Date of Hearing: June 25, 2025

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY
Cottie Petrie-Norris, Chair
SB 804 (Archuleta) – As Amended June 17, 2025

SENATE VOTE: 34-0

SUBJECT: Hydrogen pipeline safety

SUMMARY: Requires the Office of the State Fire Marshall (OSFM) to adopt dedicated hydrogen pipeline safety standards by January 1, 2028, as specified. Specifically, **this bill**:

1) Requires the OSFM to adopt dedicated hydrogen pipeline safety standards by January 1, 2028 that meet or exceed all the following requirements:

    a) The dedicated pipeline must be designed and constructed to minimize hydrogen leakage to the lowest technically feasible level.
    b) All materials used in the construction of the dedicated pipeline must be codified by the American Society of Mechanical Engineers, or its equivalent, for compatibility with hydrogen resistance to degradation, such as corrosion or embrittlement.
    c) The dedicated pipeline shall employ continuous measurement and monitoring systems to detect any deviation from normal operational parameters.

2) Requires the OSFM to enforce dedicated hydrogen pipeline safety consistently across all jurisdictions of the state and regularly review and update dedicated hydrogen pipeline safety standards, incorporating changing technology and best practices.

3) Requires a dedicated hydrogen pipeline owner to annually submit a report to the OSFM on or before March 30th of each year, detailing the operator's compliance with this bill's recordkeeping requirements.

4) Defines key terms, including "dedicated hydrogen pipeline," which for the purposes of this bill means a pipeline that has been constructed, or undergone a major retrofit, for the purpose of primarily transporting hydrogen gas. Specifies OSFM may adopt a percentage of hydrogen gas by volume carried in a pipeline that would render it a "dedicated hydrogen pipeline;" and that such percentage must exceed 50%.

EXISTING LAW:

1) Establishes OSFM, within the Department of Forestry and Fire Protection (Cal FIRE), to foster, promote and develop ways and means of protecting life and property against fire and panic. (Health and Safety Code §§ 13100-13100.1)

2) Requires OSFM to adopt hazardous liquid pipeline safety regulations that comply with federal law regarding hazardous liquid pipeline safety. Establishes certain recordkeeping and reporting requirements for hazardous liquid pipeline operators. (Government Code §§ 51010, et seq.)

3) Defines "green electrolytic hydrogen" as hydrogen gas produced through electrolysis and does not include hydrogen gas manufactured using steam reforming or any other conversion technology that produces hydrogen from a fossil fuel feedstock. (Public Utilities Code § 400.2)

4) Requires CARB to evaluate by June 1, 2024, market barriers to accelerate the use of green hydrogen, potential beneficial uses of hydrogen, and an estimate of GHG emissions reductions that can be achieved through deploying green hydrogen in various settings. Existing law requires CARB's evaluation to include an analysis of life-cycle GHG emissions from various forms of hydrogen, including green hydrogen. (Health and Safety Code § 38561.8)

5) Authorizes the California Public Utilities Commission (CPUC) to supervise and regulate every public utility in the state and permits the CPUC to do anything that is necessary and convenient to exercise its power and jurisdiction. Existing law provides the CPUC with broad authority to regulate any utility's rules, practices, equipment, appliances, facilities, or service if the CPUC finds that those rules, practices, equipment, appliances, facilities, or services are unjust, unreasonable, unsafe, improper, inadequate, or insufficient after conducting a hearing. (Public Utilities Code §§ 701 and 761)

6) Requires each gas corporation to develop a plan for the safe and reliable operation of its CPUC-regulated gas pipeline facility. Existing law specifies components that must be included in these plans and requires the CPUC to review and accept, modify, or reject the plan for each gas corporation. Under existing law, gas corporations are required to implement gas pipeline safety plans approved by the CPUC. (Public Utilities Code §§ 961 and 963)

7) Pursuant to federal law:

    a. Grants the United States Secretary of Transportation the regulatory and enforcement authority over gas and hazardous liquid pipelines, including H_2 pipelines. (49 United States Code § 60102)

    b. Prohibits the Secretary of Transportation from prescribing or enforcing safety standards and practices for an intrastate pipeline or intrastate pipeline facility to the extent that the safety standards and practices are regulated by a state authority, except as provided. (49 United States Code § 60105)

FISCAL EFFECT: Unknown. This bill is keyed fiscal, and will be referred to the Assembly Committee on Appropriations for its review. The version of this measure heard in the Senate, which authorized the CPUC to adopt and enforce the hydrogen pipeline safety standards and reporting required under this measure, was estimated by the CPUC to cost a little under $7 million over three years. It is unclear how the moving of these responsibilities to the OSFM may change these cost impacts.

CONSUMER COST IMPACTS: Unknown.

BACKGROUND:

California's Hydrogen Future – As in most matters of long-term, deep decarbonization, there is a range of plausible futures for the use of hydrogen in California. CARB's 2022 Scoping Plan Update envisioned a mix of technologies providing California's burgeoning hydrogen supply.[1] Although it is not explicitly clear exactly which end-uses are expected to be powered by hydrogen, some sectors appear to be entirely reliant on hydrogen to decarbonize. Iron and steel production, ammonia synthesis, and some functions in oil refining will almost certainly require hydrogen, and supplying that hydrogen in a sustainable manner will require major scale-up of the paltry clean hydrogen production that exists today.

What is not as clear is where that clean hydrogen will come from. One of the scenarios in the draft Scoping Plan considered using only electrolysis to meet the projected demand for hydrogen.[2] It found that doing so would require 40 gigawatts (GW) of renewable electricity dedicated to electrolysis: an amount roughly equivalent to today's statewide summer peak grid demand. Instead, the final update prescribed a mix of steam methane reforming of biomethane, gasification of biomass with carbon capture, and electrolysis from (21 GW of) off-grid solar resources to produce the statewide hydrogen supply needed in 2045.[3]

H_2 General Safety – Hydrogen has unique physical and chemical properties, such as its small molecular size, low ignition energy, wide flammability range (4% to 75% in air), and tendency to cause material embrittlement, especially in metals.[4] These characteristics necessitate specialized engineering controls, materials, and safety standards to prevent leaks, detect incidents early, and ensure safe storage, transport, and use. Agencies like the Pipeline and Hazardous Materials Safety Administration (PHMSA) and the National Renewable Energy Laboratory (NREL) are actively researching and developing regulations to address these challenges, particularly as hydrogen use expands under initiatives like the Hydrogen Energy Earthshot.[5, 6] Ongoing efforts include updating codes and standards related to pipeline materials, advanced leak detection technologies, and emergency response protocols to ensure hydrogen can be safely integrated into the broader energy system. In addition to designing safety features into hydrogen systems, training in safe hydrogen handling practices and testing is a key element for ensuring the safe use of hydrogen.

H_2 Pipeline Safety – In 2018, the Legislature passed SB 1369 (Skinner, Chapter 567, Statutes of 2018), which defined green electrolytic hydrogen and required the CPUC, CEC and CARB to consider potential uses of green electrolytic hydrogen. As part of its duties to implement SB 1369, the CPUC commissioned a study with researchers from the University of California at Riverside on the operational and safety concerns associated with injecting hydrogen into the existing natural gas pipeline system at various percentages of hydrogen blended with natural gas.

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[1] CARB, *2022 Scoping Plan for Achieving Carbon Neutrality*; December 2022; https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf
[2] See footnote 151, pg. 88, CARB *2022 Scoping Plan; Ibid.*
[3] CARB, 2022 Scoping Plan Appendix H, AB 32 GHG Inventory Sector Modeling; https://ww2.arb.ca.gov/sites/default/files/2024-01/nc-2022-sp-appendix-h-ab-32-ghg-inventory-sector-modeling.pdf.pdf
[4] U.S. Department of Energy Hydrogen Program; https://www.energy.gov/eere/fuelcells/safety-codes-and-standards
[5] https://www.phmsa.dot.gov/research-and-development/hydrogen-safety-research
[6] https://www.nrel.gov/hydrogen/hydrogen-safety.html

The CPUC published this study in July 2022. Among its findings, the study concluded the following:

- Blending up to 5% hydrogen into the natural gas stream is generally safe.
- Blending above 5% hydrogen into natural gas pipelines results in a greater chance of pipeline leaks and embrittlement of steel pipes.
- Hydrogen blends above 5% could require modifications of appliances such as stoves and water heaters to avoid leaks and equipment malfunction.
- Hydrogen blends of more than 20% increases the likelihood that blends will permeate plastic pipes, increasing the risk of gas explosions outside the pipeline.
- Due to the lower energy content of hydrogen gas, more hydrogen-blended natural gas will be needed to deliver the same amount of energy to users compared to pure natural gas.

The study also indicated that additional research, including real-world demonstrations in utility infrastructure, is needed to ensure that hydrogen pipeline injection is safe for the conditions specific to California.

Overlapping Oversight – PHMSA, under the Department of Transportation, has exclusive federal authority over ***inter***state pipeline facilities.[7] An interstate pipeline is one used in the transportation of hazardous liquid or gas in interstate or foreign commerce. Typically, these lines cross state borders or begin in federal waters. As of 2015, there were 1,188 miles of interstate pipeline in California.[8] State agencies may regulate portions of interstate pipelines located within the state, if there is an agreement between PHMSA and the agency. For hazardous liquid pipelines, that agreement is with OSFM; for gas pipelines, it is the CPUC. These agencies are only allowed to enter into an agreement with PHMSA if given all regulatory and enforcement authority of the pipelines subject to the agreement. PHMSA maintains these agreements as certifications through the Office of Pipeline Safety, which are updated annually.[9]

OSFM and the CPUC share the regulation over ***intra***state pipeline facilities. OSFM regulates intrastate hazardous *liquid* pipelines pursuant to the Elder California Pipeline Safety Act of 1981.[10] Whereas the CPUC regulates intrastate *gas* pipelines (both natural gas and liquid petroleum gas). An intrastate pipeline is defined as a pipeline that is located entirely within state borders, including offshore state waters. As of 2015, there were 4,500 miles of intrastate pipeline

[7] 49 USC § 60101, et seq.
[8] Cal FIRE-OSFM Pipeline Safety Division "Information Sheet"; October 21, 2015; https://antr.assembly.ca.gov/sites/antr.assembly.ca.gov/files/Pipeline%20Hearing%20%2810%2021%2015%29_CALFIRE%20FactSheet%20.pdf
[9] U.S. Department of Transportation, PHMSA website; "Regulatory Fact Sheet: California;" https://primis.phmsa.dot.gov/comm/FactSheets/States/CA_State_PL_Safety_Regulatory_Fact_Sheet.htm?nocache=1716; accessed April 16, 2025.
[10] Gov. Code, § 51010, et seq.

in California, although that number was predicted to grow.[11] The vast majority of pipelines in California carry petroleum based hazardous liquids.[12]

The federal definition of "gas" for purposes of the Pipeline Safety Act includes "natural gas, flammable gas, or toxic or corrosive gas."[13] As such, hydrogen pipelines are included in PHMSA jurisdiction. The pipelines are regulated under the general gas pipeline safety regulations, similarly to natural gas pipelines,[14] due to PHMSA not yet having a hydrogen-specific rule. In 2023, PHMSA started developing new regulations specific to hydrogen pipelines in response to the Biden Administration's Hydrogen Energy Earthshot Initiative and the scaling up of "clean hydrogen" industries.[15] While PHMSA issued a final rule on gas pipeline leak detection and repair in January 2025, which enhances safety measures for gas pipelines in general, specific regulations tailored exclusively for hydrogen pipelines are still under development.[16]

As of December 2020, there were 1,608 miles of active hydrogen pipelines in the United States.[17] Over 90% of these pipelines are located along the Gulf Coast in Texas, Louisiana, and Alabama, primarily serving refineries and ammonia plants in the region.[18] Comparatively short hydrogen pipelines are located elsewhere in Texas, Louisiana, and in 9 other states. California has 16 miles of hydrogen pipeline, Indiana has 14 miles, and the remaining 7 states have fewer than 10 miles each.[19] By comparison, there are over 300,000 miles of U.S. natural gas transmission pipeline (not counting distribution mains) located in the 48 contiguous states and Alaska.

COMMENTS:

1) *Author's Statement.* According to the author, "California is leading the clean energy transition and hydrogen is poised to play a major role in decarbonizing sectors like cement, aviation, and heavy-duty trucking. However, current safety regulations haven't kept pace with hydrogen infrastructure growth. Senate Bill 804, the Hydrogen Pipeline Safety Act, addresses this gap by requiring the Office of the State Fire Marshal to

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[11] Cal FIRE-OSFM Pipeline Safety Division "Information Sheet"; October 21, 2015; https://antr.assembly.ca.gov/sites/antr.assembly.ca.gov/files/Pipeline%20Hearing%20%2810%2021%2015%29_CALFIRE%20FactSheet%20.pdf

[12] According to a 2015 background paper prepared by the Assembly Committee on Natural Resources for "Joint Informational Hearing: Oil Pipeline Safety: Testing Methods and Frequency;" Santa Barbara, CA; October 21, 2015.

[13] 49 United States Code § 60101(a)(2)

[14] 49 United States Code § 192

[15] Vincent Holohan, PHMSA presentation, "2024 DOE HFTO Workshop: Hydrogen Infrastructure Strategies to Enable Deployment in High-Impact Sectors;" January 18, 2024; https://www.energy.gov/sites/default/files/2024-02/h2-infrastructure-strategies-workshop-holohan.pdf

[16] PHMSA Final rule; 4910-60-W; "Pipeline Safety: Gas Pipeline Leak Detection and Repair;" RIN 2137-AF51; https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2025-01/PHMSA%20Final%20Rule%20-%20Gas%20Pipeline%20Leak%20Detection%20and%20Repair%20-%20As%20submitted.pdf

[17] Paul Parfomak, "Pipeline Transportation of Hydrogen: Regulation, Research, and Policy;" *Congressional Research Service;* March 2, 2021. https://www.congress.gov/crs_external_products/R/PDF/R46700/R46700.3.pdf

[18] Pipeline and Hazardous Materials Safety Administration (PHMSA), "Gas Distribution, Gas Gathering, Gas Transmission, Hazardous Liquids, Liquefied Natural Gas (LNG), and Underground Natural Gas Storage (UNGS) Annual Report Data," Form 7100.2-1 operator filings database, 2020, available at https://www.phmsa.dot.gov/dataand-statistics/pipeline/gas-distribution-gas-gathering-gas-transmission-hazardous-liquids. The other states with hydrogen pipelines are Kansas, Michigan, New York, Ohio, Oklahoma, Utah, and Washington.

[19] *Ibid.*

establish specific safety standards tailored to hydrogen's unique risks. By prioritizing safety and oversight, SB 804 supports clean energy innovation while protecting public health, the environment, and public trust."

2) *Who's the Boss?* This bill focuses on all aspects of the safety of dedicated hydrogen pipelines. As noted above, PHMSA has exclusive jurisdiction over pipelines, while the CPUC regulates intrastate gas pipelines and OSFM regulates intrastate liquid pipelines. Several other state agencies also play roles in regulating intrastate pipelines. CalGEM regulates oil and gas production pipelines and wells within or near an oil field, the State Lands Commission manages offshore oil production, and the CPUC regulates in-state utility facilities, including any utility pipelines subject to CPUC's authority. Currently, the state regulator for hydrogen pipelines is unclear or unspecified.

   While hydrogen pipelines are not explicitly an existing authority of the CPUC, the CPUC's jurisdiction over gas utilities positions it as a potential regulator for hydrogen infrastructure as the industry evolves and gas utilities expand into this space. Certainly, in circumstances where existing utility pipelines would be used, such as hydrogen blending in a natural gas pipeline, the CPUC would regulate. This bill, in requiring OSFM to adopt standards for dedicated hydrogen pipelines, grants OSFM explicit regulatory authority. How OSFM's regulations would complement or integrate with activity at the CPUC is unclear. *As such, the committee recommends an amendment to clarify that the authority of the CPUC to regulate the rates and service of public utilities is not altered by this measure, and if there is a conflict between regulations adopted by the OSFM and the CPUC as it relates to utility facilities, the more protective requirements shall apply.*

3) *Playing the Percentages.* This bill grants regulatory authority to the OSFM for dedicated hydrogen pipelines, specifically around safety standards and their enforcement. This authority is specific to *dedicated* hydrogen pipelines; however, this bill permits the OSFM to adopt a percentage of hydrogen gas by volume carried in the pipeline that would identify the pipe as a "dedicated" line. The bill specifies such a percentage must exceed 50%.

   In California, multiple utilities are assessing the potential for blending some percentage of hydrogen into the existing ratepayer-funded natural gas system; however, no gas utility is currently injecting hydrogen into this system. Furthermore, some gas utilities are seeking to establish pipeline infrastructure that is dedicated solely to transporting hydrogen. This bill defines a "hydrogen pipeline" as one that is constructed or retrofitted to transport hydrogen where hydrogen constitutes at least 50% of the total gas volume in the pipe. As noted above regarding the UC Riverside-led blending studies, such a percent-by-volume concentration of hydrogen into the existing natural gas system would be harmful and infeasible. However, it is equally unlikely that such low volumes (~50%) of hydrogen would be common in dedicated pipelines, as additives and impurities may be present but, to the committee's knowledge, carrier gases are rarely used.[20] Therefore, while the bill has been recently clarified to only apply to dedicated hydrogen pipelines,

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[20] Pg. 2, Hydrogen Economy Collaborative, "Hydrogen Pipeline Transport Issue Brief;" June 2024; https://betterenergy.org/wp-content/uploads/2024/06/Hydrogen-Transportation-Issue-Brief.pdf#:~:text=Existing%20natural%20gas%20pipeline%20infrastructure%20systems%20around,impacts%20of%20hydrogen%20admixtures%20on%20pipeline%20materials.

the threshold of 50% by which OSFM may set a relevant percent-by-volume of hydrogen in the dedicated pipe seems incongruous. *As such, the committee recommends an amendment striking the 50% threshold and setting it at 90%; as well as striking "primarily" in the description of "dedicated hydrogen pipeline" related to its purpose being transporting hydrogen gas.*

4) *Related Legislation.*

AB 716 (Carrillo) requires the Office of the State Fire Marshal (OSFM) to adopt the National Fire Protection Association Hydrogen Technologies Code as the statewide fire safety standards and guidelines for hydrogen production, storage, and distribution facilities, as specified. Status: *referred* to the Senate Committee on Governmental Organization.

5) *Prior Legislation.*

AB 2204 (Bennett, 2024) establishes a goal, by an unspecified date, for all in-state hydrogen production, and specifically excludes any fossil fuel use as either a feedstock or energy source in the production process. Also requires the hydrogen to show the use of new and incremental renewable generation, temporal matching, and geographic deliverability. Status: *Died* in the Assembly Committee on Utilities and Energy.

SB 1418 (Archuleta) requires every city and county to adopt an ordinance to create an expedited, streamlined permitting process for hydrogen-fueling stations. Status: Chapter 607, Statutes of 2024.

SB 1420 (Caballero) provides for expedited California Environmental Quality Act (CEQA) and California Energy Commission (CEC) review for hydrogen production facilities that have received state or federal funding. Status: Chapter 608, Statutes of 2024.

AB 1550 (Bennett, 2023) required, on and after January 1, 2045, all hydrogen produced and used in California for either the generation of electricity or the fueling of vehicles be "renewable hydrogen of biological origin" or "renewable hydrogen of nonbiological origin." Status: Died on the Assembly Floor.

SB 414 (Allen, 2023) required CARB, upon appropriation, to complete an assessment of the use of hydrogen in specified applications. Status: Died in the Assembly Committee on Appropriations.

SB 1075 (Skinner) directs CARB, in consultation with the CPUC and CEC, to develop an evaluation by June 1, 2024 which includes, among other topics, policy recommendations regarding the use of green hydrogen in the state, an estimate of reduced GHG emissions achievable through the use of green hydrogen. Status: Chapter 363, Statutes of 2022.

AB 157 (Committee on Budget) authorized GO-Biz to take steps to prepare and submit an application to receive funding from the regional clean hydrogen hubs program or to otherwise participate in the regional clean hydrogen hubs program. The bill also established a definition of clean hydrogen. Status: Chapter 570, Statutes of 2022.

SB 1369 (Skinner) requires the CPUC, CARB, and CEC to consider green electrolytic hydrogen an eligible form of energy storage, and to consider other potential uses of green electrolytic hydrogen. Status: Chapter 567, Statutes of 2018.

6) *Double Referral.* This bill is double referred. Upon passage in this committee, it will be referred to the Assembly Committee on Emergency Management for its review.

REGISTERED SUPPORT / OPPOSITION:

Support

California State Pipe Trades Council
Environmental Defense Fund

Support If Amended

Pipeline Safety Trust

Opposition

None on file.

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