Building Electrification: Key strategy to achieve local climate and clean energy goals

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1. Why electrifying buildings is critical to a stable climate, clean air, safety
2. What about “renewable” gas?
3. The good - New laws and state standards that support electrification
4. The challenging - Common hurdles to building electrification
5. The opportunity - What can local jurisdictions do?
Why electrifying buildings critical to climate stabilization

- Roughly 90% of homes in CA use gas for water and space heating
- Buildings are 2\textsuperscript{nd} largest source of GHGs for most local jurisdictions
- Gas use = ~50% of CA home’s emissions
- Energy efficiency not enough to achieve GHG targets, need to fuel-switch

Average CA Residential Building
GHG by Source

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<tr>
<th>Metric tons CO\textsubscript{2}/year</th>
<th>Natural gas</th>
<th>Electricity</th>
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<td>2.3</td>
<td>2.1</td>
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Natural Gas Consumption in CA’s Buildings

- Residential Natural Gas Consumption
- Commercial Natural Gas Use
- Total Building Natural Gas Use
- Target to align w/ GHG Goals
Benefits of electrification

- Slash GHGs
- Reduce gas demand, prevent lock-in of gas infrastructure
- Extend reach of renewables, grid flexibility
- Air quality, health, safety, climate resiliency
- Save energy, lower bills
- New jobs to retrofit buildings, install heat pumps
What does electrification look like?

Household Gas Consumption in CA and climate-friendly electric options

- Water heater 49%
- Space heating 37%
- Stove 7%
- Pools, spas, misc. 4%
- Clothes dryer 3%
- Electric heat pump dryer
- Electric heat pump space heater
- Electric induction stove

Source: CA Residential Appliance Saturation Study 2010
SoCalGas is committed to developing renewable natural gas and renewable storage technologies to help California meet its climate goals. By using a mix of both in and out of state resources, the renewable natural gas strategy is 3 times more cost effective in reducing GHGs than an electrification pathway.

– Southern California Gas Company

**Beware of greenwashing!**

“Renewable” gas (i.e. biomethane + synthetic methane):
1. Extremely limited supply
2. More expensive, less effective
3. Still methane – highly potent GHG, leaks, safety, air pollution
4. Significant air quality and environmental justice impacts
5. Not a scalable decarbonization strategy
Biomethane supply is limited and not scalable.

Total potential biomethane supply is 2.5% of total CA gas use. If 100% of CA’s potential biomethane supply is used for buildings, it could only displace 10% of CA building’s gas use.
Biomethane + synthetic methane strategy is very costly

High Electrification Scenario appears to be lower cost with less dependence on “reach technologies”

+ Only the blue measures are implemented in the 2050 High Electrification Scenario
+ Measures in gray are “reach technologies,” including some used in the No Building Electrification Scenario

- Innovation?
Tide turning to support electrification

• **Brown’s Exec Order (B-55-18):** Economy-wide carbon neutrality x 2045; and carbon negative thereafter

• **SB 1477:** $50 mil for market transformation for “clean heating” (heat pumps, etc)

• **AB 3232:** CEC to assess how to reduce building emissions by 40% from 1990 levels by 2030.

• **Title 24 2019 Building code:** California’s first zero-net electricity code for low-rise residential. Creates all-electric code compliance pathway
The challenges facing electrification

- Public awareness & interest
- Costs
- Technology
- Gas industry opposition
- Policy bias in favor of gas
What can local governments and utilities do?

Steer the ship away from gas to clean electricity

- Establish ambitious city/county-wide building decarb and electrification goals
- Include building electrification measures in Climate Action Plans
- Adopt Reach building codes that favor electrification in new construction and major retrofits
- Consider “electrification-ready” time of sale and rental agreement ordinances

Drive demand for electrification

- Incentives to lower upfront cost of electrification, particularly for low-income
- Electrification-friendly rates (CCE/POU)
- Education and outreach programs
- Bulk buy programs

Develop supply for electrification technologies and services

- Workforce development, training and outreach programs
- Upstream and midstream incentives focused on distributors and HVAC installers
What’s the reach building code opportunity?

The goal: On January 1, 2020, a dozen or more cities and counties across CA adopt a “decarbonization” reach code in place of the 2019 statewide code, that encourages (or perhaps in some cases mandates) electric space and water heating in new buildings.

Attend Statewide Codes & Standard Team Workshop
Oct 22 – Irwindale
Oct 23 – San Diego

Request your city/county be included in Cost Effectiveness studies
Oct/Nov 2018

Local review and revisions to reach code language
Spring/Summer 2019

Adopt reach code and submit to CEC for approval September 2019

Reach code takes effect!
January 1, 2020

Register for Oct workshop:  http://localenergycodes.com/content/2020-vision-workshop

Questions?  info@localenergycodes.com
Thank you!

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