



May 8, 2025

Senator Jerry McNerney, Chair  
Senate Revenue and Taxation Committee  
State Capitol, Room 410  
Sacramento, CA 95814

**RE: SB 419 (Caballero) - Hydrogen fuel – OPPOSE UNLESS AMENDED**

Dear Senator McNerney and Committee Members:

The undersigned organizations write to express opposition unless amended to SB 419 (Caballero), which would exempt hydrogen fuel from state sales and use tax. This exemption would unnecessarily incentivize the use of hydrogen fuel cell electric vehicles (FCEVs) which are inefficient compared to battery electric vehicles (BEVs) and could potentially slow down climate progress.

The use of hydrogen FCEVs has generally been found to be an inefficient and unnecessary use of hydrogen for any function that could instead be served by battery electric vehicles (BEVs). BEVs are three times more efficient than FCEVs using green hydrogen, making BEV's clearly the better option to meet climate goals.<sup>1</sup> This is because direct electrification of a battery-electric vehicle does not include the significant energy efficiency losses presented by hydrogen production and conversion back to electricity in a fuel cell.<sup>2</sup> Furthermore, BEV's are already widely available, outselling fuel cell vehicles by a factor of 1,000:1 worldwide, with annual growth of 36% in 2023 compared with a 40% market contraction for fuel cell vehicles.<sup>3</sup> All of this is the case if FCEVs use truly green hydrogen and the picture is worse if dirty hydrogen is used.

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<sup>1</sup> International Council on Clean Transportation: "A comparison of the life-cycle greenhouse gas emissions of European heavy-duty vehicles and fuels." Feb 2023. <https://theicct.org/publication/lca-ghg-emissions-hdv-fuels-europe-feb23/>

<sup>2</sup> Id.

<sup>3</sup> Johnson, Nathan. Realistic roles for hydrogen in the future energy transition. April 22, 2025. <https://www.nature.com/articles/s44359-025-00050-4>

While it's true that FCEVs provide a reduction in local air pollution—since comparatively internal combustion engine vehicles (ICEVs) cause health-harming smog and FCEVs emit only water vapor – risks to climate and communities remain if the hydrogen is not truly green.<sup>4</sup> ‘Truly green hydrogen’ uses electrolysis and dedicated renewable energy that results in zero greenhouse gas emissions, whereas ‘dirty hydrogen’ uses emissions intensive pathways such as steam methane reformation of natural gas or electrolysis using fossil fueled electricity.

If dirty hydrogen is used in FCEVs, any potential benefit risks coming at the cost of communities located near fossil fuel power plants that will need to run more often to supply power.<sup>5</sup> Unlike with BEVs, dirty electrolytic hydrogen fuel can wipe out or reverse FCEVs’ climate benefits—an impact that can be worsened by the high rates of hydrogen leakage at refueling pumps, given that hydrogen itself that leaks into the atmosphere has an indirect climate effect approximately a 12 times greater than carbon dioxide (CO<sub>2</sub>) over a 100-year period.<sup>6</sup>

SB 419 and current California law do not guarantee that truly clean hydrogen will be used for FCEVs, and even if that were the case, BEVs are still generally more efficient, more widely available, prevent potential harm to communities via buildout of unnecessarily duplicative infrastructure, and are more affordable for consumers.<sup>7</sup>

Although there may be a climate need for a very niche market of heavy-duty hydrogen-fueled trucks (HDTs) to carry out specific functions that BEVs struggle to power today such as those requiring around-the-clock operations, extremely high payloads, or operations far from the grid, SB 419 is not prescriptive enough to incentivize such a market.<sup>8,9</sup> Furthermore, cost and impacts to communities would need to be considered if such a market were to be incentivized.

To truly incentivize green hydrogen for climate beneficial end uses that reduce local pollution and have minimal impact on communities, we recommend less focus on hydrogen FCEVs and more policy support for sectors that can't be readily electrified.

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<sup>4</sup> Environmental Protection Agency. “Smog, Soot, and Other Air Pollution from Transportation” <https://www.epa.gov/transportation-air-pollution-and-climate-change/smog-soot-and-other-air-pollution-transportation>

<sup>5</sup> Union of Concerned Scientists. Hydrogen-Powered Heavy-Duty Trucks A review of the environmental and economic implications of hydrogen fuel for on-road freight. November 2023. <https://www.ucs.org/sites/default/files/2024-04/hydrogen-powered-heavy-duty-trucks.pdf>

<sup>6</sup> Sand, M., Skeie, R.B., Sandstad, M. *et al.* A multi-model assessment of the Global Warming Potential of hydrogen. *Commun Earth Environ* 4, 203 (2023). <https://doi.org/10.1038/s43247-023-00857-8>.

<sup>7</sup> Ask MIT. Why have electric vehicles won out over hydrogen cars (so far)?. September 11, 2023. <https://climate.mit.edu/ask-mit/why-have-electric-vehicles-won-out-over-hydrogen-cars-so-far#:~:text=The%20big%20factor%2C%20though%2C%20is,price%20of%20lithium%2Dion%20batteries.>

<sup>8</sup> Johnson, N., Liebreich, M., Kammen, D.M. *et al.* Realistic roles for hydrogen in the future energy transition. *Nat. Rev. Clean Technol.* (2025). <https://doi.org/10.1038/s44359-025-00050-4>.

<sup>9</sup> Esposito, Dan. Hydrogen Policy’s Narrow Path: Delusions and Solutions. Energy Innovation. August 17, 2024. <https://energyinnovation.org/wp-content/uploads/Hydrogen-Policys-Narrow-Path-Delusions-and-Solutions-2.pdf>

For the reasons outlined above, we respectfully remain opposed to SB 419. Thank you for considering our views.

Respectfully,



Erik Kamrath  
Hydrogen Advocate  
NRDC



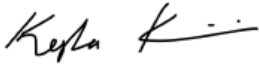
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cc: Senator Caballero