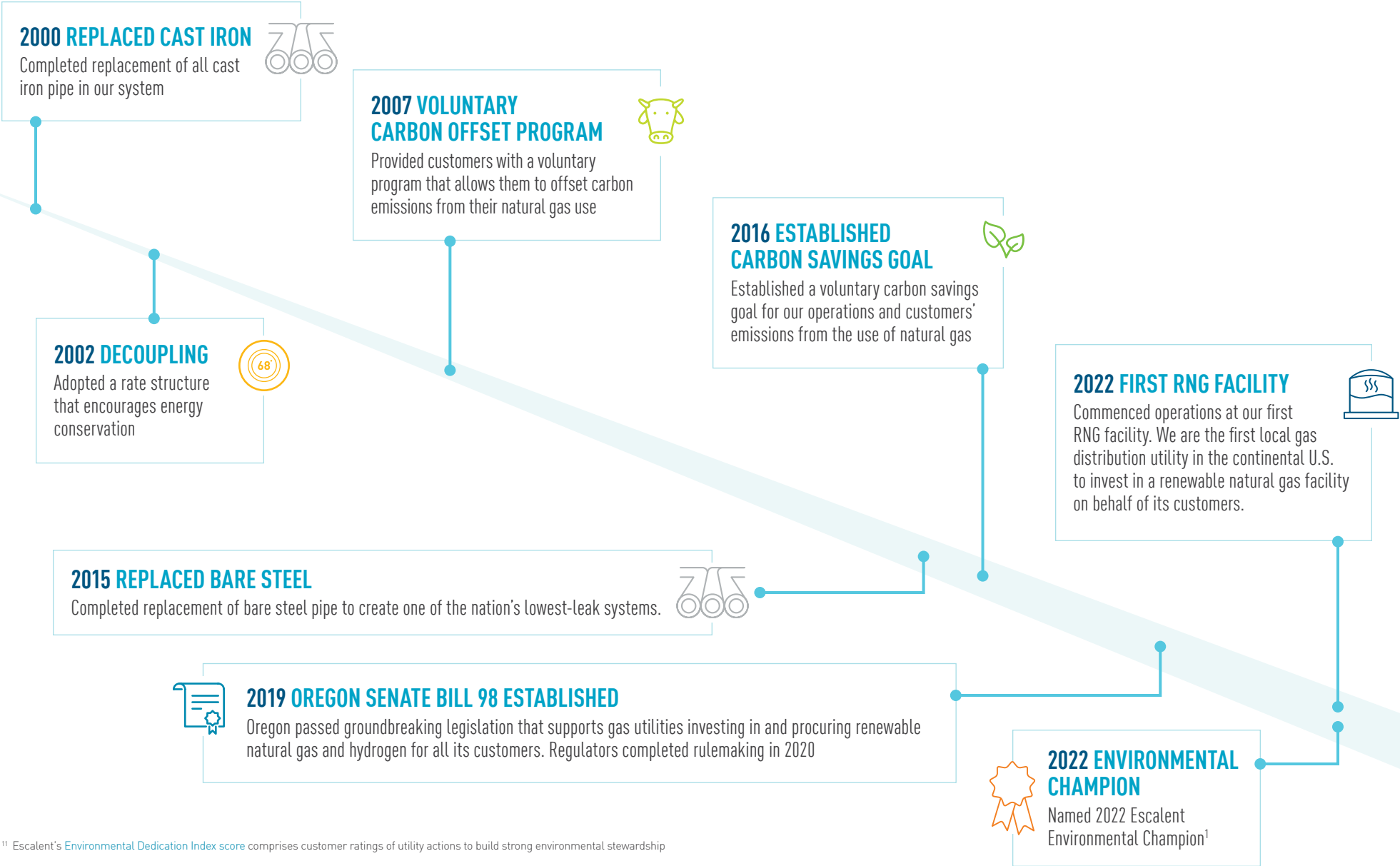


# Environmental Stewardship

NW Natural's core value of environmental stewardship is a driving force behind everything we do. We believe NW Natural has an important role to play in helping our region move to a lower-carbon, renewable energy future in a more resilient and affordable way.

# Building on a Legacy of Environmental Leadership

Our long history of environmental leadership reflects the values we share with the people we serve in Oregon and Washington.



<sup>1</sup> Escalent's Environmental Dedication Index score comprises customer ratings of utility actions to build strong environmental stewardship



## OUR DISTRIBUTION SYSTEM IS A POWERHOUSE FOR DELIVERING NATURAL GAS TODAY AND RENEWABLES IN THE FUTURE

### NW Natural's pipeline system

- Delivers 50% more energy than any other utility in Oregon<sup>12</sup>
- Meets 90% of energy needs for our residential space and water heat customers on the coldest winter days in Portland, Oregon

### 2x the energy

During winter peak-demand periods, the natural gas system in Portland, Oregon, delivers about twice as much energy as the electric system to residential customers

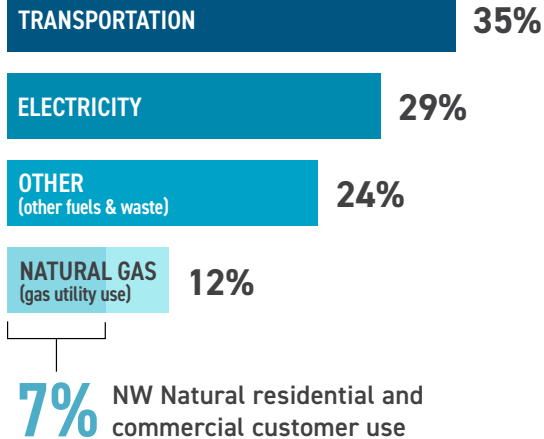
### 7% of Oregon's emissions

The natural gas our residential and commercial customers use accounts for only **about 7% of Oregon's greenhouse gas emissions**<sup>13</sup>

<sup>12</sup> Per data from the Oregon Public Utility Commission, 2021 Oregon Utility Statistics Book

<sup>13</sup> NW Natural sales load data from the Oregon Department of Environmental Quality Greenhouse Gas Sector-Based Inventory 2021

### OREGON GREENHOUSE GAS EMISSIONS BY SECTOR



Source: Oregon DEQ In-Boundary GHG Inventory 2021 data.



### THE ELECTRIC SYSTEM DEPENDS ON NATURAL GAS

Electrical power generation is the largest end-use sector of natural gas in the U.S.<sup>14</sup>

Electric power generators use more natural gas in Oregon than the amount delivered by natural gas utilities to their customers for direct use.<sup>15</sup>

<sup>14</sup> U.S. Natural Gas Consumption by End Use (eia.gov)

<sup>15</sup> 2022 Oregon Public Utility Commission Biannual Report

Reducing emissions is crucial not only for gas utility systems, but also for electrical power generation, which is now the largest user of natural gas in the U.S. and accounts for more gas use than direct residential and commercial customers combined.

## Industry leader in lowering emissions

Our vision of carbon neutrality begins with reducing emissions associated with the natural gas we deliver. The aggressive pipe replacement program we completed in 2015 has yielded important results. We saw a further decrease in fugitive emissions in 2022 compared to 2021 (see NW Natural's Emissions in Appendix). We're also focused on reducing emissions from our operations and our customers' use of natural gas.

## NW Natural named Environmental Champion

NW Natural honors Earth Month every year with events to raise environmental awareness, and in 2022 we had an extra reason to celebrate: On Earth Day, the company was named an Escalent Environmental Champion. Escalent's Environmental Dedication score is based on customer ratings of utility actions to build strong environmental stewardship. In 2022 the survey included 79,223 customers of the nation's largest 140 utilities—electric and combination as well as natural gas providers. NW Natural was one of 31 companies to achieve the Environmental Champion designation in a year when overall scores were at a multi-year high.



# Our Carbon Savings Goal

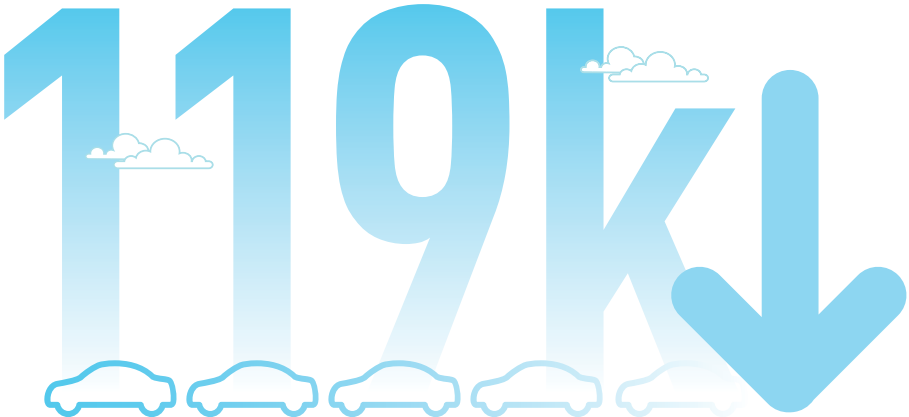
We believe we have a pivotal role to play in helping our region move to a lower-carbon, renewable energy future in a more resilient and affordable way. In 2016 we established NW Natural's [Low Carbon Pathway](#) as a cornerstone of the company's strategic plan, setting a voluntary goal of 30% carbon savings by 2035.<sup>16</sup> This is a unique and aggressive target because it includes emissions from our customers' use of our product as well as emissions from our own operations. In 2022 we remained ahead of target pace for meeting this goal. We're taking steps right now to help achieve deep decarbonization in our region by:

- Lowering energy use through increased energy efficiency and decreased consumption
- Providing customers with a voluntary program to purchase carbon offsets as an interim tool to reduce emissions
- Working to procure conventional natural gas with lower carbon intensity across the value chain
- Evolving our supply to include renewables in the pipelines

<sup>16</sup> Based on 2015 emission levels attributable to NW Natural operations and customer use of our product

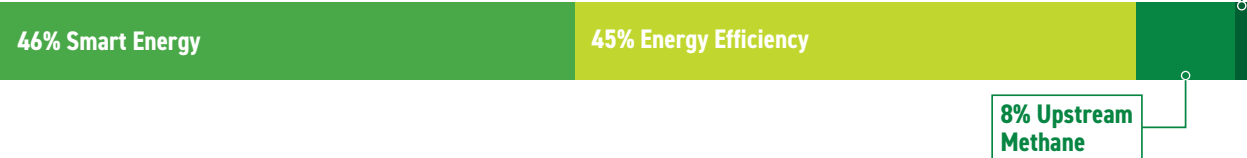
## 2022: Ahead of Target Savings Rate

535,881 metric tons of carbon dioxide equivalent saved.  
**This marks 42% of savings toward goal, ahead of target pace.**



2022 savings equal to removing nearly 119,000 cars from the road. (EPA GHG Equivalencies Calculator).

## 2022 Source of Savings Mix





## Empowering customers to help fight climate change

NW Natural was the first stand-alone gas utility in the U.S. to offer customers a voluntary program that allows them to offset carbon emissions from their natural gas use. Launched in 2007, our Smart Energy program purchases third-party verified high-quality carbon offsets from projects that reduce or prevent the release of greenhouse gases.<sup>17</sup> Many of these [projects](#) are biodigesters on family-owned dairy farms.

In 2022 we added RNG to the Smart Energy program for our Washington customers. RNG is a renewable, lower-carbon fuel produced from methane emitted by livestock manure, landfills, and other waste streams. Adding RNG projects to the Smart Energy program gives Washington customers a new mitigation resource and aligns with recent legislation that requires natural gas companies in the state to offer a voluntary RNG service. In Oregon some of our large commercial customers have asked for a renewable resource option, and at year-end in 2022 we were preparing to request approval from the Oregon Public Utilities Commission to add RNG to our Smart Energy program.

Smart Energy participation increased nearly 14% in 2022, and now more than 11% or about 84,000 of our residential customers are enrolled in the program. They funded over 246,000 metric tons in emission reductions, equivalent to removing over 53,000 cars from the road in 2022. That made Smart Energy the largest contributor to our lower-carbon goal NW Natural set in 2016 and accounted for more than 246,000 metric tons of savings toward the goal. In recognition of customers who sign up for Smart Energy,



## Equipment innovation

We are working to encourage the development of progressive technologies that use less energy. Through our partnerships with GTI Energy,<sup>17</sup> Low-Carbon Resources Initiative and Northwest Energy Efficiency Alliance we seek to transform the market for innovative products like gas heat pumps, net zero energy homes, fuel cells and other progressive energy-saving technologies. We co-founded the North American Gas Heat Pump Collaborative to support accelerated adoption of highly efficient space and water heat equipment that are designed to reduce carbon emissions. Gas-powered heat pumps offer the opportunity to dramatically reduce natural gas consumption while maintaining equipment performance in cold weather—a challenge for electric heat pumps, which lose efficiency in low temperatures. As of 2022, gas heat pumps are currently being piloted in homes and research indicates that new technologies like these have the potential to reduce energy use by 40%<sup>18</sup> or more in the residential sector.

<sup>17</sup> Formerly Gas Technology Institute - <https://www.gti.energy/about/mission-values-history/>

<sup>18</sup> Opportunities for Reducing Greenhouse Gas Emissions Through Emerging Natural Gas Direct-Use Technologies. An American Gas Foundation report prepared by Enovation Partners, 2019

NW Natural makes a donation to Oregon Parks Forever, a nonprofit organization raising funds to enhance and preserve special places and experiences in Oregon's parks.

## Since its inception, the Smart Energy program has funded over 1.9 million metric tons of CO<sub>2</sub>e emissions reductions.

## Reducing energy use

From conservation to energy efficiency improvements, reduced energy use currently accounts for the second largest savings toward our Low Carbon Pathway goal, and we're working hard to increase that savings in the coming years.

- For two decades NW Natural's rate structure has been based on decoupling, which is intended to break the link between a utility's revenues and the quantity of gas used by its customers, removing any financial incentive a utility might have to discourage customers from conserving energy. Today more than 81% of our gas utility revenues are decoupled.
- Through our [Less We Can](#) public awareness campaign, we actively encourage customers to use less energy.

Through Energy Trust of Oregon, we've consistently supported energy-efficiency measures such as cost-effective equipment upgrades, insulation and building improvements that last for many years. In 2022, NW Natural customers provided funding that covered \$35.2 million of energy-efficiency expenses and generated 5.6 million therms in energy savings. That's equivalent to removing greenhouse gas (GHG) emissions from more than 6,500 cars for one year. Energy efficiency and reduced

usage contributed nearly half of the savings we achieved in 2022 toward our voluntary goal of 30% carbon savings by 2035. Since 2016, we have saved about 240,000 metric tons related to efficiency work.

	Energy-Efficiency Expenses (in millions)	Therms of Energy Savings (in million of therms)	Equivalent Cars Removed from Roads
2022	\$35.2	5.6	6,500
2021	\$34.5	6.5	7,500
2020	\$28.8	6.8	7,800

By market, in 2022 our Oregon service territory had 514,000 MMBtu of net energy savings and our Washington service territory had about 43,000 MMBtu of gross savings.

### Advancing energy efficiency in the Northwest

Northwest Energy Efficiency Alliance (NEEA) is a non-profit collaborative that works to advance energy efficiency on behalf of more than 13 million consumers in Oregon, Washington, Idaho and Montana. NEEA supports accelerated adoption of highly efficient space and water heat equipment designed to reduce carbon emissions. After a long history of success stories in the electric sector, NEEA began the nation's first natural gas market transformation effort in 2015. Holly Braun, business development manager at NW Natural, currently serves as vice chair of NEEA's board of directors, which includes representatives of energy efficiency organizations, public interest groups and state governments.

### Gas heat pumps

In 2022, gas heat pumps moved from the laboratory into real-world residential settings. Through a FortisBC pilot program, two companies debuted gas heat pump systems that are intended to replace both a gas furnace and water heater. With a design of 140% fuel-efficiency and a capacity to operate down to -40 degrees F, the technology is projected to save an average Fortis residential customer roughly six months of annual gas use and reduce household GHG emissions by up to about two tons of carbon dioxide (CO<sub>2</sub>) equivalent. To lower emissions even further, the units are designed to operate on renewable natural gas or gas-hydrogen blends without needing any modifications. Gas heat pumps provide cooling as well as heating, with a distinct climate advantage: They don't rely on hydrofluorocarbons (HFCs), which are typically used as refrigerants in electric heat pumps. HFCs are potent greenhouse gases with a global warming potential thousands of times that of CO<sub>2</sub>.



### Industrial energy efficiency

Sodbuster Farms Inc., a NW Natural customer, grows hops in Oregon and uses gas-fired burners to process them for sale to breweries in the Pacific Northwest. The hop production industry has specialized heat processing requirements, and over the years hop growers have moved from wood-fired kilns, to diesel, to natural gas. "As farmers, we care deeply about our land, air, water and community, and natural gas is the cleanest-burning fuel that can be used on our farm," said Douglas Weathers, Sodbuster Farms president. To advance its environmental objectives, the company has focused on reducing gas use by optimizing its drying equipment and introducing state-of-the-art technology. Weathers is planning on more modifications to cut energy use and emissions—and, he said, "We're excited that even cleaner options such as renewable natural gas and hydrogen are coming online."

"We are fully supportive of statewide plans to invest in renewable natural gas and hydrogen. Ensuring the gas pipeline infrastructure is in place means we'll be ready to convert when renewables are available."

— Douglas Weathers,  
Sodbuster Farms President

## Lower-Emissions Natural Gas

Our residential and commercial customers' use of natural gas accounts for just under 7% of Oregon's greenhouse gas emissions, and we're working to reduce that footprint even further. Cutting emissions across the supply chain is foundational to this effort.

- NW Natural sources natural gas from two of the most stringently regulated regions of North America: the U.S. Rockies and Western Canada.
- NW Natural is one of the first utilities in the nation to develop and implement an emissions-screening tool that allows us to understand the carbon intensity of gas supplies and consider environmental impact when we evaluate supply purchases (alongside other key purchasing criteria such as price, creditworthiness and geographic diversity). Through this analysis we can award contracts to lower-emitting producers. Our program reduced the upstream emissions associated with the natural gas production of the product we procure and deliver to customers from our U.S. supply purchases by 34% in 2022.
- We use alternative blowdown practices that reduce emissions from pipeline venting. In 2022, we avoided releasing 1,278 metric tons of CO<sub>2</sub>e, reducing the amount these blowdowns would have vented into the atmosphere by 97%.
- Because the majority of emissions in the value chain occur in upstream natural gas production and processing,<sup>19</sup> we're working with like-minded industry members and trade groups to encourage producers to adopt best practices.




**By targeting gas purchases from more environmentally conscious producers, we have avoided more than 42,000 dekatherms of methane emissions for a year over year savings of more than 43,000 metric tons of CO<sub>2</sub>e.**

<sup>19</sup> U.S. EPA, Inventory of Greenhouse Gases and Sinks: 1990-2018

<sup>20</sup> 2022 Methane Emissions Intensity Report, One Future

<sup>21</sup> Ultra-Low NOx Natural Gas Vehicle Evaluation. Report prepared by University of California Riverside's College of Engineering-Center for Environmental Research and Technology, 2016

<sup>22</sup> <https://www.epa.gov/greenvehicles/learn-about-green-vehicles-compressed-natural-gas#:~:text=CNG%20generally%20creates%20fewer%20smog,%2C%20processing%2C%20and%20distributing%20CNG>

<p><b>NWN FOUNDING MEMBER</b></p> 	<p>The Natural Gas Supply Collaborative is a group of natural gas purchasers that deliver enough natural gas to meet the needs of more than 60 million households. The group focuses on promoting safe and responsible natural gas production practices, along with greater transparency around key issues such as water and land use, air quality, and emissions associated with natural gas production.</p>
<p><b>NWN MEMBER</b></p> 	<p>NW Natural is a member of Our Nation's Energy Future (ONE Future), a coalition representing more than 20% of the U.S. natural gas value chain and committed to reducing methane emissions through adopting science-based standards and best practices. ONE Future has exceeded its goal of reducing methane emissions across the natural gas value chain to below 1% by 2025.<sup>20</sup></p>
<p><b>NWN FOUNDING MEMBER</b></p> 	<p>Methane Challenge Program partners are recognized by the EPA as leaders in reducing methane emissions. As a founding partner, NW Natural is adopting practices such as alternative blowdown methods. Instead of venting gas into the atmosphere when we depressurize pipelines, we flare gas or reroute it to stay on a pipeline—a process known as cross-compression. With these practices we are able to reduce potential greenhouse gas emissions by 90% to as much as 100%. We also use line isolation and drawdown to reduce volume before venting. These are recognized as industry best practices.</p>

## Transportation

Replacing dirtier transportation fuels such as diesel with cleaner-burning natural gas reduces pollutants and is another source of carbon savings. Heavy-duty vehicles that run on CNG rather than diesel emit up to 90% less nitrogen oxide (NOx) air pollutants and particulate matter,<sup>21</sup> and CNG can reduce tailpipe greenhouse gases by about 20%.<sup>22</sup> Emissions also generally do not vary with engine load, as they do with diesel engines. In 2022, NW Natural supplied 14 companies with 5.5 million therms of CNG to power their fleets. Our entire NW Natural CNG fleet was powered by RNG in 2022.

"Transportation is the largest contributor of greenhouse gas emissions in Oregon, at 35%."

— Oregon Department of Energy







# Our Vision of Carbon Neutrality

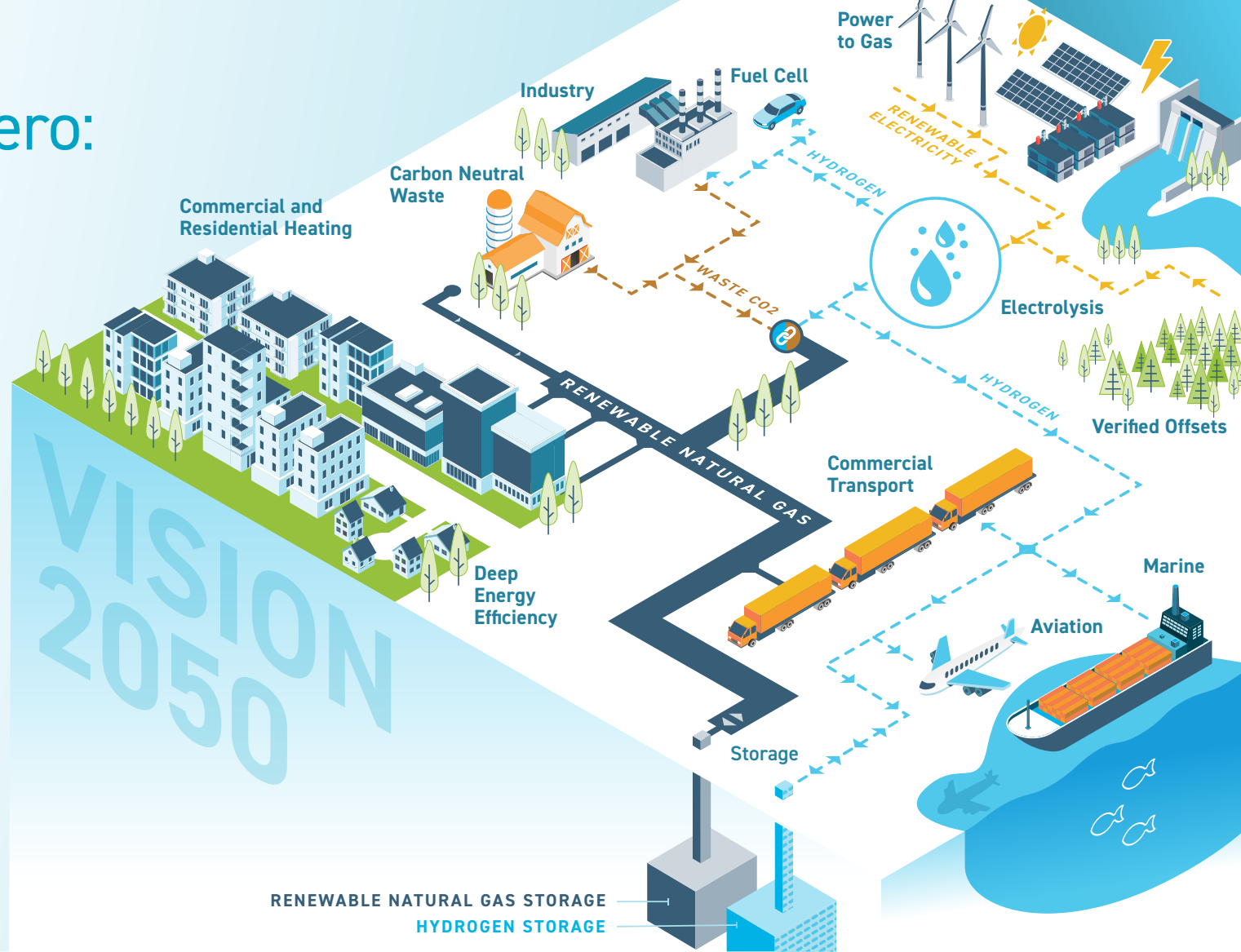
We believe climate change requires rapid innovation and collective action, which is why we're reimagining the role of our system and the fuel we deliver. We're resourced and ready to play a pivotal role in the transition to a diversified, resilient carbon neutral energy system.

# Destination Zero:

Our vision of carbon neutrality

A decarbonizing network:

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



## Vision 2050

Since NW Natural started delivering energy in 1859, the fuel going through our pipes has changed from manufactured gas to natural gas. We're on the way to our next evolution, from natural gas to renewable natural gas and hydrogen.

Our goals are focused on collective action to:

- Further reduce energy use through intensive energy-efficiency measures and new technologies
- Lower the carbon intensity of the product we deliver by shifting from conventional natural gas to renewable natural gas and hydrogen
- Leverage our tight pipeline system and long-duration storage to enable a faster, resilient, cost-effective energy transition
- Look to emerging decarbonization models such as carbon capture, utilization and sequestration that align with our skills and services
- Facilitate adoption of policies that use joint gas and electric system planning and encourage the development of renewables for the pipeline

Every year we focus on taking specific, measurable actions to advance our carbon neutrality vision. In 2022, we:

- Remained on track to meet or exceed our Low Carbon Pathway targets.
- Completed our first RNG project to serve our customers and began construction of a second utility RNG project.
- Interconnected a new RNG facility in Eugene, Oregon onto our system to deliver renewable supplies to the transportation sector.
- Successfully tested a 15% hydrogen blended gas and began using it to heat our training facility in Sherwood, Oregon.
- Entered into a partnership with Modern Hydrogen on an innovative methane pyrolysis technology project to create hydrogen and blend it into our Portland facilities' system.
- Signed contracts with several of our commercial customers to pilot new carbon capture equipment designed to capture emissions from the existing boilers to reduce both energy use and greenhouse gas emissions.
- Advocated for public policy support at the federal and state level to accelerate the development of renewable energy for the pipeline and make it affordable for customers.

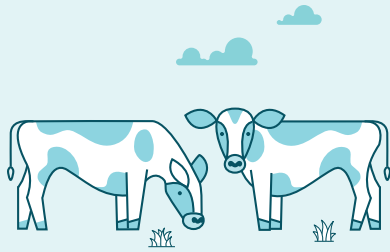


### Our key decarbonization principles

- Helping customers use less energy is the fastest and least expensive way to reduce emissions
- All forms of renewable energy are needed in a balanced, lower-carbon future
- A dual energy system—gas and electric—is essential to handle peak energy loads, provide resiliency, and withstand extreme weather events
- Leveraging our existing modern system and long-term storage capacity in new ways to help develop a renewable energy future while maintaining long-term energy affordability and dependability
- Energy system diversification and competition provide the best opportunity for accelerated innovation
- We must drive toward carbon neutrality in a way that leaves no one behind

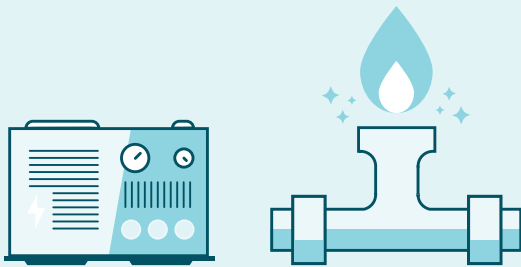


## Our vision of carbon neutrality



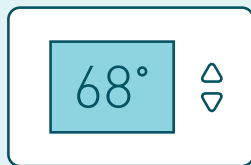
### RENEWABLE ENERGY\*

Renewable sources that do not contribute new carbon to the atmosphere



### COORDINATED ENERGY SYSTEMS

Partnership with cleaner electric systems to create seasonal and peak energy storage



### ENERGY EFFICIENCY

Encouraging end-use innovation for deep efficiency

\*From a lifecycle emissions accounting perspective

## Delivering on Our Vision

At NW Natural, the ultimate vision of carbon neutrality isn't a slogan or an afterthought: It's a longstanding commitment that underpins and shapes our business. We are constantly deepening, refining and living our commitment toward that vision.

- In 2016 we established our Low Carbon Pathway as a cornerstone of the company's strategic plan and began planning for renewable energy in our pipelines.
- In 2018 we commissioned a [deep decarbonization study](#) to evaluate strategies for achieving an 80% reduction in economy-wide greenhouse gases by 2050.
- In 2021 we released our [Vision 2050: Destination Zero](#) report, which presents multiple scenarios, using currently available technologies, toward a carbon neutral future.

### In-depth analysis lays out multiple scenarios of decarbonization

In 2021 we issued our [Destination Zero Report](#), an in-depth scenario analysis for carbon neutrality incorporating residential and commercial customers' use of our products. The scenarios we analyzed incorporate varying applications of:

- Enhanced energy efficiency, coupled with new equipment technologies that reduce consumption
- Lower-carbon fuels such as RNG and hydrogen, along with small amounts of carbon capture
- Verified offsets in amounts that decline over time

Using varying levels of these applications, the report analyzes three different views of the future and demonstrates possible scenarios of carbon neutrality by leveraging our existing natural gas system. All scenarios draw on decarbonization measures that are technically viable today and ready to be implemented with public policy support.

"This is one of the first comprehensive assessments by a gas utility demonstrating multiple scenarios to achieving carbon neutrality."

— Justin Palfreyman, NW Natural President

## Renewable Natural Gas for the Pipeline

Displacing natural gas with increasing amounts of renewable energy is central to our plan. We're already procuring supplies of RNG, a lower-carbon natural gas alternative that can be transported through our distribution system just as wind and solar energy are transmitted through existing electrical wires.

### The renewable fuel that reduces waste

RNG advances long-term carbon neutrality goals while closing the loop on waste. As a renewable fuel that can directly replace natural gas, RNG provides a reliable and cost-efficient decarbonization solution that exists right now and works with the infrastructure we already have. RNG can help mitigate the negative environmental impact of society's growing accumulation of solid waste. In the U.S., that includes methane emissions from 34 billion gallons of [wastewater](#), more than a billion tons of [livestock manure](#), and 144 million tons of [food waste](#) every year. Governments such as the UK and Denmark are already proving this concept by embracing methane capture and utilization as a way to help achieve the net-zero goals outlined in the Paris Agreement.

### RNG is the future, and it's here now

RNG is already in use at major facilities like [WM \(formerly Waste Management\)](#) and the [Port of Seattle](#), which cut emissions by 46% in a single year by switching to RNG. There are well over 450 RNG facilities online or under construction in the U.S. today. Denmark, a leader in the production of biogas in Europe, increased the proportion of biogas injected into its system to almost 25% of total demand as of 2021, and the country reports it is on track to meet [75% of its gas demand from RNG](#) by 2030 and 100% by 2034.



## RENEWABLE NATURAL GAS IS AN ESSENTIAL ELEMENT OF OUR VISION FOR THE GAS SYSTEM BECAUSE:

RNG can reduce greenhouse gas emissions, and it is interchangeable with conventional natural gas, so RNG can be added directly into existing gas pipelines.

RNG can be stored for distribution on demand, and the supply of waste doesn't fluctuate the way weather-dependent renewable energy sources do.

RNG can replace diesel fuel in transportation to reduce emissions and improve local air quality.

## RNG potential

Studies indicate that the potential supply of RNG is sufficient. An Oregon Department of Energy [report](#) identified nearly 40 billion cubic feet of technical potential, almost equivalent to the total amount of natural gas used by all Oregon residential customers today.<sup>23</sup> Nationwide, RNG production potential is [estimated](#) to be 10 to 30 times greater than current production, and the number of production facilities in the U.S. increased by nearly 79% from 2020 to 2022. The [Argonne National Laboratory's database](#) shows a sustained, rapid increase in RNG projects, and RNG investment incentives in the 2022 Inflation Reduction Act could spur significant new growth of the industry.<sup>24</sup>

## RNG PROJECTS ACROSS NORTH AMERICA

### RNG Facilities

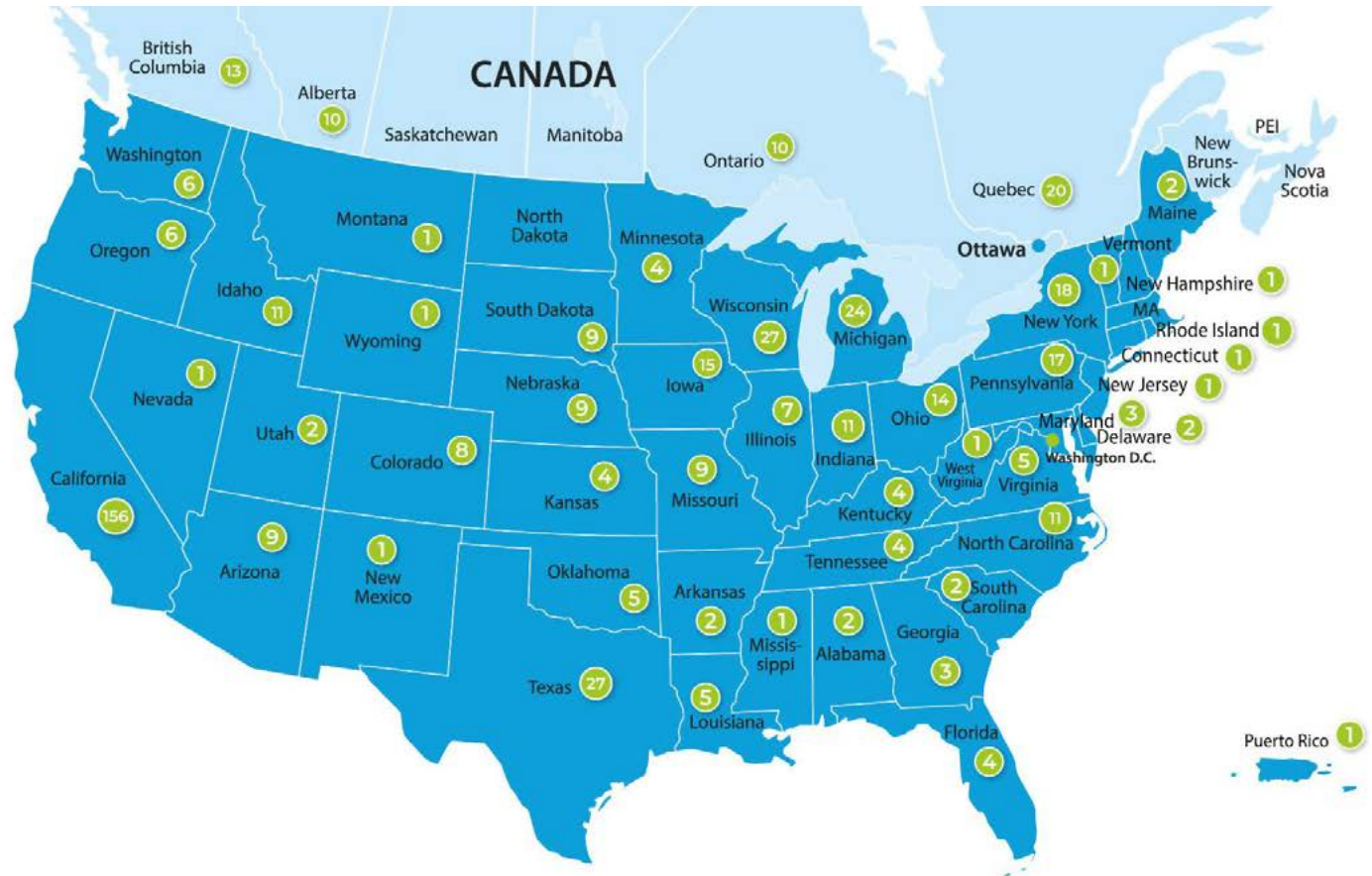
Operational: **268**

Under Construction: **109**

Planned: **136**

**TOTAL: 513**

Source: RNG Coalition map as of 8/2/22






## Oregon supports renewables

In Oregon, [Senate Bill 98](#)—the first legislation of its kind in the U.S.—allows gas utilities to procure renewable natural gas, and eventually renewable hydrogen, for customers. The law outlines voluntary goals for adding as much as 30% RNG into the state’s pipeline system by 2050 and allows gas utilities to use up to 5% of their revenue requirement to cover the incremental cost. In 2021, we had agreements with options to purchase or develop RNG totaling 3% of our current annual sales volume in Oregon. Washington state passed House Bill 1257 in 2019, which also supports renewable energy procurement and investment by natural gas utilities.

## Our renewable natural gas projects

NW Natural was one of the first movers in the market for RNG, which wasn't significantly developed even five years ago. As a result, we've been positioning ourselves to play a key role in the market as it develops. We have a full-time staff devoted to pursuing supplies of RNG with a focus on getting the best possible price on behalf of our customers. Our NW Natural renewables team, which we believe to be the first of its kind in the U.S., is continuously pursuing contracts and establishing long-term relationships with RNG producers, developers, and feedstock owners.

NW Natural advanced the company's RNG strategy on multiple fronts in 2022:

- Our first biogas facility began flowing RNG to heat homes and businesses. The RNG is produced from waste at a meat-packaging plant through a [partnership](#) with Tyson Foods. NW Natural is the first local gas distribution utility in the continental U.S. to invest in and own an RNG facility on behalf of its customers.
- We completed the bulk of construction of a biogas facility at a second Tyson processing plant.
- The Metropolitan Wastewater Management Commission in Eugene became the first wastewater facility in Oregon to produce RNG, and we partnered with the commission to inject the RNG into our system—the first wastewater interconnect in Oregon.  [Watch a video about the project.](#)
- We issued our third request for proposals (RFP) for RNG resources, which attracted bids representing about 17% of NW Natural volumetric sales in Oregon.
- In the first year of our 21-year [agreement](#) with the RNG producer Archaea Energy Inc., we helped support the development of RNG projects while generating revenue from those projects in high-value RNG markets and returning that revenue to our customers.<sup>25</sup>

<sup>23</sup> Oregon Department of Energy, Biogas and Renewable Natural Gas Inventory SB 334 Report to the OR Legislature, 2018

<sup>24</sup> S&P Commodity Insights - [US RNG Approaches Maturity As Lenders Eye 50% Production Growth By 2024](#)

<sup>25</sup> Under Oregon law, NW Natural is able to develop RNG projects and either transport the RNG directly to our customers or sell it and detach the environmental attributes to be used for our customers' benefit.

## Oregon Senate Bill 98 supports volumetric RNG targets

2025 <b>10%</b>	2030 <b>15%</b>	2035 <b>20%</b>	2040 <b>25%</b>	2045 <b>30%</b>
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## TAKING THE LEAD ON RNG

NW Natural is a member of the Coalition for Renewable Natural Gas, a member-led nonprofit representing nearly 300 companies, municipalities, universities, and organizations dedicated to advancing RNG through policy and education. The coalition's Sustainable Methane Abatement & Recycling Timeline is an initiative to capture and control methane from 43,000+ organic waste sites in North America by 2050. NW Natural director of renewable resources Anna Chittum served as chair of the coalition's Leadership Advisory Board for Advocacy in 2022.

NW Natural is also a member of the American Biogas Council, a national trade association representing the entire U.S. biogas industry and dedicated to maximizing the production and use of biogas from organic waste.

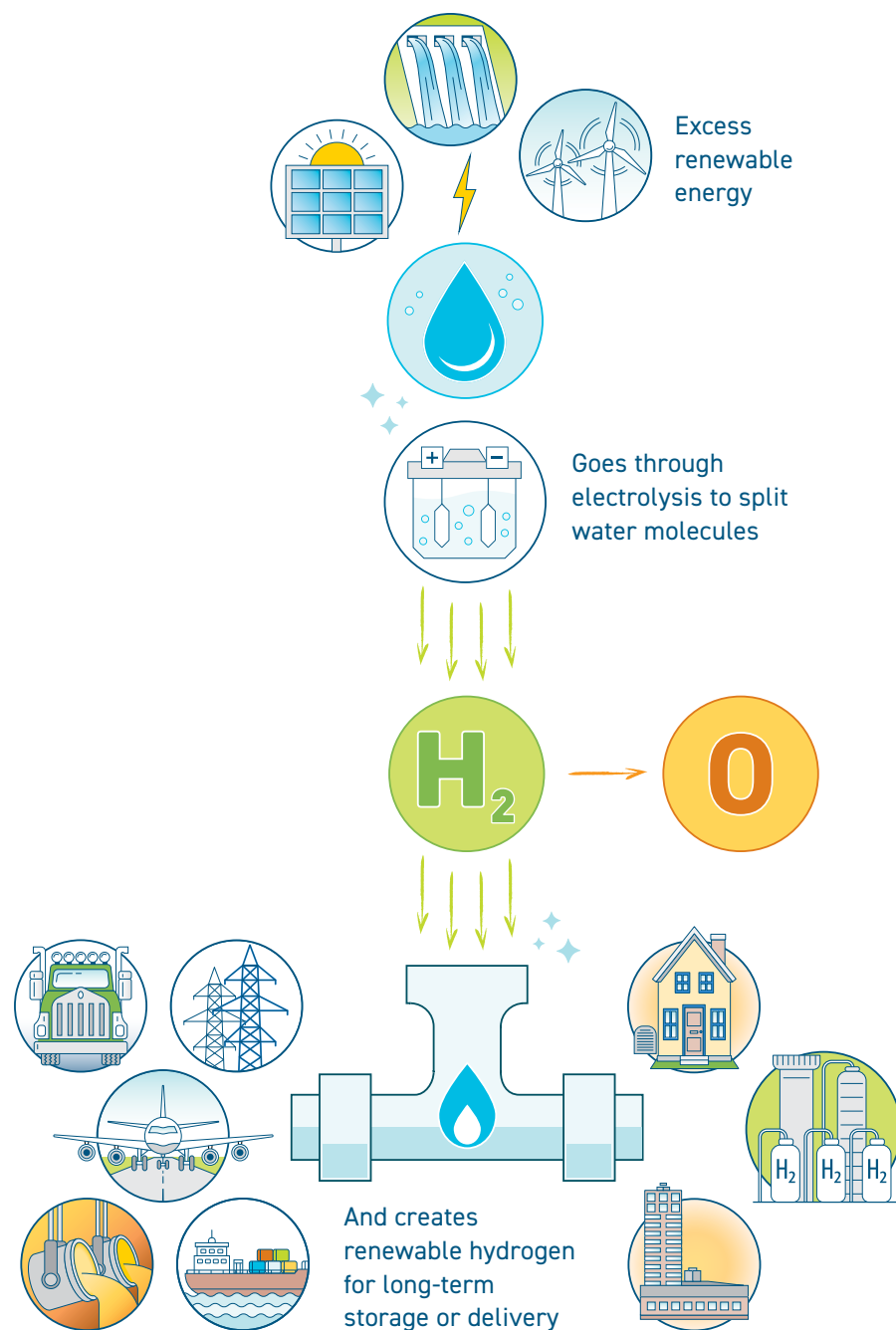
Mary Moerlins, NW Natural director of environmental policy and corporate responsibility, served in 2022 as vice chair of the American Gas Association's Climate and Sustainability Committee, which champions renewable development and leveraging the pipeline delivery systems for a decarbonized future.

# Hydrogen: The Next Milestone on Our Low Carbon Pathway

Clean hydrogen<sup>26</sup> is a key piece of our vision to achieve carbon neutrality. It's a versatile fuel at the point of use and can be blended with natural gas in our existing pipelines to help decarbonize the gas system. Hydrogen is made in a range of ways that result in lower emissions than conventional methods. It can be created using renewable electricity, renewable biofuels, and natural gas paired with carbon capture and sequestration. We see significant opportunities for bringing hydrogen into our energy mix at a large scale.

## Hydrogen is key to decarbonization

- Hydrogen has zero CO<sub>2</sub> emissions at the point of use.
- Conventional natural gas can be blended with hydrogen in existing natural gas pipelines to reduce emissions and scale supply quickly.
- Hydrogen can be stored on a large scale for long periods of time for delivery when it's needed, adding stability and resilience to the energy system.
- Surplus electricity from wind and solar can be used to produce hydrogen, which can be stored.
- Hydrogen can be produced from diverse domestic resources, contributing to energy independence.
- "Hard to abate" sectors that currently rely on fossil fuels for high-temperature energy and other specialized requirements can be decarbonized with hydrogen.



<sup>26</sup> Defined in the 2022 Inflation Reduction Act as "The term 'qualified clean hydrogen' means hydrogen which is produced through a process that results in a lifecycle greenhouse gas emissions rate of not greater than 4 kilograms of CO<sub>2</sub>e per kilogram of hydrogen."

## Our hydrogen projects

### Using blended hydrogen in our own facilities

After several years of initial testing, in 2022, we stepped up our hydrogen blending efforts to 15% to heat NW Natural's resource center and training facility in Sherwood, Oregon, the first facility in the state to receive blended hydrogen. We also tested the 15% blend on end-use equipment like furnaces, fireplaces, and water heaters. Today we're working on blending at 20% levels.

Countries like the Netherlands, United Kingdom and Germany have been testing 20% hydrogen blending for some time. In fact, industry tests in Europe are now going beyond 20% blends to test the efficacy of higher volumes of hydrogen in the existing gas system and equipment. Our engineering team is following this work closely as we contemplate next steps to prepare our system for a hydrogen future.

### Generating hydrogen for our pipelines

In 2022 NW Natural formed a partnership with Seattle-based Modern Hydrogen to generate hydrogen on-site at our facilities.

Modern Hydrogen's groundbreaking technology is designed to strip the carbon from natural gas and turns the decarbonized gas into hydrogen at the point of use, without the need for new infrastructure or storage. This process—called methane pyrolysis—is designed to produce hydrogen and solid carbon as outputs, and the carbon can be sequestered or used to make products such as asphalt, construction materials, automobile tires and soil amendments ([see a video about the technology](#)). Unlike other hydrogen production methods, Modern Hydrogen's technology requires no electricity or catalysts. Generating the hydrogen on-site reduces supply-chain risk and eliminates fuel transportation.

## Unprecedented support for hydrogen

Policymakers across the globe are backing hydrogen as essential to achieving energy security and carbon neutrality. More than 30 countries have policies for creating a stable domestic source of hydrogen, with large-scale projects in progress from Western Europe and Australia to Kazakhstan and Mauritania. In 2022, the European Commission put forward a plan to fast forward the transition to cleaner energy, including a "[hydrogen accelerator](#)" concept to scale up the deployment of renewable hydrogen.

In the U.S., some utilities are already delivering hydrogen blends through natural gas pipelines. Hawai'i Gas has been using up to [15% hydrogen](#) in its distribution system since the 1970s, and New Jersey Natural Gas Co. recently completed the first [project](#) on the East Coast to inject renewable hydrogen into gas distribution pipelines and begin flowing it to customers. Gas utilities have more than two dozen hydrogen [projects](#) planned or

underway nationwide. On the research and development side, SoCalGas has built a demonstration [hydrogen powered microgrid and home](#) that converts solar energy into hydrogen, which is blended with natural gas and used in the home's heat pump heating, ventilation and air conditioning unit, water heater, clothes dryer and gas range. SoCalGas is leading an ambitious initiative to develop the nation's first [hydrogen hub](#), which could deliver hydrogen in an amount equivalent to almost 25% of the natural gas it delivers today.

"Repurposing natural gas pipelines for the transmission of hydrogen can cut investment costs 50-80%, relative to the development of new pipelines."

— IEA [Global Hydrogen Review 2022](#)

NW Natural is working with technical partners to determine how to convert our large industrial customers from natural gas to pure hydrogen. We have evidence it can be done, because there are 1,600 miles of hydrogen infrastructure already operating successfully in the U.S. today.



## The U.S. is investing in clean hydrogen

Federal initiatives have created new potential for accelerating the deployment of hydrogen in gas distribution systems. In August 2022, U.S. lawmakers included a lower-carbon hydrogen production tax credit in the Inflation Reduction Act, the nation's largest-ever investment in cleaner energy. Additionally, the U.S. Department of Energy advanced a plan to invest \$8 billion to develop several regional hydrogen hubs. The DOE's [Hydrogen Shot](#) program, launched in 2021, aims to accelerate breakthroughs in hydrogen technology and cut the cost of hydrogen by 80% in one decade, to \$1 per kilogram. The department projects that if Hydrogen Shot goals are achieved, they can lead to a fivefold increase in hydrogen use.<sup>27</sup>



## Collaborating on hydrogen

The transition to hydrogen will require broad support and investments in best practices and science-based research. We're active in the following groups: Renewable Hydrogen Alliance (NW Natural is one of five founding members), Center for Hydrogen Safety, Low-Carbon Resource Initiative, and HyReady. We're partnering with other North American utilities to map out the technical tests we need to do at different blending percentages and share the learnings gained through hydrogen pilot projects. NW Natural is also working with peers in the U.S. and Canada to develop a [North American plan](#) similar to the European Hydrogen Backbone, which envisions developing a 23,000-kilometer hydrogen grid across Western Europe by 2040.

## Meeting with global renewable energy leaders

NW Natural technical teams joined Oregon and Washington state policymakers on two fact-finding trips to Denmark in 2022 to understand how that country is implementing RNG and hydrogen strategies. Denmark is a leader in the production of biogas in Europe, and the Danish government has secured EU funding to build capacity for producing six gigawatts of renewable hydrogen by 2024—equivalent to more than 18 million solar panels. Rather than dismantling its gas system, Denmark is looking at [installing more pipelines](#) and repurposing existing gas lines. During the visit, the NW Natural team repeatedly heard from government agencies, think tanks and gas companies that Denmark is relying on multiple energy sources to decarbonize, including RNG, hydrogen, and renewable electricity. Molecules play an important role in the country's energy system today, and Denmark is doubling down on pipeline infrastructure, with plans in development for a hydrogen backbone transmission system.

<sup>27</sup> US Department of Energy, Energy Earth Shots: Hydrogen Shot: An Introduction, 2021







# The Gas System Delivers What We Need for a Cleaner Energy Future

Leveraging our existing natural gas system in new ways is our priority. We are seeking paths to a renewable energy future with long-term dependability, resilience and affordability.

## A coordinated energy system: Two systems are better

To meet the needs of our communities and decarbonize the energy system, our region will need an integrated portfolio of diverse lower-carbon energy sources, delivered through pipelines as well as wires. A diversified energy system is fundamentally stronger and more affordable—and diversification will be even more important as climate change and severe weather pose new risks to reliability and resiliency.

- **Continued reliability:** During winter peak-demand periods, the natural gas system in Portland, Oregon, delivers about twice as much energy as the electric system to residential customers. The gas system is critical for energy reliability in a region where the electric grid already faces serious capacity limitations.<sup>28</sup> In the future a gas system with renewable molecules can complement electric renewables, adding stability to the entire energy system.
- **Capacity and cost:** NW Natural delivers 50% more energy than any other utility in Oregon.<sup>29</sup> To handle that load without the gas system, the electric system would need to increase substantially, requiring intense investment to build new transmission and distribution lines and deploy batteries for storing renewable energy. That would come with a high price tag, and the investment in batteries to store renewable energy would drive the cost even higher. Meanwhile, the infrastructure for RNG distribution exists today.
- **Community impacts:** Some natural gas appliances and generators can operate in a power outage and can operate on RNG, providing critical energy resiliency benefits during extreme temperatures. Efforts to mandate electric equipment would eliminate optionality and create new energy system reliability risks.
- **Challenging sectors:** One of the world's biggest climate challenges is decarbonizing fossil energy uses that cannot be electrified. Among these so-called "hard-to-abate" sectors are major industries that rely on fossil fuels, including steel, cement, chemicals, and building materials, which together are responsible for approximately 30% of the world's annual CO<sub>2</sub> emissions.<sup>30</sup> RNG and hydrogen could fuel these sectors in the future.

- **Current state of electric generation:** Electric utilities are the biggest users of natural gas in the U.S., and they currently rely heavily on natural gas to back up renewables that provide intermittent energy for power generation. For the foreseeable future,<sup>31</sup> cities are likely to be using natural gas for direct heating in homes and businesses or using it less efficiently to generate electricity in power plants where energy is lost during electric generation and transmission.

"An energy system with renewable electrons delivered over wires and renewable molecules delivered underground gives our communities a more effective hedge against potential risks posed by more extreme weather, and a more cost-effective way to reduce emissions."

— Kimberly Rush, NW Natural  
Senior Vice President and Chief Operating Officer

## Unmatched storage capacity

As the world transitions to decarbonized energy systems, long-duration storage of renewable energy will be critical. Our natural gas infrastructure already provides a massive, long-term storage resource that makes it possible to deliver energy on demand to customers all year long. We envision that in the future, the storage facilities we currently have in place could be used to store RNG or hydrogen. Leveraging these unique assets can have significant benefits for decarbonization strategies across the energy sector because:

- The gas system in the U.S. can deliver 2.5 times the energy of hydrogeneration facilities<sup>32</sup> and gas storage provides about 1,500 times the energy from current large-scale utility batteries.<sup>33</sup>
- Gas storage facilities can make it possible to provide renewables at a significant cost advantage when compared to the battery storage that would be needed to decarbonize the electric grid.

<sup>28</sup> Northwest Power and Conservation Council, 2019 <https://www.nwccouncil.org/energy/energy-advisory-committees/resource-adequacy-advisory-committee>

<sup>29</sup> Per data from the Oregon Public Utility Commission, 2021 Oregon Utility Statistics Book

<sup>30</sup> Harvard School of Engineering & Applied Sciences - [Clean Hydrogen: A long-awaited solution for hard-to-abate sectors](#)

<sup>31</sup> [Global gas outlook to 2050 | McKinsey](#)



## NW Natural currently has 20 billion cubic feet of underground storage—equivalent to the capacity of a battery that would cost about \$2 trillion in today's market.<sup>34</sup>

- A large power-to-gas hydrogen plant can enable renewable energy storage in the gas system for less than half the cost per kilowatt hour of a battery storing the same energy.<sup>35</sup>
- The gas system can help protect customers from service interruptions as the demand for energy continues to grow and the electric distribution system relies more heavily on weather-dependent renewables like solar and wind that deliver an intermittent supply of energy. NW Natural's existing storage can hold 6 million MWh of energy that can be delivered whenever it's needed.

### Resilience

In the coming decades the U.S. energy system will need to be resilient to an increasing number of catastrophic events. The natural gas system's underground infrastructure is less vulnerable than above-ground systems to hurricanes, fires, winter storms, and other extreme events associated with climate change. This ability to withstand disruption will be needed for the transition to a carbon-neutral future, along with the flexible, large-scale storage the gas infrastructure provides. To ensure resilience, the energy system needs pipeline delivery infrastructure and storage capabilities meeting both short- and long-duration needs.<sup>36</sup>

<sup>32</sup> Source: EIA Weekly Natural Gas Storage Report - Withdrawals are calculated and aggregated from a weekly regional report. The figure for hydroelectric generation is the total net generation from hydroelectric facilities and does not distinguish between what can and cannot be stored.

<sup>33</sup> Source: EIA 923 Form - Hydroelectric and battery generation are pulled from generator level data identified with prime movers "HY" and "BA", respectively. Net generation is aggregated for hydroelectric generators and gross generation is aggregated for batteries.

<sup>34</sup> Prices based on NREL <https://www.nrel.gov/docs/fy19osti/73222.pdf>. That's equivalent to about 6 million megawatt hours of storage. To convert natural gas volumes to MWh for comparison, this figure uses a national average heat content of 1036 btu/cf and a direct energy conversion of 0.29307 MWh/MMBtu

<sup>35</sup> NREL - <https://www.nrel.gov/docs/fy19osti/73222.pdf>

PNNL - [https://www.energy.gov/sites/prod/files/2019/07/f65/Storage%20Cost%20and%20Performance%20Characterization%20Report\\_Final.pdf](https://www.energy.gov/sites/prod/files/2019/07/f65/Storage%20Cost%20and%20Performance%20Characterization%20Report_Final.pdf)

Caltech source [published in Joule] - [https://www.cell.com/joule/pdfExtended/S2542-4351\(20\)30325-1](https://www.cell.com/joule/pdfExtended/S2542-4351(20)30325-1)

<sup>36</sup> 2021 American Gas Foundation/Guidehouse report, Building a Resilient Energy Future



### What would it take for electricity to meet residential gas use on a peak winter day?

December 22, 2022, was a cold day—it was a record send-out day for NW Natural. Between 8–9 a.m., NW Natural delivered approximately 41 million cubic feet of gas, of which about 23 million served our residential customers. NW Natural commissioned a consulting firm to help estimate what it would take for our local electric system to serve that same customer load for just that one hour. The preliminary analysis found that if all our residential customers' appliances were replaced with electric ones, it would require more than 3.4 gigawatts of new electric capacity to provide the same energy our system did.

To put this amount of energy into perspective, it's equivalent to seven new 450-megawatt natural-gas fired power plants, which would cost roughly \$4 billion to build. But by state policy, new gas power plants are likely very challenging to build in the Northwest, so we wanted to also explore what it would take with only electric renewables.

To rely on a combination of wind, solar, and battery storage would require about 14 GW of new capacity at a cost of approximately \$20 billion—and that's using National Renewable Energy Lab (NREL) and Berkeley National Labs capital cost data (not including any potential incentives from the Inflation Reduction Act). Based on NREL estimates, it would also require about 700 square miles of land to build all that new infrastructure on. Importantly, these estimates don't include the incremental electric transmission and distribution system costs or the cost to change out end-use appliances.

This example illustrates the value of the natural gas system for providing reliable energy to our communities when they need it the most.

### Polling shows Northwest voters want a decarbonized pipeline

A poll conducted in late 2021 in NW Natural's service territory by the independent research firm DHM shows citizens in Oregon and Southwest Washington want a diversified set of solutions for decarbonizing the energy system. Survey respondents overwhelmingly said they want access to all forms of renewable energy—including renewable natural gas.

78%

voters value the natural gas system for its critical role in lowering emissions with both affordability and reliability as top priorities.

78%

of voters support local government's efforts to encourage the use of renewable natural gas.

73%

of voters agree that families and businesses should have a choice of energy options to meet their needs and not have those choices mandated by their local government.



## Public Policy Support

The effort to decarbonize the electric grid has depended on public policy that supports the development of renewable power sources, and policy is equally important in decarbonizing the gas system. We're actively advocating for thoughtful design of regulatory programs in Oregon and Washington state. We are excited about early steps such as Oregon SB 98 and Washington HB 1257, which creates a pathway for RNG, and we are also working toward additional policy support to accelerate the development of renewable energy for the pipeline and make it affordable for gas customers. At the federal level we partner with other utilities to support state and federal incentives for RNG and hydrogen.

## Where We Go from Here

NW Natural is moving forward on multiple fronts to advance our vision of becoming a provider of carbon neutral energy. We're actively supporting the rapid development and deployment of solutions like gas heat pumps and water heaters that don't require electric ignition, hybrid systems and hydrogen-ready appliances and processing equipment. And we're aggressively pursuing the adoption of renewable fuels for the gas distribution system.

### Energy equity

Our climate plans and actions are guided by our conviction that opportunity is found in new ideas and diverse perspectives. Our core value of caring includes principles of diversity, equity, inclusion and belonging, and that value is central to our vision of how NW Natural intends to contribute to a future where everyone in our region has access to lower-carbon, reliable energy.

It is critical that customers, communities and other stakeholders take part in discussions and decisions about transforming the energy system. That's why in 2022 we launched a [Community and Equity Advisory Group \(CEAG\)](#) to bring historically underrepresented voices, perspectives and lived experiences to our energy and operational planning. One of the group's important functions is to provide NW Natural with direct feedback to help us drive toward carbon neutrality in a way that leaves no one behind. We seek input from this group on matters such as energy system planning, renewable resource development, and keeping the energy we deliver affordable so those we serve are not energy burdened.

We also have an employee-led Sustainability and Equity Engagement Committee (SEEC) within the company that works with community-based organizations to help influence policy and promote adoption of environmentally and socially sustainable practices.



### What's next

Our nation is at the beginning stages of developing renewables for the gas system. As the electric system works to increase wind and solar generation from 13.6% in 2022, we need to aggressively accelerate development of renewables for our pipeline networks. We're pleased with the progress we've made at NW Natural, and we're continuing to build on our long history of success—channeling the advantages of our modern infrastructure, our expertise, and our innovative spirit in support of Vision 2050: Destination Zero.



# Environmental Stewardship Is A Priority Within Our Organization

Our values are reflected in our operations, at our facilities and through policies and procedures that are designed to protect our environment as we serve customers.

## Energy-efficient facilities

All newly constructed or remodeled NW Natural facilities are built with environmental stewardship, seismic resiliency, and employees' health and wellness in mind.

Our headquarters and operations center in Portland is LEED Core and Shell Gold certified, meeting the U.S. Green Building Council's rigorous standard for healthy and sustainable buildings. A range of features allow us to use less energy, conserve natural resources, minimize waste and support our strategic goals:

- **Energy conservation measures** – Through our high-efficiency building envelope (wall, roof and window assemblies), efficient heating, ventilation and air-conditioning system and controls, 100% LED lighting and other measures, we estimate energy cost savings for the building's core and shell of approximately 28% annually, compared to a code-compliant building—more than 550,000 kilowatt hours and approximately 8,000 therms of natural gas saved.
- **Water savings** – Efficient plumbing fixtures that use approximately 40% less water than code-compliant fixtures reduce water demand, along with a drip irrigation system to efficiently water native plants on our rooftop deck. In 2022, we used approximately 463,760 gallons of water.
- **Use of green building materials** – Nearly 21% of the materials cost for the building core and shell construction came from recycled materials, reducing environmental impacts of extracting and processing virgin materials.
- **Convenient downtown location** – Our headquarters are conveniently located in our downtown core within walking distance of transit stops for public bus lines, light rail and the streetcar. We provide secure and indoor bicycle parking to further encourage sustainable transportation alternatives and reduce pollution from automobile use.
- **Onsite recycling and composting** – To limit waste, each floor is equipped with central recycling and compost stations.



## CORE AND SHELL GOLD CERTIFIED

Our building supports employees' health and wellness with an onsite wellness center, locker room and indoor bike parking, ample daylight in work areas and access to the outdoors and nature on our rooftop deck.

## Lower-carbon operations

NW Natural implemented its own company-wide goals to achieve net zero emissions across our company's operations, including our fleets and facilities.

- In 2022, NW Natural used approximately 13.5 megawatt hours of electricity and 5.8 million therms of natural gas in our own operations.
- For our use of natural gas, we pay for carbon offsets through our Smart Energy program. We became our first Smart Energy customer when the program launched in 2007, and since 2020 we've offset 100% of the CO<sub>2</sub> associated with our natural gas heating.
- We are part of the Energy Trust of Oregon's [Strategic Energy Management program](#), which helps us continually improve our own operations through equipment and building choices as well as employee behavior. In 2022, we expanded our involvement in the program to now include six enrolled facilities, up from three in 2020.
- We are examining additional renewable electricity program options, and we expect to use increasing amounts of renewable natural gas in the future as we continue to procure RNG under Oregon Senate Bill 98.
- We continued our expanded recycling programs which now includes a personal protective equipment recycling program and a plastic film recycling program at certain NW Natural locations. This is in addition to our long-standing programs for recycling hard plastics and fabrics. Employees can also give new life to NW Natural logo wear through the Spring Cleaning Clothing Swap.

- We celebrated Earth Month 2022 with two lunch-and-learns and a SOLVE neighborhood cleanup day. Sponsored by NW Natural’s employee-run Sustainability and Equity Engagement Committee, these events emphasized the importance of ongoing engagement on sustainable landscapes, food justice and climate and energy.
- Our facility in Sherwood, Oregon received the Gold Level of the Washington County Green Business Leaders award, which recognizes a company’s efforts in sustainable materials management, toxics reduction and social responsibility. As we’re continuing to renovate and upgrade our facilities, we are inspired by LEED certification principles and focus on building resilient, energy-efficient structures that serve the needs of our customers, employees and the business.
- We strive to use the lowest carbon fuel available for our fleet vehicles, including CNG, renewable diesel and ethanol. In 2022, all CNG consumed by our fleet was RNG.



## Environmental policy and leadership

Our board, executives, employees, and customers have been committed for decades to environmental performance, protection, and stewardship. Our dedicated environmental management and sustainability team focuses daily on these issues, and reports to our VP of public affairs and sustainability, who reported directly to our CEO. The sustainability team provides direct monitoring of our environmental performance, reports regularly on environmental issues and consults with stakeholders on these issues.

Board meetings for both NW Natural Holdings and NW Natural incorporate environmental items, risks and opportunities into the topics reviewed, including climate-related risks and opportunities. The Public Affairs and Environmental Policy Committee of the boards of directors provides oversight of environmental matters. The committee is guided by the company’s environmental policy, which is reviewed and approved annually. It sets forth our commitment to:

- Environmental stewardship
- Reducing emissions, releases, and waste
- Using our natural resources and energy more efficiently
- Protecting and enhancing the quality of the natural environment
- Operating our business in an increasingly sustainable manner

## Environmental management, biodiversity, land, water, and non-GHG emissions

To help us use our precious resources wisely and efficiently, we have strong environmental programs.

**Environmental management:** With one of the most modern natural gas distribution systems in the country, in a well-established service territory, NW Natural performs a limited amount of new construction or other work that might disrupt local communities and the environment, including waterways. When work is required, our environmental management team strives to comply with all environmental regulations and leave the area the same as, or better than, it was when we began. Our environmental management program is supported by:

- Our rigorous procedure manual, which provides guidance on environmental matters. This includes EPA, Oregon Department of Environmental Quality (DEQ) and Washington Department of Ecology (DOE) regulations and local jurisdictions’ requirements. In certain instances, we take the strictest regulation within our jurisdictions and apply it to our entire service territory, which assists us in holding ourselves to a higher standard and facilitates consistent procedures across our operations.
- Our internal Environmental Management System (EMS), which addresses how our resource centers and field work sites are designed and operated. The EMS procedure manual:
  - » Outlines how to design sites to prevent runoff and soil erosion, mitigate spills, obtain necessary Clean Water Act permits, and follow federal, state and local rules and regulations. These rules and regulations are primarily related to water quality, air quality, chemical handling, spill response, waste, cultural resources and threatened and endangered species.
  - » Serves as a guide for rigorously vetting products, substances, activities and services to help us minimize our impact on the environment and use the safest and most environmentally responsible materials appropriate in our operations. We keep environmental records and provide environmental training for each project, and we offer awareness programs and trainings for new employees and refresher trainings for established employees.
  - » Allows us to assign roles and responsibilities, as well as monitor activities for compliance with our permits. Our internal audit department performs periodic audits of our environmental programs and trainings, and external agencies such as EPA, DEQ and DOE also periodically audit our permitted facilities.

- Our team of in-house environmental specialists who oversee all waste assessments. The environmental specialists:
  - » Participate on a chemical evaluation safety team to eliminate products that may produce potentially hazardous waste before it's generated, and they periodically perform waste audits at our resource centers.
  - » Each have over ten years of experience managing waste stream assessments.
  - » Have completed OSHA's 40-hour "hazwoper" certification.
  - » Attend annual waste management training seminars hosted by the Oregon DEQ.
  - » Implement several written environmental modules directed at managing commonly occurring waste streams.
  - » Identify opportunities for continued improvement.

**Waste:** We strive to reduce and recycle any byproducts of our process by:

- Performing waste audits at all our resource centers.
- Implementing and maintaining recycling programs in our operations. We currently recycle 100% of the following items: batteries, waste oil from our fleet transportation, oil filters, antifreeze, scrap metal, and some types of plastic. NW Natural's recycling activities in 2022, eliminated over 88% of the total volume of total ordinary operating waste potentially requiring disposal and diverted those materials into recycling opportunities instead.
- Diligently following EPA's rules and regulations for hazardous waste. We report to the state government the amount of hazardous waste that is incinerated or sent to the landfill annually. In addition to materials recycled in 2022, NW Natural disposed of materials from ordinary operations as well as remedial-site wastes. Of the ordinary operational waste that was disposed; 99% was non-hazardous waste (100% landfilled and 0% incinerated) and 1% was hazardous waste (6% landfilled and 94% incinerated).

**Water:** While our natural gas distribution operations are not water intensive, we strive to adhere to all Clean Water Act requirements, and we use limited water for hydrostatic testing and pipeline construction. We also repurpose water, use leading stormwater-management techniques and conduct regular audits at construction sites.

**Air:** We work to promote healthy air quality in several areas.

- We have invested in five CNG stations for our own fleet, which includes 198 vehicles.<sup>37</sup> A station at our Sherwood Service Center is designed to provide backup service for our CNG customers. We strongly believe that natural gas as a transportation fuel provides significant economic and environmental benefits to our customers and to the overall community. For example, heavy-duty vehicles that run on CNG rather than diesel emit 90% less nitrogen oxide (NOx) air pollutants and particulate matter.

<sup>37</sup> As of August 2023

- We also have an idling-reduction initiative aimed at reducing particulate emissions. Emissions such as sulfur oxides (SOx), NOx, and non-methane volatile organic compounds (VOCs) are below applicable permitting thresholds for the majority of our facilities and as such, we do not consider them to be significant to our operations.

## Suppliers

In addition to our efforts to procure RNG and target gas purchases from more environmentally conscious producers, we have similar criteria for vendors we work with:

- We have implemented a sustainable purchasing program covering various focus areas, including sustainability, community, and governance. We strive to procure goods and services in an increasingly sustainable manner and we expect our suppliers to share our core value of environmental stewardship through our Supplier Code of Ethics.
- Our Supplier Code of Ethics contains expectations for our suppliers related to environmental protection and sustainability. We also include language setting expectations for environmental stewardship and sustainability in our master contracts and agreements, and we have launched a website specific to suppliers that allows them to better understand how we promote sustainable procurement efforts.
- We monitor key vendors' environmental records and we have implemented a scorecard for certain vendors that addresses identified sustainability-related topics, including environmental performance.
- As part of our RFP process, we include in our bid evaluations the extent to which contractors demonstrate their willingness to work together on finding ways to reduce environmental impacts, and we ask prospective suppliers to describe their current or planned practices for utilizing recycled products and minimizing waste.



### For more information see also:

[Less We Can](#)

[Renewable Natural Gas](#)

[Vision 2050: Destination Zero](#)

[Public Affairs and Environmental Policy Committee](#)

[Environmental Policy](#)