

# Vision 2050- NW Natural Path to Decarbonization

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# Service Territory

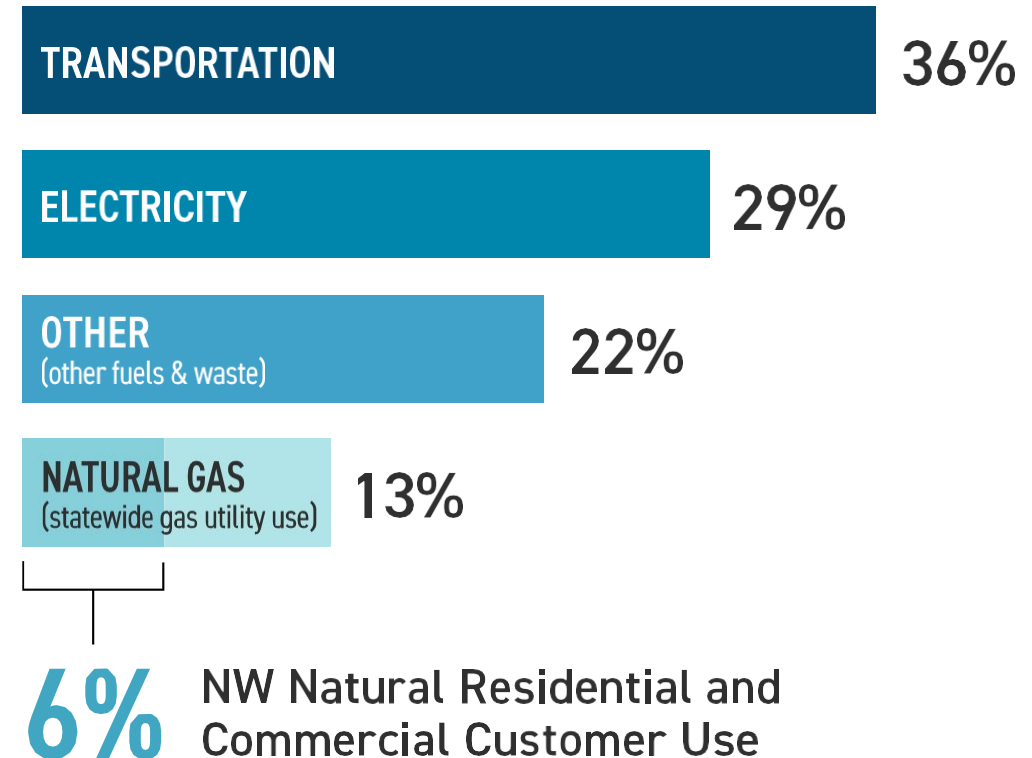


- Largest independent natural gas utility in the Pacific Northwest, founded in 1859
- Mission is to provide safe, reliable and affordable natural gas, in an environmentally responsible way
- Regulated by OPUC with variable rate structures for commercial and industrial customers
- Scored second-highest in customer satisfaction among large utilities in the West in 2022 JD Power Survey

# Our System

- We serve 2.5 million people in over 140 communities, meeting about 90% of the energy needs for our residential space and water heat customers on the coldest winter days.
- Our distribution system is one of the tightest, newest pipeline networks in the country.<sup>3</sup>
- We are pursuing renewable natural gas, clean hydrogen, and carbon capture technologies to drive toward a carbon neutral future.<sup>4,5</sup>

## OREGON GREENHOUSE GAS EMISSIONS BY SECTOR<sup>1</sup>



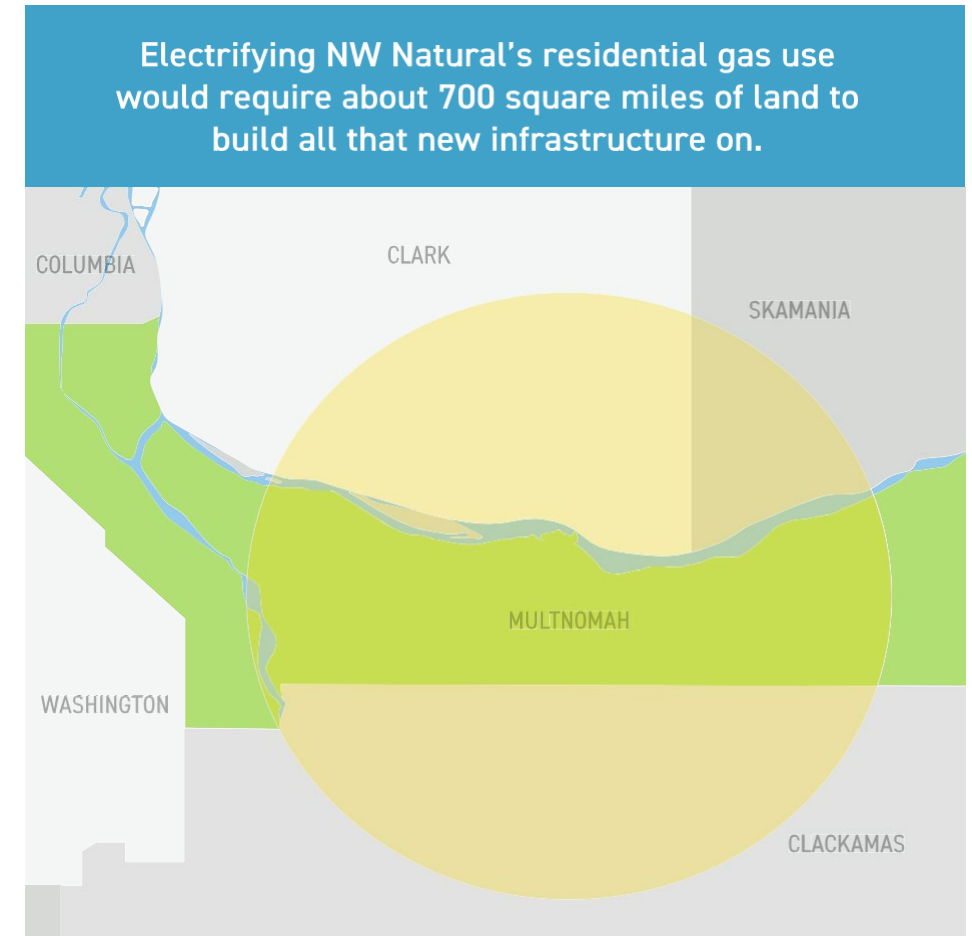


# Facts and Analysis About Our Energy System

NW Natural is committed to effectively addressing climate change by actively supporting sound energy policy, informed by facts and transparent analysis in service to those that depend on us.

# What would it take to electrify our residential gas use?

- On Dec. 22, 2022, from 8-9am NW Natural delivered approximately 23 million cubic feet of gas to our residential customers.<sup>12</sup>
- We estimated that if all those customers' gas appliances were replaced with electric appliances, it would require more than **3.4 GW of electric capacity** to provide the same amount of energy.
- Using renewable electricity to serve that gas use with 75% wind, 20% solar, and 5% battery storage would cost the local electric system approximately **\$20 billion**, according to the National Renewable Energy Lab and Berkeley National Labs capital cost estimates.



12. See <https://www.nwnatural.com/about-us/the-company/carbon-neutral-future/understanding-peak-demand> for data and assumptions

# Destination Zero:

The pathway to our vision of carbon neutral

A decarbonizing network:

- Renewable Natural Gas
- Hydrogen
- Waste CO<sub>2</sub>
- Renewable Electricity

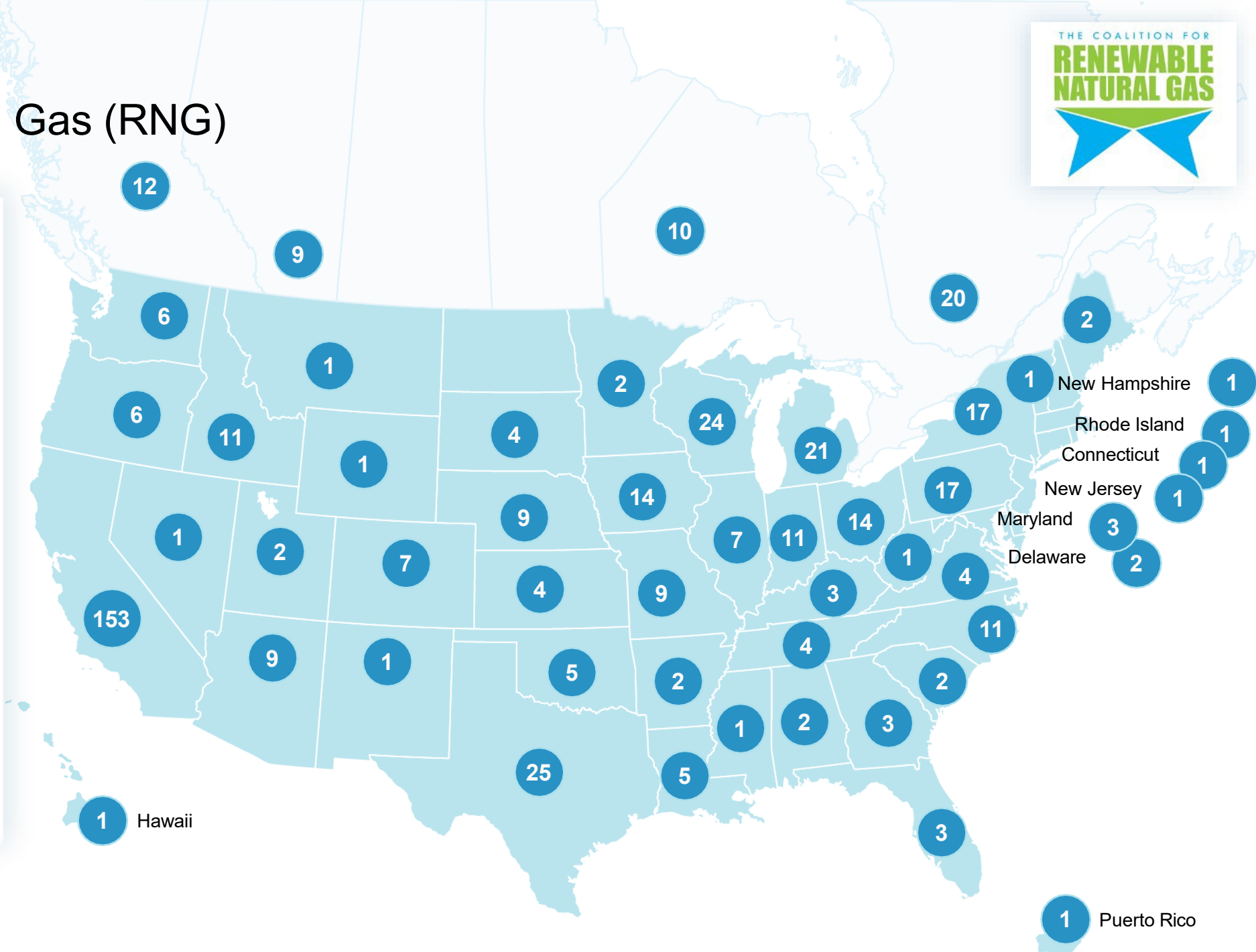


# Renewable Natural Gas (RNG)



## What is RNG?

- When organic waste decomposes, methane is produced.
- RNG is made by capturing and cleaning that waste methane and displacing fossil gas with it.
- Renewable natural gas (RNG) is not a fossil fuel- it recycles CO2 already in the atmosphere.
- RNG supply is vast and there's no need for new appliances or pipelines.
- Recent national and regional estimates find that enough potential exists today to displace all residential gas use.





# Clean Hydrogen

## Blending Now

- Pipelines operated now for gas delivery can be utilized to deliver Hydrogen as an energy resource.
- This begins with blending to enable a scale-up of hydrogen production as we look to a future with some dedicated Hydrogen delivery.
- Hydrogen blending in the gas system functions as a battery – a place for wind and solar to be stored and delivered when the electric system can't use or store.
- Over the last two years we've blended hydrogen at our training center in Sherwood – first 5% and now up to 15%.





Based on comprehensive data, we believe the fastest, most affordable and resilient way to achieve our shared climate goals is to pursue a mix of solutions with two energy systems working together to navigate the challenges ahead – one above ground delivering clean electrons and one below ground delivering clean molecules.