

Date of Hearing: June 14, 2023

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY

Eduardo Garcia, Chair

SB 746 (Eggman) – As Amended April 10, 2023

SENATE VOTE: 40-0

SUBJECT: Energy conservation contracts: alternate energy equipment: hydrogen

SUMMARY: This bill adds hydrogen to the list of alternative energy resources for which a local agency can enter into a service contract, and adds transit districts to the list of local agencies authorized to enter into those contracts.

EXISTING LAW:

- 1) Establishes that it is the policy of the state to use available resources at state facilities which can substitute for traditional energy supplies or produce electricity at its facilities when use or production will reduce long-term energy expenditures, and that the energy produced may be reserved by the state to meet state facility needs or may be sold to state or non-state purchasers. (Public Resources Code § 25008)
- 2) Defines “alternative energy equipment” as equipment for the production or conversation of energy from alternate sources as its primary fuel, including solar, biomass, wind, geothermal, hydroelectricity under 30 megawatts, remote natural gas meeting specified standards or any other source of energy that reduces the use of fossil or nuclear fuels. (Government Code § 4217.11)
- 3) Defines a “public agency” for the purposes of energy development projects as the state, county, city, city and county, district, community college district, school district, joint powers authority, or other entity designated or created by a political subdivision. (Government Code § 4217.11)
- 4) Specifies the types of contracts that a public agency may enter into for the purposes of developing alternative energy resources, including energy service contracts, facility financing contracts, and facility leasing contracts. (Government Code § 4217.11)
- 5) Authorizes a public agency to enter into an energy service contract or facility financing contract after making specified findings about the cost and energy savings achieved by the contracts and holding a public hearing. Existing law specifies that cost findings for facility financing must include a determination as to whether sales of the energy generated by the financed facility will cover the cost of the facility’s construction and operation. (Government Code §§ 4217.12-4217.13)
- 6) Authorizes public agencies to enter into contracts for the sale of electricity, electric generation capacity, or thermal energy produced by an energy conservation facility. (Government Code § 4217.14)

- 7) Specifies that existing law authorizing public energy service contracts is intended to be construed to provide the greatest flexibility to public agencies in structuring agreements to maximize economic benefits. (Government Code § 4217.18)
- 8) Establishes the Tri-Valley-San Joaquin Valley Regional Rail Authority for purposes of planning, developing, delivering, and operating cost-effective and responsive transit connectivity, between the Bay Area Rapid Transit (BART) system and the Altamont Corridor Express (ACE) commuter rail service. (Public Utilities Code § 132652)

FISCAL EFFECT: Unknown. Pursuant to Senate Rule 28.8, this bill did not receive a hearing in the Senate Committee on Appropriations due to a determination that any state costs of the bill are not significant.

BACKGROUND:

Contracting for Energy – Existing law authorizes public agencies to enter into specified types of contracts as part of broader state policy to encourage energy savings and reduced fossil fuel use by local governments. These contracts fall into three categories:

- Facility financing contracts, which enable public agencies to secure financing for the development of energy production or conservation facilities in public buildings or on land owned by the public agency.
- Energy service contracts, which allow public agencies to purchase specified energy generation or conservation services from facilities located in public buildings or on land owned by public agencies.
- Contracts for the sale of energy, through which a public agency is permitted to sell energy produced at energy conservation facilities in public buildings or on land owned by public agencies. To whom this energy may be sold is not specified in statute.

These contracts are collectively intended to provide local agencies with favorable financing terms for energy conservation or generation projects by allowing these agencies to justify upfront expenditures on energy conservation projects through projected energy saving, avoided costs, and profit from the sale of energy. Local governments have used these contracts to facilitate energy efficient building retrofits and on-site generation. For example, Alameda County has used energy service contracts to establish multiple large-scale solar installations at various public facilities in the County. The County also established energy services contracts for the installation of components and upgrades to the fuel cell and microgrid energy system at the Santa Rita Jail.¹

The Valley Link Project – The Altamont Pass Corridor connects the San Joaquin Valley to the Tri-Valley region of the Bay Area. More than 86,000 commuters travel this route on a daily basis and that figure is expected to increase substantially in the coming decades.² To address the limited public transit options and growth of commuters traveling between the San Joaquin Valley and the Bay Area, the Legislature passed AB 758 (Eggman, Chapter 747, Statutes of 2017) to

¹ The Atlantic; “The World's Greenest Jail?”; November 2013;

<https://www.theatlantic.com/technology/archive/2013/11/the-worlds-greenest-jail/281021/>

² Tri-Valley-San Joaquin Valley Regional Rail Authority; “Valley Link – Project Feasibility Report”; October 2019

create the Tri-Valley-San Joaquin Valley Regional Rail Authority and tasked the authority with overseeing the creation of connecting service between the Bay Area Rapid Transit (BART) District and Altamont Corridor Express (ACE). This project is still in the development phase. In 2022, the Tri-Valley-San Joaquin Valley Regional Rail Authority purchased a parcel of land in the city of Tracy, issued a feasibility study for the train corridor, and entered into an agreement with Linde Engineering to plan for the development of an electrolytic hydrogen facility to provide power for the Valley Link rail system as well as provide hydrogen fuel to fuel cell transit vehicles and trucks.^{3,4}

Hydrogeneralization – Hydrogen has been considered the “swiss army knife” of decarbonization technologies; praised for its touted zero-greenhouse gas (GHG) emission profile and its potential to replace fossil fuels in most applications relatively easily. However, there are many types of hydrogen with varying degrees of climate benefit.

The varieties of hydrogen are generally categorized according to the type of feedstock (what material is used to make the hydrogen) and the production method (what is done to break apart the feedstock into hydrogen), each of which play a significant role in determining the lifecycle emissions associated with hydrogen use. Some notable feedstocks of hydrogen include biomass, coal, natural gas, and water. These feedstocks are broken down through one of a variety of thermochemical processes, which vary and can generate different types and amounts of emissions, to generate hydrogen. In every process, energy is needed in order to process the feedstock into hydrogen. Some processes rely on clean resources exclusively for their power, while others are less selective. The combinations of feedstocks and processes result in a multitude of hydrogen products. A simplified color spectrum has been adopted to describe these hydrogen products, though the definitions are neither universally agreed upon nor rigorous.

- “Gray (or brown) hydrogen” is produced from a natural gas feedstock and whatever energy is cheapest, via natural gas steam methane reforming. The vast majority of hydrogen currently used in the United States comes from this process. While relatively inexpensive and efficient, it generates carbon dioxide and other pollutants in amounts depending on the energy source used.
- “Blue hydrogen” employs the same process as gray hydrogen, but the carbon dioxide emitted from steam methane reforming is captured and stored, lessening the GHG impact of this process.
- “Green hydrogen” is produced using only renewable feedstock – such as biomass, renewable natural gas, or water – and typically (but not always) relies on renewable electricity to generate the hydrogen. Less than 0.1% of hydrogen production globally comes from water electrolysis. In the future, policymakers should approach the “green” hydrogen label with caution, as new definitions for green hydrogen are developed, and may not always include electrolytic production with no carbon release.
- “Green electrolytic hydrogen” is a specific type of green hydrogen which uses water as the feedstock and renewable electricity to split the water in order to generate hydrogen. Green electrolytic hydrogen is currently the only type of hydrogen defined in the Public

³ Zen Clean Energy Solutions; “Valley Link Hydrogen Production and Energy Farm Feasibility Study”; September 2022

⁴ Metro Magazine; “Calif.’s Valley Link Enters Strategic Collaboration with Linde Engineering”; December 2022; <https://www.metro-magazine.com/10189064/calif-s-valley-link-enters-strategic-collaboration-with-linde-engineering>

Utilities Code (Public Utilities Code § 400.2). However, its statutory definition does not specify that renewable electricity must be used to split the water, making it only partially “green” in the traditional sense.

Any conversation about hydrogen is heavily dependent upon the precise definition of the type of hydrogen being discussed. With such a wide variety of definitions, each with a unique emissions profile, it is easy to misunderstand or misascribe the potential for climate benefits when discussing hydrogen.

COMMENTS:

- 1) *Author’s Statement.* According to the author, “The hydrogen fuel facility planned for in the Valley Link project (SB 758, Eggman, statutes of 2017) is critical to the success of the larger Valley Link train project, as the train will be powered by hydrogen produced at the facility and the selling of hydrogen fuel to commercial trucks and transit buses will help subsidize the operation costs of the rail service. SB 746 provides the necessary authorization for transit districts to carry out these kinds of projects.”
- 2) *Types of Hydrogen.* This bill provides local agencies with broad discretion over contracts for different types of hydrogen production, and does not specify a definition of the type nor color of hydrogen that would be eligible. As a result, this bill provides broad discretion to local agencies to propose projects to produce hydrogen from a wide range of feedstocks and energy sources. While this discretion may reflect existing law regarding energy service contracts which provide local agencies with maximum flexibility to structure these agreements to their benefit, the impact of statutorily authorizing all local governments and transit agencies to contract for or own various hydrogen production projects with varying degrees of GHG benefits is unclear.
- 3) *Marginal Cost Requirement.* Per statute, energy service contracts are required to be cost-negative, meaning that “the energy savings over a reasonable period of time generated by the project will be equal to or greater than the project costs.”⁵ These cost assessments, as well as determining what constitutes a reasonable period of time, are conducted by the public agency entering into the contract, giving the agency significant discretion in how the assessment is conducted.⁶

The addition of hydrogen as a specified energy source, both in statute and in a specific project, introduces potential ambiguity to this required cost assessment. The assessment requires the energy contracted for to be less than what the local government’s energy cost would have been in the absence of the contracted purchases. However, if an energy service contract is seeking to develop a hydrogen project, would the cost of the contracted hydrogen be compared to the cost of hydrogen purchased elsewhere, or to the cost of other potential sources of energy which could conceivably achieve a similar result (e.g., diesel or electricity)? Hydrogen has historically been expensive to produce,⁷ so the point of comparison for determining the marginal cost is critical for project eligibility.

⁵ Pg. 2; City of Tewntynine Palms; “Infrastructure Modernization Program Staff Report”; August 2018

⁶ City of Tewntynine Palms; “Infrastructure Modernization Program Staff Report”; August 2018

⁷ Utility Dive; “California coalition aims to make hydrogen power cost-competitive by 2030”; May 2021; <https://www.utilitydive.com/news/california-coalition-aims-to-make-hydrogen-power-cost-competitive-by-2030/600239/>

Since statute seems to grant the public agencies with ultimate discretion in calculating the baseline for energy savings, it seems possible that on-site hydrogen facilities could meet this requirement despite their current expense and energy usage.

A feasibility study on plans to produce hydrogen associated with the Valley Link project “showed the on-site electrolytic hydrogen production facility to be feasible with significant potential for developing positive cash flow to drive down Valley Link rider costs.”⁸ One development option listed—which would include large amounts of solar generation and energy from the grid alongside battery storage to supply energy for the electrolytic hydrogen production—projected that the hydrogen generation process would require substantial upfront investment but would be cost-negative overall within 14 years, largely through the sale of excess hydrogen.⁹ For this reason, the timeframe considered in the marginal cost assessment will be an important factor in determining whether a project satisfies the requirements for an energy service contract.

- 4) *Local Project, Statewide Implications?* The objective of this bill, as expressed by the author, is to secure a fuel source and funding mechanism for a specific project: The Valley Link project, operated by Tri-Valley-San Joaquin Valley Regional Rail Authority. This bill would expand an existing framework for public agencies, adding hydrogen as an energy source and enabling transit agencies statewide to participate in the program. This would represent a significant expansion of this program and substantially expand the availability of land owned by public agencies for hydrogen development statewide. Simultaneously, this bill also expands the eligible agencies who can access this program. Taken together, the expansion of both the type of agency and the energy sources available under this program provides greater uncertainty as to the potential benefits or consequences of these projects. *As such, the author and committee may wish to consider amendments to strike the current bill language and add language allowing a single transit district, the Tri-Valley-San Joaquin Valley Regional Rail Authority, to enter into facility financing contracts, energy service contracts, and contracts for the sale of energy, with the additional specification that electrolytic hydrogen may be used as the energy source on this specific project.*

- 5) *Prior Legislation.*

AB 758 (Eggman), established the Tri-Valley-San Joaquin Valley Regional Rail Authority to administer the development of a connection between BART and the ACE in the Tri-Valley region. Status: Chapter 747, Statutes of 2017.

SB 840 (Committee on Budget and Fiscal Review), among other provisions, authorized the Department of General Services (DGS) or another state or local agency that intends to enter into an energy retrofit contract to establish a pool of qualified energy service companies. The bill allowed until January 1, 2020, DGS and other state agencies to

⁸ Pg. 68; Zen Clean Energy Solutions; “Valley Link Hydrogen Production and Energy Farm Feasibility Study”; September 2022

⁹ Pg. 56; Zen Clean Energy Solutions; “Valley Link Hydrogen Production and Energy Farm Feasibility Study”; September 2022

establish pools of qualified energy service companies that have made certain skilled and trained workforce commitments. Status: Chapter 341, Statutes of 2016.

REGISTERED SUPPORT / OPPOSITION:

Support

Tri-Valley-San Joaquin Valley Regional Rail Authority (sponsor)

California Hydrogen Coalition

California State Association of Electrical Workers

California State Pipe Trades Council

Coalition of California Utility Employees

San Joaquin Valley Policy Council

Tri-valley Cities of Dublin, Livermore, Pleasanton, San Ramon, and Town of Danville

Opposition

None on file.

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