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Michael Lord

TOYOTA MOTOR NORTH AMERICA | Product Regulatory Affairs
1630 W. 186th Street, Gardena, CA 90248

Clerk of the Board
California Air Resources Board
1001 I Street
Sacramento, CA 95812

March 24, 2017

Dear Chair Nichols and Board Members;

Re: Toyota Comments on the ZEV Portion of the Advanced Clean Car (ACC) Midterm Review Staff Report Issued January 18, 2017

Toyota is pleased to submit these comments to the staff's proposed amendments to the ZEV regulations in the ACC Midterm Review staff report. In addition to these comments, as a member of both the Alliance of Automobile Manufacturers ("Alliance") and Global Automobile Manufacturers ("Global"), we incorporate by reference the comments of those organizations, submitted March 20 and March 18, 2017, respectively.

Toyota has a long-standing commitment to reducing the environmental footprint of our global vehicle portfolio. In October of 2015, we announced our Toyota Environmental Challenge 2050, which includes our vision for a 90% reduction in CO_2 from our worldwide new vehicle fleet by 2050, as well as a zero-CO_2 vision for Toyota's global production and plant emissions[1]. Achieving this vision will undoubtedly require an unprecedented amount of zero-emission vehicles (ZEV).[2] We believe the only way to realize this vision is to work cooperatively – and proactively – with governments and government agencies such as the Air Resources Board, energy companies and society-at-large, including our customers.

At the core of our efforts is a fundamental principle: that no advanced environmental technology can truly succeed unless it becomes a mainstream, mass-market technology. Toyota is working on a broad portfolio of advanced technology vehicles that includes fuel cell electric vehicles (FCV), battery electric vehicles (BEV), PHEVs, and HEVs. With this in mind, we believe that any opportunity to improve the program by increasing compliance flexibility and preparing the market for the large volumes of ZEVs needed in the future is important. The timing of the Midterm Review is an important milestone, and we believe that adjustments to the ZEV regulation at this time are critical to bringing us closer to our mutual goal of sustainable transportation.

Toyota has learned over nearly 20-years of marketing HEVs and other advanced vehicles that achieving large sales volumes of ZEVs requires a deliberate focus on growing the market. California is still in the early-adopter stage of the ZEV market, with ZEVs accounting for about 3.6% of new vehicle sales in the state. HEVs, which do not require any change in customer behavior or new infrastructure, are currently only 4.6% of the California market[3]. Growing the

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[1] 90% reduction from 2010 levels. See http://www.toyota-global.com/sustainability/environment/challenge2050/ for details.

[2] ZEVs include Plug in Electric Vehicles (PHEV), Battery Electric Vehicles (BEV) and Fuel Cell Electric Vehicles (FCV).

[3] The California HEV sales rate has dropped over the last 3 years from a high of approximately 6.8% in 2013 to 4.6% in 2016. We believe that low gasoline prices are a major contributor in reducing the attractiveness of HEV and all advanced technology vehicles.

market and transitioning to more ZEVs requires a tremendous effort to redirect society – automakers must develop desirable vehicles that can be sold as part of a profitable business model, and California must focus on policies that help pave the way. This includes flexibility in the regulation, continued vehicle incentives (monetary and non-monetary), and a process of continuous improvement of infrastructure buildout policies, particularly hydrogen infrastructure.

Moreover, while all of this effort is undertaken in California, it is also abundantly clear that the market realities in the S177 states are vastly different than in California, and that some form of regulatory and policy adjustments will be necessary to address the unique challenges of that market. For example, it is imperative that the S177 states start planning for installation and funding of hydrogen infrastructure, since FCVs are a key ZEV technology that can overcome some of the barriers BEVs present, particularly that of colder-temperature operation seen in the S177 states. Further, since California has been a welcomed leader in supporting FCVs and hydrogen infrastructure, the S177 states can learn from California's experience and possibly avoid some of the setbacks, described in more detail below, that we have experienced in the early phases of infrastructure buildout in California.

FCV and Hydrogen Infrastructure

After billions of dollars of global research and development, the Toyota Mirai, the Hyundai Tucson, and the Honda Clarity FCVs are now available in California with other manufacturers soon following suit. These vehicles will provide significant range (in the case of the Mirai, over 300 miles per fueling), and with a refueling time of only three to five minutes, we believe FCVs will serve as a compelling solution for many California consumers and businesses looking for ZEV options.

Toyota believes that FCVs have the greatest potential for electrifying the full spectrum of vehicles, from passenger cars to Class 8 heavy-duty trucks. However, unlike BEVs, the early introduction is more difficult because the vehicle and infrastructure are more reliant on each other for success. We have a good start with 26 stations in operation now in California and over 1,300 Mirai sold or leased, but we are behind our sales targets in part because we were expecting 48 or more stations by this time. Toyota would like to work with ARB and the CEC to improve the station buildout process to enable the mass introduction of FCVs needed to expand the market.

The buildout of hydrogen infrastructure must be accelerated in order to approach the aggressive ZEV targets set by the Governor and the Legislature, we need to revisit how we get stations to retail operation and develop creative ways to accelerate station development to get the 100 AB 8 stations in place by 2020. We would like to work further with the ARB and the CEC to review learnings so far and make adjustments to those processes that need improvement. As we look past the first 100 stations, Toyota estimates that by 2025 approximately 225 stations with capacities ranging from 400-800 kg/day will be needed for a robust FCV market. This is another area we would also like to work with the state so that California can be the leading market for FCVs. We believe more is needed to not only speed the path to the first 100 stations, but to also lay the groundwork for California to move beyond these early stations to build a more robust, reliable network of hundreds of stations to service a growing customer base.

For these reasons, Toyota requests that the ARB continue to look for creative ways to incentivize hydrogen infrastructure investments under ARB's existing programs. A more robust network of stations will increase the potential for more ZEVs, and more ZEV customers, across the economic spectrum -- and in more regions of the state.

PHEV-Related Recommendations

While FCVs have the greatest mass market potential in the long term, we believe that PHEVs are a highly attractive option in the short to midterm as fuel cell technology matures and hydrogen infrastructure is built out. We believe as technology improves, PHEVs will become more attractive and have the potential for greater expansion to larger vehicles as well. The latest generation Toyota PHEV, the Prius Prime, has a greater range and higher power than our first plug-in Prius, giving customers a more EV-like experience. Further, expansion of PHEVs in the market facilitates electric drive technology expansion overall as more batteries, motors, and power electronics would be developed and deployed in the market at a rapid rate.

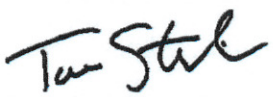
Based on the comments above, we disagree with the staff report recommendation to make no changes to the PHEV provisions. Increasing the ability to comply with the ZEV requirements by using greater volumes of PHEVs would help address market realities in California and the S177 ZEV states. Overall, we believe that PHEVs have broader appeal since they are "no compromise" on range or refuel time and availability when long trips are necessary. In addition, PHEV technology is easier to adapt to market needs in colder climates. Toyota therefore requests that, at a minimum, CARB reconsider increasing the compliance cap for PHEVs.

Additional Regulatory Incentives

Toyota believe that the credit system is an effective method for the regulatory agency to incentivize more capable FCEV, BEVs and PHEVs. With this in mind, we believe that modification which give additional credits for vehicles with greater utility (such as all-wheel-drive, greater seating capacity, etc.) and an increase in the maximum range base credit (currently capped at 80 miles for PHEVs and 350 miles for ZEVs, respectively) will help incentivize more diverse and longer-range vehicles.

If you have any questions or comments, please contact Michael Lord at (310)787-5644 or michael.lord@toyota.com.

Sincerely,



Tom Stricker, Vice President
Product Regulatory Affairs
Toyota Motor North America

CC: Richard Corey
Alberto Ayala
Annette Hebert
Michael McCarthy
Analisa Bevan
Joshua Cunningham
Shobna Sahni