

Date of Hearing: July 5, 2021

ASSEMBLY COMMITTEE ON TRANSPORTATION
Laura Friedman, Chair
SB 643 (Archuleta) – As Amended June 29, 2021

SENATE VOTE: 39-0

SUBJECT: Fuel cell electric vehicle fueling infrastructure and fuel production: statewide assessment

SUMMARY: Requires the California Air Resources Board (CARB), in consultation with the State Energy Resources Conservation and Development Commission (CEC), and the Public Utilities Commission (CPUC), to prepare a statewide assessment of fuel cell electric vehicle fueling infrastructure and fuel production needs for zero-emission trucks, buses, and off-road vehicles. Specifically, **this bill:**

- 1) Requires CARB to complete the assessment by December 31, 2023, post the assessment on its website, and update the assessment at least once every three years
- 2) Requires the assessment to be based on the goals of Executive Order (EO) N-79-20 and any other CARB regulation that requires or allows zero-emission vehicles (ZEVs) in the heavy-duty vehicle and off-road sectors.
- 3) Requires the assessment to consider:
 - a. All necessary fuel production and distribution infrastructure, including dispensing equipment, distribution equipment, production equipment, storage equipment and supporting hardware and software.
 - b. All heavy-duty and off-road vehicle categories.
 - c. Road, highway, and off-road electrification.
 - d. Port and airport electrification.
 - e. Other programs to accelerate the adoption of fuel cell electric vehicles.
- 4) Requires the assessment to examine existing and future fuel production and distribution infrastructure needs throughout the state, including in low-income communities.
- 5) Requires the assessment to list synergies and estimate the potential for hydrogen to contribute to emissions reductions across sectors, including truck, bus, off-road vehicle, locomotive, maritime, and aviation sectors.
- 6) Requires the assessment to take into consideration the process for creating hydrogen and include an evaluation of the ability of hydrogen to:
 - a. Enable a more renewable grid.
 - b. Provide grid services.

- c. Decarbonize hard-to-electrify industries and remote locations.
 - d. Contribute to microgrids.
 - e. Improve energy resilience.
- 7) Requires CARB to regularly seek data and input relating to fuel cell electric vehicle fuel production and fueling infrastructure from CPUC, CEC, the Department of Food and Agriculture, the Governor's Office of Business and Economic Development, and interested stakeholders.
 - 8) Provides that the assessment does not constitute a directive instituting a mandate on state funding. Prohibits the assessment from limiting CEC's ability to award fuel cell electric vehicle fueling infrastructure and fuel production program funds on a competitive basis.
 - 9) Repeals its provisions January 1, 2030.

EXISTING LAW:

- 1) Creates the Alternative and Renewable Fuel and Vehicle Technology Program (also known as the Clean Transportation Program, CTP) to develop and deploy technology and alternative and renewable fuels in the marketplace, without adopting any one preferred fuel or technology. (HSC 44272)
- 2) Requires CEC to allocate \$20 million annually from the Alternative and Renewable Fuel and Vehicle Technology Fund for hydrogen-fueling stations until there are at least 100 publicly available hydrogen-fueling stations in operation in the state. (HSC 43018.9)
- 3) Requires CARB, until January 1, 2024, to annually evaluate, and then report to CEC, the need for additional publicly available hydrogen-fueling stations for the subsequent three years in terms of quantity of fuel needed for the actual and projected number of hydrogen-fueled vehicles, geographic areas where fuel will be needed, and station coverage. (HSC 43018.9)
- 4) Requires CEC and CARB to jointly review and annually report, until January 1, 2024, on progress toward establishing a hydrogen network that provides the coverage and capacity to fuel hydrogen vehicles. (HSC 43018.9)
- 5) Requires CEC, in partnership with CARB, and in consultation with the State Water Resources Control Board (Water Board), the Department of Food and Agriculture (CDFA), and other relevant state agencies to develop and adopt a state plan to increase the use of alternative transportation fuels. (HSC 43866)
- 6) States that it is the duty of CDFA acting through the Division of Measurement Standards to enforce provisions related to dispensing motor vehicle fuels (which includes fuel consumed in fuel cells, i.e. hydrogen) and to employ inspectors as may be necessary. (BPC 13400, 13590)
- 7) Requires the Department of Conservation to supervise the operation, maintenance, and removal of tanks and facilities attendant to oil and gas production, including pipelines. (PRC 3106)

FISCAL EFFECT: Unknown

COMMENTS: In 2006, the Legislature passed the California Global Warming Solutions Act of 2006 [AB 32 (Nunez), Chapter 244], which created a comprehensive, multi-year program to reduce greenhouse gas (GHG) emissions in California. AB 32 required CARB to develop a Scoping Plan that describes the approach California will take to reduce GHGs to achieve the goal of reducing emissions to 1990 levels by 2020. SB 32 (Pavley), Chapter 249, Statutes of 2016 requires CARB to ensure that statewide GHG emissions are reduced to at least 40% below the 1990 level by 2030.

Reducing emissions in the transportation sector requires an approach to address a full range of system improvements relating to efficient land use, affordable housing, infrastructure for cyclists and pedestrians, public transit, new vehicle technologies, fuels and freight. In terms of vehicle technologies, Governor Newsom issued EO N-79-20 which requires 100% of medium- and heavy-duty vehicles in the state be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks. EO N-79-20 charges CARB with developing and proposing medium- and heavy-duty vehicle regulations requiring increasing volumes of new zero-emission trucks and buses sold and operated in the state towards that goal.

Existing law defines ZEV as “a vehicle that produces no emissions of criteria pollutants, toxic air contaminants, and GHGs when stationary or operating, as determined by CARB.” ZEVs include battery electric vehicles (BEVs), which run exclusively on batteries, and hydrogen fuel cell electric vehicles (FCEV), which are powered by electricity stored in hydrogen fuel.

The state has been planning for the charging and fueling infrastructure necessary to support increased numbers of ZEVs required by legislation and EOs. AB 2127 (Ting), Chapter 365, Statutes of 2018 requires CEC, working with CARB and CPUC, to prepare and biennially update a statewide assessment of the electric vehicle charging infrastructure needed to support the levels of BEV adoption required for the state to meet its goals of putting at least 5 million ZEVs on California roads by 2030 and reducing emission of GHGs to 40% below 1990 levels by 2030. EO N-79-20 required CEC to update this assessment based on the new ZEV goals established by the EO.

AB 8 (Perea), Chapter 401, Statutes of 2013 requires CARB to annually aggregate and publish 1) the number of FCEVs that manufacturers project to be sold over the next three years and 2) the total number of FCEVs registered with the Department of Motor Vehicles (DMV). Additionally, AB 8 requires CARB to evaluate the need for additional publicly available hydrogen-fueling stations for the next three years in terms of quantity of fuel needed for the actual and projected number of FCEVs, geographic areas where fuel will be needed, and station coverage. CARB must then report these findings to the CEC in terms of number of stations, geographic areas where additional stations will be needed, and minimum operating standards, such as number of dispensers, filling protocols, and pressures.

This bill focuses the assessment on FCEV fueling infrastructure and fuel production needed to support the adoption of zero-emission trucks, buses, and off-road vehicles. While AB 8 did not explicitly call out passenger vehicles and light-duty trucks, most of the FCEVs currently on the road fall into this category. Based on DMV registration data, CARB estimates that the on-road

FCEV fleet is 7,172¹ as of April 1, 2020. CARB's 2020 Mobile Source Strategy calls for the deployment of approximately 1.4 million medium- and heavy-duty ZEVs in California by 2045, but it is unclear what the proportion of FCEVs and BEVs will be.

This bill goes beyond AB 8, which requires evaluation of the necessary number, location, and distribution of hydrogen stations. This bill requires the assessment to examine existing and future fuel production and distribution infrastructure needs throughout the state. A viable hydrogen infrastructure requires that hydrogen be able to be delivered from where it is produced to the point of end-use, such as a dispenser at a refueling station or stationary power site. Infrastructure includes the pipelines, trucks, storage facilities, compressors, and dispensers involved in the process of delivering fuel.² The U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA) has regulated hydrogen pipelines since 1970, and currently approximately 700 miles of hydrogen pipelines nationwide are under PHMSA regulatory jurisdiction.³ In California, the regulation of fuels from production to pump crosses many agency and department jurisdictions.

The conversion of hydrogen to electricity using fuel cells is a zero-emission process, making fuel cell trucks a much cleaner substitute for diesel trucks from the perspective of local air quality. But nearly all commercially produced hydrogen in the United States comes from natural gas⁴, which is comprised primarily of methane. Encouraging the use of hydrogen for transportation purposes increases the use of natural gas usage when currently some cities are taking steps to discourage the use of natural gas as a heating fuel. (Methane, or CH₄, is a GHG far more potent than CO₂.⁵) In the future hydrogen may be produced from water using electricity or from the gasification of coal, which results in substantial GHG emissions unless the CO₂ is captured and sequestered. So while it is clear that at the point of use hydrogen is environmentally superior to diesel, it is less clear from a GHG emissions perspective that hydrogen is superior, particularly compared to battery electric drivetrains. How hydrogen is produced matters. For this reason, amendments taken in the Senate require the assessment to "take into consideration the process for creating hydrogen."

Double referral: This bill was heard by the Assembly Natural Resources Committee on June 23, 2021 and passed out on an 11-0 vote.

According to the author, "To meet our climate goals, California needs to adequately plan and implement hydrogen technologies. This bill tasks the Air Resources Board, in consultation with the California Energy Commission and Public Utilities Commission to prepare a statewide assessment of the fueling infrastructure and fuel production needed to support the adoption of zero-emission trucks, buses, and off-road vehicles."

¹ Industry estimates provided by the California Fuel Cell Partnership indicate cumulative sales of 8,363 across the United States as of June 1, 2020. The vast majority of these sales are in California and may differ from DMV registrations due to differences in the nature and timing of the data. CARB has also confirmed that California Fuel Cell Partnership data likely do not adjust fully for vehicle attrition.

² www.energy.gov/eere/fuelcells/hydrogen-delivery

³ 49 CFR Part 192, Transportation of Natural and Other Gas By Pipeline: Minimum Federal Safety Standards.

⁴ https://afdc.energy.gov/fuels/hydrogen_production.html

⁵ <https://www.epa.gov/gmi/importance-methane>

In support Golden Gate Zero Emission writes, and other groups similarly echo, “Hydrogen fuel cells are a necessary component to California’s climate solution, particularly in the heavy-duty commercial space, but there exists a knowledge gap regarding the hydrogen distribution infrastructure and hydrogen fuel production that is required for California to meet its carbon-neutrality goals.”

Related and previous legislation: AB 1322 (Rivas), of this session, requires CARB, as a part of its scoping plan update, to develop a plan to use sustainable aviation fuels to reduce GHG emission from aircrafts in the state. Requires CARB to address shortfalls in incentives with new incentives and to include in the plan actions that can be taken to ensure the state’s policy incentives for sustainable aviation fuels are comparable to those provided to renewable diesel and other on-road fuels. AB 1322 is currently pending in the Senate Environmental Quality Committee.

AB 1312 (Rodriguez), of this session, changes the mandate that CARB set regulations requiring 33% of hydrogen produced or dispensed for motor vehicles be made from eligible renewable energy sources to instead require the hydrogen be “green hydrogen” as newly defined. AB 1312 is currently in the Assembly Natural Resources Committee.

SB 18 (Skinner), of this session, requires CARB, by December 31, 2022, as a part of the scoping plan and the state’s goal for carbon neutrality, to prepare a strategic plan for accelerating the production and use of hydrogen, including a specific plan to accelerate production and use of green hydrogen in California and an analysis of how curtailed electrical generation could be better utilized to help meet the state’s GHG emissions reduction goals. SB 18 is currently pending in the Assembly Natural Resources Committee.

SB 662 (Archuleta) of this session require CPUC to evaluate and implement policies to promote the development of equipment and infrastructure needed to facilitate the use of hydrogen to fuel low-emission vehicles, as provided. SB 662 was held in the Senate Appropriations Committee

SB 662 (Archuleta) of 2019 would have set targets for in-state production of renewable hydrogen for transportation and required the CPUC to allow gas utilities to file applications for investments to accelerate transportation electrification, including hydrogen and hydrogen related pipelines. SB 662 died in the Assembly Utilities and Energy Committee.

AB 1257 (Bocanegra), Chapter 749, Statutes of 2013 requires CEC, beginning November 1, 2015, and every four years thereafter, concurrent with the preparation of the integrated energy policy report, to identify strategies to maximize the benefits obtained from natural gas as an energy source, as specified.

REGISTERED SUPPORT / OPPOSITION:

Support

350 Silicon Valley
Advanced Structural Technologies, INC.
Alaska Applied Sciences, INC.
Ballard Fuel Cell Systems, INC.
Golden Gate Zero Emission Marine

Gta, INC.
Longitude 122 West, INC.
Millennium Reign Energy
Natural Hydrogen Energy, LLC
Neo-h2
Next Hydrogen
Sacramento Metropolitan Air Quality Management District
Sempra Energy Utilities
T2m Global
Taylor Wharton America, INC.
The Protium Company
U.S. Hybrid Corporation
Ventura County Air Pollution Control District

Opposition

None on file

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