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Canadian Natural Gas & Washington State

Border Policy Research Institute

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Introduction. This report examines the natural gas relationship between Canada and Washington State, emphasizing the regulatory and economic changes that have influenced past availability of this energy source, and identifying some future challenges.

Natural gas service came to Washington in the 1950s when the Northwest Pipeline was built, delivering gas from Rocky Mountain basins to the Pacific Northwest. (See Figure 1.) At the same time, gas basins in Alberta and British Columbia were developed and the Westcoast Pipeline was built, bringing Canadian gas south to Sumas, Washington, the location of an interconnection between the two pipelines. Gas from either Canada or the Rockies could then reach customers located along the bidirectional Northwest Pipeline. By 1961, the GTN Pipeline was built. A unidirectional pipeline, its major role is to deliver Canadian gas to California, but it can also deliver gas to the Northwest Pipeline. This configuration has existed for 45 years, with Washington markets served by both Canadian and American gas fields. Washington has at times benefited from and at other times been harmed by the market forces and regulatory disparities resulting from this dual source of supply.

The Regulated Era. Prior to 1985, gas utilities within the U.S. operated as regulated monopolies. Federal and state authorities controlled most aspects of the industry, including: retail prices; wholesale prices; pipeline delivery charges; the proportion of a utility's available proven reserves that could be sold. Gas was typically a byproduct of the oil-extraction process, and the oil industry was *not* regulated. Within this paradigm, an oil company had little incentive to invest in new natural gas infrastructure, when greater profits were to be had selling oil. By the 1970s, gas shortages existed in many U.S. markets.

Price controls also existed in Canada through 1985, and in addition there were export restrictions. Before an export license could be granted, a producer had to demonstrate the availability of proven reserves equal to 25 times the annual Canadian demand. However, given the large size of Canadian reserves and the relatively low level of Canadian demand, licenses were granted, and Washington, served by cross-border pipelines, did not experience shortages as severe as those elsewhere. Washington's demand was met (albeit at a higher price) by expansion of supply from the north.

Deregulation. Between 1985 and 1993, both nations deregulated many aspects of the gas industry. Wellhead prices were decontrolled and open access to pipelines was established. A local utility could purchase gas from a variety of wellfield owners and likewise purchase the delivery of that gas from a pipeline operator. Markets arose for both the supply and the transportation of natural gas. In the deregulated environment, efficiencies led to development of new supplies, lower prices, and accompanying increases in demand.

The "25-times-demand" test was no longer applied to Canadian exports, so the large Canadian reserves became available on the marketplace. Because of the existence of the Westcoast Pipeline and the absence of pipelines connecting Canadian basins to mid-continent markets, Washington was one of the few areas able to access Canadian gas. The early 1990s were thus a time of inexpensive gas in Washington.

Free Trade and a Continental Market. The Canada—U.S. Free Trade Agreement resulted in the removal of all trade-related tariffs and taxes upon natural gas, and NAFTA perpetuated that arrangement.

Given the abundance of gas in western Canada and the existence of a large market in the mid-continent, new pipelines were built beginning in the late 1990s. By 2000 there was a unified North American natural gas market, and Washington no longer enjoyed preferential access to Canadian gas. Wholesale prices and pipeline transportation charges became the dominant factors influencing

demand for Canadian gas. Today about 60 percent of the gas consumed in Washington is produced in Canada, and the remainder is produced in the Rocky Mountains.

Demand from New Sectors. In the regulated era, priority was given to the use of natural gas for residential and commercial purposes. That policy preference, combined with the scarcity of supply and the relatively high price, constrained the use of gas by industry. The low prices and abundant supplies resulting from deregulation led to a ramp-up in industrial gas consumption. In particular, the use of natural gas for electrical generation became very significant. Figure 2 shows the total amount of gas consumed in Washington over time, as well as the proportion consumed within various market sectors. The surge in the use of gas for electrical generation and for industry

Figure 1. Schematic of Major Gas Lines in Washington

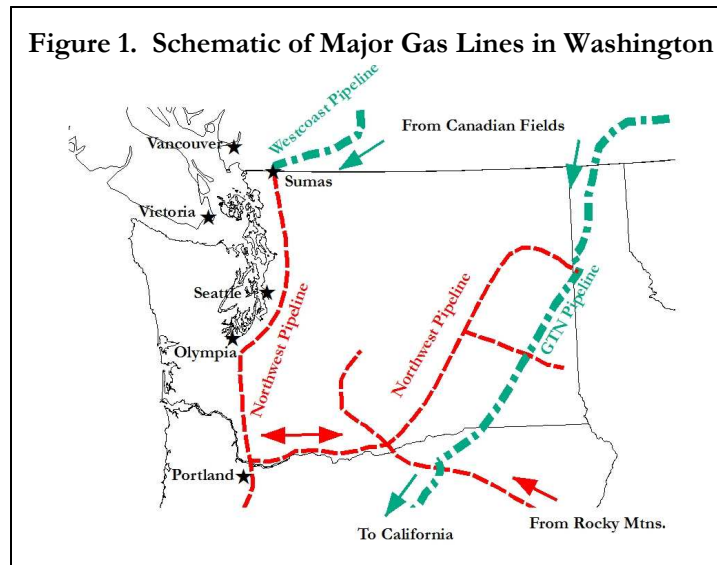
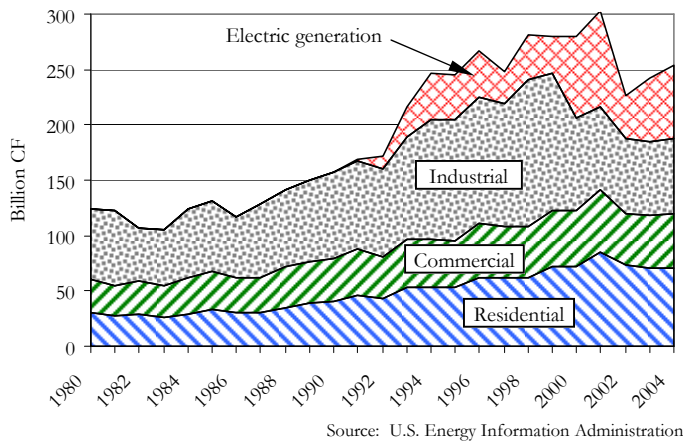


Figure 2. Washington Gas Consumption, 1980—2004



is evident between 1992 and 2005. About 26 percent of Washington's gas is now used for electric generation.

A new sector of gas demand is emerging. Canada has large "tar sand" deposits from which heavy crude oil can be extracted. The extraction process requires heat, and natural gas is increasingly used to meet that need. In addition, hydrogen is a production input that is used to upgrade the heavy crude to a more marketable form, and gas is a good source for that hydrogen. By some estimates, the amount of gas used in tar-sand extraction could grow to 912 billion CF/year by 2017, which amounts to about 15 percent of Canada's current annual gas production, and more than three times Washington's annual consumption.

The Challenge of Augmenting Supply. The amount of natural gas extracted by conventional methods from gas fields in Alberta and British Columbia is expected to decline beyond the year 2008. The fields are mature, and the largest gas deposits have been producing for decades. Drilling is now targeted at smaller deposits, and production has remained constant over recent years only because of a major increase in drilling (i.e., 14,000 wells completed in 2003, vs. 2,200 in 1990). In the U.S., conventional drilling is expected to yield a constant amount of gas for the coming 20 years, but an increase in the number of wells

will likewise be needed. To serve growing demand, both countries will turn to unconventional supply methods, such as extraction of methane from coal beds and import of liquefied natural gas (LNG) from South America and the Middle East. LNG terminals will likely be located on the eastern seaboard and the Gulf Coast, which distances Washington from supplies. Productive coal beds are found nearer at hand, in the Canadian and American Rockies. To bring gas west to Washington from either source, the long-haul pipelines now in use will serve a continuing role. Maintaining adequate capacity in those pipelines will therefore be vital.

Conclusion. Historically, Washington has relied upon conventional natural gas basins in Canada as the main source of supply, with Rocky Mountain basins supplying the balance. The availability of low-cost gas in the deregulated era has led to significant use of this energy source. Declining conventional production coupled with emerging sectors of demand is driving the need to develop new supplies. Three methods of future supply are contemplated — import of LNG, coal-bed methane extraction, and a campaign of increased conventional drilling. Each method is significantly more costly than the historic era of conventional drilling to exploit large gas basins. Higher gas prices are on the horizon as supply shifts away from traditional sources. The long-haul pipelines that bring gas to Washington will continue to play a vital role.

A wealth of information about natural gas is available. This report uses the following sources:

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Bellingham, WA 98225-9110
516 High Street, MS-9110