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CARB releases annual evaluation of FCEV deployment and hydrogen station network development

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The California Air Resources Board has released the [2020 issue](#) of its *Annual Evaluation of Fuel Cell Electric Vehicle Deployment and Hydrogen Fuel Station Network Development*, pursuant to the requirements of AB 8 (2013). This report is the seventh annual publication.

The Annual Evaluations provide CARB's latest assessments of California's on-road fuel cell electric vehicle fleet, auto manufacturer projections for future deployment volumes in California, and progress in development of California's hydrogen fueling station network. CARB staff's analyses and recommendations for new station locations, capacities, and technical capabilities are also discussed in the reports.

According to the report, California's hydrogen fueling station network has continued to add new, highly capable stations in the past year while the number of Fuel Cell Electric Vehicles (FCEVs) on-the-road continued to increase. Growth in these industries continued despite significant events within and outside the industry (most recently the onset of COVID-19) that led to a slower

development pace than previously estimated.

The report found that the hydrogen fueling industry is responding favorably to the State's maturing support mechanisms. The California Air Resources Board (CARB)'s Low Carbon Fuel Standard's (LCFS) Hydrogen Refueling Infrastructure (HRI) credit provision has initiated the development of nine additional stations. The California Energy Commission (CEC) released its latest Grant Funding Opportunity (GFO) 19-602 to solicit applications to co-fund new hydrogen fueling stations; the CEC last week announced recommended funding of \$39.1 million to three awardees —FirstElement, Iwatani and Shell—for 36 light-duty (passenger vehicle) hydrogen stations, stemming from the GFO.

Another 87 stations were also recommended for funding to these same awardees in subsequent funding batches.

GFO 19-602 is a multi-year effort designed expressly to enable multi-year network plans expected to help station designer/operators make larger purchase orders, support development of the upstream station equipment supply chain, and unlock economies of scale. These are necessary steps to move California's hydrogen fueling and FCEV industries out of the current early adopter phase and into the broader mass-market.

California has set hydrogen infrastructure targets with the goal of developing and growing FCEV and hydrogen fueling market scale. Assembly Bill 8 (AB 8; Perea, Chapter 201, Statutes of 2013) requires the establishment of at least 100 hydrogen fueling stations to launch the FCEV market in the state. More recently, Executive Order B-48-18 (EO B-48-18) tasked these same agencies with working towards a network of 200 stations by 2025.

Achieving the goal of 200 stations by 2025 puts the state on a path to achieve economies of scale and future growth that does not depend on State incentives.

Recent estimates point to the AB 8 grant process enabling the establishment of as many as 122 stations in California's hydrogen fueling market. The combination of LCFS HRI credits and GFO 19-602 are the State's strongest support mechanisms for reaching the 200-station goal.

Industry stakeholders continue to take action toward larger hydrogen markets within California, the report found. Hydrogen fuel providers have invested in expansion of hydrogen fuel production and distribution facilities to serve California's developing FCEV market. Collaborative hydrogen industry organizations have announced efforts to increase the use of renewable, low-carbon, and sustainable resources in the production of hydrogen.

The challenge before the public and private stakeholders of California's hydrogen and FCEV industries now is to ensure that progress not only continues but accelerates. Of particular importance, CARB finds that the FCEV market may soon experience an acceleration out of the earliest market development phase, and that the shift to broader consumer adoption depends on expanded and accelerated station network deployment.

CARB recommends that the Energy Commission fully leverage all funds available for hydrogen fueling station development through the current multi-year funding solicitation GFO 19-602.

Successful expansion of the FCEV market will rely on several complementary factors in addition to the development of hydrogen

fueling infrastructure. New supply chains and manufacturing capacity, especially at large scale to support market acceleration, need to develop, the report said.

Consumer awareness and acceptance of the new technology needs to grow. The network of facilities that produce hydrogen fuel (especially renewable hydrogen) specifically for transportation uses needs to expand and mature, enabling lower prices paid by the consumer and building resiliency of supply. Consumer incentives may need to fill the affordability gap as the market matures.

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