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On behalf of the 21st Century Truck Partnership

Chairman Baird, Ranking Member Inglis, thank you for the opportunity to appear today. My name is Anthony Greszler. I am the Vice President for Government and Industry Relations with Volvo Powertrain North America in Hagerstown, Maryland, a part of Volvo Group North America, including Mack, Volvo, and Nissan Diesel Truck brands in the U.S. I am currently serving on the NAS "Committee for a Study of Potential Energy Savings and Greenhouse Gas Reductions from Transportation" and on the Transportation Research Board Special Task Force on Climate Change & Energy. I am speaking to you today on behalf of the industry representatives of the 21st Century Truck Partnership.

Background and Purpose

The 21st Century Truck Program (21CTP) is uniquely structured to coordinate efforts to improve the efficiency, emissions, and safety of class 3 to 8 commercial

trucks and buses. 21CTP members include original equipment manufacturers, diesel engine manufacturers, major component suppliers and a number of U.S. Government agencies. 21CTP member companies are all multi-national with major U.S.-based research and development activities. Products from this group of companies are widely used and not only consume over 30% of the US motor fuel, but also heavily influence global motor fuel consumption. 21CTP also provides a forum for small suppliers to gain access to major R&D programs by working through any of the partner companies.

As heavy vehicle and component suppliers our objective is to assure sustainable, cost effective freight transport in an environment of limited petroleum supply and carbon emissions constraint. This means we need technology development plus related infrastructure and policy enablers to greatly improve vehicle and freight system efficiency while also developing low-carbon, non-petroleum fuel sources. Requirements for heavy duty vehicles are markedly different from light duty, and require unique solutions. Furthermore, the demand for freight movement is directly tied to economic growth and is projected to grow at 2 to 2.5% for the next 20 years. Recent DOE projections show that, if light duty fuel use targets are met and heavy duty trends continue, HD fuel use will exceed LD by 2040. These facts demand a major focus on efficient freight movement -- combining strong government and industry efforts -- comparable to the effort on light duty over the past decades.

Heavy Truck Technology Development Needs

1. Vehicle Integration and Demonstration

The small amount of federal support for commercial truck technology during the past few years has been focused on vehicle components and sub-systems. While this has generated encouraging results in laboratory demonstrations, the next development should focus on technology that can be effectively deployed in real vehicle applications. **Going forward, we propose a strong emphasis on initial design for vehicle integration and final in-use demonstration which meets emissions, safety, and operational requirements.**

2. Engine Technology

At 42% peak thermal efficiency, heavy-duty diesel engines are already the most efficient mobile energy converters in common use. In addition, through joint R&D programs with the Department of Energy, the industry has already demonstrated the capability for an additional eight (8) percentage points of improvement in peak thermal efficiency in lab testing. The real challenge however, is to accomplish this in a truck within the emissions, operational, and vehicle constraints in a fully representative drive cycle. **We strongly support public – private partnership for a demonstration program to support such an initiative.**

Current public-private partnership was instrumental in the successful launch of 2007 emissions-compliant Heavy Duty Engines while maintaining fuel efficiency. Those engines are the basis for upcoming 2010 emissions products which will deliver near zero emissions. Although we do not envision further tightening of criteria emissions, we do need to find ways to achieve 2010 emission levels at lower cost and with improved fuel efficiency. This requires a continuing focus on both in-cylinder emissions reduction and on exhaust aftertreatment to reduce back pressure, size, weight, and cost.

3. Heavy Duty Hybrid, Electrification & Reduced Idle Solutions

Hybrid Powertrains can offer significant fuel savings in stop-and-go applications. In fact, several medium and heavy duty “Stop-and-Go” vocations have reported fuel savings in the range of 30-50% with both electric and hydraulic hybrid powertrains. The primary reasons to hybridize a class 8 on-highway powertrain are 3-fold: 1) reduced idle time through the hybrid energy storage and use of electric auxiliaries; 2) reduced fuel use through electrification of components – thereby, improving efficiency; and 3) reduced fuel usage during cruise through energy management with traffic induced speed variation and in rolling terrain. Research and development is required to fully realize the potential of an integrated Electric Hybrid Powertrain with Electrified Auxiliaries. In addition, longer life and less expensive energy storage systems are also required to complete this package. Working with industry organizations like the Hybrid Truck Users Forum (HTUF) can accelerate technology development, provided

adequate funding is achieved. In fact, discussions are already underway with HTUF regarding future industry forums.

4. Truck and Trailer Aerodynamics

At 65 mph, aerodynamic drag is typically more than 50% of the total road load on a heavy truck. The tractor and trailer operate as an aerodynamic system with strong interactions between the front (tractor) and rear (trailer) parts of the system. Heavy vehicle aerodynamic development has focused on the front of the system where tractor manufacturers compete vigorously on aerodynamic performance and fuel economy. However, enormous opportunity exists in improving trailer aerodynamics and further opportunity exists through optimization of the aero performance of the tractor and trailer together because the quality of the airflow delivered from the tractor to the trailer has a significant performance impact on trailer aerodynamic devices offering up to 12% improvement in aerodynamic losses. Further benefits of another 10-15% can be realized by aerodynamic trailer treatments, if the designs can overcome issues of durability, cost and operability.

5. Fuels

Vehicular improvements alone will not achieve the full potential for fuel and greenhouse gas savings. Cost-effective changes to fuels and to vehicle usage need to be considered. Vehicle research and development will be necessary to take full advantage of some improvements. Investigations need to be conducted

that build upon work already done in biofuels, natural gas, hydrogen and other alternative fuels. This is only possible if we: (1) Ensure that fuel standards are written to support optimal engine performance; (2) Ensure that fuels meets the appropriate standards; and (3) Provide the necessary fuel infrastructure.

Fuel Efficiency Assessment

There will be a need for vehicle fuel efficiency assessment and accounting as we seek to minimize fuel use and CO_2 emissions. With the tremendous variation in vehicle specifications, this will require a fuel efficiency model accepted by industry, end-users, and government agencies. The model should be verified by testing on typical vehicles while allowing for simulated results for variations.

In Conclusion:

The heavy duty vehicle industry is comprised of a small base of companies with a huge impact on current and future petroleum consumption as well as our nation's economic growth. Despite the critical need to deal with trucking industry challenges, there has been minimal federal investment to address many untapped opportunities. We believe that $200 million annually in federal funding is required to support these initiatives. **The 21st Century Truck Partnership is the only forum in which the relevant companies come together.** Given the significant technical challenges in developing a fully integrated truck that optimizes all of the aforementioned characteristics, it is essential that the industry has strong strategic alliances and significant resource support from the

appropriate federal agencies. To accomplish these objectives, w**e recommend that 21 CTP serve as a focal point to create a longer term vision for the future of commercial vehicle technology.**

21st Century Truck Partnership member companies

Allison Transmission, Inc.
BAE Systems
Caterpillar Inc.
Cummins Inc.
Daimler Trucks North America LLC
Detroit Diesel Corporation
Eaton Corporation
Freightliner Trucks
Mack Trucks, Inc.
Navistar, Inc.
PACCAR Inc.
Volvo Trucks North America