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Re: Proposed 2018 LCFS Amendments

To Whom It May Concern:

SoCalGas appreciates the opportunity to provide comments on the Proposed 2018 Low Carbon Fuel Standard (LCFS) Amendments. We look forward to continuing to collaborate with the Air Resource Board (ARB) on this very important program. To that end, SoCalGas respectfully submits the following comments on the Amendments.

Removal of Opt-in Status for Fossil Compressed Natural Gas (CNG)

Staff is proposing to convert fossil CNG from an opt-in fuel to a mandatory reporting fuel under the LCFS program. This proposal is based on the anticipation of most fossil CNG pathways becoming deficit generating pathways subsequent to updates to the current California Greenhouse gases, Regulated Emissions, and Energy use in Transportation (CA-GREET) model and setting of new, lower average carbon intensity requirements for the 2020-2030 timeframe. SoCalGas believes that removal of fossil CNG's opt-in status in the current rulemaking is premature.

Given that ARB anticipates a program reauthorization in 2019, it is prudent and reasonable to forego modifying fossil CNG's status as an opt-in fuel under the current rulemaking and revisit the issue during the 2019 reauthorization. While fossil CNG may become a deficit generating fuel post-2020, the current compliance schedules for both diesel and gasoline would allow CNG to remain a credit generating fuel until at least 2020. This is true even in the context of the current draft revisions to the CA-GREET model. Under the draft CA-GREET 3.0 model released by Staff on August 7th, fossil CNG has EER-adjusted carbon intensities of 88 and 80 gCO₂e/MJ for diesel-displacing and gasoline-displacing fuels, respectively. The carbon-intensity standards through 2020 are 91.81 and 88.62 gCO₂e/MJ for diesel and gasoline, respectively.

Based on the current CA-GREET model, it is clear that fossil CNG remains a credit generating fuel through 2020. This will serve several important purposes:

1. Maintaining the opt-in status of fossil CNG through 2020 is consistent with the current compliance schedules and planning by fuel providers that have constructed

- fueling stations and reasonably anticipated CNG would remain an opt-in fuel through 2020.
2. Allows ARB and stakeholders to prepare for a transition to a future where small CNG station owners/operators are required to report under the LCFS, either directly or potentially under an aggregator program.
 3. Avoids the sudden imposition of costs and compliance burdens that may impede near-term investments in clean vehicles.
 4. Allows investments made in natural gas infrastructure to be in continued use as the market for renewable natural gas grows.

Modifications to CA-GREET

SoCalGas understands and appreciates Staff's intent to update the CA-GREET model to use Argonne National Laboratories (ANL) GREET 2016 model as the basis for CA-GREET 3.0. Further, SoCalGas supports Staff's modification of GREET 2016 and the use of the Oil Production Greenhouse Gas Emissions Estimator (OPGEE) model to more accurately reflect the specifics of California's transportation market. While the full details of the proposed modifications to the CA-GREET model are not anticipated to be available until Staff release the 2018 rulemaking package, SoCalGas would like to highlight areas of concern for Staff's further consideration.

Proper accounting for California's CNG fleet tailpipe emissions.

In Staff's process to update CA-GREET 1.8 to CA-GREET 2.0, numerous stakeholders commented on the method used by Staff to estimate tailpipe emissions of methane from natural gas vehicles. In particular, the initial data sets that Staff relied upon reflected outdated emissions factors based primarily on data collected in the 1990's. In concert with ANL and stakeholders, Staff partially addressed this issue by developing updated emissions factors based on more recent emissions testing.

ARB is currently in the process of updating the EMFAC model from its current 2014 version to a new 2017 version. As part of this process, ARB is developing updated vehicle inventories with separate population data for natural gas vehicles by heavy-duty (HD) sector. Preliminary results indicate that approximately 80% of California's natural gas HD fleet is model year 2007 or newer. Further, a significant fraction of these vehicles are transit buses and refuse trucks that are or will be using Cummins Westport's 8.9L engine with closed crankcase technology that dramatically reduces methane slip. SoCalGas recommends that Staff leverage the EMFAC 2017 updates to better reflect California's natural gas fleet and account for continuing reductions in tailpipe methane emissions.

CNG Compressor Efficiency Calculations

As part of Staff's proposal to transition fossil CNG from North American natural gas to a lookup table pathway, Staff proposed to establish a value for the compression station efficiency of 97%. This estimate was based on an analysis of 24 stations in California. However, other fuel providers have recently submitted data for substantially more stations and SoCalGas believes it is necessary to consider these additional data to more accurately characterize the

State's average compression efficiency as the actual efficiency may be higher than 97%. Further, where the compressor efficiency is an input into the simplified, fuel-specific calculators, it should be designated as a "Conditional Default" value as this would allow pathway applicants to demonstrate a site-specific value if such data were available.

Elimination of landfill gas (LFG) Flaring Credit

Most biofuel pathways in the LCFS program discount the carbon dioxide present in the vehicle tailpipe (or electricity generator exhaust) based on the recognition that the CO₂ is biogenically-derived and does not add to the carbon dioxide burden in the atmosphere. However, landfill gas has been modelled by counting the carbon dioxide in the vehicle tailpipe but offsetting those emissions through the use of a credit for avoided GHG emissions from the flaring of the landfill gas that would have otherwise occurred. This approach is equivalent (as it relates to carbon dioxide emissions) to discounting the carbon dioxide emissions in the tailpipe as is done for other biofuels. However, avoided flaring credits also includes avoided emissions of VOCs, CO, CH₄, and N₂O. SoCalGas believes an accurate accounting of these benefits is important and recommends that Staff retain the flaring credit, but modify it to accurately and consistently account for emission reductions of other pollutants and tailpipe emissions.

Calculation of Volume-Weighted Centroid for RNG Endpoint

SoCalGas agrees with Staff's proposal to establish an end-point location for RNG delivered to California based on a volume-weighted centroid of existing CNG stations in California. However, SoCalGas is concerned that Staff's recommendation does not clearly define the frequency with which this value could be updated. As California's network of CNG stations changes, so too will the volume-weighted centroid and the resulting calculated carbon intensity for RNG delivered under pathways that rely on this value. Frequent updates to the centroid would serve only to inject uncertainty and administrative burden to pathway holders, verifiers, and Staff. Consequently, SoCalGas requests clarification from Staff as to the anticipated frequency of updates to this value and recommends that such updates occur no more frequently than once every three years – on the same schedule as future OPGEE updates. For pathways subject to periodic verification, the pathway should be verified against the RNG endpoint that was in effect at the time the certified carbon intensity value was issued so as to avoid any potential credit invalidation risk associated with updates to the endpoint.

Modeling of L-CNG Pathways

CA-GREET 2.0 appears to incorrectly model the typical L-CNG process at the station. As modeled in CA-GREET 2.0, Staff assume that LNG is first vaporized and then compressed to CNG dispensing pressures. This is incorrect. L-CNG stations typically pump LNG to high pressures before vaporizing the liquid in an ambient heat exchanger to produce CNG. The pumping of liquid to high pressure is much more energy efficient than the compression of gas. Consequently, CA-GREET overestimates the energy needed for compression at the station. Additionally, because L-CNG stations often use ambient heat exchangers for vaporization, there is no meaningful amount of energy required for vaporization. In the proposed simplified fuel-specific calculators, the compression and vaporization energy requirements appear to be "Standard" values. SoCalGas recommends that these values be updated using the correct

modeling of a typical L-CNG station process and that the “Standard” values be changed to “Conditional Default” values.

Reporting and Verification

Staff have proposed substantial changes to various aspects of reporting and verification requirements under the LCFS program. Several of these changes, such as tracking what RNG is injected into pipelines to what is sold and reporting whether RNG or fossil gas is dispensed, could represent significant additional burdens that would impede the development and growth of low carbon fuels in California.

Verifying Entities

The Amendments list the entities that are responsible for verification. The entities listed do not include those responsible for verifying electricity as a fuel. The Amendments should also list electricity suppliers or generators as responsible for verification.

Carbon Intensity Adjustments

SoCalGas disagrees with staff’s proposal to adjust carbon intensity values annually. ARB should adjust carbon intensity (CI) values no more often than every 24 months unless it is at the producer’s request. It takes 24 months of data to certify a project’s CI therefore it is impractical to adjust values annually. Additionally, annual adjustments will create uncertainty in the LCFS credit market.

Third-Party Verification of Initial and Ongoing Data

SoCalGas does not believe it is appropriate to require third party verification of data for the initial pathway application or ongoing verification of fossil CNG pathways. In general, fossil CNG pathway applications require relatively straightforward documentation of utility usage and fuel production at the site. Requiring a fossil CNG pathway applicant, one that could likely be a small fleet with only a single station, to contract a third-party verifier would likely result in significantly increased burdens on the applicant with little reduction in burden on Staff. Therefore, assuming fossil CNG is not transitioned to a lookup table pathway, SoCalGas believes that fossil CNG should be exempted from the proposed third-party verification requirements.

Determination of EER for Natural Gas Pathways

In many public CNG and LNG stations, the station owner does not track details on the specific vehicle receiving fuel. This makes it difficult to properly determine the appropriate EER associated with a given transaction. SoCalGas supports Staff’s approach of determining a transaction volume below which an EER of 1.0 could reasonably be used without further documentation of the vehicle type. SoCalGas also supports Staff’s proposal to allow a station owner serving a dedicated fleet the flexibility to document the appropriate EER based on the fleet being served.

SoCalGas does not believe that there is any significant number of light-duty LNG-fueled vehicles in operation in California, consequently, there is no need to establish a volume threshold for LNG sales.

Calculating Credits from Non-Metered EV Charging

Staff is proposing a methodology to provide Electricity Distribution Utilities (EDU) with credits assessed to be otherwise unreported by public, workplace, and EV charging stations. These credits would be assessed by assuming “full electric vehicle use by vehicle type” and then subtracting the EV charging credits claimed by other parties in the EDU’s service territory. The intent would be to avoid “stranded credit” associated with these unreported stations.

SoCalGas is concerned with the proposed approach and disagrees with Staff’s proposal. While Staff have provided little detail on the approach, some concerns are immediately apparent. Assuming “full electric vehicle use” is determined by EVs registered within an EDU’s territory, applying the full use of these vehicles to the EDU ignores circumstances where a vehicle is registered in one EDU’s territory but utilizes public, workplace, or fleet charging facilities in another EDU’s territory. In such circumstances, the “full use” of the EV would be credited to one EDU while the workplace charging could be credited to facilities in another EDU. This would essentially lead to double counting of EV charging. Such an approach also fails to rely on “measured” electricity usage and could lead to significant overestimates of EV charging and overallocation of credits.

Additionally, SoCalGas does not believe it is appropriate for LCFS program Staff to seek to generate credits on behalf of EDUs to avoid stranded credits, particularly when such stranded credits exist in other fuel categories and no such allowances for capture of these credits exist. As an example, it is clear that some volume of CNG is distributed in California that is not claimed under the LCFS program. However, there is no mechanism that allows the natural gas utility to claim these stranded credits. Consequently, establishing such a mechanism for EDUs represents preferential treatment of EVs and is not a fuel neutral approach.

Updating EERs for EV and Fuel Cell Applications

SoCalGas supports an accurate accounting of the relative efficiencies of technologies in the LCFS program. The EERs assigned to each technology have a significant impact on the credits generated within the program, as well as competition amongst the technologies for market share.

Staff has noted working with the ARB’s Innovative Clean Transit team to develop more specific EER values for medium- and heavy-duty EVs, and may do the same for fuel cell vehicles. While the effort to improve the accuracy of the EER values is commendable, SoCalGas has significant concerns with the technical accuracy of the analysis to date. In particular, the use of chassis dynamometer data for EVs neglects the potentially substantial energy demands associated with heating, ventilation, and cooling systems. Internal combustion engines generate significant amounts of waste heat that are typically used to supplement HVAC heating demands. By contrast, EVs must typically supply all of the heat demand through heat pumps and resistance heaters. These demands can be substantial, relative to the average propulsion energy demand of the vehicle.

Additionally, the Altoona test data used to calculate EERs for electric buses does not include charger efficiency losses. Based on charging data included in the Altoona reports, charging efficiencies could range from 75-90%. Because neither CA-GREET 2.0 or the draft CA-GREET 3.0 model include impacts of charging efficiencies in the calculated carbon intensity for electricity, the charging efficiencies must be incorporated into the EER values for these vehicles. It does not appear that ARB's analysis has appropriately accounted for the impacts of charging inefficiencies.

Finally, Staff's proposal to develop more specific EERs would require fleets to document or otherwise demonstrate that the reported charging energy is being delivered to the appropriate vehicle type. As is the case with natural gas vehicles, dedicated fleets may be able to document the vehicles being charged on a per-charging event basis. However, some mixed fleets or fleets that offer a combination of public and private charging may have more difficulty in delineating the appropriate EERs for all electrical energy supplied. Consequently, SoCalGas recommends that Staff develop requirements for documenting the types of vehicles receiving electricity being reported under various EERs.

Thank you again for the opportunity to comment on the Proposed 2018 LCFS Amendments. If you have any questions, please do not hesitate to contact me directly.

Respectfully submitted,



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