STATEMENT

OF

THE ALLIANCE OF AUTOMOBILE MANUFACTURERS

BEFORE THE:

ENERGY AND COMMERCE COMMITTEE
THE SUBCOMMITTEE ON ENERGY AND POWER
U.S. HOUSE OF REPRESENTATIVES

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PRESENTED BY:

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Thank you, Chairman Whitfield, Ranking Member Rush and members of the Subcommittee. My name is Shane Karr and I am Vice President for Federal Government Affairs at the Alliance of Automobile Manufacturers (Alliance). The Alliance is a trade association of twelve car and light truck manufacturers including BMW Group, Chrysler Group LLC, Ford Motor Company, General Motors Company, Jaguar Land Rover, Mazda, Mercedes-Benz USA, Mitsubishi Motors, Porsche Cars, Toyota, Volkswagen Group and Volvo Cars. Together, Alliance members account for roughly 3 out of every 4 new vehicles sold in the U.S. each year. On behalf of the Alliance, I appreciate the opportunity to offer our views on the role alternative fuels can play in helping address our nation's energy security and environmental concerns.

Automakers in the United States have invested almost $200 billion over the last decade in research and development to increase fuel efficiency, for safety innovations, for environmental gains and for improved communications. Roughly 99% of that research has been privately funded. Today, consumers have more than 270 models that get over 30 miles per gallon – and we are working on a variety of additional technologies to dramatically improve fuel economy and reduce gasoline consumption. Each company is pursuing research strategies consistent with its own vision of what will motivate its future customers.

Ultimately, consumers will determine which of these investments were wise. Given the absence of a crystal ball, and the reality that consumers will manifest their choices over a long window of time, we believe it is imperative that government not get in the business of picking technology winners and losers. Government should set performance-based standards and let auto engineers decide how best to meet them. Consumers should choose winners through their collective purchasing patterns. Therefore, while we agree that alternative fuels are an important component of an energy security and independence strategy, we strongly believe that legislation mandating a particular vehicle technology or fuel or set of fuels would be a mistake.

Without meaningful alternative fuel use, the energy security implications of any particular alternative fuel technology are marginal at best, and possibly less impactful than other technology applications aimed at reducing oil consumption. This is an important point, because vehicle production mandates divert significant resources that could be applied to other fuel saving technologies and reduce the incentive for manufacturers to innovate.

The U.S. is on pace to consume around 132 billion gallons of gasoline this year, which is down because of the relatively higher price of gasoline, the vastly improved fuel efficiency of new vehicles, and the slowing pace of broader economic recovery. As it happens, the renewable fuel standard (RFS) requires blenders to purchase 13.2 billion gallons of corn ethanol this year, almost exactly 10 percent of the total gasoline pool, which will be taken up almost exclusively by E10, leaving virtually no room for higher level blends.

The U.S. is already the world's largest producer by far of corn ethanol. No one – not even the ethanol industry – is suggesting that the US should divert more of its arable land to produce additional feedstock for corn ethanol. Continued production efficiencies will result in higher yields, but those will be incremental, not exponential. We won't have the option of importing it in significant quantities (which arguably defeats the energy security goal anyway), given that the second largest ethanol producer in the world is Brazil, which itself has a shortage that will continue as long as sugar prices remain high. And we still wouldn't have pipelines to ship ethanol around the country efficiently and cheaply or the compatible pumps at fueling stations. So, a number of very significant factors in addition to vehicles would need to change to make the theoretical notion that consumers could buy more ethanol – if they wanted to – a reality.

H.R. 1687, The Open Fuels Standard Act

H.R. 1687 calls for 95 percent of vehicles to be alternative fuel vehicles beginning in model year 2017. Although the bill defines alternative fuel broadly, it is generally understood that the least expensive compliance path would be to build vehicles that meet the current requirements for flexible fuel vehicles (FFVs). This is why H.R. 1687 is supported primarily by the ethanol producers in the alternative fuel space.

Let me start by saying that automakers agree with the sponsors of H.R. 1687 that FFVs, currently defined as vehicles capable of running on any blend of gasoline and ethanol up to 85 percent (E85), are an important and worthwhile technology. In fact, there are already close to 12 million E85 FFVs on U.S. roads, and we will probably sell another million this year. However, only about 2 percent of gas stations have an E85 pump, and most are concentrated in the Midwest, where most corn ethanol is produced. This makes sense, because keeping production

close to point-of-sale is the most affordable approach. But even in states where E85 pumps are concentrated, actual sale of E85 has been low and stagnant. For example, in 2009 Minnesota had 351 stations with an E85 pump (the most of any state) but the average FFV in the state used10.3 gallons of E85 for the whole year. The bottom line is that E85 FFVs are a piece of the puzzle, but their effectiveness in actually displacing gasoline consumption is a function of fuel price, availability and consumers' willingness to use E85. Thus far it has been small in impact – and requiring huge percentages of new vehicles to have this capability is unnecessary and cost ineffective for consumers.

It is worth noting that achieving compliance with the vehicle production mandates in H.R. 1687 by producing E85 FFVs would cost consumers well more than $1 billion per year by the most conservative estimates. And these conservative estimates are severely understated for the vehicle mandates of the bill for two reasons: (1) H.R. 1687 requires a new kind of tri-fuel FFV that can run on gasoline, ethanol, methanol, and any combination of the three fuels, and which does not exist today; and (2) it will be more expensive to produce tri-fuel FFVs that can comply with H.R. 1687 especially with the forthcoming California Low Emission Vehicles (LEV III) and federal Tier 3 emissions standards along with very aggressive fuel economy/GHG emission requirements through 2025.

The Methanol Experience

In the late-1980s to mid-90s, automakers produced a limited number of light-duty vehicle models that could run on an 85% blend of methanol in gasoline (M85). This was undertaken in response to a series of California initiatives to increase the availability of methanol fuel and M85 FFVs across the state. Attachment 1 lists the extensive changes that were made to vehicles at the time to make them compatible with methanol blends. It should be noted that vehicle changes to accommodate methanol (then and now) are distinct from ethanol FFVs. Larger valves, greater hardening efforts associated with parts, and software changes to allow the vehicles to run effectively are some of the unique modifications necessary to allow vehicles to run on alternative fuels – and they are different for each alternative fuel involved.

The California methanol effort was abandoned for a variety of reasons. The largest was that methanol was finding its way into water supplies and its toxicity was considered a

significant health concern. But from a vehicle perspective, there were also concerns. Methanol contains 50 percent less energy content than gasoline. Drivers had to refuel twice as often and consumer acceptance was low. The fueling infrastructure was very expensive, and retailers were unwilling to mortgage their futures on an unproven fuel.

Today, there are no production facilities in the U.S. making methanol for use as transportation fuel in commercial quantities. The U.S. currently imports over 80% of its methanol needs and the additional imports required to fuel an M85 compatible fleet would be counter to efforts to bolster U.S. energy independence and security. There are no pipelines to ship it around the country and methanol cannot be shipped using conventional oil and gas pipelines due to its highly corrosive nature. There are no pumps available at fueling stations (ethanol pumps would not be certified for methanol, which is more corrosive and much more problematic if it leaks and contaminates our ground water). The only country making significant quantities of methanol for motor vehicle use is China, which is making it from coal. If methanol is intended to become a significant alternative fuel in the future, these issues will have to be further studied and addressed. In the meantime, consumers should not be required to pay more for vehicles that are capable of using a fuel that is unlikely to ever be a player in the market.

Emissions Standards and Alternative Fuels

Even if methanol is eliminated from the equation, the cost of making E85 FFVs will increase. As emission standards continue to be tightened – which is happening as both California and EPA work to create new LEV III and Tier 3 standards respectively – designing vehicles to meet those requirements on two fuels will be very challenging and costly – adding a third fuel could dramatically increase costs. It is worth noting that engineering a vehicle to run effectively and efficiently on two fuels means that it cannot be optimally tuned to run on either, so it is a compromise design to start with. This situation is compounded substantially when you add a third fuel.

Furthermore, today's E85 FFVs do not comply with the most stringent state emissions standards and testing requirements. California and states that have adopted California regulations, which effectively governs 40% of the U.S. vehicle market, will require virtually all vehicles to certify to the most stringent standards in the coming years under its LEV III program.

Because ethanol is a renewable fuel and can have fewer carbon emissions, it does not perform as well as gasoline when a cold engine is started, and methanol is even worse. While California has added flexibilities to its LEV III requirements that may enable automakers to engineer E85 FFVs to comply with these standards over time, they will be more expensive than FFVs today.

It should also be noted that if manufacturers were required to design FFVs to be capable of meeting these emission standards on methanol, the challenges become far greater on all fronts – exhaust emissions, evaporative emissions, durability and test burden. Because burning methanol produces much higher levels of formaldehyde, an air toxic, a whole new development effort focused on meeting stringent formaldehyde standards would be needed. The high volatility and permeation rates of methanol blends bring into question the feasibility of meeting evaporative emission standards (we last produced methanol vehicles before the introduction of real world test procedures in the 1990s). The corrosive nature of methanol leads to durability concerns for fuel system components. Additionally, thousands of additional tests per year would be required, which include more expensive and time-consuming measurement techniques for methanol and formaldehyde, impacting both the need for additional manpower and lab equipment. Simply put, the future emission standards were not developed taking into account the challenges of methanol.

Looking Ahead

Automakers are open to prospective policies that reflect a comprehensive commitment to make new fuels successful in the marketplace. Such policies would need to address production and distribution equally with vehicles and consumer acceptance, which are really the final link in the chain. The availability of new fuels should coincide with the availability of the vehicles that can run on them, so there is a market for both. Such a prospective approach is a far preferable alternative to retroactively introducing fuels into a market that has not been designed, certified or warranted to run on them.

Some key considerations as we move forward include:

Octane Level: Since ethanol provides less energy per gallon than gasoline, the future fuel may need to provide for higher octane to minimize fuel economy decreases as more ethanol is added to gasoline. Higher octane fuels enable automakers to calibrate our engines to improve

fuel economy. This change may be crucial for consumer acceptance. It is also critical that automakers not be penalized under future regulations for any decreases in fuel economy that are attributable to greater ethanol use.

Legacy Fuels: Legacy fuels must continue to be available for older vehicles while the refueling infrastructure for higher level ethanol blends is transitioning. Government assistance in implementing an effective program to educate consumers about the fueling capabilities of their vehicles to prevent misfueling will also be crucial to the success of the effort. In addition, enforcement of fuel blend and labeling requirements must be extensively and effectively executed.

Above all, this approach must give automakers the lead-time required and establish the certainty needed to design and develop vehicles that can best meet the multitude of requirements placed on us by regulators, and by consumers. It should also provide certainty for producers, retailers, engine manufacturers and other stakeholders. With certainty about the fuels our vehicles will be using, our engineers can design vehicles that are optimized for that fuel. This will allow us to deliver better fuel economy, better performance, and more cost-effective compliance with emissions standards – which in turn improves the value proposition for our customers.

In closing, it is worth stressing again that competition is the best driver for technology innovations. Automakers are each placing their bets on various advanced vehicle technologies and alternative fuels. Technology-neutral policies, not government mandates, will guarantee the ongoing development of a broad scope of technologies. But, ultimately consumers will have the final say in determining which technologies and fuels will ultimately succeed or fail in the marketplace. That is how it should be.

Thank you for the opportunity to offer our views on the Open Fuels Standard and I will be happy to answer any questions.

Attachment 1

Past Experience with M85 Flex-Fuel Vehicles (FFVs)

In the late 1980s to mid-90s, automakers produced a limited amount light-duty vehicle models that could run on an 85% blend of methanol in gasoline (M85). This experiment was in response to a series of California initiatives to increase the availability of methanol fuel and M85 FFVs across the state. Below is a generic list of components and modifications automakers may have utilized in the late 80s and 90s to transform a vehicle into a M85 compatible FFV.

It is important to note that these vehicles were produced prior to the implementation of the federal Tier 2 vehicle emissions program or enhanced evaporative emissions standards. The Tier 2 program resulted in vehicles emitting 99% fewer smog-forming emissions compared to vehicles in the 1970s. EPA and California are currently in the process of implementing new Tier 3 and LEV III vehicle emissions standards respectively that will require automakers to significantly lower the remaining 1% of smog-forming emissions. Because of the unique nature of methanol, the M85 FFVs produced in conjunction with this CA program would not have been able to meet the Tier 2 emissions targets, much less the pending aggressive Tier 3 and CA LEV III requirements.

Generic List of Vehicle Components and Modifications Utilized in pre-Tier 2 M85 FFVs:

- Fuel Pump Speed Controller
- Canister Purge Valve
- Engine Modifications:
    - Piston Ring – chrome plated face to resist corrosion and wear.
    - Exhaust Valve & Seat – material upgrade to resist corrosion and pitting.
    - Engine Oil – formulated to reduce the tendency of methanol to remove anti-wear additives from the oil. Also contains additives to reduce corrosion and wear due to higher acidity of blow-by gases.
    - Throttle Body – changes made to allow canister purge at idle.
- Wiring Assemblies – modifications required for component additions.
- Electronic Control Module (ECM) – changes required for specific methanol inputs and outputs:
    - Fuel Composition
    - Fuel Temperature
    - Fuel Tank Level
    - Prom and Software Changes
- Fuel Injector Driver Module
- Ignition Coil – high secondary current ignition coil for improved cold start.
- Fuel Rail Assembly – material changes for methanol compatibility to injectors, pressure regulator, and rail coating.

- Pipe Assemblies – material changes for methanol compatibility.
- Variable Fuel Sensor Assembly – monitors fuel composition (% of methanol) in fuel line.
- Catalytic Converter – revised catalyst loading for emissions control.
- Low Fuel Light – added because of decreased driving range with methanol.
- Fuel Sender Control Module – interrupts current through fuel level sender to reduce galvanic attack in methanol environment.
- Fuel Tank – stainless steel required for corrosive methanol environment.
- Solder –silver solder required for methanol compatibility.
- Flame Arrestors – stainless steel required to prevent fame propagation from fill door to fill tank.
- Fuel Hose and Vent Hose – revised for decreased fuel.
- Fuel Fill Pipe and Vent Extensions – stainless steel required for corrosive methanol environment.
- Fuel Fill Pipe – modified vent pipe to provide canister clearance.
- Canister – increased capacity evaporative canister required because of higher vapor pressures of low methanol blends.
- Canister Bracket – unique bracket to reposition large canister.
- Fuel Cap – gasket materials modified for methanol compatibility
- Fuel Sender and Pump Assembly:
    - Higher flow pump to account for reduce energy density
    - Extensive material changes for methanol compatibility