ISSUE BRIEF

Local Natural Gas Emission Reduction Options

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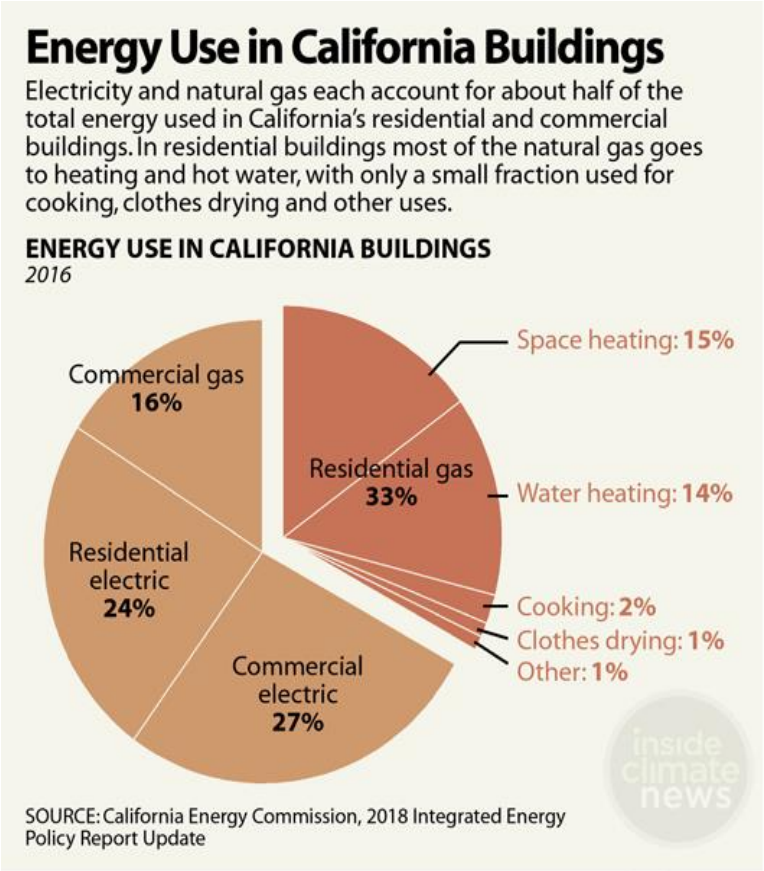
ISSUE SUMMARY

This Issue Brief compiles key information and resources for local governments interested in exploring or pursuing various **local natural gas emission reduction options** for buildings. It is part of the effort to fulfill a technical assistance request of the Statewide Energy Efficiency Best Practices Coordinator by a local government practitioner in a rural community that is considering a range of different approaches to realize quantifiable natural emissions reductions in a climate action plan and general plan update. In addition to this Issue Brief, a Virtual Office Hours event was conducted on this topic on April 23, 2020, featuring expert speakers, local leaders and attendee questions and discussion. You may view a recording of that event here.

Introduction

In California, residential and commercial buildings are one of the largest sources of carbon emissions for cities and counties. Natural gas accounts for about half of building energy use, largely in space and water heating.



PAUL HORN / InsideClimate News

The State has adopted the most ambitious greenhouse gas (GHG) reduction targets in North America through policies like Renewable portfolio standards, AB 32, SB 350 and Executive Orders. These actions commit California to cut GHG emissions to 40% below 1990 levels by 2030, doubling energy efficiency savings by 2030 and to achieve carbon neutrality by 2045.

While electricity is rapidly being decarbonized, fossil fuels like natural gas pose a unique challenge for local governments aiming to meet local and State emission reduction goals. The California Energy Commission's 2018 Integrated Energy Policy Report (IEPR) Update includes discussion of building decarbonization and states that "electrification of space and

water heating using highly efficient technologies is **a key strategy** to reduce or eliminate GHG emissions from buildings."

In January 2019, the CPUC instituted a new rulemaking on building decarbonization (R.19-01-011). The proposed scope includes establishing a building decarbonization policy framework and implementing SB 1477 (Stern, 2018), which calls on the CPUC to develop two incentive programs (BUILD and TECH) aimed at reducing greenhouse gas emissions associated with buildings.

When it comes to lowering natural gas emissions within their jurisdictions, local governments in California have may options as summarized in the next section.

Local Options for Lowering Natural Gas Emissions

To meet goals and requirements to reduce GHG emissions, local governments may consider the following approaches to lowering emissions from natural gas.

Collaborate with local gas provider on emission reduction efforts

Gas providers like Southern California Gas Company are working towards state emission goals by developing "zero carbon" fuels like renewable natural gas (RNG) and hydrogen. SoCalGas aims to make 20% of its natural gas supply renewable by 2030. There are currently 40 renewable natural gas projects in CA, including methane capture at dairy digestors and organic and food waste sources. Local governments like the City of Corona have received incentive funding for completing renewable natural gas projects. In addition, SoCalGas is working through a CPUC proceeding to allow residential, small commercial and industrial customers to opt to purchase a portion of renewable natural gas, thereby increasing the demand for renewable natural gas which can help increase supply and lower its costs over time. (Learn more)

In addition, gas providers can support efforts to lower natural gas usage through energy efficiency programs targeting natural gas systems (e.g. PG&E energy saving solutions). See more information below.

Develop codes and standards

Local governments have special authorities to develop building codes, municipal or zoning codes, thresholds of significance and other codes and standards for their city of county.

Reach Codes

Local governments may choose to change a city or county building code to exceed State building code standards, known as reach codes. Many local governments have adopted reach codes to exceed Title 24 Building Energy Efficiency Standards, which are updated by the CEC every three years (the 2019 version of Title 24 went into effect January 1, 2020). To receive CEC approval, codes must prove cost effective. Studies demonstrating cost effectiveness of all-electric and electric-preferred new construction ordinances have been completed for all California climate zones.

Decarbonization Code Comparison Matrix as of 3/30/2020

Number of California Jurisdictions: 30

Jurisdiction	Approach			Systems			Buildling Types								Add-Ons		
	Natural Gas Infrastructure Moratorium	All-Electric Reach	Electric-Preferred	Whole Building	Water Heating	Space Heating	Low Rise Residential	City-Owned Properties	High Rise Residential	Hotel	Retail	Office	Restaurant	Life Sciences	Additional Solar	Electric Vehicles	Natural Gas In Lieu Fee
Alameda	X			X				X									
Berkeley	X		X	X			X	X	X	X	X	X	X	X			
Brisbane*		X			X	X	X	X	X	X	X	X	X				
Campbell		X			X	X	X									X	
Carlsbad		X			X		X								X		
Cupertino		X		X			X	X	X	X	X	X	X			X	
Davis			X	X			X										
Hayward		X	X	X			X	X	X	X	X	X	X	X	X		
Healdsburg		X			X	X	X	X	X	X	X	X	X	X			
Los Altos Hills		X			X	X	X	X	X	X	X	X	X				
Los Gatos		X		X			X									X	
Marin County			X	X			X	X	X	X	X	X	X	X		X	
Menlo Park*		X			X	X	X	X	X	X	X	X	X		X	X	
Mill Valley			X	X			X		X							X	
Milpitas			X	X			X	X	X	X	X	X	X	X			
Morgan Hill	X			X			X	X	X	X	X	X	X	X			
Mountain View*		X		X			X	X	X	X	X	X	X		X	X	
Pacifica		X			X	X	X	X	X	X	X	X	X		X	X	
Palo Alto*		X	X	X			X	X	X	X	X	X	X	X		X	
Richmond		X		X	X	X	X	X	X	X	X	X				X	
San Francisco	X		X	X			X	X	X	X	X	X	X		X	X	
San Jose*	X		X	X			X	X	X	X	X	X	X	X	X	X	
San Luis Obispo			X	X			X	X	X	X	X	X	X	X	X		X
San Mateo			X	X			X					X			X	X	
San Mateo County		X		X			X	X	X	X	X	X	X			X	
Santa Cruz	X			X			X	X	X	X	X	X		X			
Santa Monica			X	X			X	X	X	X	X	X	X	X	X		
Santa Rosa		X		X			X										
Saratoga		X			X	X	X	X	X	X	X	X	X	X		X	
Windsor		X		X			X										

*City Council opted to go beyond staff recommendation.

As shown in the table produced by the Building Decarbonization Coalition to the right, the past year was a windfall year for decarbonization reach codes. Thirty local governments in California developed electrification ordinances, including reach codes, that address natural gas emissions. While these reach codes vary widely with respect to the type of ordinance used, and the types of systems and buildings covered, they predominantly address new construction rather than retrofits. For example, the City of Berkeley passed a municipal code prohibiting natural gas infrastructure in new buildings, while the City of San Luis Obispo's proposed building code would require additional energy efficiency, electrification readiness and adds a small fee for new mixed-fuel buildings based on expected gas consumption. Other cities, such as Menlo Park, have limited natural gas use for specific appliances.

The Sierra Club's summary of city reach codes provides for more details on electrification ordinances in California, including links to staff reports and code language. Existing reach codes (including energy efficiency, solar and electrification codes) are also mapped on Local Energy Codes' local ordinance map.

While electricity providers are often amendable to initiatives that encourage a transition towards electrification (as promoted in this SMUD video and this SCE webpage), local governments can face varying levels of opposition when attempting to enact reach codes that address natural gas emissions. Some examples are provided below:

- https://www.npr.org/2019/11/21/781874235/california-restaurant-industry-group-sues-berkeley-over-natural-gas-ban
- https://www.latimes.com/environment/story/2020-05-06/socalgas-union-leader-protest-threat-no-social-distancing
- https://c4bes.org/about-us/
- https://www.utilitydive.com/news/california-natural-gas-costs-could-spike-as-state-decarbonizes-e3-uc-irvi/556512/

Thresholds of Significance

The California Environmental Quality Act (CEQA) requires that lead agencies identify significant environmental impacts of proposed projects, including impacts from greenhouse gas (GHG) emissions, and to avoid or mitigate those impacts if feasible. Jurisdictions all over California have developed thresholds of significance for GHG emissions to define the level of impact above which the agency will consider impacts from a proposed project to be significant. To mitigate emissions from proposed projects that exceed a threshold of significance, some jurisdictions are discouraging reliance upon natural gas.

For example, to provide guidance to Sacramento County lead agencies in determining significance for GHG emissions in CEQA documents for proposed projects through 2030 and beyond, the Sacramento Air Quality Management District recently updated its GHG thresholds of significance. In alignment with CARB's 2017 Scoping Plan, the update requires projects to commit to Best Management Practices (BMPs), one of which states "No new natural gas. Projects shall be designed and constructed without natural gas infrastructure." If a project cannot implement any one of the BMPs, the GHG must be mitigated with other on-site reduction measures or offsite reduction projects would be required to mitigate emissions. If offsite mitigation is utilized, the project, credit, or registry must demonstrate with substantial evidence that the offset is real, permanent, quantifiable, verifiable, enforceable and additional.

Provide or promote incentives for replacing existing building systems

Local governments across California can opt to take advantage of incentives for replacing existing building systems and lowering energy use in municipal facilities. They can also provide or promote incentives for residential and nonresidential properties within their jurisdiction. Several examples of incentives that can address natural gas emissions are provided below:

- Self Generation Incentive Program including $45 million for electric heat pump water heaters through 2025 (CPUC Decision D.19-09-027)
  https://www.cpuc.ca.gov/General.aspx?id=5935
- Energy Efficiency Rebates from CA Energy Providers
  https://www.energyupgradeca.org/home-energy-efficiency/rebates-incentives/
- Sacramento Municipal Utility District (SMUD) electrification rebates
  https://www.smud.org/en/Rebates-and-Savings-Tips/Go-electric
- BayREN audit, advising and rebate programs for single family, multifamily and business properties
  https://www.bayren.org/
- Monterey Bay Community Power Building Electrification Program (under development)
  https://www.mbcommunitypower.org/building-programs/
- Silicon Valley Clean Energy's FutureFit rebates for residential electric heat pump water heaters
  https://www.svcleanenergy.org/water-heating/
- Electrify Marin rebates
  https://www.marincounty.org/depts/cd/divisions/sustainability/energy-programs/electrify
- Marin Clean Energy customer programs for EE, EV, and renewables
  https://www.mcecleanenergy.org/customer-programs/
- Pending – The CPUC is developing Building Initiative for Low Emission Development (BUILD) and Technology and Equipment for Clean Heating (TECH) decarbonization programs in compliance with SB 1477
  https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442462255

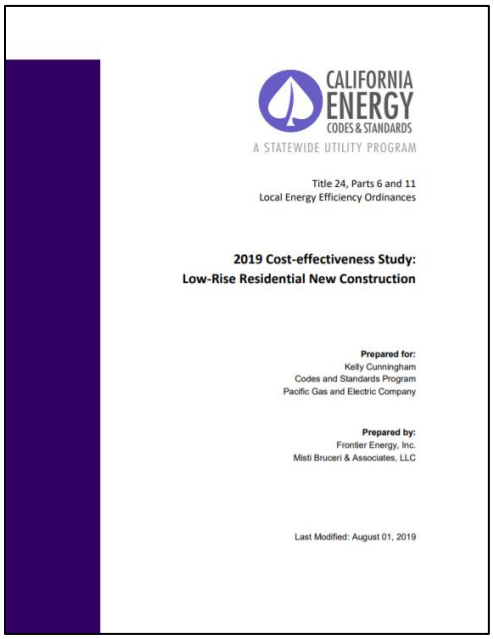
Obtain technical assistance

Local governments can obtain a range of technical assistance to help them lower natural gas emissions, including developing reach codes, lowering energy use, and quantifying emission reductions. See technical assistance opportunities listed on Page 9.

Local Considerations

When weighing their options, many local governments consider the following factors:

- Relative emission reduction potential
- Cost (e.g. construction costs, utility costs, consumer costs, infrastructure cost burden on smaller pool of gas ratepayers, fiscal prudence)
- Economic impact
- Health, safety, and equity (e.g. indoor air pollution, gas leaks)
- Resiliency and recovery speeds
- Technical capacity (e.g. electric equipment performance, availability of renewable natural gas)
- Legal issues (e.g. potential lawsuits)



RESOURCES AND FURTHER ASSISTANCE

Join conversations

- Watch the Virtual Office Hours recording on this topic
- Sign up for the Natural Gas Emission Reductions email Listserv
- Contact **Misti Bruceri** (mistib@comcast.net) to join monthly California Reach Code calls
- Contact **Amy Rider** (arider@archamy.com) to join Zero Emission Buildings Task Force calls
- Join the Local Government Sustainable Energy Coalition (LGSEC) to engage with other local governments on related policy and regulatory matters
- Follow the CPUC Building Decarbonization proceeding (R.19-10-011)

Request technical assistance

- Climate action planning and light emissions analysis – Contact **Calyn Hart**, Program Officer, Statewide Energy Efficiency Collaborative, *ICLEI-Local Governments for Sustainability USA*: calyn.hart@iclei.org
- Developing reach codes
  - CA C&S Reach Code program
  - East Bay Community Energy Reach Codes program
  - Peninsula Clean Energy Reach Codes program
  - Process for completing State reach code approval - Contact **Danuta Drozdowicz**, Building Standards Office, *California Energy Commission*: danuta.drozdowicz@energy.ca.gov
- Contact your energy provider for help lowering your municipal energy use
  - Pacific Gas and Electric Company
  - San Diego Gas & Electric Company
  - Southern California Edison
  - Southern California Gas Company
  - Community Choice Aggregation programs, Regional Energy Networks (e.g. SoCalREN), or Local Government Partnerships active in your area may also offer support

Connect with Experts

The following individuals agreed to participate in the 4/23 Virtual Office Hours on "Local Natural Gas Emission Reduction Options," which can be viewed here.

Amy Rider

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Learn from Other CA Local Agencies

1. Summary of CA City Reach Codes with linked staff reports, resolutions and code language (Sierra Club)
   https://www.sierraclub.org/articles/2020/03/californias-cities-lead-way-gas-free-future

2. Greenhouse Gas Thresholds for Sacramento County, including Best Management Practices (Sacramento Metropolitan Air Quality Management District) https://smairquality.novusagenda.com/agendapublic/CoverSheet.aspx?ItemID=1234&MeetingID=963

3. Peninsula Climate Comfort: A Residential Electrification Feasibility Study and Demonstration Project (Peninsula Clean Energy) https://drive.google.com/file/d/1fOFao6MOR4crKQPPqU6ExVuKWZrD95X7/view

4. RFP for Streamlining Community-Wide Electrification Program (Silicon Valley Clean Energy) https://www.svcleanenergy.org/wp-content/uploads/2020/02/RFP-StreamliningCommunity-WideElectrfication.pdf

Learn from Reports & Studies

1. 2018 Integrated Energy Policy Report (California Energy Commission) https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report

2. 2019 Ordinances and Cost Effectiveness Studies (compiled by Local Energy Codes) https://localenergycodes.com/content/2019-local-energy-ordinances

3. Ventilation and Air Quality in New California Homes with Gas Appliances and Mechanical Ventilation (California Energy Commission) https://ww2.energy.ca.gov/2020publications/CEC-500-2020-023/CEC-500-2020-023.pdf

4. BayREN's Guide to Understanding and Adopting Reach Codes https://www.bayrencodes.org/reachcodes/

5. Effects of residential gas appliances on indoor and outdoor air quality and public health (UCLA Center for Occupational & Environmental Health) https://coeh.ph.ucla.edu/effects-residential-gas-appliances-indoor-and-outdoor-air-quality-and-public-health-california

6. Residential Cooktop Performance and Energy Comparison Study (Frontier Energy)
https://cao-94612.s3.amazonaws.com/documents/Induction-Range-Final-Report-July-2019.pdf

7. Building Energy Reach Codes: A Key Climate Action Strategy for Cities and Counties (Building Decarbonization Coalition, NRDC and Sierra Club)
http://www.buildingdecarb.org/uploads/3/0/7/3/30734489/zeb_reach_code_fact_sheet_2019-01.pdf

8. A Roadmap to Decarbonize California Buildings (Building Decarbonization Coalition)
http://www.buildingdecarb.org/resources/a-roadmap-to-decarbonize-californias-buildings

9. A Zero Emissions All-Electric Single-Family Construction Guide (Redwood Energy)
https://drive.google.com/file/d/1ckdFdVTFa9KhqCDG4c3sVSouH-OHKZp5/view

10. Decarbonization 101 Webinar with Sean Armstrong of Redwood Energy (EE Coordinator)
https://www.youtube.com/watch?v=vBYAuRcWHbg

11. Codes and Standards Program: Reach Codes Subprogram with Misti Bruceri of the Statewide Codes and Standards Program (EE Coordinator)
https://eecoordinator.info/wp-content/uploads/2017/08/2017-08-29-13.00-Local-Energy-Codes.mp4

12. Evaluation of the Next Generation Residential Space Conditioning System for California (Electric Power Research Institute)
https://wcec.ucdavis.edu/wp-content/uploads/2018-ACEEE-Res-Heat-Pumps.pdf

13. Case Studies of Natural Gas Sector Resilience Following Four Climate-Related Disasters in 2017 (ICF)
https://www.socalgas.com/1443742022576/SoCalGas-Case-Studies.pdf

14. Getting to Neutral: Options for Negative Carbon Emissions in California
https://www-gs.llnl.gov/content/assets/docs/energy/Getting_to_Neutral.pdf

15. The False Promise of Natural Gas (New England Journal of Medicine)
https://www.nejm.org/doi/full/10.1056/NEJMp1913663

16. Cooking Up Indoor Air Pollution: Emissions from Natural Gas Stoves (Environmental Health Perspectives)
https://ehp.niehs.nih.gov/doi/10.1289/ehp.122-a27

17. Residential Building Electrification in California: Consumer economics, greenhouse gases and grid impacts (Energy+Environmental Economics)
https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf