

Written Statement

of

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Transportation

on

Corporate Average Fuel Economy Standards

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INTRODUCTION

Toyota appreciates the opportunity to submit its views on Corporate Average Fuel Economy

One of Toyota's founding principles was the elimination of waste. This principle still permeates our corporate philosophy and is, therefore, quite evident in our processes and products.

Toyota always has recognized and pursued our responsibility to improve the fuel efficiency of our products. Most importantly, we believe that achieving real environmental gains and fuel use reductions requires wide consumer acceptance of our vehicles. For this to happen, vehicles must offer expected performance, be convenient, affordable and use a readily available fuel so that their utility is not hobbled by insufficient infrastructure. Toyota believes the next core powertrain technology that meets these criteria is the hybrid electric, addressed in greater detail below.

This testimony will first address Toyota's North American operations and then will focus on the technology Toyota has used and will use to improve the fuel efficiency of our vehicles. Finally, it will describe some of the challenges associated with

increasing fuel efficiency while meeting the demands of a market, which – unfortunately – does not value it highly.

TOYOTA'S NORTH AMERICAN OPERATIONS

With total North American investment of \$12 billion and sales last year of more than 1.7 million new vehicles, Toyota is the fourth largest motor vehicle manufacturer in North America. We directly employ over 31,000 associates. We produce more than one million cars and trucks a year at our plants in Kentucky, Indiana, California and Ontario, Canada. We manufacture 4- and 6-cylinder engines in both West Virginia and Kentucky. The West Virginia facility also produces automatic transmissions.

In addition, Toyota has parts manufacturing facilities in Missouri, California and British Columbia and has begun construction of a \$220-million V-8 engine plant in Huntsville, Alabama, to supply our Indiana truck plant.

These and other Toyota facilities in the U.S., Canada and Japan purchased nearly \$15 billion in U.S. parts and materials last year. Toyota's U.S. retail sales force is comprised of more than 1400 Toyota and Lexus dealers, who employ 95,000 Americans and have a total U.S. investment of nearly \$9 billion dollars.

TOYOTA'S USE OF ADVANCED TECHNOLOGY TO IMPROVE

FUEL EFFICIENCY

Toyota will continue to be a leader in automotive technology. In the 1980s and early 1990s, Toyota began widespread use of engines with 4 valves per cylinder, overhead cam and multi-port fuel injection to improve fuel efficiency. Today, 100 percent of our fleet is equipped with multi-port fuel injection and 4 valves per cylinder. In addition, much of our engine line-up has been reengineered since 1990 in our efforts to improve fuel efficiency and reduce emissions. Most of our engines also now have lightweight aluminum blocks and heads, variable valve timing and increased compression ratios.

Likewise, Toyota has developed and is now introducing a new generation of lightweight, compact and highly efficient automatic transmissions. In the future, Toyota also plans to offer energy-saving technologies such as electric power steering.

All these technologies boost fuel efficiency while simultaneously providing our customers the performance and utility they demand.

As a result of our investment in this technology, in 2001, EPA rated six Toyota

vehicles as “most fuel-efficient” in their class – the Prius, ECHO, Avalon, RAV4, Tacoma and Sienna. This is more than any other automotive brand. These vehicles range from small to large, from SUV to passenger car to pickup to minivan. They all incorporate most of the best available fuel economy technology.

Even Toyota's Lexus division, which competes in the high-end performance market – and in 2000 was the luxury market's sales leader – has never produced a car subject to the gas-guzzler tax. In large part, this is because of our aggressive application of fuel-efficient technology, even in a market segment where it ranks very low as a purchase reason.

Consistent with Toyota's philosophy of continuous improvement, each new generation of vehicle generally is more fuel-efficient than its predecessor. In 1990, for instance, the fuel economy of our Corolla was 28.6 mpg. In 2000, with the application of variable valve timing, sequential fuel injection, weight reduction and other technologies, Corolla's fuel economy improved to 32.6 mpg. But make no mistake, squeezing ever-greater fuel efficiency out of each succeeding generation of vehicle is extremely difficult, when married with the marketplace demands for performance, utility, safety and affordability.

Some of the most promising engine technologies from a fuel efficiency perspective are lean-burn gasoline and diesel engines. Toyota currently offers these engines in

Japan and Europe. However, federal Tier II and California LEV II emission standards make their future use in the U.S. questionable.

For example, Toyota has developed a lean-burn catalyst system for gasoline vehicles and a diesel particulate and NOx reduction system to control emissions from these engines. Although we are continuing to work on them, they will need to be further improved before they can be certified for use in the United States. The availability of low-sulfur gasoline and diesel fuel will be critical to any possible U.S. future for these technologies.

In 1997, Toyota introduced the world's first mass-market hybrid gasoline-electric vehicle – the Prius – in Japan. The second-generation Prius introduced in the United States and Europe in 2000 incorporates a number of improvements in an effort to accommodate customer demands – including improved performance, fuel efficiency and reduced emissions. The U.S. version, for example, has an EPA fuel economy rating of 52 mpg city, 45 mpg highway and 48 mpg combined. In addition, Prius is certified to California's Super Ultra Low Emission Vehicle (SULEV) standard.

The improvements made to the second-generation Prius also have enabled it to have greater driving distance on electricity, and a much smaller battery pack, which reduces weight and increases cargo capacity.

Looking to the future, Toyota will continue to develop and apply technology that increases fuel efficiency while giving customers the performance and utility they demand.

New conventional technologies like those previously mentioned will be developed, refined and utilized. We also will continue to improve the Toyota Hybrid System (THS) and incorporate it into a wider range of vehicles as rapidly as possible. For example, Toyota just introduced a limited-volume four-wheel-drive hybrid minivan in Japan called the Estima. Initial sales have met expectations and we are hopeful they will continue at an acceptable rate.

Finally, Toyota has recently introduced two fuel cell concept vehicles – the FCHV4 and FCHV5. The base body for both vehicles is the mid-sized Highlander SUV we sell here in the U.S. The FCHV4 runs on pure hydrogen, while the FCHV5 runs on a clean hydrocarbon fuel reformed on-board into hydrogen. Both vehicles are called fuel cell hybrid vehicles because they use a fuel cell in place of a conventional engine in conjunction with the Toyota Hybrid System. But we do not expect fuel-cell hybrids to be available in any significant quantity before 2010 at the earliest.

INCREASING FUEL ECONOMY WHILE MEETING CONSUMER

DEMAND

As the Committee can see, Toyota has aggressively developed and applied technologies that increase fuel efficiency while providing the types of vehicles consumers demand. The element of consumer demand is critical to the marketplace success, in fact, the existence, of any manufacturer. All of us must meet demand or suffer the consequences.

Through the application of technology, we believe we have been able to successfully balance these two competing demands. The key question is whether, even with our planned technology, we can continue to meet this challenge in the future without losing some of our customers because of high prices.

Although it varies by segment, all our sales and marketing data indicate that fuel economy is low on the shopping list of the typical American vehicle purchaser. Despite this, because of our corporate culture, over the years Toyota has always exceeded the car and truck CAFE standards. We have done so without using any of the credits we have accumulated under the existing CAFE program and while becoming a full-line manufacturer.

Looking to future energy policy, Toyota believes that any program designed to improve vehicle fleet fuel economy cannot focus solely on the vehicle manufacturer. The demand side of the equation also must be addressed – as it is

in countries such as Japan – if policymakers are going to send consumers the proper signal that fuel economy is an important attribute to consider when purchasing a vehicle.

There is a crucial distinction among fuel efficiency, fuel economy, and fuel usage. The automaker is the primary driver of product-by-product fuel efficiency. In this effort, automakers face a complex combination of product trade-offs including vehicle size, cargo and/or towing capacity, the technical challenges inherent in new technology, desired price-positioning, the often conflicting demands of safety, emissions and fuel regulations, and the how-much/how-soon calculation imposed on us by the limited capacity of our product-development workforce.

In contrast, the aggregate fuel economy of the approximately 16 million new vehicles sold each year in the United States is determined by the mix of vehicles consumers choose to buy.

And finally, the total amount of fuel usage each year is determined by the first two factors plus how much and in what way customers choose to use their vehicles.

In our efforts to continue to improve fuel efficiency, Toyota is looking to a new generation of advanced technologies, such as gasoline/electric hybrids and fuel cells. Looking at the customers purchasing our Prius and Honda's Insight, tells us

that it will be a big challenge to move these advanced technologies from niche to mass market.

The primary difficulty in moving from conventional to hybrid powertrain technology is increased cost. The Toyota Hybrid System has the highest degree of hybridization and benefit of any system now available or proposed. If we are to spread this fuel-efficient technology to other body styles and reach high-volume segments as rapidly as possible, some form of incentives will be required to reduce its price premium.

Ongoing development may further improve the benefits of the Toyota Hybrid System and reduce its cost. And we can expect some level of savings if higher levels of mass production can be achieved. However, incentives will be necessary to get us past the early years and lower volumes. In Japan, for example, Prius buyers are eligible for both national and local incentives, which can total over \$2,800. Yet, there is no such incentive at the federal level in the U.S.

The CLEAR Act, presently pending before the Senate Finance Committee and which also has been amended and passed by the House as part of H.R.4, provides consumer tax credits for advanced technology vehicles in an effort to narrow their price premium. Indirect incentives, such as the provision in the House-passed bill, which clarifies that states are allowed to grant single occupant hybrids the use of HOV lanes, are another way to help enhance the attraction of these new-technology

vehicles to consumers.

Given the success of the Prius, the Committee may ask why incentives are necessary. The answer is that the typical Prius buyer is very different from the typical compact buyer. Prius purchasers are older, wealthier, more educated and more interested in technology than typical compact buyers. Therefore, to reach the typical buyer of a vehicle in the compact or any other high-volume market segment, something must be provided to encourage buyers to purchase an advanced-technology vehicle or the most fuel-efficient vehicle in that segment. In shaping future energy policy, the challenge of addressing fuel economy should not be placed solely on manufacturers. Clearly, and inescapably, we have a large role to play and Toyota will do its part. But Congress can help by passing incentive legislation to bring the consumer into the fuel-economy equation. A one-sided program is likely to lead to less than optimum energy savings.

Toyota appreciates the opportunity to work with this Committee as well as others and with the Administration to help develop a sound approach to fuel economy. We believe this process should begin with a thorough examination of the NAS Report by the agency with the greatest expertise on this issue, NHTSA, as it begins its rulemaking to set future fuel-economy standards.

The NAS Report demonstrates the complex set of issues that must be addressed in

establishing a fuel economy program for the future. Product cycles, safety trade-offs, the time needed for technological advances, and issues related to the structure of any program (e.g. credit trading across cars and trucks and among manufacturers, attribute or weight-based programs) make the task of developing the appropriate policy difficult.

With respect to the current CAFE system, the NAS Report and its predecessor Report in 1992 make it clear that the existing import/domestic fleet distinction for passenger cars is counter-productive in today's industry and should be eliminated. The NAS could find no analysis or research to justify the fleet distinction, but did find that the requirement was increasing costs to consumers and perversely providing an incentive for manufacturers to use less domestic content in their vehicles. Toyota supports the NAS findings.

The NAS panel also makes clear that any change in the structure of the existing program should not "impose higher burdens on those manufacturers who had already done the most to help reduce energy consumption." Specifically, NAS said that to require each manufacturer to improve its own CAFE average by a defined percentage "punishes those who have done the most to improve the environment," increases the cost of environmental compliance, reduces competition and "seems to convey a moral lesson that it is better to lag than to lead." Commonly referred to as the Uniform Percentage Increase (UPI) approach, such a policy would be a huge

disincentive for future technological innovation and development and would provide a strong incentive for manufacturers not to exceed regulatory standards. Some industry experts have summed up the UPI concept by saying that it stands for Unwarranted Punishment of Innovation.

Most importantly, to the extent that the discrimination inherent in the UPI approach causes higher fuel economy vehicles to be replaced by lower mileage vehicles from producers with lower fuel economy targets, energy conservation and environmental goals would suffer as improvements in overall fleet fuel economy and CO₂ reduction goals would not be met.

UPI or UPI-like approaches which seek to impose higher standards on one company compared with another based on an arbitrary base year or vehicle attribute fail on both policy and environmental grounds. The UPI approach has been highly discredited in the past and the NAS again heavily criticized and strongly cautioned against such an approach. Toyota strongly agrees.

Another point that is crystal clear in the NAS Report is the need for adequate lead time. It took years to develop many of the advanced technologies previously mentioned. These technologies then had to be applied in conjunction with new product and capital investment cycles. The new Toyota Camry recently introduced will be sold for several years, yet work on its replacement already has begun. The

product cycle typically is longer for trucks and even longer for powertrains. Thus, any future program involving manufacturers must take into account the time required to develop new technology, incorporate it into vehicles, and bring them to market at a competitive price. This process cannot be turned on a dime without severe consequences.

Toyota again thanks the Committee for the opportunity to submit this testimony for the hearing record.

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