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Ca Fuel Cell Partnership Response to 20-FINANCE-01

*See Cover letter and attached submittal document

Additional submitted attachment is included below.

April 10, 2020

Mr. Tim Olsen, Senior Policy Advisor
California Energy Commission
Docket No. 20-FINANCE-01
1516 Ninth Street
Sacramento, CA 95814-5512
Re: Docket No. 20-FINANCE-01, RFI Clean Transportation Financing and Investment

Dear Mr. Olsen,

The California Fuel Cell Partnership (CaFCP) submits this letter to the California Energy Commission (CEC) in response to Docket, 20-FINANCE-01, Strategies to Attract Private Investment in Zero Emission Vehicle Charging Infrastructure and Other Clean Transportation Projects.

CaFCP and its members (just like the California Air Resources Board) strongly believe that hydrogen and fuel cell technology are a sound and viable solution to electrification of transportation as are BEVs. Given there is no single silver bullet solution, each technology has a unique and important role to play in the transition to clean transportation.

In 2018 CaFCP released *The California Fuel Cell Revolution: A Vision for Advancing Economic, Social, and Environmental Priorities*. This report outlines our members' vision for fuel cell electric vehicle (FCEV) and hydrogen infrastructure market success in California that supports the state's 2030 target of five million zero emission vehicles (ZEV), and its larger environmental and economic goals. This foundational document envisions a cost-competitive light, medium and heavy duty fuel cell and hydrogen market, led by private investment and consumer demand, while enabling an ensuing exit from subsidies and support.

Building on this vision, CaFCP private-sector members formed a "market activation" working group to systematically identify conditions for success in hydrogen mobility, including key enablers and blockers to these conditions, and offer actions by industry and government policy that could facilitate and accelerate successes and the corresponding 2030 timeline. Of specific interest to the intent and purpose of RFI 20-FINANCE-01, this working group produced a menu of public policy mechanisms that could support and enable market activation. This menu presents a comprehensive policy framework and roadmap that would send positive signals to industry for expanding private investment, give confidence to consumers in expanding adoption, and provide sign posts back to public policy and funding programs, ultimately enabling a government offramp. The working group developed a series of slides outlining these needs and opportunities as a discussion tool and we submit these to CEC and the 20-FINANCE-01 docket for consideration.

These slides are not an end to themselves, but rather a means to launch and broaden the public-private dialogue on the actions needed to stimulate and achieve California's ZEV market goals. CaFCP accepts the CEC invitation in 20-FINANCE-01 for ongoing dialogue and our membership offers to co-manage and co-fund workgroup and stakeholder meetings for hydrogen and fuel cell vehicles (light-, medium- and heavy-duty applications). CaFCP welcomes and is prepared to work closely with CEC staff and other agencies. Together, we can facilitate joint discussions around the output presented and on the appropriate policy environment needed to increase private investment for light, medium and heavy duty FCEVs and overall ZEV success in California.

We compliment CEC on initiating this dialogue and asking stakeholders for input on appropriate signals and actions that will lead to a self-sustaining ZEV market. Considering the diversity in vehicle types needed to accomplish transforming transportation to electric powertrain, we all have our work cut out for us. This means

the NEXT pathway to Medium and Heavy Duty, with NO harm to the critical Light Duty advances being made today. This necessitates robust fueling infrastructure plus the shepherding of consumers and businesses through the disruption. Driving solutions to create an environment to scalable momentum while overcoming key barriers and winning over customers with both policy and private investment will ensure overall ZEV success in California. CaFCP appreciates the opportunity to provide this feedback and we look forward to partnering with CEC on these important activities.

Sincerely,

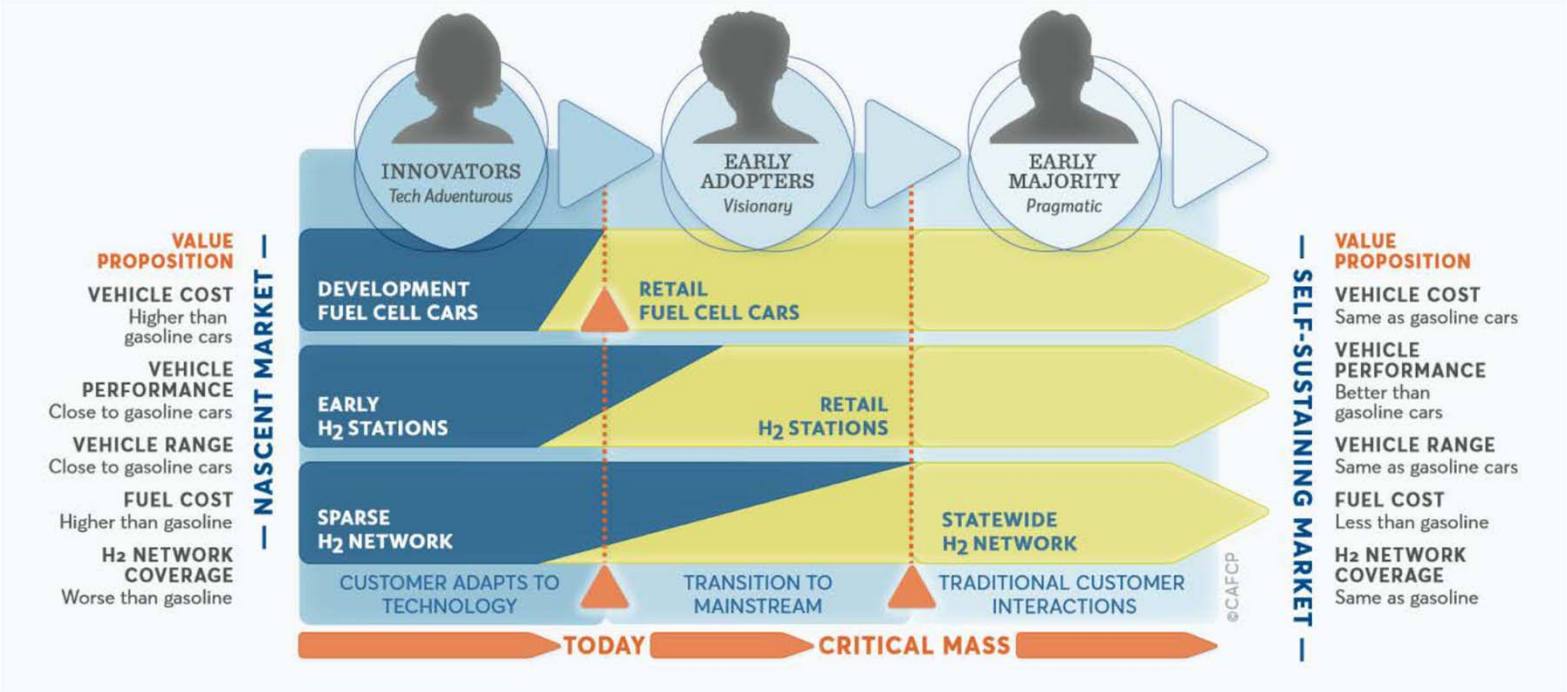
David Park

Attachment

Vision: the California Fuel Cell Revolution

Advancing California's Economic, Social & Environmental Priorities

Mission: accelerate commercialization of hydrogen and fuel cell vehicles // Revolution: tipping point to going mainstream



- Transition from grant funding to market-based policy that enable scale and encourage private investment
- Accelerate customer value proposition to increase adoption of fuel cell electric vehicles
- Amplify: Trucks and Grid Integration and Low-Carbon

Shared Objective / Shared Challenge

Pivot from demonstration to commercialization is needed, and possible

Objective: scale increase for FCEV market adoption and HRS cost reduction

Roadmap for California Hydrogen Market Activation

KEY ENABLERS TO CREATE

Virtuous Effects of Acceleration & Scale, from Stability & Confidence
1. Scale in Vehicle manufacturing & sales
2. Scale in Station Equipment manufacturing
3. Scale in Station Network for Density and Utilization
4. Stability in Station Development (program)

Opportunity to Decarbonize H2 from the Start, in Energy Systems
A. Renewable Content & Decarbonization (without increase in cost)
B. Distributed H2 Production with Energy & Waste System Benefits (e.g., electrolysis, Tri-gen, gasification, etc.)
C. Grid-Connected Hydrogen Production supporting increase in Renewable Electricity Generation without Electricity Transmission

KEY CHALLENGES TO OVERCOME

Barriers to Market Entry for Industry
1. Development Costs for vehicles, equipment, infrastructure
2. Perception of Risk and Risk Tolerance (companies, investors)
3. Real and Perceived Customer Demand (Cost, Convenience, Utility, Desirability, Buyer Excitement)
4. Late-mover Advantage and Competition for Capital
5. Capital Costs in small-scale manufacturing & construction
6. Operating Costs in sparse network and/or distant sources
7. Costs and Difficulty of doing business in California
8. Clear Use Case in HD… but Challenged Business Case

Industry Delivers:
1. Compelling Vehicles (makes, models, cost, utility, desirability)
2. 75% Cost Reduction (Halving Twice)
3. Refueling Station Performance (Reliability, Throughput)
4. Supply Performance (Reliability, Resilience, Cost, Carbon)

CONDITIONS FOR SUCCESS

Customer Adoption of Fuel Cell Electric Vehicles
a) Compelling vehicle makes and models
b) Customer Incentives to Accelerate Adoption
c) Statewide Station Network, including network coverage for convenience in light-duty & corridors for heavy-duty

Market-Based Policy to Attract Private Capital based on a Viable Investment Case (transition from direct public funds toward private capital investment)

Cost Reductions to Attract Private Capital based on Viable Investment Case (cost reduction in vehicles, stations, and hydrogen supply)

Economies of Scale for Large-Scale Infrastructure, with Market Confidence and Stable Long-term Policies to support Multi-Year Large-Scale Investments

Competitive Pressures to motivate Cost Reduction and Performance Improvement, translate to the customers.

TARGET:
- Reach a Tipping Point when hydrogen fuel cell vehicles are at or near price parity with gasoline combustion vehicles (removes cost as a barrier to market entry for customers)
- Industry delivering convenience, utility, desirability, and creating buyer excitement
- Competition and Market Entry occurring

[2030] VISION

Market Confidence
1.) Growing market (private and public investment, customer adoption)

Strong Customer(s) Value Proposition(s) Accelerating Adoption
1.) Full range of compelling vehicle makes and models
2.) Statewide Refueling Network (Fuel Available)
3.) Competitive Cost (Vehicle, Fuel, total cost of ownership)
4.) A self-sustaining commercial market for zero-emission vehicles
5.) 100% Renewable zero-carbon zero-emission vehicle fuel
6.) Achieve California emission reduction and air quality goals

Necessary Market Conditions Exist
1.) Strong and Stable Policy Support (expression of Society as Customer, for Emission Reduction goals/value)
   a.) Market-based policy frameworks
   b.) Policies to enable, establish, expand market segments
2.) Strong and Stable Industry Progress (confirming cost and performance targets, investment)

Results (look for Evidence on the Roadmap)
1.) Increasing Private Investment, Decreasing Direct Public Investment
2.) Acceleration and Scale: Increasing Vehicle Makes/Models, Large Scale Infrastructure, New Entrants
3.) Hydrogen Supply: Dedicated Infrastructure, Low Carbon, Renewable
4.) Increasing Benefit from Hydrogen in Energy Systems (CA Grid)

TARGET:
- 1 million FCEV with 1,000 fueling stations serving X% Californians
- Average X gCO2e/MJ fuel providing X% of total emission reduction at less than $X/ton CO2 public cost
- Sunset the internal combustion engine through customer choice and better products rather than prescriptive mandate

Comprehensive Policy Framework for CA Hydrogen Market Activation

POLICY ACTIONS TO ACTIVATE THE MARKET

1.) Multi-Year Program of Station Development and Investment for Market Confidence
- ✓ Semi-Annual ARFVTP Grant Funding for more than 100 HRS as per AB8
- ✓ Multi-Year Public Funding Program (e.g., structure ARFVTP in Multi-Year GFO)
- • Re-authorize AB-8 for beyond 200 HRS

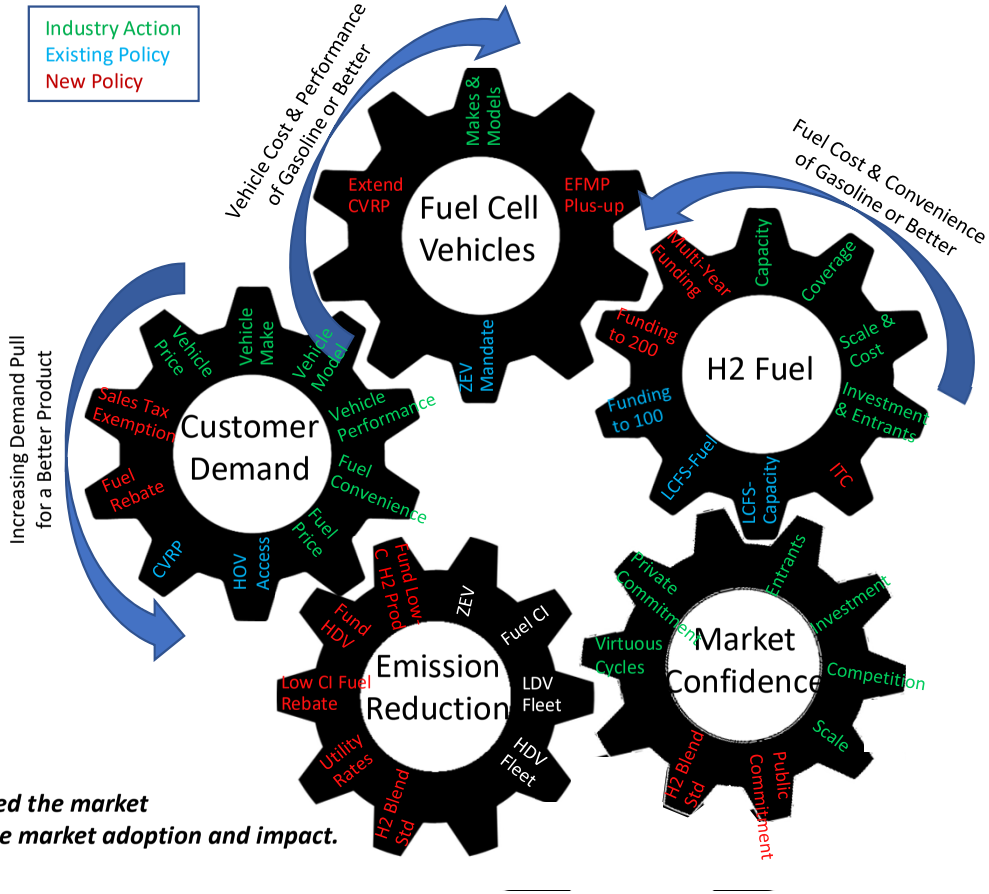
2.) Viable Market Conditions for Investment to Accelerate and Scale for Impact
- ✓ LCFS Fuel Credits with EER at 2.5 (or greater as vehicle efficiency improves)
- • Investment Tax Credit for H2 Infrastructure Investment (Stations, Production, Distribution)
- • Clean Hydrogen Blending Standard in Natural Gas (analog to Renewable Portfolio Standard)

3.) Increase and Accelerate Customer Value Proposition to Support Adoption
- ✓ Zero-Emission Vehicle (ZEV) Mandate
- ✓ Clean Vehicle Rebate Program (CVRP)
- • Continue and Increase Customer Incentives
  - • Continue CVRP, increase with larger incentive (fill federal tax credit gap)
  - ✓ Continue HOV Lane access
  - • [Activate EFMP Plus-Up program]
- • Sales Tax Exemption for Hydrogen Fuel (with sunset) and Station Equipment (in CAETFA program – probably needs broader push, the program needs more money)
- • Fuel Rebate to offset market price of fuel to parity now (customer adoption)

4.) Guide Development from the Start for Maximum Social Benefit
- ✓ LCFS Capacity Credits to Accelerate Station Capacity and Incentivize Decarbonization
- • Put 2030 carbon free in statute (and ensure definitions work for industry and enviros)
- • Electric Utility Rate Structures for Electrolysis as Demand Response Asset, Grid Storage Tech.
- • Fuel Rebate to offset higher cost of zero-carbon supply (zero-carbon from start)
- • Fund Heavy-Duty vehicles and stations to accelerate with bridge to Total Cost of Ownership

5.) Principles
- • Equal (proportional) funding for ZEV Infrastructure (Hydrogen, BEV)
- • Harmonize across policies for level playing field

Picking up Speed in the Gears of the Hydrogen Fuel Cell Revolution to Hasten a Tipping Point with Virtuous Cycles – Lean In on Confidence

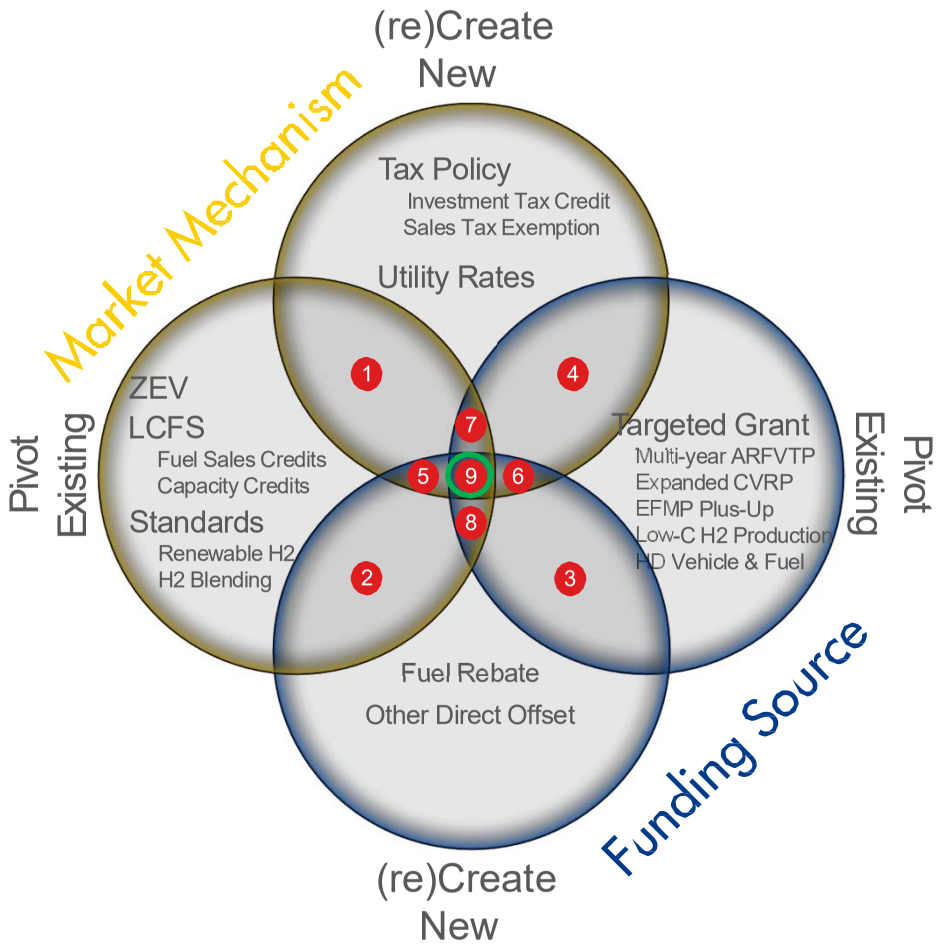


Have one Carrot (CVRP, ARFVTP) and one Stick (ZEV, LCFS) each for Vehicle, Fuel that have created the market
Adding policy supports in each area is now needed to pivot toward commerciality and accelerate market adoption and impact.

Policy Packages

Legend of Policy Packages

1. Market Incentives: combination of LCFS credit generation, reduced tax burden, and enabling rate structures provides most certainty and scalability for viable market conditions.
2. Pivot Existing Policy: combination of LCFS credit generation and direct offset to fuel price improves scalability and pump price for viable market conditions.
3. Pivot Existing Funding: directing available funding toward enabling commercialization with confidence for station grants (multi-year, network), direct offset to fuel price, expanded support for vehicle purchase including heavy-duty, and support for low-carbon hydrogen production can improve scalability for viable market conditions and accelerate customer adoption.
4. Grants and Tax Credits: tax credits and exemptions can be used to decrease the amount of grant funding needed to support station development.
5. Change from Grants to Market Mechanisms: support for station development can be provided through LCFS Credits and Tax Policy (market mechanisms), with public funding applied directly to fuel cost reduction.
6. Focus on Fuel Cost: complement Grants with Tax Credits to increase support for station development, while applying additional funding to direct offset of pump price.
7. Focus on Station Capacity: complement Grants with Tax Credits and LCFS Credits to incentivize buildout of fueling capacity.
8. Augment Existing Policy to Hasten Cost Parity: complement existing Grants for station development and vehicle purchase with LCFS Credits and direct offset of pump price.
9. Apply the full toolkit: LCFS credits from fuel sales and available capacity partially offset initial low utilization to incentivize refueling network development; scalable to enable cost reduction. Reduced tax burden improves market conditions to improve investment case for private sector infrastructure development. Direct offset to fuel price hastens attractive customer value proposition for adoption of FCEV. Targeted grant funding ensures complete refueling network buildout (e.g., connector & destination stations, DAC).



Roadmap for California Hydrogen Market Activation

- Top asks to CA Administration
- Top asks for CA Legislature
- Top asks for Fed. Administration
- Industry Led

	2019	2020	2021
	Scale & Cost Reduction for Market Confidence & Off-Ramp of Public Funding		
CA Budget	Re-authorize AB8 to 500 station target	Funding off-ramp to 500 Stations for LD Establish funding structure designed for HD	
CA Policy	Sales Tax Exemption for H2 Equipment	Investment Tax Credit for H2 Infrastructure (analogous to renewable power generation)	
CA Admin.	✓ Multi-Year GFO Structure ✓ LCFS Capacity Credits (HRI Pathway)		Keep / Increase EER in LCFS Rulemaking Capacity Credits for HD in LCFS Rulemaking
Industry	Station: cost down, performance up… Supply: dedicated supply (reliability, cost, carbon)… investments & infrastructure expansion (announcements)		
	Accelerate Customer Adoption		
CA Budget	Long-term CVRP and HVIP funding	Activate EFMP Plus-Up Fund Heavy-Duty to Bridge TCO	HOV access
CA Policy	Sales Tax Exemption for H2 Fuel		
CA Admin.		Fuel Rebate to offset price of fuel to parity	
Industry	Increasing vehicle production and sales … expansion of makes and models (announcements) … growing customer adoption (announcements)		
	Achieve Emission Reduction Objectives		
CA Budget	Funding for low-carbon hydrogen supply (consider: grid-connected, waste to resource)		
CA Policy	Standard for 100% Renewable (in progress)*		Clean Hydrogen Blending Standard in Natural Gas (*analogous to Renewable Portfolio Standard*)
CA Admin.		Electric utility rate structures for hydrogen	
Fed. Admin.	RNG to H2 Pathway in RFS (in progress)	Investment Tax Credit for H2 Infrastructure	
Industry	Hydrogen production from renewable and low-carbon sources …		

* Ensure "renewable" definition inclusive of biomas / RNG and carbon intensity is net of CCS / fugitive emissions