

James Yost
Chair
Idaho

W. Bill Booth
Idaho

Guy Norman
Washington

Tom Karier
Washington



Northwest Power and Conservation Council

Jennifer Anders
Vice Chair
Montana

Tim Baker
Montana

Ted Ferrioli
Oregon

Richard Devlin
Oregon

November 6, 2018

MEMORANDUM

TO: Council Members

FROM: Steven Simmons

SUBJECT: Update on the Natural Gas Pipeline Rupture in British Columbia

BACKGROUND:

Presenter: Steven Simmons

Summary: There was a major rupture and explosion on the Enbridge BC Pipeline System near Prince George in British Columbia on the evening of October the 9th. This presentation will provide a summary of the events since the pipeline rupture and the impact on market prices to date.

The rupture affected a key pipeline for the region. The Enbridge BC Pipeline transports natural gas from the Western Canadian Sedimentary Basin (WCSB) south to mainland British Columbia (BC) and connects to the Northwest Pipeline at the Washington/Canadian border where it delivers gas to the Northwest states of Washington and Oregon. Following the incident, there was no gas flowing at all at the interconnect with the Northwest Pipeline at Sumas, resulting in a Force Majeure notice. In the weeks since the incident, gas flows through BC and the across the border to the Northwest have resumed, though at a significantly reduced rate.

The Northwest is considered to have a robust natural gas system that includes interconnected long-haul pipelines, links to multiple gas supply basins, and gas storage facilities. However a disruption of this magnitude can severely constrain the natural gas normally supplied to homes,

business, industries, and power generators. Natural gas supply constraints can also drive up market prices for natural gas, electricity, and even gasoline.

Relevance: Gas-fired power generation in the Northwest is expected to increase over the next several years and play a more significant role as a source of baseload power and renewable integration. As such, natural gas and the associated infrastructure may play an increasingly key role in future electricity pricing and electric reliability for the region.

Workplan: A.3 Forecasting and Economic Analysis, A.4 Generation Resources, A.5 System Analysis

Background: In 2017, WECC commissioned a study to assess future Gas-Electric Interface. A team from Wood Mackenzie, E3 and Argonne National Lab was selected to perform the study, with the help of a Technical Advisory Committee, which included staff from the Council. The final report was published in June of 2018.

Staff presented on the Gas-Electric Interface at the Power Committee held in Wenatchee in October of 2018.

More Info: Presentation on the Gas-Electric Interface from October 2018:
https://www.nwcouncil.org/sites/default/files/2018_1009_p3.pdf

WECC Gas-Electric Interface study report:
<https://www.wecc.biz/SystemAdequacyPlanning/Pages/Gas-Electric-Interface-Study.aspx>

Update on the Natural Gas Pipeline Rupture in British Columbia

Steven Simmons
Council Meeting
November 14, 2018

Today's Discussion

- **Recap of Events**
- **Context within the natural gas system of the Northwest**
- **Market price impacts to date**



October 9	Major rupture and explosion on an Enbridge gas transmission pipeline in a rural area near Prince George BC (450 miles north of the BC/WA border)
	The rupture was on a 36-inch mainline, an adjacent 30-inch line was depressurized and taken off line as a precaution
	No gas was flowing at the interconnect with the Northwest Pipeline at the Sumas WA/BC border – resulting in a Force Majeure notice
	The largest gas storage facility in the Northwest - Jackson Prairie Storage – which is located on the Northwest Pipeline, was offline for scheduled maintenance at the time of the rupture
October 10	Shippers on the BC and Northwest Pipelines (including FortisBC, PSE) requested customers to conserve natural gas and gas-fired power generation in the region was dialed back
October 11	Enbridge brought the 30-inch adjacent line back into service and started gas flows at a reduced capacity
	Williams completed maintenance on the Jackson Prairie Storage facility and brought it back on line
October 14	Preliminary soil sampling at the rupture site detected no traces of hydrocarbons in the soil. A temporary road was constructed to access the site to repair the 36-inch mainline
October 31	Enbridge completed repairs on the 36-inch mainline and expect it to be flowing gas again by Nov 3 but at a reduced capacity

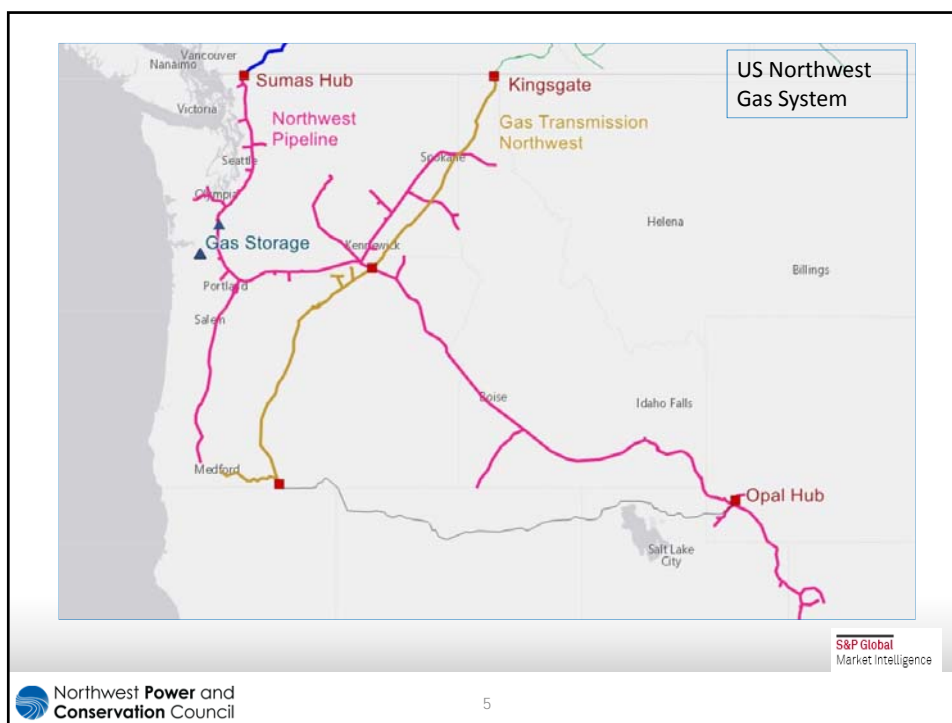
BC Gas System

Pre-rupture gas flows in winter at around 1,700 mmcf/day

- Provides around 75% of Fortis BC gas
- Remaining flow to the US Northwest at Sumas – around 1,150 mmcf/day

Post rupture flows dropped to 0 for a few days

- Since October 18 flows have averaged 460 mmcf/day at Sumas (EIA)
- Flows on the pipeline are expected to be around 900 to 1300 mmcf/day this winter



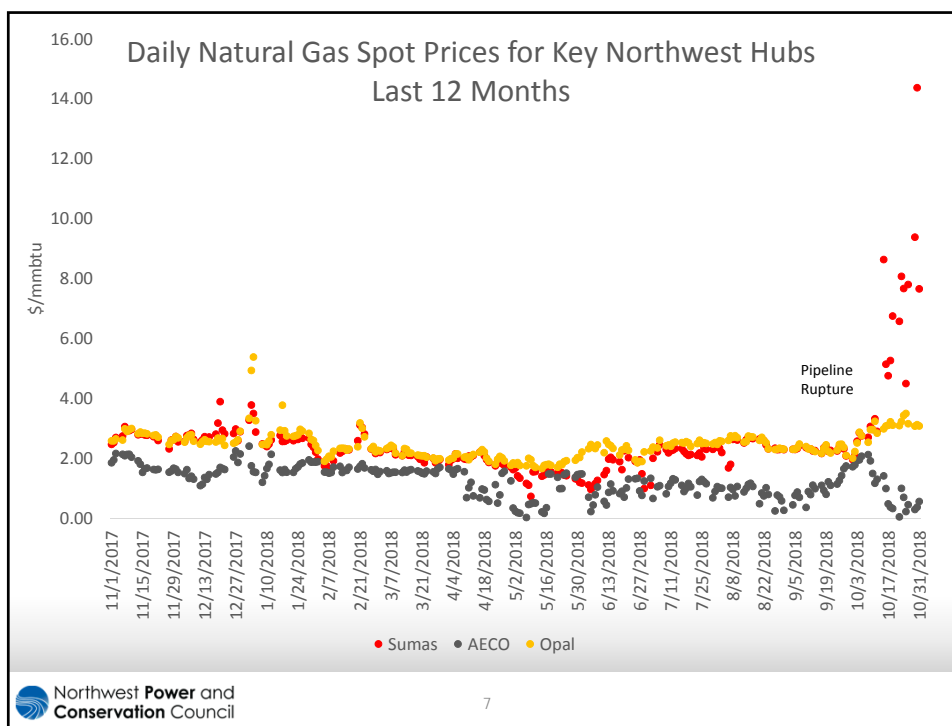
Northwest Natural Gas System

Williams Northwest Pipeline

- Brings gas supply from BC & AB into Washington & Oregon along I-5 corridor - Winter import flows around 1,150 mmcf/day
- Largest shipper is Puget Sound Energy
- Jackson Prairie Storage Facility – largest gas storage in the Northwest (Mist Storage nearby too)
- Also interconnects with GTN, and connects to US Rockies gas supply

TransCanada Gas Transmission Northwest (GTN)

- Brings gas supply from Alberta into the Northwest and California – Winter import flows around 2,150 mmcf/day
- Largest shipper is Pacific Gas & Electric, other major shippers include Portland General Electric and Avista
- Plymouth peak shaving LNG on the system



Market Prices

- Natural gas spot prices at Sumas have jumped from around \$2.35 to as high as \$14.38 dollar - highest prices since the winter of early 2014
- Mid-C on-peak electricity prices have also risen – from around \$34 to around \$50
- Retail gasoline prices (at the pump) rose around 9 cents per gallon in Washington – Four NW oil refineries depend on natural gas imports from Sumas and reduced operations based on natural gas constraints