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**Fuel Cell and Hydrogen Energy Association Transportation and Climate Initiative Comments**

The Fuel Cell and Hydrogen Energy Association appreciates the opportunity to provide input to the Transportation and Climate Initiative’s (TCI) and discuss the critical role that fuel cell vehicles (FCVs) and hydrogen will play in our low-carbon transportation future.

The Fuel Cell and Hydrogen Energy Association (FCHEA) is the trade association dedicated to the commercialization of fuel cells and hydrogen energy technologies. FCHEA member organizations represent the full global supply chain for hydrogen and fuel cells, including automakers; material, component, stack and system manufacturers; hydrogen producers and energy companies; government agencies; trade associations; utilities; and end users.

As the TCI develops, we encourage the states to be inclusive of all electric zero-emission vehicles (ZEVs), including fuel cell vehicles (FCVs) and the hydrogen stations that fuel them as part of this plan. Fuel cell technologies are commercially viable today in a wide range of light, medium, and heavy-duty on-road and off-road vehicle applications, and will be instrumental to Mid-Atlantic and Northeast states’ transportation future.

Fuel cell vehicles (FCVs) are electric vehicles. Rather than storing electricity from the grid in a battery, FCVs combine oxygen from the air with hydrogen fuel to generate electricity on board the vehicle to power an electric motor, with the only tailpipe emission being water vapor.

FCVs get excellent fuel economy offering 300-400 miles of driving range per tank of hydrogen fuel, refueling in three to five minutes, experience minimal effects from cold weather, and operate quietly with highly responsive performance characteristics, all with zero-emissions. Fuel cells are scalable and can be integrated into any model or make, from compact to sedan to sport utility, crossovers, or trucks. In other words, fuel cell vehicles offer consumers the option of Zero Emissions with Zero Compromises.

With the goal of low-carbon transportation in mind, fuel cells must play an integral role. Several states and jurisdictions involved in the TCI have signed onto the ZEV Memorandum of Understanding (MOU) with California agreeing to commit to at least 3.3 million ZEVs on their roadways by 2025, as well as adopted California’s emissions standards which requires automakers to sell ZEVs. FCHEA encourages TCI to consider California’s view of fuel cells being vital to its ZEV activities. In fact, the California Air Resources Board (CARB), the agency charged with oversight of the state’s ZEV program, has stated “*successful market launch and continued growth of both FCEVs and California’s hydrogen fueling network are essential for the State to meet zero-emission vehicle goals set forth in Governor Brown’s Executive Order B-16-2012 as well as greenhouse gas reduction, air quality improvement, and petroleum reduction goals set forth in state and federal laws and programs*.”[[1]](#footnote-1) Automakers similarly view fuel cells as essential to reaching the state’s ZEV mandate.

In just the few short years of being available, today there are more than 7,000 light-duty fuel cell vehicles operating in California offered by Toyota, Honda, and Hyundai. In addition, California is home to dozens of fuel cell buses operating in revenue service; the state is investing millions in fuel cell class 8 trucks to help clean up its ports; fuel cell-powered medium-duty delivery vans are in demonstration; and other fuel cell transportation projects are all underway. There are 40 public retail hydrogen stations servicing California’s consumer fleet of FCVs, with another 25 stations in various stages of development. This network of stations is being developed through cost-sharing between the state and private industry and will continue until such time that the infrastructure is sustainable through private investment alone. In the northeast, private industry has already begun developing an early network of 12 hydrogen fueling stations to support an initial launch of vehicles.

Operating an FCV is no different than the gasoline vehicles consumers use today, beyond the increased performance and maintenance benefits of electric drive. When fuel is running low, you simply pull into a station with a hydrogen dispenser, swipe a credit card, insert the fuel pump, and in a few short minutes, you are back on the road. By giving the option to maintain driver’s habits of returning to a central station whenever they need more fuel, FCVs can provide a zero-emission option for consumers that live in multi-family dwellings, have off-street parking, or are without access to recharge their vehicle at work or home. Fuel cells can expand access to zero-emission vehicles to new markets and customers.

Hydrogen is an environmentally friendly fuel. Hydrogen-powered fuel cell vehicles generate zero carbon, NOx, SOx, or particulate matter emissions from the tailpipe, improving local air quality and supporting public health. No matter the source of hydrogen, FCVs dramatically reduce emissions on a well-to-wheel basis compared to combustion vehicles and are on par in reductions with battery electric vehicles (BEVs). When hydrogen is generated from renewable or zero-carbon sources – such as wind, solar, biomethane, or natural gas with carbon capture and sequestration – carbon emissions are completely eliminated.

Just as battery electric vehicles are getting cleaner as the utility grid adopts more renewable power generation, so too is hydrogen production. In fact, in September 2018 the Hydrogen Council, a global CEO coalition of fuel cell and hydrogen companies, announced an ambitious goal of fully decarbonizing hydrogen fuel for transport by 2030.[[2]](#footnote-2) This goal would set the stage for a significant environmental impact and put hydrogen-fueled transport on a much faster path to zero-carbon intensity than the one charted by utilities for the grid. However, accomplishing this task will require the collaboration of local and state governments. By supporting FCV deployment, states can significantly reduce the transportation sector’s environmental impact, reduce local air pollution, and promote public health.

In the lead up to and rollout of commercial offerings of these vehicles, the U.S. Department of Energy, automobile manufacturers, and industrial gas companies have and are continuing to invest billions of dollars in fuel cell and hydrogen technologies. While California has committed to $200 million over a period of ten years to support hydrogen infrastructure development, industry has already far exceeded that. Recent announcements of investments collectively total hundreds of millions of dollars from multiple companies for hydrogen production to support current and future fuel cell transportation use. Over just the last year, several industrial gas companies have collectively announced nearly a billion dollars in investments to develop new hydrogen production facilities in response to projected hydrogen supply needs. Should the Northeast and Mid-Atlantic states move forward with supporting fuel cells and hydrogen as part of the TCI, this industry stands ready to invest in these markets as well.

While America is currently the world leader in fuel cell technologies, home to double the number of FCVs as the next largest country Japan, a leading manufacturer of key fuel cell hydrogen components, and a significant exporter of stationary fuel cell systems, that gap is quickly tightening due to government interest abroad. Europe, Japan, South Korea, and China are investing heavily and moving rapidly to deploy thousands of zero-emission fuel cell cars, buses, and trucks, the hydrogen fueling stations needed to support them, and installing large-scale fuel cells for power generation. Now is the time to pursue programs to expand fuel cell and hydrogen systems to maintain our competitive advantage and ensure American technology leadership, as well as preserving future jobs, manufacturing, and growth that the industry will bring. There is potential for hundreds of thousands of jobs in the future fuel cell and hydrogen industry, however, these jobs will be geared towards markets and regions that support and encourage the industry to develop.

As development of TCI continues, we ask that any program be inclusive of all ZEVs, including FCVs. We ask that you provide a level playing field and provide parity for all ZEVs, including both vehicle deployment and infrastructure development. In addition, any program that may fund ZEV infrastructure, we encourage the program to set aside a portion of that funding specifically for development of hydrogen fueling infrastructure. Implementing a ZEV technology neutral approach will be simple, fair, and allow consumers more choice.

As planning for the TCI continues, state agencies and policymakers have ready access to network planning expertise. Station developers with real world experience gained from planning and building California’s hydrogen station network, as well as the early network underway in the Northeast, are available to share best practices. Developers have significant subject matter expertise regarding fuel cell application and infrastructure design, planning, and implementation. FCHEA member companies look forward to sharing their expertise with stakeholders as projects are designed, planned, and implemented. The U.S. Department of Energy-affiliated research laboratories provide sophisticated technical services, such as network planning tools that model preferred station locations, hydrogen production, and fuel cell vehicle costs.

The fuel cell and hydrogen industry is capable of great things, but we need to be able to compete on equal footing with other technologies, with an eye to always letting the consumer have options and be the ultimate decider in the marketplace. By supporting development of fuel cell and hydrogen technologies, the TCI states can both mitigate the causes of climate change, while supporting the region’s economic future and protecting public health.

Thank you for your consideration of our input. FCHEA looks forward to working with TCI to ensure that the full potential of hydrogen and fuel cell technologies are included in the final policy proposal.

1. <https://ww3.arb.ca.gov/msprog/zevprog/ab8/ab8_report_2016.pdf> [↑](#footnote-ref-1)
2. <http://hydrogencouncil.com/our-2030-goal/> [↑](#footnote-ref-2)