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**Joint Comments of Alliance of Automobile Manufacturers and Association of Global Automakers on
Draft ISO Board Vision Discussion Paper**

November 20, 2017

The Alliance of Automobile Manufacturers¹ (Alliance) and the Association of Global Automakers² (Global Automakers) appreciate the opportunity to provide these joint comments to the California Independent System Operator (ISO) Board of Governors and Management on the Draft ISO Board Vision Paper. The current draft document clearly lays out some of the major “Trends” and “Tasks” facing CAISO as the organization moves towards 2030.

Our two associations represent nearly every car and light-truck manufacturer and about 99% of the new vehicle market in California. Our manufacturers are offering a wide range of fuel-efficient and advanced-technology vehicles, including over 30 models in various vehicle segments of plug-in hybrid, battery, and fuel cell-electric vehicles. Based on manufacturer announcements, the California Air Resources Board estimates that by 2021, there will be 80 different electric-drive vehicles for sale in the market.³ There is an undeniable trend in both the market and in the regulatory environment toward greater electrification – hydrogen and grid-powered – of the vehicle fleet. Vehicle electrification will not happen in isolation, and dedicated efforts to create consumer awareness, provide consumer incentives, and develop hydrogen and electric grid infrastructure are critical to supporting and growing the market.

Based on the draft document, we would like to make the following recommendations:

The Paper Should Consider the Benefits of Hydrogen for Vehicles and Stationary Storage

Virtually every major car company is currently pursuing a variety of vehicle electrification strategies, including plug-in hybrids (PHEV), fully battery-electric vehicles (BEV), and hydrogen fuel cell-electric vehicles (FCEV). The California Energy Commission (CEC), Air Resources Board (ARB), and other stakeholders are supportive of this multi-faceted technology approach. The Alliance and Global Automakers believe that a variety of options and technology types are likely needed to support long-term environmental goals and thus have been working with legislators, regulators and other stakeholders to build markets that will support *all* electric-drive technologies. At present, the Draft Vision Paper does not address the potential impacts of hydrogen for vehicle electrification or stationary applications.

¹ Alliance members are BMW Group, Chrysler Group LLC, Ford Motor Company, General Motors, Jaguar Land Rover, Mazda, Mercedes-Benz USA, Mitsubishi Motors, Porsche, Toyota, Volkswagen, and Volvo.

² Global Automakers’ members include Aston Martin, Ferrari, Honda, Hyundai, Isuzu, Kia, Maserati, McLaren, Nissan, Subaru, Suzuki, and Toyota. For more information, please visit www.globalautomakers.org.

³ California Air Resources Board. “California’s Advanced Clean Cars Midterm Review Summary Report for the Technical Analysis of the Light Duty Vehicle Standards,” 2017, at ES-41.

The Introduction and Trends 4, 7, and 8 should acknowledge that some portion of electric vehicles (EV) in the market will be fueled by electricity produced by hydrogen onboard the vehicles. This could include renewable hydrogen produced by electrolysis of renewable electricity or other means. The portion of the EV market that will be hydrogen fueled is readily available from the ARB and CEC through their ZEV regulations and annual AB-8 report. This inclusion ensures that stakeholders reading the Vision Paper understand that not all EVs will be BEVs or PHEVs, and will plan electricity grid upgrades, Integrated Resource Plans, etc. appropriately.

Similarly, Trends 4, 5, and 7 should acknowledge that stationary hydrogen fuel cells could provide equivalent benefits to batteries and other forms of energy storage. In some applications, stationary fuel cells could be a more appropriate solution. For example, stationary hydrogen fuel cells can provide essential energy storage solutions for intermittent renewable energy. This is especially true for energy storage or energy shifting that is necessary for periods of weeks and months, where the function is superior to batteries. As California approaches its 50% renewable target, the importance of these technologies will only continue to increase.

The Paper Should Encourage Dialogue with Automotive Companies on Vehicle-Grid Issues

Trend 7 discusses how EVs could charge intelligently in order to absorb excess renewable generation, reduce peak demand, and optimize the overall grid. While grid services could be a secondary revenue source for EVs, facilitating markets and services for low carbon and zero carbon transportation should be the ultimate driver.

An owner of an EV counts on it to provide reliable transportation. This is the case both for individually-owned vehicles, as well as vehicles operating as part of a fleet or shared mobility application. Grid services, such as controllable charging (V1G), are a potential secondary revenue source for vehicle owners that also provide a benefit to CAISO. Regardless of the specific technological application, CAISO's approach should ensure that the needs and preferences of the vehicle owner, such as a full charge by a certain time, are paramount.

To this end, we propose that CAISO include collaboration and discussion with automotive companies as a bullet point in the Tasks section of Trend 7. In addition, the Guiding Questions section should also explore:

- What new or existing grid services would be most effective for EVs to participate in
- What impact would time of use rates have on EV charging behavior, specifically at TOU off-peak start times
- How the CAISO could signal a need to demand increase (also called "reverse demand response") to EVs to help alleviate renewable energy curtailment and maximize carbon-free mobility
- How to minimize any impact grid services could have on EV owners use of their vehicles

By better understanding EV load and its potential for responding to renewable generation, CAISO will better understand its future market participants.

Additionally, the Alliance and Global Automakers recommend that CAISO consider adding a new Task to conduct consumer education and awareness activities. To help support the ongoing rollout of EVs in the market, there cannot be an assumption that consumers will learn on their own about grid services.

There needs to be proactive consumer education about how consumers can leverage their EVs to benefit from grid services, and CAISO may be well positioned to help fulfill this role.

The Paper Should Balance CAISO’s Vision with Its Role as a System Operator

The paper acknowledges that “many of the actions suggested herein are not within the purview of the ISO.” Indeed, Trend 7’s Task and Guiding Question sections on incentives for EVs and EV infrastructure fall well outside of CAISO’s responsibility and authority. As explained above, vehicle electrification in California will include PHEV, BEV, and FCEVs, and will require incentives and investments for all types of infrastructure. CAISO’s recommendations on transportation incentives, infrastructure support mechanisms, etc. should acknowledge this reality.

Furthermore, CAISO should consider whether it is appropriate for a nonprofit grid operator to endorse subsidies and other support mechanisms that would have a direct impact on CAISO’s own market participants. We believe that CAISO should remain aware of the subsidies and study them on their own merits, but refrain from supporting those that favor one type of vehicle over another. Through these studies, CAISO can help policy makers, market participants, and other stakeholders better understand the impacts of vehicle electrification on electricity markets and transmission.

Thank you for your consideration of our comments.

Sincerely,



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