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Secretary for
Environmental Protection

Air Resources Board

Mary D. Nichols, Chairman
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Edmund G. Brown Jr.
Governor

October 10, 2014

The Honorable Ernest Moniz
Secretary of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Subject: Quadrennial Energy Review

Dear Secretary Moniz:

The California Air Resources Board (ARB) appreciates the opportunity to provide formal comments for the first year of the Quadrennial Energy Review (QER). The national scope of the QER provides a unique platform to share best practices among states and outline necessary paths forward to create a resilient energy infrastructure for our growing economy. I encourage you to consider California's experience in developing the QER and implementing its recommendations, as our state has long been a leader in forward-looking planning and implementing policies to tackle pressing energy and environmental challenges.

As referenced in the June QER presentation, climate change is first among the greatest near- and long-term infrastructure vulnerabilities. ARB fully agrees with this assessment, and under Governor Jerry Brown, we have made emissions of greenhouse gases a unifying metric that guides energy planning throughout the state.

Along those lines, we are working to integrate high levels of intermittent renewable energy onto our electricity grid and millions of electric and fuel cell vehicles onto our roads. Planning for this future has shown that our electricity and transportation systems are becoming inextricably linked, and that by integrating systems, we can improve operational efficiencies and reliability while cutting costs and emissions. I strongly recommend you include transportation and interactions among energy and transportation systems in your QER planning.

Much of our transportation and energy policy in California is driven by two defining objectives. We must reduce emissions of criteria air pollutants significantly, by more than 80 percent in many parts of the state, in order to meet federal air quality standards

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: <http://www.arb.ca.gov>.

California Environmental Protection Agency

for 2023 and 2032. By state law, we must also reduce greenhouse gas emissions to no more than 1990 levels by 2020, and have a goal of reducing them by 80 percent below those levels by 2050. These goals, along with our progress and plans to meet them, are described in the Climate Change Scoping Plan Update.¹ The technology and policy solutions needed to reduce both criteria and greenhouse gas emissions are similar, and achieving both sets of goals will require a widespread shift to renewable energy, low carbon fuels, and zero-emission vehicles in both the light-duty and heavy-duty sectors (including plug-in electric vehicles and fuel cell vehicles). These actions will impact our transmission, storage and distribution systems. The QER would benefit from considering scenarios in which we fully electrify transportation and implement advanced energy generation and storage systems, such as fuel cells and battery storage, to enable significant increases in renewable energy for both the electricity and transportation sectors.

In March 2012, Governor Brown signed Executive Order B-16-2012, which set a goal to put at least 1.5 million zero-emission vehicles on California roads by 2025. The state subsequently developed an interagency ZEV Action Plan in February 2013, identifying over 100 strategies to meet the milestones established in the Executive Order.² And through the California Plug-In Electric Vehicle Collaborative and California Fuel Cell Partnership, we are working with public, private and non-profit sector partners to facilitate market growth for these technologies in the state. We are well on our way to meeting the Governor's target. California is home to more than 100,000 zero emission vehicles, about 40 percent of the U.S. total.

Our focus on zero-emission vehicles is not limited to passenger cars. In order to meet our air quality and climate goals, we need a wide array of zero-emission vehicles in medium- and heavy-duty fleets, as well. California is supporting demonstrations and pilots of battery electric and fuel cell buses, drayage trucks, package delivery vehicles and other freight vocational vehicles.³ ARB is working with other government agencies and stakeholders to develop a Sustainable Freight Strategy to bolster economic growth and competitiveness, achieve our air quality and climate goals, and protect highly impacted populations in California. The strategy will improve the movement of goods throughout the state and nation by significantly improving efficiency and electrifying both rail and trucks using batteries and fuel cells.

¹ ARB Scoping Plan Update, <http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm>

² Zero-Emission Vehicle Action Plan, [http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_\(02-13\).pdf](http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf)

³ <http://www.arb.ca.gov/msprog/aqip/pilots.htm>

California is not alone in its zero-emission vehicle efforts. Following a multi-state Memorandum of Understanding, eight states, including California, issued a Multi-State ZEV Action Plan in May 2014.⁴ We are also finding international partners, and are working with Canadian provinces, China, Japan, Mexico and Europe to improve air quality, fight climate change, and build markets for zero-emission vehicles.

Moving forward, both plug-in electric vehicles and fuel cell electric vehicles can be utilized to help balance and optimize our increasingly renewable electricity grid. Electric vehicle charging or hydrogen production from electrolysis can be controlled to help balance load and provide ancillary services. Both batteries and hydrogen provide an opportunity to store excess renewable generation and use it for transportation, or potentially feed it back to the electricity grid. California is committed to supporting markets for energy storage, and has a target of at least 1,325 megawatts of new storage capacity by 2020.

The QER should consider the role of batteries, fuel cells, and hydrogen for stationary as well as transportation applications. California has almost 35 megawatts of installed stationary fuel cell capacity,⁵ and is home to the California Stationary Fuel Cell Collaborative, a public-private partnership working to accelerate commercialization of the technology.

In addition to targeted policies and programs to support renewable and zero emission technologies, performance-based policies are guiding a continual reduction in emissions and increase in investment in clean energy. California's Low Carbon Fuel Standard and Cap-and-Trade program ensure that our fuels mix will get cleaner, and that greenhouse gas emissions in our state will decline to targeted levels, while offering flexibility in how businesses and the market achieve those goals. Ultimately, meeting our ongoing air quality and climate goals will require moving from conventional liquid fuels to advanced biofuels, electricity, hydrogen, and renewable natural gas.

We are planning for the future now, and grappling with many issues connecting energy infrastructure and transportation. In many ways, California provides a test bed for solutions to environmental, energy, and transportation challenges that others will inevitably face. ARB welcomes the opportunity to provide additional support or information as you develop the QER, and as we continue to move forward in our own policy and systems planning.

⁴ Multi-State Action Plan, <http://governor.maryland.gov/documents/MultiStateZEVActionPlan.pdf>

⁵ One such collaborative pilot project was the Orange County Sanitation District's hydrogen fueling station—the first in the world to source hydrogen from wastewater. As the stationary fuel cell generates heat and 250kW of power for facility use, it also produces 100kg of hydrogen for the vehicle fueling station operated by Air Products.

The Honorable Ernest Moniz
October 10, 2014
Page 4

Thank you for the opportunity to comment on the first year of the QER. I look forward to continued collaboration.

Sincerely,

A handwritten signature in blue ink, reading "Mary Nichols". The signature is fluid and cursive, with the first name "Mary" and last name "Nichols" clearly distinguishable.

Mary Nichols
Chairman
California Air Resources Board