NW Natural®

VISION 2050: Destination Zero

NW Natural Carbon Neutrality Scenario Analysis Report

To Our Customers

David H. Anderson
President and
Chief Executive Officer

At NW Natural, we are engaged on multiple fronts to reduce emissions.

The Low Carbon Pathway we launched in 2016 began our planning for renewable energy in our pipeline. In 2019, we commissioned Energy+Environmental Economics to conduct a study designed to achieve the Paris Accord emission reduction targets by 2050, with the results showing how it can be done using NW Natural's existing system.

The release of our Destination Zero report is the next evolution for us. It provides in-depth scenario analysis incorporating a broad spectrum of solutions and advancements that leverage our system for more holistic, economy-wide approaches to greenhouse gas reductions.

NW Natural is a 163-year-old company that has evolved many times since 1859 to meet the essential energy needs of our region. We are committed to implementing climate solutions that work for our environment, our customers, and our communities. The renewable supply is growing, the necessary technology exists, and our modern storage and delivery system is ready.

We are eager to share this important work and our vision forward with our customers, recognizing it will continue to evolve through our energy transition. Scan the QR code to explore the report further.

David H. Anderson

Leading the Way

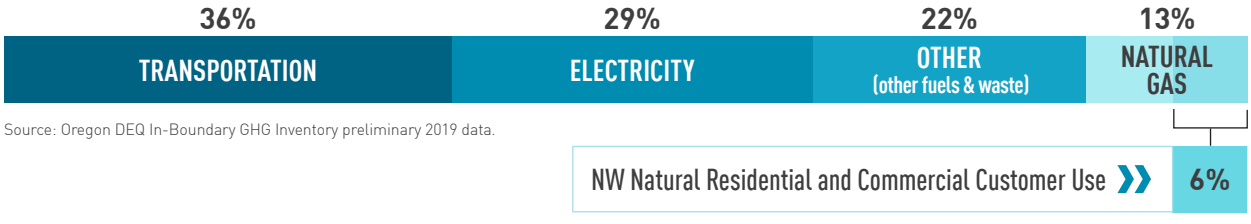
OUR KEY DECARBONIZATION PRINCIPLES

- Helping customers use less is the fastest and cheapest way to reduce emissions. We are dedicated to continuing to help customers conserve energy, save money, and reduce emissions through deep energy efficiency.
- All forms of renewable energy are needed in a balanced, low-carbon future. We are committed to displacing conventional natural gas over time with renewable natural gas and clean hydrogen.
- Communities served by the gas system have greater energy reliability. We need a dual energy system — gas and electric — to handle peak energy loads and to prepare for a future with potentially more extreme weather events. Homes and businesses with gas service can have energy even when the power is out.
- Families and businesses should have a choice of energy options to meet their needs. Energy system diversification and competition provides the best opportunity for accelerated innovation, affordability and dependability.
- We must drive toward carbon neutrality in a way that leaves no one behind. We are committed to pursuing solutions that provide equitable support for our most vulnerable customers.

Innovating Toward Carbon Neutrality

On the coldest winter days NW Natural provides 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.[1] We're working to reduce those numbers even further.

OREGON GREENHOUSE GAS EMISSIONS BY SECTOR



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

Carbon neutrality means having a balance between emitting carbon and absorbing carbon from the atmosphere. In the Destination Zero report, we analyze three different scenarios using various combinations of decarbonization measures (energy efficiency, renewable energy, carbon offsets and carbon capture, utilization and sequestration) that allow us to build upon our existing efforts and realize our vision for a carbon neutral gas utility.

Central to all scenarios is the replacement of conventional natural gas with carbon neutral alternatives like renewable natural gas and clean hydrogen over time.

Renewable Natural Gas

Renewable natural gas is produced from organic materials like food, agricultural and forestry waste, landfills and wastewater. With a similar climate benefit to wind and solar, RNG 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, hydro, wind or solar, our pipelines can deliver natural gas from conventional or renewable sources.

Early Progress on RNG

Within just one year of ground-breaking Oregon legislative rules being in place, NW Natural has signed agreements to purchase and develop 3% of our supply as RNG — enough renewable gas to heat the equivalent of all the homes we serve in Eugene and Corvallis. With wind and solar accounting for 11% of U.S. electric generation after decades of development, we are proud of this early progress.[2]

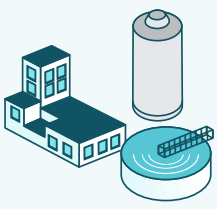
2 https://www.eia.gov/tools/faqs/faq.php?id=427&t=3

1 Our Clark, Klickitat and Skamania County customers' natural gas use accounts for half a percent (0.5%) of greenhouse gas emissions in Washington state: Washington Department of Ecology 2012 GHG Inventory

TURNING WASTE INTO RENEWABLE ENERGY

North American sources of organic waste that can be converted to RNG to displace conventional natural gas are vast—and provide similar climate benefits to wind and solar:

MORE THAN
144
MILLION METRIC TONS
of food waste produced each year



17,000
WASTEWATER FACILITIES

19,000
LARGE FARMS AND DAIRIES

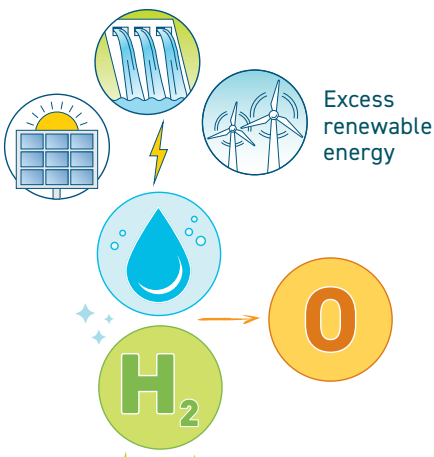
4,400
LANDFILLS

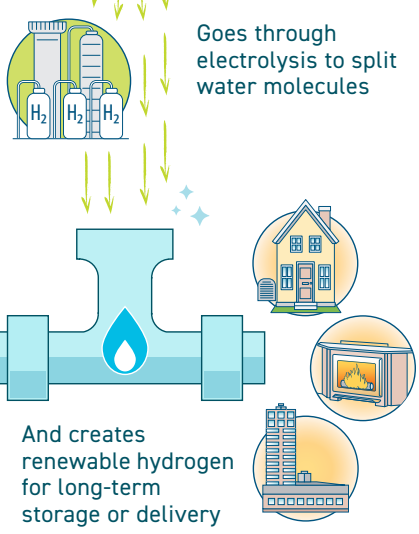
Source: Coalition for Renewable Natural Gas

As we acquire RNG for customers now, we're also looking forward—to opportunities to deliver low-carbon hydrogen, which can be produced in myriad ways to serve multiple industries and end-uses.

Clean Hydrogen

When used as energy, hydrogen emits water vapor—so it's expected to be an important part of energy system decarbonization over the next several decades. Through the power-to-gas process, renewable hydrogen can be created using wind, solar and hydro energy sources that often produce excess power at times of low demand. Renewable hydrogen can be blended with natural gas or converted to synthetic natural gas and used as a direct replacement for conventional natural gas. Clean, low-carbon hydrogen can also be produced by reforming conventional natural gas, paired with carbon capture and storage ("blue hydrogen") to make it carbon neutral.





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**.[3] This existing storage is already in place, can deliver on-demand, and is primed to store renewable molecules.

Hydrogen pathways can deliver clean energy to multiple industries via pipeline infrastructure

3 Cole, Wesley, and A. Will Frazier. 2019. Cost Projections for Utility-Scale Battery Storage. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-73222. https://www.nrel.gov/docs/fy19osti/73222.pdf.

Where we are heading

Our Destination Zero analysis supports what we've believed for some time: Using our existing gas infrastructure in new ways will help our region reach its climate goals faster, more affordably and more resiliently.

We firmly believe the right answer for a net-zero future is a diversified energy system that pairs renewable electrons in the wires overhead with renewable molecules running through the pipes underground.

NW Natural has initiated progress on multiple fronts in support of this vision, including ramping up our RNG procurement and actively supporting the development and utilization of clean hydrogen in the Pacific Northwest.

Building on 163 years of success, we are looking forward—channeling the advantages of our modern infrastructure, our expertise, and our innovative spirit toward what's next: **Destination Zero**

Complete the Destination Zero Quiz for a **CHANCE TO WIN!**

You've read the information included on this insert. You've reviewed the details about NW Natural's vision to get to carbon neutrality by 2050. Now enter for a chance to win one of five amazing prizes.

Here's how to enter:

1. Visit **nwnatural.com/destinationzerosweepstakes**
2. Click on the button to start the quiz (you will be taken to another website to enter)
3. Answer five trivia questions about NW Natural Vision 2050: Destination Zero
4. Supply us with your contact information (information will not be stored and will only be used to select and contact the winners)
5. Five winners will be randomly selected from all qualified entries

What you can win:

GRAND PRIZE
A high-efficiency natural gas furnace, fireplace, OR tankless water heater installed by a NW Natural Certified Contractor

CONSOLATION PRIZES
One of four $100 Visa gift cards

FOLLOW US:

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