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CaFCP comment submission to 19-ALT-01

Additional submitted attachment is included below.

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July 6, 2020

Patrick Brecht
California Energy Commission
Docket Unit, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket No. 19-ALT-01, Feedback on 2020-2023 CTP Investment Plan and Advisory Committee meeting

Dear Mr. Brecht,

The California Fuel Cell Partnership (CaFCP) respectfully submits this letter of comment to the California Energy Commission (CEC) in response to 19-ALT-01, the Clean Transportation Program's 2020-2023 Investment Plan. The comments and feedback provided are intended as broad observations, based on learnings from over 20 years of collective global experience in the fuel cell electric vehicle market.

Based upon the CEC staff presentation and direction for the 2020-2023 Investment Plan, the questions posed by the Commissioner, and the discussion held by the Advisory Committee, we present the following comments.

- **California needs every ZEV it can get**
- **CEC has the responsibility to aim all of California's ZEV programs towards success**
- **Acceleration of ZEVs now is critical to primary state objectives and overall success**

As a national and global leader, CEC has advanced alternative fuels and vehicles, including hydrogen and fuel cell technologies, through far-sighted and focused programs. Through this leadership, in coordination with other state and local agencies, industry and climate allies, CEC and California continue to make progress towards state goals and drive us towards a clean, sustainable energy system. Collectively, great progress has been made, but our goals still lay in front of us, and now is the time to aggressively push forward. To help move our shared agenda forward, CaFCP offers the following feedback and is committed to continue working closely with CEC.

California needs every ZEV it can get, and fuel cell electric vehicles (FCEVs) are critical to the state achieving its ZEV, environmental and economic targets.

California's carbon-reduction goals require successful creation of a healthy ZEV economy, across light- and heavy-duty applications, as evident by the state's 2030 ZEV goal of five million vehicles. Yet, as the staff presentation illustrated (page 13, below), the state is far behind all its ZEV and supporting infrastructure targets. With great diversity in geography, population and lifestyles, California needs a variety of ZEV choices – *battery and fuel cell electric* – to meet customer needs and achieve state goals.

FCEVs are a necessary component and choice in a healthy light- and heavy-duty ZEV economy.

- Light-duty FCEVs provide the performance and value certain customers expect. These ZEVs provide users, especially multi-unit dwellers (without access to a personal garage), residents and frequent visitors to extreme temperature environments and super commuters with high output/energy, fast fueling, and long range.
- FCEVs mimic the known behavior of ICE vehicles, requiring little-to no change in behavior, making for easier customer adoption.
- FCEV are easily scaled from light-duty sedans and SUVs to heavy-duty trucks, buses and trains.
- The fastest route to economies of scale requires simultaneous commercialization of light- and heavy-duty FCEV markets

The Clean Transportation Program rightfully focuses on ZEV technologies as the primary focus to achieve the state's aggressive climate and air quality goals. This is due to the ability to be zero emission at the point of use and the ability to develop fully decarbonized resource pathways. FCEVs and the associated hydrogen infrastructure are true reflections of that goal and opportunity, as evident by the 2018-2019 Investment Plan's *Table 7: Expected Annual Petroleum Fuel and GHG Emission Reduction Benefits*[1]. In that analysis CEC reported that the expected GHG emission reduction benefits from the current (at the time) hydrogen station network was already vastly greater than that of any other ZEV or near ZEV technology – *despite being the last technology to enter the commercial market*. Similar benefits were presented in

[1] ARFTP 2018-2019 Investment Plan https://efiling.energy.ca.gov/getdocument.aspx?tn=223420

Table 9 of the same report, demonstrating the greatest NOX and PM2.5 reductions from either ZEV fueling infrastructure. This analysis highlights the environmental impact and value of FCEVs in the light-duty market today and portends even greater for the future. The CEC analysis also demonstrated the early hydrogen progress has significant positive impact on petroleum displacement. **FCEVs are critical to achieving California environmental targets.**

Table 7: Expected Annual Petroleum Fuel and GHG Emission Reduction Benefits

Project Type	Petroleum Displacement (Million Gallons)			Greenhouse Gas Emission Reductions (Thousand Tonnes CO_2e)		
	2020	2025	2030	2020	2025	2030
Fueling Infrastructure						
Biodiesel	8.5	8.5	8.5	73.8	73.8	73.8
E85	11.1	11.2	11.2	33.7	33.8	33.8
Electric Vehicle Charging	2.8	2.6	2.6	20.9	20.0	20.0
Hydrogen	13.6	14.3	15.5	107.7	113.8	123.2
Natural Gas	35.3	35.3	35.6	87.1	87.8	87.8
Fueling Infrastructure Subtotal	*71.3*	*71.9*	*73.4*	*323.2*	*329.2*	*338.6*

Table 9: Expected Annual Air Pollution Emission Reduction Benefits

Project Type		NO_X Reductions (Tonnes/Year)			$PM_{2.5}$ Reductions (Tonnes/Year)		
		2020	**2025**	**2030**	**2020**	**2025**	**2030**
Fuel Infrastructure	Electric Chargers	1.89	1.57	1.57	0.19	0.19	0.07
	Hydrogen	9.31	8.51	9.25	0.94	1.05	0.43
Vehicles	CVRP & HVIP Support	7.06	6.44	1.83	0.11	0.09	0.05
	Medium- & Heavy-Duty	7.52	12.43	11.52	0.23	0.25	0.22
	Manufacturing	537.17	1,126.14	1,201.45	7.55	19.68	28.13
Total		**562.95**	**1,155.09**	**1,225.62**	**9.02**	**21.26**	**28.90**

CEC has the responsibility to aim all of California's ZEV programs towards success to meet California's primary objectives of 5 million vehicles by 2030. CEC's Clean Transportation Program provides the methodology, and now is the time for CEC to exercise best approaches across *all* ZEV technologies.

CEC and its Clean Transportation Program appropriately focus on ZEVs and the achievement of the 5 million ZEV target, as fast and effectively as possible, to support state environmental goals. CEC's approach for BEVs and charging infrastructure reflect that approach towards achieving success; from directly referencing and targeting the 5 million vehicle objective and developing new analysis tools (EVI-Pro), to focusing all efforts on filling the gaps identified in reaching the overarching objective. In addition, CEC recently released an RFI (20-FINANCE-01)

seeking comments regarding strategies to attract private investment in ZEV infrastructure, seeking feedback on how government policies and support mechanisms can develop in tandem with private investment to scale up ZEV infrastructure rapidly and effectively[2]. These approaches are well suited to lead to success for the Clean Transportation Program and the state's overall environmental goals. Furthermore, the signals CEC sends to industry, investors and the public with these "aim to succeed" activities cannot be understated and have demonstrated CEC's leadership capability in ZEV deployments.

However, CEC does not appear to objectively or equally apply these methodologies or approaches across ZEV technologies. The Clean Transportation Program has the obligation – under the CTP mandate and to meet the state's environmental and economic goals – to replicate BEV infrastructure planning approaches and successes to FCEVs and hydrogen infrastructure. Creating similar gap analysis tools, such as EVI-Pro for FCEVs, should be relatively straightforward, and can be done with the existing CEC contracts already working on BEV light- and heavy-duty charging applications. These tools are known and identifiable within the CEC Clean Transportation Program and will set CEC up for program and comprehensive ZEV success. Delays in applying these tools towards hydrogen and FCEV success only inhibit the success of CTP and state reaching its ZEV objectives.

In addition to the state objective of deploying 5 million ZEVs, the standing state hydrogen infrastructure target is 200 hydrogen stations by 2025, per Executive Order B-48-18[3]. Although the original mandate of the Clean Transportation Program is the achievement of 100 HRS, this does preclude or negate the greater state target of 200 HRS by 2025, *or the necessary ZEV infrastructure to support five million ZEVs by 2030* (including both charging AND hydrogen stations). The Clean Transportation Program needs to pivot its hydrogen infrastructure activities away from near-term vehicle projections and towards these larger state vehicle targets, quickly. CEC has the tools, experience, and methodology, needing now to be more inclusive in its approach to achieving similar success for FCEV and HRS deployment. Now is not the time to stifle FCEV progress by failing to fully fund the $20M annually through the end of the program or asking if the state should stop halfway to its first infrastructure goal. That sort of action does not aim the program or technology towards the success needed to achieve California's objectives. Nor is it proper to send negative signals to industry, investors, consumers and climate allies about the state's ZEV commitments and future.

Acceleration of ZEVs, now, is critical to primary state objectives and overall success. Aggressive moves now by government (policies and signals) creates faster acceleration and encourages private investment and public adoption overall, achieving California's environmental and economic objectives earlier and with greater impact.

California, and the Clean Transportation Program, should accelerate the development of light-duty hydrogen stations. This acceleration is critical, as the FCEV market is ramping up, to achieve the economies of scale and market self-sufficiency earlier rather than later. California

[2] https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=20-FINANCE-01

[3] https://www.ca.gov/archive/gov39/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/index.html

funding is the accelerant to achieve this market self-sufficiency. Acceleration of funding will send positive signals to industry and public that the state is committed to achieving economies of scale, and positively encourage private investment and public adoption of FCEVs and HRS to achieve common goals.

CEC is to be congratulated for listening to industry that *scaling up* will result in lower-cost stations with lower-cost hydrogen[4]. CEC acted on this by announcing the current GFO-19-602 (GFO), providing an immediate $45.7 million and "up to $115.7 million" in grant funds to accommodate California's near-term light-duty FCEV roll-out, and, more importantly, support the 5 million ZEV objective. Award of the tranches and batches as specified in the GFO will give station developers and vehicle OEMs, alike, the *certainty* to make longer-term contracts for a larger-volume purchases of equipment, and, therefore, lower cost vehicles and fuel. These actions then positively cascade to longer-term investment commitment decisions on the production of light-duty FCEV, and other hydrogen applications, which yields even further price reduction.

The Executive Order B-48-18 target of 200 hydrogen fueling stations represents the first critical milestone towards a fully self-sufficient light-duty FCEV ZEV commercial marketplace, and also represents California's pathway towards an offramp from public subsidies. The approach and timing is not unlike early California investments in solar and wind, which have reached sufficient scale to create necessary cost parity and a virtuous cycle of momentum. Considering California's history in creating new market economies through strong leadership, and the current global economic crisis that is desperately searching for such leadership, this should be another example of the state's prowess and foresight. Should funding not materialize or the state sends negative market signals to this developing global industry, California is at risk of missing its own environmental targets and attracting additional investment to the state.

We welcome CEC's forethought and vision and appreciate the opportunity to provide this feedback. We encourage CEC, in the strongest possible words, to accelerate the funding and support for retail hydrogen fueling infrastructure, which will support the global movement to a carbon free transportation system. Our door is open to providing any additional insights, guidance and support CEC finds necessary to scale up the FCEV and HRS commercial market.

Sincerely,

Bill Elrick
Executive Director

[4] Path to Competitiveness: A Cost Perspective, Hydrogen Council, https://cafcp.org/sites/default/files/Path-to-Hydrogen-Competitiveness_Full-Study-1.pdf; Roadmap for the Deployment and Buildout of Renewable Hydrogen Production Plants in California, UC Irvine/CA Energy Commission, https://cafcp.org/sites/default/files/Roadmap-for-Deployment-and-Buildout-of-RH2-UCI-CEC-June-2020.pdf