FACT SHEET

All-Electric Construction: A Good Deal for Washington

All-electric building codes lead to lower construction costs in Washington by encouraging developers to bypass the cost and complexity of installing new gas lines. These homes have roughly the same utility bills as mixed-fuel homes, which use both gas and electricity. Those savings are projected to improve over time as gas prices rise.

Building all-electric reduces upfront costs.

All-electric, single-family homes cost $1,875 less to construct in Washington than mixed-fuel homes, which use both gas and electricity.[1] Adopting an all-electric building code will reduce construction costs while allowing these homes to emit less carbon over time as more renewables power our electric grid.

"What about building electric-ready?"

While wiring new buildings to support electrical upgrades can reduce future costs of replacing gas equipment, it misses the opportunity to eliminate gas piping entirely. This approach ultimately costs more than building all-electric from the start.

SEATTLE, WASHINGTON

$1,875

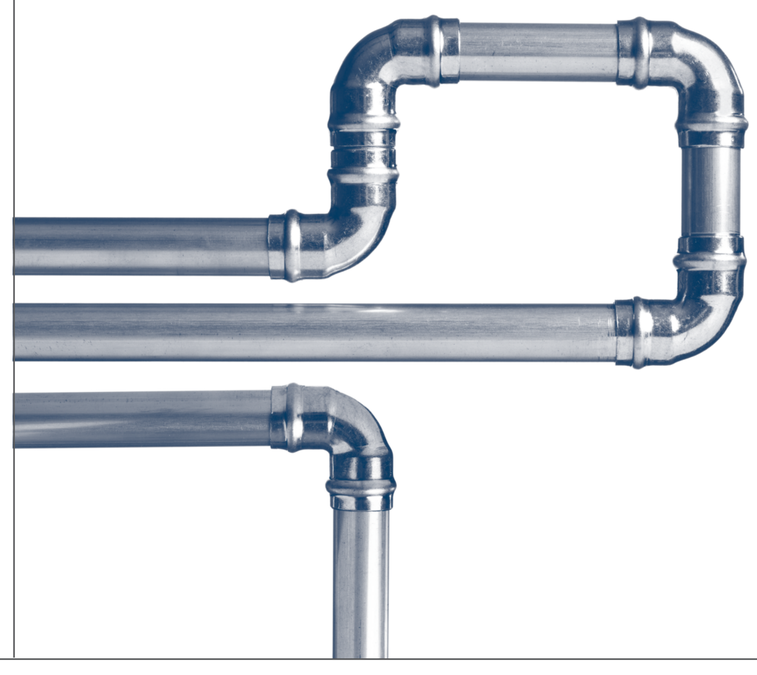
savings from building all-electric instead of mixed fuel

WASHINGTON STATEWIDE

$1,640–$1,890

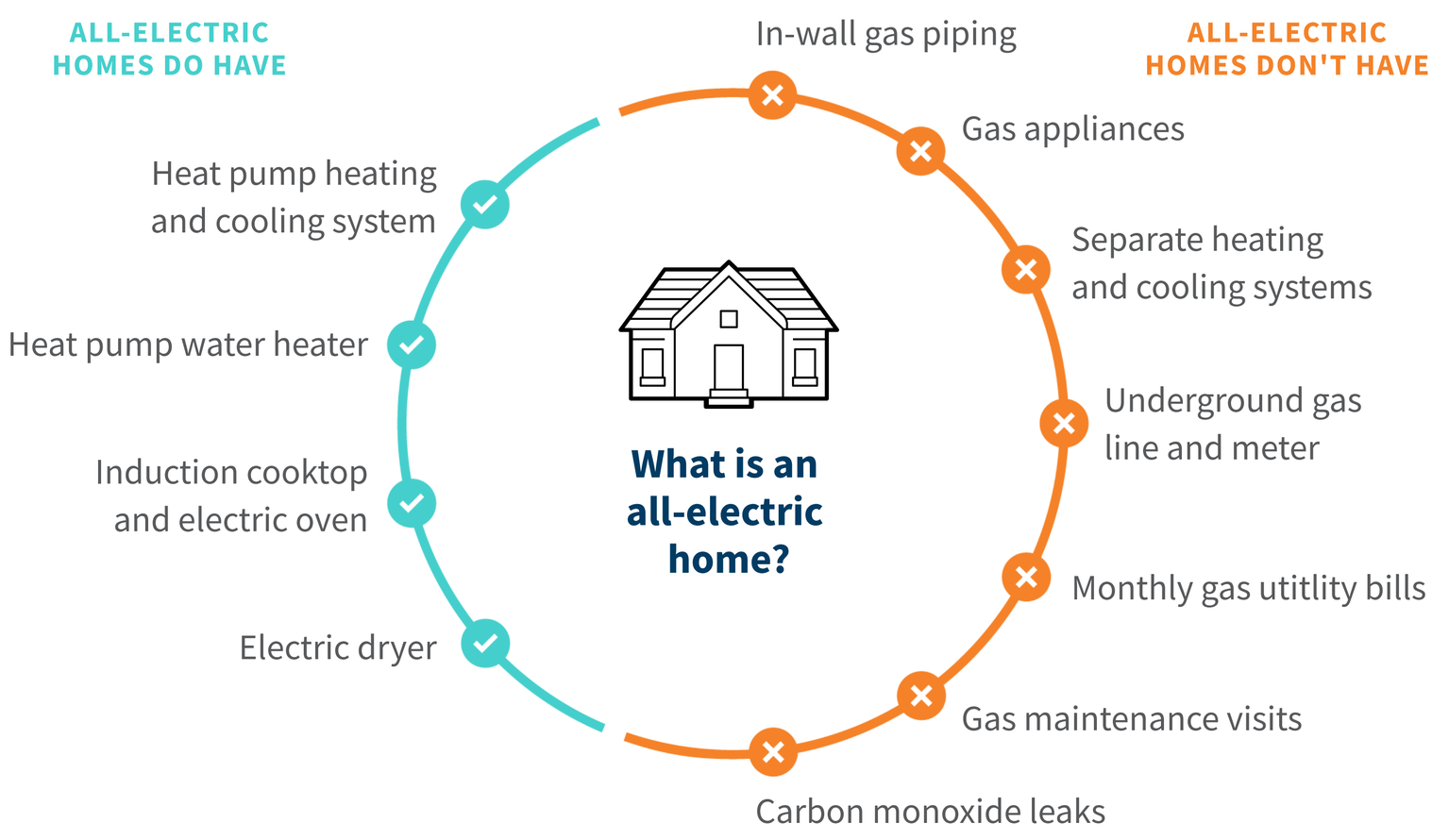
savings in other locations

Gas piping increases the cost to construct a typical single-family home in Washington by **$2,940**.[2]



Simpler construction saves money.

All-electric homes cut out unnecessary materials and equipment. Constructing homes with gas requires a new underground extension from the gas main, a gas meter, and piping throughout the home to gas-powered appliances — an added cost of $2,940 per home. These homes also typically have separate heating and air conditioning systems. All-electric homes operate without gas infrastructure and use a single efficient heat pump for heating and cooling.



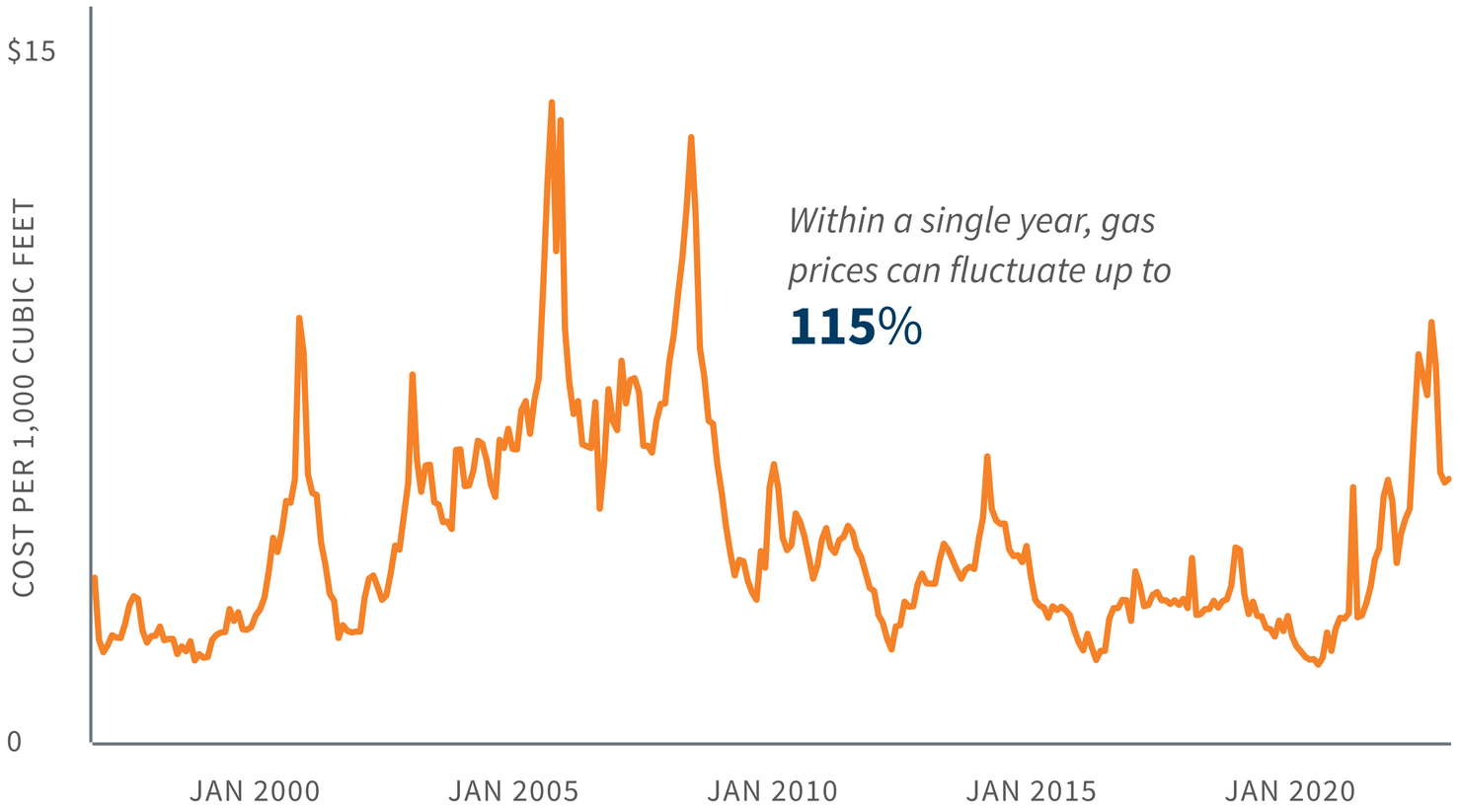
New all-electric homes reduce utility bills.

A typical all-electric, single-family home constructed in Seattle, Washington will save $40 per year on utility bills. That's 2% less than the annual utility bills for a Seattle household living in a new home with gas.[3] These savings largely come from utilizing heat pumps, which are 2–4 times more efficient than comparable gas appliances, for space heating and water heating.

These savings are expected to increase over time as gas prices continue to rise and utilities reform electric rate structures.[4]

This analysis incorporates rates from the largest public utility in the state, covering 15% of residents. Rates in other parts of the state are often even more favorable for all-electric homes.

Volatile gas prices can unexpectedly strain budgets in mixed-fuel households.[7]



A typical all-electric home in Washington will save

$40

on utilities each year.

By 2030, gas prices are expected to increase as much as

130%[5]

All-electric new homes in Seattle built with rooftop solar see

24%

lower bills.[6]

Take action

Washington policymakers can advance the economic benefits of all-electric homes in several ways:

- **Educate households and business owners** about incentives available for all-electric new buildings, including federal tax credits offered through the Inflation Reduction Act.
- **Support climate-aligned utility rate reform** that promotes all-electric buildings, including shifting toward higher fixed costs or a tiered time-of-use structure.
- **Establish a timeline and phasing plan** for adopting all-electric codes by 2030.
- **Phase out gas line extension allowances** to prevent the cost of new gas lines from being subsidized by ratepayers.

Learn more

The Economics of Electrifying Buildings: Residential New Construction, RMI, 2022, https://rb.gy/8jqtq

Overextended: It's Time to Rethink Subsidized Gas Line Extensions, RMI, 2021, bit.ly/3DTdNBV

Federal Income Tax Credits and Incentives for Energy Efficiency, Energy Star, 2022, bit.ly/3QyLsZ6

NOTES

1. RMI analysis; methodology from prior analysis, updated using IECC 2018 building standards, current rates, RSMeans regional construction data; RMI, 2022, rb.gy/8jqtq
2. Base gas connection costs from RMI study, adjusted using RSMeans regional construction data; RMI, 2022, rb.gy/8jqtq
3. Updated RMI analysis; RMI, 2022, rb.gy/8jqtq
4. Energy Systems Integration Group, 2023, bit.ly/451Ay2o
5. American Council for an Energy-Efficient Economy, 2023, bit.ly/3s5gT34
6. RMI analysis based on the National Renewable Energy Laboratory REOpt tool, 2023, bit.ly/3Yy9g1g
7. Henry Hub natural gas spot price, US Energy Information Administration, 2023, bit.ly/3KA5OgE

UPDATED AUGUST 2023

FACT SHEET

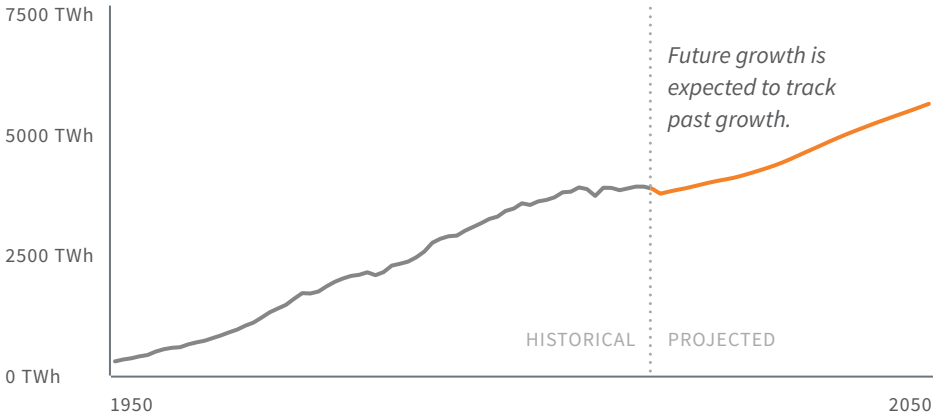
Modernizing Washington's Grid with All-Electric Buildings

Washington must modernize its electric grid to maintain reliable and affordable power. Efficient, all-electric buildings can be a valuable tool in optimizing this evolution. There's no need to wait: today's grid can already serve thousands of new electric systems as utilities continue long-term planning efforts.

Building the grid of the future starts today

Updating and expanding Washington's grid is essential to improving reliability and powering electrified buildings and vehicles as part of our clean energy transition. Managing this growth will require coordinated investments in grid infrastructure, distributed energy resources like solar and battery systems, and building technologies that give grid operators more flexibility. Utilities need to inform this process by creating infrastructure plans that reflect a climate-aligned trajectory.

U.S. electricity consumption will continue to rise with the growing adoption of all-electric vehicles and buildings[1]

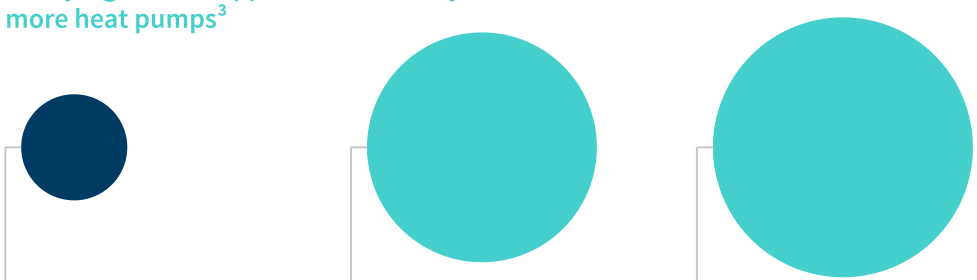


Grid-interactive technology could offset **20% of projected electric demand** by 2030, helping manage grid growth.[2]

We are ready for accelerated heat pump adoption

Washington policymakers and regulators should advance building electrification efforts to both catalyze and inform long-term grid planning. Today's grid distribution system can already serve 5-6 times more heat pumps than are currently in operation.[3] Utility operators are well-prepared to meet this growing demand as long-term plans are developed.

Today's grid can support substantially more heat pumps[3]



13%
*of buildings **currently use heat pumps***[4]

61%
*could electrify with **standard heat pumps***

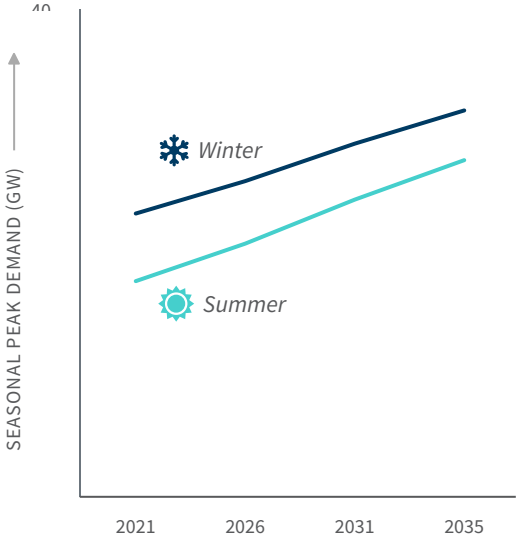
78%
*could electrify using **high-performance heat pumps***

Electrification will change how our grid operates

Washington's infrastructure is designed to meet the maximum load (a.k.a. "peak demand") that buildings require throughout the year. Washington is one of the few states in the country that currently peaks in winter, in part because most homes in the state already use electricity for heating. Ensuring homeowners use efficient heat pumps can **reduce these winter peaks.**

Washington will also see an increased summer peak as the climate warms and air conditioning use grows. Promoting heat pumps and other efficient electric systems can allow utilities to export more electricity to neighboring states when they need it most, **helping reduce prices for local consumers.**

States like Washington will see a more seasonally balanced grid[5]



All-electric buildings can help modernize the grid

Washington's transition to a clean power grid will rely on several innovations in all-electric buildings to improve reliability while increasingly running on renewable energy. Together, the technologies described below can balance energy use throughout the day to reduce carbon emissions and electricity bills. They can also help prevent blackouts and allow for the continuation of essential services when the power does go out.

Efficient equipment

Heat pumps and other modern, energy efficient building systems reduce overall electricity consumption year-round.

Distributed energy resources

Solar, battery storage, and electric vehicles can act as grid assets and maintain building operations when the power goes out.

Grid interactive technology

Smart appliances and energy management systems let buildings shift power use during the day based on real-time grid conditions.

Microgrids

These networks cost-effectively balance operations across multiple buildings and support community-scale resilience.

Take action

Policymakers can help guide strategic investment in the grid in several ways:

- **Adopt high-performance building codes** that incentivize or require solar, battery systems, energy efficiency, and other technologies to support grid flexibility and increase resilience.
- **Direct utilities to establish integrated distribution plans** that account for climate-aligned electrification of all sectors and leverage available federal funding.
- **Direct utilities to adopt ratemaking processes, tariffs, and incentives** to encourage the adoption of building energy management systems, on-site energy generation, and energy storage.
- **Improve state oversight** over transmission spending to prioritize regional and interregional projects that support grid decarbonization efforts.

Learn more

What States Can Do to Modernize the Grid, Climate XChange, 2023: bit.ly/44nqXSH

Modernizing the Electric Grid: State Role and Policy Options, National Conference of State Legislatures, 2021: bit.ly/3pq0a9G

Cut Costs, Reduce Carbon, and Improve Health with Demand Flexibility, RMI, 2020: bit.ly/3r6cLzv

NOTES

1. National Renewable Energy Laboratory, 2018, bit.ly/3XuUdVJ
2. The Brattle Group, 2019, bit.ly/3XqD5QT
3. Waite and Modi, 2019, bit.ly/3JAFl2h
4. Baseline data for residential buildings; graphic assumes equivalent commercial heat pump penetration. US Energy Information Administration, 2020, bit.ly/44A8GT6
5. Northwest Power and Conservation Council, 2019, bit.ly/3PBU1SG

UPDATED JUNE 2023

FACT SHEET

Cold Climate Heat Pumps: A Reliable Solution for Washington

Heat pumps now provide dependable heating across Washington, even in sub-zero temperatures. New cold climate product certifications, trained installer networks, and weatherization programs are helping consumers switch from less efficient fossil fuel systems and stay warm all winter.

Heat pumps are ready for Washington's climate.

Thanks to remarkable technological advancements in recent years, there are now thousands of heat pump models that can operate effectively in sub-zero temperatures. Over 100 heat pump manufacturers now offer cold climate products serving a wide range of building types.[1]

Heat pumps perform 2 to 4 times more efficiently than gas, oil, or propane systems in Washington's climate thanks to improved performance in both mild temperatures and extreme cold.[2]

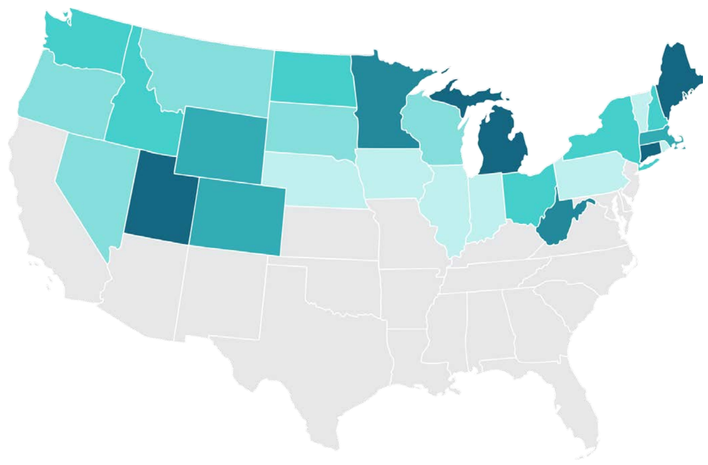
TEMPERATURE	COLD CLIMATE HEAT PUMP PERFORMANCE[2]	
47°F ❄	**3.7–4.6x** *more efficient*	HEAT PUMP / GAS FURNACE
17°F ❄❄	**2.7–3.3x** *more efficient*	HEAT PUMP / GAS FURNACE
5°F ❄❄❄	**2.2–3.0x** *more efficient*	HEAT PUMP / GAS FURNACE

What is a cold climate heat pump?

Cold climate heat pumps are specifically engineered to maintain performance below freezing. All cold climate heat pumps perform twice as efficiently as gas furnaces down to 5°F, with many products performing at -13°F or below without backup.[6] Ground source heat pumps provide even better performance at any temperature — and new federal incentives have made them increasingly affordable.

Many of the coldest states are heat pump leaders.

Cold states are increasingly adopting heat pumps[3]



MAINE

Pursuing a goal of 100,000 new heat pumps by 2025, Maine installed over

27,000

heat pumps in 2021.[4]

MASSACHUSETTS

Mass Save's network of 800-plus verified contractors installed more than

18,000

heat pumps in 2022.[5]

ALASKA

The Cold Climate Housing Research Center has successfully field-tested heat pumps **north of the Arctic Circle.**

What about the coldest days of the year?

Heat pumps can serve as a primary heating system year-round in Washington, but do become less efficient and effective in extreme temperatures. Backup heating systems can ensure year-round comfort in areas where winters consistently drop below -13°F.

Many heat pumps perform without backup down to

-13°F

Electric backup

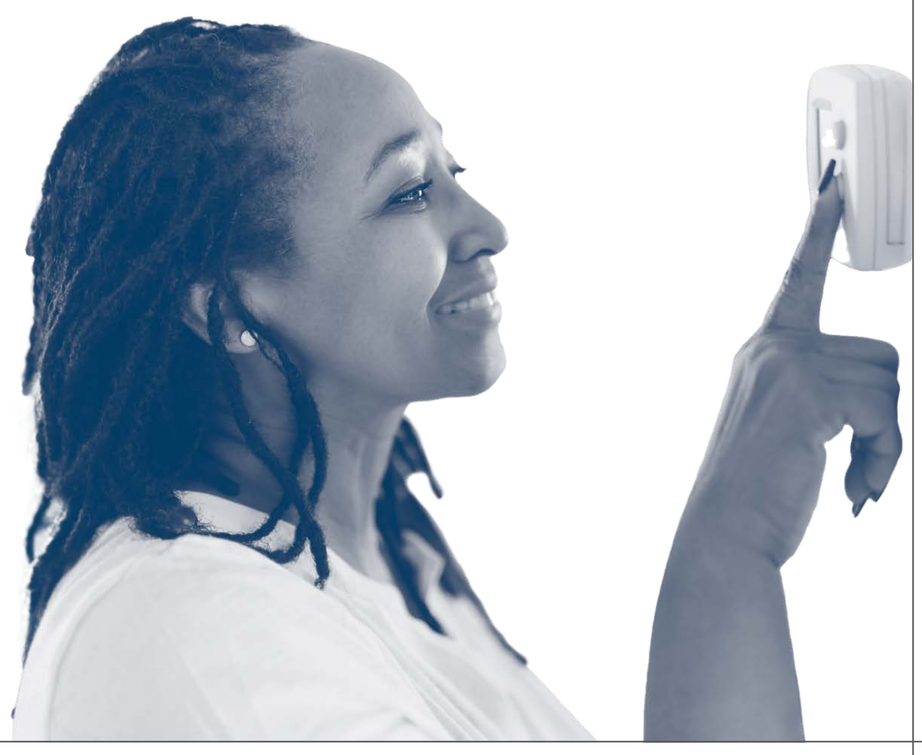
Some heat pumps come with integrated backup systems to ensure year-round performance. These systems must be installed and programmed correctly to maximize bill savings and minimize grid impacts.

Fossil fuel backup

These systems keep households reliant on aging infrastructure and volatile commodity prices. Programs in Washington should disincentivize new fossil fuel installations when feasible to align with the necessary transition to cleaner, all-electric buildings.

DID YOU KNOW?

Over **1.5 million** American homes already use heat pumps to stay warm in sub-freezing conditions.[7]



Successful installations start with three key steps.

Use rating systems.

Consumers can rely on established standards to select products proven to perform in extreme cold. Certified product lists and other resources from ENERGY STAR and Northeast Energy Efficiency Partnerships (NEEP) can be found at:

- **ENERGY STAR:** www.energystar.gov/products/air_source_heat_pumps
- **NEEP:** neep.org/heating-electrification/ccashp-specification-product-list

Work with trained installers.

Proper system design and installation is essential for ensuring heat pumps perform as intended. Approved contractor lists like those managed by many utility programs can help consumers connect with the right contractors.

Incorporate weatherization.

Ensuring homes are properly insulated and air sealed can result in lower-cost heat pump installations, improved performance and bill savings, and enhanced comfort. Weatherization measures are an important addition for many heat pump installations.

Take action

Washington policymakers can take several steps to maximize the benefits of cold climate heat pump deployment:

- **Target optimal opportunities for heat pumps** including new construction, delivered fuel systems (e.g., oil and propane), electric resistance, water heater replacements, and new air conditioning installations.
- **Maintain a verified contractor list** to ensure quality installations.
- **Invest in workforce development programs** to address contractor questions about new, high-performance cold climate heat pumps.
- **Design programs** to align with cold climate certifications, incentivize whole-home installations, and coordinate with complementary weatherization and air filtration upgrades.

UPDATED JUNE 2023

Learn more

Heat Pumps: A Practical Solution for Cold Climates, RMI, 2020, rmi.org/heat-pumps-a-practical-solution-for-cold-climates

Can Heat Pumps Actually Work in Cold Climates?, Consumer Reports, 2022, www.consumerreports.org/heat-pumps/can-heat-pumps-actually-work-in-cold-climates-a4929629430

NOTES

1. Northeast Energy Efficiency Partnerships, 2022, bit.ly/46b2W34
2. Values represent the 5th and 95th percentiles of performance on the Cold Climate Air Source Heat Pump Product List. Northeast Energy Efficiency Partnerships, 2023, bit.ly/44bDbxV
3. RMI industry research, 2023
4. Energy News Network, 2022, rb.gy/c4z8o
5. Energy News Network, 2023, rb.gy/mty7h
6. Center for Energy and Environment, 2017, rb.gy/aow4z
7. US Energy Information Administration, 2020, bit.ly/44A8GT6

FACT SHEET

All-Electric Buildings: A Health Priority for Washington

Burning fossil fuels for cooking and heating produces pollution that harms Washingtonians, especially children, the elderly, people of color, and low-income households. Washington can prioritize health by helping residents and businesses make the switch to all-electric appliances.

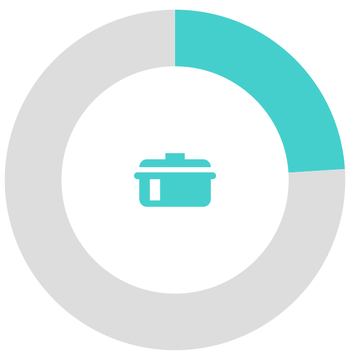
Cooking with gas pollutes our homes

Gas stoves release harmful pollutants like carbon monoxide, nitrogen dioxide, and formaldehyde into the homes where we eat, sleep, work, and play. Everyday kitchen activities like baking a cake or boiling water can create pollution that would be **considered illegal** outdoors. Despite decades of evidence on the health risks of cooking with gas, no standards or regulations exist for indoor air quality.[1]

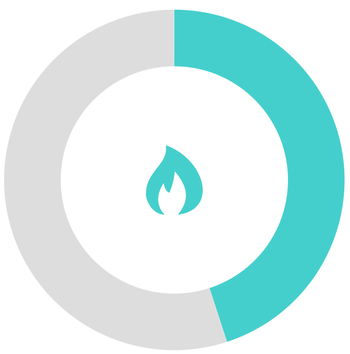
"How can I reduce my health risk?"

Households can reduce their pollution exposure by cooking on back burners, using range hoods, or opening a window. However, gas stoves can leak chemicals, including benzene, a known carcinogen, **even when turned off**. The most effective way to minimize risk is by cooking with electric appliances.

Children living in a home with a gas stove are **42% more likely** to experience asthma symptoms.[1]



24%
of Washington homes use gas for cooking.[2]



45%
of Washington homes use fossil fuels for heating.[2]

Fuel-burning appliances pollute outdoor air

More than 15.9 million homes and commercial buildings in the Pacific region burn fuels — including gas, oil, propane, wood, and biomass — in furnaces, water heaters, and other appliances.[3] These appliances are a significant source of outdoor air pollution that **cost Washington $6.3 billion in health impacts every year**.[4] On-site air pollution from appliances is linked to asthma, cardiovascular disease, cancers, birth defects, and approximately 560 early deaths per year in Washington.[4]

APPLIANCE POLLUTANT	ALSO FOUND IN	LINKED TO CANCER	LINKED TO CARDIOVASCULAR DISEASE	LINKED TO RESPIRATORY ILLNESS
Carbon monoxide	Car exhaust		✕	
Nitrogen dioxide	Power plant emissions	✕	✕	✕
Ozone	Smog			✕
Particulate matter	Wildfire smoke	✕	✕	✕
Benzene	Cigarette smoke	✕		
Formaldehyde	Pesticides	✕		✕

Electrifying buildings advances health equity

Converting to clean, all-electric appliances can make the biggest difference for Washington's most vulnerable populations, who currently face disproportionate health impacts from fossil fuel pollution.

Children

Developing lungs are particularly vulnerable to air pollution. Nationwide, estimated childhood asthma risk from exposure to gas stoves is similar to that of secondhand smoke.[5]

Low-income households

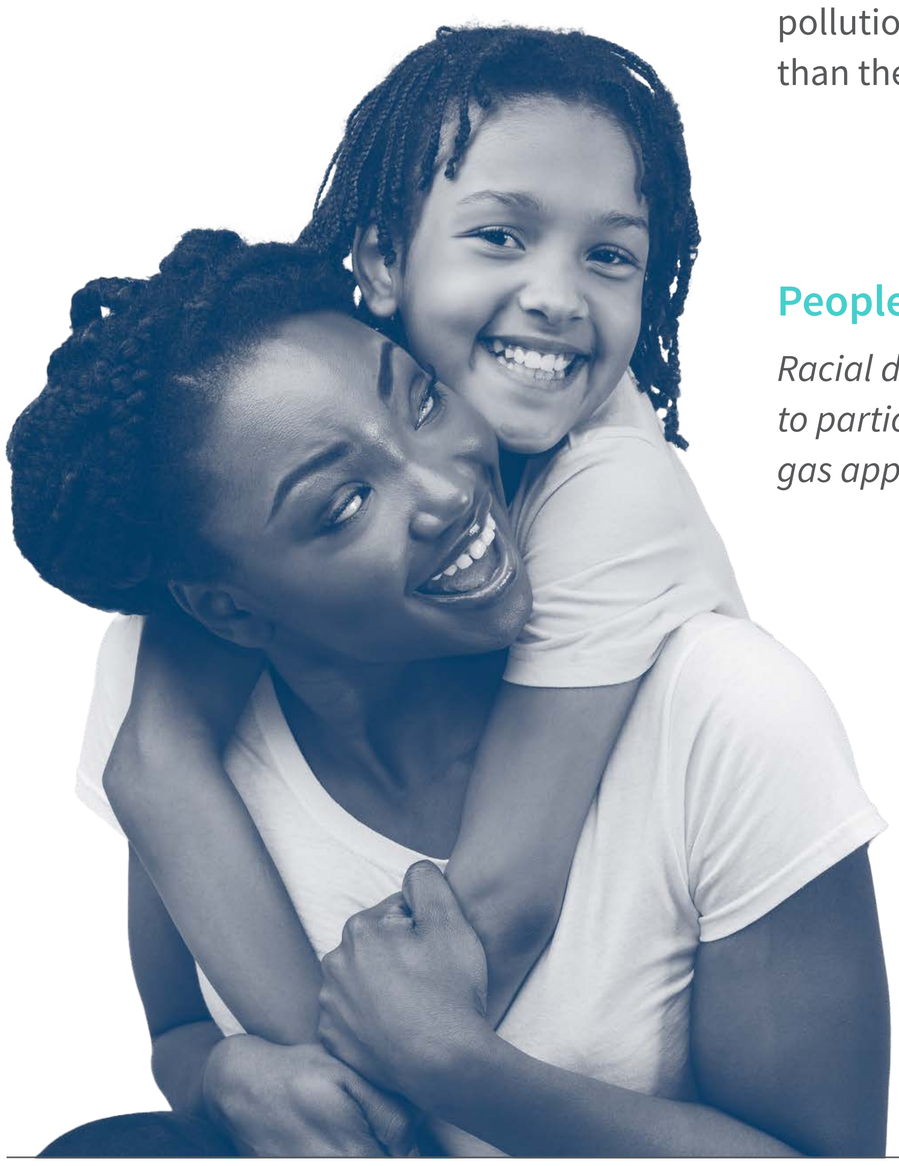
Smaller living spaces, older appliances, and poor ventilation can expose low-income households to higher concentrations of pollution from fossil fuel appliances.

People of color

In Washington, people of color are exposed to more outdoor particulate matter pollution from residential gas appliances than the Washington average.[6]

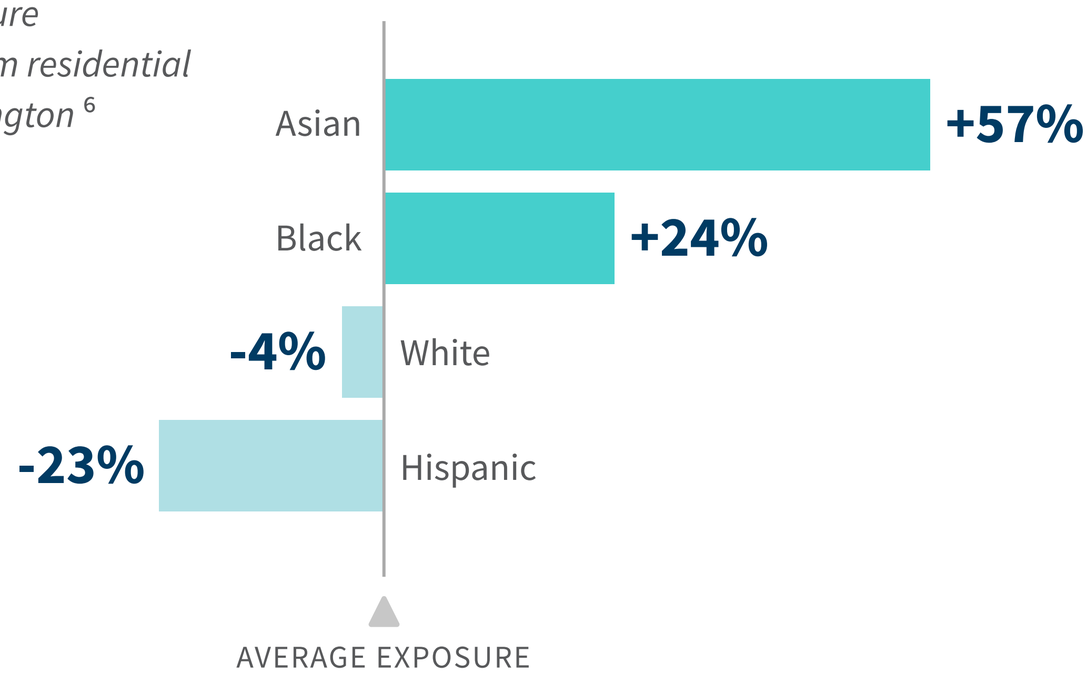
Elderly people

Exposure to air pollution from fossil fuel appliances can increase the risk of cardiovascular and respiratory illnesses that older adults are most susceptible to, as well as dementia and Alzheimer's.



People of color are at higher risk

Racial disparity in exposure to particulate matter from residential gas appliances in Washington [6]



Take action

Accelerating the transition to clean, electric appliances will deliver significant health benefits by reducing Washington residents' exposure to indoor and outdoor air pollution. Policymakers and regulators can help advance this goal in several key ways:

- **Incentivize electric appliances** through point-of-sale rebates and accessible tax credits.
- **Adopt a health-based indoor air quality guideline** that protects the most sensitive populations, including children, the elderly, and those with existing respiratory ailments
- **Educate residents** about the importance of proper ventilation and safer cooking techniques for gas stoves as they wait for healthier options.

Learn more

Gas Stoves are a Health and Climate Problem, RMI, 2023, rmi.org/gas-stoves-health-climate-asthma-risk

What is the Health Impact of Buildings in Your State?, RMI, 2021, rmi.org/health-air-quality-impacts-of-buildings-emissions

All-Electric Homes: A Health Professional's Guide, RMI, 2023, rmi.org/all-electric-homes-a-health-professionals-guide

NOTES

1. Lin et al., 2013, bit.ly/429HskH
2. US Energy Information Administration, 2020, bit.ly/44A8GT6
3. US Energy Information Administration, 2020, bit.ly/44A8GT6; US Energy Information Administration, 2018, bit.ly/3NCTFtT
4. Data for 2017. RMI, 2021, bit.ly/3HKBRcC
5. RMI, 2022, bit.ly/3pgDgkw
6. RMI analysis of supplemental data from Tessum et al., 2021, bit.ly/44w9FDX

UPDATED JUNE 2023

FACT SHEET

All-Electric Buildings: Key to Achieving Washington's Climate Goals

To reach Washington's goal of net zero carbon emissions by 2050, we must stop burning fossil fuels in buildings. Heat pumps are a readily available and effective solution for reducing building emissions today.

Buildings are a major source of carbon emissions

41% of Washington's energy-related carbon emissions come from buildings.[1] Of this, over one third stems from burning fossil fuels (gas, oil, and propane) for heating, cooking, hot water, and other uses. Despite progress decarbonizing other sectors, these **emissions have only decreased by 1% in Washington since 2016**.[1] The good news is that we have better technology at our fingertips and can convert these fuel-burning appliances to heat pumps and other efficient, electric systems.

"Why are we transitioning off gas?"

Methane gas (a.k.a. natural gas) served as a "bridge fuel" in the transition away from dirtier forms of energy like coal. That need has changed as Washington has increasingly adopted renewable energy, reducing electric grid emissions by 17% since 2010.[1] It's time to take the next step in the energy transition by harnessing this cleaner grid to power our buildings.

59%

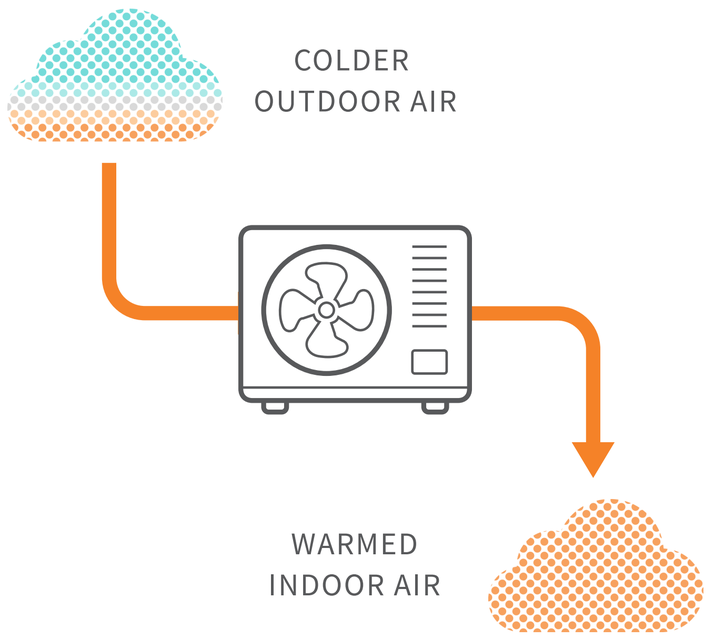
of Washington homes burn fuels on-site for cooking, heat, or hot water.[2]

68%

of commercial buildings in the Pacific region burn fuels on-site.[3]

Heat pumps are two efficient appliances in one

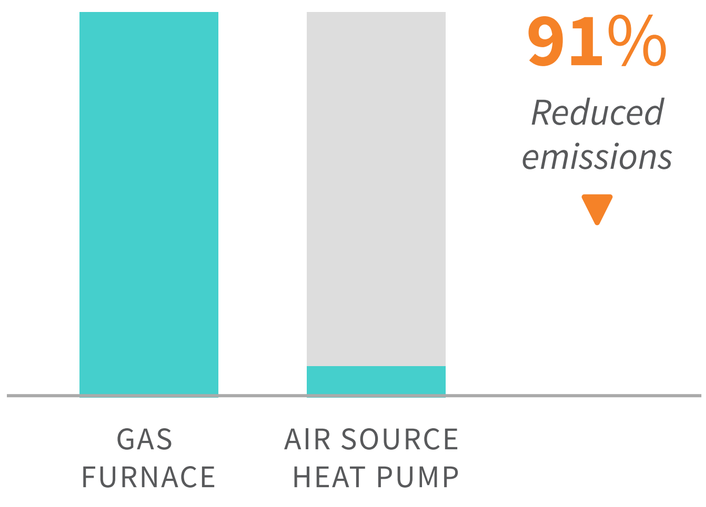
Heat pumps are so efficient because **they *move* heat rather than *make* heat**. In winter a heat pump gathers warmth from the air or ground (even in sub-zero temperatures) and moves it indoors. That flow is reversed to cool buildings in summer by moving heat outdoors. Heat pumps can replace both a furnace and an air conditioner. Plus, they can be used in water heaters, clothes dryers, and other appliances.

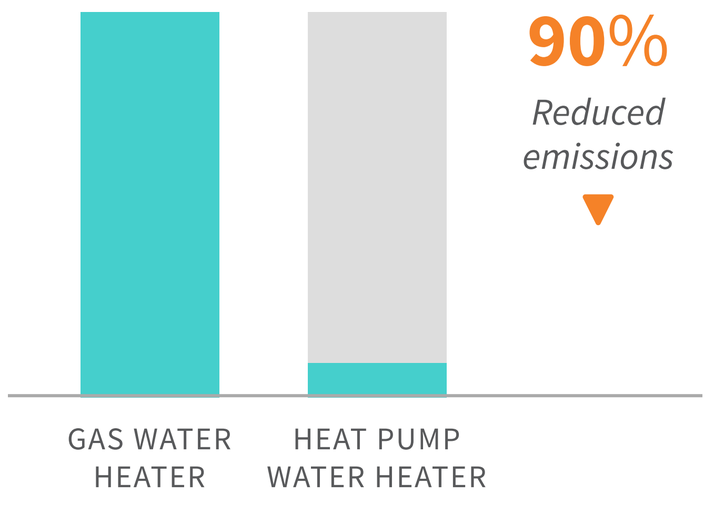


All-electric buildings reduce carbon emissions

Replacing fossil fuel appliances with electric heat pumps dramatically reduces carbon emissions from buildings in Washington. This is because **heat pumps are 2 to 4 times more efficient than gas appliances**. The carbon savings are even more significant when replacing oil and propane systems, and will only improve as Washington's electricity grid continues to get cleaner.

Lifetime gas and electric appliance emissions in Washington[4]





It’s time to start the transition off gas

Transitioning from gas to electric is a necessary step toward a zero-carbon future, but we’re moving in the wrong direction: **spending on gas continues to rise** as distribution networks sprawl and aging pipelines create leaks and safety concerns. An equitable transition to all-electric buildings requires careful planning that acknowledges the complexities of the current system and the workers and residents who rely on it. Several states have initiated this process, recognizing it’s far more efficient and cost-effective to start planning now.

GAS IS STILL GROWING

Since 2020, utilities in Washington have extended gas service to over

19,100

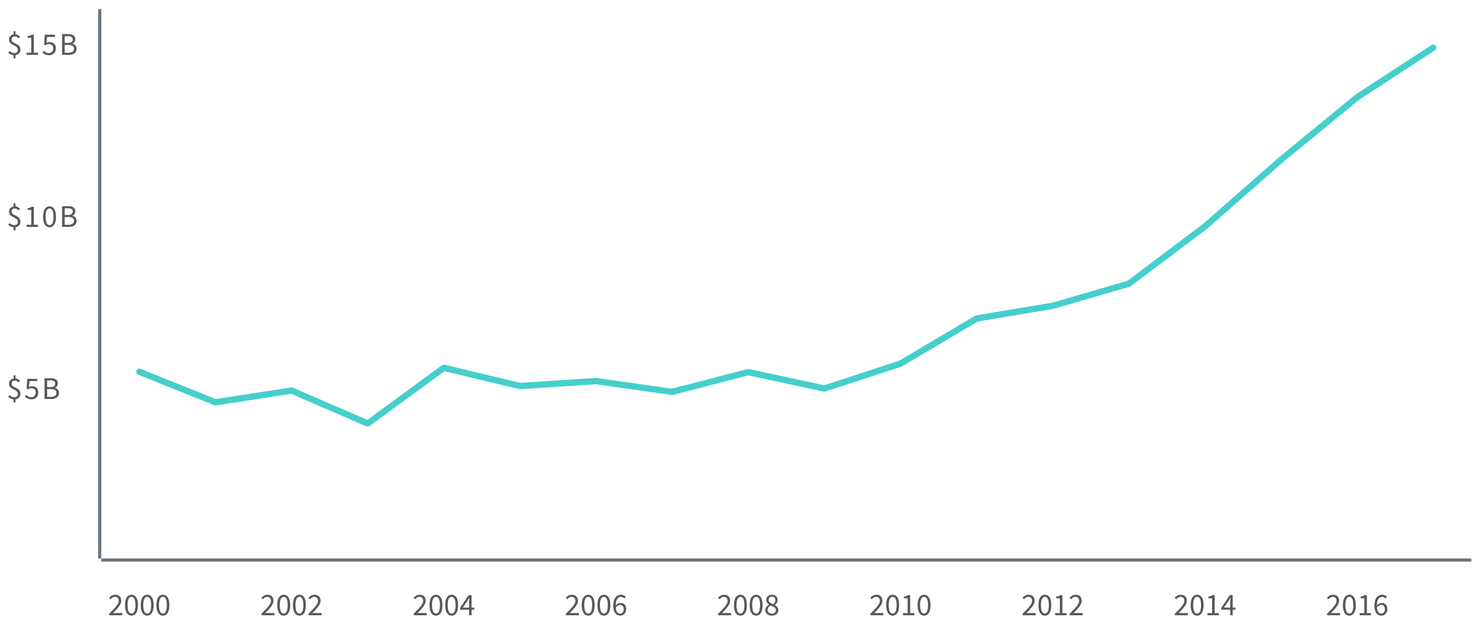
new customers.[5]

An average of

218 miles

of new gas lines are laid per year in Washington.[6] *These can remain in commission for decades.*

Gas distribution spending in the U.S. has more than tripled since 2009[7]



Gas equipment and pipelines leak methane, a greenhouse gas 30 times more potent than carbon dioxide. These leaks can **double the climate impact** of gas use in buildings but are often ignored.[7]

Take action

Washington can help accelerate the transition to all-electric buildings in several ways:

- **Adopt building codes** requiring or strongly incentivizing all-electric buildings in new construction and major renovations.
- **Establish a statewide navigator** to coordinate programs and incentives for all-electric buildings from the Inflation Reduction Act and Climate Commitment Act.
- **Educate community members** about the importance of building electrification and available programs.
- **Petition the Washington Utilities and Transportation Commission** to open a stakeholder process to bring utility regulation and planning in line with state climate goals.
- **Adopt a zero-emission appliance standard** to phase out the sale of fossil fuel furnaces and water heaters by 2030.

Learn more

Clean Energy 101: Heat Pumps, RMI, 2022, rmi.org/clean-energy-101-heat-pumps

Now Is the Time to Go All In on Heat Pumps, RMI, 2023, rmi.org/now-is-the-time-to-go-all-in-on-heat-pumps

Washington State Energy Strategy, 2021, www.commerce.wa.gov/growing-the-economy/energy/2021-state-energy-strategy/

NOTES

1. US Energy Information Administration, 2022, bit.ly/42aPZns
2. US Energy Information Administration, 2020, bit.ly/44A8GT6
3. US Energy Information Administration, 2018, bit.ly/3NCTFtT
4. RMI, 2023, bit.ly/3NOTk5V
5. Data for 2020-2021. US Energy Information Administration, 2023, bit.ly/44LkjqL
6. Data for 2020-2021. American Gas Association, 2021, bit.ly/3M0hZVq
7. RMI, 2019, bit.ly/3NbhU0s

UPDATED JULY 2023

FACT SHEET

Renewable Gas: Not a Climate-Aligned Solution for Buildings in Washington

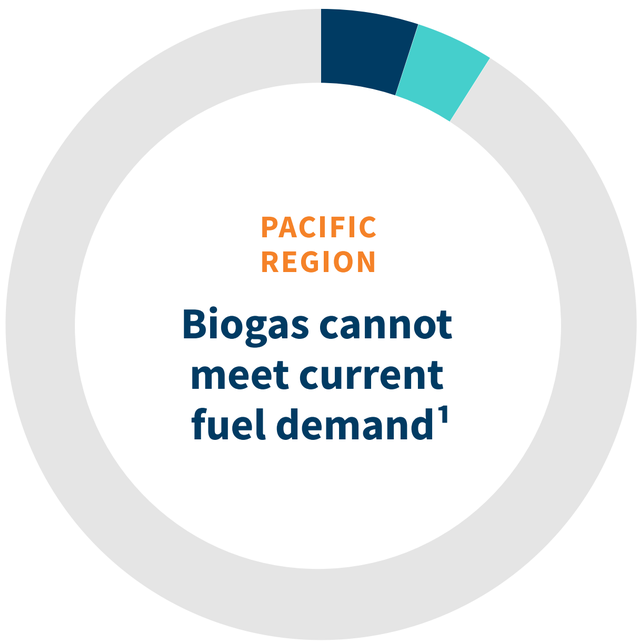
Electrification is the most viable option to fully decarbonize Washington's buildings. Alternative fuels like renewable gas are more expensive, limited in supply, and can still cause significant environmental and health impacts. Washington must plan to transition away from existing gas infrastructure as part of its clean energy strategy.

Biogas is only available in limited supply

"Biogas" is a gas alternative harvested from organic sources like landfills, animal manure, and wastewater treatment plants. **Gas industry analysis shows that biogas could only meet 6-12% of current gas demand** in Washington's region by 2040.[1]

"Does biogas have other impacts?"

Some biogas is captured from existing sources, like landfills, that would otherwise emit methane into the atmosphere. But more than two fifths of the 2040 supply would have to come from newly produced sources, like crops grown for energy, that can actually increase emissions while displacing forests and causing other environmental impacts.[1]



5% **Captured biogas**
Landfill, animal manure, food waste, wastewater

4% **Produced biogas**
Agricultural and forest residue, energy crops, municipal waste

91% **Remaining demand**

What does "alternative fuel" actually mean?

Alternatives proposed by the gas industry go by a variety of names and include two main groups:

Biogas is produced and harvested from organic sources. This biogas is then purified to pipeline-quality **biomethane** or **"renewable natural gas"**.

Synthetic gas, also known as **synthetic methane,** is manufactured by combining hydrogen with carbon oxides.

Blended hydrogen, is created by mixing gas with a small amount of hydrogen.

Synthetic gas is an inefficient option

Synthetic gas is created by producing hydrogen and blending it with carbon oxides. This process can theoretically be powered by renewable energy; however, renewables are more effectively used on the electric grid, where they can power efficient devices like heat pumps.

Blended hydrogen can similarly be powered (in part) by renewable energy, but existing gas pipelines can only safely carry a small percentage of hydrogen blend, limiting the carbon-saving potential of the fuel.

Synthetic gas requires more energy to produce the same amount of heat[2]

SYNTHETIC METHANE FURNACE

29.6 MWh energy input

Loss *from production and leakage*

Loss *from gas equipment efficiency*

15 MWh heat

ELECTRIC HEAT PUMP

5.2 MWh energy input

Loss *from transmission and distribution*

Gain *from heat pump efficiency*

15 MWh heat

Electrification lowers costs in more ways than one

Consumer costs

Building electrification is a more affordable option for meeting carbon goals. Biogas and synthetic gas will cost 4 times more than gas in 2040, while electricity costs are projected to decrease by 9% as Washington continues to transition to renewable energy.[6]

Health impacts

Burning any alternative fuels in Washington buildings will continue to pollute both indoor and outdoor air. Electrification would reduce the more than $6.3 bilion per year in health impacts that Washington faces from burning fuels in buildings.[7]

HEAT PUMP POWERED ELECTRIC HEATING

$39

per MWh of delivered heat[3]

BIOGAS POWERED HEATING

$109

per MWh of delivered heat[4]

SYNTHETIC GAS POWERED HEATING

$111

per MWh of delivered heat[5]

Alternative fuels do have important uses

Where do these fuels belong? Biogas and hydrogen should be reserved for applications in hard-to-electrify sectors:

- Fuels for shipping, aviation, and heavy-duty trucking
- Certain industrial processes like steel and fertilizer production
- Fuel cell backup for sensitive applications like semiconductor fabrication facilities

The time to electrify is now

Washington cannot rely on running biogas and synthetic gas through aging pipelines to heat space and water and cook food. The supply of these alternative fuels is too limited to meet demand, and manufacturing and delivering them to consumers would be inefficient and costly.

Efficient, electric buildings are the best option for meeting climate, health, and affordability goals.

Take action

There are several steps policymakers can take now to ensure Washington doesn't unduly invest in alternative fuels to decarbonize its buildings:

- **Specifically prioritize electrification and energy efficiency** in Washington's building decarbonization planning.
- **Petition the Washington Utilities and Transportation Commission** to evaluate potential cost-effective and high-value applications of biogas and synthetic gas outside of the building sector.
- **Establish emissions standards, monitoring, and reporting** for any policy supporting the development of biogas and synthetic gas.

Learn more

At Scale, Renewable Natural Gas Systems Could be Climate Intensive, Environmental Research Letters, 2020, bit.ly/453clbO

A Pipe Dream or Climate Solution?, NRDC, 2020, on.nrdc.org/3JG5Sv8

We Need Hydrogen — But Not for Everything, RMI, 2022, bit.ly/3Pxb1JE

NOTES

1. RMI analysis; graph shows the average of high and low biogas potential for the Pacific region. American Gas Foundation, 2019, bit.ly/3PzTHUb; US Energy Information Administration (EIA), 2023, bit.ly/3Xur3pD
2. RMI analysis assuming 80% efficiency for methanation, electrolysis, and synthetic gas combustion and [%] heating season-weighted efficiency for heat pump.
3. RMI analysis assuming [%] heating season-weighted efficiency. US EIA, 2023, bit.ly/3XzJucu
4. RMI analysis assuming 80% combustion efficiency. American Council for an Energy-Efficient Economy, 2023, bit.ly/46rSS63
5. RMI analysis assuming 80% combustion efficiency. American Gas Foundation, 2019, bit.ly/3PzTHUb
6. American Council for an Energy-Efficient Economy, 2023, bit.ly/46rSS63; US EIA, 2023, bit.ly/3DRtppv
7. Data for 2017. RMI, 2021, bit.ly/3HKBRcC

UPDATED JULY 2023