

# Natural Gas Fact Sheet Oregon

Natural gas is a fundamental fuel for Oregon's economic and environmental future. Heating our homes, powering businesses and serving as a key component in many of our most



vital industrial processes. Read on for an overview of Natural Gas' role in our state, the key attributes of this clean and abundant fuel and opportunities available to increase utilization of this domestically sourced resource.



## Overview

Oregon relies on three utilities to supply natural gas throughout the state. Three transmission pipelines provide reliable gas transport to, and through, our region from major supply basins in the Rockies, Northern Alberta and Northern British Columbia.

These companies are major Oregon employers; their joint in-state workforces total more than 1,160 individuals serving more than 780,000 residential, commercial and industrial natural gas customers.

Utilities in Oregon earn the majority of their revenue based on the service and delivery fees they charge to transport natural gas safely to a home or business. The commodity cost of natural gas is largely passed on to the consumer.

## Oregon's Natural Gas System

### Legend

- Avista Corporation
- Cascade Natural Gas
- NW Natural
- Ruby Pipeline LLC
- TransCanada's GTN System
- Williams Northwest Pipeline

## More Supply = Lower Costs for Oregon's Natural Gas Consumers

As the commodity cost of natural gas has decreased, due to new supply from shale, Washington consumers have reaped the benefits through rate reductions and a stable pricing outlook.

According to "Fueling the Future With Natural Gas: Bringing it Home," a 2014 study by IHS CERA and the American Gas Foundation, low natural gas prices driven by America's abundance of domestic natural gas are expected to increase per-household income in the U.S. by more than \$3,500 by 2025.

Natural gas is a key process fuel for some of Oregon's largest and most vital industries, including:

- **Manufacture of Wood & Paper Products:** 24,315 Oregon employees
- **Manufacture of Primary and Fabricated Metal Products:** 22,852 Oregon employees
- **Food Processing:** 26,328 Oregon employees

Source: 2012 BLS-NAICS, 2012



## Natural Gas Helps Oregon Farms Stay Healthy

Fertilizer used to grow crops is composed almost entirely of natural gas components, meaning the price of natural gas has a tremendous effect on Oregon's agriculture, responsible for 15 percent of the state's economic output. Gas also serves as an important fuel in preparing some of our most important agricultural products. Natural gas dries hops, warms eggs, roasts filberts and more for Oregon's food processors.

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## Gas for Power Generation

Natural gas as an electric generation fuel continues to grow in popularity, and importance, to our state. Flexible gas-fired generation keeps 63 MW of wind generation while providing peaking capability during times of high demand.

## Natural Gas is . . . Abundant & Domestic

- About 93% of the natural gas consumed in the United States was produced in the U.S. The remaining 7% is imported from Canada along with a nominal amount of internationally traded liquefied natural gas (LNG).
- Oregon relies on production basins in Northern Alberta, Northern British Columbia and the U.S. Rockies for our gas supply. Depending on demand and market conditions we may receive as much as two-thirds of our supply from Canada due to our proximity.
- The domestic natural gas resource base is large, estimated to be 2,515 trillion cubic feet, enough to meet America's diverse energy needs for generations to come. (Source: PGC, 2015)

- The natural gas industry operates in all 50 states and is responsible for almost 3 million jobs and \$385 billion in economic output. (Source: API, 2015)

## Clean

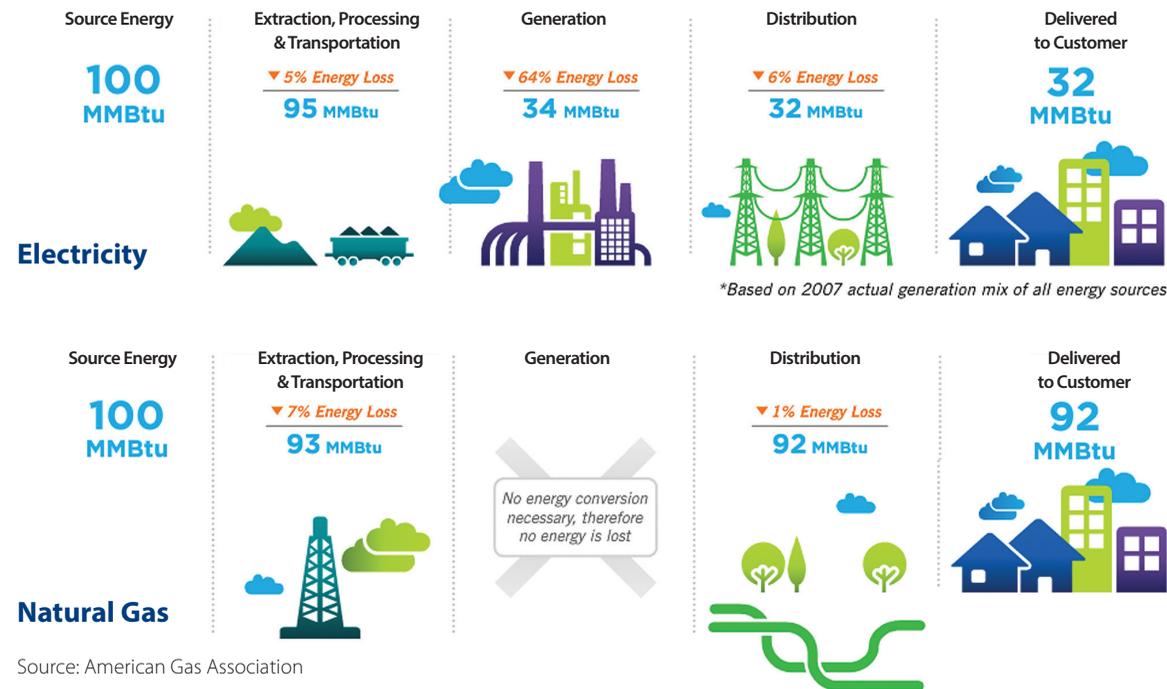
- Natural gas is efficient: 92% of the natural gas produced is delivered to customers as usable energy. (In contrast, 32% of the total energy used to generate electricity from coal reaches consumers.)
- Natural gas produces 50% fewer Greenhouse Gas emissions than coal and up to 30% fewer than oil, along with significantly fewer particulate and NOX emissions.
- Quick ramping natural gas "peaker" power plants allow for intermittent renewable resources, such as wind and solar, by providing power when the wind stops blowing or the sun stops shining.

## Safe & Reliable

- Natural gas pipelines and utilities have strict protocols designed to ensure system integrity and replace any aging infrastructure.
- Oregon gas utilities have some of the most modern distribution systems in the country. In 2016, Portland-based NW Natural became the first gas utility to replace all of their cast iron pipes with safer, more modern equipment.
- Two natural gas transmission pipelines, Williams NW Pipeline and TransCanada GTN, deliver the majority of the natural gas consumed in Oregon; both pipelines have continuously operated safely and reliably for more than 50 years.
- According to the National Transportation Safety Board, pipelines are the safest form of energy transportation.

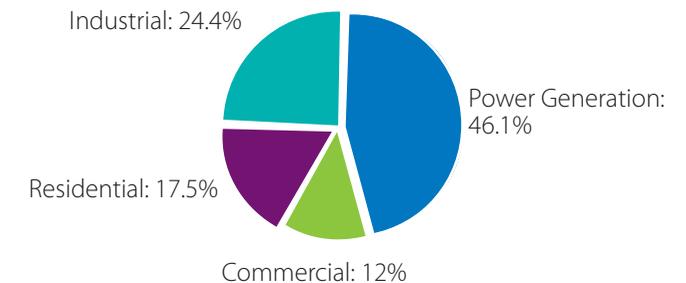
## Versatile

- Natural gas touches nearly every segment of American life, as the dominant source of energy nationwide for heat, hot water and cooking in homes and businesses.
- Natural gas also has uses as a feedstock for industrial processes, is used to generate electricity and has a growing role as a transportation fuel.



Source: American Gas Association

## Oregon's 2016 Gas Consumption by End Use



Source: EIA, 2016

# Opportunities

Our nation's abundant natural gas supply outlook offers an incredible opportunity to deliver energy value to American homes and businesses, fuel a renaissance in manufacturing and provide a cleaner, less expensive option for vehicles, thus reducing our dependence on imported oil.

## NGVs

- Compared to diesel-powered vehicles, natural gas vehicles can reduce greenhouse gas emissions by 17%.
- This could be as high as 83% if renewable natural gas is introduced into the supply.
- Natural gas vehicles offer significant fuel savings over time and began 2017 at around \$2 per Diesel Gallon Equivalent.
- Replacing medium and heavy duty diesel trucks with NGVs is the most economically efficient way to reduce NOx emissions.



***This natural gas fueled trolley gives tours of Crater Lake and fuels at an Avista facility in Klamath Falls.***

## Combined Heat and Power (CHP)

A proven American technology that is more efficient and cleaner than the majority of current power generation technologies. CHP puts the excess heat created during power generation to use, boosting efficiency while producing clean, affordable energy for businesses and factories.

## Direct Use

When natural gas is utilized directly in the home over 90% of its energy is applied to its intended use; compared with just 30% with electric appliances. Natural gas furnaces are up to 97% efficient, last longer than electric heat pumps and deliver heat up to 25 degrees warmer.

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Greater recognition of the benefits of natural gas in federal and state regulation, legislation, building energy codes, appliance standards and energy policy initiatives will open new doors to increased energy efficiency and energy security for our state and its citizens.

## Extending Natural Gas Service & Reducing Emissions

Oregon natural gas utilities are working with policymakers and regulators to find new ways to reduce state emissions via natural gas use.

SB844, adopted into rules in 2014, established a voluntary emissions reduction program allowing for natural gas utilities to invest in projects that reduce emissions including converting oil furnaces to natural gas and developing CHP projects.



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