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Denver, CO 80202

September 19, 2022

Cheryl Laskowski, Ph.D.
California Air Resources Board (CARB)
1001 I St.
Sacramento, CA 95814

Re: PureWest Energy comments on the August 18, 2022 Low Carbon Fuel Standard (LCFS) workshop

Dear Dr. Laskowski:

PureWest Energy (PureWest) appreciates the opportunity to comment on the August 18, 2022 2nd Public Workshop to Discuss Potential Changes to the Low Carbon Fuel Standard. PureWest supports CARB's re-evaluation of the LCFS program and amendments in-line with the State's climate change goals and priorities. As you consider developing a tier 1 hydrogen calculator and updating emissions factors, we encourage you to include low-carbon intensity (CI), certified gas in the program, and allow book and claim accounting of certified gas wherever the program allows similar accounting for biogas.

About PureWest Energy

PureWest Energy is an independent natural gas company focused on development in the U.S. Rockies, with current operations in the Pinedale Anticline and Jonah Field in Southwest Wyoming. We are dedicated to advancing modern life by responsibly delivering essential energy with exceptional reliability and proven environmental stewardship. We strive to go beyond the expected to produce natural gas in the most responsible and efficient manner possible.

PureWest was recognized by Hart Energy as a Top ESG Performer and has been working with Project Canary to certify 100% of our production as TrustWell certified gas by year end. We are the first Rocky Mountain producer to achieve TrustWell's Freshwater-Friendly Verified Attribute and have earned a platinum rating, representing the top decile of performers, from Project Canary on nearly 65% of the production certified to date with more than 99% rating platinum or gold. All certified production has also achieved the Low-Methane Verified Attribute.

In addition, we are partnering with Colorado State University Energy Institute in their Advancing Development of Emissions Detection program to field-test multiple stationary methane detection technologies that will inform PureWest's multi-layer strategy for methane detection

throughout our field. Last year, we delivered the first-of-its-kind scope one and two carbon neutral certified gas to Pierce Transit to power transit buses on the northwest coast.

Significant Climate Opportunity Associated with Reducing Methane Emissions from Natural Gas Supplying California

There is significant opportunity to reduce methane emissions from upstream gas production supplying California. For example, PureWest has completed an initial calculation of our average climate impact using the GREET model, which estimates the average carbon intensity of our operations to be 0.489 gCO₂e/MJ. This represents greater than a 90% reduction compared to the average for natural gas recovery (6.07 gCO₂e/MJ) in the GREET 3.0 model.¹

While these results are preliminary, and we are working with third parties to complete the model with greater rigor and validate them, they suggest a significant potential for the state to further reduce greenhouse gas and potent methane emissions. California used 2,075 billion cubic feet of natural gas in 2021,² and imports 92% of its supply.³ This suggests that about 1,900 billion cubic feet is produced out of state and not subject to the State's oil and gas methane rules.

Based on the estimated potential reduction in upstream methane emissions of 5.581 between PureWest operations and the current assumed industry average, California could reduce potent short-lived climate pollutant (SLCP) emissions by 11.7 MMTCO₂e/year, simply by shifting its natural gas use to certified gas.^{4,5} *This is equivalent to total methane emissions from dairy manure management in California, according to CARB's greenhouse gas inventory.*⁶

CARB Should Allow Book-and-Claim Accounting of Certified Gas

In order to help begin capturing this widespread opportunity to achieve further, low-cost greenhouse gas emissions reductions associated with fuels used in California, CARB should allow book-and-claim accounting for certified gas, in a similar manner that does so for biogas already. This includes allowing verified low-CI certified gas as a viable input fuel to produce low-CI hydrogen from steam methane reforming or other pathways as part of the proposed Tier 1 calculator for hydrogen. As described above, certified gas provides a lower CI (gCO₂e/MJ) than the standard 79.21 gCO₂e/MJ of compressed natural gas. PureWest Energy is in the process of

¹ <https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/ca-greet/lut-doc.pdf>

² <https://www.eia.gov/state/print.php?sid=CA>

³ <https://www.cpuc.ca.gov/industries-and-topics/natural-gas/natural-gas-and-california>

⁴ Based on 10.37 therms per thousand cubic feet and 105.5 MJ/therm natural gas

⁵ Note this value exceeds CARB's estimate for greenhouse gas emissions associated with natural gas imports, which it estimates were 9.6 MMTCO₂e in 2019. (Note that the report acknowledges that numerous studies suggest the data behind these numbers may significantly underestimate actual emissions.) Still, CARB's estimates suggest a significant potential emissions benefit associated with switching to certified gas, likely on the order of multi-millions of metric tonnes CO₂e per year.

https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ab_2195_out_of_state_natural_gas_emissions.pdf

⁶ https://ww3.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_sum_2000-19.pdf

confirming the CI of its certified gas, but is confident it will be competitive with the CI of landfill gas (about 70 gCO₂e/MJ⁷).

Due to the limited supply of biomethane, allowing certified gas as a viable input fuel to produce low-CI hydrogen would provide fuel providers additional, cost-effective opportunities to reduce the carbon intensity of their fuel. It would also support the state's efforts to target particularly potent, short-lived climate pollutants like methane, as well as growing national efforts through the Inflation Reduction Act and other efforts to move the industry to certified gas. At a lower cost than the supply-limited biomethane, certified gas can play a key role in producing low-carbon fuels to meet California's needs in the near-term, while biomethane, renewable hydrogen, and other low carbon fuels supplies are established to support longer-term emissions reduction goals of California.

Update Emissions Factors to Account for Certified Gas

Relatedly, as CARB considers updating emissions factors, it should incorporate and account for certified gas. Specifically, the LCFS should include an overarching option to utilize verified certified gas, including book-and-claim certified gas, to help reduce methane emissions and support development of lower-CI fuels for use in California. One option for incorporating certified gas is to consider site-level measurements, as included in the Oil and Gas Methane Partnership 2.0 Level 5 quantification framework, to allow certified gas to prove it's a differentiated product with third-party verification.

In the workshop, CARB staff mentioned that one consideration for incorporating site-specific and/or emissions factors that otherwise differ from industry averages is the prevalence of a practice. Already, an estimated 20% of U.S. gas production is certified as low methane, and this value is expected to grow. Much of this is in the southeast United States, however, where it may not reach the California market.⁸ Incorporating differentiated accounting certified gas into the LCFS will help this practice to grow further throughout the west and the broader U.S.

Align Approach to Imported Natural Gas with Other Imported Energy Sources

CARB already thoroughly accounts for differentiated greenhouse gas emissions associated with electricity and transportation fuel imported into the state, but does not do so for natural gas – even though 90% of it is imported. Aligning the State's approach towards natural gas with emissions accounting and policy incentives in place for other imported energy sources could deliver significant, near-term low or negative cost greenhouse gas emissions reductions and bolster the State's leading efforts to measure, monitor and reduce potent methane emissions.

⁷ https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/ca-greet/temp.pdf?_ga=2.157143219.909726452.1663260865-1922464068.1630600940

⁸ <https://www.houstonchronicle.com/business/energy/article/How-green-is-my-gas-Questions-linger-as-17244835.php>

CARB's SLCP Strategy rightfully touts the State's leading approach to reducing methane emissions from oil and gas systems, but that approach only covers 10% of the state's gas use. The Strategy admits as much, noting "There may be steps that California agencies or utilities can take to ensure that infrastructure supplying gas to the state has minimal leakage, and to ensure that natural gas is providing environmental benefits compared to use of other fossil fuels in the State."⁹ CARB can begin to take those steps by incorporating certified gas into the LCFS and allow book-and-claim accounting for certified gas, like is done for biomethane.

Thank you again for the opportunity to comment on this workshop. We look forward to collaborating with CARB as it works to amend the LCFS. Please do not hesitate to reach out if you have any questions about PureWest Energy, certified gas, or these comments.

Thank you,

A handwritten signature in blue ink that reads "Kelly Bott".

Kelly Bott
Senior Vice President, ESG, Land and Regulatory
PureWest Energy

⁹ See pg. 79 of the SLCP Strategy at https://ww2.arb.ca.gov/sites/default/files/2020-07/final_SLCP_strategy.pdf