Northwest **Power** and **Conservation** Council

April 29 2014

MEMORANDUM

TO: Power Committee

FROM: Massoud Jourabchi

SUBJECT: Northwest Gas Association Natural Gas Outlook

Dan Kirschner, Executive Director of the Northwest Gas Association will present NWGA's 2014 Outlook for natural gas supplies, demand and prices for 2014-2023. The outlook includes an aggregation of supply and demand projections by NWGA member utilities.

Key Conclusions (excerpted) from the 2014 Outlook include:

Supply: The enormity of North America's natural gas resource, made available by extracting hydrocarbons from shale rock formations deep underground, is fundamentally changing the energy landscape. Natural gas production continues to exceed expectations despite lower natural gas prices, reallocation of capital and concerns over shale production techniques. Pacific Northwest natural gas consumers benefit from their proximity to the prolific Western Canadian Sedimentary Basin and U.S. Rocky Mountain natural gas producing regions. The market for additional capacity in the region has evolved as the market need has shifted.

Demand: While growth rates in the Pacific Northwest over the forecast period remain about the same as in the 2013 Outlook, annual volumes start lower. The industrial sector is showing signs of life in the region with higher loads and a faster rate of growth than projected in the 2013 Outlook.

Prices: Spot and futures prices rebounded in 2013 but continue to reflect an abundance of North American natural gas. Most long-term price forecasts have declined significantly since 2008, when large volumes of natural gas from shale began to affect the market.

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2014 Northwest Gas Market Outlook

Northwest Power and Conservation Council

Boise, Idaho

May 6, 2014

NWGA
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NWGA Members:

Avista Corporation

Cascade Natural Gas Co.

FortisBC Energy

Intermountain Gas Co.

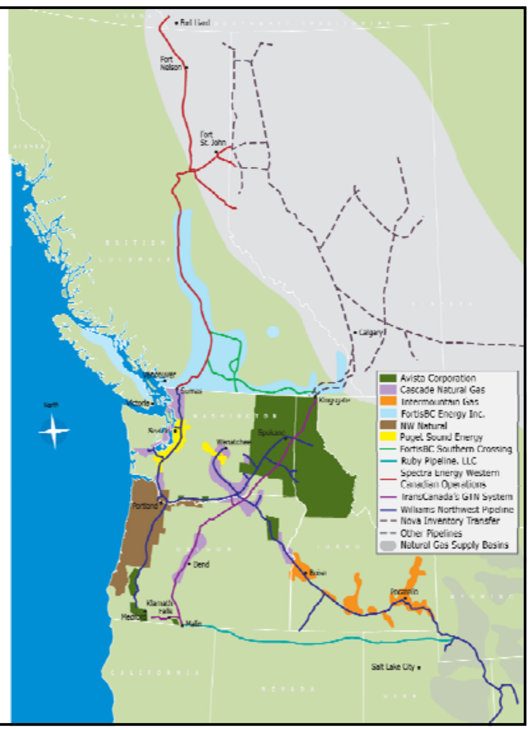
NW Natural

Puget Sound Energy

Spectra Energy Transmission

TransCanada GTN System

Williams NW Pipeline



What is the Outlook?

- Aggregation of IRPs and other planning docs.
- A consensus regional perspective.
- Can be read/downloaded at:

http://www.nwga.org/2014-gas-outlook

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What's New in 2014?

- Introduction/Executive Summary
- Sidebars
  - BC Supply
  - Economic Outlook
  - Market Development Successes/Challenges
  - Gas/Electric Collaboration
  - IRP Preferred Resources
  - IRP Assumptions (Appendix)
- Demand Scenarios
  - Industrial
  - Coal Replacement

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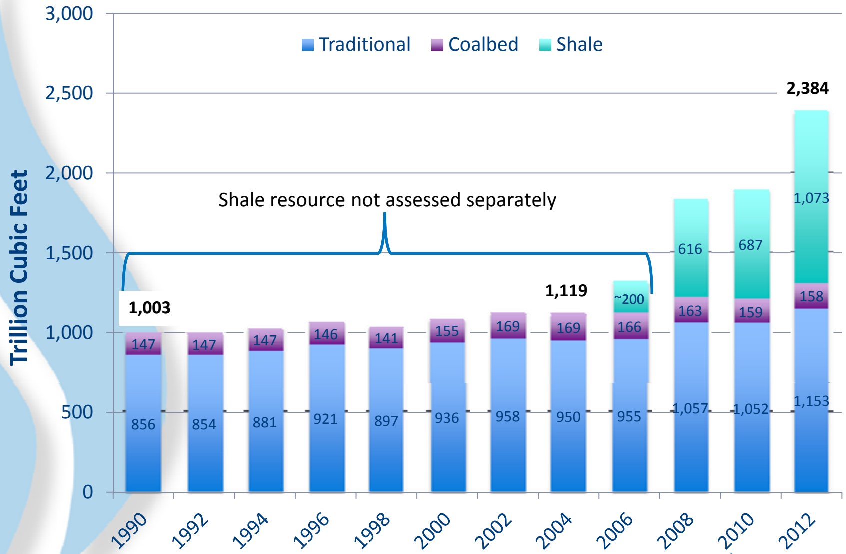
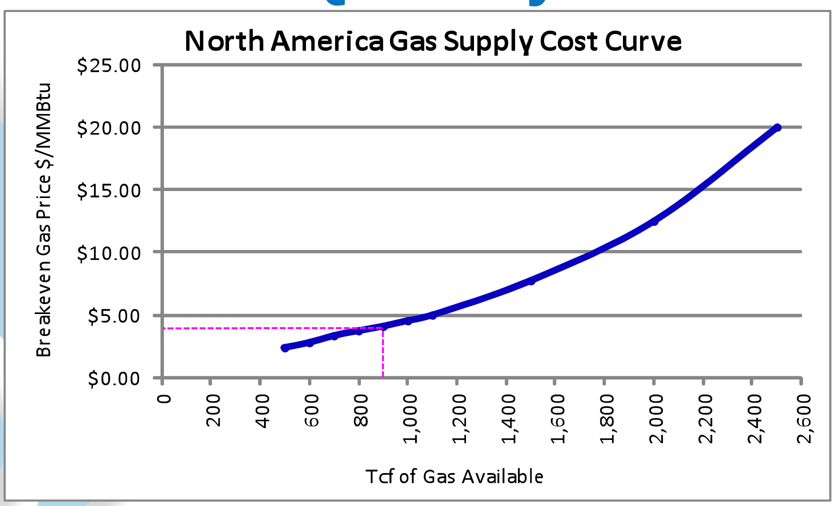
NatGas Reserves

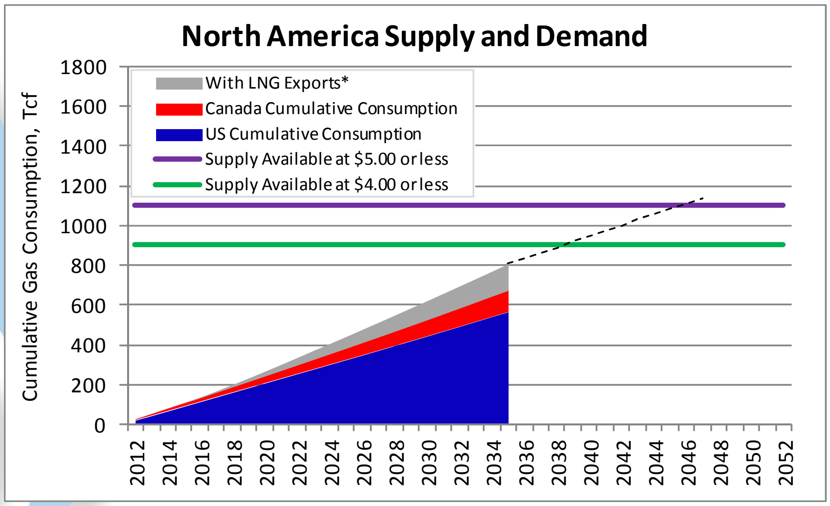


Price Not Quantity



Source: 2011 MIT Study on the Future of Natural Gas, Figure 2.10

How Much Is 900 Tcf?



Source: US Energy Information Administration, Canada National Energy Board

* Source: Spectra, 6 bcf/day in 2015 increasing to 20 Bcf/day in 2020 remaining at 20 Bcf/day thereafter

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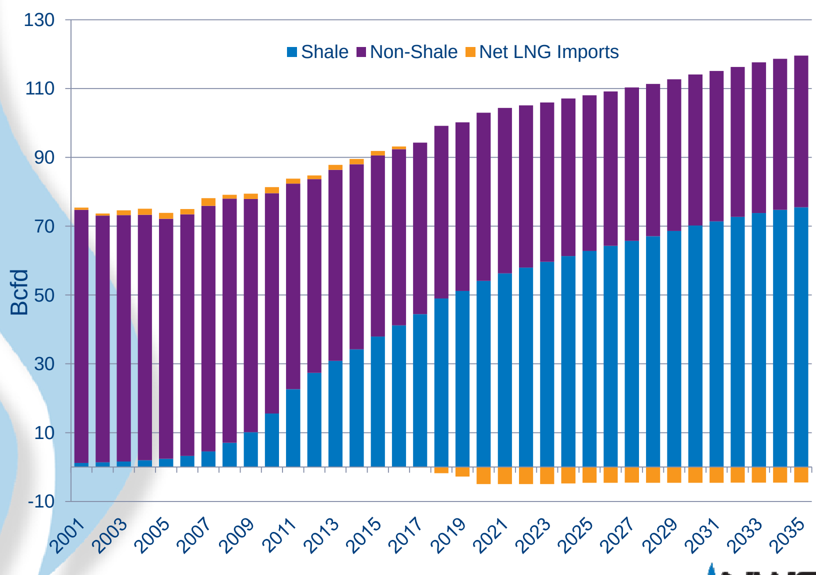
Shale Production



Source: Navigant Consulting, *Fall 2012 Gas Market Outlook*

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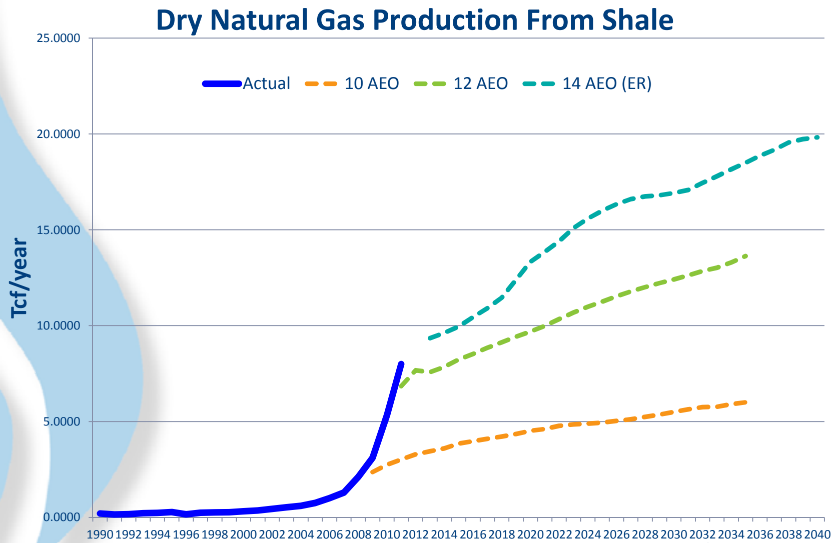
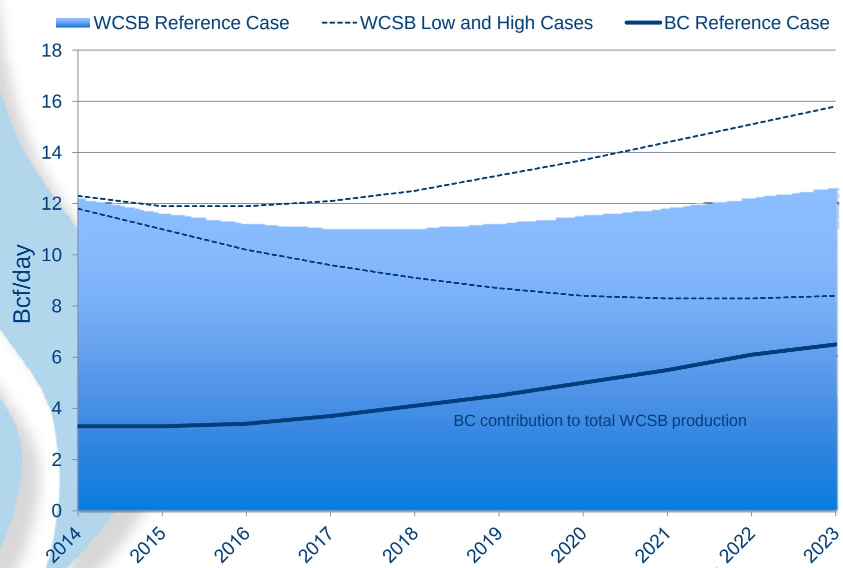
“Learning Curve”



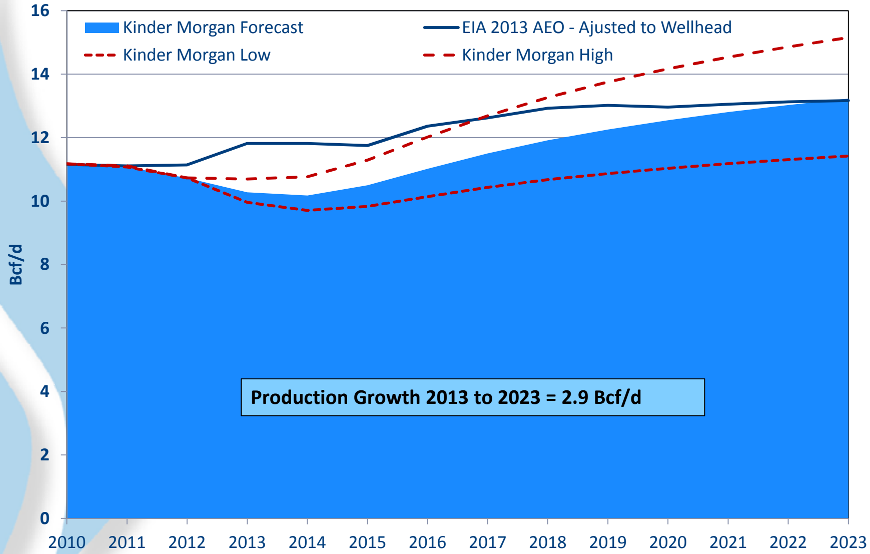
Source: EIA Annual Energy Outlook

WCSB Forecast



Source: NEB 2013 Canada’s Energy Future

Rockies Forecast



Adjusted to exclude San Juan, Raton, Paradox, and Williston Basins

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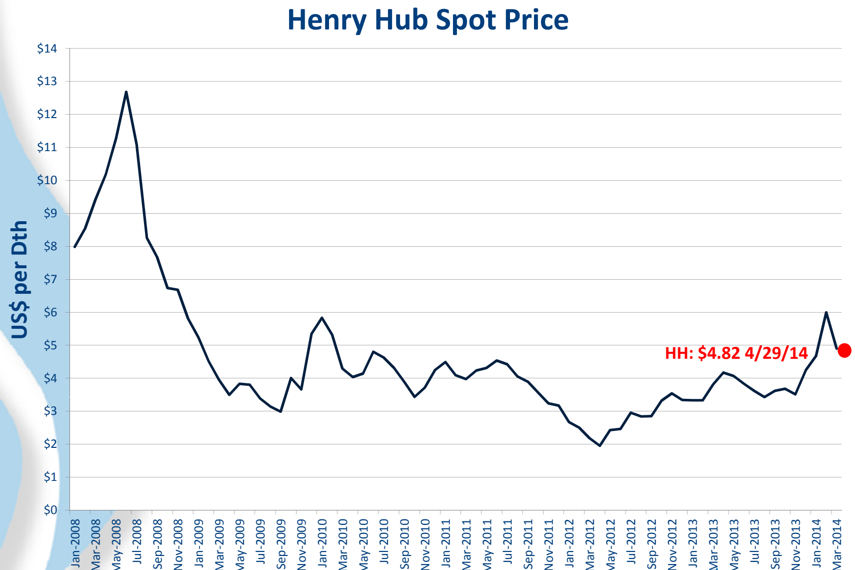
Historic Prices



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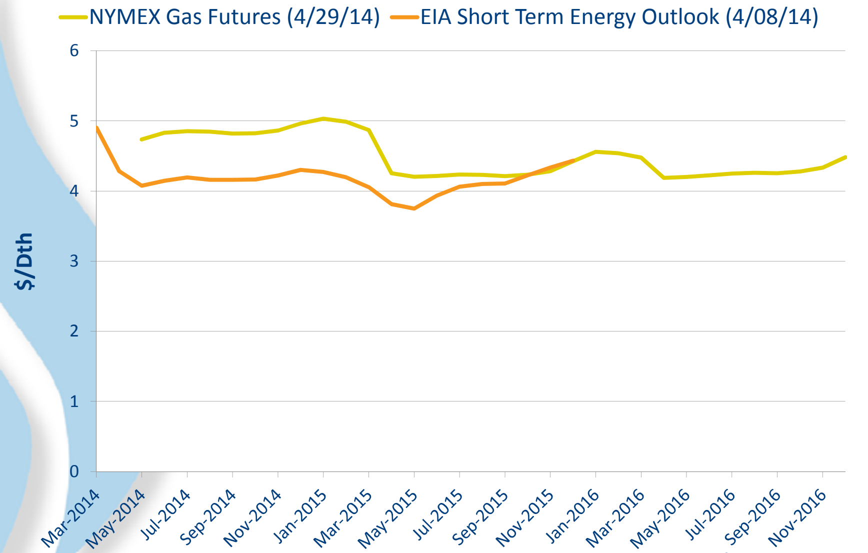
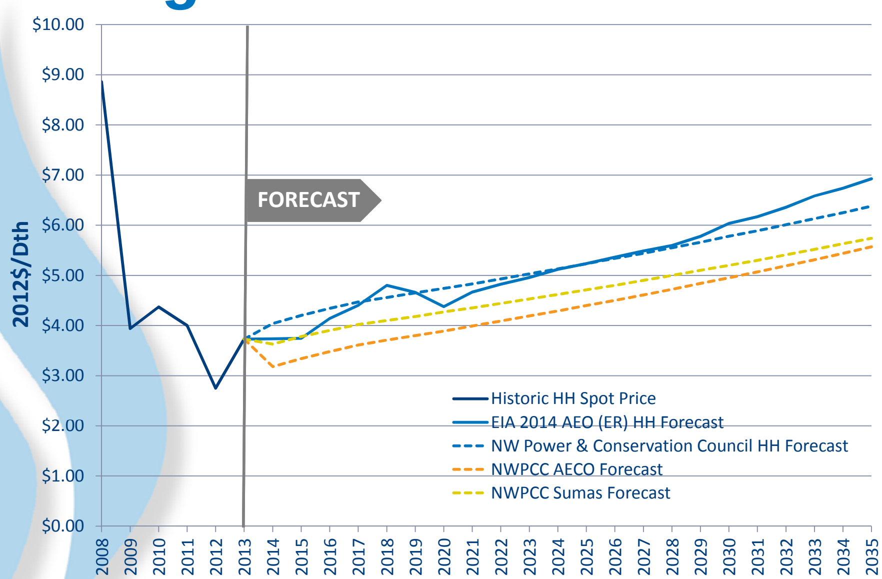
NYMEX & EIA Short Term

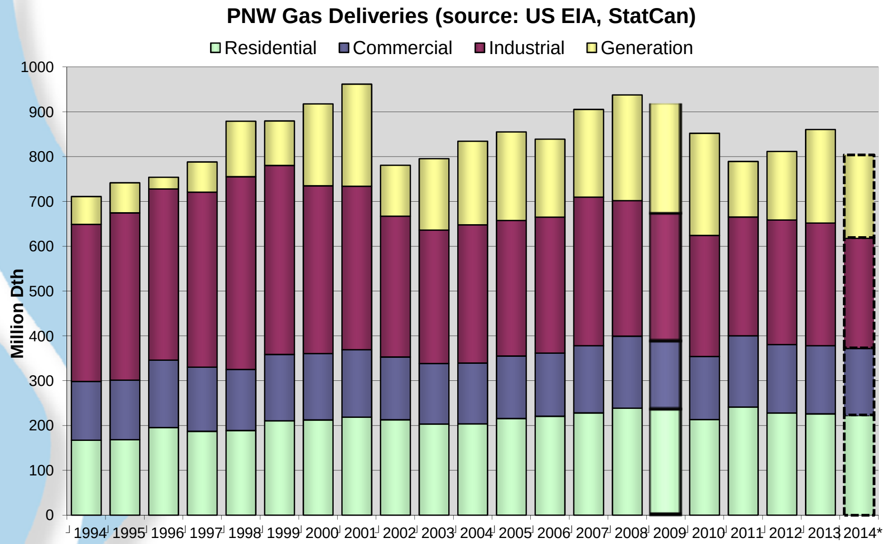


Long Term Forecasts



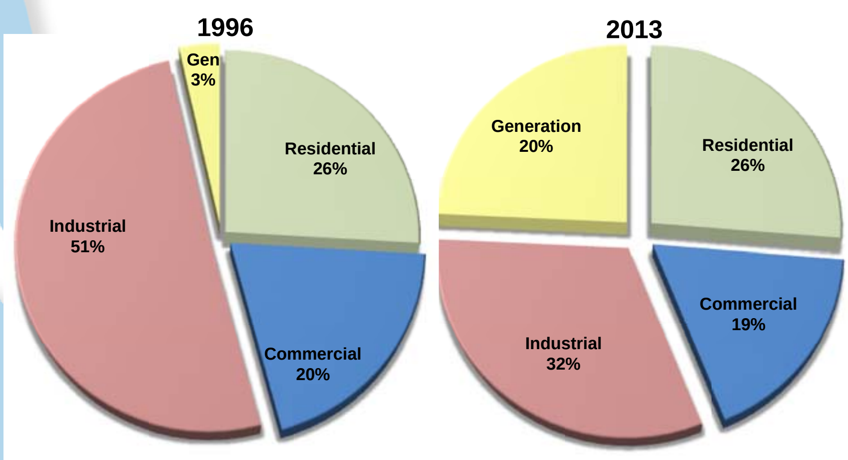
Source: EIA 2014 Annual Energy Outlook Early Release – December 2013

Recent Gas Demand



* 2014 Outlook Year 1 Forecast

Demand Composition



Growth Rates by Sector

	Low		Expected		High	
	Annual Rate	Cumulative	Annual Rate	Cumulative	Annual Rate	Cumulative
TOTAL	**0.9%**	**8.7%**	**1.5%**	**14.2%**	**2.2%**	**21.7%**
Residential	0.7%	6.7%	0.9%	8.8%	1.1%	10.5%
Commercial	0.4%	3.9%	0.8%	7.6%	1.2%	10.9%
Industrial	0.7%	6.5%	0.9%	8.3%	1.0%	9.8%
Generation	1.9%	18.6%	3.3%	34.0%	5.0%	55.3%

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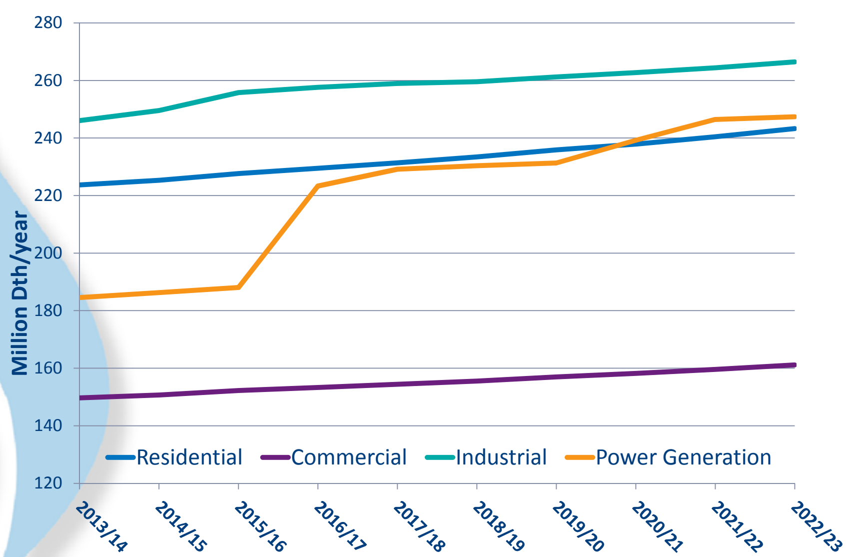
2014 Outlook Forecast



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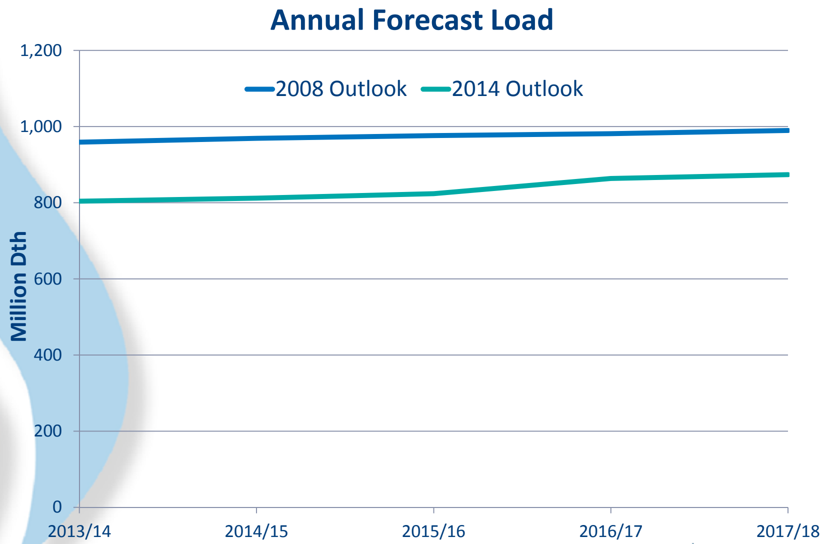
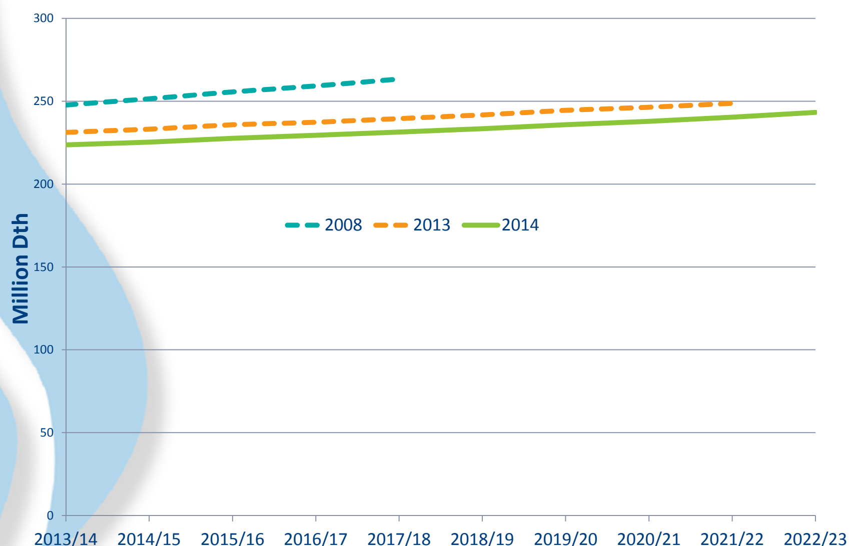
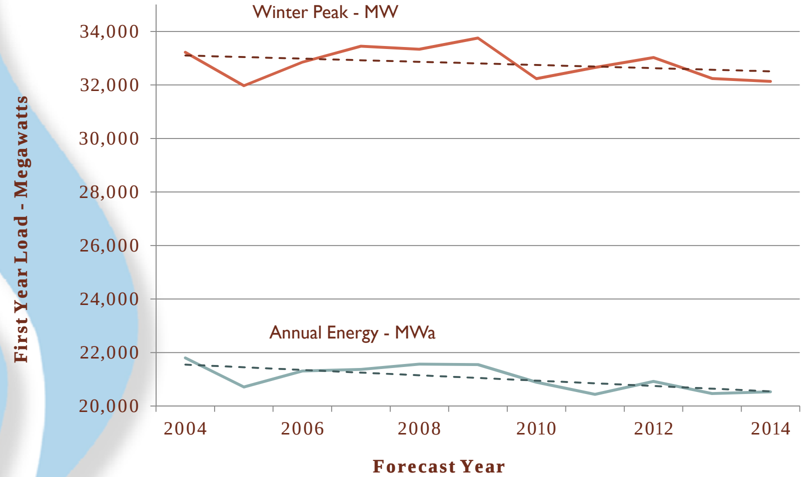
2008-2014 Comparison



Residential Demand



Power Forecasts Drift Down



Source: PNUCC 2014 Northwest Regional Forecast

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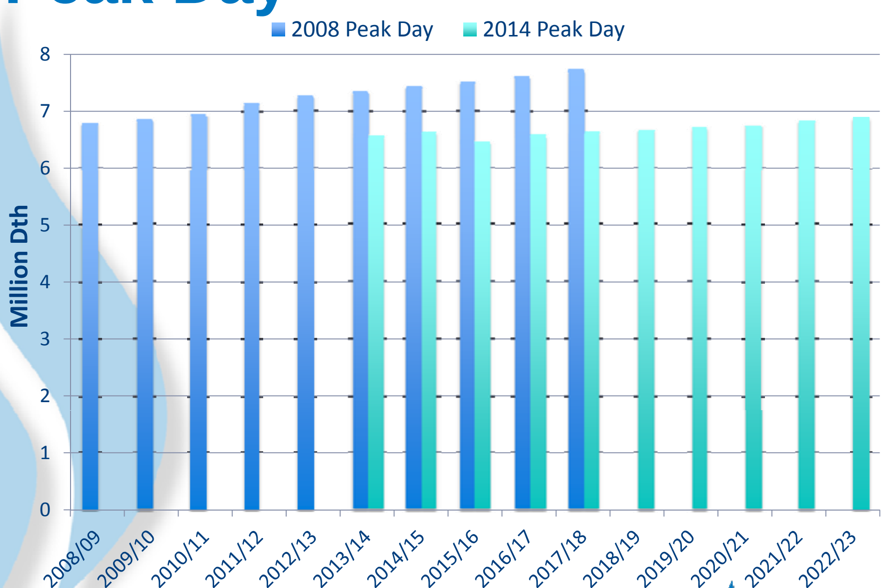
Peak Day



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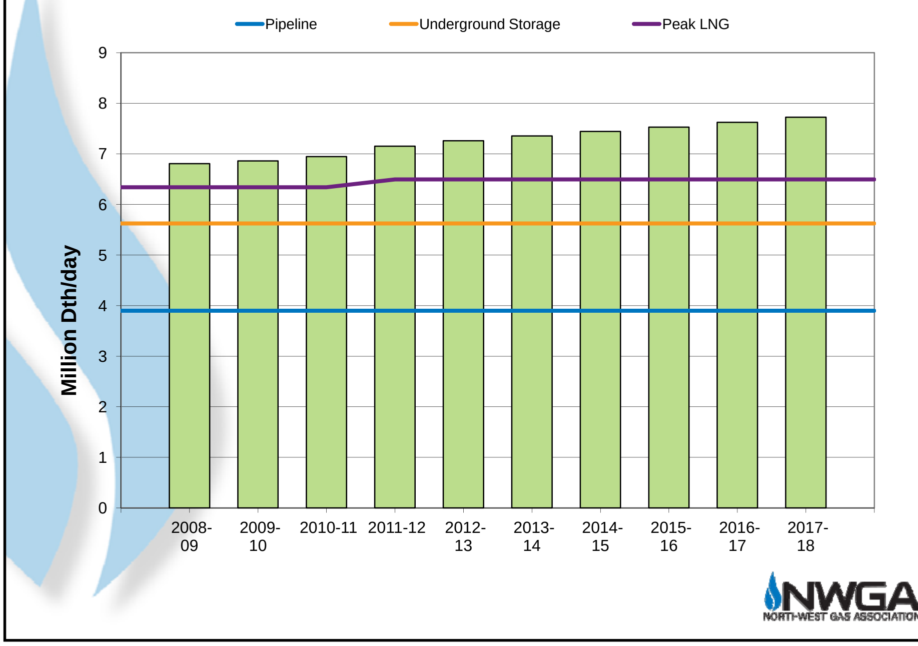
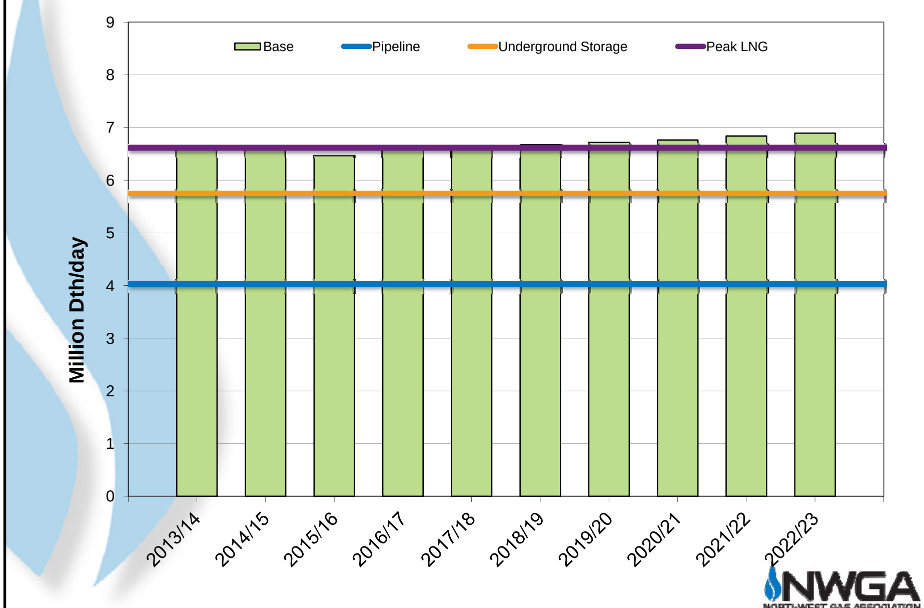
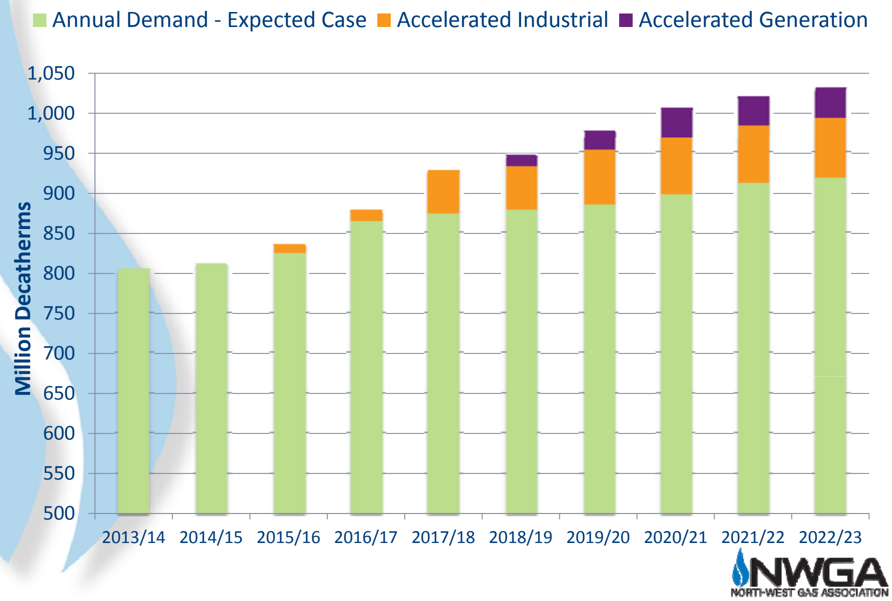
Pre-Recession Peak



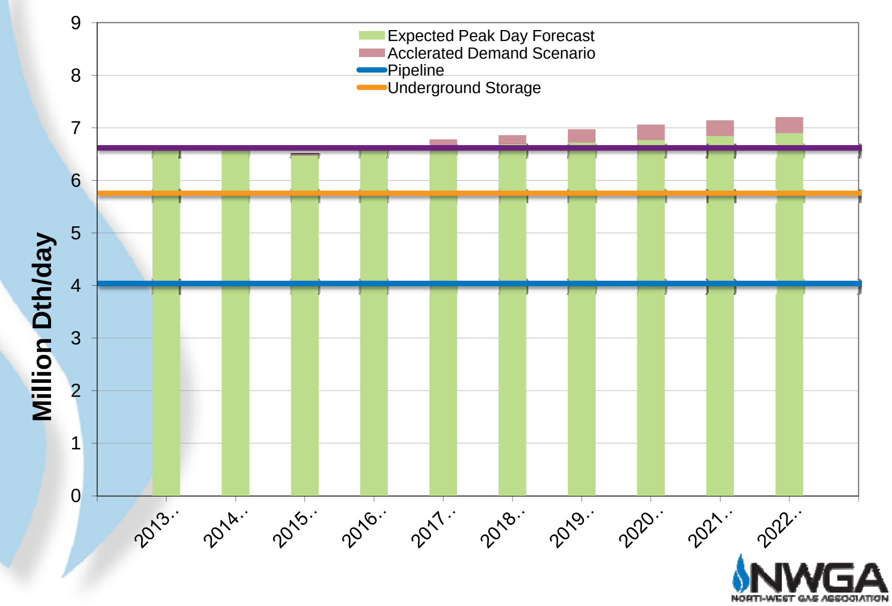
2014 Outlook Peak



Demand Scenarios



Peak w/Demand Scenarios

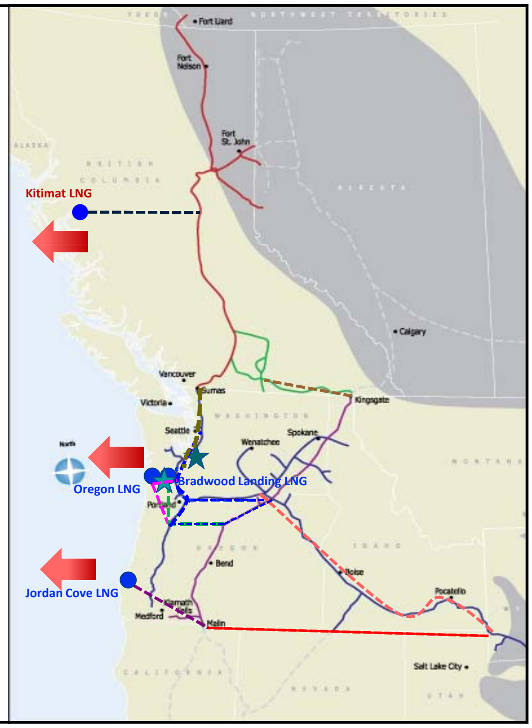


Capacity Projects

Pipelines
- Southern Crossing Expansion
- Palomar
- Sunstone
- Blue Bridge (N-MAX)
- Ruby
- Pacific Connector
- Pacific Trail
- Oregon LNG
- Washington Expansion

LNG Terminals
- Kitimat LNG
- Bradwood Landing
- Oregon LNG
- Jordan Cove LNG

Storage Facilities
- Mist
- Jackson Prairie



Preferred Resources

Company	IRP File Date	Jurisdiction	Year of Peak Day Deficiency	Preferred Supply Resource(s) Selected
Avista	August 31, 2012	Washington/Idaho	2029	• Vintage GTN Capacity
	August 31, 2012	Oregon	2028	• Vintage GTN Capacity • Medford Lateral Expansion
Cascade	December 14, 2012	Washington	2024	• NWP capacity • Satellite LNG • City gate purchases
	May 25, 2012	Oregon	Currently deficient	• Ruby capacity with GTN Backhaul
Puget Sound Energy	May 30, 2013	Washington	2017	• SWARR upgrade • PSE LNG • Mist/NWP Expansion
FortisBC	July 15, 2010	British Columbia	No deficiency in planning horizon	N/A
Northwest Natural	March 22, 2013	Washington	2014	• Mist recall • Cross Cascade Pipeline (2018)
	January 12, 2011 – Original September 1, 2011 – Modified	Oregon	Currently deficient	• Mist recall
Intermountain	February 2013	Idaho	No deficiency in planning horizon	N/A

Questions?

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