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SoCalGas Comments on the Advisory Committee Meeting

Additional submitted attachment is included below.

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May 14, 2021

The Honorable Patty Monahan
Commissioner
California Energy Commission
Docket Unit, MS-4
Docket No. 21-ALT-01
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Comments on the Advisory Committee Meeting

Dear Commissioner Monahan:

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide public comments on the Draft 2021-2023 Investment Plan Update (Draft Investment Plan) for the Clean Transportation Program (CTP). California has made substantial progress to transform the transportation sector, the largest source of emissions in the State, to improve public health. Continued decarbonization of the transportation sector will be key to meeting the State's emissions goals by 2030 and set us on the trajectory to achieve carbon neutrality by 2045.[1] Besides sound policy and regulation, public and private investments are needed to support the use of zero emission technologies, wherever feasible, as well as other clean technologies. These investments can provide communities with immediate health, environmental, and economic benefits, especially in vulnerable and disadvantaged communities.[2] Thus, it is in the public interest for the California Energy Commission (CEC) to prioritize public investments of up to $100 million annually to fund projects for electric and hydrogen vehicles and infrastructure, medium- and heavy-duty vehicles, biofuels, and workforce development.

[1] *See* California Energy Commission, *Draft Staff Report: 2021-2023 Investment Plan Update for the Clean Transportation Program*, April 2021, at 1. Available at https://efiling.energy.ca.gov/getdocument.aspx?tn=237549.
[2] Ibid, at 1-2.

Zero-Emission Vehicle (ZEV) Infrastructure for Light-Duty Vehicles

According to the California Air Resource Board (CARB), on-road passenger vehicles, trucks, and SUVs are responsible for 74 percent of the transportation sector greenhouse gas (GHG) emissions inventory.[3] Currently, electricity and hydrogen are key fuels to transition petroleum vehicles to ZEVs. However, according to a 2021 study, "a key barrier to replacing gasoline and diesel vehicles with plug-in vehicles is the availability of reliable and dependable charging infrastructure at [single- and multi-family dwellings], workplaces, along intercity highways, and public locations in urban and suburban areas."[4] The 2021 study continues to say that hydrogen stations are equally needed for fuel cell vehicles,[5] which give users an additional option in cases where plug-in vehicles cannot meet operation and performance needs. Aside from these barriers, CTP Staff identified ZEV infrastructure gaps,[6] stating that existing and future ZEV infrastructure will be insufficient to meet the State's goal set out in Executive Order N-79-20 by 2025.[7]

Accelerating the pace of market growth requires broader involvement and new stakeholders entering the market. In fact, Executive Order B-48-18 mandates "that all State entities work with the private sector and all appropriate levels of government to spur the construction and installation of 200 hydrogen fueling stations and 250,000 zero-emission vehicle chargers, including 10,000 direct current fast chargers, by 2025."[8] Ramp up of public and private sector engagement is needed to further accelerate consumer adoption of ZEVs that includes plug-in electric vehicles and hydrogen fuel cell electric vehicles (FCEVs). As such, the CEC may wish to collaborate with additional stakeholders to close the ZEV infrastructure gap as well as to deploy an expansive hydrogen and ZEV fueling network statewide to support all vehicle types.[9]

Mass adoption of ZEVs is dependent upon the availability and accessibility of both electric and hydrogen fueling infrastructure, particularly for heavy-duty transportation where FCEVs have more efficacious performance qualities. Presenting a multi-year approach to fund the ZEV fueling infrastructure can specifically help to stabilize the hydrogen market. However, monies authorized for on-road electric and hydrogen fueling infrastructure are not regarded in the same light. For instance, the Draft Investment Plan states that the "CEC will re-evaluate whether the proposed $5 million allocation for light-duty public fueling infrastructure in the final year of the program is sufficient to meet the needs of the FCEV market and will adjust as needed in annual updates to the

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[3] California Air Resource Board, *California Greenhouse Gas Emissions for 2000 to 2018: Trends of Emissions and Other Indicators*, 2020, at 8. Available at https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf.

[4] Austin L. Brown, Daniel Sperling, et al., *Driving California's Transportation Emissions to Zero*, UC Office of the President: University of California Institute of Transportation Studies, April 2021, at 7. Available at https://escholarship.org/uc/item/3np3p2t0.

[5] Ibid.

[6] *See Draft Staff Report: 2021-2023 Investment Plan Update for the Clean Transportation Program*, at 6-7.

[7] Executive Order N-79-20, at 2. Available at https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf.

[8] Executive Order B-48-18. Available at https://www.ca.gov/archive/gov39/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/index.html.

[9] SoCalGas is willing and able to assist the State with developing and deploying hydrogen fueling stations within our service territory to help California meets its carbon neutrality goals.

plan."[10] Though Executive Order B-48-18 set a goal of 200 hydrogen stations by 2025, it does not specify how many stations should serve light-duty versus medium- and heavy-duty vehicles.[11] Reevaluating authorized monies for light-duty hydrogen infrastructure may disincentivize investors from maintaining a "fully self-sustaining market that eliminates GHG emissions and criteria air pollutants from the transportation sector."[12] Thus, it is in the public interest to maintain dedicated funding levels as indicated in the CTP for all vehicle types.

Alternate Fuel Production and Supply

We commend the CEC for proposing $10 million in funding for zero- and near zero- carbon fuel production and supply for FY 2021-2022.[13] Allocation of these funds help to advance low-carbon fuels, support upstream blending infrastructure, and improve the supply of renewable hydrogen. However, the State must not overlook emission reductions that can be achieved today by capturing methane from organic sources and putting it to beneficial use as renewable gas.[14,15] Renewable gas produced from methane emitted from organic sources such as dairy waste, wastewater treatment plants, food and green waste, and landfills has among the lowest carbon intensity (CI) ratings of all fuels in the CARB Low Carbon Fuel Standard (LCFS) program. In fact, second quarter (Q2) 2020 data from CARB confirmed that the average energy weighted CI value of all renewable gas was below zero—at (-) 0.85 grams of carbon dioxide equivalent units per mega joule (gCO_2e/MJ).[16]

Further, industry experts expect that the CI of renewable gas will continue to decrease. A 2018 study on the near-term supply of in-State renewable gas showed that 160 new renewable gas production facilities will supply more than 15.8 million MMBTU to transportation end users.[17]

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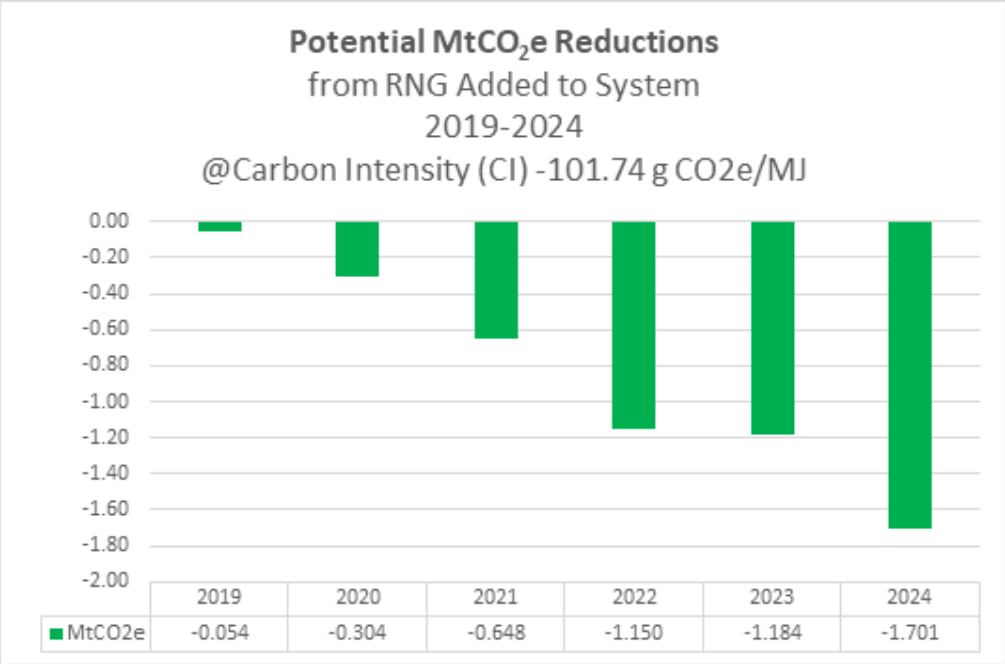
[10] *See Draft Staff Report: 2021-2023 Investment Plan Update for the Clean Transportation Program,* at 10.
[11] Executive Order B-48-18.
[12] California Fuel Cell Partnership, *The California Fuel Cell Revolution: A Vision for Advancing Economic, Social, and Environmental Priorities*, July 2018, at 6. Available at https://cafcp.org/sites/default/files/CAFCR.pdf.
[13] *See Draft Staff Report: 2021-2023 Investment Plan Update for the Clean Transportation Program,* at 56.
[14] California Air Resource Board, *California's 2017 Climate Change Scoping Plan: The strategy for achieving California's 2030 greenhouse gas target*, November 2017, at 3. Available at https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf.
[15] Senate Bill 1383 (Chapter 395, Statutes of 2016) requires CARB to develop, adopt, and implement a Short-Lived Climate Pollutant (SLCP) Strategy to establish pathways to reduce methane 40 percent below 2013 levels by 2030 as well as to reduce hydrofluorocarbon gases and anthropogenic black carbon. Available at https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383. CARB's 2017 Short Lived Climate Pollutant Reduction Strategy includes "avoiding landfill methane emissions by reducing the disposal of organics through edible food recovery, composting, in-vessel digestion, and other processes; and recovering methane from wastewater treatment facilities, and manure methane at dairies, and using the methane as a renewable source of natural gas to fuel vehicles or generate electricity." Available at https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf.
[16] FleetOwner, *California natural gas vehicle fuel reaches carbon negative*, November 2020. Available at https://www.fleetowner.com/running-green/press-release/21147848/california-natural-gas-vehicle-fuel-reaches-carbon-negative.
[17] Cliff Gladstein and Patrick Couch, *An Assessment: California's In-State RNG Supply for Transportation 2020-2024. A survey of the existing and developing RNG production capacity in California for use in motor vehicles,* Gladstein Neandross & Associates, 2018, at 5. Available at https://cdn.gladstein.org/pdfs/whitepapers/report-assesment-california-in-state-rng.pdf.

These facilities will add 119 million diesel gallon equivalent units of renewable gas by 2024. Most astonishing, the weighted average CI of the renewable gas produced will be (-)101.74 gCO_2e/MJ.[18] For comparison, the electric grid currently has a CI of 82.92 gCO_2e/MJ. As shown in the graphic below,[19] renewable gas used as a transportation fuel will have a negative CI of (-) 101.74 and can reduce carbon emissions by over 1.7 million metric tons.[20] Thus, capturing methane to generate renewable gas to fuel vehicles and generate electricity for ZEVs aligns with the State's climate goals.



Opportunities to Transition Medium- and Heavy-Duty Vehicles

Medium- and heavy-duty vehicles make up nearly 21 percent of transportation emissions inventory.[21] These trucks are responsible for 70 percent of smog pollution and 80 percent of diesel particulate matter (PM) emissions.[22] Alone, "heavy-duty trucks emit over 22 percent of CO_2e from on-road transportation"[23] in the State. Currently, the cleanest commercially available truck technology for heavy-duty applications is the 11.9-liter low-NOx engine fueled by natural gas. The low-NOx engine produces 90 percent less NOx than the cleanest available diesel truck.[24] This low-NOx engine can provide an immediate, low-emission option both for criteria pollutants and GHG

[18] Ibid.
[19] Ibid.
[20] Ibid., at 19. Converted Table 6 annualized energy production (MMBTU/YR) to million metric tons of CO2e (MtCO2) reduced at carbon intensity of -101.74 g CO2e/MJ if all RNG displaces diesel consumption. Conversion factor = -0.11 metric tons of CO2e per million British thermal units (MTCO2e/MMBTU).
[21] Austin L. Brown, Daniel Sperling, et al., at 8.
[22] Ibid., at 201.
[23] Ibid.
[24] Ashley Duplechien, *How Can Renewable Natural Gas Provide a Negative Carbon Impact?* Advanced Clean Tech News, 4 March 2020. Available at: https://www.act-news.com/news/how-can-renewable-natural-gas-provide-a-negative-carbon-impact/.

emissions in the short-term. Currently, plug-in technologies cannot replace conventional fast-fuel technologies at a one-to-one ratio. In fact, a 2020 study found that 19 diesel drayage trucks would have to be replaced by 36 zero emission drayage trucks.[25] This means that deploying one plug-in heavy-duty truck would not even get one full diesel truck off the road and the benefits would not be fully realized.

Hydrogen fuel is also an attractive long-term option for medium- and heavy-duty trucks. Hydrogen fuel weighs much less than electric batteries, which could make trucks more efficient as they carry more cargo, refuel faster, and drive longer distances.[26] In fact, Toyota and Hino collaborated to develop a 25-ton fuel cell electric truck for the Japanese market. The companies see hydrogen fuel cell technology as a superior zero emissions alternative to battery power for large commercial vehicles.[27] Likewise, the Department of Energy (DOE) is planning to invest $100 million over the next five years into research for hydrogen powered heavy-duty trucks.[28] The DOE intends for this investment to help jump-start the American hydrogen economy. To support the beneficial private and public investments in hydrogen, we recommend that the CEC to allocate at least 50 percent of the proposed $30 million for FY 2021-2022. Dedicated funds will help to increase availability of hydrogen fueling stations for medium- and heavy-duty trucks.

Additionally, immediate emission reductions of criteria pollutants including NOx and PM are needed to meet federal ozone standards. Significant emission reductions from the transportation sector are needed to attain the 1997 eight-hour ozone standard of 80-parts per billion (ppb) standard by 2023; and the 2008 eight-hour ozone standard of 75-ppb standard by 2031 in the South Coast Air Basin.[29,30] To meet these federal obligations, public and private stakeholders must work collaboratively to turnover diesel trucks and reduce NOx emissions from the transportation sector. According to the South Coast Air Quality Management District (SCAQMD), CARB's 2020 Draft Mobile Source Strategy "does not address the significant NOx emission reductions needed for attaining the 1997 8-hour ozone attainment in the basin in 2023."[31] There are over 900,000 tucks that would need to be replaced to meet attainment. Zero emission trucks are expected to cost approximately $350,000, which is almost $200,000 more than a new diesel truck. It would also take 1.7 BEV trucks to replace one diesel truck in drayage therefore the incremental cost is much

[25] Genevieve Giulliano, Maged Dessouky, et al., *Developing Markets for ZEVs in Short Haul Goods Movement*, UC Davis: National Center for Sustainable Transportation, 2020. Available at https://escholarship.org/uc/item/0nw4q530.
[26] John Fialka, *Hydrogen fuel weighs less than electric batteries, making it an attractive option for long-haul vehicles*, Scientific American: E&E News, 6 November 2020. Available at https://www.scientificamerican.com/article/energy-department-looks-to-boost-hydrogen-fuel-for-big-trucks/.
[27] Paul O'Donnell, *Toyota expects to roll out a fuel cell electric big rig early next year in North America*, The Dallas Morning News, 5 October 2020. Available at https://www.dallasnews.com/business/local-companies/2020/10/05/toyota-expects-to-roll-out-a-pilot-fuel-cell-electric-big-rig-early-next-year-in-north-america/.
[28] Department of Energy, *DOE Announces $162 Million to Decarbonize Cars and Trucks*, 15 April 2021. Available at https://www.energy.gov/articles/doe-announces-162-million-decarbonize-cars-and-trucks.
[29] South Coast Air Quality Management District, *National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin*, 2016. Available at http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf.
[30] In 2015, the Environmental Protection Agency further lowered the 8-hour Ozone Standard to 70 ppb.
[31] Letter from SCAQMD Executive Officer to CARB Executive Officer dated October 20, 2020.

higher than just the $200,000. Alternatively, a truck powered by renewable gas can have an incremental cost of $50,000, which is significantly lower than the cost of battery electric vehicles and can be replaced at a one-to-one ratio.

Without support from the State's regulatory agencies, the Southern California region will likely not meet attainment and could be subject to economically damaging federal sanctions. Choosing to fund technologies and fuels that replace diesel trucks as quickly as possible is vital to meeting the 2023 and 2031 attainment deadlines. Low-NOx natural gas trucks using renewable gas is a commercially available technology that can be deployed to turn over fleets now to help meet attainment requirements.

The CEC's CTP funding is still critical to produce clean fuels from waste products. It is true that the LCFS program incentivizes these fuels. The LCFS program also incentivizes electricity and hydrogen production and use, and the CEC continues to provide funding support for both resources. Renewable gas production facilities are capital intensive projects on the front end; thus the CEC's grant program is vital to help provide funding to get these projects started. These projects also make use of what would otherwise be flared waste products. As such, renewable gas projects can result in cleaner local environments around California dairies, landfills, and wastewater treatment facilities.

Further, older diesel heavy-duty fleets are often replaced with new diesel fleets to comply with CARB's Clean Truck Rule.[32] These new diesel trucks, and their emissions will be present for at least the next decade. Yet, there is an opportunity to cost-effectively replace older diesel fleets with low-NOx trucks for communities to accrue immediate air quality benefits. Further, the low-NOx truck can help the State meet aggressive near-term and long-term emission reduction requirements in the hard-to-abate heavy-duty truck sector. In fact, CARB committed to funding the turnover of 33,000 heavy duty trucks to the low-NOx standard of 0.02 grams of NOx per brake horsepower hour by 2024 to meet attainment in the San Joaquin Valley.[33]

Inclusion of Cost-Benefit Analyses for Projects Funded by the CTP

During the workshop, there was a brief discussion on previous cost-benefit analyses that were conducted in prior year Investment Plan Updates. The Advisory Committee member Bill Elrick asked that these cost-benefit analyses be produced once again to understand the emission benefits per dollar spent. Commissioner Monahan acknowledged that the cost-benefit of zero emission vehicles is "often not as good as a biofuel investment."[34] It is important that the Draft Investment

[32] The CARB Truck and Bus Rule requires all heavy-duty trucks to have a model year 2010 or later engine by 2023. There are roughly 300,000 trucks that must be turned over in the next two years.

[33] California Air Resources Board, *DRAFT: San Joaquin Valley Supplement to the Revised 2016 State Strategy for the State Implementation Plan*, August 2018. Available at https://ww3.arb.ca.gov/planning/sip/sjvpm25/2018plan/20180828_sjv_supplement_sip_strategy.pdf.

[34] Clean Transportation Program Investment Plan Advisory Committee Meeting Event recording, 29 April 2021, at 1:48:31. Available at: https://energy.zoom.us/rec/play/fYKH0ewhptpqeUE4wMaeLlUfvECzwihcW8trPOZGeY8Mfk2uZClMKhEus_cJG

Plan include cost-benefit analyses to show which CTP-funded projects result in the largest emissions reductions per public dollar spent. A cost benefit report provides necessary data for assessing and comparing the extent to which programmatic decisions advance the public interest, which assessment should be both transparent and technology neutral.

In closing, we appreciate the CEC's efforts to develop the Draft Investment Plan. SoCalGas offers these comments in the spirit of collaboration and we hope to work constructively with the CTP Staff on this and other transportation funding efforts.

Respectfully,

Matt Gregori
Technology Development Manager

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