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RNG Coalition Comment on SB 100 Draft Modeling Results

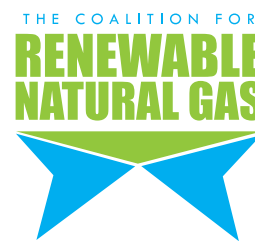
Please see our attached comments.

Additional submitted attachment is included below.

Submitted Via Electronic Filing

September 15, 2020

California Energy Commission
Docket Office
1516 Ninth Street
Sacramento, CA 95814



RE: Docket 19-SB-100 – SB 100 Joint Agency Report Draft Modeling and Scenarios

The Coalition for Renewable Natural Gas (RNG Coalition)¹ offers this letter regarding the Draft Modeling and Scenarios (SB 100 Modeling) conducted by Energy and Environmental Economics (E3) in conjunction with the California Energy Commission (CEC) and presented at the September 2, 2020 Draft Results Workshop (Workshop).

We applaud the state’s efforts to develop the 2021 SB 100 Joint Agency Report (Joint Agency Report) and the ongoing effort to achieve carbon neutrality by 2045. Our comments below address the benefits of renewable gases (RG) as an input into dispatchable sources of renewable power and, accordingly, the necessity of correctly modeling the potential of renewable natural gas (RNG or biomethane) and renewable hydrogen in the SB 100 Modeling and Joint Agency Report.

About the RNG Coalition and the RNG Industry

The RNG Coalition is the trade association for the RNG industry in the United States and Canada. Our diverse membership is comprised of cities, counties, municipalities, universities and leading companies operating across the RNG supply chain. Together, we advocate for the sustainable development, deployment and utilization of RNG, so that present and future generations have access to domestic, renewable, clean fuel and energy in California and across North America.

The RNG industry is nascent relative to other renewables industries but has shown significant growth in recent years driven by policies designed to promote environmental and economic goals—including but not limited to improved waste management, clean air, clean water, job development, energy independence, and resource diversity.

In the last twelve months our industry has brought more RNG production facilities online than it did during its first thirty years of existence between 1982 and 2011. A key benefit of RNG is its ability to be a “drop-in” fuel capable of decarbonizing a wide variety of end-use applications currently served by conventional natural gas,² including through the utilization of RNG (or RNG-derived renewable hydrogen) as an input to dispatchable power generation units, such as gas turbines or fuel cells.

¹ For more information see: <http://www.rngcoalition.com/>

² The RNG Coalition supports the increased development, deployment and utilization of renewable gases regardless of the feedstock, indiscriminate of the competing technologies used to create the RG, and for all sustainable end-use applications. Currently our organization focuses primarily on RNG derived from biologic wastes (often called biomethane or biogas that has been upgraded to meet pipeline specifications) but we also

Renewable Gases are Highly Valuable as Inputs to Dispatchable Power Resources

We thank the Joint Agencies' (California Energy Commission, California Public Utilities Commission, and California Air Resources Board) for clarifying their interpretation of eligible power generation technologies under SB 100 as inclusive of bioenergy.³ Exclusion of bioenergy—as some parties have historically advocated for—is unsupported by either the text of SB 100 or the legislative intent behind the law. A key driver behind SB 100 opening up eligibility to “zero-carbon” resources was that the legislature recognized we need all possible “tools in the tool box” to combat the existential threat of climate change, and therefore chose to expand the list of eligible technologies to anything with strong greenhouse gas performance.⁴

Now that the SB 100 Modeling has begun to more closely examine how various resources might fit together to create a zero-carbon system, we'd hoped that the reliability benefits provided by dispatchable generation sources using RG would be better recognized. In other recent work E3 has, in fact, highlighted this advantage of RG use in the power sector. For example, the draft report E3 has recently prepared for CARB, entitled *Achieving Carbon Neutrality in California*, states that “...dispatchable biomethane enables the Balanced and Zero Carbon Energy scenarios to achieve zero emissions electricity generation...”⁵ Bioenergy is also included as an important GHG reduction strategy for the power sector in E3's work for a number of other jurisdictions, including in recent analyses conducted for Colorado and New York.⁶

Renewable Gases Should be Preferred to Conventional Geologic Gas

We understood the phase-out of conventional geologic gas to be a high priority for the Joint Agencies, yet the SB 100 Modeling presented at the workshop shows a significant share of 2050 generation capacity coming from conventional natural gas in all scenarios,⁷ which we find perplexing. We propose

support all other sustainable methods of producing renewable gases. Biomethane is a direct substitute for conventional natural gas that can be introduced to the gas system in significant volumes safely and quickly. This type of RG deserves significant near-term attention because the primary method of generating biomethane today—anaerobic digestion (AD)—is a well-proven cost-effective technology available at commercial scale.

³ In-line with our November 27, 2019 comments, available here:

<https://efiling.energy.ca.gov/GetDocument.aspx?tn=230871&DocumentContentId=62512>

⁴ Even if such technologies had potential negative environmental externalities that had previously kept them from being RPS-eligible, such as potential fish habitat disruption issues for large hydroelectric generation or nuclear waste from nuclear reactors.

⁵ Draft E3 Report, *Achieving Carbon Neutrality in California: A Report by E3* page 55.

https://ww2.arb.ca.gov/sites/default/files/2020-08/e3_cn_draft_report_aug2020.pdf

⁶ See recent Climate Action Plan material produced by E3 for [Colorado](#) and [New York](#). E3's work highlights the role of RG-based electricity in serving peak electricity demand, citing multiple studies that show the benefits of complementing intermittent renewables with dispatchable, low carbon sources such as RNG. E3 also specifically notes that peak winter electricity demand can be met with a combination of large-scale hydro, RNG, other fuels such as hydrogen, and CCS.

⁷ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=234549&DocumentContentId=67381> Page 16

that RG should be more seriously considered as a method of displacing this remaining conventional gas use across all scenarios to actually achieve the goal of SB 100.

Proper inclusion of RG may not dramatically shift the mix of generation assets deployed—because a gas turbine unit that historically has used conventional gas can easily use biomethane today, and may be retrofitted to run hydrogen in the future—but planning for the decarbonizing gas supply cannot be divorced from the planning of generation units. Rather, the planning process (and the models available) for each of these objectives needs to be better integrated.

During response to questions at the workshop it was orally mentioned that estimates of costs of biomethane and hydrogen were not included due to uncertainty, however, in recent prior work for CEC on pipeline decarbonization E3 has explicitly developed a supply curve for RG. We fail to see why that curve could not be employed in the current SB 100 Modelling.⁸ We believe RG supply and cost estimates used by the same consultants in a report finalized by the CEC this year should be thought of as suitable for inclusion in this exercise, but if CEC would like the RNG industry to provide supplemental cost information on any topic please let us know.

If the issue is that it is not clear to the Joint Agencies which sector⁹ will most need the sustainable biomethane resource in the long-term, we understand that uncertainty but request that it not generate paralysis on additional policies to incent near-term biomethane deployment. Instead, in the near-term, we would recommend simply emphasizing development of pipeline-injected projects¹⁰ to maximize optionality of deploying the resource moving forward. In the longer-term the Joint Agencies must develop an effective integrated gas system planning process to be sure the projects are interconnected to segments of the system that are expected to remain viable for the long-term.

When Carbon Capture and Sequestration is Included, Bioenergy can Produce Carbon Negative Outcomes

We were also surprised to see gas fired power plants with carbon capture and sequestration (CCS) have not yet been included in the SB 100 Modelling. Based on upstream emission avoidance, bioenergy with carbon capture and sequestration (BECCS) could be used to create “carbon negative” reductions (i.e.,

⁸ See page 25 of *The Challenge of Retail Gas in California’s Low-Carbon Future*.

<https://www2.energy.ca.gov/2019publications/CEC-500-2019-055/index.html#:~:text=In%20any%20low%2Dcarbon%20future,and%20the%20cost%20of%20RNG.&text=The%20costs%20of%20safely%20operating,be%20shared%20among%20fewer%20customers>.

⁹ E3 has produced a series of related work using the PATHWAYS model, much of which was funded by CARB and the CEC. This series includes: The [2017 Scoping Plan](#) Pathways Analysis, [Deep Decarbonization in a High Renewables Future: Updated Results from the California PATHWAYS Model](#) (June 2018), [Residential Building Electrification in California](#) (April 2019), [The Challenge of Retail Gas in California’s Low Carbon Future](#) (April 2020) and [SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future, Draft Results](#) (September 2020). All of this work shows the complementary nature of RG and other low-carbon technologies, but the work does not consistently select the same best end-use sector(s) for the biomethane resource.

¹⁰ Our recent 2020 IEPR Transportation workshop comments and comments to CARB on carbon neutrality contain a description of the optionality and local air quality benefits created by pipeline-injected projects:

<https://efiling.energy.ca.gov/GetDocument.aspx?tn=234371&DocumentContentId=67230>
<https://www.arb.ca.gov/lists/com-attach/9-cn-e3-report-ws-W2kFM1VkBG5WYAI1.pdf>

better than “carbon neutral”). The potential synergy between BECCS technologies are addressed in a recent study conducted by Lawrence Livermore National Lab for California,¹¹ where organic-waste-derived hydrogen paired with CCS is the largest category providing carbon negative emission reductions.

Proper Lifecycle Analysis Can Address Concerns About Methane Leakage

During the question and answer portion of the workshop, CEC and E3 indicated that methane leakage from RNG used to produce power might be worth further investigation and that may be delaying inclusion in the SB 100 Modelling. We agree that methane leakage is an important issue for all gaseous fuels, which is why we continually have been advocating for strong lifecycle analysis to capture these impacts (along with addressing other concerns associated with bioenergy more generally) across all California policy that incepts RNG use.

The vast majority of RNG commercially available today is created by capturing raw biogas generated at sites where organic waste is aggregated—such as landfills, food processing facilities, wastewater treatment plants, and agricultural operations—and then upgrading that biogas to RNG. In the absence of the RNG project this biogas may be flared (combusted and wasted), or worse, would go uncollected and escape fugitively into the atmosphere as a short-lived climate pollutant (methane). These type of RNG projects show significant lifecycle GHG benefits in CARB’s Low Carbon Fuel Standard (LCFS), even after appropriately accounting for methane leakage.

The lifecycle accounting in the LCFS program has many years of proven success in incenting biomethane (and other low carbon biofuels). The same concepts could be used to create a harmonized policy to promote renewable gas use in other sectors.¹² Closely evaluating time-dependent avoided emissions created by renewable resources in conjunction with this lifecycle analysis would also help better reward the dispatchable nature of RG-to-power. CARB, the CPUC and CEC, should examine if harmonized LCFS-like GHG accounting can be used as the backbone to promote RG in power applications (per SB 100)¹³ and to direct pipeline use (per SB 1440, Hueso, 2018).¹⁴ If harmonized with the LCFS, such accounting would help clarify relative incentives to use RG across transport, power, building, and industrial applications.

RNG is a key strategy to reduce methane emissions from organic waste streams. Through the RNG Coalition’s Sustainable Methane Abatement & Recycling Timeline (SMART) Initiative, we are committed to sustainably capturing and repurposing methane that would otherwise be wasted via flare or escape

¹¹ LLNL, *Getting to Neutral: Options for Negative Carbon Emissions in California*, Baker et al., January, 2020, Lawrence Livermore National Laboratory (LLNL) https://www-gs.llnl.gov/content/assets/docs/energy/Getting_to_Neutral.pdf

¹² Full lifecycle accounting also ensures that biomass resources that have poor greenhouse gas performance are disincentivized.

¹³ CPUC has begun to explore the use of lifecycle accounting for biomass used for power generation in the BioMAT program. This work should be harmonized with CARB’s LCFS lifecycle work to create consistent incentives across sectors. See: <ftp://ftp.cpuc.ca.gov/energy/BioMAT/Brief%20-%20Draft%20LCA%20Calculator.zip>

¹⁴ SB 1440 bill text here: https://leginfo.legislature.ca.gov/faces/billVersionsCompareClient.xhtml?bill_id=201720180SB1440&cversion=20170SB144098AMD

fugitively into the atmosphere from more than 43,000 sites in North America by 2050.¹⁵ We are working with our members and developing an action plan that includes meaningful benchmarks for 2030 and 2040, but smart California policy support is needed to reinforce this voluntary effort.

Conclusion

RNG Coalition appreciates the opportunity to provide feedback on this iteration of the SB 100 Modeling and forthcoming Joint Agency Report. Numerous studies in California and other jurisdictions show that renewable gases can contribute to significant GHG reductions within the State—including providing a dispatchable power resource with a multitude of environmental benefits. We respectfully urge CEC and E3 to include biomethane and renewable hydrogen in their modeling and look forward to working constructively with all stakeholders to ensure the goals of SB 100 are achieved.

Sincerely,



Sam Wade
Director of State Regulatory Affairs
Coalition for Renewable Natural Gas
1017 L Street #513
Sacramento, CA 95814
530.219.3887
sam@rngcoalition.com

¹⁵ We estimate that there are more than 4,400 landfills, 19,000 large farms and 20,000 wastewater treatment and lagoon facilities, food waste and agricultural sites in the US and Canada, where methane emissions occur as organic materials decompose. <http://www.rngcoalition.com/renewable-natural-gas-industry-announces-smart-initiative>