

Journalists' Guide to Building Electrification in Washington State

2021

>> Nationwide, the use of “natural” gas for electricity and heating now contributes [more to climate pollution than coal](#). The portion of this pollution coming specifically from buildings – from burning gas for space and water heating and cooking -- is on the rise in the U.S, [up 10 percent](#) in 2018.

>> In Washington state, homes and buildings are the single fastest-growing source of climate pollution, up [50 percent](#) since 1990 -- and now cause 27 percent of Washington’s climate pollution, more than the industrial sector. For example, in Bellingham, buildings comprise 43% of climate-heating emissions, more than all the cars driven in the city.

The devastating [heatwaves](#) and [wildfires](#) that hit the Pacific Northwest this summer will become more commonplace in the future if we don’t start tackling climate pollution with greater urgency. According to a new [IPCC report](#), the planet is warming even faster than previously thought, creating conditions for [more intense and frequent extreme weather events](#).

Given buildings’ large and growing share of climate pollution, repowering them to run on clean, high-efficiency electric appliances instead is a key part of stemming the worst impacts of climate change -- plus doing so can support jobs and communities throughout the state. Washington state is part of a growing movement of [state](#) and [local governments](#) that are pursuing building electrification through local ordinances, legislation and building codes. The state’s building community is also starting to embrace electrification, and, in Seattle, builders now choose [electric heat instead of gas in 65 percent of new homes](#).

Below are key facts, sources, and potential storylines to help you in reporting on this topic in Washington. Please [let us know](#) if you would like more information or help connecting with any of the people or organizations listed.

KEY FACTS ABOUT THE BENEFITS OF BUILDING ELECTRIFICATION IN WASHINGTON

Building electrification is essential for meeting the state’s climate goals

- Major climate studies, including those from [Governor Inslee](#), [President Obama](#), and the [United Nations](#), show that moving buildings off gas and toward cleaner, safer electric appliances is necessary to avoid the worst impacts of the climate crisis.
- According to Washington’s [Deep Decarbonization Pathway Study](#), the lowest cost pathway for achieving our state’s commitment to 80 percent carbon reductions

economy-wide by 2050 relies on electrifying our buildings, reducing the residential sector's use of gas by 85 percent.

- Washington homeowners that replace a gas furnace with an electric heat pump can reduce their household's climate footprint by [more than 50 percent](#) - the equivalent of giving up their car completely.

Building electrification taps into Washington's already low-cost, clean grid

- The electricity powering Washington's grid is already among the [lowest-cost](#) and lowest-carbon in the country, about 80 percent cleaner than the national average.
- The state's electricity is becoming even cleaner with the passage of the Clean Energy Transformation Act in 2019, which puts the state on a path to 100 percent clean electricity by 2040.

Building electrification creates good local jobs

- Transitioning homes and buildings to clean electric heating, water heating and cooking can sustain a significant workforce over many years. Jobs include the HVAC work -- both in gas removal and electric appliance installs, service and maintenance -- as well as construction jobs associated with building modifications; and electrical work associated with new renewable energy and grid infrastructure.
- A [study by UCLA](#) found that electrifying California's buildings over the next 25 years would support an additional 100,000 full-time jobs in construction, manufacturing and the energy sector each year. Washington would expect to see jobs numbers for our state proportional to our population and housing stock.
- Five in 10 jobs in Washington's energy economy are now in renewable energy and efficiency — and we have room to grow, as Oregon and California have an even higher proportion of clean energy jobs. There are 11 times more clean energy jobs in Washington than in fossil fuels ([source: E2](#)).

Building electrification saves households money

- A new home with electric appliances avoids thousands of dollars of upfront construction costs to install gas pipes. Since heat pumps are three to five times more energy efficient than gas appliances, they also translate to [lower monthly bills compared to gas](#). All-electric new construction allows builders to build new homes at [lower cost](#) and more quickly, two ingredients that are essential in addressing the state's housing crisis.
- A Rocky Mountain Institute [analysis](#) for Oakland -- a good comparison for Seattle in terms of a temperate coastal climate -- found that all-electric construction saves \$2,000 over 15 years. In its analysis for California, [E3](#) found savings ranging from \$3,000-\$10,000.
- Gas prices have nowhere to go but up, as recent low prices are the product of the increase in fracking technology, which is proving to be [a consistent money loser](#) for fossil fuel investors.

Building electrification helps address environmental and racial inequities

- Air pollution-related health issues [disproportionately impact](#) communities of color in Washington who are already [more likely to live](#) in areas with higher levels of both indoor and outdoor air pollution.
- Low-income residents and critically underserved populations experience particularly concentrated indoor air quality impacts in smaller buildings with poor ventilation.
- The inequities in air pollution exposure are associated with a host of other inequities. One recent example is highlighted by researchers at [Harvard University](#) who found that for every additional small increase in exposure to fine particulate matter (PM 2.5), the

COVID-19 death rate increases by 8 percent. In King County, the rate of COVID-19 deaths for Hispanic/Latinx and Native Hawaiian/Pacific Islanders is [more than double](#) that of whites.

- Switching from burning gas to using clean and low-cost electricity in homes and other buildings reduces air pollution that disproportionately harms communities of color and exacerbates their risk of COVID-19 and other air pollution-related illnesses and premature deaths.

KEY FACTS ABOUT GAS USE & RISKS IN WASHINGTON BUILDINGS

Burning gas in buildings is a leading cause of air pollution in Washington

- In Washington state, homes and buildings are the single fastest-growing source of climate pollution, up [50 percent](#) since 1990 -- and now cause 27 percent of Washington's climate pollution, more than the industrial sector.
- Nearly 30 percent of gas burned in Washington is burned in homes and commercial buildings.
- Most gas burned in Washington is fracked gas, which as it is extracted and transported through miles of pipelines frequently releases methane, a greenhouse gas [84 times more potent](#) than carbon dioxide. In its new report, the IPCC calls out [reducing methane emissions](#) (read: natural gas) as the single fastest way to slow global warming.
- Nationwide, the use of "natural" gas for electricity and heating now contributes [more to climate pollution than coal](#). The portion of this pollution coming specifically from buildings -- from burning gas for space and water heating and cooking -- is on the rise in the U.S, [up 10 percent](#) in 2018.

Air pollution from buildings is more deadly than from cars

- Pollution from burning gas in buildings in Washington accounts for more premature deaths in the state each year than air pollution from any other sector, including industry and transportation, according to [data from MIT](#). Researchers found that Washington's building sector accounts for about 579 (or 68 percent) of the 848 estimated total annual premature deaths from air pollution across all source sectors -- nearly three times the share of estimated premature deaths (201) due to transportation-sector air pollution in Washington.
- Buildings are now the largest source of toxic air pollution in the U.S. and linked to a greater number of premature deaths in 2018 than either the power or transportation sectors, according to a [study published in Nature](#).

Burning gas in buildings threatens Washingtonians' health and safety

- Fossil-fuel powered appliances like gas stoves and furnaces release dangerous pollutants, including nitrogen dioxide (NO₂), carbon monoxide, nitric oxide and ultrafine particles. Both unburned and burned gas also release toxic chemicals into indoor air, such as lead, chromium, benzene, hexane, and formaldehyde, all of which are harmful to human health.
- Homes with gas stoves have [50 to over 400 percent higher NO₂](#) levels in their indoor air than homes with electric stoves.
- An April 2020 UCLA study found that one hour of cooking on a gas stove produces [NO₂ levels that would be illegal if found outdoors](#). In addition, scientists at [Lawrence Berkeley National Laboratory](#) in 2013 estimated that 60 percent of homes that cook at least once a week with a gas stove can reach pollutant levels that would illegally exceed federal standards if found outdoors.

- [Numerous studies show](#) children living in a home with a gas stove have a 42 percent higher chance of developing asthma. Additionally, a 2018 study published in the [Medical Journal of Australia](#) found that for 12.3 percent of asthma sufferers aged 14 or younger, the condition was triggered or worsened by exposure to gas stoves.
- Exposure to indoor and outdoor air pollution caused by buildings is of particular concern for low-income communities and people of color, who are exposed to higher incidences of fine particulate matter and other harmful pollutants such as nitrogen oxide that contribute to asthma and other respiratory diseases, lung cancer and premature death. (See “Building electrification helps address environmental and racial inequities” below.)
- Burning gas locally also causes harm to communities outside Washington where fracking takes place. Fracking - the process used to extract gas where toxic chemicals are injected into the ground - has been linked to low birth weights, neurological disorders, respiratory illness, cancer and is harmful to pregnant women.
- Using gas increases the risk of household fires and explosions through methane leaks from pipes, meters, and appliances--a particular risk in earthquake-prone areas like Western Washington. Communities around the state have seen major gas explosions in recent years due to leaks from aging gas pipes. (See “Washington’s gas infrastructure is aging and unsafe” below.)

Washington’s gas infrastructure is aging and poses safety risks

- Washington’s gas pipeline system is aging -- nearly 400,000 service mains were installed in the 1990s.
- The risk of earthquakes in Western Washington increases concern over aging gas infrastructure, as highly pressurized pipelines run a high risk of exploding during earthquakes and causing fires.
- Dangerous and destructive explosions from gas leaks occur all over the country, including here in Washington where [three PSE workers were injured](#) in a gas explosion in North Seattle in October 2019; while that same month [a major gas leak in Seattle’s University District](#) resulted in a 12-block evacuation; and a [gas explosion in March 2016](#) leveled most of a city block, injured nine firefighters and caused millions of dollars in damage in the heart of Seattle’s Greenwood neighborhood.
- Americans are killed or injured by gas pipeline explosions and other incidents with alarming regularity. Over the last decade (2010-2019), the United States suffered 1,411 significant gas incidents along gas distribution and transmission systems – roughly one every three days – resulting in 109 fatalities, 606 serious injuries, and more than \$3.5 billion in property damage, according to data from the [Pipeline and Hazardous Materials and Safety Administration](#).

Renewable natural gas is an unrealistic solution to pollution from fracked gas.

- The most likely sources of “renewable natural gas” (RNG) - biomethane or biogas - are landfills and industrial dairy farms that are significant sources of air and water pollution. Expanding or propping these industries up even more only [further worsens pollution](#) for vulnerable communities living nearby.
- There’s not nearly enough RNG -- at best, three to five percent of Washington’s use of fracked gas might be replaced by RNG, according to a Department of Commerce [report](#).
- [An analysis by the Rocky Mountain Institute](#) found that all-electric homes in Seattle are more affordable to build due to avoided costs of installing gas pipelines.

IN-STATE ACTION

Washington state: On December 15, 2020 Governor Inslee announced his [climate policy priorities](#) for the 2021 legislative session in the form of the Climate Commitment Act, which included a Healthy Homes and Clean Buildings bill. If passed, the bill would have charted a long-term path off of the use of gas in the building sector, and instead hooking buildings up to clean electricity. Among the elements proposed is \$55M dedicated to low-income weatherization programs, and a requirement that utilities fund programs to help gas workers transition to other jobs. A revised version of the legislation to decarbonize buildings is [expected to be introduced by Rep. Alex Ramel](#) (D-40) in the 2022 legislative session.

Seattle: In 2021, the City of Seattle updated its 2018 Seattle Commercial Energy Code, which sets energy standards for new commercial and large multifamily buildings. The proposed updates took effect on July 1, 2021 and require the use of efficient electric heat pump heating and cooling systems instead of those using gas.

Bellingham: The City of Bellingham made commitments to use 100% renewable energy by 2035. The city's Climate Action Task Force later released its first set of recommendations to meet that goal in December 2019 ([full report here](#) and [PowerPoint presentation here](#)). City of Bellingham public works department staff are in the process of further assessing rules for new buildings with a Triple Bottom Line + Technology (TBL+) analysis, hopefully with a draft ordinance proposed in late 2020 or early 2021. Existing building measures will come after. But the entire time there will be a robust public process.

VOICES & EXPERTS TO TALK TO

- **Steve Gelb**, Emerald Cities Collaborative - Pacific NW director, sgelb@emeraldcities.org; 206-713-0952
- **Chris Covert-Bowlds**, family physician practicing with Group Health in Bothell. c.covertbowlds@comcast.net; 206-883-8989. [Linkedin profile](#).
- **Annemarie Dooley**, pediatrician, member of Washington Physicians for Social Responsibility. Worked on Clean Buildings Act of 2019. annemarie.dooley@gmail.com; 206-679-7253, [Linkedin profile](#)
- **Heather Price**, professor of chemistry, North Seattle College, climate & air quality expert; huprice@gmail.com; 206-696-1094, [LinkedIn profile](#)
- **Jonathan Heller**, president, Ecotope, mechanical engineering, focused on energy efficiency and sustainable building design, jonathan@ecotope.com; 206-596-4704, [LinkedIn profile](#)
- **Stephanie Pitts**, McKinstry, building sector consultants and contractors focused on making buildings more energy efficient; stephaniep@mckinstry.com; 206-832-8382; mckinstry.com/
- **Joel Meyer**, firefighter, Ph.D. in chemistry, with focus on developing energy efficient materials and can also speak to natural gas leaks/calls to 911. joel4594blues@gmail.com 317-285-8145.
- **Nancy Henderson**, architect/owner, ArchEcology, architectural design and green building, nancyh@archecology.com; 206-860-2904, [LinkedIn profile](#)

Please reach out to Liz Banse, Resource Media at liz@resource-media.org for other local and statewide subject matter experts in the building sector, public health, equity, labor and climate communities. See also the [Build Electric Washington](#) website for more information.