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SoCalGas Comments- Status of ZEV Market

Additional submitted attachment is included below.

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California Energy Commission
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Subject: Comments on the Integrated Energy Policy Report Commissioner Workshop on the Status of Zero Emission Vehicle Market, Docket # 19-IEPR-04

Southern California Gas Company (SoCalGas) appreciates the opportunity to comment on the California Energy Commission's (CEC) Workshop on the Status of the Zero Emission Vehicle Market (Workshop) held on May 2, 2019 as part of the 2019 Integrated Energy Policy Report (IEPR) proceeding. SoCalGas supports the efforts led by the California Energy Commission (CEC) to accelerate the commercial development and adoption of Zero Emission Vehicles (ZEVs) in California to reduce greenhouse gas (GHG) emissions in the State. However, SoCalGas was concerned to observe that the Workshop focused solely on Battery Electric Vehicles (BEVs) as part of the ZEV market study even though there are other ZEV technologies in the market that can support the reduction of GHG emissions. SoCalGas offers comments below on the following:

1. Supporting Hydrogen Fuel Cell Electric Vehicles (FCEVs) and zero-carbon hydrogen production will assist the State in meeting its GHG emissions reduction goals

2. FCEVs can reach cost parity with gasoline and BEVs by 2025 and a strong statewide policy signal supporting hydrogen is needed to accelerate cost reductions for FCEVs

1. Supporting FCEVs and zero-carbon hydrogen production will assist the State in meeting its GHG emissions reduction goals

SoCalGas is concerned that discussions on the market outlook on zero-emission vehicles disregarded FCEVs, which chooses to ignore the potential FCEVs have in helping California reduce GHG emissions from the transportation sector. FCEVs are a complementary technology to BEVs and should not be neglected in addressing the overall development of the ZEV market in California. This is especially true when the benefits of FCEVs are considered, including when

they are powered by zero-carbon hydrogen. Zero-carbon hydrogen, also known as green electrolytic hydrogen, is hydrogen that is produced from electrolysis. According to the National Renewable Energy Laboratory (NREL), "electrolysis is one of the most promising hydrogen production techniques because of its ability to use renewable electricity to make hydrogen while simultaneously supporting grid needs with flexible, fast responding operation."[1] California today produces excess wind and solar power that cannot be used. To avoid overloading the grid, renewable electricity production is curtailed; however, instead of curtailing renewable energy production this excess renewable power can be used to create green electrolytic hydrogen as a fuel gas[2] that can be used for a variety of end uses, including transportation fuel, fuel for heating and cooking, and industrial applications. Zero-carbon hydrogen will be a critical and a complementary pathway to BEVs that will help the State meet its aggressive climate goals as it is a completely carbon free fuel gas for FCEVs. Executive Order B-48-18,[3] ordered that all State entities work with the private sector towards a target of five million ZEVs on California roads by 2030 and 250,000 vehicle charging stations and 200 hydrogen fueling stations by 2025. CEC should support the deployment of FCEVs and zero-carbon hydrogen production to meet the requirements of Executive Order B-48-18. SoCalGas respectfully believes it was a critical oversight that the CEC excluded any consideration of FCEV market potential and its beneficial impact on the transportation sector from Workshop discussions. Including FCEVs makes sense because it is a complementary technology solution that can assist California in meeting its GHG emission reduction policy goals.

Plug-in BEV technologies were the focus of the ZEV workshop. FCEVs should be equally considered because these ZEVs can provide several advantages over plug-in BEV technologies, including faster fueling time and longer range. Today, FCEVs can offer longer travel distances (up to 380 miles without refueling),[4,5] which is longer than any BEVs currently on the market. Major manufacturers see the potential for FCEVs and are scaling up vehicle production and market expansion in California and elsewhere globally. For example, Toyota,

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[1] National Renewable Energy Laboratory. California Power-to-Gas and Power-to-Hydrogen Near-Term Business Case Evaluation. At page v. Available at: https://www.nrel.gov/docs/fy17osti/67384.pdf

[2] Gas or Fuel Gas is defined by the California Public Utilities Commission under General Order No. 58A as "any combustible gas or vapor, or combustible mixture of gaseous constituents, used to produce heat by burning. It shall include, but shall not be limited to, natural gas, gas manufactured from coal or oil, gas obtained from biomass or from a land fill, or a mixture of any of any or all of the above. Available at: http://docs.cpuc.ca.gov/PUBLISHED/GENERAL_ORDER/54827.PDF

[3] Executive Order B-48-18. http://www.opr.ca.gov/planning/transportation/zev.html

[4] National Hydrogen Roadmap (Australia), 2018, see https://www.csiro.au/~/media/Do-Business/Files/Futures/18-00314_EN_NationalHydrogenRoadmap_WEB_180823.pdf?la=en&hash=36839EEC2DE1BC38DC738F5AAE7B40895F3E15F4

[5] https://www.hyundaiusa.com/nexo/index.aspx

Honda and Hyundai are currently manufacturing several light-duty FCEVs and Audi is also developed an FCEV.[6] Additionally, Nikola Motors recently has begun production of a Class 8 fuel cell truck.[7] Nikola Motors plans to build a vast network of 700 heavy duty truck stop-size hydrogen fueling stations across the U.S. and Canada by 2028.[8] Toyota is currently demonstrating Class 8 fuel cell trucks powered by the same fuel cell technology used in its light-duty model the Mirai.[9] In part of strategic efforts to reduce GHG emissions and highlight the benefits of hydrogen fuel cell technology, Kenworth recently announced that it will develop ten zero-emissions heavy-duty trucks using Toyota's hydrogen fuel cell electric powertrains to be used at the Ports of Los Angeles, throughout the Southern California and Central Coast areas, and in Merced County.[10] Heavy-duty FCEV adoption in California is key to meeting the State's climate goals because heavy-duty trucks account for 20 percent of the GHG emissions from the transportation sector.

2. FCEVs can reach cost parity with gasoline and BEVs by 2025 and a strong statewide policy signal supporting hydrogen is needed to accelerate cost reductions for FCEVs

Currently, FCEVs have a higher Total Cost of Ownership (TCO) than conventional gasoline and plug-in BEVs. However, FCEV costs are expected to decrease significantly in the coming years. For example, Australia's National Hydrogen Roadmap shows that the Levelized Cost of Transport (LCOT) for light-duty FCEVs can reach parity to both gasoline and BEVs around the 2025 timeframe as shown below.[11]

[6] https://www.audi-mediacenter.com/en/hybrid-fuel-cell-slash-audi-h-tron-242
[7] https://nikolamotor.com/motor
[8] https://www.trucks.com/2019/04/22/nikola-ambitious-plan-hydrogen-service-network/
[9] https://corporatenews.pressroom.toyota.com/releases/toyota+zero+emission+heavyduty+trucking+concept.htm
[10] https://www.truckinginfo.com/330270/toyota-and-kenworth-unveil-jointly-developed-hydrogen-fuel-cell-truck
[11] Bruce S., Temminghoff M., Hayward J., Schmidt E., Munnings C., Palfreyman D., Hartley P. (2018) National Hydrogen Roadmap. CSIRO, Australia. Available at https://www.csiro.au/~/media/Do-Business/Files/Futures/18-00314_EN_NationalHydrogenRoadmap_WEB_180823.pdf?la=en&hash=36839EEC2DE1BC38DC738F5AAE7B40895F3E15F4.

Comparison of Vehicle Type by Levelized Cost of Transport (LCOT)[12]

	LCOT 2018 ($/vkm)	LCOT 2025 ($/vkm)	LCOT 2018 ($/vkm)	LCOT 2025 ($/vkm)
	Passenger Vehicle		Buses	
ICE	0.71	0.73	1.83	1.85
BEV	1.19	0.68	2.66	1.80
FCEV	**1.43**	**0.70**	**2.96**	**1.84**

These findings are consistent with a recent California Air Resources Board (CARB) study that examined the TCO of various truck types including regional day tractors which found that "Hydrogen fuel cell vehicles cost more upfront and may pay more for fuel than their diesel counterparts. But with reductions in capital cost and with declining hydrogen prices, TCO parity may be achievable by the 2030 timeframe. If costs for the vehicle and fuel decline faster than projected in this report, TCO parity may happen quicker than projected."[13] SoCalGas believes one of the keys to accelerate the TCO parity described by CARB is to establish and promulgate strong statewide policy signals that hydrogen will be included in the State's transportation future. SoCalGas thus respectfully requests that the CEC include an analysis of FCEVs and zero-carbon hydrogen so that a complete and accurate report on the ZEV market can be reflected in and inform this year's IEPR proceeding.

Conclusion

SoCalGas provides these comments to support California's aggressive GHG emission reduction goals and the adoption of ZEVs in the transportation sector that is balanced, sensible and allows all complementary vehicle technologies to innovate, deploy and compete.

Sincerely,

/s/ Tim Carmichael

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[12] Id. at p. 41, Table 15.
[13] Advanced Clean Trucks Total Cost of Ownership Discussion Document Preliminary Draft for Comment, California Air Resources Board, February 22, 2019. Available at: https://ww2.arb.ca.gov/sites/default/files/2019-02/190225tco_0.pdf