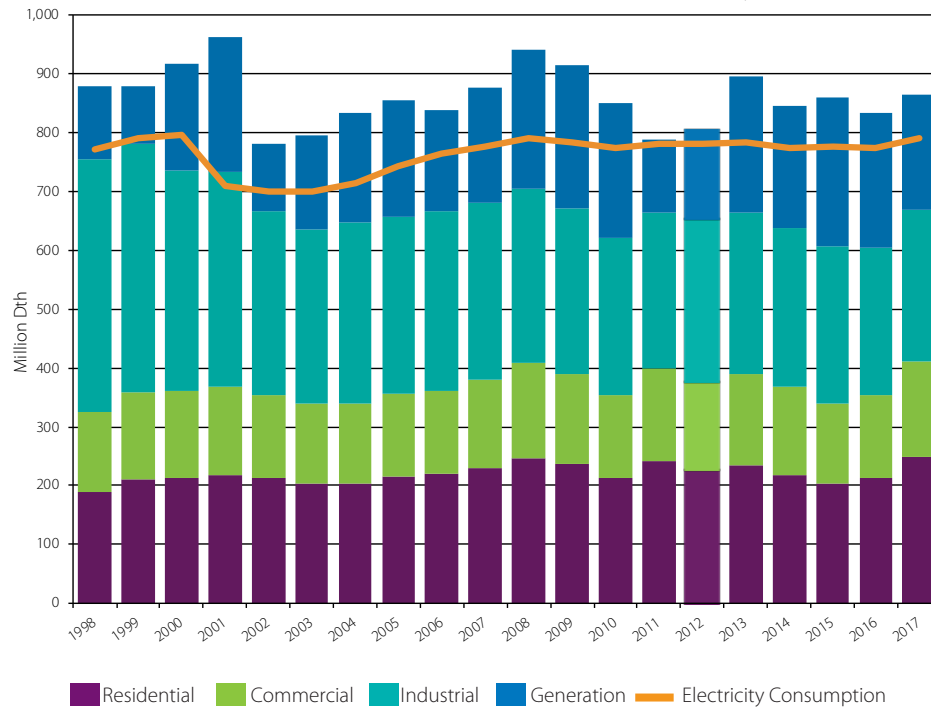


2018 GAS OUTLOOK • REGIONAL DEMAND



Forecast demand for natural gas ticked up compared to last year's Outlook but growth remains modest at 1.1 percent per year overall. Customers continue the decades-long trend of using gas more efficiently. Natural gas as a fuel to generate electricity paces overall growth in regional gas use. A projected step increase in gas for generation coincides with the retirement of coal generation units in the 2021-2022 time frame.

FIGURE D1. Historic Regional Demand by Sector



NOTE: The region is using increasingly more natural gas as a fuel for generating electricity. Year-to-year variations occur because gas is typically the last resource on when others (hydro, nuclear, wind, solar) are unavailable in sufficient quantities, and the first one off.

FIGURE D2. Declining Per Capita Consumption in Residential and Commercial Sectors

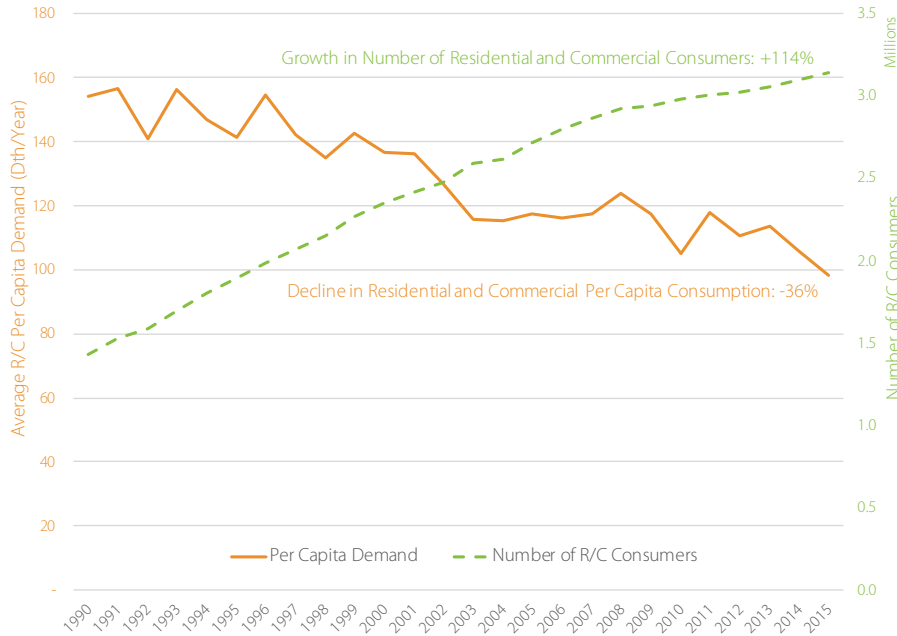


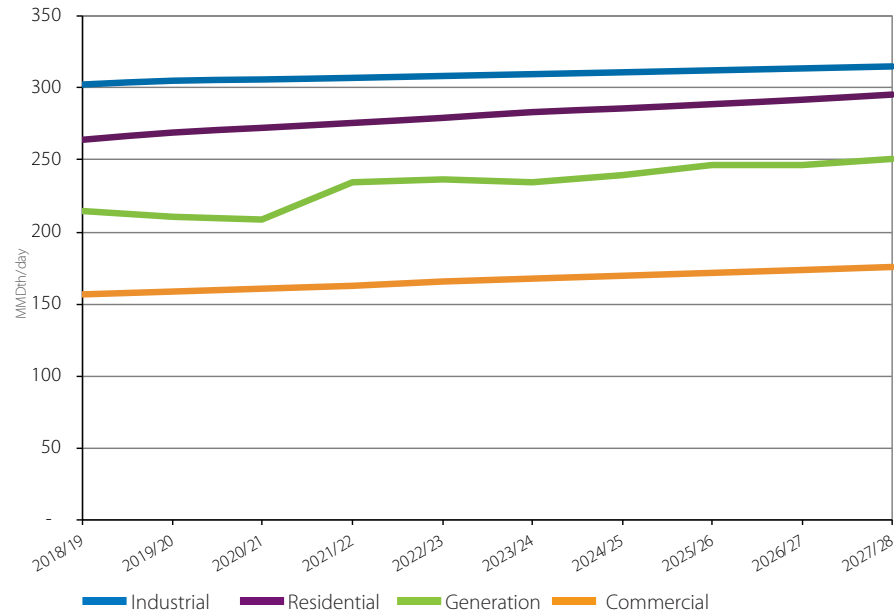
TABLE D1. 10-year Forecast Growth Rates and Cumulative Consumption Growth by Case

	Low		Expected		High	
	Annual Rate	Cumulative Rate	Annual Rate	Cumulative Rate	Annual Rate	Cumulative Rate
TOTAL	-0.3%	-2.5%	1.1%	9.6%	1.8%	14.7%
Residential	0.7%	6.5%	1.3%	10.6%	2.2%	18.0%
Commercial	0.9%	7.6%	1.3%	10.8%	2.5%	19.9%
Industrial	-1.0%	-9.4%	0.5%	4.0%	1.4%	11.9%
Generation	-1.6%	-16.1%	1.7%	14.4%	1.3%	10.8%

NOTES: The Outlook forecast is a compilation of the planning conducted by NWGA member-companies, including the integrated resource plans each natural gas utility is required to file with their respective state/provincial regulator.

Low and high demand cases are driven by a variety of economic and policy factors, including growth, commodity cost, cost of carbon, etc. See Appendix B for forecast assumptions utilized by a number of regional utilities.

FIGURE D3. Expected Case Forecast by Economic Sector

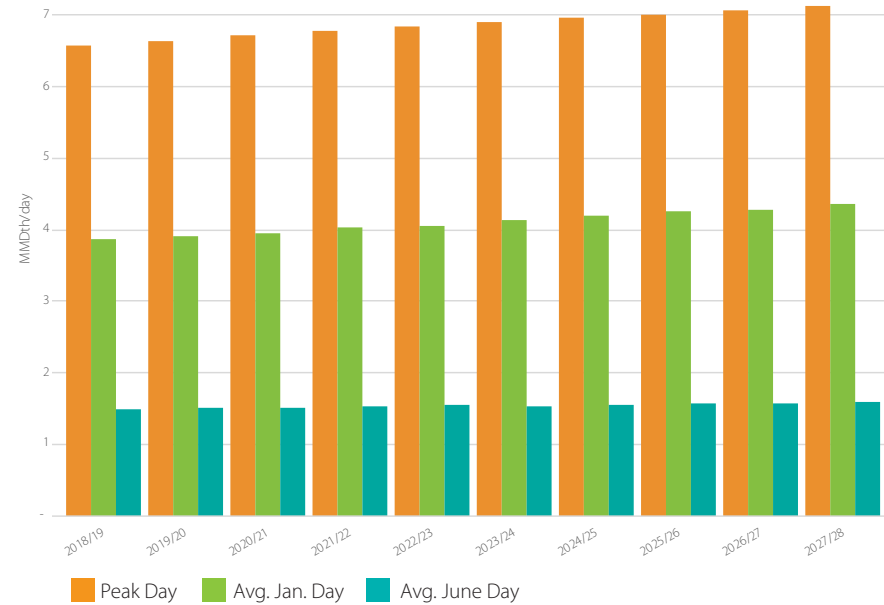


NOTES: Residential and Commercial demand for natural gas is expected to grow at a more rapid pace than recent Outlook iterations.

The forecast step increase in gas for generation (2021-2022) coincides with the retirement of several coal-fired generation units that currently serve the region, including Boardman in Oregon (end of 2020), Centralia Boiler 1 in Washington (end of 2020), and Colstrip Units 1 & 2 in Montana (mid-2022). This forecast demonstrates the expectation that natural gas will play an increasingly important role in maintaining system reliability and affordability as policymakers drive the region toward a cleaner energy future.

Previous versions of the Outlook included two demand scenarios which explored the impact that plausible but unplanned growth could have on regional demand and capacity utilization. Because one of the scenarios – the replacement of coal-fired generation – now shows up in the Outlook’s expected case, we have decided to dispense with the scenario analysis.

FIGURE D4. Peak and Average Day Forecast



NOTES: On average, the Pacific Northwest utilizes the least amount of gas during the month of June. Gas used to generate electricity for air conditioning typically ramps up in July and August before tailing off during the fall. January is the month during which our region typically utilizes the most gas to heat space and water for homes and businesses.

Natural gas utilities design their systems to serve demand on the coldest day likely to occur in the territories they serve. Figure D4 illustrates that demand for natural gas on those days can double the demand experienced during an average winter day. While each company approaches its planning standard a little differently, “peak” or “design” days are typically based on actual 24-hour average temperatures recorded at representative locations. A comparison of the NWGA member company weather design standards can be found in Appendix B.