

ALASKA LNG

AFL-CIO

December 15, 2017

Keith Meyer, President



- **Alaska Gasline Development Corporation (AGDC)**

- Public corporation owned by the State of Alaska.
- Empowered to expedite, finance, and build a gas project.



- **Vision:**

Maximize the benefit of Alaska's vast North Slope natural gas resources through the development of infrastructure necessary to move the gas into local and international markets.



Stars are Aligned

Alaska's economic ties are with Asia.

Alaska's political ties are with the United States, but our economic ties are with Asia.

Our economy depends on exports.

- The Hon. Walter J. Hickel
Former Governor of Alaska

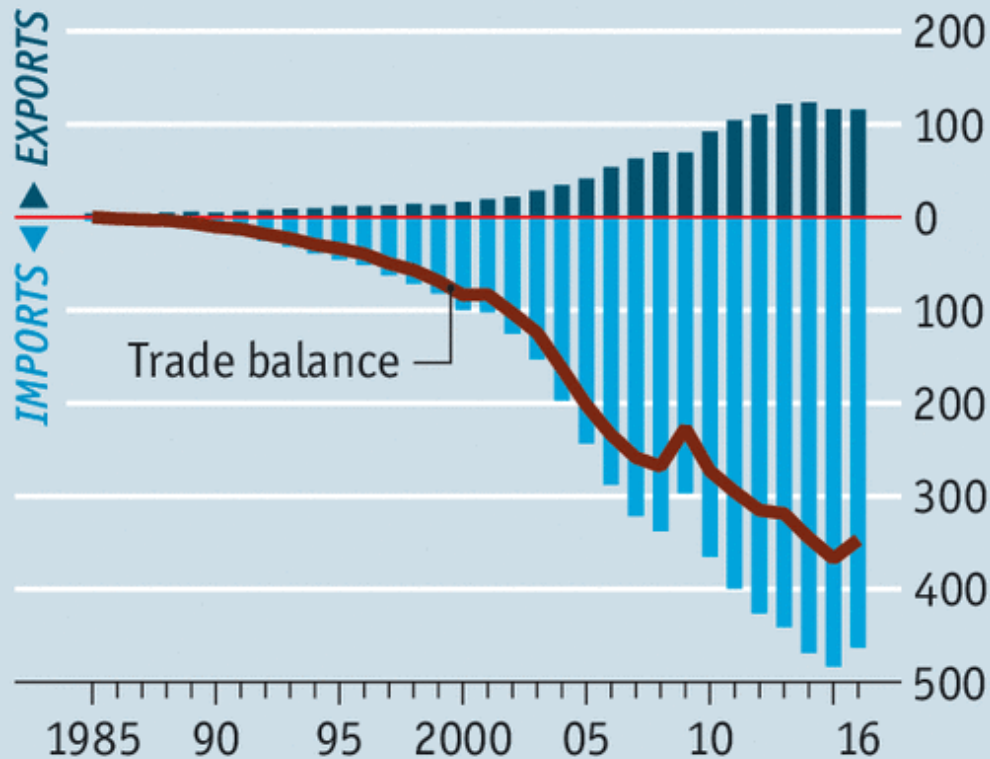
**A number of external factors
have aligned that are favorable
for Alaska LNG.**



U.S. Focus on Trade and Energy

It's yuuge

United States goods trade with China, \$bn



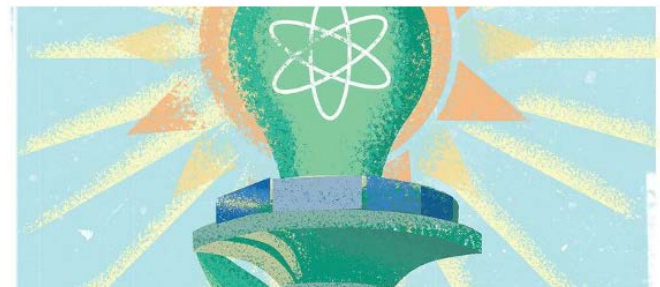
Source: Census Bureau

China needs to buy more from U.S.



Paving the path to U.S. energy dominance

"Energy Week" highlights the role of American resources in securing prosperity



Environment is a priority.



OCTOBER 25, 2017

China leads the growth in projected global natural gas consumption

Natural gas consumption in selected regions, IEO2017 Reference case (2015-40)
billion cubic feet per day



LNG? It's a deal!



Trump-Xi Deal Could Fuel A U.S. LNG Boom

By [Irina Slav](#) - May 16, 2017, 4:00 PM CDT



Global Positioning

**Alaska is China's
closest and most
direct source of
U.S. LNG.**

**7 to 9 days
shipping.**

**Direct route; no
third nation or
canal.**



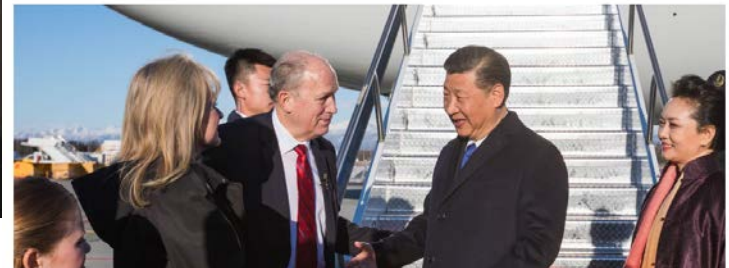
Alaska and China Establish Ties



Alaska News

A surprise guest: Chinese president makes Anchorage stopover, meets Gov. Walker and takes in some sights

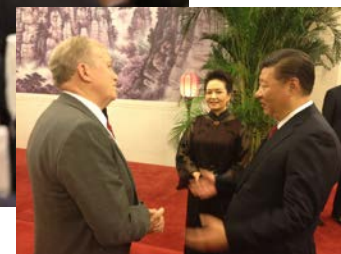
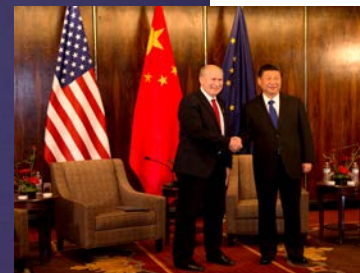
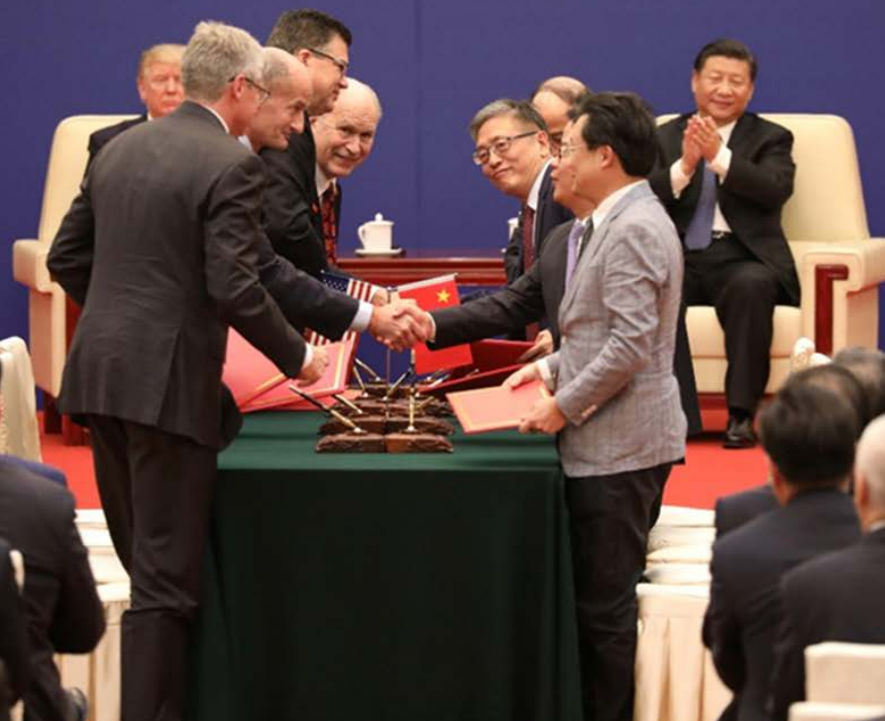
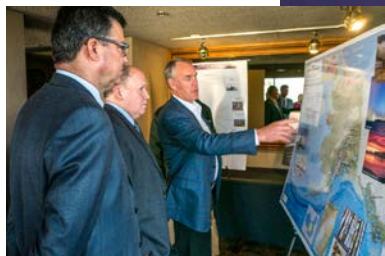
✍ Author: **Jeannette Lee Falsey** ⓘ Updated: April 8 📅 Published April 7



Joint Development Agreement

中国 · 北京
Beijing · China

2017年11月9日
Nov 9, 2017



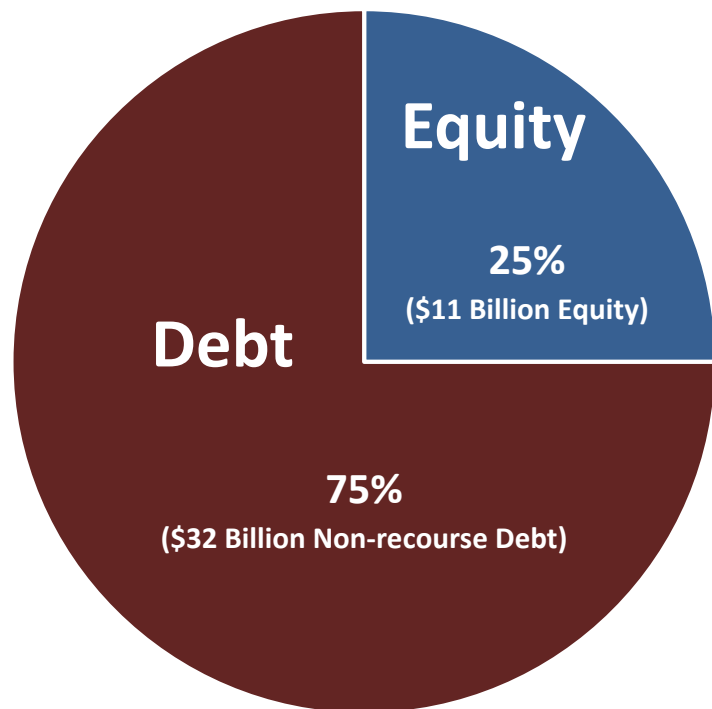
Integrated Gas Infrastructure



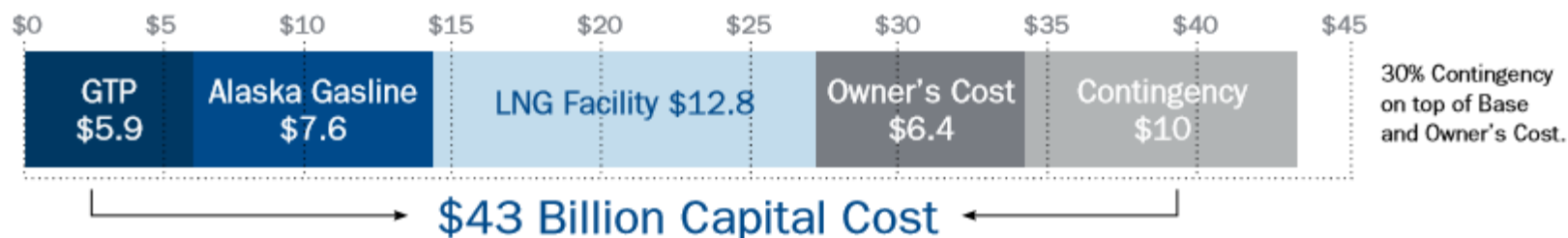
All components
including gas supply
are within Alaska.

- **Gas Treatment Plant:**
 - Treat and compress 3.5 Bcf/d.
 - Sequester all CO₂.
- **Pipeline:**
 - 807-mile (1,299 km), 42-inch (1.1 m) pipe.
 - Established corridor under State of Alaska control.
 - Delivers over 3.3 Bcf/d.
- **LNG Production Facility:**
 - 20 MTPA; 3 trains with phased development opportunity.
 - Two 240,000 m³ LNG storage tanks.
 - Two berths, capable of 217,000 m³ vessels.
- **In-service 2023 – 2025.**

Alaska LNG Capital Structure



- Base case: 42-inch, three train, 20 Mtpa design.
- Total Capital Cost = \$43 Billion.
- Potential for phased development.



“Mega Deal” for a “Mega Project”

- **Thinking outside the box – leveraging market position.**
- **Proposal to top LNG consuming Asian governments.**
 - In-country bank provides the debt for 75% of capital cost;
 - Alaska LNG provides proportionate amount of capacity (75%) to in-country buyer as repayment of the debt.
 - In-country buyer makes debt service payments directly to in-country bank, eliminating credit risk and foreign exchange risk.
- **Equity portion (25%) is funded by owners;**
- **Project company retains 25% capacity for sale into regional markets.**
- **Partial ownership investment by foreign entity is a potential, but AGDC will remain in control.**

Marketing Effort: Asia-Pacific

G2G Interaction:

- High level government engagement.

Potential customers coming to Alaska:

- Alaska LNG summit.
- Individual customer visits.

Engaging potential customers:

- Focus on China, Japan, Korea, SE Asia.
- Meetings in Asia and Alaska.

Advancing the contracting process:

- Initial non-binding indication of interest.
- Precedent agreement.
- Binding bankable agreement.



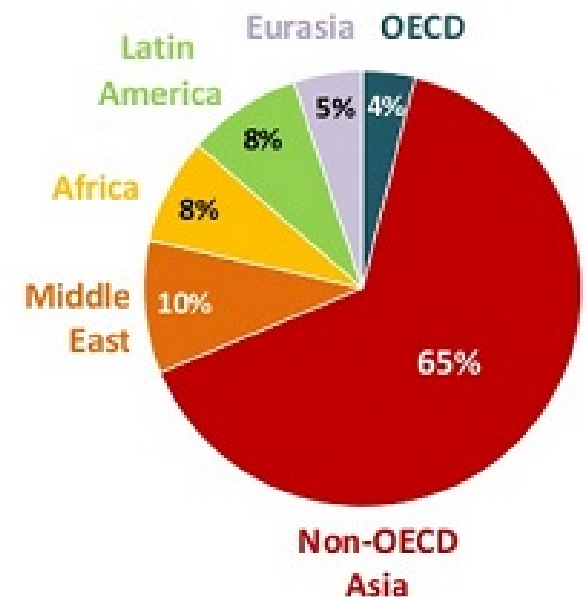
Primary Energy Demand Growth

- China is the biggest growth market for primary energy demand.

Primary energy demand, 2035 (Mtoe)

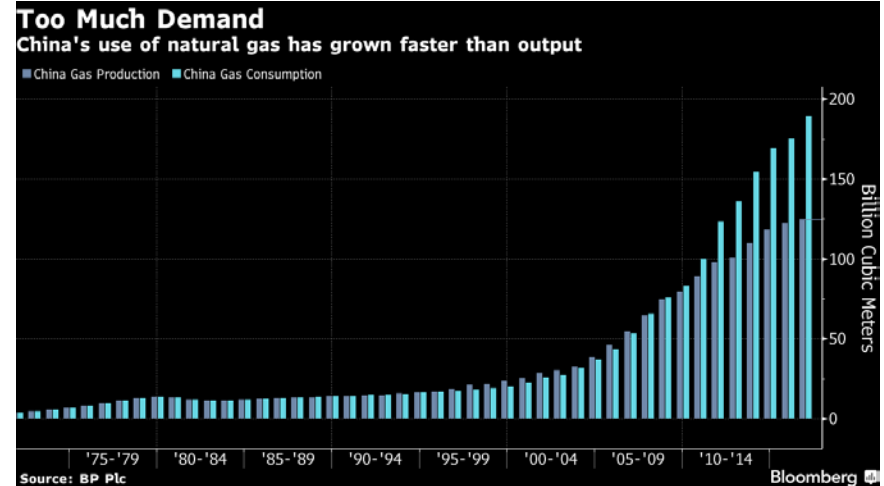


Share of global growth
2012-2035



China LNG Demand to Grow Rapidly

- Demand for natural gas has grown dramatically, outpacing the ability to produce domestically.
- LNG import capacity is increasing rapidly to help satisfy future demand.



China's LNG Terminals

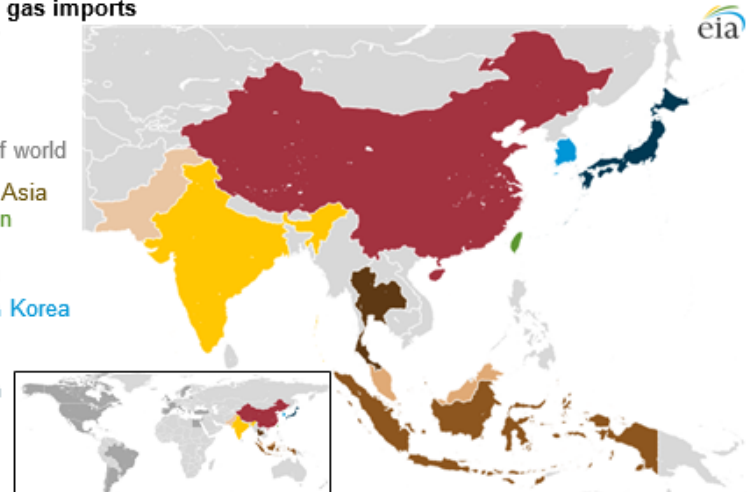
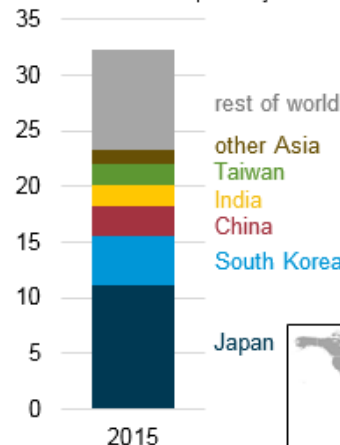
Easier access to private terminals may help imports

● State company operated ● Independent



Global liquefied natural gas imports

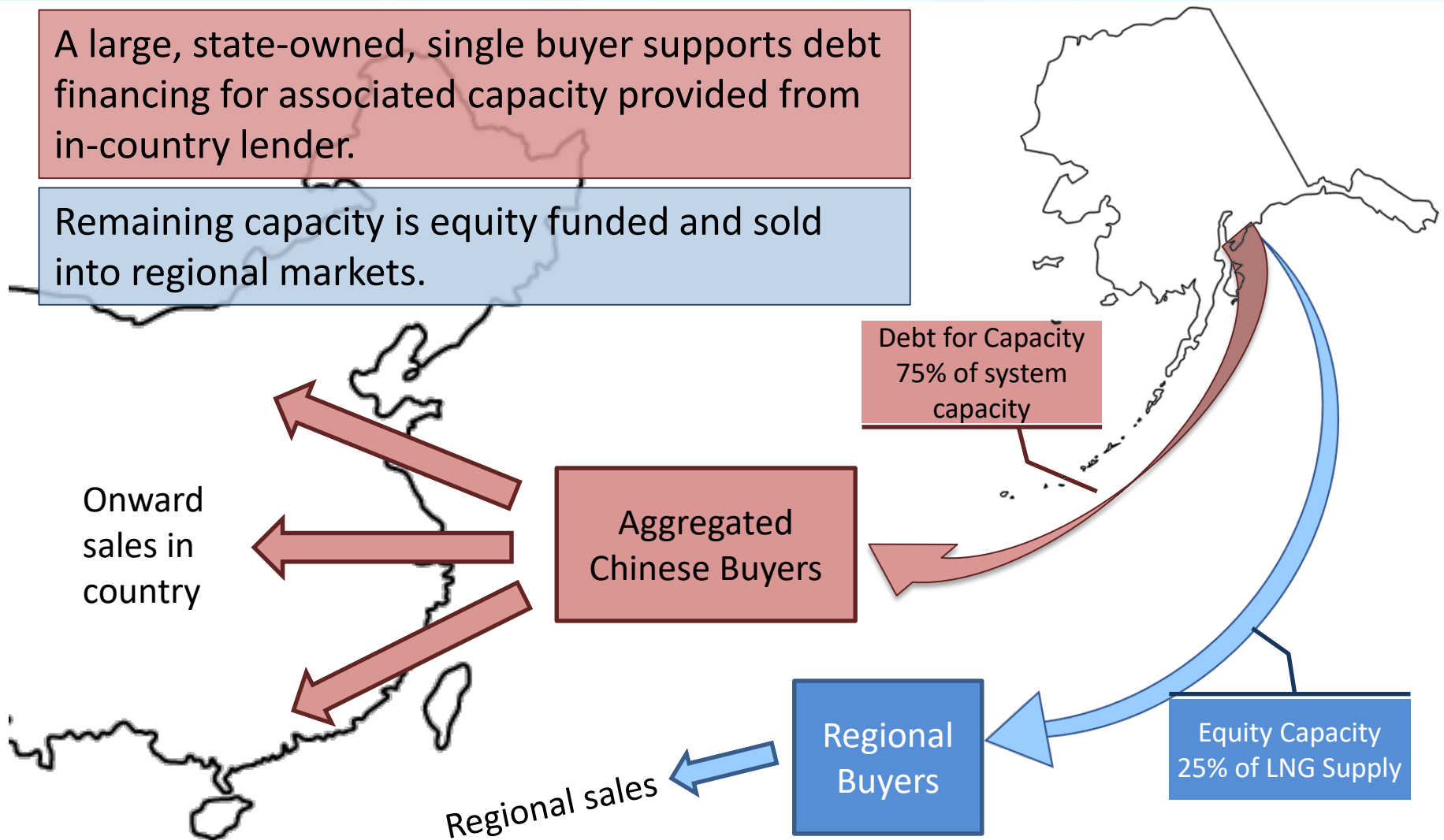
billion cubic feet per day



Unified Buyer/Lender Proposal

A large, state-owned, single buyer supports debt financing for associated capacity provided from in-country lender.

Remaining capacity is equity funded and sold into regional markets.



Joint Development Agreement



- 75% of project debt financing from China in exchange for 75% of capacity for life of loan; O&M plus gas is additional.
- Remaining 25% of capacity held for sale by Alaska LNG to markets.
- Potential for Chinese companies to invest in minority interest.
- Potential for engineering and fabrication.
- Specific roles and terms defined by end of May, definitive documents by December 31, 2018.
- Parties not obligated to sign definitive agreements or expend funds.

• Sinopec:

- Very large petroleum and petrochemical enterprise group.
- World's largest fully-integrated oil and gas company by revenue, with upstream, midstream, and downstream operations.
- China's largest producer and supplier of refined oil products.
- Largest oil refinery company.
- 2nd largest chemical company in the world.



Fortune Global 500 Rankings, 2017

	Company	Revenues (US\$M)
1	Walmart	\$485,873
2	State Grid	\$315,199
3	Sinopec Group	\$267,518
4	China National Petroleum	\$262,573
5	Toyota Motor	\$254,694
6	Volkswagen	\$240,264
7	Royal Dutch Shell	\$240,033
8	Berkshire Hathaway	\$223,604
9	Apple	\$215,639
10	ExxonMobil	\$205,004

Sinopec's track record of LNG developments and investments:

- Sinopec has 3 LNG receiving terminals on China's coast (9 MTPA).
- Partner with ConocoPhillips in Australia Pacific LNG (APLNG) with an offtake commitment for 7.6 MTPA for 20 years.
- 20 year, 2 MTPA contract with ExxonMobil from Papua New Guinea (PNG LNG).

• Bank of China:

- World's 4th largest bank.
- China's most internationalized and diversified bank.
- Engages in commercial and investment banking and insurance and investment services.



Current Rank ▲	Company (ticker-exchange)	Total assets (US\$B)
1	Industrial & Commercial Bank of China Ltd. (1398-HKG)	3,473.24
2	China Construction Bank Corp. (0939-HKG)	3,016.58
3	Agricultural Bank of China Ltd. (1288-HKG)	2,816.04
4	Bank of China Ltd. (3988-HKG)¹	2,604.30
5	Mitsubishi UFJ Financial Group Inc. (8306-TKS)	2,589.56
6	JPMorgan Chase & Co. (JPM-NYSE)	2,490.97
7	HSBC Holdings Plc (HSBA-LON) ²	2,374.03
8	BNP Paribas SA (BNP-PAR)	2,190.42
9	Bank of America Corp. (BAC-NYSE)	2,187.70
10	Wells Fargo & Co. (WFC-NYSE)	1,930.12

Track Record of Successful LNG Financing:

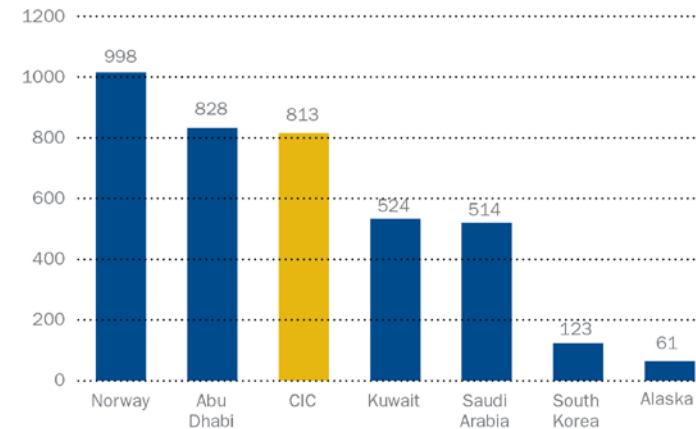
- Coral South floating LNG project in Mozambique.
- Tangguh LNG in Indonesia.
- Cheniere's Corpus Christi trains 1 and 2.
- Australia Pacific LNG.

- **China Investment Corporation (CIC):**

- World's 3rd largest sovereign wealth fund.
- CIC Capital is a subsidiary specializing in making direct investments in infrastructure, mining, and energy (oil and gas).
- Acquired a 10% stake in Teck Resources Limited, which operates Red Dog Mine.
- Acquired a stake in 1 New York Plaza office tower for \$700 million (1st direct U.S. investment).



Sovereign Wealth Funds (US \$ Bill), 2017



Track Record of Successful LNG Investment:

- CIC Invested \$3.15 billion in GDF Suez Exploration & Production International SA and \$850 million in Atlantic LNG Company of Trinidad and Tobago in 2011.

PetroVietnam Gas

- Wholly owned by nation of Vietnam.
- Responsible for all oil and gas resources.
- Developing two LNG receiving terminals in Vietnam.



AGDC and PetroVietnam gas sign MOU in front of US President Trump and Vietnam President Tran Dai Quang; November 10, 2017

From PetroVietnam Press Release:

The LNG import projects including Son My LNG terminal project play a significant role to PetroVietnam/PV GAS in specific and to the energy industry of Vietnam in general by diversifying the gas sources as well as meeting the growing demand of LNG/ gas and electricity in Vietnam in the years to come for the benefit of the national energy security and food security.

The MoUs signing ceremony is part of the remarkable collaborative activities during the very first visit to Vietnam of the US President Donald Trump, setting the milestone for a tighter collaboration in economic development between the US and Vietnam in the coming time.



Korea Gas Corporation (KOGAS)

- **MOU sets framework for cooperation in several areas of Alaska LNG, including:**
 - Korean investment.
 - KOGAS cooperation on EPC of project components and operation.
- **Represents KOGAS' active effort to learn more about the current project plan and assess project economics.**
 - First working session occurred in Daegu, South Korea, July 2017.
 - KOGAS technical team meetings and inspections Anchorage and Nikiski, November 2017.
 - KOGAS commercial team will meet with AGDC in Alaska, early 2018.



AGDC and KOGAS sign MOU in Washington, D.C.; June 28, 2017



KOGAS technical team inspects Nikiski LNG site; November 6, 2017

Tokyo Gas Co., Ltd.

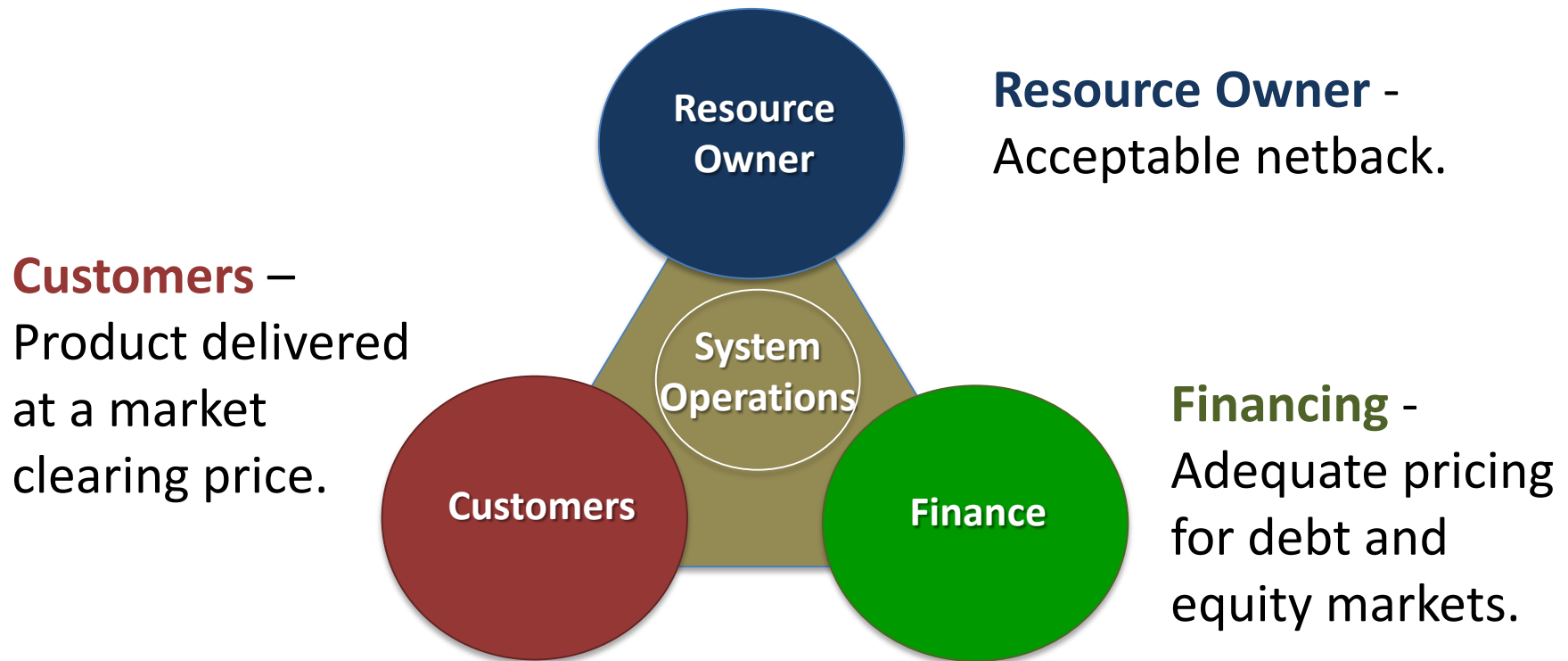
- One of the largest energy utilities in Japan.
- Letter of Intent sets forth the basic principles upon which AGDC and Tokyo Gas Co., Ltd. agree to collaborate on the following matters:
 - To explore potential purchase of LNG from AGDC.
 - To evaluate the possibility of other opportunities to advance Alaska LNG.
- Continuation of decades-long relationship between Alaska and Tokyo Gas.
- Helps round out sales volumes from Alaska LNG.



AGDC and Tokyo Gas Co., Ltd. sign LOI in Tokyo, Japan; December 4, 2017

Balancing Three Drivers

- All infrastructure and resource development projects have similarities.
- Three key drivers have to be balanced to make the project economic.



LNG Market Price

Asia Pacific LNG Market

U.S. Competition

Henry Hub + \$5.00

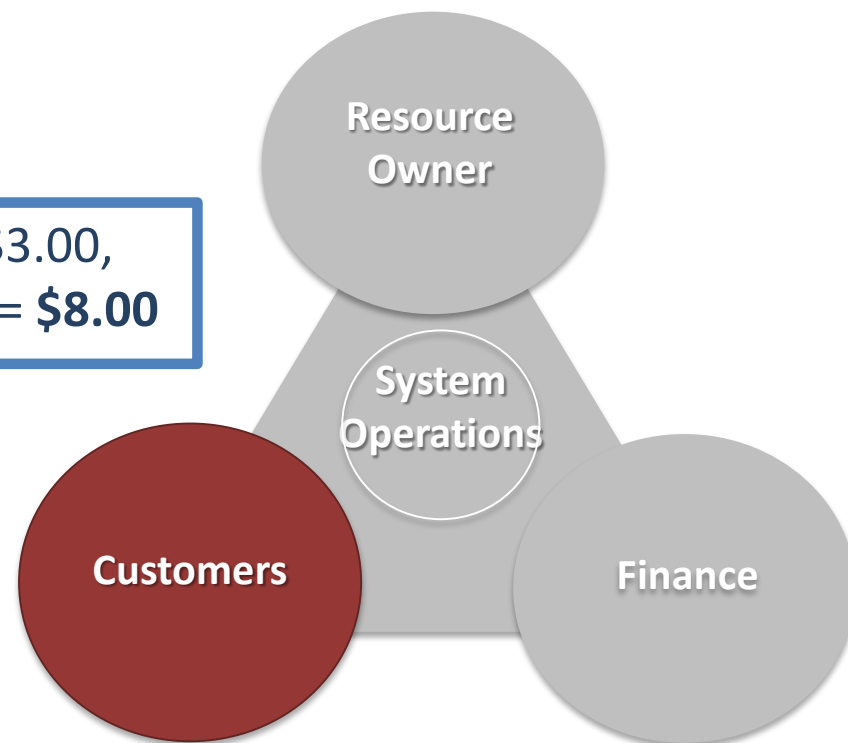
HH currently \$3.00,
 $\$3.00 + \$5.00 = \$8.00$

International

12-14% x Oil per Barrel

Other emerging pricing

Brent currently \$63,
 $\$63 \times 12\% = \7.56



US Gulf Coast LNG Delivered to Asia			
	\$/MMBtu		
Gas supply	\$ 3.00	<== Henry Hub market price	
Liquefaction	\$ 3.20	<== US Gulf Coast Liquefaction	
Shipping	\$ 1.80	<== Gulf to Asia + Panama	
Total Delivered	\$ 8.00		

Market Price
\$8.00/MMBtu

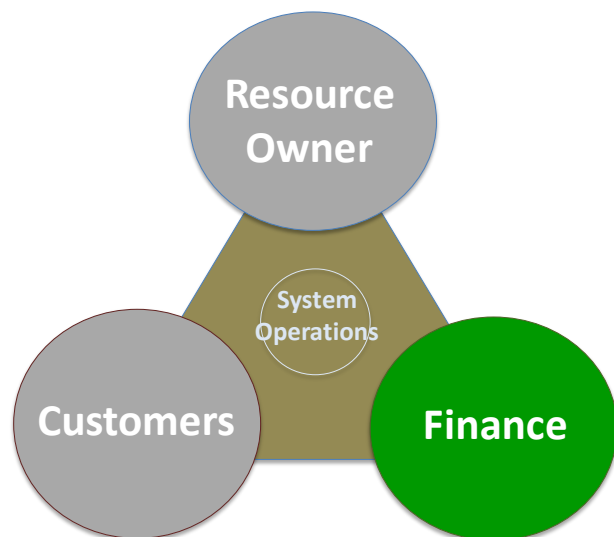
LNG Price: FOB Nikiski

Market Price
\$8.00/MMBtu

FOB Nikiski
\$7.20/MMBtu

Shipping
\$.80/MMBtu





Alaska LNG Infrastructure

System Operations & PILT

- \$1.4 Billion Annually

\$/MMBtu

O&M
\$1.45

Financing

- Debt service - \$3.5 Billion/yr (20 yr; 5%)
- Equity - \$1.1 Billion/yr

Debt
\$3.60

Equity
\$1.15

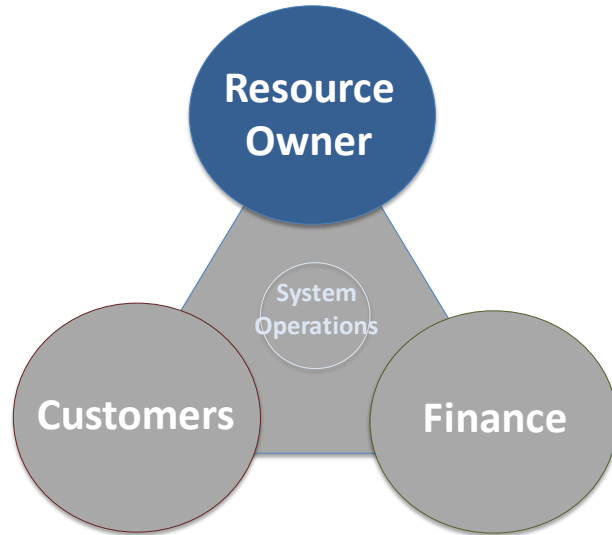
Alaska LNG System

Total
\$6.20

Annual Financing Costs				
	Ratio	Capital	Price	\$Billions
Equity	25%	\$ 10.8	10%	\$ 1.1
Debt	75%	\$ 32.3	5%	\$ 3.5
Total Annual				\$ 4.6
Equity	50%	\$ 21.5	20%	\$ 4.3
Debt	50%	\$ 21.5	5%	\$ 2.3
Total Annual				\$ 6.6

\$2.00 /MMBtu Savings

Netback to North Slope



\$1 Billion annually for gas supply; plus

\$1.4 Billion for Alaskan workers and communities.

US Gulf Coast LNG Delivered to Asia			
	<u>\$/MMBtu</u>		
Gas supply	\$ 3.00	<== Henry Hub market price	
Liquefaction	\$ 3.20	<== US Gulf Coast Liquefaction	
Shipping	\$ 1.80	<== Gulf to Asia + Panama	
Total Delivered	\$ 8.00		

\$/MMBtu

**Asia Market
\$8.00**

**Less:
Shipping
\$.80**

**Nikiski
\$7.20**

Selling into an \$8.00/MMBtu Asian market means LNG at Nikiski needs to be \$7.20; less O&M, Debt Service, and Equity Return, leaves \$1.00 Netback to the North Slope.

Alaska LNG System: \$6.20/MMBtu

**O&M
\$1.45**

**Debt
\$3.60**

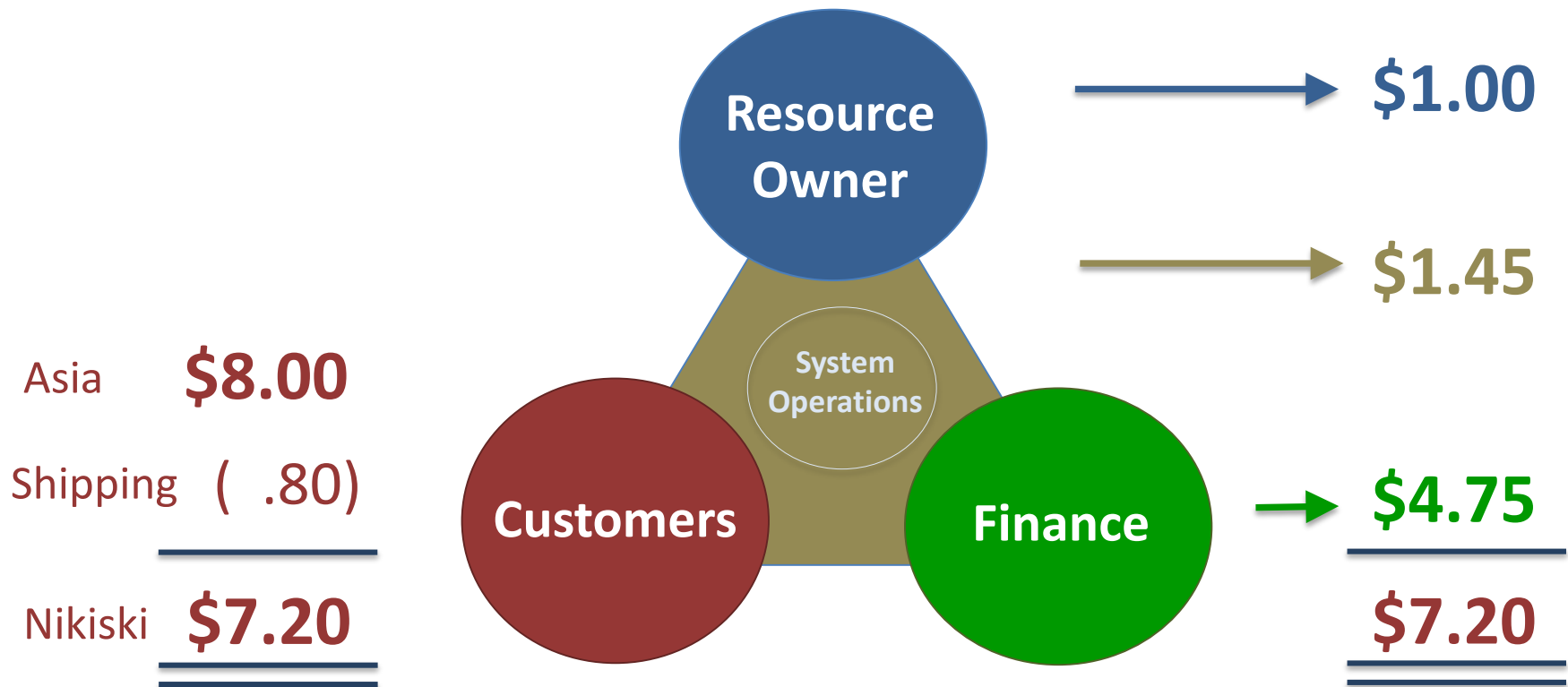
**Equity
\$1.15**

**Netback
\$1.00**

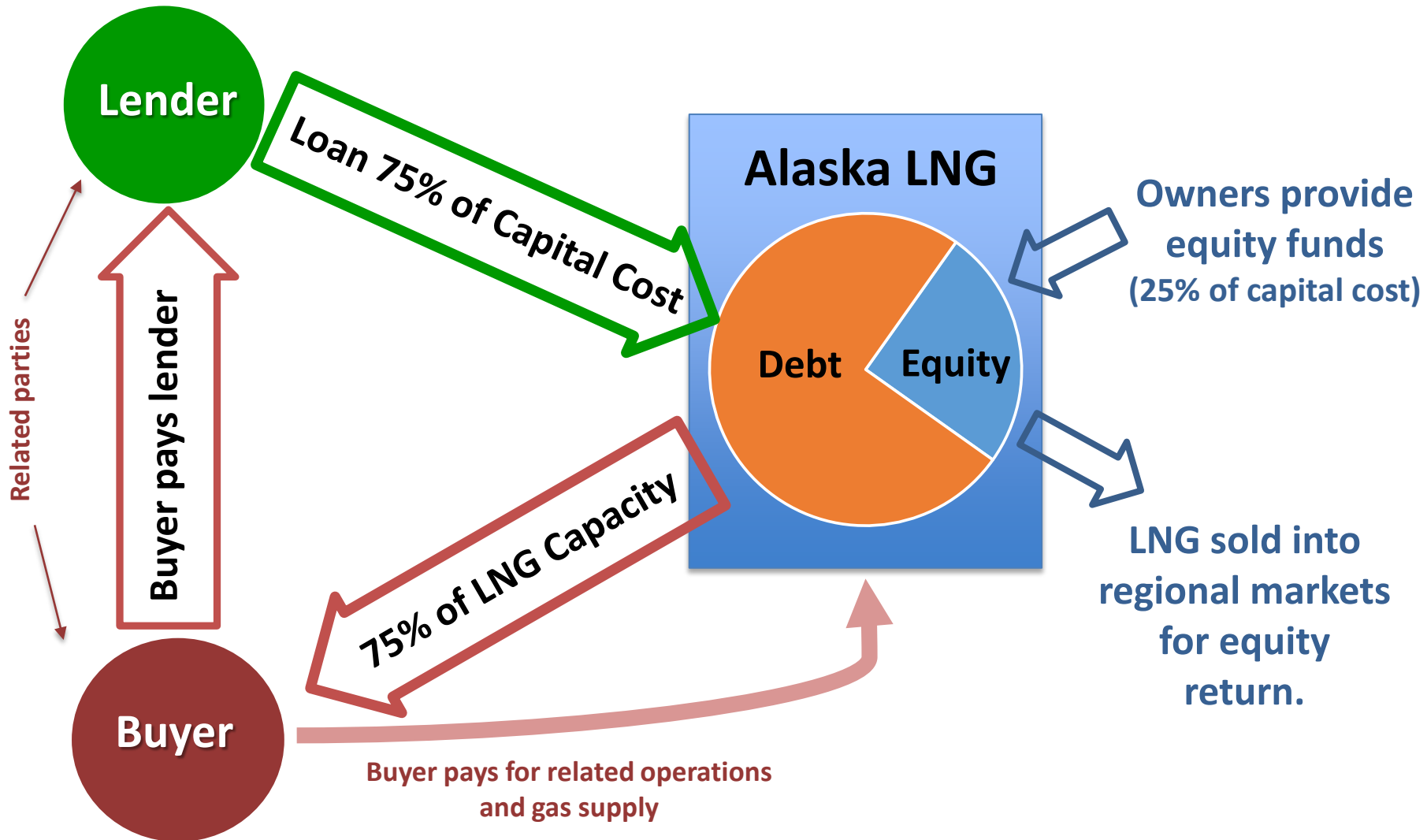
Alaska LNG Unit Cost at 19.7 Mtpa			
	<u>\$Billions</u>		<u>\$/MMBtu</u>
Raw Gas Supply	\$ 1.0	\$ 1.00	
Shipping	0.8	0.80	
Equity Return	1.1	1.15	
Debt Service	3.5	3.60	
O&M + PILT	1.4	1.45	
Total Delivered	\$ 7.8	\$ 8.00	

Balancing Three Drivers

The project is economic to all stakeholders under the current structure.



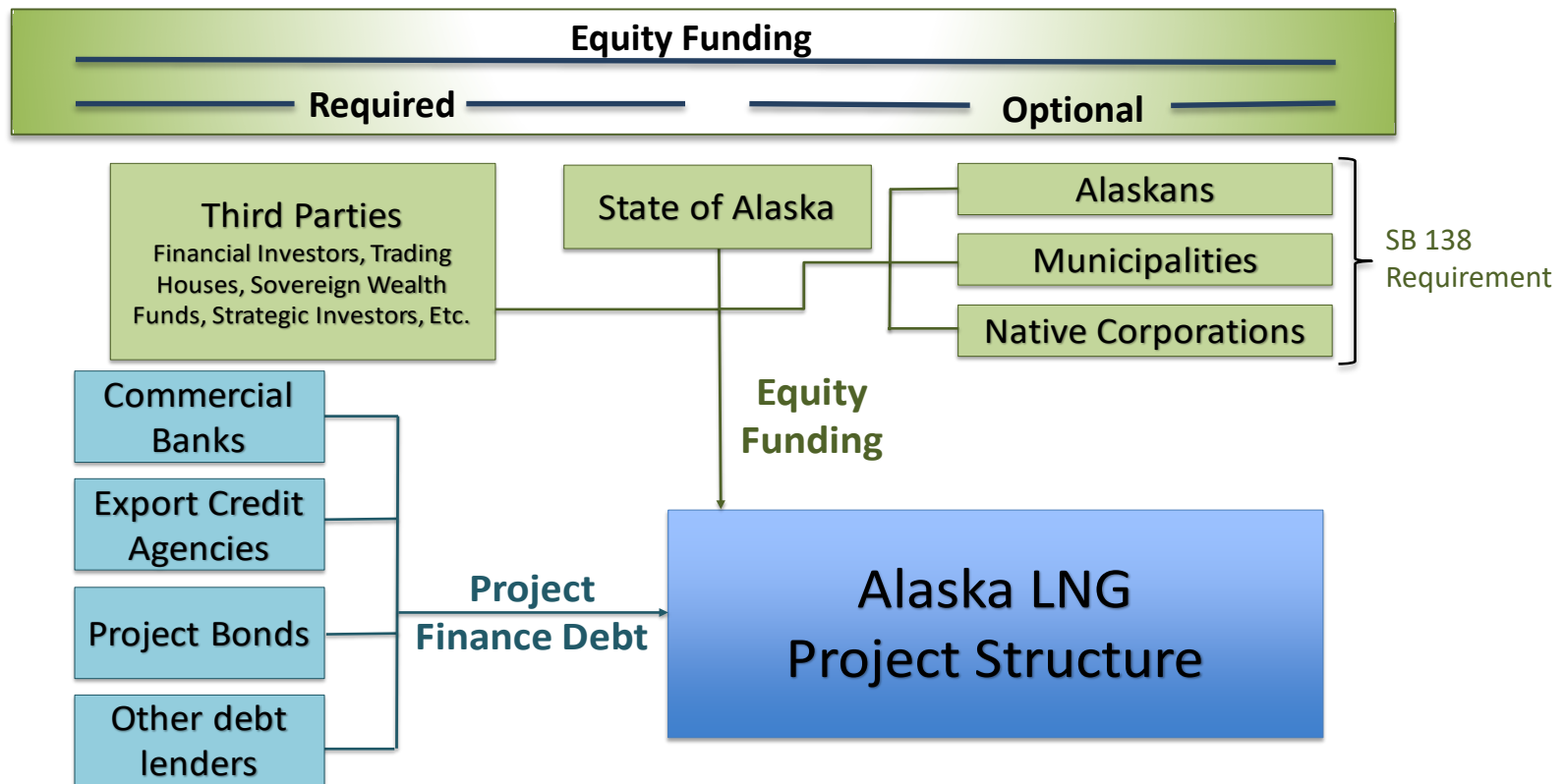
Transaction Simplified



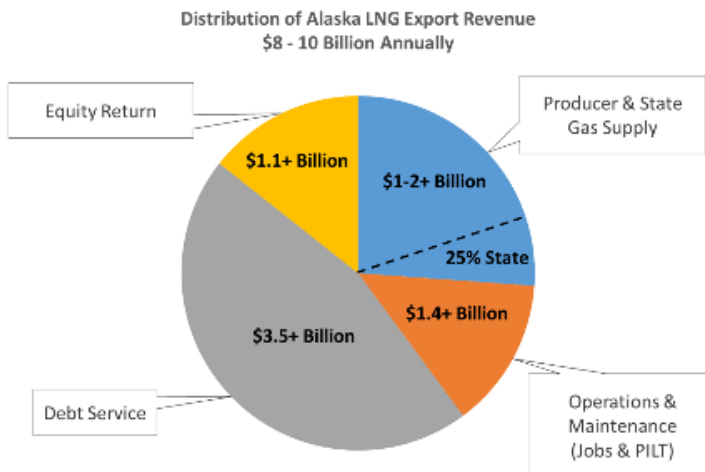
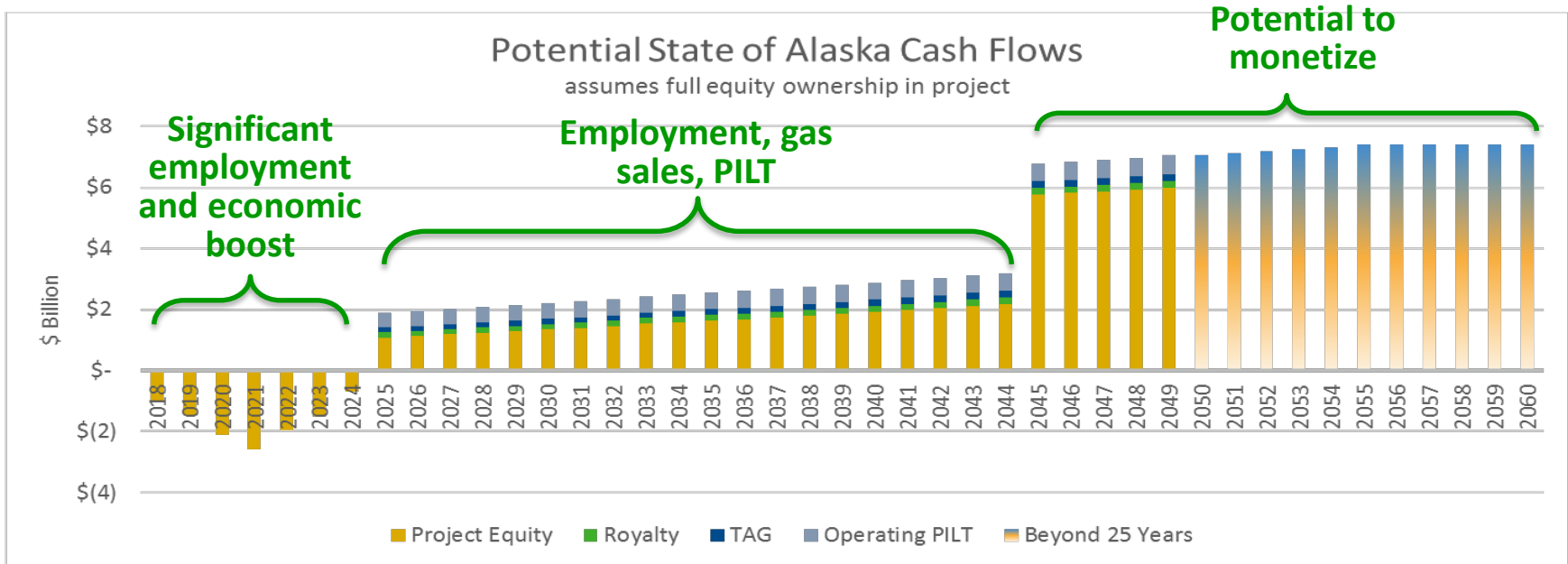
Financing

Equity investment in the project will be required; pursue a development path to provide the State with an ability to invest, but not the requirement to invest; Alaskans also to have investment option.

- Structure to receive third-party funds.
- Equity road shows.
- Debt term sheets.



Investment Profile – State of Alaska



Equity-only ROE:

- 8% through initial period.
- 10% life of project.

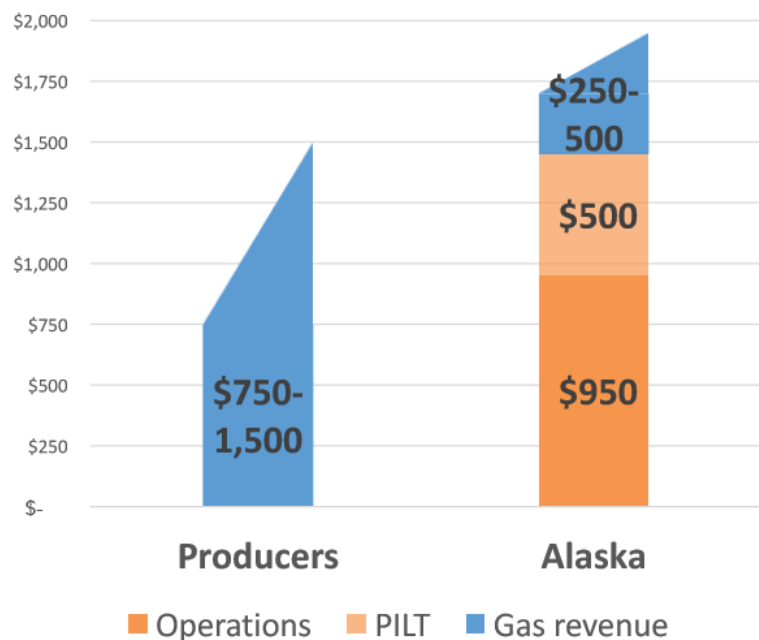
Equity ROE plus RIK/TAG and PILT:

- 13% during initial period.
- 15% life of project.

Non-Equity Benefits to Alaska

The gasline and LNG infrastructure provides enormous value to Alaska; there is a significant opportunity cost of not developing the project.

Payments Outside of Debt and Equity
(2025 \$Millions)

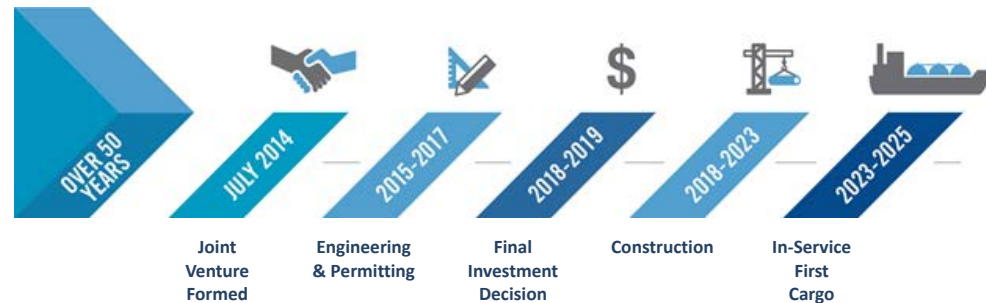
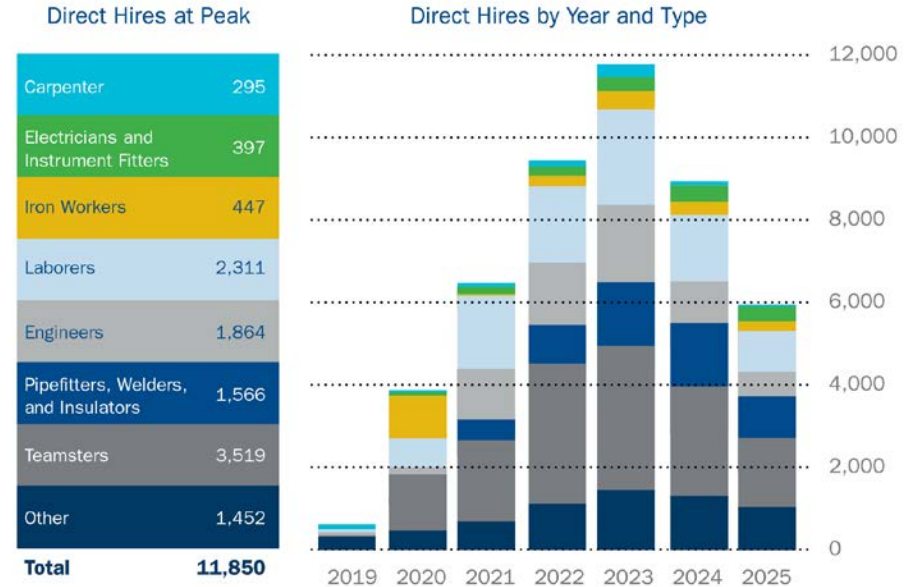


Item	Annual Value	State's Share/yr	
Gas Resource	1 TCF/yr @ \$1-2/Mcf =\$1-2 Billion	25%	\$250-500+ MM
PILT	\$450-500 MM	100%	\$450-500 MM
Operations	\$950 MM	100%	\$950 MM
Equity Return	\$1.1 Billion	0 to 100%	
Net Revenue After Debt Retirement	\$6 Billion	0 to 100%	

- Opportunity for the State to generate \$1.6-\$2.0B per year upon project completion.
- Alaska can elect to be an equity investor.
- Significant upside opportunity given long-term LNG price forecasts.

Jobs for Alaskans

- Alaska LNG will create a construction employment boom with a long-term employment future.
- Alaskans can begin training; demand for employment is expected to outstrip available trained workforce.
- Indirect and induced jobs will spread the benefit of the Alaska LNG project to even more Alaskans.
- Every trade will be needed to construct the Alaska LNG.



Gas for Alaskans

- Low cost energy for Alaskans.

\$1,000

Savings per household/year



- Blue sky for Beijing and clean air for Fairbanks.

For the past 30 years, China has tapped coal for about two-thirds of its energy needs, resulting in carbon dioxide and particulate emissions that have significantly degraded the nation's air quality and impacted the global climate.

In an effort to address both concerns and provide a backup fuel for intermittent renewables, China is working to increasingly replace coal with cleaner-burning natural gas. As a first step, the government aims to boost the share of natural gas in its primary energy supply from 6 to 10 percent by 2020.



Alaska LNG can improve China's Air Quality and offset 80 million tonnes of CO2 per Year

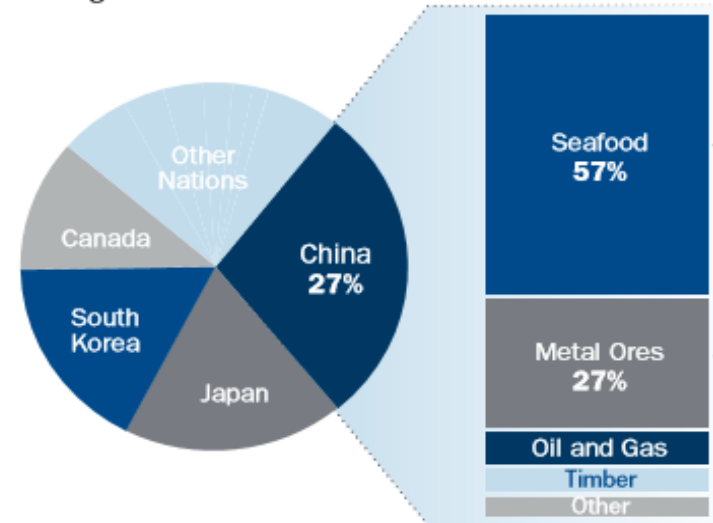
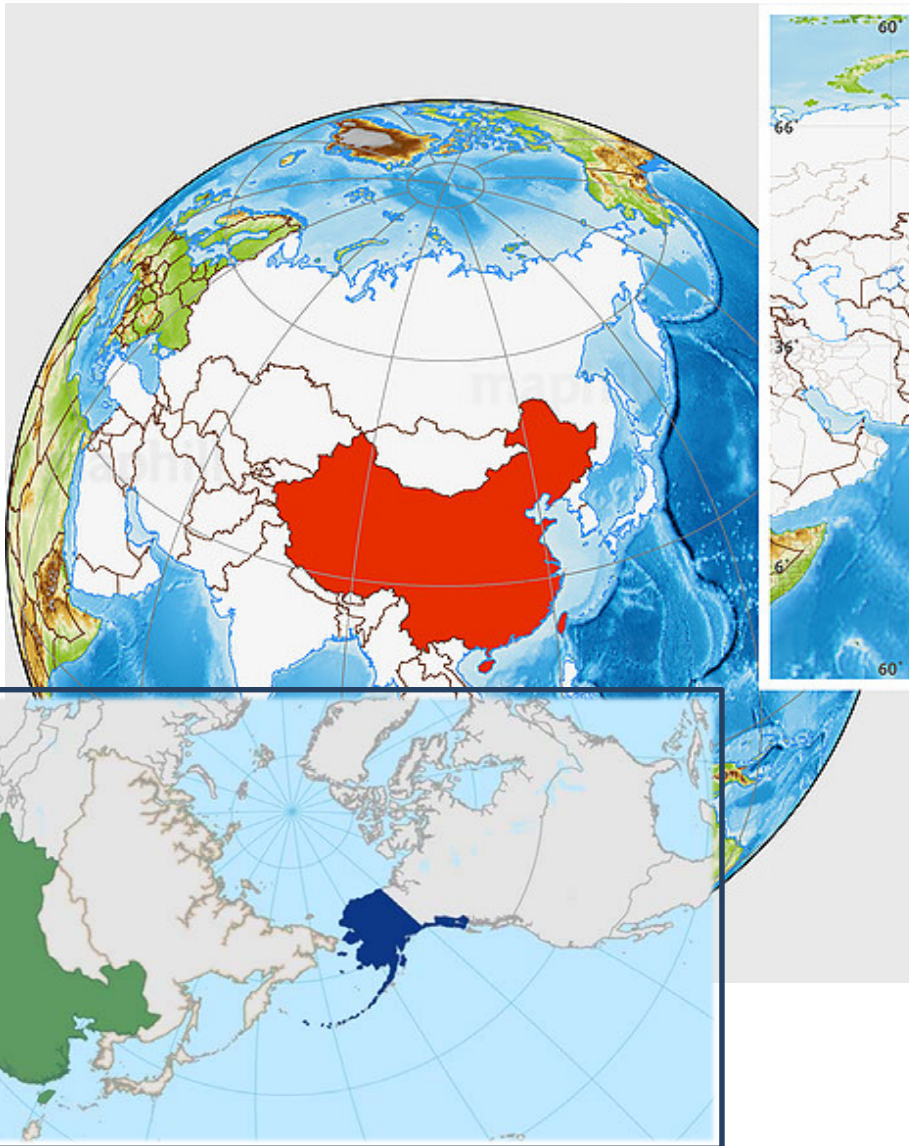


The Alaska Gasline will provide clean fuel to reduce particulate pollution in Fairbanks.

Focus: China



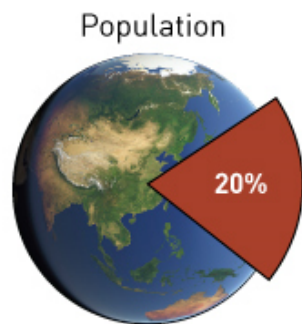
China: Alaska's Export Partner



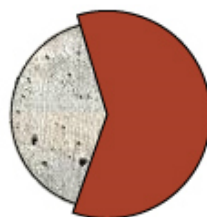
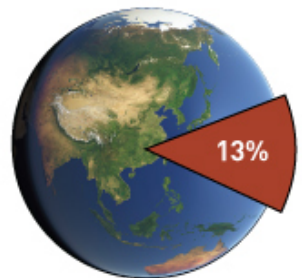
China as a Resource Buyer

China is a major consumer of raw materials that can be produced in Alaska.

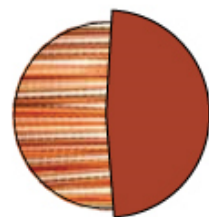
China share of world raw material consumption



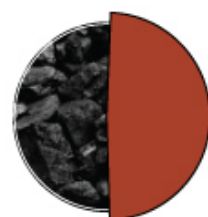
Economy (GDP)



Concrete



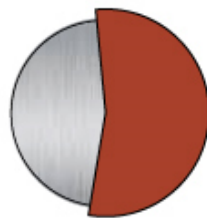
Copper



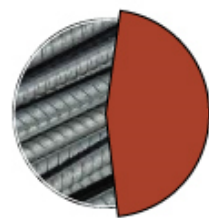
Coal



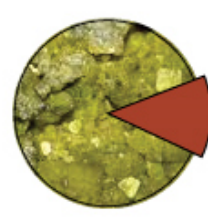
Rice



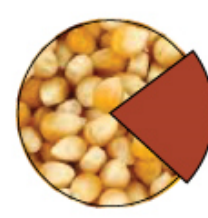
Aluminum



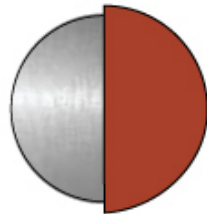
Steel



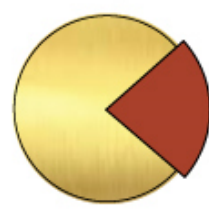
Uranium



Corn



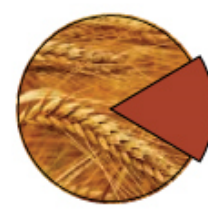
Nickel



Gold



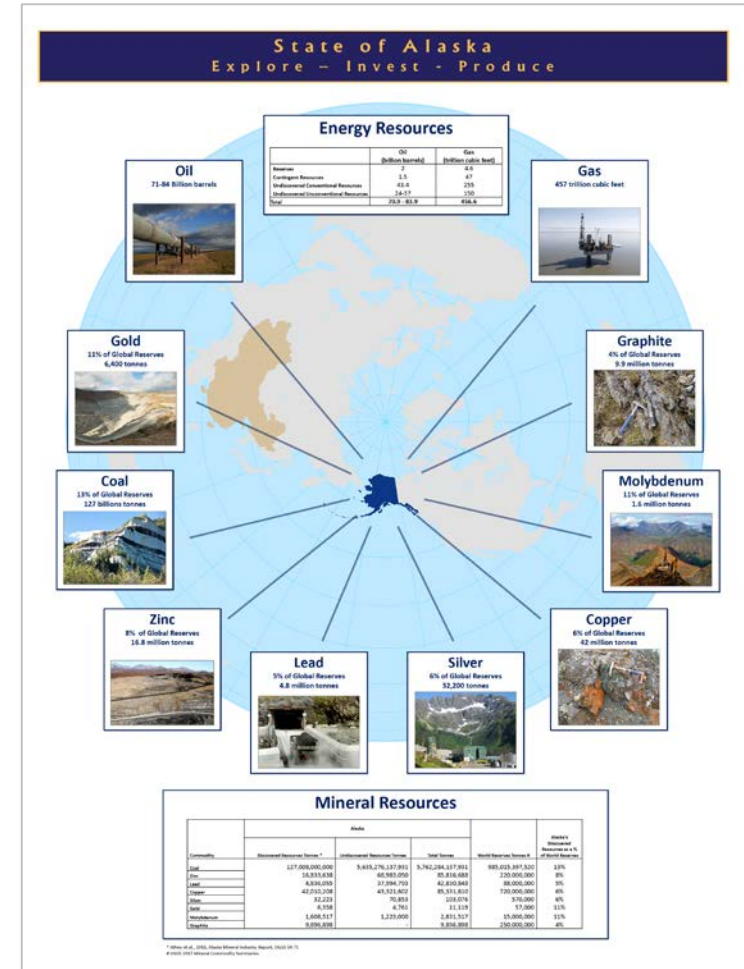
Oil



Wheat

Alaska as a Resource Neighbor

- Alaska is a resource development state.
- 4 trillion tons of high quality coal: one ninth of world's known coal resource.
- **World-scale lead/zinc deposits:** including the world's largest zinc mine.
- **World-scale gold and copper mines:** numerous existing and potential.
- **Graphite:** America's highest grade largest, large flake graphite deposit.
- **Significant rare-earth deposits.**



U.S. Export Engine

- Major resource base in many commodities.
- Gas, oil, and coal for energy buyers.
- Mining projects, enabled by Alaska LNG will further enhance trade.



**Alaska can be the
resource export
powerhouse for
the United States**

- **Big project.**
- **Achievable.**
- **Alaskans have done it before;**
 - LNG at Nikiski,
 - Pipeline down the corridor,
 - Gas treating on the North Slope.
- **Asia is the customer.**
- **Future opportunities beyond LNG.**

The stars are aligned, seize the opportunity.

Get involved.

Get Ready.

Get Engaged.



www.agdc.us

Facebook.com/AKGaslineDevelopmentCorp.