Why getting off methane gas is right for communities:

Debunking fossil fuel industry arguments against building electrification

A briefing note to address the false and misleading claims made by the fossil fuel industry. **The evidence is clear: it's time to move off fossil fuels in our buildings towards cleaner, more efficient energy for all.**

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Industry talking point: Gas is natural and safe. FALSE

Fast facts: Every day we learn more about the serious health, safety, and climate impacts of methane gas. The fossil fuel industry has misleadingly branded methane "natural gas" to make it seem safe, but it's far from harmless. Methane gas is highly polluting and leaks at fracking drilling sites, in aging pipe infrastructure, and also in our own homes. **Burning methane gas to heat and power buildings is one of the top sources of climate-wrecking emissions in cities**, and when methane leaks it is significantly more harmful than carbon dioxide emissions. This isn't the first time industry has misled the public and decision makers about the safety of a product to get it inside our homes – and now it's time for our gas appliances to go the way of lead gas, lead paint, and asbestos insulation.

Deeper dive: Gas stoves pose an asthma risk to children comparable to secondhand smoke. Children in homes with gas stoves face a 42% increased risk of asthma symptoms, with harmful emissions of formaldehyde, methane, nitrogen oxides, and other pollutants being found inside homes. Methane gas creates both unhealthy indoor and outdoor air quality. The American Medical Association has recognized the asthma risks to children both from gas stoves and from fracking. Fracking to extract methane gas is associated with many other health risks, including dangerous groundwater contamination. Moreover, gas is highly flammable, and leaks can lead to explosions, evacuations, injuries, and deaths. People of color and low-income people bear disproportionate health and safety impacts from gas and other fossil fuels and from the climate crisis. When methane gas leaks, as it frequently does during extraction as well as from pipes and appliances, it has 84 to 86 times more impact on global warming than carbon dioxide on a 20-year timeline. Moving off methane as soon as possible is crucial to combating global temperature rise and preventing dangerous and deadly health consequences.

Industry talking point:
If our electricity isn't powered by 100% renewable energy then it doesn't make sense to get off gas. MISLEADING

Fast facts: Heat pumps are so energy efficient that they lead to lower carbon emissions even with electricity generated from today's current grid fuel sources. We can't afford to wait for a completely clean grid while installing equipment that locks buildings into using methane gas for decades and we don't need to. Renewable energy is a substantial source for electricity today, and the supply is projected to steadily increase. In Canada renewables are the source for 67% of electricity. In the US renewables are the source for over 20%, and they are the fastest-growing source of new energy generation.

Deeper dive: 85% of new electricity capacity in the US came from clean sources in 2021. The US has a goal of a zero-emission grid by 2035. More and more communities are developing local renewable power generation and in community projects and on individual buildings with solar panels and battery storage. Research by RMI found that all-electric homes result in "substantial carbon emissions savings over the mixed-fuel home in all cities" that they studied.

As the grid continues to incorporate more and more renewable electricity sources, these appliances' performance will only get better. A study by UC Davis comparing heat pumps to high-efficiency gas furnaces found that heating homes with heat pumps reduced emissions by 45% to 85% in all regions of the US compared to heating with gas.

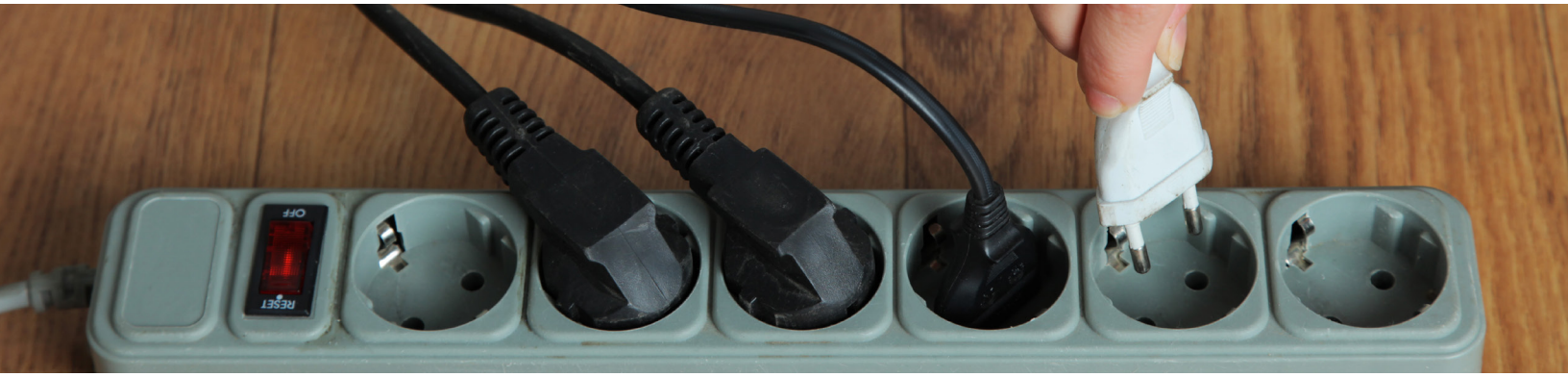
Industry talking point: Building all-electric costs more. MISLEADING

Fast facts: Studies have shown that energy-saving electric heat pumps pencil out well in most markets and climates. **Building right with all-electric the first time will save money on energy costs for buildings.** Some gas appliances may be cheaper up front than their electric counterparts (although this is rapidly changing as electric heat pump technology matures), but the **costs of operating high-efficiency electric appliances is lower and saves people money over time.** Building with gas equipment will cost renters and homeowners more to operate in the long run and results in dangerous health, safety, and climate impacts.

Deeper dive: RMI conducted an analysis of the present value of building electrification in seven different energy markets and climates across the United States. In every case they found that it was cheaper to build and run a new home with all-electric appliances than to build and run a new home where gas is used for cooking and space and water heating. This means that all-electric has what's called "lower net present cost" for new buildings.

In the United States, the Inflation Reduction Act is expected to reduce the costs of building with electric appliances even further, especially for affordable housing projects. So while the cost of electric appliances like heat pumps is projected to continue declining, the cost of maintaining the aging gas infrastructure is increasing. These gas infrastructure costs are passed directly on to customers, and we'll be expected to pay them off over the next 50-plus years.

In addition to concerns about stranded assets, global geopolitics continue to highlight the vulnerability of gas to supply disruptions and price shocks. The cost of electricity generation with renewables continues to decline, and new storage and grid developments will enable a more reliable, emissions-free future.



Industry talking point:
Retrofitting existing buildings is very expensive.
MISLEADING

Fast facts: Most building electrification requirements have focused on new construction. This is the easier step and it is critical not to lock in more gas infrastructure that will need retrofitting later on. But more and more **governments are also developing policies for getting gas out of existing buildings in equitable and affordable ways.** Ultimately, turning the tide on climate change and addressing the health and housing disparities in our cities will require us to address existing buildings.

Deeper dive: Electrification of existing buildings should be planned to ensure that the cost of the transition doesn't land disproportionately on low income households, small businesses and historically marginalized communities. There are incentives for buying high-efficiency appliances in many places and in the US the Inflation Reduction Act will provide more.

However, if incentives don't cover the full cost of retrofits they may not be accessible to those without the resources to cover the difference, and those left using gas could see rapidly rising costs as gas companies try to recover investments in stranded assets. Sacramento, CA's Roadmap is a good example of local government leadership for this important planning. The Greenlining Institute's framework on equitable building electrification is an important resource for this work, as is the framework on planning for equitable buildings from the Urban Sustainability Directors Network, Emerald Cities Collaborative, and other partners.

Industry talking point: Building electrification will kill jobs. FALSE

Fast facts: Building electrification could be a net job creator. A study by Inclusive Economics and UCLA's Luskin Center for Innovation examines how electrification could affect jobs in California. It found that there could be significant job growth from electrifying new and existing buildings across the state. Most of the new jobs would be in construction, and there are opportunities for job growth in other sectors as well, including manufacturing.

Deeper dive: As the Sierra Club said about the study, "The analysis reveals that electrifying 100% of California's existing and new buildings by 2045 would create over 100,000 full-time equivalent jobs, even after accounting for losses in the fossil fuel industry." The study includes recommendations to help transition workers and make as many of the new jobs high-paying jobs with benefits and opportunities for advancement, or "high-road" jobs, as possible.

FEASIBILITY

Industry talking point:
We can just replace the gas we're using with "renewable natural gas," which is the perfect "bridge" fuel.

FALSE

Fast facts: "Renewable natural gas" (RNG) is methane produced by sources such as landfills and manure lagoons. It's far more expensive, and even if gas customers could afford it, there is nowhere near enough to replace the conventional methane being used. If it's going to be used at all, it should be in hard to decarbonize sectors like heavy industry. Additionally, buying into this infrastructure means the continued construction of gas prioritized infrastructure through the building of pipelines and facilities–unintentionally incentivizing the industry to continue business as usual.

Deeper dive: There's nowhere near enough RNG to support a move to cleaner energy. Multiple states in the US have performed studies to assess the maximum amount available compared to their overall gas use, and it's not much. Washington estimates 3-5% of current gas use could be RNG; Oregon 4.5%; and Utah 5%.

What little renewable methane gas there is still has most of the same negative impacts, including indoor air quality and safety. Just like fracked methane gas, "renewable natural gas" is almost entirely methane, and would be transmitted through the same system of leaky pipes and combustion units. The primary difference is where it comes from. Renewable natural gas is captured from places like manure lagoons at dairy farms and landfills, which are sources communities are trying to shrink rather than grow.

Since RNG is so scarce, it should be reserved for sectors that are hardest to electrify, like heavy industry. According to a *Sightline* article, "studies by Energy Transitions Commission and Rocky Mountain Institute both suggest that using RNG for residential or commercial purposes would be misallocating a precious resource because these sectors can be transitioned to all-electric clean power relatively easily." Research shows that "renewable natural gas" is 4 to 17 times more expensive than gas.

Industry talking point: We can just blend hydrogen into the gas to reduce emissions instead. MISLEADING

Fast facts: Most hydrogen is made from methane gas, so producing and using it results in significant amounts of greenhouse gasses. There is a limited amount of what's called "green hydrogen," which is hydrogen created using renewable energy, and it is very expensive and not as effective or efficient as traditional renewable energy. It's also not safe to use any kind of hydrogen at concentrations over a few percent in much of the piping we use for methane gas.

Deeper dive: It's more efficient to use renewable energy to power homes directly than to make expensive "green hydrogen." Hydrogen gas at concentrations higher than about 5% energy content (about 10% of the volume) in much of the piping used for methane gas raises the risk of "hydrogen embrittlement," where the pipes become weaker and prone to leaks. Replacing all the pipes and appliances would be extraordinarily expensive and unnecessary compared to electrification.

Industry talking point:
Heat pumps don't work in cold climates, and electric heat isn't efficient or affordable.

FALSE

Fast facts: Modern heat pumps are incredibly efficient appliances that work even in cold climates and allow us to meet the need for space heating and cooling and water heating with far less energy than from fossil fuels or other heating systems.

Norway has installed more air-source electric heat pumps per capita than anywhere in the world. There are viable, effective solutions for climates as cold as Norway's and every climate warmer than Norway's. **Heat pumps also work in reverse, providing cooling for hot days (something increasingly important on our rapidly warming planet) as well as heating for cold days.**

Deeper dive: There are models of electric heat pumps designed to meet the needs of every climate. High-efficiency electric space heating also means cooling, as electric heat pumps do both, offering air-conditioning to many buildings that have never had it before and increasingly need it.

Electric heat pumps are very different from the much less efficient, older electric baseboard heaters. In fact, modern electric heat pumps are several times more energy efficient.

Building electrification is a cost-effective, common sense approach to reducing the pollution that causes climate change, improving indoor air quality, lowering energy bills, and saving lives in increasingly common extreme heat events.

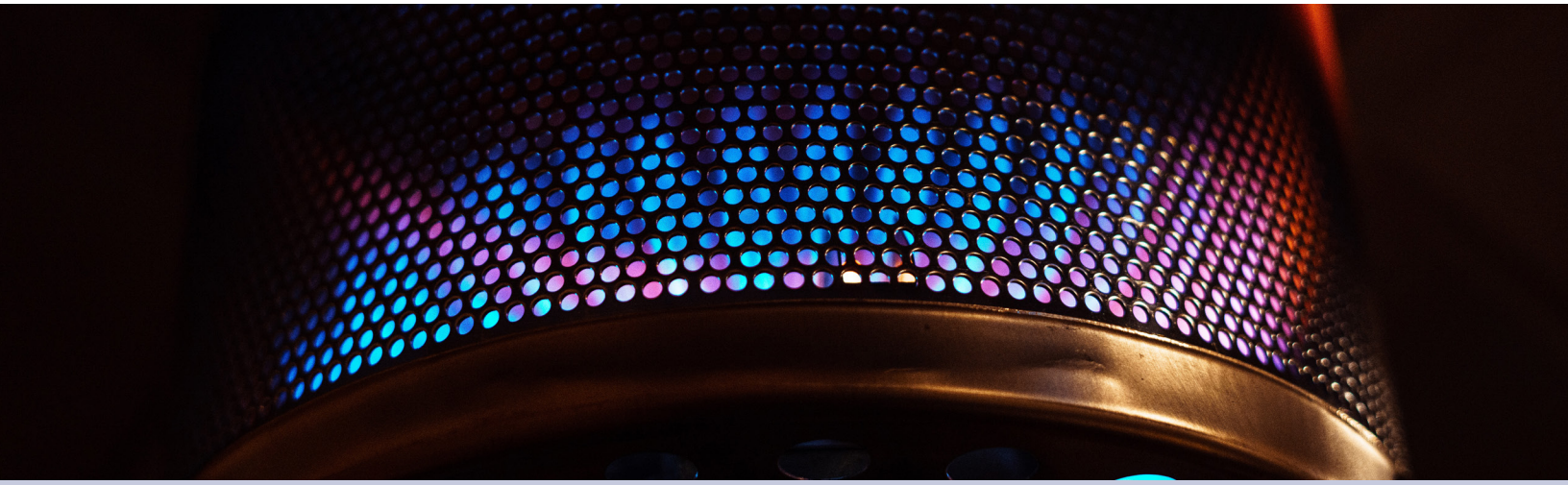
Industry talking point:
The electrical grid can't handle all this new demand.
MISLEADING

Fast facts: This transition is speeding up but it's not happening overnight. **Given the time we have to prepare, the electric utilities and transmission authorities can meet this demand.** Other solutions such as load-management are relatively easy to implement and will have a huge impact on the way we manage our electrical needs

Growing the wave of policies that ensures that new construction will be all-electric, and developing more policies for equitably electrifying existing buildings, sends the signal that the electric utilities need, and gives them the time to plan and grow. This electric grid capacity growth can be handled within existing planning processes that governments and energy utilities use to manage energy supply and demand. Modeling from the David Suzuki Foundation found that Canada can meet its needs for clean electricity "reliably and affordably" through a combination of growing solar and wind power generation, new transmission connections between provinces, and other grid improvements.

Deeper dive: The electricity service disruptions in California and Texas that were widely reported in recent years were caused by extreme weather – extremes made more common and more severe by climate change. Using them to argue against action on climate, health, and safety is cynical game-playing that we don't have time for.

A study prepared for the Sierra Club by **Synapse Energy Economics** showed that the additional load required to rapidly electrify all the buildings in Oregon would require the grid to increase capacity by only 0.5 or 0.6% per year. The authors noted that this relatively small difference is because of the expected switch from electric resistance heating to high-efficiency electric heat pumps.



Industry talking point:
If you don't have a gas furnace and the power goes out, then you'll have no heat. MISLEADING

Fast facts: Most modern gas furnaces require electric fans to run, so they won't work when the power is out. Some people use gas generators or gas fireplaces as a backup heat source. These backup systems come with the risks and health impacts of methane. They also can be expensive.

The best protection from blackouts is in moving to high-efficiency appliances and investing in improving our grid reliability, not expensive, polluting backups for each individual building. Battery backups and microgrids are increasingly viable and affordable solutions.

Deeper dive: Most homes and most people don't have the luxury of backup generation or heat sources. We should focus on building an energy system that prioritizes the needs of the majority of people, which is in moving to high-efficiency appliances and investing in improving our grid reliability. Household battery backups, including using electric vehicles (EVs) to power homes, and microgrids – local electric grids – are solutions that are becoming increasingly available and affordable. During the energy transition, it is reasonable for building decarbonization policies to have exceptions for fossil fuel generators for essential services like hospitals or data centers.

Heat pumps increase resilience against wildfire smoke and extreme heat, disasters that, in many regions, are much more common than extended blackouts.

CONCLUSIONS AND PARTNERS

The dangers of gas and other fossil fuels in our buildings are clear, as are the benefits of electrification.

Despite the need for, and effectiveness of, building electrification, the fossil fuel industry and their allies continue to aggressively oppose and obstruct building electrification policies. There is no way to meet most state and national emissions goals without building electrification and the movement to pass policies is growing quickly. The industry knows this and is working to offer false solutions and delay building electrification at every level of government.

Fortunately, more and more government leaders and advocates are taking action.

Scores of counties and districts across the US and Canada **have taken steps to electrify homes and buildings** to protect local health and safety and global climate and accelerate a just transition to renewable energy. Spurred on by the actions of local government leaders and advocates, states are now passing building electrification policies as well.

Building electrification can take a number of different forms, ranging from the complete prohibition of fossil fuel infrastructure in new construction and renovations to building emissions or efficiency requirements to policies to electrify existing buildings and more.

These places and policies are part of the growing SAFE Cities movement, which is working to pass local policies to stop the expansion of all types of fossil fuel infrastructure.

PARTNERS:

SAFE Cities at Stand.earth is proud to partner with the following groups on this briefing note and in the work for a just transition off fossil fuels:

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