

Alaska's natural gas: Does any country need it?



Alaska World Affairs Council

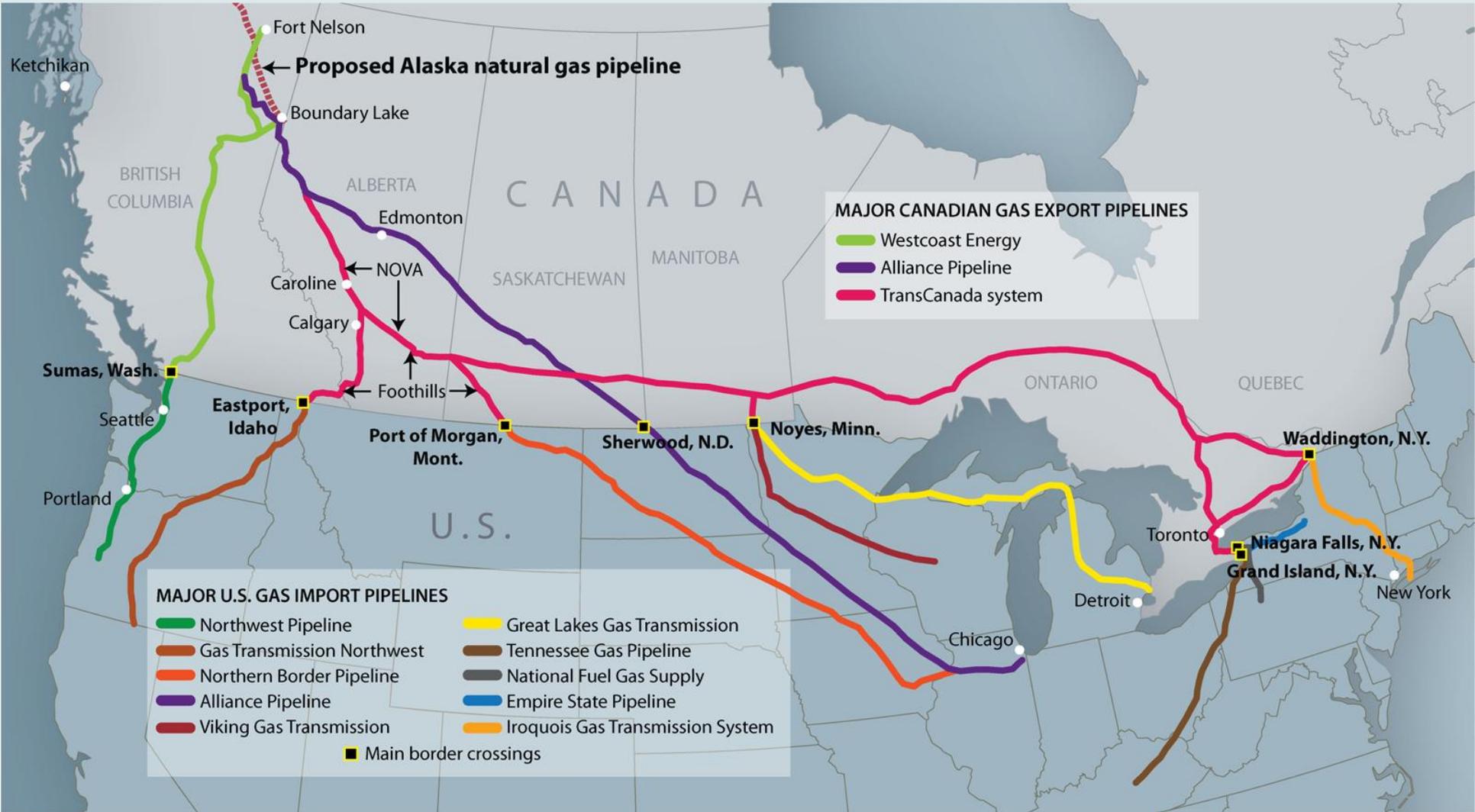
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Answer hinges on the 'ifs'

- North American demand growth and higher prices
- Future productivity, cost of shale gas
- Global competition in Asia-Pacific markets
- North Slope producers willing to bet on the future
- Stable, manageable fiscal terms with the state
- Alaskans need to measure success not by the last tax dollar but by access to affordable gas and tens of billions in oil and gas investments

Major Canada / U.S. gas lines



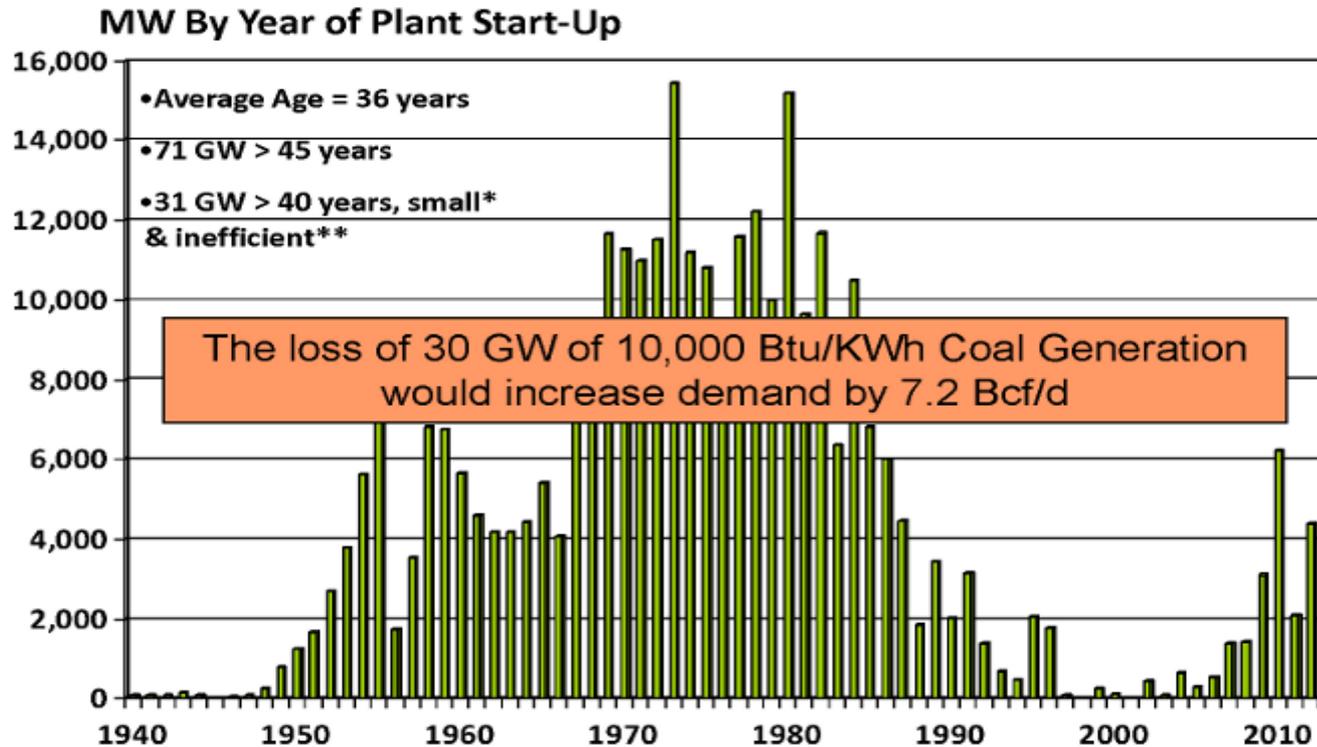
Coal is losing its grip

- American Electric, the biggest U.S. producer of coal-fired electricity, plans to retire 6,000 MW of coal production by end of 2014
- Southern Co., the biggest U.S. utility owner by market value, will shutter 4,000 MW of coal plants and replace the load with gas
- North and South Carolinas' Progress Energy will phase out 11 of its oldest, dirtiest coal-fired generating plants by 2014

Natural gas gains

- Coal's share of electrical generation in the first quarter 2011 was the lowest in 30 years
- U.S. electrical generation by natural gas has climbed 50% over the past decade
- Several forecasts put gas ahead of coal for power generation in three decades
- Gas has to be low enough for power generation, but high enough to generate producer profits

U.S. coal plants getting old



Between 30 and 70 GW (10-20% of coal fleet) could be shuttered due to more stringent environmental regulations

Source: Ventyx Velocity Suite

*Less than 300 MW

** Heat rate > 10,000 Btu/KWh

Gas prices lower than low

- This week gas fell to \$2.50 for February delivery
- Almost one-sixth of summer 2008 peak
- Warm winter, weak economy, large stockpiles equal lowest natural gas prices in a decade
- Lower 48 producers keep sending gas to market to generate cash flow on their sunk capital costs
- Eventually, supply and demand will rebalance; eventually, debt load and development costs will catch up with drillers and slow production

And what about shale gas

- Water is an issue, going in and coming out
- Several million gallons required for each frack
- Disposal of polluted wastewater that comes back up
- Earthquakes now an issue after 4.0 tremor in Ohio
- Communities question drinking water supplies, wastewater disposal, truck traffic and noise
- EPA is studying fracking and water quality issues; states and communities adopt their own rules

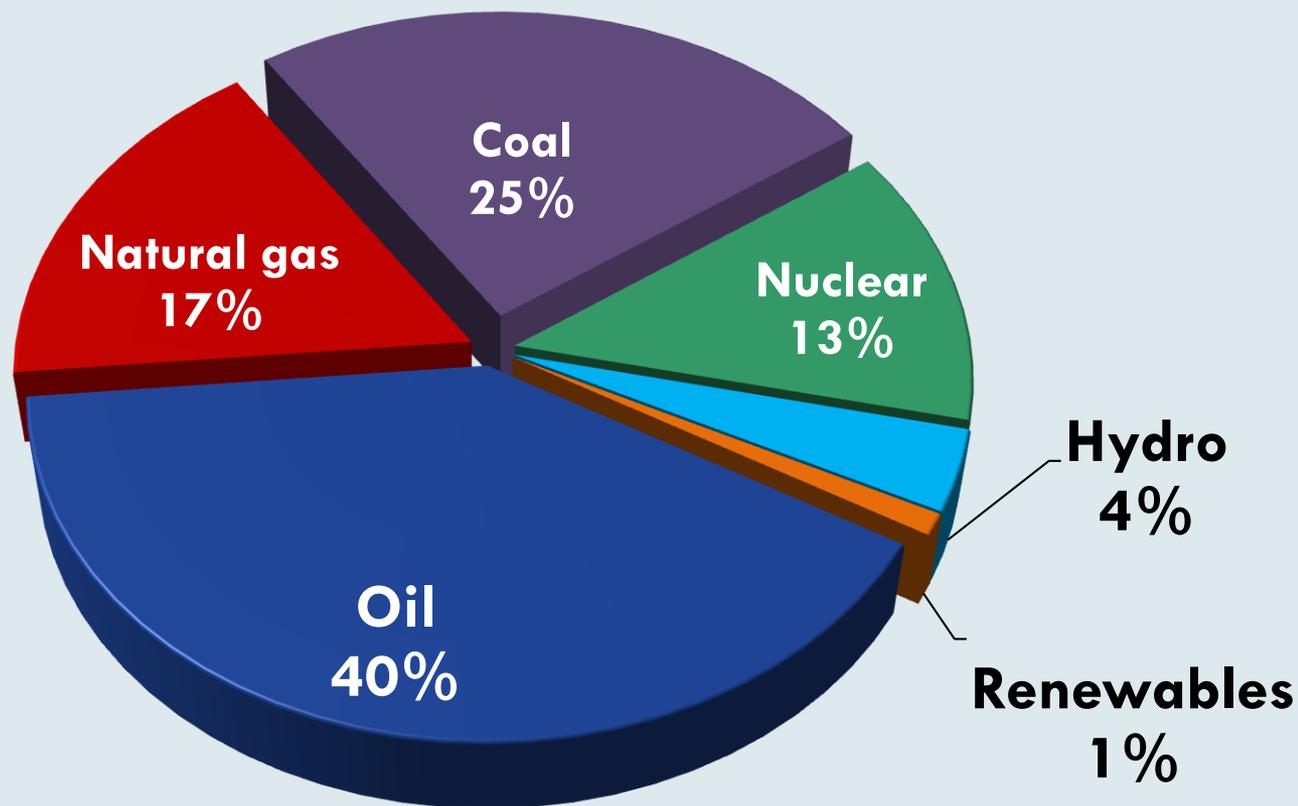
Shale production curve

- Steep decline curve requires constant drilling and fracking to maintain field production
- Meanwhile, conventional U.S. gas production is in its own decline; one-third lost each year
- That means 22 bcf a day of new gas needed each year just to hold U.S. production level
- Alberta conventional production is forecast to drop by 2018 to half of its 2011 level

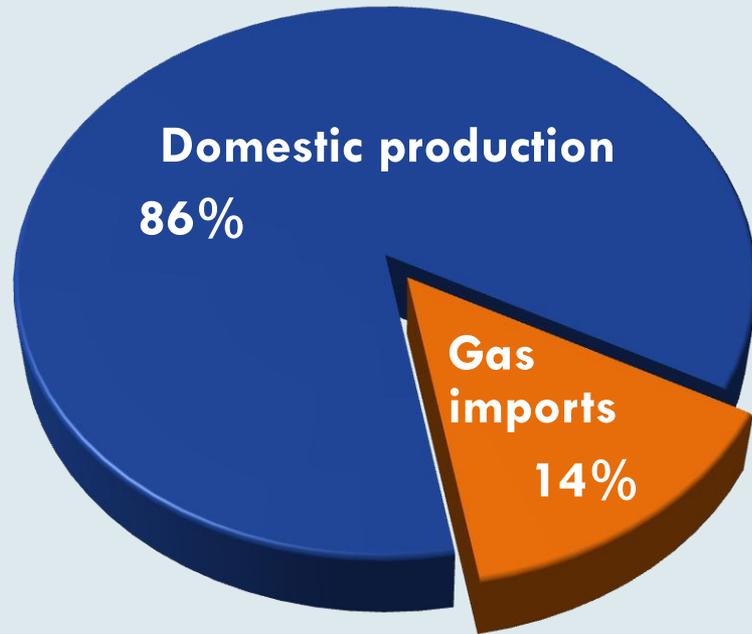
LNG sells at higher prices

- Asia LNG contracts generally linked to oil prices
- Spot sales peaked close to \$18; back below \$15
- Alaskans shouldn't confuse spot with contract prices
- Buyers are pushing back, especially China and India
- U.S. exports could be linked to gas prices, not oil
- Cheniere LNG supply deals are tied to Henry Hub
- Buyers will pay \$2.50/million Btu for capacity, regardless whether they use liquefaction plant

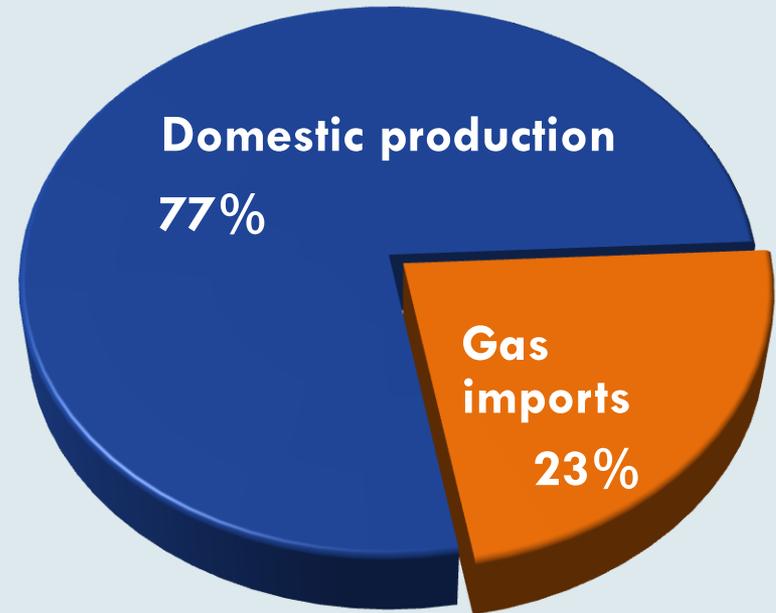
Japan's energy sources 2010



China's gas supplies, 2010-2012



2010 Actual

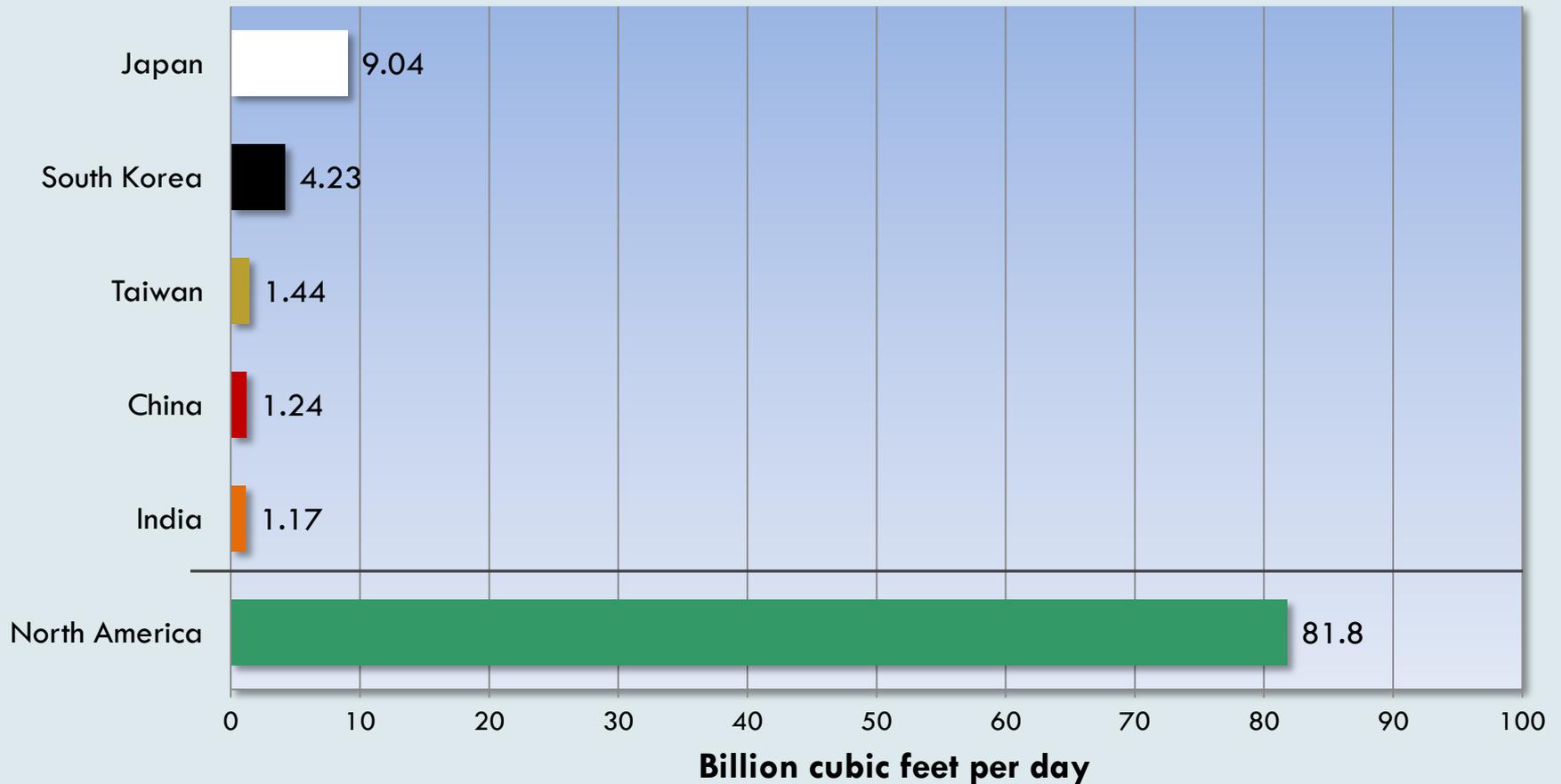


2012 Estimated

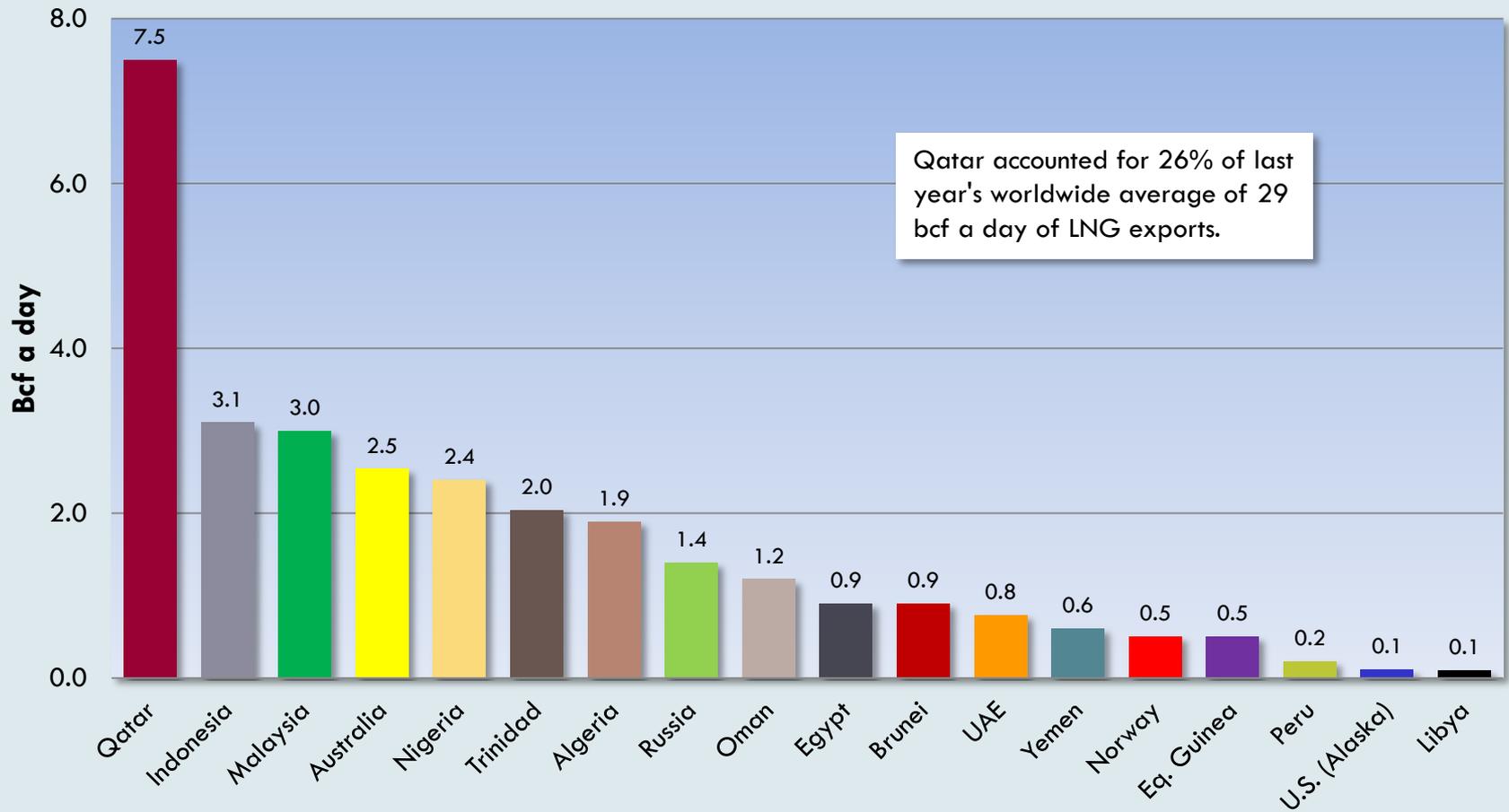
China's gas options and prices

- About half of China's natural gas imports come via 3 bcf/day pipeline from Turkmenistan
- Wood Mackenzie in November said China could buy Turkmenistan pipeline gas at \$8.50
- Meanwhile, the government sets the price that utilities can charge consumers for natural gas
- So importers lose money selling imported gas
- Price varies by region, but average about \$5; government is testing cap at \$12 in two regions

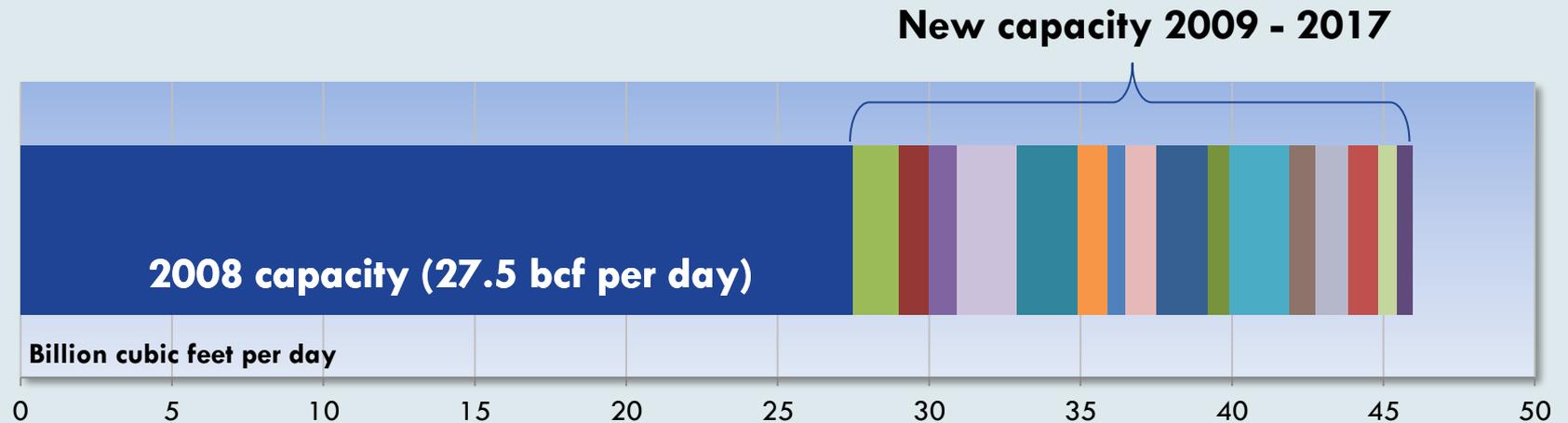
Asia-Pacific LNG imports 2010



Global LNG exporters 2010



Global LNG export capacity

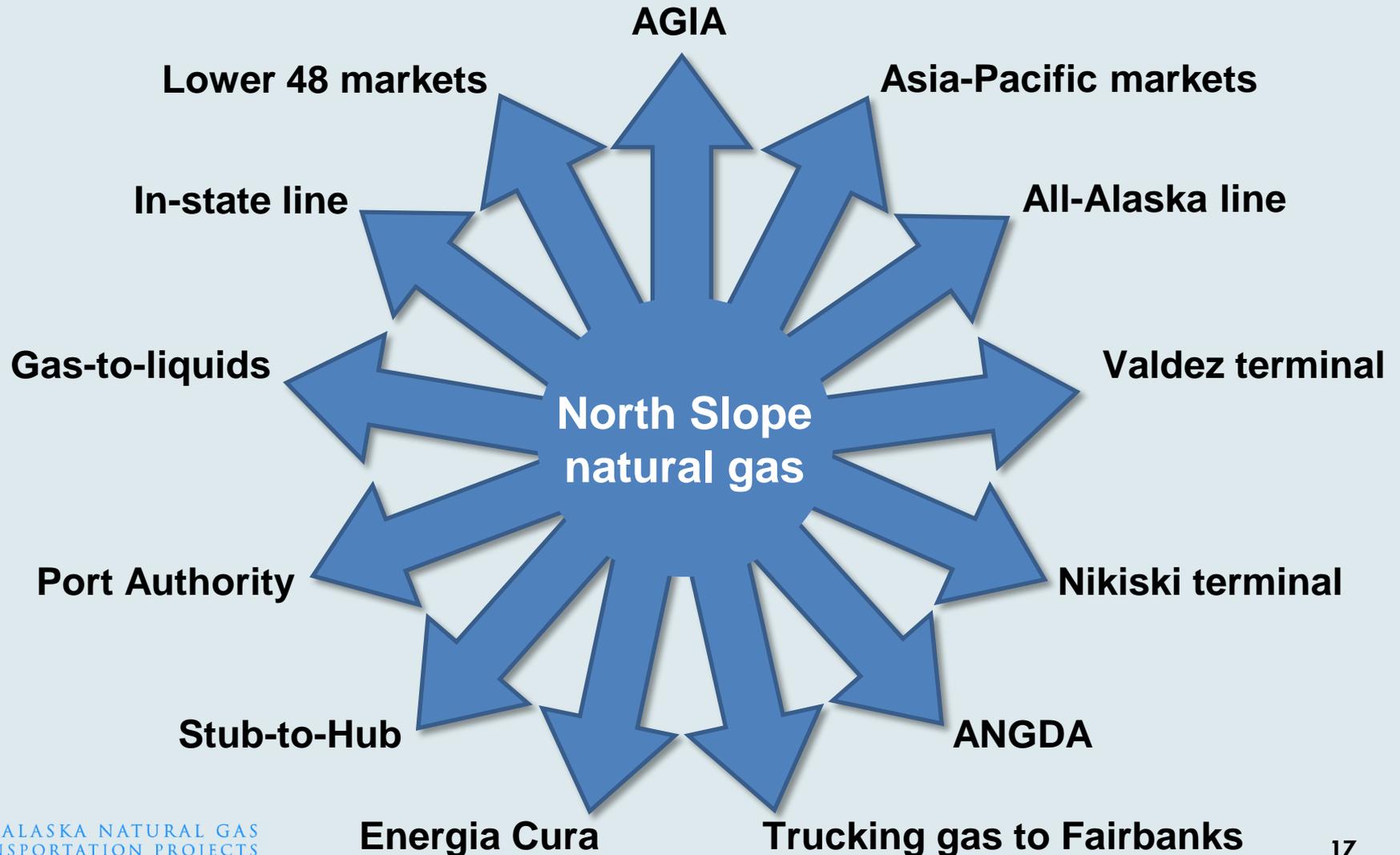


- Global capacity (2008)
- Sakhalin, Russia (2009)
- Tangguh, Indonesia (2009)
- Yemen LNG, Yemen (2009)
- Qatargas II, Qatar (2009)
- Ras Laffan III, Qatar (2009)
- Qatargas III, Qatar (2010)
- Melchorita LNG, Peru (2010)
- Qatargas IV, Qatar (2011)
- Pluto LNG, Australia (2011)
- Soyo LNG, Angola (2012)
- Gorgon LNG, Australia (2014)
- Papua New Guinea (2014)
- Queensland Curtis, Australia (2014)
- Gladstone, Australia (2015)
- Australia Pacific LNG, Queensland, Australia (2015)
- Prelude floating LNG, offshore Australia (2017)

U.S. LNG exports an option

- Energy Department license is required
- Domestic needs and price are the issues
- Nine applications filed with Energy Department
- One approved; eight are pending and on hold
- First Energy Department report expected this week
- Opposition from some utilities, industrial consumers
- North Slope gas export requires second approval that it would not harm gas pipeline to Lower 48

Pulling in every direction



Alaska politics

- More Alaskans are warming up to the notion that the state will need to negotiate a fiscal structure that works to enhance gas project economics
- But they are frustrated we don't have a gas line
- Frustration a strong political force, but unproductive
- Alaskans should realize they need a gas line for jobs, affordable gas to meet local needs, and more oil for TAPS — and then count the cumulative benefits for decades to come

Thank you

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