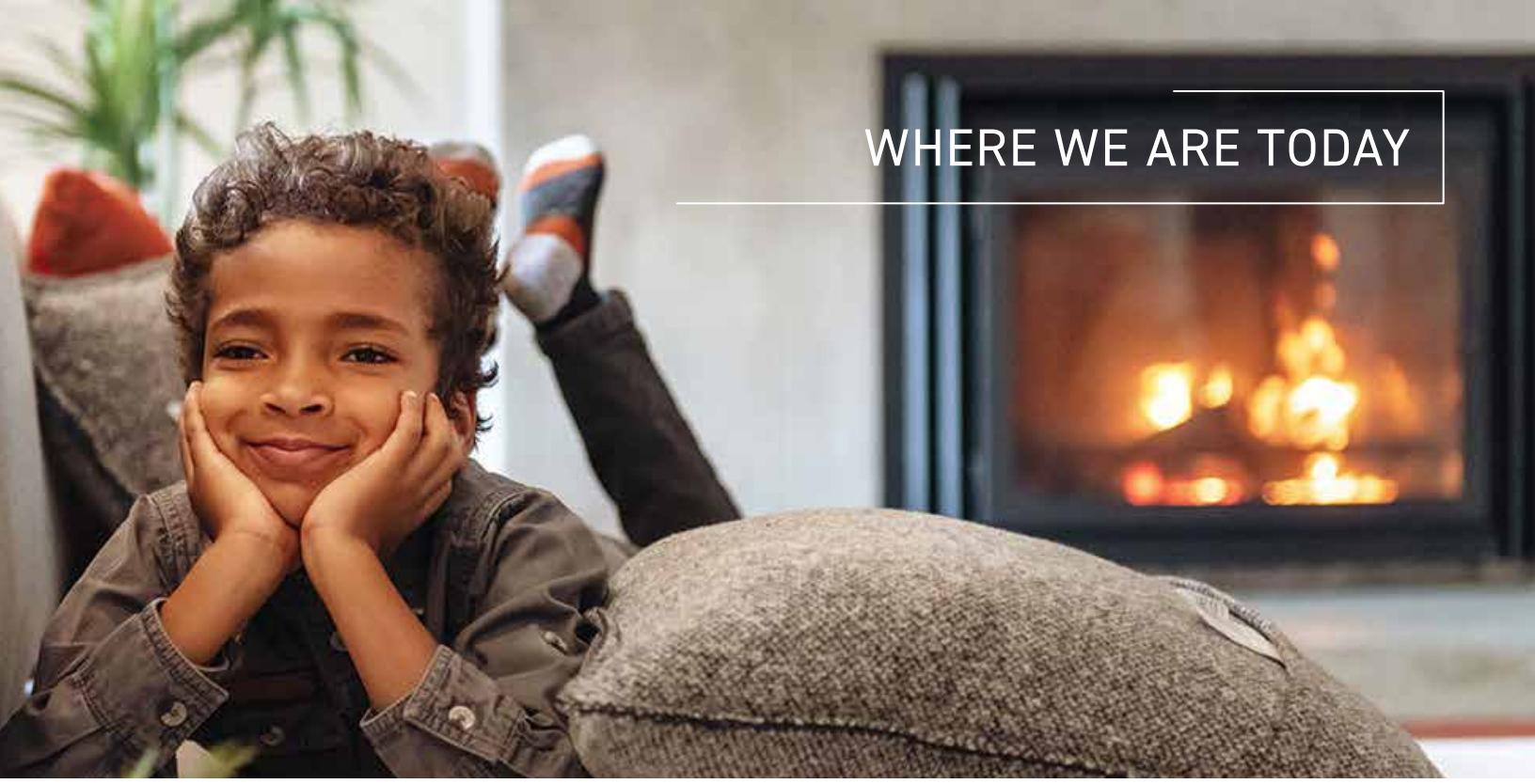


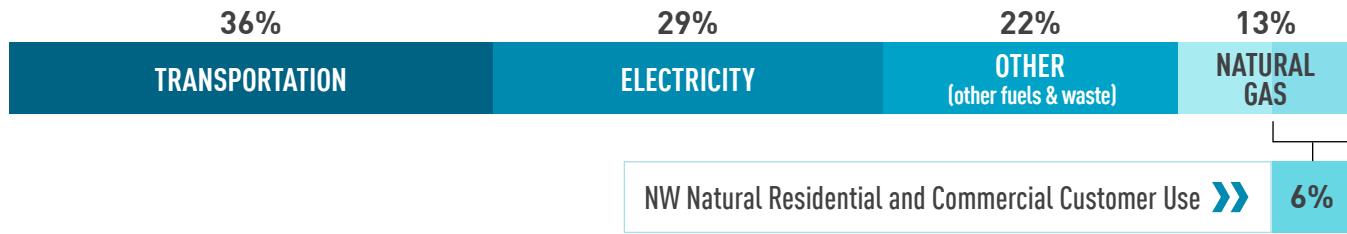
# WHERE WE ARE TODAY



We take pride in delivering reliable, safe and affordable energy in a way that makes us industry leaders. Per J.D. Power's annual independent survey, our customers have given NW Natural a top-2 score in customer satisfaction for large gas utilities in the west for 17 years running.

Natural gas is today's cleanest energy option to meet our region's biggest energy needs reliably and affordably—and we're proud to be providing this essential resource to the communities we serve. On the coldest winter days—those "peak" times for gas and electric demand—NW Natural is providing 90% of the energy our residential space and water heating customers need. Yet the use of the gas we purchase for customers accounts for only 6% of Oregon greenhouse gas emissions. We're working to reduce that number even further.

## OREGON GREENHOUSE GAS EMISSIONS BY SECTOR



Source: Oregon DEQ In-Boundary GHG Inventory preliminary 2019 data.

We've begun to decarbonize the energy we deliver by focusing on a shift from conventional supplies to renewables.

Renewable natural gas (RNG) is produced from organic materials like food, agricultural and forestry waste, landfills and wastewater. With recent advancements in technology, the gases from those waste streams can now be captured, cleaned up and added into our pipeline network to serve homes and businesses.

This turns the problem of waste into a powerful climate solution using our pipeline network already in place. Just as the electric

grid's transmission lines can deliver electricity made from natural gas, coal, wind or solar, our pipelines can deliver natural gas from conventional or renewable sources.

We've begun to acquire RNG on behalf of customers, and have also interconnected new RNG projects onto our system to fuel heavy duty vehicles and displace diesel. Now we're looking for opportunities to deliver the next renewable gas: low-carbon hydrogen, which can be produced in myriad ways to serve multiple industries and end-uses.



## Diversified Solutions

Today we are working with cities on their climate action plans and demonstrating the significant role our system plays in meeting energy demands most efficiently and reliably.

During winter peak-demand periods, the direct-use natural gas system<sup>2</sup> in the Northwest delivers nearly twice as much energy as the electric system, which is also highly dependent upon natural gas during cold weather events. Homes and businesses can rely on natural gas generators and many fireplaces, cooktops and water heaters even when the power is out.

A diversified energy system is fundamentally stronger, more affordable, and more reliable. The electric and gas systems depend on each other to serve our communities—and each system provides different benefits. This diversification helps us effectively meet different energy needs and will be even more important going forward, as climate change and severe weather pose new risks to reliability and resiliency.

Proposals to "electrify everything" put this reliability at risk without advancing emissions reduction goals any differently than innovatively using the gas system already in place. The Northwest electric grid currently faces serious capacity limitations. Driving more peak demand to the electric system will increase this risk.

For the foreseeable future, cities will either be using natural gas for direct heating in homes and businesses or using even more of it to less efficiently generate electricity in natural gas-fired power plants.

Research conducted by the Oregon firm DHM in NW Natural's service territory shows that Oregon and SW Washington citizens don't want bans on new natural gas hookups.<sup>3</sup> Instead, they want choice and a diversified set of solutions to lower carbon emissions affordably. That includes direct use natural gas and renewable natural gas.

So how do we create a decarbonization strategy that leverages the strengths of the natural gas system to get us to our climate protection goals as fast as possible? By building on the foundation of environmental stewardship we have in place today.

## A Systematic Approach to Reducing Emissions

Our legacy of environmental stewardship reflects the values held by us and those we serve here in Oregon and Washington. That legacy is embodied in our innovative and voluntary approaches that go beyond business as usual. These include energy efficiency programs, delivered in partnership with Energy Trust of Oregon, and a rate structure that decouples profits from volumes of gas sold, so as not to incentivize consumption.

We were one of the nation's first gas utilities to complete the modernization of our pipeline network, upgrading older cast iron and bare steel pipelines to more resilient polyethylene and cathodically protected steel. This reduced the potential for fugitive system emissions or corrosion and provides us with an energy system prepared to deliver the low-carbon energy of our future, safely and reliably.

Proactive and voluntary efforts in the past have driven down fugitive emissions associated with gas we procure today as well as the system through which we deliver it.

- NW Natural purchases natural gas from Canada and the Rocky Mountain regions—two of the most stringently regulated (i.e., lower methane leaks) production areas in North America.
- We have developed an emissions screening tool that uses EPA data to prioritize purchases from the lowest emitting producers.
- NW Natural is a founding member of the EPA's Natural Gas STAR Methane Challenge, designed for utilities to share emission-reducing best practices in pipeline construction, maintenance and repair.
- We are also a member of ONE Future, working to promote science-based technology and best practices for dramatically lowering greenhouse gas emissions.
- In 2007, we established a voluntary carbon offset program, Smart Energy, allowing our customers to offset the greenhouse gas emissions associated with use of the product we deliver by investing in methane capture at Northwest dairies. Since then, our customers have funded the equivalent of 1.5 million metric tons of carbon dioxide offsets.

## NW Natural's Pipeline Replacement and Modernization

In the 1980s, NW Natural worked with our public utility commissions to proactively create a pipeline replacement program, and by 2015 the company had replaced all its cast iron and bare steel pipe. Today we operate one of the tightest, most modern natural gas systems in the nation.

An Environmental Defense Fund study led by Washington State University found that methane emissions on our system were 90% lower than EPA assumptions at the time, with more than 99.9% of natural gas flowing through our system ultimately reaching our customers.<sup>4</sup>

<sup>2</sup> "Direct use" gas is all gas that is not used for electric generation.

<sup>3</sup> DHM survey, October/November 2019.

<sup>4</sup> NW Natural's reporting of fugitive methane emissions from our pipeline network to EPA via Subpart W reporting shows that roughly 0.08% of our total gas deliveries is emitted as fugitive methane from our system.

## Continuous Inspection and Monitoring

Completing our pipeline replacement program created a tighter system with fewer leaks and advanced our efforts to distribute natural gas in a safe and environmentally responsible manner. We maintain just over 700 miles of transmission pipelines and approximately 14,000 miles of distribution pipeline, performing preventative maintenance and proactive monitoring, investigating, and repairing potential issues. In 2020, we performed safety inspections on our transmission system at nearly three times the rate required by federal and state regulations, using a combination of direct assessment and technologically advanced inline tools to evaluate the integrity of those transmission pipelines.

Our employees performed approximately 210,000 routine field visits in 2020. We operate a 24/7 emergency hotline so we can immediately dispatch nearby responders if there is a problem.

Learn more about system safety and resilience at NW Natural in our 2020 Environmental, Social and Governance Report: [nwnatural.com/about-us/the-company/sustainability](http://nwnatural.com/about-us/the-company/sustainability).



## Unmatched Energy Storage Capacity

The issue of energy storage has grown more prominent in recent years, as utilities and grid planners look for ways to store electricity produced from wind and solar resources. Electricity must be used as it's generated. In times of system surpluses, those renewable electrons are either sold at deep discounts, or never produced at all due to lack of demand (curtailment). Battery installations offer one way to flex energy availability for short periods, typically by 4-6 hours.

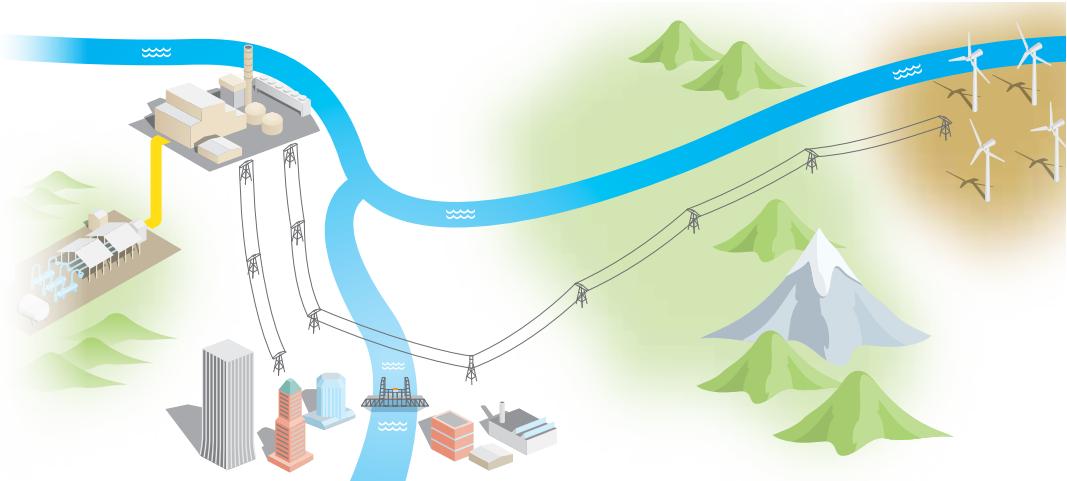
But as electric systems rely more heavily on variable resources like wind, solar and hydropower, the limits and expense of shorter-duration batteries become more apparent—as do the benefits of natural gas infrastructure as a massive, long-term and dispatchable storage resource.

The natural gas grid is built for seasonal variability. Unlike electricity, natural gas can be stored for months or even years after it's produced. From late spring to early fall, system operators fill storage facilities in advance of the winter heating season. This storage provides an additional supply resource that can be used as a hedge against spot market prices or to avoid interstate pipeline constraints during times of peak demand. This storage can be used for low-carbon fuels like renewable natural gas, synthetic gas made from hydrogen and captured carbon dioxide, and potentially even pure hydrogen.

Our facility in Mist, Oregon, provides 20 billion cubic feet of underground storage capacity. That translates into 6 million megawatt hours of renewable storage capability or the equivalent of a \$2 trillion dollar battery.<sup>5</sup> This existing storage is already in place, and can deliver on-demand and is primed to store renewable molecules.

### GAS STORAGE TO BALANCE RENEWABLE ELECTRICITY

A dedicated 4.1 billion cubic feet reservoir and compressor station at our storage facility in Mist, Oregon, supplies Portland General Electric's Port Westward power plant with "no-notice" natural gas service via a 13-mile pipeline. This project, completed in 2019, gives PGE the flexibility and capacity to manage peak demand and the variability of wind, hydro and solar energy by using natural gas as a reliable resource available to generate electricity when needed.



<sup>5</sup> This figure was developed based on the National Renewable Energy Laboratory's Cost Projections for Utility-Scale Battery Storage report (2019), as well as hydroelectric and battery generation data reported in the U.S. Energy Information Administration's Power Plant Operations Report (EIA-923).