

Alaska's Arctic

Can the gas reserves find a way to market?



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Outline

- The options:
 - LNG to Asia
 - Dry or wet gas to the United States
- The challenges of a \$30 billion to \$50 billion cost
- Alaska's small-scale LNG option
- All of the above need shipping commitments
- Uncertainties caused by U.S. shale gas development

Federal Coordinator Office

- ❑ U.S. Congress created the U.S. Office of the Federal Coordinator in 2004.
- ❑ Part of 'Alaska Natural Gas Pipeline Act' that declared a national need for Alaska gas.
- ❑ Mission is to see that nothing the U.S. government agencies do make an already challenging project more challenging.
- ❑ I research and write about natural gas development and trends in effort to inform the public discussion.

Scale of Alaska's resource I

- Arctic region
 - 1 tcm of known reserves onshore & offshore
 - 225 mmcm produced daily - reinjected
 - 6 tcm of reserves estimated undiscovered
- Major players: ExxonMobil, BP, ConocoPhillips
- Others active: Chevron, Royal Dutch Shell, Total, ENI, Repsol

Pipeline project

- TransCanada Corp./ExxonMobil venture
- \$32 billion to \$41 billion project (2009\$)
- 1,700-mile pipeline – Prudhoe Bay to Alberta
- \$300 million spent so far. Up to \$700 in pre-construction spending thru 2014.
- Proposed start-up: 2020

Project timeline



Pipeline route

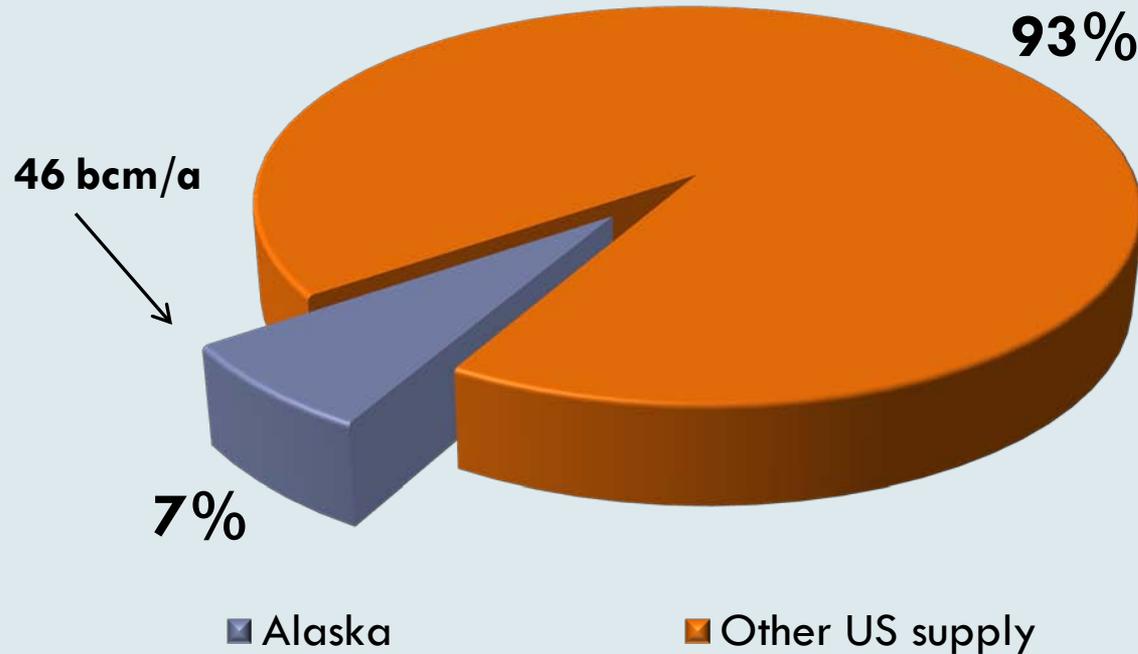
ALASKA GAS PIPELINE PROJECT



How much is 46 bcm/a?

If Arctic Alaska gas were flowing to U.S. now ...

Projected Alaska production as share of 2010 U.S. consumption



Arctic LNG

- Idea is to pipe gas 800 miles to liquefaction plant and tanker port in Valdez, Alaska
- Volume: 17 to 20 million tonnes of LNG a year
- About \$50 billion project – half pipeline, half LNG
- TransCanada/ExxonMobil offered the pipeline option in a 2010 open season. Someone else would build the liquefaction
- Little interest, no work under way, but TC/EM remains open to offers

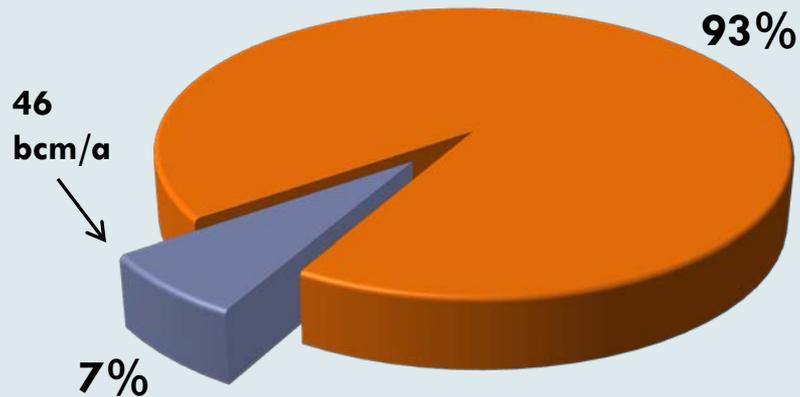
Where would LNG plant be?

ALASKA GAS PIPELINE PROJECT



How much is 18 mm tonnes?

If Arctic Alaska gas were flowing to U.S. now ...

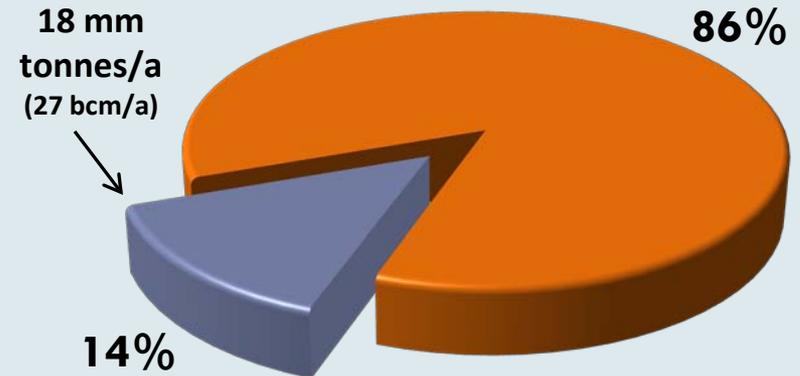


■ Alaska

■ Other US supply

Projected Alaska production as share of 2010 U.S. consumption

If Alaska LNG entered world trade ...



■ Alaska

■ Other supply

Projected Alaska LNG as share of 2010 Asia Pacific LNG consumption

Alaskans grow impatient

- Alaska's two biggest communities have natural gas anxieties
 - Anchorage: 40-year-old Cook Inlet fields pressed to produce enough gas
 - Fairbanks: Reliance on oil for heat and electricity = painfully high prices, over \$20 per mmBtu
- Can something be built faster than 2020?

Scale of Alaska's resource II

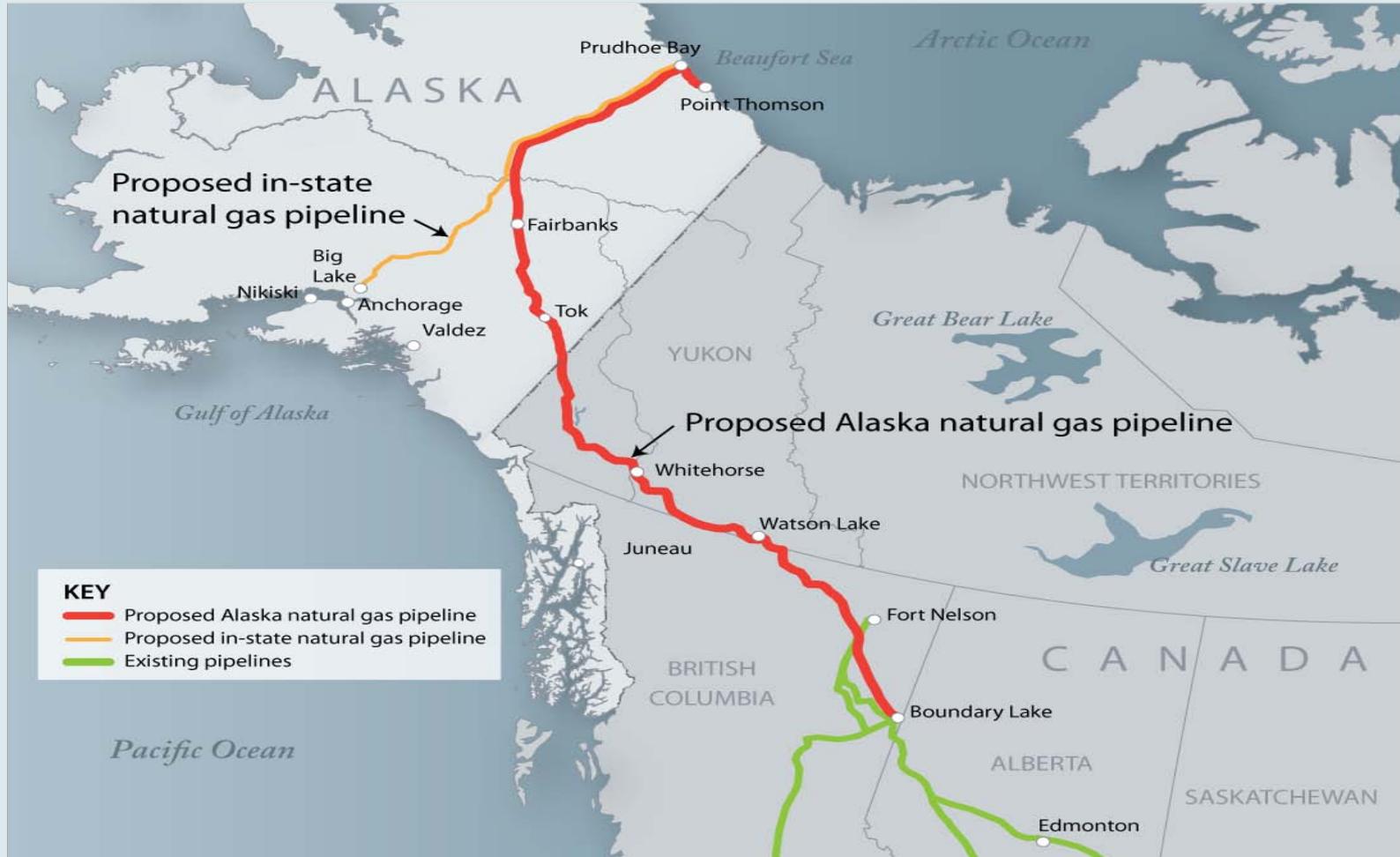
- Cook Inlet region (southern Alaska)
 - 250 bcm produced since 1960s
 - Some exported as LNG
 - 500 bcm of reserves estimated undiscovered
- Gas is essential to the economy of Alaska's largest urban area
- Gas deliverability is running low

In-state pipeline proposal

- This is Plan B. Sponsor is State of Alaska
- Cost is \$5 billion to \$10 billion (2011 \$)
- 737-mile pipeline from Arctic to Anchorage area
- 14 mmcm/d flow
- LNG exports of 2 million tonnes a year – about half of pipeline's gas – if customers found
- Up to \$400 million in permitting & design work under way

Route of in-state pipeline

ALASKA GAS PIPELINE PROJECTS



Alaska LNG imports

- Anchorage-area utilities studying LNG imports option. Plan B+
- Need for LNG is small – 45,000 tonnes in 2015, growing to 1 million tonnes in 2021
- Status: Under study by consortium of utilities
 - Cost?
 - Import at Nikiski LNG export plant?
 - Floating regasification?

Pipeline project challenges

- Will sponsors secure sufficient precedent agreements to underwrite financing?
- Will shale gas production take away market?
- How fast will U.S. utilities switch from coal to gas?
- What will the price be in 2020, 2030, 2040?
 - Currently about \$4 per mmBtu
 - Needs \$6+ per mmBtu
 - 285,000 bbl/d of liquids enhance project economics
- Can \$40 billion project stay on time, on budget?

LNG project challenges

- Will an entity step forward to take on liquefaction side of project?
- Competitive market -- Can buyers be found for 18 mm tonnes/a of gas near time of project completion?
- Will the oil-LNG price linkage hold in Asia Pacific?
- Will Arctic producers shift allegiance to LNG over gas pipeline through Canada?
- Can \$50 billion project stay on time, on budget?

Thank you

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