DOCKETED	
Docket Number:	19-MISC-03
Project Title:	The Natural Gas Infrastructure and Decarbonization Targets
TN #:	230669
Document Title:	Earthjustice NRDC Sierra Club Comments On Final Project Report
Description:	N/A
Filer:	System
Organization:	Earthjustice NRDC Sierra Club/Sasan Saadat
Submitter Role:	Public
Submission Date:	11/13/2019 4:46:06 PM
Docketed Date:	11/13/2019

Comment Received From: Sasan Saadat
Submitted On: 11/13/2019
Docket Number: 19-MISC-03

Earthjustice NRDC Sierra Club Comments E3

Additional submitted attachment is included below.

November 13, 2019

Submitted via electronic commenting system

Docket No. 19-Misc-03
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Earthjustice, Natural Resources Defense Council, and Sierra Club Comments on Final Project Report on Natural Gas Distribution in California's Low Carbon Future

Earthjustice, the Natural Resources Defense Council, and Sierra Club appreciate the opportunity to comment on the California Energy Commission ("CEC") final project report *Natural Gas Distribution in California's Low-Carbon Future: Technology Options, Customer Costs, and Public Health Benefits* ("Final Report") conducted by Energy and Environmental Economics, Inc. ("E3"). We applaud the study's authors for this critical work examining the future of the natural gas system in the context of California's decarbonization goals. The results add to the expanding body of research concluding that to ensure a higher likelihood of full decarbonization, lower society-wide costs, and better air quality and health outcomes, the State should immediately begin pursuing policies that achieve widespread building electrification and the strategic decommissioning of the gas distribution system.[1]

We begin our comments by underscoring the Final Report's findings related to resiliency and wildfire risk. We then focus on the implications of its conclusions for the State's carbon-neutrality targets, and how the limited potential of biomethane should not be squandered on the building sector. Finally, we urge the CEC to act based on the stark findings presented in the Final Report by developing an actionable Gas Transition Strategy and ensuring that local governments are well informed about the implications of these findings.

[1] See, *e.g.*, CEC, 2018 IEPR Update, Vol. II at 28 (Jan. 2019) ("growing consensus that building electrification is the most viable and predictable path to zero-emission buildings … due to the availability of off-the-shelf, highly efficient electric technologies (such as heat pumps) and the continued reduction of emission intensities in the electricity sector."); E3, Residential Building Electrification in California (Apr. 2019) ("We confirm that the electrification of buildings represents an important opportunity to reduce greenhouse gas emissions from buildings both in the near term and long term, and can lead to consumer capital cost savings, bill savings, and lifecycle savings in many circumstances."), https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf.

1. Widespread Building Electrification Can Help Manage the Costs of Wildfire Impacts While Improving Resilience

The climate crisis continues to fuel more devastating fire seasons, and on top of wildfire risk, residents now face the added anxiety of blackouts from planned shutoffs. These challenges have raised concerns about grid resilience and future wildfire prevention. There is no scenario where these challenges do not pose costs to California, and the Final Report offers findings that help create a more informed dialogue about how to end reliance on the fossil fuels while managing the costs of a resilient electric grid. Including wildfire and wildfire prevention costs, a high building electrification ("HBE") scenario is $5 billion to $20 billion lower in cost than a no building electrification ("NBE") scenario. This is in part because new electric loads from building electrification helps reduce electric rates by improving the utilization of grid assets.[2] On the question of whether building electrification increases wildfire risks or whether those risks change the study's outcomes, researchers clearly state: "[n]o, it is not likely that building electrification will increase the risk of wildfires."[3]

The Final Report makes appropriately conservative estimates on the impact of wildfire costs to electric rates (e.g. "biasing upward" cost estimates by basing them on PG&E's rate proposal, where there is a larger share of "high-risk exposure" wildfire areas).[4] While wildfire-related expenses (which will be required regardless of building electrification) increase electric costs, the study finds that they "are unlikely to change the basic conclusion that building electrification will lead to long-term bill savings for customers relative to continued reliance on natural gas in homes."[5]

Moreover, while the costs from wildfires and upgrades impact all scenarios, including the reference case, adding new electric loads from EVs and building electrification help to mute the impacts on rates by spreading grid costs over more units of electricity sold, and by providing grid services. Electric loads from heat pumps and vehicles have high storage and load shifting potential.[6] Microgrids can also help flatten load curves while helping utilities avoid long-distance infrastructure investments.[7] Coupling these technologies with distributed renewable energy and community-scale microgrids also provides critical, hard-to-quantify benefits of energy security during emergencies. Electric vehicles enabled to provide vehicle-to-grid ("V2G") service have the potential to store enough energy to provide a home with back-up power for two days,[8] and

---

[2] Final Report at 4, https://ww2.energy.ca.gov/2019publications/CEC-500-2019-055/CEC-500-2019-055-D.pdf.
[3] Final Report Appendices at A-3, https://ww2.energy.ca.gov/2019publications/CEC-500-2019-055/CEC-500-2019-055-D-AP.pdf.
[4] Final Report at 61.
[5] Final Report Appendices at A-3.
[6] *See, e.g.*, Ryan Hledik *et al*, The Hidden Battery, Opportunities in Electric Water Heating (Jan 2016), https://www.electric.coop/wp-content/uploads/2016/07/The-Hidden-Battery-01-25-2016.pdf.
[7] Clean Coalition, Making it Easy to Electrify and Prepare for a Resilient Future, (Sept. 16, 2019), https://clean-coalition.org/news/making-it-easy-to-electrify-and-prepare-for-a-resilient-future/.
[8] Camron Gorguinpour *et al*, How California Can Use Electric Vehicles to Keep the Lights On (Nov. 6, 2019), https://www.wri.org/blog/2019/11/how-california-can-use-electric-vehicles-keep-lights.

heat pump water heaters can store hot water for over 24 hours even while the grid is down.[9] We note that modern gas appliances require both electricity and gas to operate, and therefore face the vulnerabilities of both energy systems.

2. Deep Decarbonization Scenarios that Achieve Carbon Neutrality Will Require High Levels of Building Electrification

As we noted in previous comments, the study's target of an 80 percent greenhouse gas ("GHG") reduction below 1990 levels by 2050 does not reflect the more aggressive pace of decarbonization now understood to be necessary to avoid catastrophic climate disruption and limit warming to 1.5°C.[10] The Final Report does not evaluate carbon neutrality, but is clear about what that a more aggressive decarbonization target would imply. While substantial volumes of fossil gas can remain in buildings under the NBE scenario under a target of reducing GHGs to 80 percent below 1990 levels by 2050, the study finds this approach "may not be possible in a scenario that achieves the state's 2045 carbon-neutrality goal."[11] A pathway that limits building electrification precludes any meaningful likelihood of keeping warming to 1.5°C and thereby significantly reducing the risk and impacts of climate change. Indeed, "[t]he research team concludes that the no building electrification scenario is unlikely to represent a stable, internally consistent future… So long as the state is on track to meet its climate targets, building electrification is likely to take hold."[12] Building electrification is not just a "low risk" strategy, it is an indispensable and economic component of any legitimate decarbonization pathway.

3. The Health and Cost Benefits of Direct Electrification Make Buildings a Poor Use Case for Renewable Gas

In previous comments, we highlighted that the study uses optimistic assumptions to demonstrate the potential for decarbonized gas (e.g. biomethane, synthetic natural gas, and hydrogen) to decarbonize buildings.[13] For example, the study's estimates of biomethane supply were likely overstated because they relied on sources, such as factory-farmed dairies, that have severe localized air quality and groundwater impacts. It is unjust to structure decarbonization strategies around sources that perpetuate local impacts, especially when many impacted communities are advocating for meaningful regulation and transition strategies for the State's industrial agriculture. Similarly, the study's assumptions of 20 percent hydrogen injection into the gas pipeline were overly-optimistic,[14] and under-count the costs associated with

---

[9] Rachel Golden, Electrification for Climate Resiliency (Oct. 9, 2019), https://www.sierraclub.org/articles/2019/10/electrification-for-climate-resiliency.

[10] Earthjustice and Sierra Club Comments on June 6th Workshop on Natural Gas Distribution Infrastructure and Decarbonization Targets, June 21, 2019 at 3 ("[I]n relying on the 2005 Executive Order target as its 2050 GHG reduction objective, the study fails to communicate and reflect the scientific reality that reductions in GHG pollution must occur far faster to avoid climate catastrophe.").

[11] Final Report at 5.

[12] *Id.* at 64.

[13] Earthjustice and Sierra Club Comments on June 6th Workshop on Natural Gas Distribution Infrastructure and Decarbonization Targets, June 21, 2019 at 3-4.

[14] Id. at 3-4 ("A UC Davis study for the California Air Resources Board notes that the 'current consensus seems to be that most parts of the natural gas system can tolerate mixtures up to 10 percent by volume

comprehensive upgrades to pipelines and appliances necessary to handle high levels of pipeline hydrogen.

The Final Report does not lower its aggressive and unproven assumptions about the cost and availability potential of decarbonized gas, and in failing to do so, improperly shrinks the "gap" between the costs of an HBE and NBE scenario. Some bioenergy proponents have argued the opposite – claiming without merit that decarbonized gas is cheaper and more available than described in the "low cost" renewable gas scenario. However, even if the Final Report were to increase its assumptions about the availability of decarbonized gas potential, marginal improvements to decarbonized gas cost scenarios are unlikely to alter the fundamental finding that decarbonized gas is better suited for applications where there are not already low-cost pathways to electrification. For example, even if renewable electricity costs decrease and electrolyzer and methanation technology improves so that the cost of renewable synthetic gas (either renewable hydrogen or synthetic methane) comes down even more than already assumed in this analysis, decarbonizing heat with synthetic gas as opposed to heat pumps is likely to remain far more expensive. Changes to this dynamic are limited by the basic physics that using renewable electricity to power electrolysis and methanation will result in conversion losses that are unlikely to compete with the superior efficiency of heat pumps.

Absent costly modifications to the gas delivery system, the most optimistic scenarios of hydrogen pipeline blends remain at 20 percent—which is just 7 percent by energy content. Beyond that level, hydrogen must be converted to methane at even great energy and economic cost. Devoting renewable hydrogen potential to incrementally reduce the carbon intensity of the gas network is a poor use of a resource that can enable decarbonization in sectors where there are still significant barriers to electrification. Hydrogen is already used as a feedstock in industries such as ammonia production. Nearly all of that hydrogen comes from emission-intensive steam methane reformation (SMR).[15] Renewable hydrogen offers a way to provide a cleaner feedstock to these industries, or deliver the high-grade heat required for heavy industrial processes.[16] Similarly, any truly sustainable biomass that could be used to produce biomethane could instead be used to produce renewable liquid fuels for off-road transportation. As the study notes, "those end-uses are not only more difficult to electrify, but the displaced petroleum is more expensive and has higher GHG emissions intensity than natural gas."[17] To the extent that advocates of biomethane, renewable hydrogen and synthetic methane can demonstrate the sustainable

---

hydrogen,' but even this level would require a comprehensive maintenance inventory of the entire natural gas transport system, where regulators "would need to independently verify estimates to ensure compatibility of existing components and materials to hydrogen blends and to verify repairs to ensure that transmission and distribution lines would be safe for hydrogen exposure.").

[15] Energy Independence Now, *Renewable Hydrogen Roadmap*, (June 2018) at 15, https://static1.squarespace.com/static/58e8f58d20099ea6eb9ab918/t/5afd25a9f950b7543abe21ba/1526539702668/EIN_RH2_Paper_Lowres.pdf.

[16] McKinsey & Company, *Decarbonization of Industrial Sectors: The Next Frontier* (Jan 2018) https://www.mckinsey.com/~/media/mckinsey/business%20functions/sustainability/our%20insights/how%20industry%20can%20move%20toward%20a%20low%20carbon%20future/decarbonization-of-industrial-sectors-the-next-frontier.ashx.

[17] Final Report, Appendix C at 4.

integrity and economic potential of these resources, deployment of these resources should focus on sectors that are harder to electrify.

Moreover, the choice to decarbonize heat in buildings through combustion-based fuels, even if they were carbon-neutral, would continue to harm the health of people living in these buildings and contribute to poor local air quality through the continued emissions of NO_x and other combustion byproducts – an unacceptable and avoidable outcome given the opportunity to implement zero-emission solutions that offer superior health and air quality benefits.

4. The CEC Must Initiate a Comprehensive Gas Transition Strategy

While this important study offers a comprehensive view of the economic, environmental, and public health imperatives for high levels of building electrification, the conclusions of the report should not be viewed as surprising. The need for—and benefits of—dramatically reducing fossil gas use in buildings is well understood. As of this writing, more than 17 cities have passed ordinances either banning gas in new construction or adopting reach codes that strongly favor all-electric new construction.[18] The choice now is not whether we need to transition from the gas system, or even when, but how best to do so while also protecting vulnerable Californians and providing a just transition for workers.

A recent report by Gridworks, which builds on the Final Report's draft results from the summer, makes this point bluntly: "[t]here are two paths available to California: a smart, managed path that maximizes benefits and minimizes costs for everyone, or an uncontrolled path that is reactive and costly."[19] In order to stay the managed course, the report recommends a number of steps for policy-makers, including:

1. Initiating an integrated, interagency Gas System Transition Plan that assesses options for contracting existing gas infrastructure to reduce costs;
2. Requiring all new residential and commercial construction to be all-electric to avoid additional stranded costs and GHG lock-in;
3. Organizing a just transition for the gas delivery system workforce; and
4. Designing bill protections for all low-income customers and creating a one-stop shop for them to pair electrification with energy efficiency, weatherization, and solar and storage installation.

The CEC is well-positioned to take a leading role enacting many of these recommendations, and can play an important role coordinating other agencies and stakeholders for the remaining actions. We strongly encourage the CEC to take the necessary next steps to achieve equitable and widespread building electrification.

---

[18] Matt Gough, Forward-Looking Cities Lead the Way to a Gas-Free Future, (accessed Nov. 6, 2019), https://www.sierraclub.org/articles/2019/11/forward-looking-cities-lead-way-gas-free-future.
[19] Gridworks, California's Gas System in Transition: Equitable, Affordable, Decarbonized, and Smaller, (2019) at 2, https://gridworks.org/wp-content/uploads/2019/09/CA_Gas_System_in_Transition.pdf.

5. Coordinate Outreach to Local Governments to Counter SoCalGas' Efforts to Obstruct Statewide Action to Facilitate Building Electrification

The climate imperative of transitioning from gas to electric buildings is clear, the health benefits are clear, and the cost of inaction is clear. Yet as recently documented in investigative reporting by the LA Times, SoCalGas, an entity with a shareholder interest in maintaining reliance on gas combustion, is crisscrossing Southern California in an effort to build local opposition to electrification.[20] Among its tactics, SoCalGas has given dozens of presentations to local governments arguing against building electrification using highly misleading analyses.[21] As a result of SoCalGas' efforts, more than 100 local governments have passed a version of its pre-drafted "balanced energy" resolutions to oppose state polices that favor electrification in the name of local control.[22] SoCalGas was also instrumental in forming a front group, Californians for Balanced Energy Solutions, to rally opposition to building electrification.[23]

We encourage the Energy Commission to coordinate outreach to local governments to combat self-serving gas industry efforts to confuse and stall action. The Final Report provides a clear picture of the critical importance and benefits of building electrification. The Commission should ensure these results are communicated as broadly as possible so local communities that may not participate in Energy Commission proceedings have access to and understand both the public health, climate and economic benefits of building electrification and the consequences of continued reliance and further expansion of the gas system.

We appreciate the Commission for initiating this important work, and thank the study authors for pioneering research that illuminates critical information as California takes on the urgent challenge of building decarbonization. We look forward to working with the CEC and other parties to begin the work of achieving widespread building electrification in earnest.

Sincerely,

---

[20] LA Times, *California ditched coal. The gas company is worried it's next* (Oct. 22, 2019), https://www.latimes.com/environment/story/2019-10-22/southern-california-gas-climate-change.
[21] *Id.*
[22] https://www.prnewswire.com/news-releases/socalgas-applauds-more-than-100-local-governments-in-southern-california-that-pass-resolutions-in-support-of-balanced-energy-policies-300931093.html
[23] *Id.*; LA Times, Editorial: SoCalGas' sleazy 'Astoturf' effort to keep fossil fuels flowing in California, Aug. 10, 2019, https://www.latimes.com/opinion/story/2019-08-10/socalgas-astroturf-cpuc-aliso-canyon.

Matt Vespa
Staff Attorney
Earthjustice
50 California St., Ste 500
San Francisco, CA 94111
mvespa@earthjustice.org
(415) 217-2123

Sasan Saadat
Research and Policy Analyst
Earthjustice
50 California St., Ste 500
San Francisco, CA 94111
ssaadat@earthjustice.org
(415) 217-2104

Merrian Borgeson
Senior Scientist
Natural Resources Defense Council
111 Sutter Street, 21st floor
San Francisco, CA 94104
mborgeson@nrdc.org
415-875-6100

Rachel Golden
Deputy Director, Building Electrification
Sierra Club
2101 Webster St., Suite 1300
Oakland, CA 94612
rachel.golden@sierraclub.org
(415) 977-5647

Lauren Cullum
Policy Advocate
Sierra Club California
lauren.cullum@sierraclub.org
(916) 557-1107