SB-1075 Hydrogen: green hydrogen: emissions of greenhouse gases. (2021-2022)

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Senate Bill No. 1075

CHAPTER 363

An act to add Section 38561.8 to the Health and Safety Code, to add and repeal Section 25307 of the Public Resources Code, and to amend Section 400.3 of the Public Utilities Code, relating to energy.

[Approved by Governor September 16, 2022. Filed with Secretary of State September 16, 2022.]

LEGISLATIVE COUNSEL'S DIGEST

SB 1075, Skinner. Hydrogen: green hydrogen: emissions of greenhouse gases.

(1) The California Global Warming Solutions Act of 2006 designates the State Air Resources Board (state board) as the state agency charged with monitoring and regulating sources of emissions of greenhouse gases. The state board is required to ensure that statewide greenhouse gas emissions are reduced to at least 40% below the 1990 level by 2030.

This bill would require the state board, in consultation with the State Energy Resources Conservation and Development Commission (Energy Commission) and Public Utilities Commission (PUC), to prepare an evaluation posted to the state board's internet website by June 1, 2024, that includes specified information relative to the deployment, development, and use of hydrogen. The bill would require the state board, in making this evaluation, to consult with the California Workforce Development Board and labor and workforce organizations.

(2) Existing law requires the Energy Commission, beginning November 1, 2003, and every 2 years thereafter, to adopt an integrated energy policy report that includes an overview of major energy trends and issues facing the state.

This bill would require the Energy Commission, as part of the 2023 and 2025 editions of the integrated energy policy report, to study and model potential growth for hydrogen and its role in decarbonizing, as defined, the electrical and transportation sectors of the economy, and helping to achieve specified goals.

(3) Existing law requires the PUC, state board, and Energy Commission to consider green electrolytic hydrogen an eligible form of energy storage, and to consider other potential uses of green electrolytic hydrogen.

This bill would require the PUC, state board, and Energy Commission to consider other potential uses of green electrolytic hydrogen specifically in all of their decarbonization strategies, as defined.

Vote: majority Appropriation: no Fiscal Committee: yes Local Program: no

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. (a) The Legislature finds and declares all of the following:

(1) Climate change and air pollution threaten the health and prosperity of all Californians. Historic droughts, devastating wildfires, storms, extreme heat, and the death of millions of trees are creating billions of dollars in property damage and threatening human health and food supplies.

(2) California has set ambitious targets to reduce the effects of climate change by reducing greenhouse gas emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

(3) In 2018, Governor Brown issued Executive Order No. B-55-18, creating a state goal to reach greenhouse gas neutrality by no later than 2045 and to maintain net negative greenhouse gas emissions thereafter, and directing the State Air Resources Board to work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward these goals.

(4) Hydrogen also has the ability to significantly reduce diesel emissions from goods movement, which particularly impacts low-income communities living near ports and freeways. In 1998, the State Air Resources Board identified diesel particulate matter as a toxic air contaminant based on published evidence of a relationship between diesel exhaust exposure and lung cancer, and diesel pollution also leads to noncancer health effects, such as premature death, hospitalizations, and emergency department visits for exacerbated chronic heart and lung disease, including asthma, increased respiratory symptoms, and decreased lung function in children. Hydrogen fuel cell buses and trucks emit zero harmful tailpipe emissions, their only tailpipe emission being water.

(5) California has also set targets to reduce short-lived climate pollutants by 2030, including targets to reduce black carbon emissions by 50 percent and methane emissions by 40 percent. Short-lived climate pollutants account for nearly 45 percent of global warming, and can be harmful to human health. Capturing and productively using methane, and productively using wood waste, to displace fossil fuel use to generate electricity and for transportation fuel can help eliminate short-lived climate pollutants while also reducing harmful exposure to diesel particulate matter and other air quality pollutants.

(6) California's leadership in driving aggressive emissions reductions has helped bring to market many new forms of renewable energy resources and fuels, including supporting a rapid decline in prices for electricity generated by eligible renewable energy resources such as solar, wind, and battery storage, and has accelerated adoption and price reduction of zero-emission vehicles. The cost of utility-scale solar generation dropped by 50 percent in just four years between 2011 and 2015, and electric vehicle battery prices dropped 87 percent in real terms from 2010 to 2019. Creating similar market conditions scaling green hydrogen demand will help scale supply chains and achieve similar cost reductions for green hydrogen and its derivatives.

(7) Multiple studies show that renewable hydrogen, particularly green electrolytic hydrogen produced by using electricity generated by eligible renewable energy resources to split water, is poised to experience similar cost declines over the next decade. However, the scaling up of current technologies alone will not be sufficient to meet the nation's green hydrogen cost targets or to provide durable advantages for ratepayers and research is still necessary to produce hydrogen from renewable feedstock at a cost of $1 per kilogram.

(8) Achieving these cost reductions and deploying green hydrogen at scale may help decarbonize many difficult-to-decarbonize sectors, including cement and steel production, industry, thermal powerplants, agriculture, and the transportation sector, including light-, medium-, and heavy-duty vehicles, goods movement, rail, shipping, mining, and aviation, and accelerate progress towards the state's climate, clean air, and clean energy goals.

(9) Green hydrogen offers many climate and energy cobenefits, including better utilizing curtailed electrical generation and better integrating eligible renewable energy resources into the electrical grid to achieve greater than 100 percent zero-carbon energy and putting renewable generation of electricity to use to decarbonize many other sectors of the economy.

(10) Green hydrogen offers an opportunity to reduce emissions of greenhouse gases, criteria air pollutants, and toxic air contaminants and improve the health of local communities located close to existing industrial hydrogen uses, including oil refining, production of ammonia, and other industrial chemical uses.

(11) Green hydrogen is a flexible resource that can be used for many things, including oil refining, ammonia and fertilizer production, and other industrial and chemical processes; net-zero or net-negative carbon chemicals, fuels, and polymers that can be produced when green hydrogen is combined with captured carbon dioxide; storing renewable and zero-carbon electricity for multiple days and seasons; powering a variety of onroad, off-road, rail, aviation, and maritime transport and materials handling applications; providing dispatchable electricity production including enhancing resiliency for behind-the-meter emergency backup generation and islanded microgrids; displacing coking coal used in the production of steel; fueling industrial thermal applications; and decarbonizing the existing natural gas pipeline.

(12) California has been a national and global leader in hydrogen market and policy development for 20 years, with leading policies to support the development and deployment of fuel cell vehicles, hydrogen refueling stations, and clean hydrogen supplies.

(13) Continuing to support the build out of hydrogen infrastructure and end uses, particularly in sectors of the economy that are otherwise difficult to decarbonize with renewable resources available today, will ensure that as green hydrogen production increases, these sectors are prepared to shift to green hydrogen.

(14) The hydrogen industry, and likewise the green hydrogen industry, are well positioned to offer new opportunities for developing and employing California's skilled and trained workforce. Additionally, many potential end uses of hydrogen, such as powerplants, and freight, airline, and shipping vessels, which today generally run off of fossil fuels, already employ large numbers of unionized employees who could continue to work at these facilities when repowered with hydrogen or green hydrogen. California's policies regarding growing the hydrogen economy should include a deep emphasis on developing and utilizing skilled and trained workers, to ensure that the availability of well-paid jobs with good benefits remains a top priority in California.

(15) Several countries developed national hydrogen strategies that include goals for electrolyzer deployment and green hydrogen production and use. For example, Chile has a goal of 5 GW of electrolyzer capacity under development by 2025, Germany has a goal of 10 GW of electrolyzers by 2030, and the European Union has set a goal of 40 GW of electrolyzers in the Union and 40 GW in neighboring regions by 2030.

(16) The Lawrence Livermore National Laboratory report, "Getting to Neutral," highlights gasification of biomass to hydrogen as the most promising strategy for achieving negative carbon emissions in California. The report finds that building about 50-100 facilities in California to utilize existing biomass waste streams would generate nearly 4 million tons of hydrogen per year and avoid or remove more carbon dioxide emissions than emitted from all passenger vehicles in California combined, at costs on par with those under California's Cap-and-Trade program.

(b) It is the intent of the Legislature to develop a leading green hydrogen industry in California in order to provide accelerated clean air, climate, and energy benefits, better integrate existing and new renewable resources into the electrical grid; support forest management, short-lived climate pollutant and waste management goals; create jobs; and provide new clean technology to decarbonize challenging sectors.

SEC. 2. Section 38561.8 is added to the Health and Safety Code, to read:

38561.8. (a) For purposes of this section, "decarbonize" means to reduce or eliminate associated emissions of greenhouse gases.

(b) The state board, in consultation with the State Energy Resources Conservation and Development Commission and the Public Utilities Commission, shall prepare an evaluation posted to the state board's internet website by June 1, 2024. The evaluation shall include, but not be limited to, all the following:

(1) Policy recommendations regarding the use of hydrogen, and specifically regarding the use of green hydrogen, in the state to help achieve the state's climate, clean energy, and clean air objectives. The policy recommendations may include recommendations on how to overcome market barriers and accelerate progress in green hydrogen production, scaling and use, including through the use of public-private partnerships, demonstration projects undertaken by public, private, or nonprofit entities, or a combination thereof, incentives, financing mechanisms, or other policies, and recommendations to maximize economic, environmental, public health, workforce, and equity benefits resulting from increased utilization of green hydrogen.

(2) A description of strategies, consistent with the state's climate, clean energy, and clean air requirements, supporting hydrogen infrastructure, including needed infrastructure for production, processing, delivery, storage, and end uses in difficult-to-decarbonize sectors of the economy for the purpose of preparing infrastructure and end uses for green hydrogen deployment. This description shall identify policies that promote the reduction of economywide emissions of greenhouse gases and short-lived climate pollutants through the deployment of hydrogen, including green hydrogen, while ensuring that hydrogen infrastructure will support the employment of a skilled and trained workforce in California to perform that work.

(3) A description of the potential for other forms of hydrogen, outside of green hydrogen, to achieve emission reductions that can contribute to achieving the state's climate, clean energy, and clean air objectives.

(4) An analysis of how curtailed electrical generation could be better utilized to help meet the goals set forth in this division, including, but not limited to, whether curtailed electrical generation could be made available for the production of green hydrogen. The state board shall also consult with the Independent System Operator in the preparation of the analysis.

(5) An estimate of the amount of reduced emissions of greenhouse gases and air quality benefits the state could achieve through deploying green hydrogen through a variety of scenarios, the costs associated with using green hydrogen, and the associated health and environmental impacts of prioritizing the development of various forms of hydrogen, when compared to other alternatives.

(6) An analysis of the potential for opportunities to integrate hydrogen, including green hydrogen, production and application with drinking water supply treatment needs, particularly for advanced treatment water supplies such as desalination, potable reuse, and salt and contaminant removal projects.

(7) Policy recommendations for regulatory and permitting processes associated with transmission and distribution of hydrogen, including green hydrogen, from production sites to end uses.

(8) An analysis of the life-cycle greenhouse gas emissions from various forms of hydrogen, including green hydrogen, production.

(9) An analysis of air pollution and other environmental impacts from hydrogen, including green hydrogen, distribution and end uses.

(c) In developing the evaluation pursuant to subdivision (b), the state board shall consult the California Workforce Development Board and labor and workforce organizations, including those that administer state-approved apprenticeship programs that train workers to construct, install, and maintain hydrogen infrastructure.

SEC. 3. Section 25307 is added to the Public Resources Code, to read:

25307. (a) For purposes of this section, “decarbonizing” means reducing or eliminating associated emissions of greenhouse gases.

(b) As part of the 2023 and 2025 editions of the integrated energy policy report, the commission shall study and model potential growth for hydrogen and its role in decarbonizing the electrical and transportation sectors of the economy, and helping to achieve the goals set forth in The 100 Percent Clean Energy Act of 2018 (Chapter 312 of the Statutes of 2018), the California Global Warming Solutions Act of 2006 (Division 25.5 (commencing with Section 38500) of the Health and Safety Code), and the Clean Energy and Pollution Reduction Act of 2015 (Chapter 547 of the Statutes of 2015).

(c) Pursuant to Section 10231.5 of the Government Code, this section is repealed on January 1, 2030.

SEC. 4. Section 400.3 of the Public Utilities Code is amended to read:

400.3. The commission, State Air Resources Board, and Energy Commission shall consider green electrolytic hydrogen an eligible form of energy storage and shall consider other potential uses of green electrolytic hydrogen in their decarbonization strategies. For purposes of this section, “decarbonization strategies” means actions undertaken to reduce or eliminate emissions of greenhouse gases.