SS 2. 7/12/22
Presentation -
Climate Solution

The Future of Buildings: Clean, Safe, and All-Electric

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climate solutions

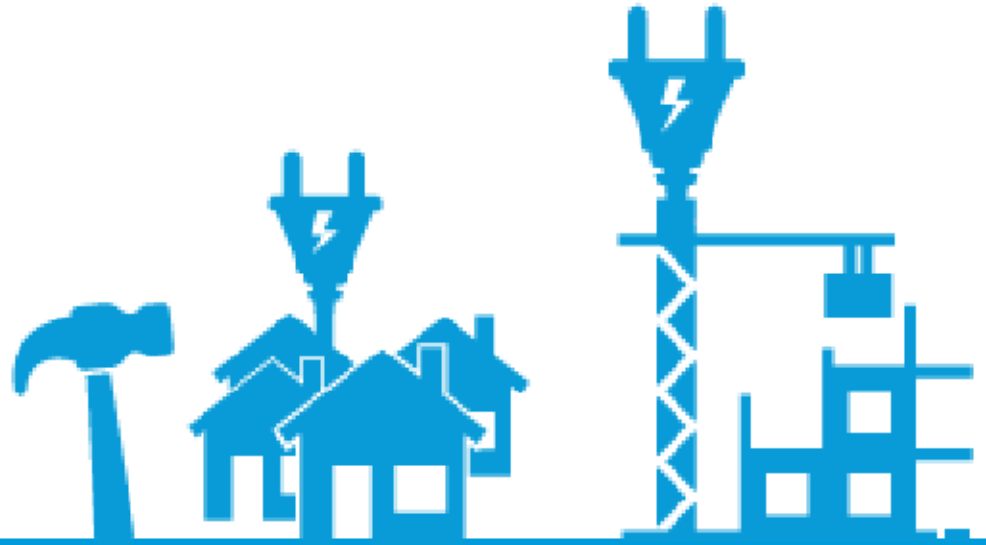
accelerating the transition to our clean energy future

The climate crisis

"Climate impacts are already worsening public health crises, increasing economic disruption, and exacerbating racial inequity in Oregon."

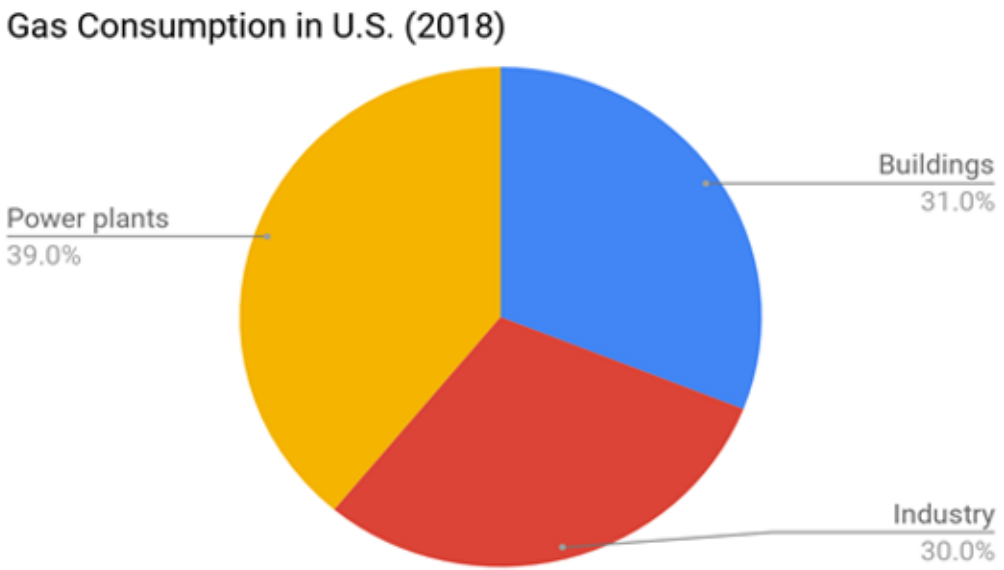
--Oregon Health Authority, Climate + Health in Oregon 2020 report

WHY



buildings? Why *now*?

Emissions from buildings are on the rise



One-third of all gas consumption nationwide comes from buildings.

According to the American Gas Association, gas companies connect to at least one new house *every minute*, totaling over 560,000 gas hook-ups every year nationwide.

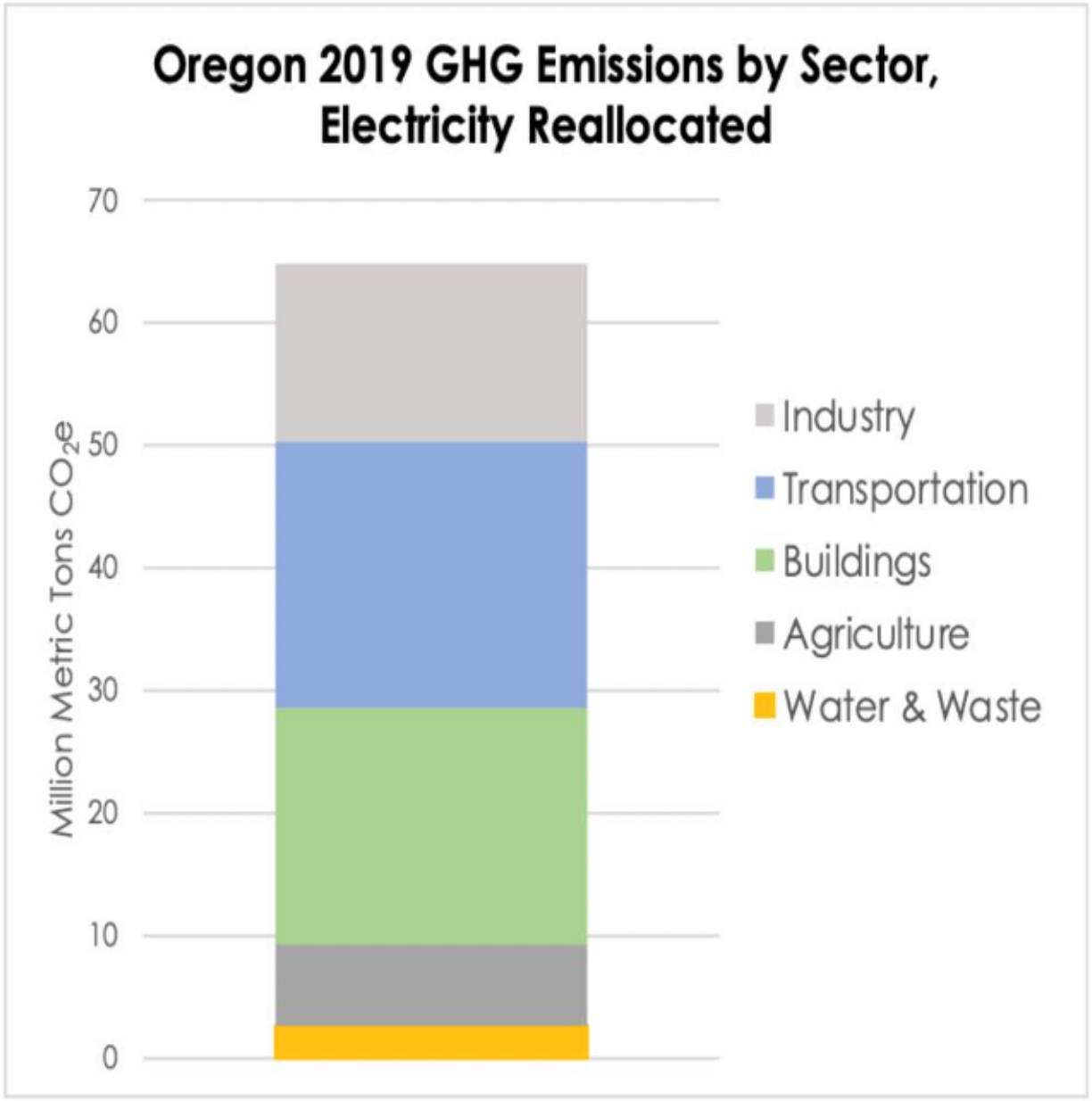
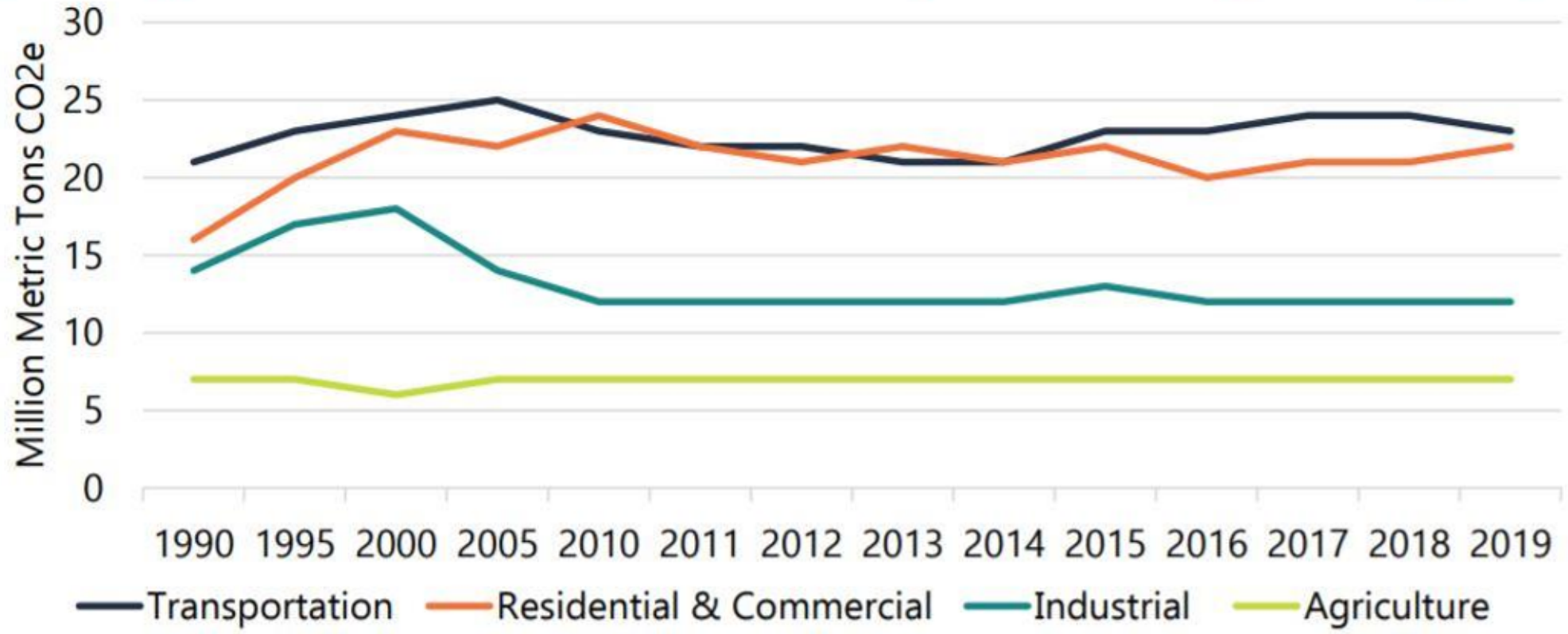


Figure 2. *Oregon's 2019 GHG emissions from Oregon DEQ's GHG Sector-Based Inventory, with electricity emissions reallocated to respective demand sectors. Elements of the Inventory have been recategorized in line with the classification system used by the EPS.*

Where do emissions come from in Oregon?

Are emissions going down in Oregon?

Figure 4: Oregon Emissions in Million Metric Tons of CO2e by Sector: 1990-2019 (Source: DEQ, 2020)



Setting the path for climate progress

Oregon Climate Action Plan (EO 20-04)

- New climate targets to reduce GHG emissions:
  - At least 45% below 1990 levels by 2035
  - At least 80% below 1990 levels by 2050

Recent policy victories make electrification a clear win for the climate

1. Capping Climate Pollution: Climate Protection Program (CPP)

- Requires oil & gas companies to reduce GHG emissions 50% by 2035 & 90% by 2050;
- Establishes targets for industrial facilities to cut GHG emissions 50% by 2035;
- Invests millions of dollars in clean energy projects across the state.

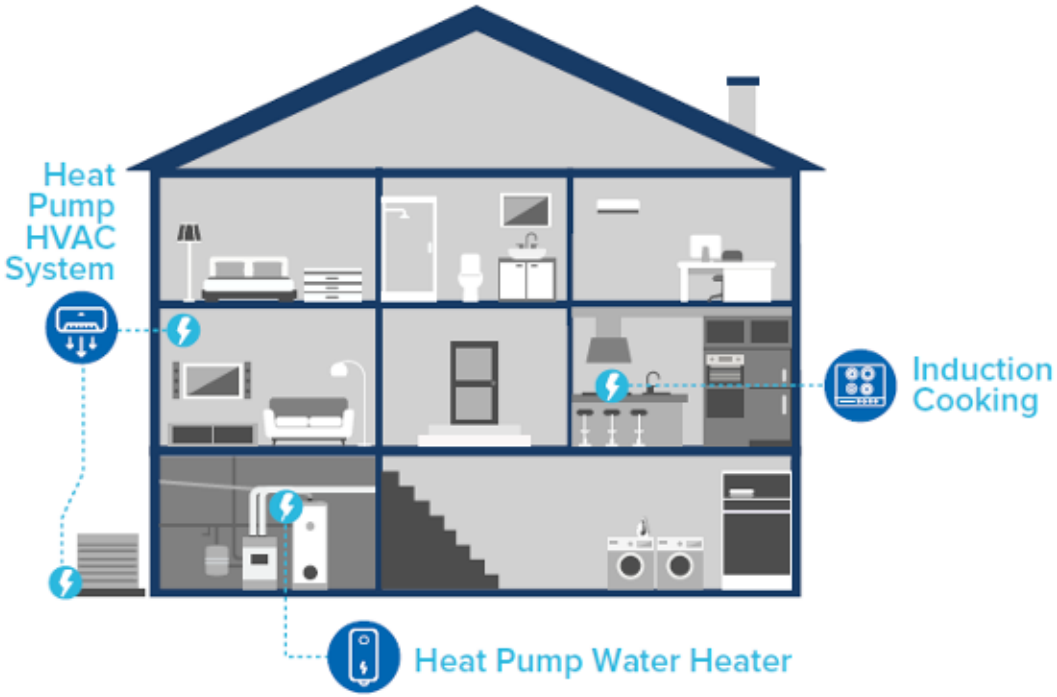
2. 100% Clean Electricity for All (HB 2021)

- Transitions Oregon's electricity grid to 100% clean, emissions-free sources by 2040.
- Supports regional sharing of clean power, bans new fossil gas power plants.

3. Transportation Policies

- Clean Fuel Standard
- Zero Emission Vehicle (ZEV) Standard, and Advanced Clean Trucks Rule

What does an all-electric home look like?

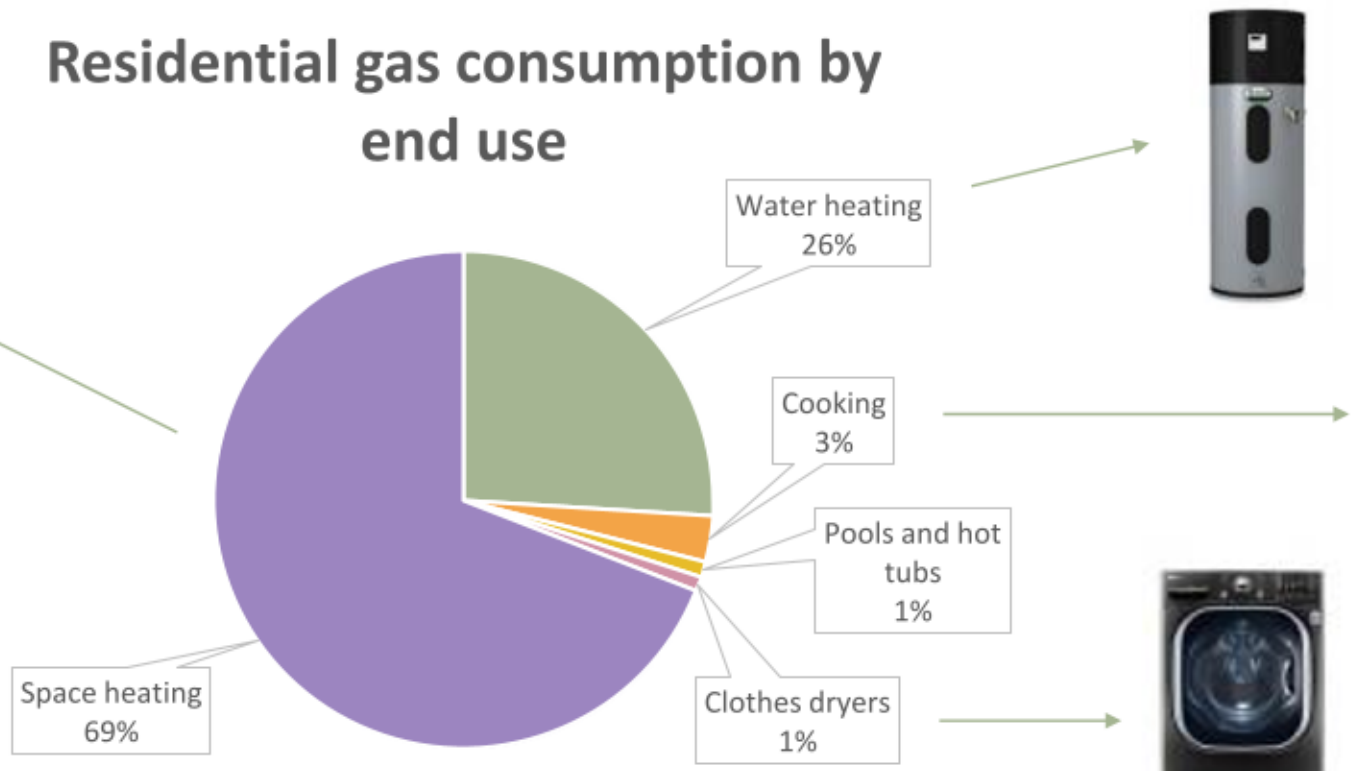


Heat pump HVAC systems include both heating and cooling, which will help protect residents during summer heat waves and smoke.

Heat pumps are also highly energy efficient and can reduce energy use overall.

Shifting gas use to electric

Heat pump space heating and cooling



Heat pump water heater

Induction cooking

Electric dryer

HEALTH

Why does *gas use* matter?

Indoor air pollution

Gas cooking appliances emit dangerous pollutants like carbon monoxide, nitrogen oxide, particulate matters, and formaldehyde – and have been shown to leak methane *even when they're turned off*.

A study by UCLA found that after one hour of cooking with a gas stove, 90% of homes would not meet federal air quality standards for outdoor air.

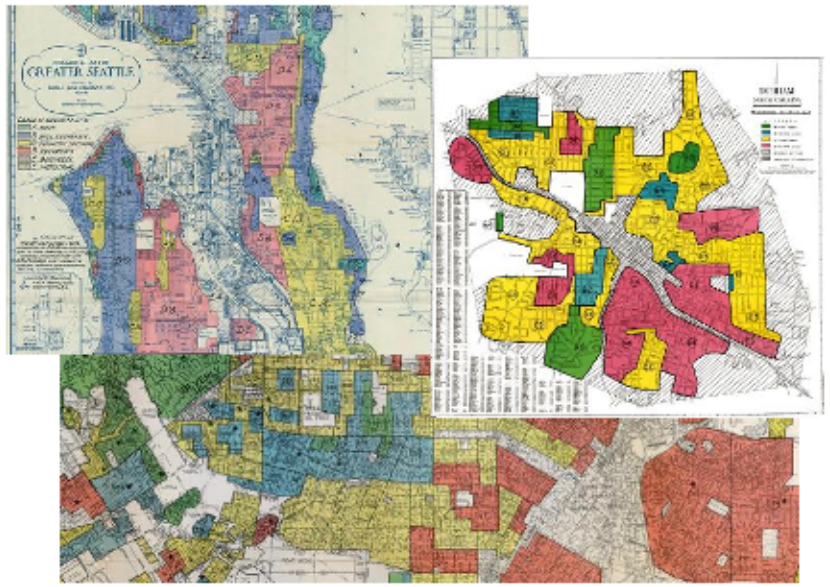
Children living in a home with a gas stove are 42% more likely to experience asthma symptoms

Indoor air pollution

Pollutant	Health Effects	
	Acute	*Chronic*
Nitrogen oxide (NOx)	Decreased lung function, asthma exacerbation, respiratory infection, stroke	Premature mortality, lung and breast cancer, cough, shortness of breath, asthma, wheezing, respiratory illness in children
Carbon monoxide (CO)	Death, brain damage, seizures, memory loss, dementia, headaches, dizziness, nausea	Brain and heart toxicity, heart failure and cardiovascular disease, low birth weight
Fine particulate matter (PM 2.5)	Stroke, increased blood pressure	Premature mortality, bronchitis, asthma onset and exacerbation, low birth weight and preterm birth
Ultrafine particles (UFP)	Increased blood pressure	Cardiovascular disease, neurological disorders
Formaldehyde	Respiratory/eye/skin irritation, sneezing, coughing, nasal congestion, drowsiness, chest tightness, shortness of breath, asthma exacerbation, death (higher doses)	Cancer, asthma and bronchitis in children, damage to respiratory system, headaches, sleep disorders, memory loss, birth defects, low birth weight, spontaneous abortion

Environmental (in)justice

"The burden of air pollution is not shared."
- American Lung Association



Segregation and redlining have led to BIPOC communities, particularly Black communities, being pushed to live in places where there is already greater exposure to air pollution.

Black, Latino, and Asian people, as well as people with lower socioeconomic status, have higher risks of premature death from particle pollution.

Safety impacts

Earthquake risk makes Oregon State particularly vulnerable because highly pressurized gas pipelines run a risk of exploding during earthquakes and causing fires and immediate danger.

All-electric buildings are more resilient following natural disasters, since electricity can be restored more quickly than repairs can be made to ruptured gas lines.

Electrification saves money

DIVE BRIEF

Switching to efficient electric heat pumps and appliances could save Oregon $1.1B through 2050, study finds

Published July 6, 2022

Figure 1. Cost Savings for an All-Electric Home versus Mixed-Fuel Home in Eugene

- According to RMI's analysis, an all-electric home in Eugene saves $1,600 in upfront construction costs, primarily due to the cost savings from eliminating the need for gas infrastructure.
- The all-electric home also has a $3,500 net present cost savings over a 15-year period. The increase in life-cycle cost savings is primarily due to utility bill savings of the all-electric home, equal to $208 a year.

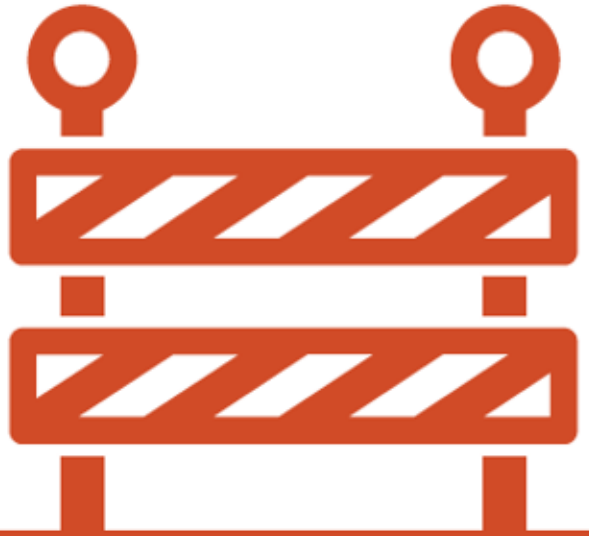
Less gas now, lower costs later

If we don't make this transition now, new buildings constructed with gas will last over 50 years.

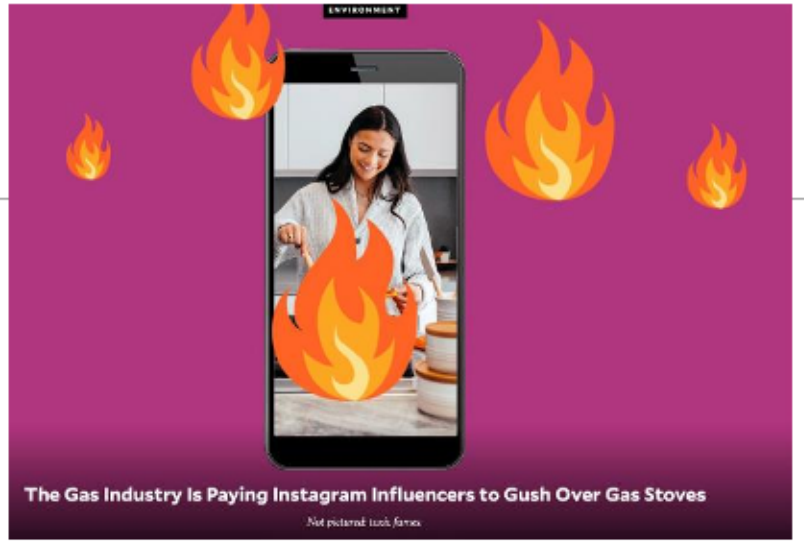
New gas pipelines built now will become stranded assets in the future.

The homes least likely to switch now will be low-income homes, who will have to pay for costly electrification retrofits down the line.

The opposition has already started too

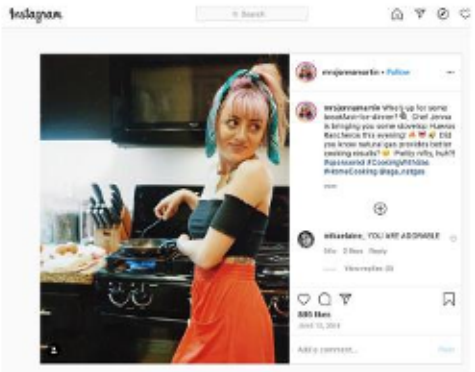


Greenwashing gas

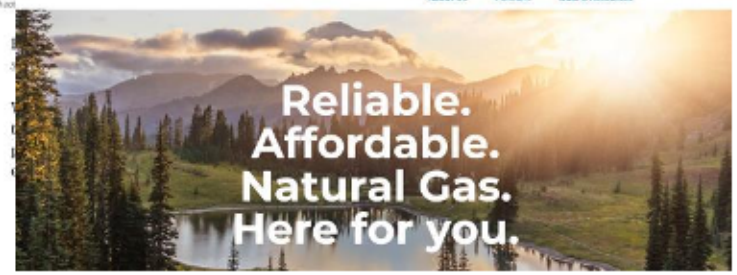


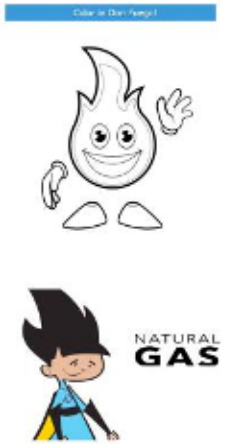
Environment | Health | Local News | Local Politics | Northwest | Puget Sound

Natural gas industry's $1 million PR campaign sets up fight over Northwest's energy future



partnership for energy progress

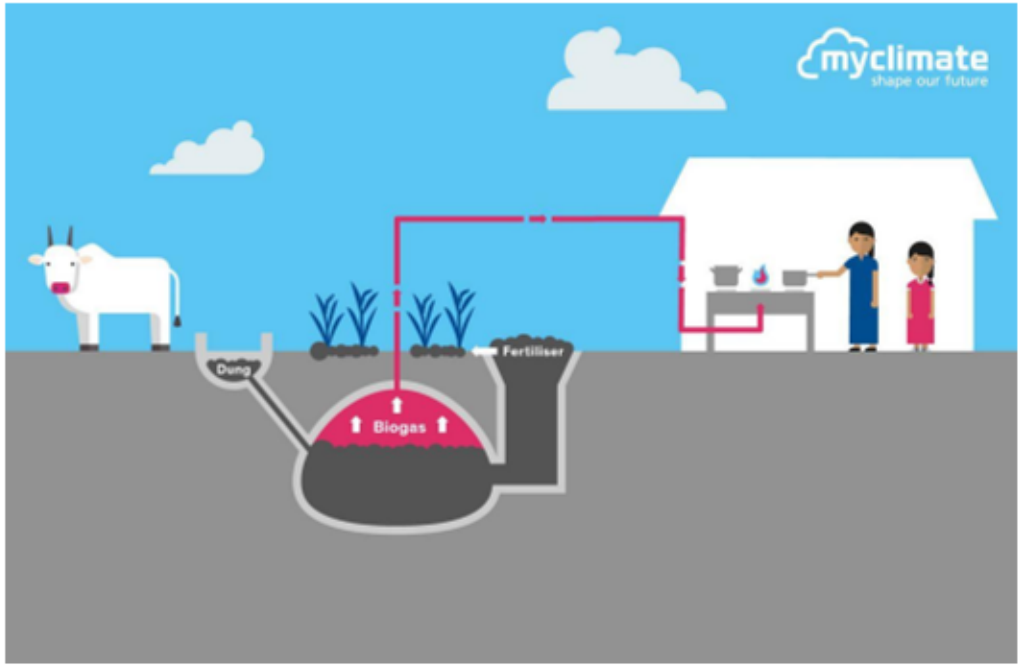




Greenwashing gas

Renewable natural gas (RNG, aka biogas or biomethane) and green hydrogen are not good solutions for decarbonizing our buildings sector.

They may be useful in sectors that are harder to electrify like the industrial sector or long-haul transportation.



HOW

do we move towards *solutions*?

We can *lead* in the Pacific Northwest

This work has already begun.

- Eugene, Multnomah County, Portland Public Schools resolutions
- Seattle, Shoreline, and Bellingham, and other fossil fuel phase out-policies in Tacoma and Olympia
- Washington State Building Codes win

THE SPOKESMAN-REVIEW

Spokane, Washington Est. May 19, 1883

NEWS · WASHINGTON

Washington council significantly restricts use of natural gas heating in new commercial buildings

UPDATED: Fri. April 22, 2022

A new roll of natural gas line is driven into place for installation by NPL crews on Seminole Drive, Sept. 24, 2014, in Spokane. The Washington Building Code Council approved on Friday, April 22, 2022 significant restrictions on the use of natural gas to heat new commercial building. (DAN PELLE/The Spokesman-Review)

Oregon State Policy Progress

- **DEQ Climate Protection Program** (requiring gas utilities to reduce their GHG footprint by 50% by 2035 and 90% by 2050)
- **Legislative Resilient Efficient Buildings Task Force** directed to develop legislative proposals for 2023 session to enable the state to achieve GHG goals in the building sector for both new and existing buildings.
- **Natural Gas Fact-Finding Investigation** (aka “Future of Gas” docket) at OPUC

We have a range of local policy options and activities

- **All-Electric resolutions** can require all-electric government buildings or for all buildings
- Carbon-based **building performance standards** can reduce emissions for existing large buildings
- **Heat pump campaigns/policies** can raise or allocate money to help retrofit homes of lower-income and BIPOC communities
- **Green building incentives** can offer expedited permitting to builders who choose clean energy
- **Franchise Agreements** can be negotiated to reduce gas consumption or replace it with cleaner energy

Questions?