatory tests defining confidential information. Is it possible for your or Legal Staff to confirm that and explain why the data meets those tests and therefore cannot be disclosed?

Thank you again for your attention to this matter.

From: Benjamin, Michael@ARB [mailto:MBenjami@arb.ca.gov]
Sent: Monday, December 08, 2008 6:08 PM
To: Jim Lyons
Cc: White, Erik@ARB; Brasil, Tony@ARB; Albu, Steve@ARB; Cross, Bob@ARB; Murchison, Linda@ARB; Terris, Mike@ARB; Sax, Todd@ARB
Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

Jim,

In response to your e-mail request of December 4, 2008, ARB would like to provide you with the analytical database that underlies the final output tables that were posted to the In-Use On-Road Diesel Vehicle website. The analytical database is over 300 MB in size and therefore too large to include as an attachment to this e-mail. We have therefore burned the database to CD and it is available for you to pick up tomorrow morning at the Cal-EPA building at 1001 I Street in Sacramento or we can mail it to you. Please let me know your preference. I can be reached through e-mail or at (916) 323-2915.

Since receipt of your December 4 e-mail, in an effort to be as transparent as possible, staff have been working to put together data that should assist you in better understanding the final output tables that were posted on the ARB website. The database information that we are now providing includes input tables, queries, and interim tables that staff used in deriving the output tables. However, the information now being provided does not include confidential data. We believe that even without the latter information, the provided database, in conjunction with the assumptions and information provided in Appendix G of the Technical Support Document will address your needs and enable you to better understand the previously released output tables.

Michael

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy cost, see our web site at http://www.arb.ca.gov

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From: Jim Lyons [mailto:JLyons@sierraresearch.com]
Sent: Monday, December 08, 2008 5:02 PM
To: Benjamin, Michael@ARB; Sax, Todd@ARB
Cc: White, Erik@ARB; Brasil, Tony@ARB; Albu, Steve@ARB; Cross, Bob@ARB; Murchison, Linda@ARB
Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

Michael:

As you know, the Board hearing on the in-use heavy-duty item is this week and the CARB webpage indicates that the deadline for comments submitted electronically is Wednesday December 10 at noon. (see http://www.arb.ca.gov/lispub/comm/bclist.php). Given this, I wanted to check and see if there was any indication as to when CARB legal staff might consider my request and when I might receive some sort of more definitive response. Obviously, even if the requested information were to be provided immediately, there would be only about 24 hours of the original 45 day comment period remaining to review it and prepare comments. Also if you could identify the member(s) of CARB legal staff involved, none of whom appear to be copied on the email, so that I might contact them directly I would appreciate it.

Thank you again for the information you have provided and thank you in advance for you further attention to the matter.

From: Benjamin, Michael@ARB [mailto:MBenjami@arb.ca.gov]
Sent: Friday, December 05, 2008 3:54 PM
To: Jim Lyons; Sax, Todd@ARB
Cc: White, Erik@ARB; Brasil, Tony@ARB; Albu, Steve@ARB; Cross, Bob@ARB; Murchison, Linda@ARB
Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

Yes, your request is currently being reviewed by CARB legal staff.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy cost, see our web site at http://www.arb.ca.gov

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From: Jim Lyons [mailto:JLyons@sierraresearch.com]
Sent: Friday, December 05, 2008 11:07 AM
To: Jim Lyons; Sax, Todd@ARB; Benjamin, Michael@ARB
Cc: White, Erik@ARB; Brasil, Tony@ARB; Albu, Steve@ARB; Cross, Bob@ARB
Subject: RE: Heavy-Duty On-Road Diesel Inventory Data

This message is to confirm my understanding of the status of my request based on our meeting yesterday.

It is my understanding that my request is currently being reviewed by CARB legal staff and that no decision has been made regarding if or when the requested information, which forms the basis for the emission inventory and emission benefit calculations for the on-road in-use Diesel regulation, will be released to me.

Please let me know if my understanding is incorrect.

Thank you.

From: Jim Lyons
Sent: Thursday, December 04, 2008 10:28 AM
To: 'tsax@arb.ca.gov'; 'mbenjami@arb.ca.gov'
Cc: 'ewhite@arb.ca.gov'; 'abrasil@arb.ca.gov'; 'salbu@arb.ca.gov'; 'rcross@arb.ca.gov'
Subject: Heavy-Duty On-Road Diesel Inventory Data

Todd and Michael:

Please forgive the additional email, but given that the hearing on this item is a week away and I've yet to receive any response from you related to the email I sent on Tuesday or the one forwarded to you on Tuesday by Tony (both attached), I need to understand whether or not you will be able to provide me with the requested information regarding the actual calculation of the inventory values that are in the inventory spreadsheet posted on the web. I think it is obvious that the inventory cannot be properly reviewed without access to a version of either the spreadsheet or an underlying database that clearly shows how the calculations leading to the output values published on the web were performed.

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I look forward to receiving a response to this email, and please do not hesitate to call me if you would like to discuss.

Thank you in advance for your attention to this matter.

James M. Lyons
Sierra Research
1801 J Street
Sacramento, CA 95811
916 444-6666

ATTACHMENT B

TAXABLE DIESEL GALLONS 10 YEAR REPORT
NET OF REFUNDS

PERIOD	1999	2000	2001	2002	2003
JANUARY	187,148,400	170,207,751	215,341,108	217,858,239	206,564,142
FEBRUARY	162,583,400	223,442,683	156,858,546	188,848,691	183,682,701
MARCH	207,489,200	237,723,872	243,284,099	219,505,887	196,063,015
APRIL	197,021,600	217,373,347	209,051,825	233,367,231	228,519,713
MAY	205,201,600	231,288,948	217,223,818	240,789,649	225,923,408
JUNE	229,892,000	244,718,369	252,630,426	230,067,755	226,785,744
JULY	184,320,400	213,709,273	222,755,765	236,536,743	255,585,863
AUGUST	210,672,600	234,015,374	224,008,967	212,449,201	230,957,142
SEPTEMBER	239,657,200	225,579,679	241,790,380	243,826,715	233,926,547
OCTOBER	232,677,100	218,908,370	231,541,332	245,274,808	257,895,277
NOVEMBER	161,422,300	202,559,906	186,314,545	220,872,044	200,494,214
DECEMBER	240,240,000	213,232,526	226,564,880	210,725,576	221,535,870
1ST QTR.	557,221,000	631,374,306	615,483,753	626,212,817	586,309,858
2ND QTR	632,115,200	693,380,664	678,906,069	704,224,635	681,228,865
3RD QTR.	634,650,200	673,304,326	688,555,112	692,812,659	720,469,552
4TH QTR.	634,339,400	634,700,802	644,420,757	676,872,428	679,925,361
TOTAL	2,458,325,800	2,632,760,098	2,627,365,691	2,700,122,539	2,667,933,636
Fiscal Year	2,349,368,200	2,593,744,570	2,602,394,950	2,663,413,321	2,637,223,810

PERIOD	2004	2005	2006 (3)	2007 (3)	2008 (4)
JANUARY	209,394,132	214,983,978	230,632,114	244,873,915	234,700,260
FEBRUARY	183,476,603	201,534,490	210,697,066	206,728,016	223,985,934
MARCH	261,486,638	259,929,246	245,235,573	275,550,478	241,439,734
APRIL	252,810,617	244,793,310	236,650,287	249,509,391	230,152,121
MAY	227,500,213	245,217,440	253,686,919	253,117,796	225,272,249
JUNE	271,998,138	285,657,928	255,514,957	284,171,511	260,434,744
JULY	251,519,845	262,358,240	245,994,379	263,867,265	243,095,395
AUGUST	242,702,165	261,564,348	279,070,073	273,394,950	234,022,307
SEPTEMBER	279,633,524	248,991,544	276,289,706	278,961,920	
OCTOBER	212,723,964	256,140,348	264,953,476	276,167,807	
NOVEMBER	205,784,931	232,780,652	245,345,768	230,407,370	
DECEMBER	243,301,276	249,782,148	249,978,816	245,989,862	
1ST QTR.	654,357,373	676,447,714	686,564,753	727,152,409	700,125,928
2ND QTR	752,308,968	775,668,678	745,852,163	786,798,698	715,859,114
3RD QTR.	773,855,534	772,914,132	801,354,158	816,224,135	477,117,702
4TH QTR.	661,810,171	738,703,148	760,278,060	752,565,039	0
TOTAL	2,842,332,046	2,963,733,672	2,994,049,134	3,082,740,281	1,893,102,744
Fiscal Year	2,807,061,254	2,887,782,097	2,944,034,196	3,075,583,325	2,984,774,216

Notes:

(1) Fiscal year reports year ending in column year. Example, FY03/04 is reported in the column for 2004.

(2) Above figures reported net of BOE audit assessments, refunds and amended/late returns.

(3) The September 2006 and September 2007 figures have been revised to include all late or amended returns that remained unaccounted for when the September 2006 reports were prepared. This is a one time adjustment due to the material difference of a late return. In addition, the May 2006 and March 2007 figures have been revised due to incorrect postings.

(4) The February 2008 figures include 10.7 million gallons in billed assessments.

ATTACHMENT C

Oct 2007 YTD vs Oct 2008 YTD Mileage Summary

Model Year	2007 Oct YTD Total	2008 Oct YTD Total	Variance
1995	453,800	257,733	(196,067)
1996	1,058,445	539,153	(519,292)
1997	446,229	293,671	(152,558)
1998	2,168,341	1,412,021	(756,320)
1999	3,445,035	2,498,667	(946,368)
2000	3,382,963	2,539,009	(843,954)
2001	3,014,105	2,346,494	(667,611)
2002	349,201	274,182	(75,019)
2003	2,690,429	2,266,411	(424,018)
2004	3,035,103	2,463,173	(571,930)
2005	4,784,904	3,861,343	(923,561)
2006	5,835,927	5,455,858	(380,069)
2007	832,904	1,405,594	572,690
2008	-	2,383,978	2,383,978
Leased Units	145,171	76,728	(68,443)
Grand Total	**31,642,557**	**28,074,015**	**(3,568,542)**

CA annual miles 37,093,601

Linehaul Mileage

Model Year	2007 Oct YTD Total	2008 Oct YTD Total	Variance
1995	189,462	77,426	(112,036)
1996	647,935	292,985	(354,950)
1997	191,316	121,024	(70,292)
1998	1,228,603	571,294	(657,309)
1999	2,039,765	1,332,327	(707,438)
2000	2,213,243	1,403,733	(809,510)
2001	2,409,245	1,783,940	(625,305)
2002	266,022	184,320	(81,702)
2003	2,076,151	1,667,289	(408,862)
2004	1,553,523	1,117,430	(436,093)
2005	4,073,151	3,091,098	(982,053)
2006	4,315,953	3,922,961	(392,992)
2007	695,642	1,167,679	472,037
2008	-	2,014,551	2,014,551
Leased Units	77,525	61,346	(16,179)
Grand Total	**21,977,536**	**18,809,403**	**(3,168,133)**

CA annual miles 25,612,152

P&D Mileage

Model Year	2007 Oct YTD Total	2008 Oct YTD Total	Variance
1995	264,338	180,307	(84,031)
1996	410,510	246,168	(164,342)
1997	254,913	172,647	(82,266)
1998	939,738	840,727	(99,011)
1999	1,405,270	1,166,340	(238,930)
2000	1,169,720	1,135,276	(34,444)
2001	604,860	562,554	(42,306)
2002	83,179	89,862	6,683
2003	614,278	599,122	(15,156)
2004	1,481,580	1,345,743	(135,837)
2005	711,753	770,245	58,492
2006	1,519,974	1,532,897	12,923
2007	137,262	237,915	100,653
2008	-	369,427	369,427
Leased Units	67,646	15,382	(52,264)
Grand Total	**9,665,021**	**9,264,612**	**(400,409)**

CA annual miles 11,481,449