

Gas Sourcing: A Tale of Two Coves

Dominion Cove Point and Jordan Cove

What they mean to U.S. Producers

Presentation to:

Hart Energy's
North American LNG Conference

By:

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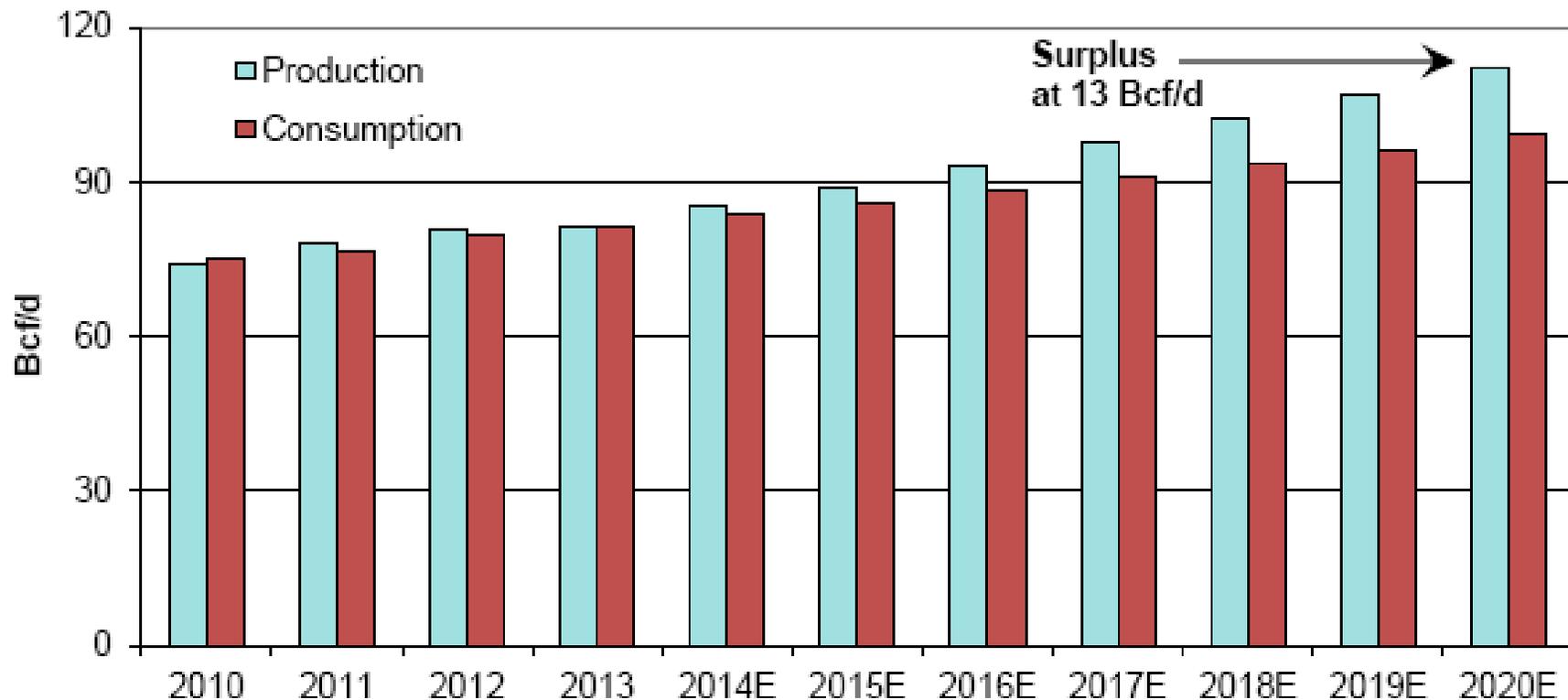
November 20, 2014

U.S. Producers

- We are not talking from a scarcity viewpoint anymore.
- Producers are used to someone knocking on their door.
- They must break that “psychology” and start knocking on doors themselves.
- Some of those doors are overseas.



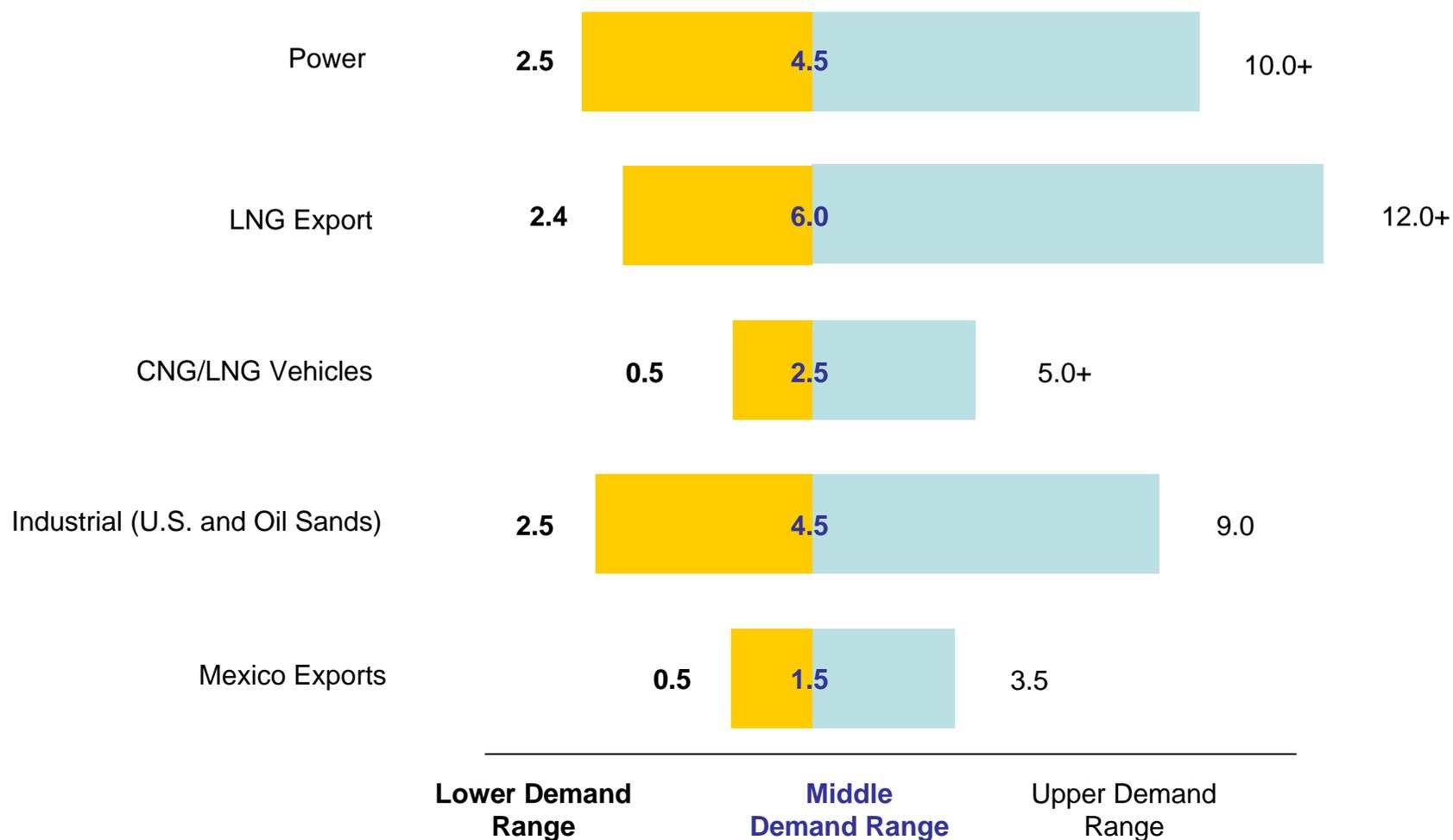
U.S. and Canada: Natural Gas Production vs. Consumption



Source: BP Statistical Review, Raymond James research

North American Natural Gas Demand Ranges by Selected Sector

Significant demand growth is possible in the LNG, transportation/HHP and power sectors through 2020 in Bcf per day.



Source: Encana Corporate Presentation, August 2013; Industrial Energy Consumers of America; Bentek Energy; Raymond James; Michael Smith, Chairman & CEO Freeport LNG, Industry Sources

October 2014 World LNG Prices (\$U.S./MMBtu)

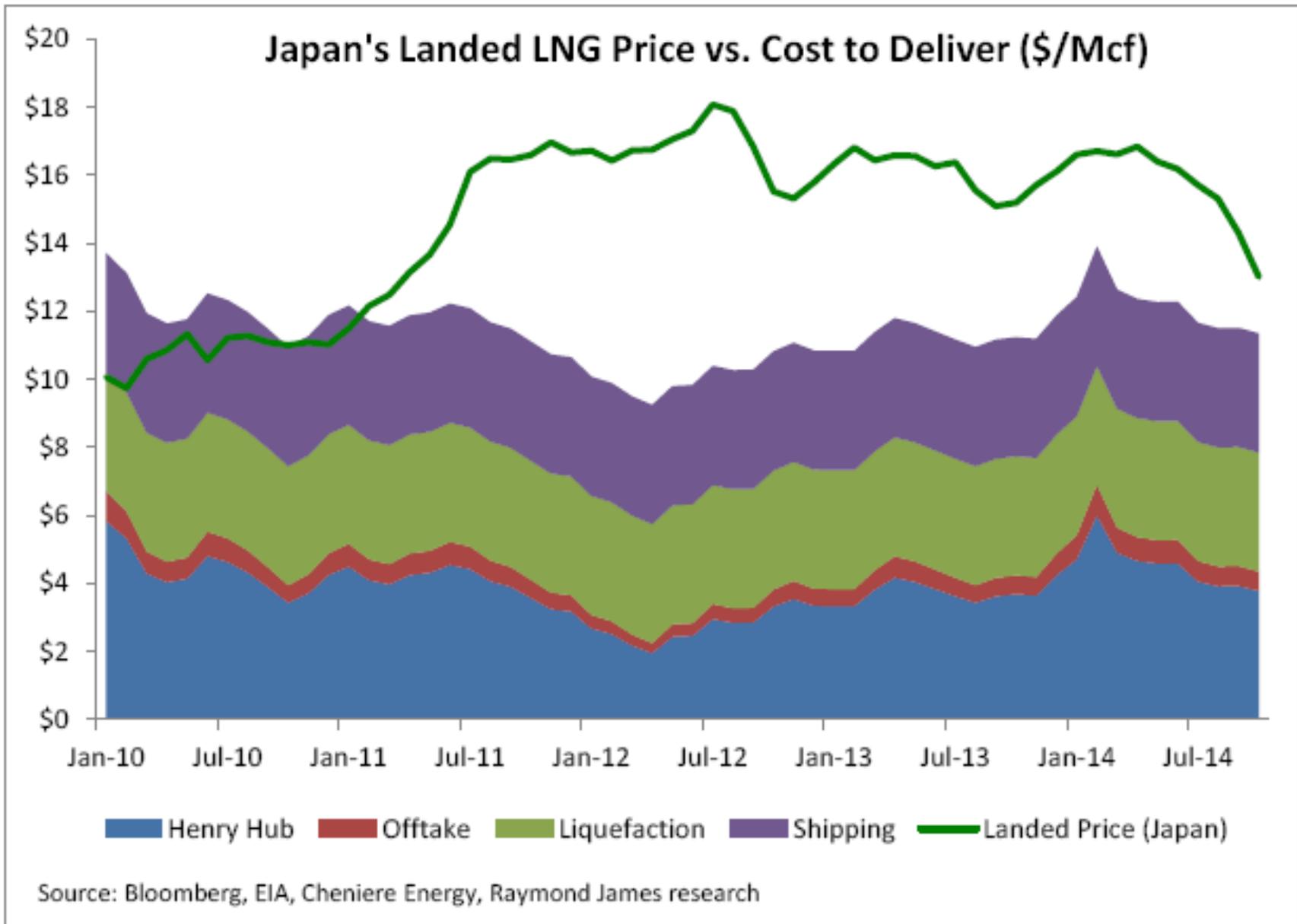


Source: Waterborne Energy, Inc. Data in \$US/MMBtu

The LNG Delivery Chain

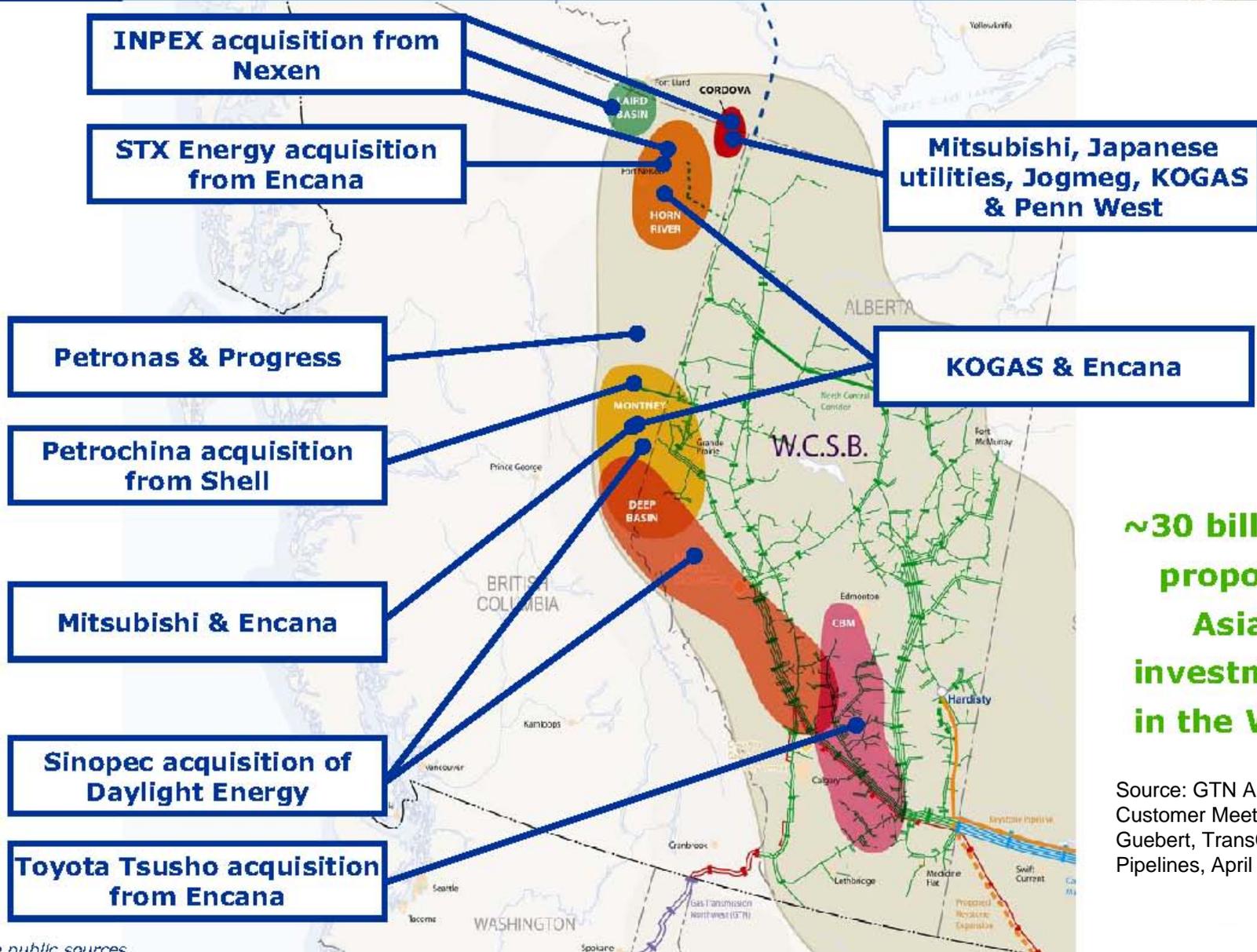


Source: King & Spalding Energy Newsletter, August 2014



Supply Update

Asian Investments – WCSB Natural Gas



~30 billion of proposed Asian investments in the WCSB

Source: GTN Annual Customer Meeting, Roland Guebert, TransCanada Pipelines, April 18, 2013

Export License Volumes for Canadian LNG Projects

Project	Total (Tcf)	Annual (Tcf)	Daily (Bcf)
Aurora LNG	30.50	1.14	3.00
BC LNG ¹	1.69	0.08	0.23
Goldboro LNG ²	7.30	0.51	1.40
Jordan Cove LNG ³	15.63	0.63	1.55
Kitsault LNG	24.00	0.90	2.60
KM LNG ¹	9.36	0.47	1.28
LNG Canada ¹	32.90	1.18	3.20
Oregon LNG ³	13.25	0.47	1.30
Pacific NorthWest LNG ¹	24.50	1.00	2.70
Prince Rupert LNG ¹	29.60	1.06	2.90
Stewart LNG	35.70	1.50	4.00
Triton LNG ¹	2.88	0.12	0.32
WCC LNG ¹	38.90	1.46	3.90
Woodfibre LNG ¹	2.62	0.11	0.29
TOTALS	238.33	9.48	25.67

¹Canadian gas export license granted

²Nova Scotia terminal site

³Oregon terminal site

The Japanese Crude Cocktail Story

The Oil Derivative LNG Contract

- LNG prices in Pacific Basin (ie – Northeast Asia) are closely tied to crude oil prices
- On a Btu equivalent
 - One barrel of crude oil equals approximately 5.8 MMBtu of natural gas
 - Crude oil at \$75 per barrel should mean (on a Btu equivalent) that natural gas is worth \$12.93 per MMBtu (today's price approximately \$4.00 per MMBtu)
- LNG delivered to Tokyo Harbor sold for approximately \$19.00 per MMBtu in November 2014.

Current DOE LNG Export Approvals

Company	Maximum Non-FTA Quantity (BCF/D)
Sabine Pass Liquefaction, LLC	2.2
Freeport LNG Expansion, LP and FLNG Liquefaction, LLC	1.4
Lake Charles Exports, LLC	2.0
Dominion Cove Point LNG, LP	0.77
Freeport LNG Expansion, LP and FLNG Liquefaction, LLC*	0.4
Cameron LNG, LLC	1.7
Jordan Cove Energy Project, LLC	0.8
Total	9.27

Source: NERA Economic Consulting

1. Dominion Cove Point (Producer Driven?)



Dominion Cove Point

(60 miles southeast of Washington DC)



Dominion Cove Point Stats

- 131-acre existing (Brownfield site) LNG import facility located on Chesapeake Bay near Lusby, MD.
- Filed for FERC approval in April 2013
- Received FERC approval in September 2014
- Number of trains: 1
- Total liquefaction capacity: 770,000 MMBtu/day
- Projected cost: \$3.8 billion
- 20-year service agreements with:
 - ST Cove Point LLC, a joint venture of Sumitomo Corp. and Tokyo Gas Co. Ltd
 - Gail Global (USA) LNG LLC, a wholly owned indirect U.S. subsidiary of Gail (India) Ltd.

Cabot and Cove Point Headlines

Dominion Cove Point LNG Terminal Wins Federal Approval

- Bloomberg

Cabot Oil & Gas Corporation, Announces Agreement to Provide Natural Gas to the Dominion Cove Point LNG Terminal

- Cabot Oil & Gas Press Release

Cabot secures Transco natural gas pipeline space

- Oil & Gas Journal

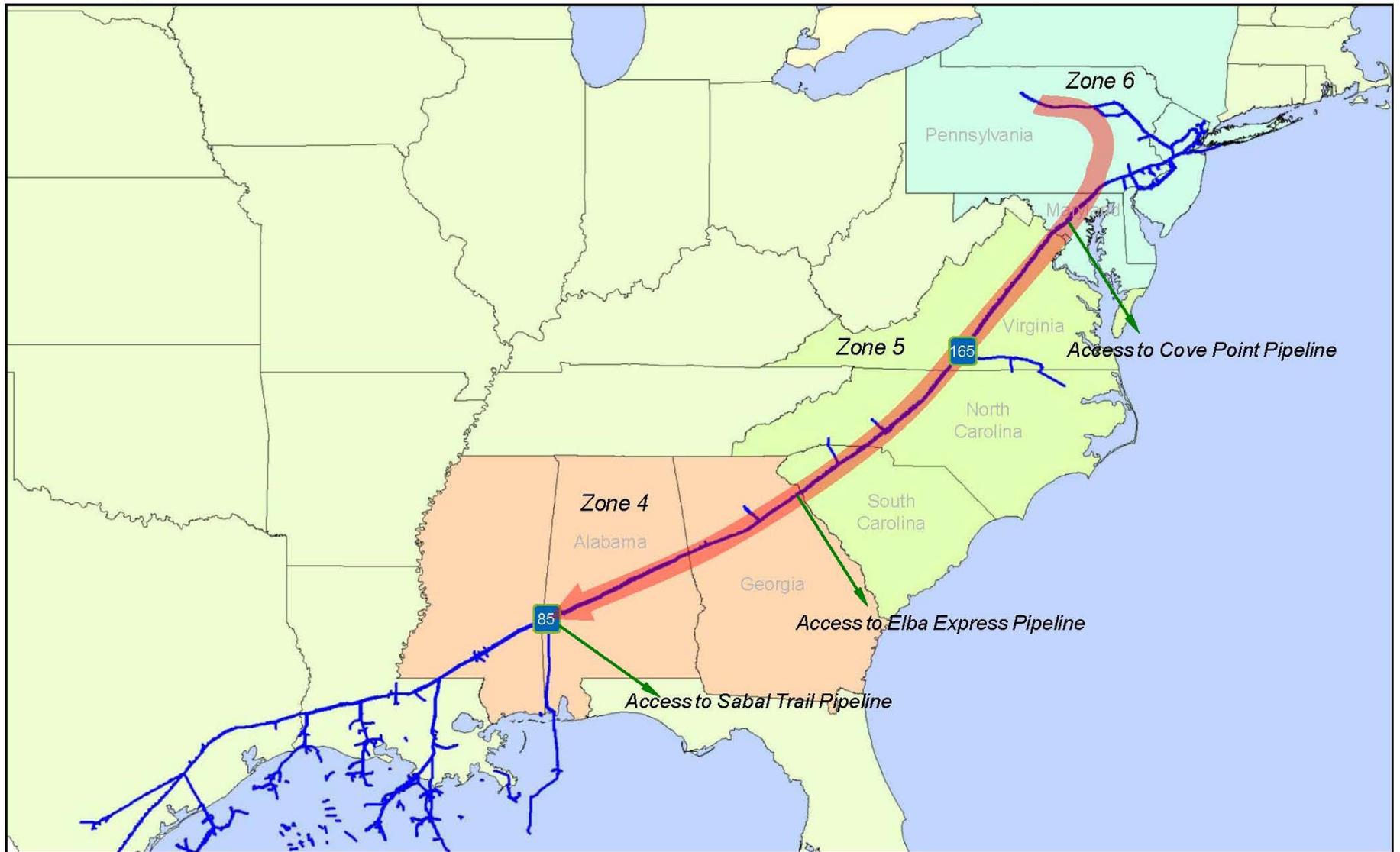
Proposed Dominion Cove Point natural gas export terminal in Md. would send Marcellus Shale gas to Japan, India

- Timesleader.com

Pipeline and LNG Commitment

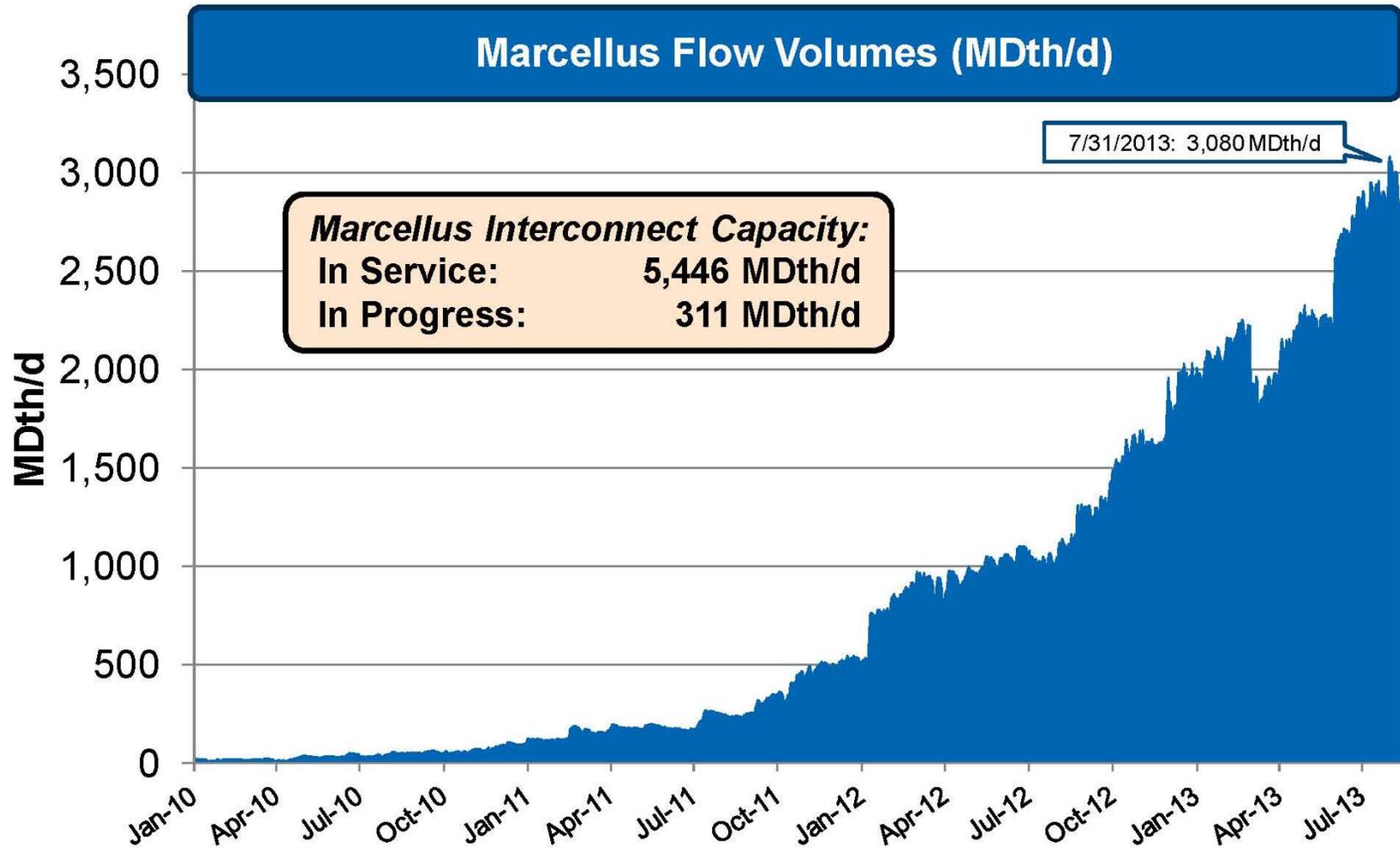
- Cabot will sell 350,000 MMBtu/day for a term of 20 years beginning with Cove Point's in-service date scheduled for 2017
- Cabot committed to takeaway capacity from its acreage in Susquehanna County on Transco's Atlantic Sunrise expansion
- Cabot will own 850,000 MMBtu/day (Sunrise capacity) and will also be an equity owner

Project Path



Source: Transco's Atlantic Sunrise Project Shipper Presentation, August 2013

Leidy Line Volumes Ramping Up

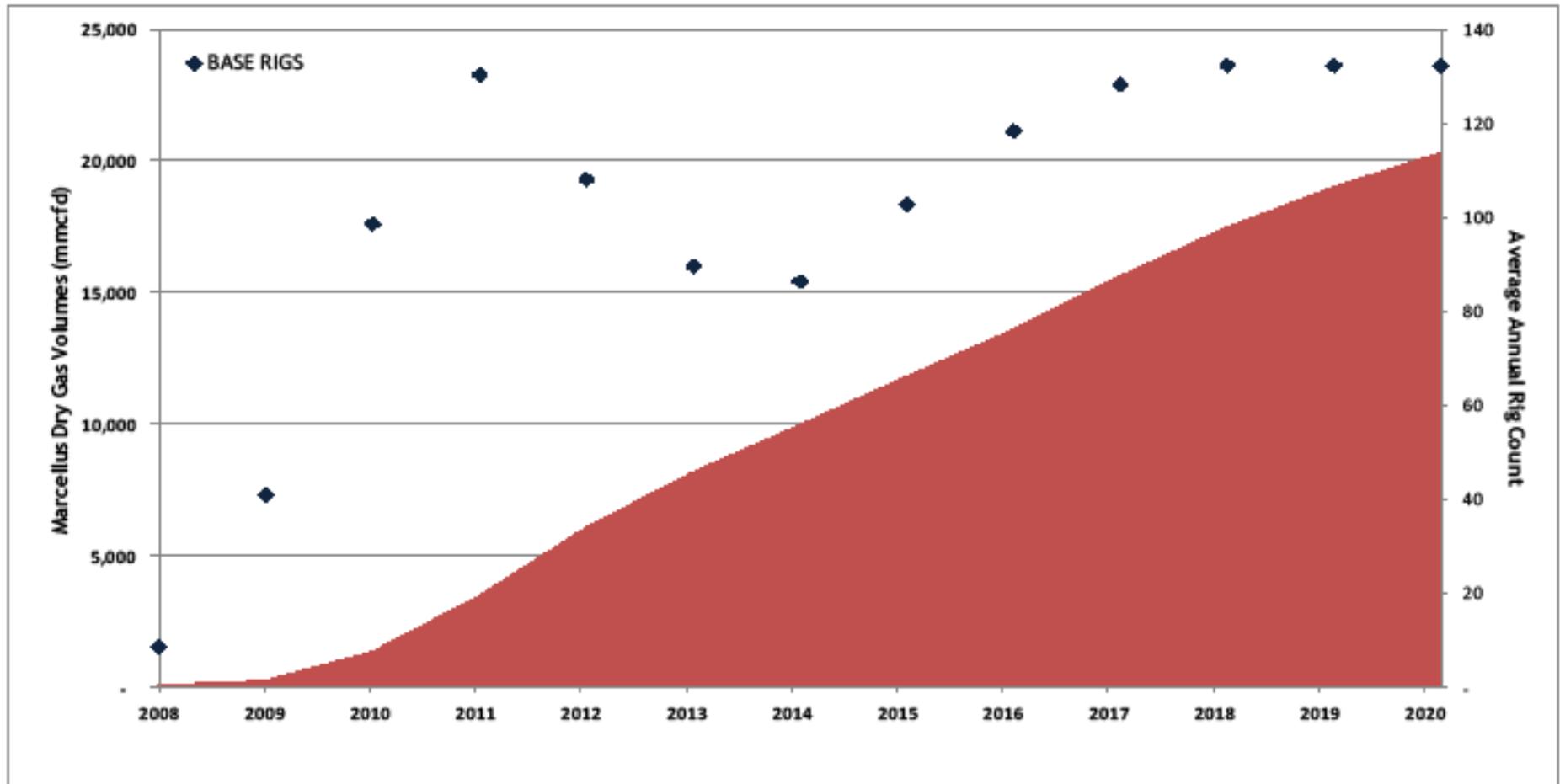


Source: Transco's Atlantic Sunrise Project Shipper Presentation, August 2013

Summary of Problem

- Unparalleled, explosive production growth near Leidy, PA
- Waiting on export pipelines to clear market...they will clear, only a question of when
- Until then, large basis exposure at Leidy

Marcellus Gas Production Forecast



Production is primarily driven by a handful of growth oriented, low cost operators including Cabot, Range, Noble/Consol, Southwestern, and EQT. We assume minimal acceleration for larger E&Ps, small caps and majors.

Marcellus Producers

Leidy Line Interconnects	Producers	6-month Historical Avg. Vol. (Dts/Day)
Barto	Chesapeake, Enerplus, Exco	110,000
Breon	Anadarko Petroleum, Exxon Mobil, Pennsylvania General Energy	150,000
Bull Run Vista 1 & 2	Anadarko Petroleum, Mitsui, Ultra	105,000
Canoe Run	Anadarko Petroleum, Chesapeake, Enerplus, Exco, Mitsui, Range, Statoil	55,000
Chapin	Chesapeake, Chief, Enerplus, Statoil	375,000
Grugan 1 & 2	Anadarko Petroleum, Mitsui, Ultra	110,000
Guinte	Anadarko Petroleum, Chesapeake, Mitsui, Statoil	70,000
Liberty Drive	Seneca Resources Corporation	155,000
Marc I	Anadarko Petroleum, Chesapeake, Mitsui, Statoil	440,000
Miller Hill	Anadarko Petroleum, Chesapeake, Mitsui, Statoil	40,000
Puddlefield	Cabot Oil & Gas	540,000
Quaker State	Inflection	15,000
Rattlesnake	Great Plains Energy	2,000
Tombs Run	Anadarko Petroleum, Chesapeake, Chief, Range, Enerplus, Mitsui, Statoil	340,000
Total		2,507,000

Transco's Atlantic Sunrise Pipeline

Project Milestones – Proforma

	Deliverable	Timing
Project Development	• Preliminary Marketing Effort	March 2013 – July 2013
	• Non-Binding Open Season	August – September 2013
	• Execute Binding Precedent Agreements	October 31, 2013
	• WMB / WPZ Board Consideration	November 2013
Project Execution	• Initiate FERC Pre-Filing	Q1 2014
	• File FERC Application	January 2015
	• Receive FERC Certificate	February 2016
	• Commence Compression Construction	July 2016
	• Commence Pipeline Construction	July 2016
	Start-up (Target ISD)	July 1, 2017

2. Jordan Cove (LNG Purchaser Driven?)



Jordan Cove Stats

- Located within the Port of Coos Bay on the North Spit of lower Coos Bay
- Facilities & Infrastructure: Greenfield site with no existing tanks or other structures and little pipeline infrastructure
- Filed for FERC approval in June 2013
- Still waiting on FERC approval
- Number of trains: 1
- LNG Storage Capacity: 320,000 cubic meters
- Sendout Capacity: 800,000 MMBtu/day non-FTA
- Peak sendout capacity: 1,200,000 MMBtu/day
- Projected cost: \$6 billion

Jordan Cove



Potential offtakers/Jordan Cove

“In October 2013, three unnamed potential Asian buyers signed non-binding and non-exclusive heads of agreements (HOA) for at least 75% of Jordan Cove LNG’s 6 mtpa capacity, according to Veresen, under a proposed liquefaction tolling services agreement (LTSA).”

Source: LNG Business Review by Gas Strategies Information Services, The Gas Strategies interview, Guy Dayvault, Jordan Cove LNG project, March 2014

Managing Long-Term Henry Hub Risk

Three options for managing gas supply risk for LNG purchasers:

1. Long-term gas supply agreement with U.S. producers
2. Investment in gas reserves (taking on E&P risk)
3. Enter into an Asset Management Agreement (AMA) with gas marketing and trading company

Death By Credit Exposure

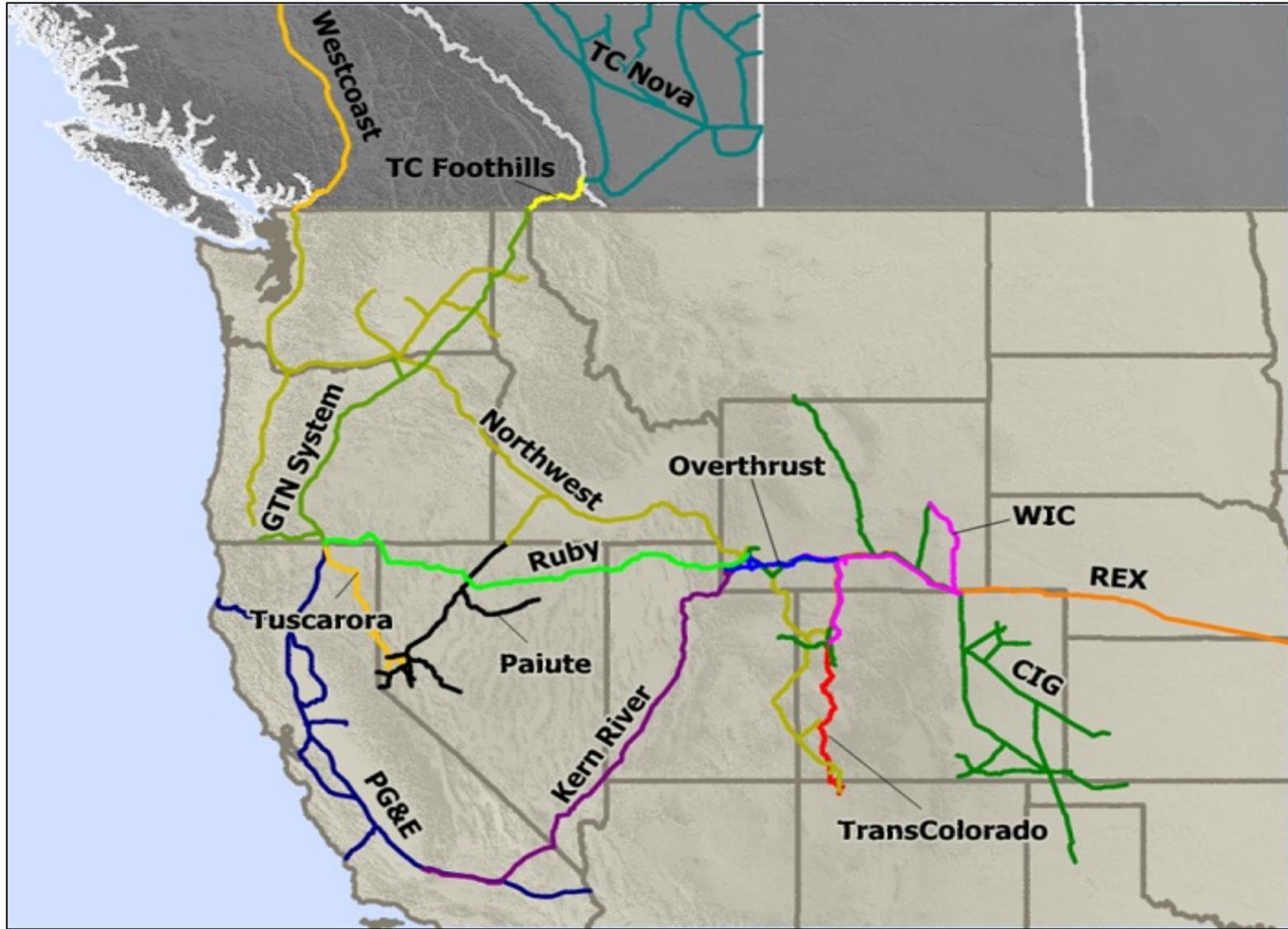
100,000 MMBtu/day X \$4.00/MMBtu
X 20 years = \$2.9 Billion



Nucor EnCana – A Model for Asian LNG Purchasers?

- A price protection deal for Nucor Steel
- \$3.6 billion 20 year investment in 4,000 wells located in western Colorado
- Lack of counterparty creditworthiness drove the structure of the deal
- A financial investment/partnership in drilling and development was the only solution for Nucor
- Nucor will sell the gas in western Colorado and use the cash to purchase like volumes in Louisiana
- This deal structure allowed for the phased development of a \$1.4 billion DRI steel mill

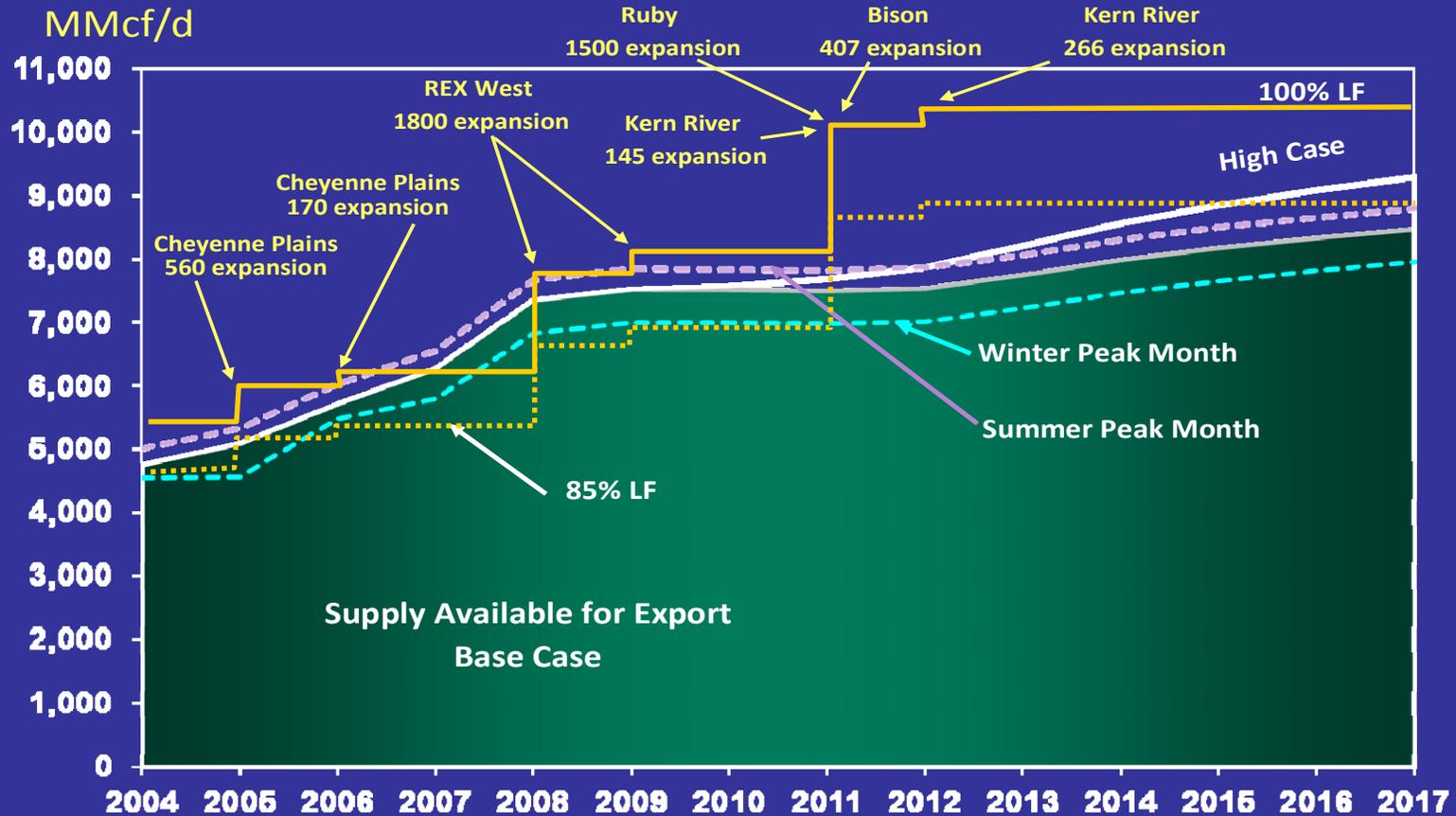
Rockies Pipeline Infrastructure



Rockies Supply vs. Regional Export Capacity

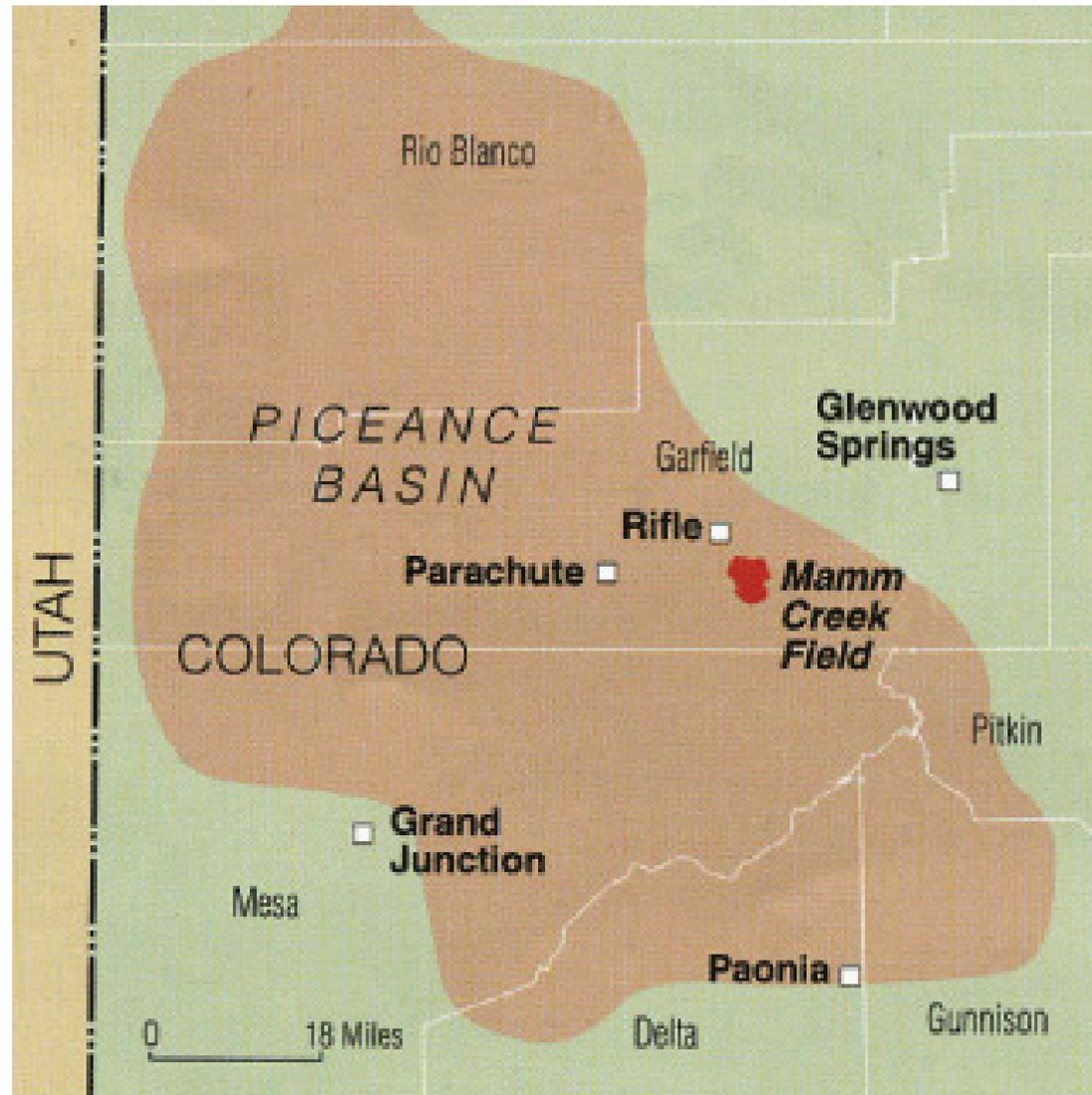
Rockies Supply vs. Regional Export Capacity

1.5 Bcf/d Ruby
MMcf/d



Source: George Wayne, Wyoming Gas Fair – Rockies Market Update – 9/15/2011 presentation

Piceance Basin Map

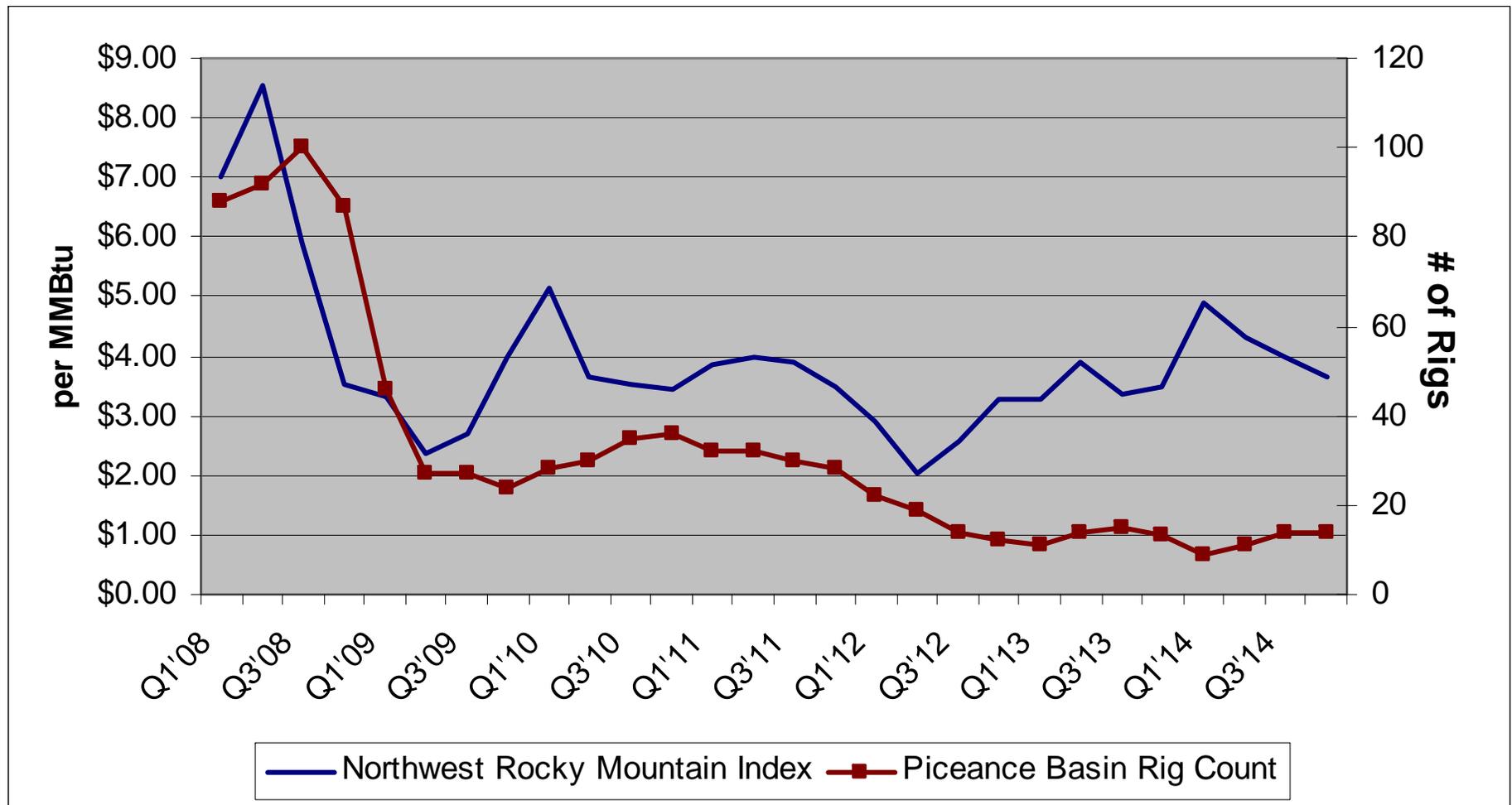


Growth in Piceance Basin Pipeline Take-away Capacity

	December 2005	February 2006	Summer 2006	Summer 2007	Summer 2008	Summer 2013
CIG (Net)	90,000	90,000	90,000	90,000	90,000	195,000
Northwest Pipeline North	330,000	330,000	330,000	330,000	780,000	800,000
Northwest Pipeline South	440,000	440,000	440,000	440,000	440,000	655,000
Questar Pipeline (Net)	25,000	25,000	25,000	25,000	25,000	35,000
TransColorado	350,000	385,000	385,000	385,000	385,000	385,000
WIC	30,000	30,000	350,000	350,000	350,000	552,000
REX / Entrega (Segment 1)		500,000	500,000	750,000	1,300,000	1,300,000
Total Pipeline Export Capacity	1,265,000	1,800,000	2,120,000	2,370,000	3,370,000	3,922,000

* All numbers in MMBtu/Day

Decline of Natural Gas Price Index Since 2008 and Piceance Basin Rig Count 2008-Current (By Quarter)

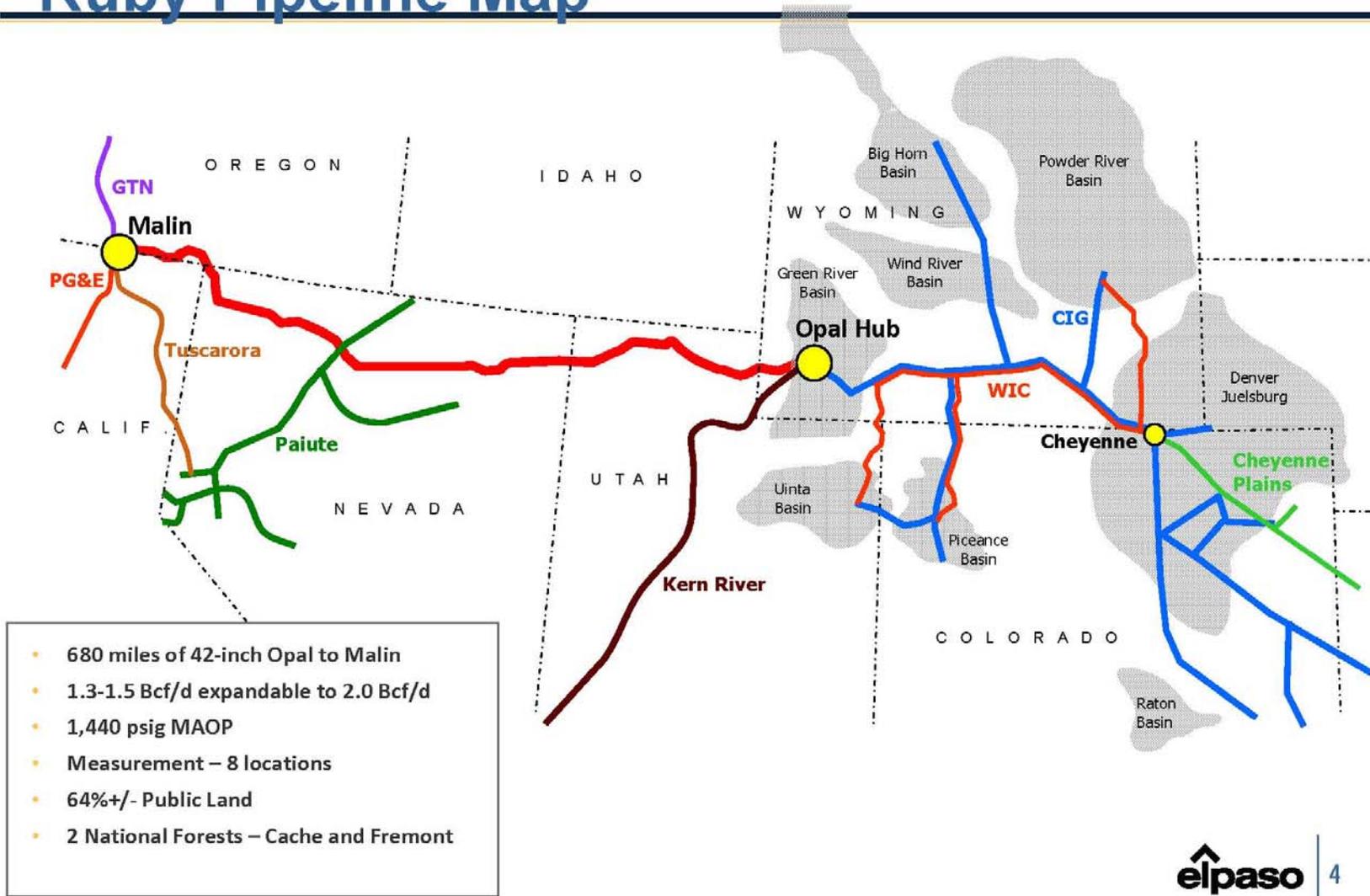


Source: Inside FERC's Gas Marketing Report, A McGraw Hill Publication and Tudor Pickering Holt & CO

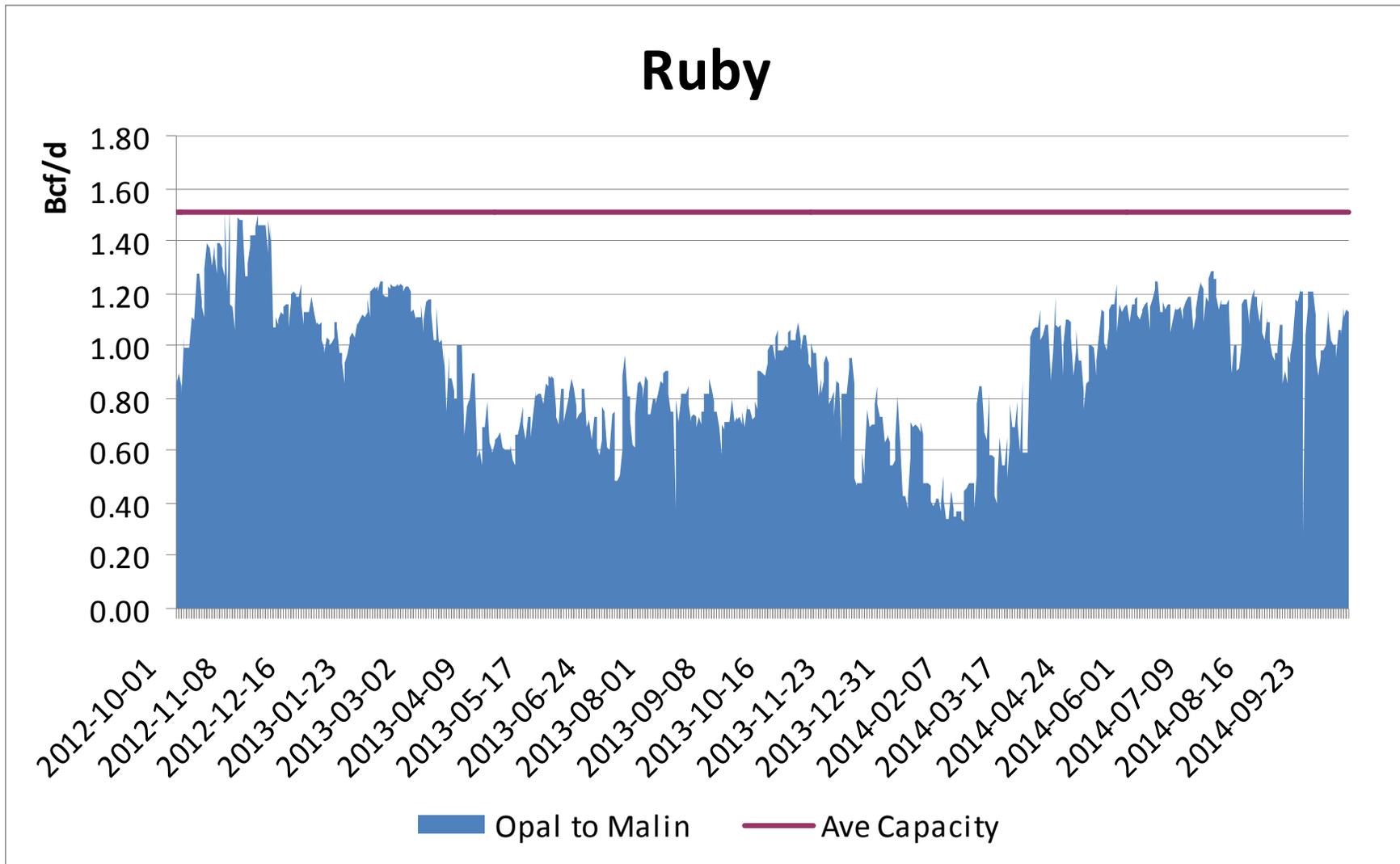
Partial List of Current Piceance Basin Producers

- Encana Corporation
- WPX Energy
- Caerus Oil and Gas
- Gunnison Energy LLC
- Foundation Energy Management
- Vaquero Energy, Inc.
- Piceance Energy LLC
- Chevron Corporation
- Marathon Oil Corporation
- Occidental Petroleum Corporation
- Noble Energy Inc.
- Laramie Energy, LLC
- Mesa Energy Partners, LLC
- Southwestern Energy Ventures Company, LLC
- BOPCO, L.P.
- XTO Energy Inc.
- Wexpro
- Whiting Petroleum Corporation
- LINN Energy, LLC

Ruby Pipeline Map



Ruby Capacity



Source: Bentek Energy

Veresen (owner of Jordan Cove) and Ruby Headlines What do they see?

Veresen Announces US\$1.425 Billion Acquisition of 50% Interest in the Ruby Pipeline and Acquisition Financing

- Veresen Press Release

Veresen to acquire half stake in Ruby pipeline for \$1.43 billion

- Reuters

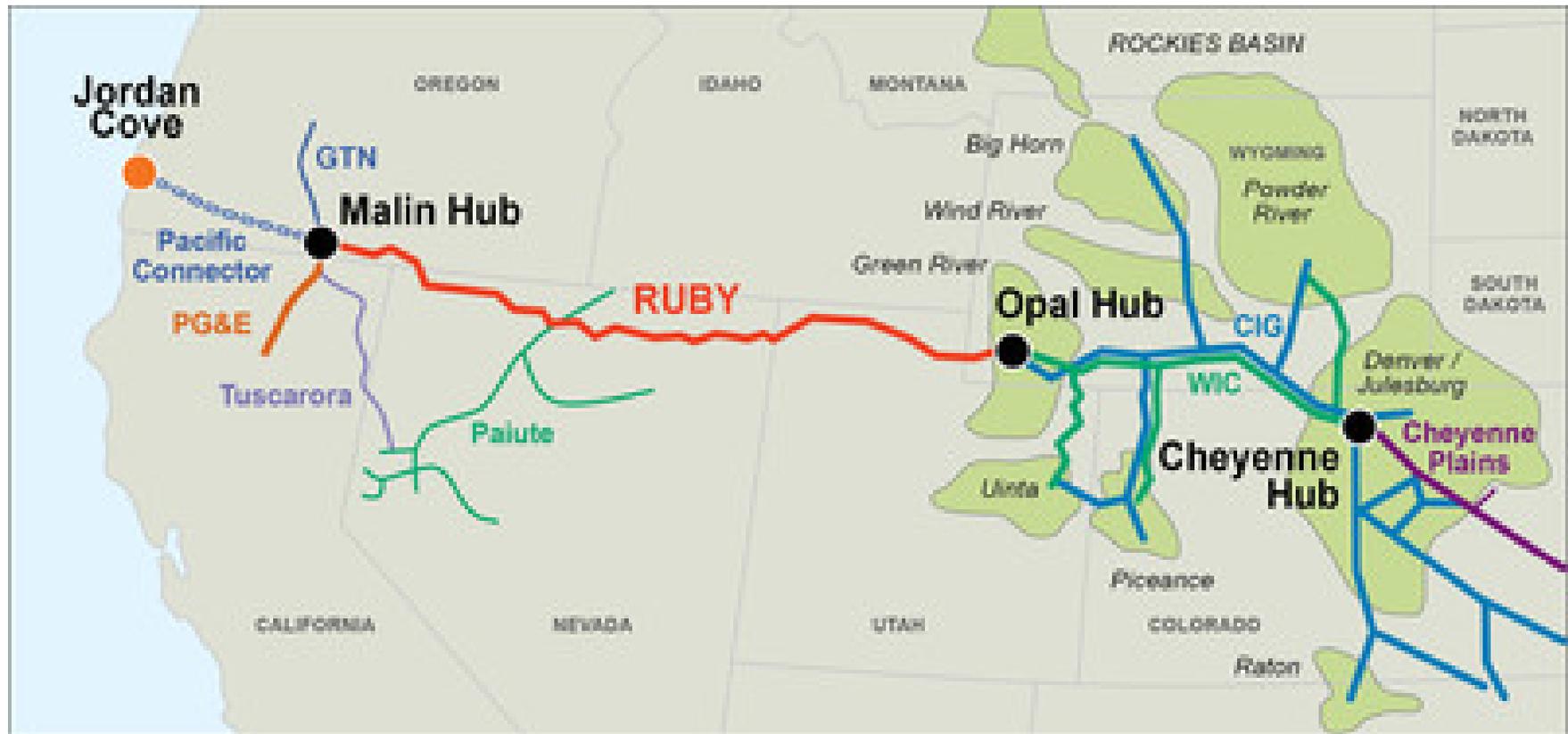
Veresen Makes Biggest Deal With \$1.43 Billion Ruby Stake

- Bloomberg

Veresen completes Ruby pipeline interest acquisition

- LNG World News

Piceance to Pacific Rim?



Pacific Connector Pipeline



Source: Oregon Green Energy Guide

Conclusions

- Natural gas is “on sale” in the U.S.
- Huge pressure and effort underway to close the international price arbitrage
- Some LNG export facilities are clearly producer-driven vs. LNG purchaser-driven
- Producers and LNG purchasers have entirely different strategies based on divergent risk profiles
- Don't bet against the underdog Greenfield project like Jordan Cove

Questions

- What happens to the rig count in the U.S. if crude oil drops below \$60 per barrel?
- Will natural gas volumes continue to increase if associated gas volumes decline?
- Has there ever been an accurate 20-year forecast or prediction in the U.S. oil and gas industry?
- Can we really guarantee 20 years of liquidity for foreign LNG purchasers?

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Citations for Report

All of the information utilized for this report is a compilation of information pulled from the following data sources:

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Wyatt Investment Research
Rueters
LNG World News
Timesleader.com
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