CALIFORNIA AIR RESOURCES BOARD

WORKSHOP TO CONSIDER	**)**	
VISION FOR CLEAN AIR:	**)**	**September 20, 2012**
A FRAMEWORK FOR AIR QUALITY	**)**	
AND CLIMATE PLANNING	**)**	

STATEMENT OF
DAIMLER TRUCKS NORTH AMERICA

INTRODUCTION

On June 27, 2012, the California Air Resources Board (ARB) published the *Vision for Clean Air: A Framework for Air Quality and Climate Planning* (Vision Paper), discussing scenarios that California might follow to meet requirements of the Clean Air Act, including attainment of National Ambient Air Quality Standards (NAAQS), and to meet greenhouse gas (GHG) reduction requirements under AB32. Daimler Trucks North America (DTNA) is a major manufacturer of heavy-duty vehicles and engines, products which ARB's Vision Paper discusses regulating. Because DTNA builds both vehicles and engines that the Vision Paper proposes to regulate, DTNA has a strong interest in plans outlined in the Vision Paper. Daimler is a member of the Truck and Engine Manufacturers Association (EMA), and Daimler supports the comments submitted by the association.

DTNA's engine manufacturing division, Detroit Diesel Corporation, was one of the first heavy-duty engine manufacturers to be certified to ARB's stringent 0.20 gram / brake horsepower-hour (g/bhp-hr) NOx standard. DTNA's vehicle manufacturing divisions, Freightliner, Western Star, Freightliner Custom Chassis, and Thomas Built Buses, were the first to be certified to the new 2014 Environmental Protection Agency (EPA) / National Highway Traffic Safety Administration (NHTSA) GHG and fuel efficiency regulations – certifying DTNA's entire product line before any other manufacturer certified any portion of theirs. We strive daily to improve our customers' vehicles' fuel efficiency – working with customers to educate them of the most fuel efficient options and accordingly guide their decisions throughout the vehicle ordering process.

We understand ARB's approach to planning how the state can meet its mandated NAAQS and GHG targets. These targets are extremely difficult given California's emission inventory and its natural geographic/climatic conditions, so DTNA appreciates the magnitude of the work required of the state. We believe that ARB has taken the right approach by starting with a top-down analysis of the magnitude of emissions reductions required to reach mandated targets. Where we differ with ARB's approach, our differences are because we question the feasibility of the reductions that ARB proposes, we think that the proposals are mutually incompatible, or we think that the proposals rely on technology that is either not yet developed or is extremely expensive. That said, we wish to continue working with ARB to fashion a proposal that targets

more realistic and achievable goals, based on solid scientific and economic principles as opposed to a simple "what if" scenario analysis.

DISCUSSION

DTNA suggests that ARB make clear that the Vision Paper is neither a regulatory document nor a recommendation of any particular strategy.

As EMA made clear in its comments, it is important to make clear that the scope of the Vision Paper is limited. ARB staff needs to ensure that the Vision Paper states very clearly and up-front what the Paper is and what it is not. Specifically, the Vision Paper needs to state in the Executive Summary, Introduction and Conclusion sections that it is not a regulatory document, nor is it a recommendation of any particular regulatory strategy, action plan or series of control measures.

DTNA supports a top-down approach, but ARB's cannot be viewed in isolation.

Clearly, a top-down modeling approach has historical precedent in the types of analyses necessary to meet both the federal NAAQS and AB32-driven emission reduction targets, and this approach is appropriate given the challenging air quality problems faced by the state of California. Moreover, a coordinated approach integrating criteria pollutant and greenhouse gas emission reductions – with properly allocated, feasible emission reduction responsibility distributed across all emission source categories – is essential in developing a comprehensive emission reduction plan. To be effective, the Vision Paper needs to be more comprehensive. DTNA has concerns regarding the way that the Vision Paper may be interpreted given that it focuses only on mobile sources and their associated energy production pathways. As the Vision Paper authors note on page 1, "similar analyses will be necessary for industrial and other emission sources to develop a complete foundation for integrated planning." The Vision Paper cannot be viewed in isolation but rather must be viewed as only part of the analysis. Failing to analyze potential emission reductions from other sources has the impact of over-allocating reductions on a few sectors, driving higher costs into those sectors than would be required or necessary if emission reductions were properly allocated across all sectors. This point is important to note as regulators and regulated entities begin to discuss the Vision Paper and interpret its implications. DTNA urges ARB to not only initiate similar studies of additional pollution source categories, but to integrate the results of those analyses into a second version of the Vision Paper that truly takes a holistic view of the emission reductions that would be required from all sectors to attain the Board's stated air quality goals.

DTNA recommends that ARB check the compatibility of its assumptions.

One of the primary concerns that DTNA has with ARB's approach is that some of the assumptions are incompatible with each other, leading to erroneous results. For example, when ARB assumes as part of its scenario analysis that "for trucks, the average fuel economy doubles and NOx emission standards are 80 percent below the current the cleanest standards" (page 16), we think that ARB's assumptions do not mesh with each other. NOx reduction and increased fuel efficiency are contradictory targets: increased fuel efficiency requires increased NOx emission and vice versa. In particular, today's engines are optimized for both peak efficiency

and minimum NOx emissions, within the 0.20 g/bhp-hr limits permitted by ARB and EPA regulations. This is accomplished by optimizing combustion efficiency, which leads to relatively high engine-out NOx emissions, and then reducing NOx emissions through selective catalytic reduction (SCR) aftertreatment. But SCR reduction efficiency is not 100%. To achieve sub 0.20 g/bhp-hr NOx emissions, given limited SCR reduction efficiency, will force reductions of engine-out NOx levels and in turn compromise combustion efficiency. In other words, to further decrease NOx emissions given limited SCR reduction efficiency, engines would have to degrade combustion efficiency. Moreover, even the best hybrid powertrains cannot achieve the reductions ARB expects from trucks, especially in a high vehicle miles traveled (VMT) application like line-haul trucking, which tends to travel at very constant speeds where hybridization is of limited effectiveness. In conclusion, with engines already optimized for peak efficiency given limited NOx emissions, dramatic further increases in efficiency coupled with similar reductions in NOx emissions will be extremely difficult to achieve.

DTNA recommends that ARB complement its approach with a bottom-up approach, examining what emission reductions are feasible and cost effective in each sector.

A top-down approach, such as that conducted in the Vision Paper, is one of many steps in an analysis to identify the magnitude of the emissions changes needed in order to meet specific air quality targets. Such an analysis is helpful in identifying how far the state needs to reach, but it does not address whether achieving stretch targets in the way proposed is feasible or cost-effective. This is where a bottom-up approach is important to the integrity of the overall analysis. A bottom-up approach allows ARB to evaluate what future emissions reductions are possible on a fleet-wide basis based on costs and science, and translate these emissions reductions into ambient air quality levels. The Vision Paper does not consider this type of bottom-up approach but instead makes a number of broad assumptions about future opportunities for mobile source efficiency improvements. For example, on page 10, the Vision Paper assumes that the same percent reduction in emissions will be achieved by each mobile source sector. This does not consider the possibility that there are opportunities for more efficient emission reductions in certain sectors than in others. Many mobile source sectors have a fairly long history of regulation and have been regulated to the 99% emission reduction level (NOx emissions from passenger cars, for example), whereas others are fairly new to regulation with more opportunities for additional emission controls (non-road equipment as an example). ARB's analysis does not account for the possibility that some sources are "lower hanging fruit," with greater opportunity for cost-effective emission reductions, than others. The problem with a top-down analysis without a sufficient bottom-up analysis is that people may read the Vision Paper as the path for reaching California's air pollution goals, when in fact it is only one possible path, listing one way to reach those goals – and perhaps not the most effective way.

DTNA recommends that ARB complement its approach with cost analysis, allowing ARB to find the most cost-effective approach.

DTNA recommends that, when ARB analyzes scenarios for emissions reductions, ARB looks at the costs of these scenarios. Some scenarios will be much more expensive than others. For example, doubling fuel efficiency of trucks in order to halve trucks' GHG emissions may be far

more expensive than halving the carbon-intensity of diesel fuel. While diesel fuel is a dense energy source, yielding sufficient energy per unit weight to haul 50,000 lb loads, batteries do not have sufficient energy density. Rather, the batteries would outweigh payload, sacrificing efficiency and requiring many more trucks to be on the road per unit of goods transported. Moreover, catenary electrical sources exist in only limited areas and would be very expensive fiscally and environmentally to build statewide. In summary, we recommend that ARB include costs in its scenario analyses as well as environmental impact and that ARB look for more cost-effective scenarios than the ones currently proposed.

CONCLUSION

In summary, DTNA believes that ARB has completed just one step of many in this scoping effort. We strongly believe that further information and analysis is required, in order to determine not merely *a mix* of emission reduction targets but *the best mix* of such targets. In particular, we recommend that ARB complement this top-down analysis, which was useful in determining the magnitude of emissions reductions necessary to meet the state's ambitious air quality and GHG targets, with a bottom-up analysis incorporating the full range of pollution sources as well as feasibility and cost and environmental impact assessments. Such a bottom-up modeling effort is a standard component of any comprehensive rulemaking activity and must be done here – in spite of the fact that the Vision Paper does not claim to be a list of SIP-ready control measures. We understand that these analyses are not simple. But we think such analyses are necessary before the board or any other decision makers in the state translate this analysis into regulations requiring broad-reaching emissions reductions. DTNA looks forward to working with ARB to fill in the missing pieces of these analyses.

Respectfully Submitted

Daimler Trucks North America LLC