

CORRESPONDENCE

Memorandum

To: Pasadena City Council
From: Environmental Advisory Commission
Date: July 9, 2025
Re: Concerns and Recommendations Regarding the Hydrogen-Based Zero Emission Bus Rollout Plan

The Environmental Advisory Commission, writes to express our appreciation for the City of Pasadena's continued leadership in advancing climate action and transitioning to a zero-emission municipal bus fleet. The goal of a cleaner, healthier transit system aligns with our shared environmental and public health priorities. However, after reviewing the City's proposed Zero Emission Bus (ZEB) Rollout Plan presented on May 13, 2025, we feel compelled to raise serious concerns regarding the plan's reliance on hydrogen fuel cell electric buses (FCEBs) for the Pasadena Transit fleet.

While we understand that both battery electric buses (BEBs) and FCEBs are permissible under the California Air Resources Board's Innovative Clean Transit Rule, the heavy investment in hydrogen technology as the primary pathway raises questions regarding cost, safety, reliability, and climate efficacy:

1. Cost and Financial Risk

The plan anticipates spending over \$150 million through 2028, with \$100 million allocated to a Transit Operations and Maintenance Facility and \$20.5 million to a hydrogen fueling station. Yet even with grant funding, over \$31.5 million remains unfunded. Hydrogen buses are estimated to cost approximately \$1.6 million per unit, compared to \$1.3 million for BEBs, with significant additional costs for hydrogen fueling infrastructure. While the ZEB Rollout Plan anticipates that BEBs would require an additional 9 units, the marginal reduction in fleet size with FCEBs does not offset the substantial difference in capital and infrastructure costs. These figures suggest escalating financial burdens on local taxpayers, especially as long-term fuel and maintenance costs remain uncertain.

2. Fuel Supply and Emissions

Unlike battery electric vehicles, which can be charged using local grid electricity and increasingly renewable sources, hydrogen fuel must be imported by truck. This introduces both cost and reliability risks in addition to undermining climate benefits. Each delivery entails truck traffic (likely diesel trucks) through Pasadena's residential neighborhoods and along freeways, contributing to greenhouse gas emissions, air pollution, and road safety risks.

Additionally, truly "green" hydrogen is not yet available at scale and even if it was, requires large amounts of electricity and water to produce, straining both energy and water resources. More commonly, hydrogen is produced from natural gas or so-called "renewable natural gas," both of which are energy-intensive processes that generate significant fossil fuel emissions. In this context, the logistics and environmental impacts of hydrogen make it a far less sustainable or reliable fuel choice than battery electric options. The City would be effectively swapping tailpipe emissions for upstream emissions from fossil-fueled supply chains.

3. Safety Concerns

Hydrogen is a highly flammable and pressurized gas, requiring strict containment protocols. The prospect of transporting and storing large quantities of hydrogen within City limits, particularly near homes or sensitive areas, is deeply concerning. The risk of leaks or accidents — whether during storage or transportation — cannot be entirely mitigated and raises serious questions about the prudence of placing such facilities in a dense environment like Pasadena.

4. Future Cost and Technology Uncertainty

Hydrogen is a relatively immature transit technology. During the ZEB Rollout Plan presentation, we were told that only one company in the world currently manufactures hydrogen fuel cell buses. There is also a limited network of hydrogen fueling stations and a narrow supply chain for parts and maintenance. This leaves us concerned about higher operating costs, longer downtimes, and greater dependency on a small set of specialized vendors. The risks of relying on a single manufacturer are not hypothetical — we are informed that the City has already experienced similar challenges with EV chargers that use proprietary technology, which have remained out of service due to lack of available repairs. In contrast, battery electric buses, when thoughtfully implemented using open standards and diverse suppliers, offer a strategic advantage: they benefit from a rapidly expanding market, declining costs, and widespread parts availability.

5. Battery Electric Buses as a Viable and Preferable Alternative

Battery electric buses, which are already designated for Dial-A-Ride service in Pasadena's plan, offer a lower-risk and more scalable path to zero emissions. BEBs do not rely on fuel imports, produce no local emissions, and can leverage existing investments in the electrical grid and renewable energy. Other agencies across the state, including LA Metro, have made significant investments in BEBs, recognizing their potential for long-term operational cost savings and climate resilience.

Recommendation

We urge the City Council to reconsider the current emphasis on hydrogen fuel cell buses and instead consider prioritizing a battery-electric fleet transition for both Pasadena Transit and Dial-A-Ride. To that end, we also recommend commissioning an updated comparative analysis of lifecycle emissions, total cost of ownership, and safety implications for BEB versus FCEB pathways — including localized supply chain impacts. However, cost is not the only factor to consider; the significantly greater risks to safety associated with hydrogen fuel compared to electric transportation infrastructure must also be fully accounted for in the City's decision-making.

Our Commission is committed to supporting Pasadena's transition to a sustainable, zero-emission future. We believe that with careful planning and community-centered investment, this goal can be achieved in a manner that maximizes both environmental benefit and public safety.