

Date of Hearing: July 5, 2023

ASSEMBLY COMMITTEE ON TRANSPORTATION

Laura Friedman, Chair

SCR 21 (Archuleta) – As Amended March 21, 2023

SENATE VOTE: 38-0

SUBJECT: Clean energy: hydrogen

SUMMARY: Resolves that the Legislature urges the Alliance for Renewable Clean Energy Systems (ARCHES) to prioritize renewable, clean hydrogen for California. Specifically, **this resolution:**

1) Urges ARCHES to:

- a) Focus its efforts in communities with the largest pollution burden for an environmentally just transition;
- b) Invest in energy systems and hydrogen production and distribution infrastructure through a multisector approach;
- c) Ensure projects minimize hydrogen leakage risk;
- d) Develop public policy that enables early markets scalable with private capital; and,
- e) Prioritize the hardest-to-abate sectors with the largest emissions profiles to create economically sustainable markets.

EXISTING LAW:

- 1) Defines “green electrolytic hydrogen” as hydrogen produced through electrolysis, not including hydrogen manufactured using steam reforming or any other conversion technology that produces hydrogen from a fossil fuel feedstock. (Public Utilities Code (PUC) 400.2)
- 2) Requires the Public Utilities Commission (PUC), California Energy Commission (CEC), and Air Resources Board (CARB) to consider green electrolytic hydrogen an eligible form of energy storage and consider its potential uses. (PUC 400.3)
- 3) Declares the policy of the state to achieve net zero greenhouse gas (GHG) emissions as soon as possible, but no later than 2045, and to achieve and maintain net negative GHG emissions thereafter. (Health and Safety Code 38562.2)

FISCAL EFFECT: This resolution is keyed non-fiscal by the Legislative Counsel.

COMMENTS: The federal government is investing money in hydrogen and the state has an opportunity to bring money to California to serve the development and deployment of clean, renewable hydrogen projects and infrastructure. The Legislature has a responsibility to ensure that hydrogen funding prioritizes renewable, clean hydrogen for use in hard-to-abate sectors in California.

The state has ambitious goals to reduce GHG emissions as part of its climate action plan. SB 32 (Pavley), Chapter 249, Statutes of 2016 built upon the Global Warming Solutions Act of 2006 and enacted a goal of reducing GHG emissions to 40% below 1990 levels by 2030. AB 1279 (Muratsuchi), Chapter 337, Statutes of 2022 enacted a goal of carbon neutrality by 2045.

The three largest sources of GHG emissions in California are transportation, electric power, and industrial. According to CARB's GHG Inventory for 2000-2020 by Economic Sector, in 2019 transportation contributed 166 million metric tons of carbon dioxide (MMT CO_{2e}), industry 88 MMT CO_{2e}, and electrical power generation 59 MMT CO_{2e}. GHG emissions from these sectors are the result of burning fossil fuels, such as coal, oil, natural gas, gasoline and diesel.

Hydrogen has potential as an environmentally friendly alternative to fossil fuels. When hydrogen is used in fuel cell electric vehicles, the resulting emissions are only water vapor and warm air as exhaust. Therefore, fuel cell electric vehicles that run on hydrogen are considered zero-emission vehicles. As a carbon-free fuel in industrial applications, the direct combustion of hydrogen releases no CO₂. Hydrogen has multiple possible end-uses. It is important for policy makers to identify the promising applications for hydrogen, because while the use of hydrogen is zero-emission, the production of hydrogen by various methods has differing environmental impacts.

The majority of hydrogen today is produced by steam methane reformation of natural gas, a process which splits hydrogen from the methane and creates CO₂ as a byproduct. Electrolysis, or using electricity to split water, is the lowest carbon-intensive way to make hydrogen, particularly when the electricity utilized is generated by a zero-carbon resource, such as solar power or wind. Electrolysis is currently the most expensive production pathway, and current efforts are focused on scaling and reducing costs for clean hydrogen production.

The environmental impacts of hydrogen, including effects on climate and air quality, can range from very favorable to very unfavorable, depending on production, delivery, end use, and the fuel the hydrogen is replacing. For example, hydrogen produced with fossil fuels and used in a combustion application that replaces a renewable energy source is not a good environmental solution. However, hydrogen produced with zero-carbon energy and used in a zero-emission application that replaces diesel combustion has clear climate and air quality benefits.

ARCHES is California's public-private hydrogen hub consortium to accelerate the development and deployment of clean, renewable hydrogen projects and infrastructure. The US Department of Energy will award \$8 billion to up to 10 regional hydrogen hubs to build self-sustaining hydrogen economies of producers, infrastructure, and users. In partnership with the Governor's Office of Business and Economic Development (GO-Biz), ARCHES unites key public and private stakeholders to build the framework for a California renewable, clean hydrogen hub.

According to the author, "Under the US Infrastructure Investment and Jobs Act, Congress allocated \$8 billion for the creation of multiple hubs dubbed "Hydrogen Hubs" to support clean hydrogen in the United States. California's application is being led by the Alliance for Renewable Clean Hydrogen Energy Systems or ARCHES. [This resolution] simply recognizes ARCHES' hard work and urges them to prioritize renewable, clean hydrogen for California."

Related legislation: AB 1550 (Bennett of 2023) requires, on and after January 1, 2045, all hydrogen produced and used in California for the generation of electricity or fueling of vehicles be "green hydrogen" and makes a facility that generates electricity using green hydrogen an eligible renewable energy resource. This bill is currently on the Assembly floor inactive file.

REGISTERED SUPPORT / OPPOSITION:

Support

Tuolumne County Supervisor, Jaron E. Brandon

Opposition

None on file

Analysis Prepared by: Christine Casey / TRANS. / (916) 319-2093