August 11, 2021

Mark L. Johnson
Executive Director and Secretary
Washington Utilities and Transportation Commission
P.O. Box 47250
Olympia, WA 98504-7250

Re: Docket U-210553 – Relating to the Commission's examination of energy decarbonization impacts and pathways for electric and gas utilities to meet state emissions targets

Dear Mr. Johnson,

The Coalition for Renewable Natural Gas (RNG Coalition)[1] offers the following initial comments pursuant to the Washington Utilities and Transportation Commission's (UTC) examination of energy decarbonization pathways in the electric and gas sectors. As a historical supporter of renewable natural gas (RNG) development,[2,3] we believe Washington is ahead of many other jurisdictions in exploring RNG's role in helping to achieve the necessary greenhouse gas (GHG) reductions. We support the goal of creating a robust vision for the long-term path to carbon neutrality for these energy sectors in this docket to continue the state's leadership role. Furthermore, we appreciate the questions posed by UTC about gas and electricity greenhouse gas reductions, which highlight some of the largest challenges that society faces in moving toward deep decarbonization.

While our industry looks forward to a robust examination of these issues, we also urge Washington not to delay substantive policy action to begin RNG procurement by gas utilities as soon as possible. RNG issues have already been extensively examined in the state.[4] While it may be true that the nuances of how RNG use can best be optimized in the long run—after consideration of the impacts of all other complementary strategies, including electrification, efficiency, etc.—should be examined in this docket, this should not prevent Washington from building on prior work and adoption of robust policy to promote RNG use to reduce methane from organic wastes today.

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[1] http://www.rngcoalition.com/

[2] See UTC's renewable natural gas policy statement, Docket U-190818:

https://apiproxy.utc.wa.gov/cases/GetDocument?docID=69&year=2019&docketNumber=190818

[3] See HB 2580:

http://lawfilesext.leg.wa.gov/biennium/2017-18/Pdf/Bills/Session%20Laws/House/2580-S.SL.pdf?q=20210804103151

[4] *Promoting Renewable Natural Gas in Washington State: A Report to the Washington State Legislature*, Department of Commerce and Washington State University, December 2018. https://www.commerce.wa.gov/wp-content/uploads/2019/01/Energy-Promoting-RNG-in-Washington-State.pdf and *Harnessing Renewable Natural Gas for Low-Carbon Fuel: A Roadmap for Washington State*, Washington State University Energy Program, December 2017 http://www.commerce.wa.gov/wp-content/uploads/2018/02/Energy-RNG-Roadmap-for-Washington-Jan-2018.pdf

The results from the analysis contemplated in this docket is very unlikely to discover a pathway that does not involve significant RNG buildout. We highly recommend the UTC reject any framing of the path to decarbonization as "RNG vs. electrification" and instead focus on "how much and how fast" to move forward with each of these strategies to ensure that costs are minimized, the reliability of the gas and electric systems are maintained, and low-income customers are protected during the transition.[5]

In our initial responses below we broadly explain the role of RNG in achieving waste and energy sector decarbonization before addressing the specific questions posed by UTC.

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 leading companies across the RNG supply chain, including recycling and waste management companies, renewable energy project developers, engineers, financiers, investors, organized labor, manufacturers, technology and service providers, gas and power marketers, gas and power transporters, transportation fleets, fueling stations, law firms, environmental advocates, research organizations, municipalities, universities, and utilities. 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 Washington and across North America.

Over the last decade, policies focused on GHG reduction have driven extraordinary growth within the RNG industry. There are now 190 operational RNG production facilities in North America with 232 under construction or in substantial development[6] compared to only 30 developed between 1982 and 2011. This recent development has been incentivized largely by transportation decarbonization programs, including the Unites States Environmental Protection Agency's Renewable Fuel Standard and clean fuel standard (CFS) policies. We expect that the Washington CFS, established via legislation in Washington earlier this year,[7] will provide similar support for use of RNG as a transportation fuel and familiarize Washington government with important lifecycle analysis (LCA) concepts that underly proper RNG GHG accounting.

RNG is also increasingly being used by Washington's neighbors to decarbonize natural gas end-use applications in non-power stationary sectors, marked by the emergence of new gas utility procurement programs for RNG. In Oregon, Northwest Natural has recently begun to procure RNG for all customers[8]

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[5] Thinktanks have already conducted multiple studies on these issues globally. For example, in the California context, Gridworks has published two reports entitled *California Gas System in Transition* and *Gas Resource and Infrastructure Planning for California*, available here: https://gridworks.org/initiatives/cagas-system-transition/ Stakeholders in the European Union have also conducted a multitude of studies on the issue. For a good summary see: Cătuţi et al., *The Future of Gas in Europe: Review of Recent Studies on the Future of Gas*, available from: https://www.ceps.eu/wp-content/uploads/2019/08/RR2019-03_Future-of-gas-in-Europe.pdf

[6] Based on RNG Coalition's production facility data as of August 4, 2021: https://www.rngcoalition.com/rng-production-facilities

[7] See HB 1091 as enacted:

http://lawfilesext.leg.wa.gov/biennium/2021-22/Pdf/Bills/Session%20Laws/House/1091-S3.SL.pdf?q=20210804094123

[8] https://www.nwnatural.com/about-us/environment/renewable-natural-gas

under the cost recovery framework authorized in Oregon Senate Bill 98 of 2019.[9] Similarly, the California Public Utilities Commission is currently considering requiring all gas utilities to procure RNG at levels up to ~12% of current core consumption by 2030, per the requirements of California Senate Bill 1440 of 2018.[10] Finally, British Columbia recently upped its ambition on RNG and now is targeting 15% renewable gas content in the natural gas system by 2030.[11]

Environmental Benefits and Long-Term Role of RNG in Washington

Renewable gases—both RNG and hydrogen—are important near-term decarbonization tools for all applications which currently utilize fossil-derived fuels and, in the longer-term, renewable gases will be a necessary resource for any applications that have certain reliability requirements, or which are not well suited to electrification.[12] There have been a number of studies in recent years outlining the benefit and necessity of renewable gases as part of balanced decarbonization strategies. One particularly relevant example by Columbia University's Center on Global Energy Policy[13] is focused on the use of the existing gas system in a carbon neutral world. Notably, the authors state that:

> *"[R]etrofitting and otherwise improving the existing pipeline system are not a choice between natural gas and electrification or between fossil fuels and zero-carbon fuels. Rather, these investments in existing infrastructure can support a pathway toward wider storage and delivery of cleaner and increasingly low-carbon gases while lowering the overall cost of the transition and ensuring reliability across the energy system. In the same way that the electric grid allows for increasingly low-carbon electrons to be transported, the natural gas grid should be viewed as a way to enable increasingly low-carbon molecules to be transported."*

The RNG industry does not claim to be able to solve the daunting challenge of fully decarbonizing all sectors alone, but we know that renewable gases will be a significant contributor to this effort. In understanding RNG's role, it is important to consider both the well proven technology readiness level of various methods of making RNG today, such as Anerobic Digestion (AD), and the flexibility provided by RNG's full fungibility with all conventional gas applications. In the long run, RNG can be directed to the end-uses where it is most needed, serving in tandem with technologies that require time to scale and achieve production cost reductions (e.g., electrolytic hydrogen, heavy duty electric vehicles) or that involve the turnover of long-lived capital stock (e.g., electrification of building space and water heating).

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[9] https://olis.oregonlegislature.gov/liz/2019R1/Downloads/MeasureDocument/SB98/A-Engrossed

[10] Such as the framework under consideration by the CPUC under Senate Bill 1440. See the CPUC staff's recent whitepaper on this topic in CPUC Docket R.13-02-008: https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M386/K579/386579735.PDF

[11] https://news.gov.bc.ca/releases/2021EMLI0046-001286

[12] Bataille et al., *A Review of Technology and Policy Deep Decarbonization Pathway Options for Making Energy-Intensive Industry Production Consistent with the Paris Agreement.* https://www.sciencedirect.com/science/article/abs/pii/S0959652618307686

[13] Blanton et. Al, *Investing in the US Natural Gas Pipeline System to Support Net-Zero Targets* https://www.energypolicy.columbia.edu/research/report/investing-us-natural-gas-pipeline-system-support-net-zero-targets?utm_source=Center+on+Global+Energy+Policy+Mailing+List&utm_campaign=38d4ab05a7-EMAIL_CAMPAIGN_2019_09_24_06_19_COPY_01&utm_medium=email&utm_term=0_0773077aac-38d4ab05a7-102456873

RNG's Role in Achieving Emission Reductions from Organic Waste

As part of UTC's examination of cross-sector environmental benefits it will be crucially important to consider the intersection between RNG's benefits in the waste, agricultural, and energy sectors. Organic waste is a serious and growing issue, and climate and other environmental impacts from these wastes require an immediate and ongoing solution. Globally, municipal solid waste is expected to grow 69% from 2.01 billion metric tons (BT) in 2018 to 3.4 BT in 2050 (around 50% of which is organic waste).[14] Moreover, these trends are underpinned by an expected 25% population increase of 2 billion people between now and 2050.[15] Washington needs to help pioneer the development and deployment of commercially viable technologies to address this waste challenge.

In tandem with waste reduction efforts, RNG development and utilization will also be a primary solution for solving Washington's (and the nation's) leading biogenic methane emissions sources—livestock manure management and landfilled organics.[16] Methane is a short-lived climate pollutant that—when assessed over a 20-year timeframe—is up to 84 times as potent as a greenhouse gas as carbon dioxide.[17] Addressing these methane challenges rapidly, through RNG production, will simultaneously create a significant amount of useful low carbon fuel.[18]

Generally speaking, RNG provides an incentive to better manage organic waste by providing an associated revenue stream for those who handle the waste, such as municipalities and farmers. RNG production through anaerobic digestion of materials such as food waste, animal manure, and wastewater also yields valuable by-products. After the elimination of pathogens, digested solids can be recycled for productive uses such as animal bedding,[19] and AD converts nutrients into a form more accessible by plants than raw manure, allowing for an effective organic fertilizer.[20] Overall, recycling and using the by-products of waste through AD for RNG production processes creates a more environmentally responsible and sustainable circular economy. Therefore, RNG derived from AD of

[14] https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html

[15] https://www.un.org/development/desa/en/news/population/world-population-prospects-2019.html

[16] Manure management and landfills make up 47% of California's methane emissions and 26% of U.S. methane emissions. See: https://ww3.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_2000-18ch4.pdf and https://www.epa.gov/ghgemissions/overview-greenhouse-gases

[17] Myhre, G. et al., *Anthropogenic and Natural Radiative Forcing*. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf

[18] The consulting firm ICF estimates that 65% of landfills with gas collection systems in place, 60% of landfills without collection systems in place, 80% of EPA candidate landfills, 60% of technically available animal manure, 50% of wastewater treatment plants with a capacity of over 3.3 MG/D, and 70% of food waste available at $100/dry ton can be turned into RNG by 2040. Just these AD-ready feedstocks would produce approximately 1,425 t/Btu of RNG, covering approximately 8.4% of 2019 U.S. residential, commercial, and industrial natural gas demand (16,948 t/Btu). Additional renewable gas volumes could also be produced through non-AD processes. See: https://gasfoundation.org/wp-content/uploads/2019/12/AGF-2019-RNG-Study-Full-Report-FINAL-12-18-19.pdf and https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_nus_a.htm

[19] U.S. EPA. (2020, August 18). The Benefits of Anaerobic Digestion.

[20] Id.

organic wastes should be thought of as a no-regrets near-term solution that eliminates a dangerous short-lived climate pollutant.

Carbon Intensity of RNG

All commercially available methods of producing RNG from organic waste feedstocks have excellent greenhouse gas performance, exemplified by carbon intensity (CI) modeling employed by California's LCFS program.[21] Moreover, some RNG projects capture and destroy a greater amount of GHG (as measured on a tons of carbon dioxide equivalency basis) than are emitted during the fuel's combustion, making it one of the few fuels available commercially today with a carbon-negative impact (i.e., better than carbon-neutral). There remain thousands of landfills, wastewater treatment facilities, and livestock operations across North America—including many in Washington—where raw biogas (methane) is being flared, or worse, is uncollected and escaping fugitively into the atmosphere. Pursuing increased development and utilization of RNG will incentivize improved management of these waste streams while simultaneously providing a flexible, renewable energy resource.

Because of the breadth of technological options to make renewable gases, the RNG industry has long advocated for employing metrics to assess the GHG emissions from each RNG production pathway. We believe that a lifecycle analysis (LCA) is the most appropriate method of doing so because it accounts for all greenhouse gas emissions benefits and disbenefits[22] from a given RNG production pathway. These various emissions steps are then combined to produce a CI score for each production pathway. A common tool for calculating RNG CI scores is the GREET model[23] created by Argonne National Lab, which is widely accepted among both regulatory agencies and the scientific community, most notably by CARB in the LCFS.[24]

Pathway-specific CI scores for RNG production facilities range from low-carbon to carbon-negative.[25] While it would be technically possible to produce RNG with a higher CI than conventional natural gas—due to methane leakage, energy consumption, or other factors—this is not the current practical reality at real-world RNG facilities in the U.S. today.[26]

As the nation's electricity grid sees an increased amount of zero-carbon electricity generation, the CI for all RNG pathways which utilize grid electricity will decrease. This means that the RNG pathways which are currently low-carbon (primarily due to fossil-based electricity and gas inputs from the current grid)

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[21] For example, see the lifecycle analyses conducted by California's Air Resources Board: https://ww3.arb.ca.gov/fuels/lcfs/fuelpathways/pathwaytable.htm

[22] For example, benefits may include avoidance of upstream emissions while disbenefits may include leakage, energy usage, and non-CO_2 combustion emissions.

[23] See more information about Argonne National Lab's GREET model: https://greet.es.anl.gov/

[24] GREET can easily be modified to provide CI scores for stationary uses of RNG, as is required in other jurisdictions' RNG utility procurement program. For example, the California Public Utilities Commission (CPUC) required Southern California Gas Company and San Diego Gas and Electric to use a modified version of GREET to measure the Carbon intensity of procured RNG. See CPUC Decision 20-12-022 dated December 17, 2020.

[25] See information on LCFS Pathway Certified Carbon Intensities: https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities

[26] RNG Coalition does not support the utilization of RNG produced through high-CI methods.

will move increasingly toward zero-carbon as their upstream energy inputs are derived from a greater and greater share of renewable electricity, and those which are currently carbon negative will produce even greater benefits. Modeling CI based on these important interactions clearly illustrates the immediate and long-term benefits of RNG deployment, and the use of such a framework in a consistent fashion across all policies promoting RNG will provide an incentive for RNG producers to maximize their greenhouse gas benefit.

UTC Considerations

How Can Natural Gas Utilities Decarbonize?

Achieving full decarbonization of all natural gas infrastructure in its current form will be one of the greatest challenges in reaching carbon neutrality. Indeed, there are many strategies which must be employed in tandem in a thoughtful manner to reach those goals. In addition to the aforementioned study from Columbia University, extensive modeling has been conducted in various jurisdictions which outlines various aspects of this issue. Notably, studies by Energy and Environmental Economics for California,[27] Minnesota,[28] New York, [29] and the Pacific Northwest[30] show the necessity of using renewable gaseous fuels—including biologically-derived RNG and renewable hydrogen—in every scenario which reaches carbon neutrality by 2050. As previously discussed, it is important to consider the vast infrastructure currently in place to facilitate the transport and use of gaseous fuels, and how some of that infrastructure can be modified for continued long-term benefit. The immediate availability and flexibility of RNG to decarbonize any type of natural gas end-use means that it should be generally incentivized in the near-term as part of that effort, and may ultimately be directed to specific end-uses as total gas throughput declines.

Costs and Benefits to Residential and Commercial Customers, Including Environmental, Health, and Economic Benefits

RNG is currently higher cost than conventional natural gas, but should be valued for its benefits in terms of decarbonization and facilitating additional improvements in organic waste management. Similarly, the full social benefit provided by avoiding or reducing greenhouse gases due to RNG deployment

[27] For example, see pg. 35 of the California Energy Commission report entitled *The Challenge of Retail Gas in California's Low Carbon Future,* which finds that natural gas in California's residential, commercial, and industrial sectors is still ~1,000 tBtu in 2050 in the high-building-electrification case: https://ww2.energy.ca.gov/2019publications/CEC-500-2019-055/CEC-500-2019-055-F.pdf

[28] GPI, CEE, *Decarbonizing Minnesota's Natural Gas End Uses.*

https://e21initiative.org/wp-content/uploads/2021/07/Decarbonizing-NG-End-Uses-Stakeholder-Process-Summary.pdf

[29] E3, *Pathways to Deep Decarbonization in New York State.*

https://climate.ny.gov/-/media/CLCPA/Files/2020-06-24-NYS-Decarbonization-Pathways-Report.pdf

[30] E3, *Pacific Northwest Pathways to 2050.*

https://www.ethree.com/wp-content/uploads/2018/11/E3_Pacific_Northwest_Pathways_to_2050.pdf

should be fully captured through cost benefit analysis being inclusive of credible estimates of the social cost of greenhouse gases.[31]

In addition to its climate-related benefits, and its ability to generally improve organic waste management practices, RNG production can be used to create organic soil amendments and capture nutrients. Such processes provide a way to reduce nutrient application on site and improve local soil health, which can improve drainage and allow native plant growth, protecting waterways and increasing biodiversity. Additional practices for the capture of nitrogen, phosphorus, and potassium—which are currently commercially viable—can be added to biogas and RNG systems, transforming nutrients so plants can absorb them quickly. Unlike manure, which takes many months to break down before nutrients are absorbed, digested material from biogas and RNG systems can be absorbed quickly by plants, reducing nutrient runoff.

RNG is local, distributed energy, thereby protecting people and enabling local businesses to remain online during energy shortages or outages; providing additional revenue streams for municipalities and rural communities, including historically disadvantaged communities, which in some cases can reduce local taxes; and helping to grow local employment opportunities, with each project attracting between $10-$100 million in capital investment and creating up to 173 direct and indirect jobs.

These various benefits outside of the energy sector should be important considerations for RNG development and use in Washington. Indeed, RNG provides unique value as a strategy for decarbonization and environmental improvement.

Equity Considerations and Impacts to Low-Income Customers and Highly Impacted Communities

The interaction between RNG projects, organic waste management sites, and the surrounding communities presents an opportunity to accelerate the improvement of waste management practices which will benefit communities as well as the facilities which implement such improvements. The RNG sector and RNG development from these feedstocks can help in addressing environmental justice issues by moving the organic waste sector towards better overall waste management, and in most cases will improve local air quality (e.g., reduce odors, reduce criteria pollutants relative to a situation where methane is being constantly flared). The RNG industry does not claim to be a full solution for all environmental justice issues related to organic waste management, however, the implementation of RNG production facilities which improve organic waste management deserves consideration as an important first step to that end.

Potential Regulatory Policy Changes to Facilitate Decarbonization of the Services that Gas Companies Provide While Ensuring Customer Rates are Fair, Just, Reasonable, and Sufficient

Because of cross-sectoral interactions and (perceived) complexity of GHG LCA of RNG projects, designing successful RNG policy is not always easy.[32] To build on existing momentum for RNG development in

[31] For example, see https://www.dec.ny.gov/docs/administration_pdf/vocguidrev.pdf and https://www.rff.org/topics/scc/

[32] For an excellent primer on how RNG fits as a decarbonization strategy we recommend the recent work from the World Resources Institute, entitled *Renewable Natural Gas as a Climate Strategy: Guidance for State Policymakers.* https://www.wri.org/publication/renewable-natural-gas-guidance

Washington and successes in other jurisdictions, we recommend that UTC's examination carefully consider the following preliminary policy recommendations related to RNG:

- ***Examine Appropriate Targets for Renewable Gas Procurement Programs for all Gas Customers.*** Just as renewable portfolio standards (RPS) and CFS programs have successfully done for power and transportation fuels, establishing a policy (or policies) that decarbonize all gas end uses should be a critical near-term goal for Washington. Carbon-weighted RNG procurement programs for gas customers—as described conceptually in the 2018 RNG Report to the Legislature[33]— represent an excellent starting point for this crucial aspect of promoting RNG use. Such programs will be a necessary component of reducing methane emissions and improving organic waste management and should be implemented without delay.

  Furthermore, it is important for UTC to consider how renewable gas use can best be incentivized for large gas users in the industrial sector. This could be accomplished either through an all-encompassing RNG procurement standard or through new industry-specific policies.[34] Designing policies for large industrial gas users may be more challenging because of concerns about economic and emissions "leakage" should out-of-state competitors not face similar requirements. However, from the RNG industry's perspective it's important that a clear vision be presented in the results of this examination on which tools will be relied upon—and how they will interact—to fully decarbonize gas supply to all end uses in the state.

- ***Align GHG Accounting Across all Programs Promoting RNG.*** The greenhouse gas accounting in all RNG-inclusive programs should be adjusted to better align with the CFS and other emerging programs which utilize LCA and CI scoring in evaluating GHG reductions from RNG and other resources.

- ***Consider All Renewable Gas Feedstocks.*** UTC's analysis presents an important opportunity to consider all feedstocks that can be converted into renewable gases in the long run, some of which have large co-benefits. While our industry is currently focused on treating organic wastes through anaerobic digestion to reduce methane, that is not only potential bio-feedstock for renewable gas production. While continuing with a primary focus on the near-term deployment of AD, this examination should also develop a framework to promote the utilization of organic wastes/residues that are not well suited to AD, such as forest residues and other woody wastes. These feedstocks were not explored in much detail in the prior Washington work[35] but may be an important source of RNG or hydrogen supply according to more recent studies.[36]

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[33] *Promoting Renewable Natural Gas in Washington State: A Report to the Washington State Legislature*, page 31.

[34] Such as the type of program envisioned by California SB 596 (2021, Becker) which would incentivize carbon reduction in the cement sector from a variety of technologies, including RNG. See: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB596

[35] See *Promoting Renewable Natural Gas in Washington State: A Report to the Washington State Legislature*, page 15.

[36] 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 and ICF, *Renewable Sources of Natural Gas: Supply*

The best long-run use of these materials may be to convert them to create either carbon-negative renewable hydrogen (when coupled with carbon capture and sequestration) or bioliquids, as outlined by the work done by Lawrence Livermore National Laboratory.[37] This process has the potential to facilitate several ancillary environmental benefits, including reducing wildfire risks and the negative impacts of openly burning agricultural waste. All previously mentioned studies include the production and use of renewable hydrogen as an important decarbonization strategy.

Conclusion

Based on the large variability in RNG feedstocks, project location, uncertainties surrounding emerging technologies, and the benefits of a storable and dispatchable resource in various sectors, the highest and best use of the bioresources that can be converted to RNG is not yet known, but the fact that we must use these feedstocks constructively should no longer be in question. Given that the highest and best use of this low carbon resource will likely change over time with the evolution of our energy system, it remains important to continue to incentivize and develop well-coordinated programs to promote RNG use across all sectors.

RNG Coalition looks forward to working with UTC and other stakeholders in this examination of the future of Washington's energy systems. Our industry is poised for continued growth in Washington, and globally, as leading jurisdictions look to address climate change and increase the resiliency of our energy systems. We thank UTC for your ongoing work related to RNG, organic waste reduction, short lived climate pollutants, and for creating policies which will serve as an example for other jurisdictions on these issues.

Sincerely,

/S/

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[37] 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