MENLO SPARK *Climate Neutral for a Healthy, Prosperous Future*

Ten Truths About Natural Gas

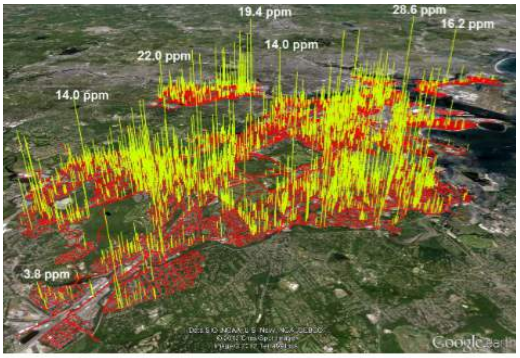
Most homes and businesses burn natural gas, a fossil fuel, generating at least one third of Greenhouse Gas (GHG) emissions in Silicon Valley. Every new home and building presents an important opportunity to break the cycle of fossil fuel dependency and pollution. We have the technology and affordable alternatives to natural gas to make all new construction go All-Electric, supported by clean, carbon free power that is now widely available. Electrifying our buildings will require a massive market transformation, including eventually repurposing the gas distribution system in a way that shares the costs equitably, transitioning gas utilities, promoting new appliances, and integrating software to manage power demand for a smart, renewable energy power grid. The stakes are high and so are the benefits. A new movement for all-electric, Fossil Free Buildings can create significant green jobs, address long standing equity issues of low-income tenants paying too much for utilities, and ultimately become one of the key climate solutions.

1. Natural Gas is a Dirty Fossil Fuel

Natural gas is a fossil fuel, and its production and distribution has become one of the biggest contributors to the climate crisis. Once considered a "cleaner" alternative to coal and oil, most natural gas now comes from fracking, which pollutes the air and groundwater. Traditional gas drilling on land and off-shore also has a major impact on health and the environment, including contamination of water, destroyed habitats, and air pollution from leaks along the entire distribution network, from the well to the meter outside your house and your appliances. In fact, natural gas is so dirty, its production and use contributes one-third of the total greenhouse gas emissions produced in California.

2. Natural Gas has Enormous Climate Impacts

Natural gas has exceptionally high carbon emissions when the lifecycle of natural gas, including leaks, is considered. In California, 3 – 5% of methane – the chemical name for natural gas - is leaking. These leaks are more damaging to our climate than the 95% that is released as CO_2 when natural gas is burned, because methane is a more potent greenhouse gas, which has 80 times the warming impact of CO_2 in the short term. In the near term, taking fast, ambitious action to reduce "short-lived climate pollutants" like methane is vital to reducing the rate of global warming and limiting temperature rise.



A map of Boston's methane emissions, leaking from the aging gas pipe infrastructure

3. Building Without Gas Saves Money

The average cost *savings* to developers for each all-electric apartment unit compared to building with gas, according to Frontier Energy, is $3,300. All-electric homes save at least $6,000 or more, by avoiding gas use. Trenching and piping gas from the street to a new development is very costly, and plumbing each gas appliance costs $200-800 per unit, according to Stone Energy. These savings are critical to improving housing affordability in California, since for every $1000 increase in the price of a home, more than 15,000 families are priced out of the market, according to the National Assoc. of Home Builders. Researchers, including E3, Rocky Mountain Institute and Synapse, have shown that transitioning to efficient electric appliances is the also the most cost-effective way to reduce emissions from homes and buildings.

4. Natural Gas is Dangerous

Major gas leaks and explosions like those in San Bruno, Aliso Canyon, and in Western Massachusetts make the news, highlighting the precarious state of our natural gas infrastructure. However, natural gas pipeline explosions and incidents are quite common, causing 15 fatalities, 57 injuries, and over $300 million in property damage each year in the US. The National Fire Protection Association found that natural gas use in homes is responsible for almost *half* of the residential house fires, causing over 50 deaths and hundreds of injuries each year.

Further, natural gas leaks are a pervasive problem with gas infrastructure, and can be particularly hazardous for people living in earthquake and fire-prone areas since leaking gas leads to fires after earthquakes. The California Seismic Safety Commission estimates that up to half of total post-earthquake fires are related to by gas leaks.

5. Natural Gas is a Potent Indoor Air Pollutant, Posing Threats to Health

Burning of gas in household appliances produces harmful indoor air pollution, including nitrogen dioxide, carbon monoxide, nitric oxide, formaldehyde, acetaldehyde, and ultrafine particles. The carbon monoxide produced by burning gas indoors can be lethal without proper venting. According to U.S. EPA, carbon monoxide poisoning results in roughly 15,000 emergency room visits and 500 deaths every year.

Young children and people with asthma are especially vulnerable to indoor air pollution. The California Air Resources Board warns that cooking emissions from gas stoves, have been associated with increased respiratory disease. In a combined analysis of 11 pediatric studies, researchers concluded that cooking with gas versus electric increased the risk of respiratory illnesses such as asthma.

6. Phasing Out Natural Gas Improves Social Justice and Equity

All-electric new construction can enable greater opportunities for affordable housing construction by reducing construction costs and streamlining mitigation requirements. For disadvantaged populations, which spend a disproportionate amount of their income on energy costs, and who are more likely to suffer from asthma due to poor indoor air quality, zero emission homes are an important opportunity to deliver social equity. According to a recent Synapse Energy Economics report, electrification can lower the cost of utility bills by $800 per year.

7. Most Natural Gas Comes from Fracking

Hydraulic fracturing or “fracking” has been applied in various forms to most of the oil and gas wells in the U.S. to increase production. It uses a series of underground explosions and high-pressure fluid injection to release gas. The drilling fluids may contain toxic chemicals. Fracking has been linked to contamination of drinking water, earthquakes, air pollution and an array of serious adverse health effects. Fracked natural gas may exceed coal and oil on climate impacts over its lifecycle.

8. Electric Alternatives to Gas Create Green Jobs

All-electric buildings that replace gas could spur development of a local workforce for jobs that will be a key component in California’s broader energy transition. Partnering with local organizations and community colleges can foster training programs for new jobs in construction, HVAC installation, electrical work, energy efficiency and load management services, as well as manufacturing.

These new jobs will rapidly grow in demand as local governments across the state take steps to address the carbon impact of buildings. In the Sacramento area, where all-electric buildings are quickly becoming the default for new developments, demand for specialized plumbers and HVAC technicians has already grown significantly. The region expects to install more than 300,000 heat pump space heaters in the next 15 to 20 years.

9. Drilling for Gas Causes Irreparable Harm to Ecosystems

The construction and land disturbance required for gas drilling can severely harm local ecosystems by causing erosion and fragmenting wildlife habitats and migration patterns. The industrial drilling operations require site clearing, well pad and pipelines construction, and creation of new roadways, that contribute to erosion and contamination with harmful pollutants into nearby streams.

10. There is No "Natural" Natural Gas

Waste gas from landfills, sewage treatment plants, and factory farm waste lagoons is often called biogas and can be considered as renewable energy in California. Cool, right? Wrong. Burning biogas releases carbon and other pollutants including smog-forming gases, ammonia and hydrogen sulfide. Biogas can also leak, catch on fire, or explode in aging infrastructure, just like fossil gas. The gas industry could be promoting "renewable natural gas" to justify continued use and expansion of fossil fuel infrastructure.

Learn More!

Want to learn more about a fossil free future? Visit www.fossilfreebuildings.org

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