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Long-term Price Stability in the Gas Price Equation: The Case of Alaska LNG

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#WGC2018
FUELING THE FUTURE

Alaska – A Resource State

- **Alaska became a state in 1959.**
- **Largest state in the U.S.**
- **Resource state – Alaska owns the resources in the ground.**
- **Large resource base, small population.**
- **Alaska relies on exports.**

Alaska Gasline Development Corporation (AGDC)

✓ Public corporation owned by the State of Alaska.

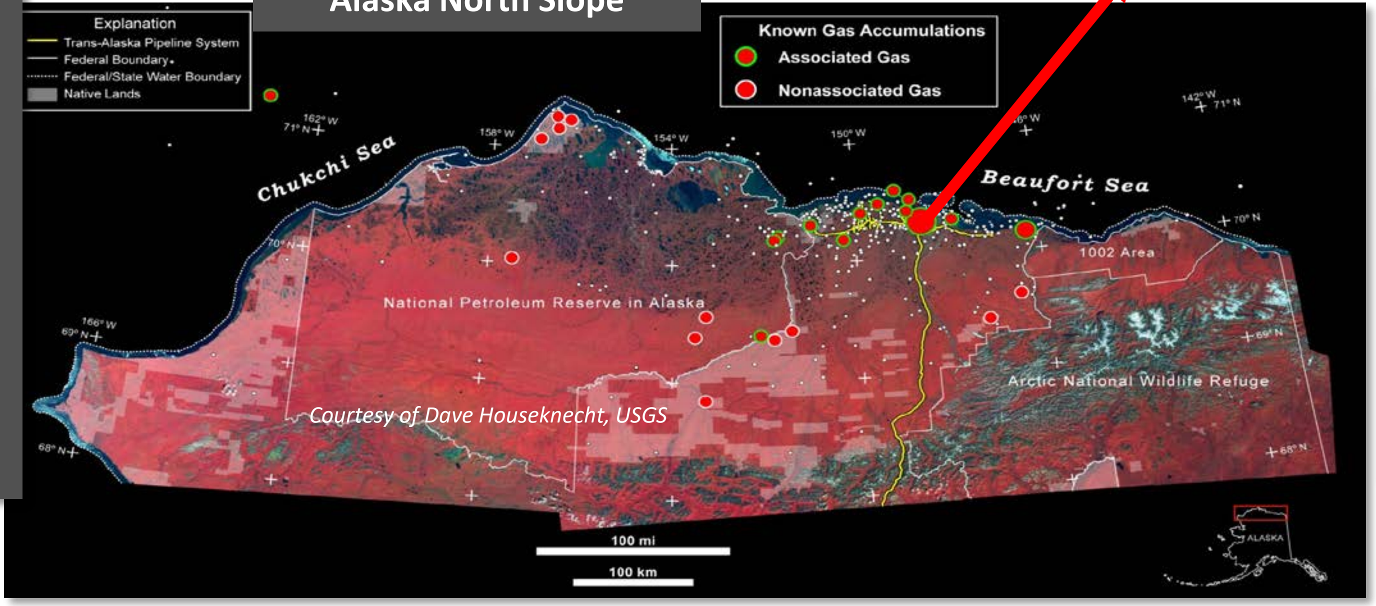
✓ Empowered to expedite, finance, and build a gas project.

World-Class Hydrocarbon Resource

- **Alaska's North Slope:**
  - Largest oil and gas field in North America;
  - 35 Tcf Proven - Prudhoe Bay and Point Thomson;
  - 200 Tcf potential conventional;
  - Shale and methane hydrates add 100's Tcf.;
  - 8 Bcf/day reinjected.

Alaska's North Slope is a hydrocarbon-rich, largely unexplored area.
At 245,000 km2, it is larger than most states.

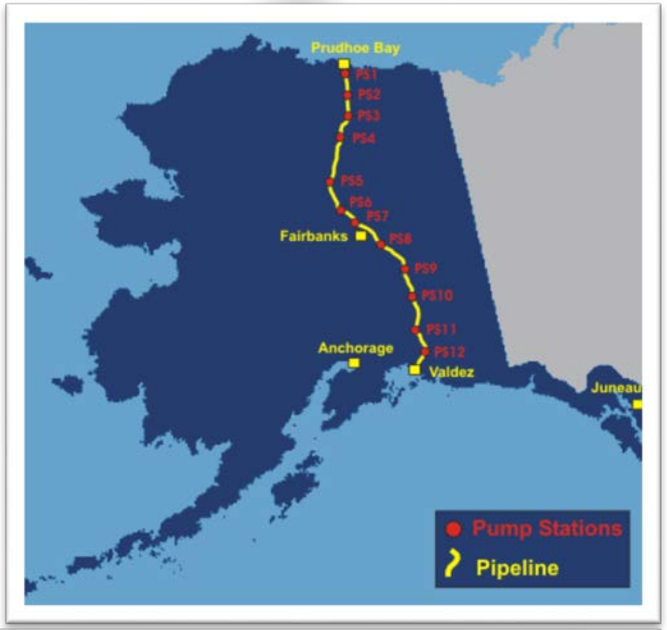
Alaska North Slope



Prudhoe Bay Complex

Alaska – A Resource Owner

- Enormous hydrocarbon resource on the North Slope.
- Oil pipeline and road was built in the 1970’s in response to energy crisis.
- Alaska highly dependent on oil revenue.
    - Natural gas remains stranded; development attempts by producers and/or pipeline companies failed to achieve alignment with market timing.
    - 2017 – State of Alaska takes leadership of the project; Alaska LNG becomes State’s priority energy export project.



Resource State Develops Infrastructure to Commercialize Resource.

Resource State as Infrastructure Developer

- Resources are often held in complex lease agreements.
  - Resources can be held hostage to demands of lessees.
  - Priority of development may not align with host government.
- Resource development rights need to extinguish on prolonged lack of activity – hoarding resources robs the local government of economic development.
- Resource states need to commercialize their resources to support their local economies.
- By stepping into the role of infrastructure developer, resource states can prioritize the project and move it on a path to meet the needs of the host government.

LNG Industry Pricing and Contracts History

1960's
- First contracts use stable, utility-style pricing (Alaska).
- Take-or-pay, long-term contract structure.

1970's and 1980's
- Oil-linked pricing.

1990's
- Supply and demand growing; FSRU's lower barrier.

2000's
- High U.S. gas prices; sellers want Henry Hub pricing.
- Spot market growing; negotiated destination flexibility.

LNG Industry Pricing and Contracts History

2010's

- Low U.S. gas prices; buyers want Henry Hub pricing.
- LNG demand pull creates supply surplus.

2015

- Growing spot market; destination flexibility demanded.

2020's

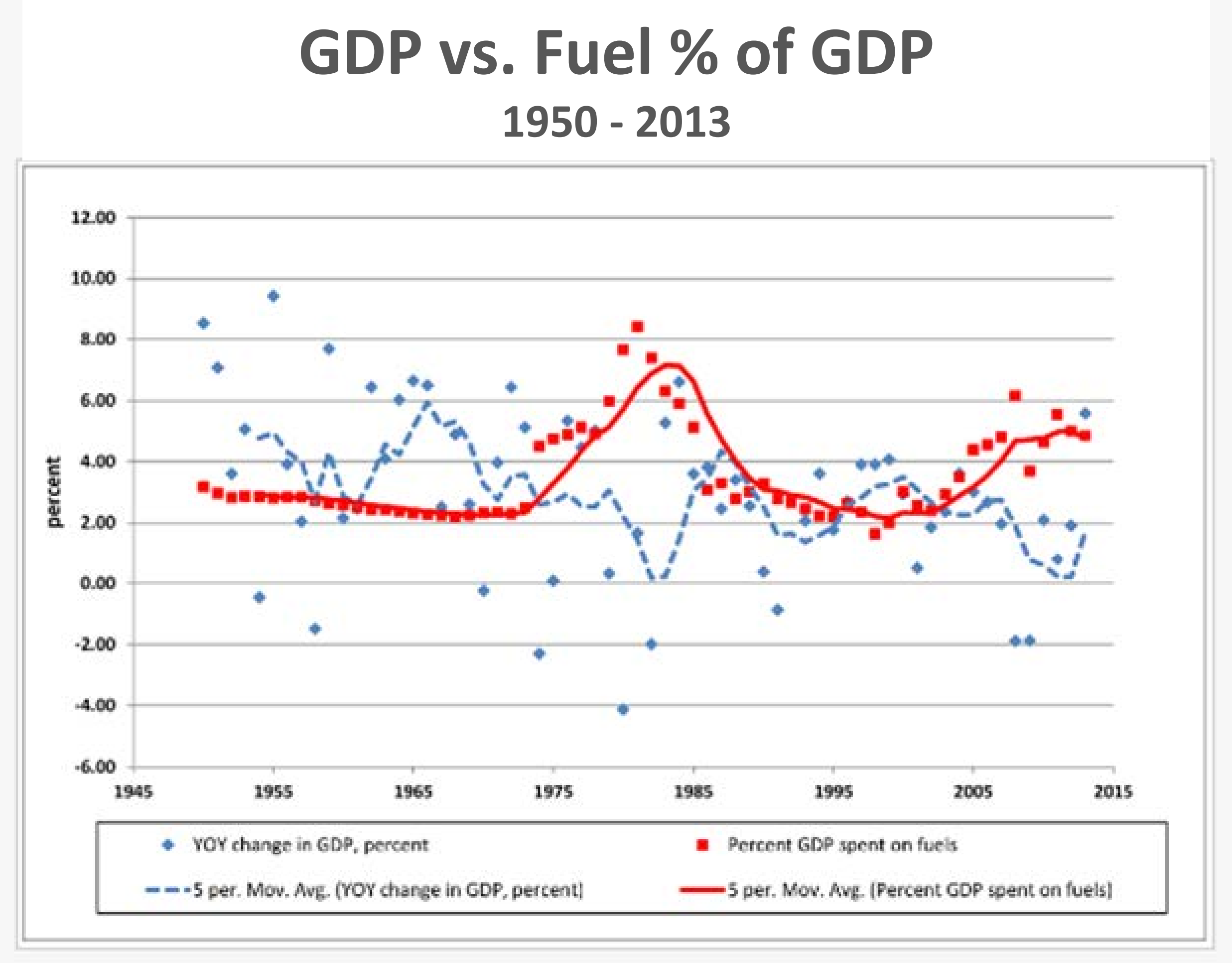
- Potential supply tightness; pricing uncertain.

Future

- Is it time for price stability to come back?

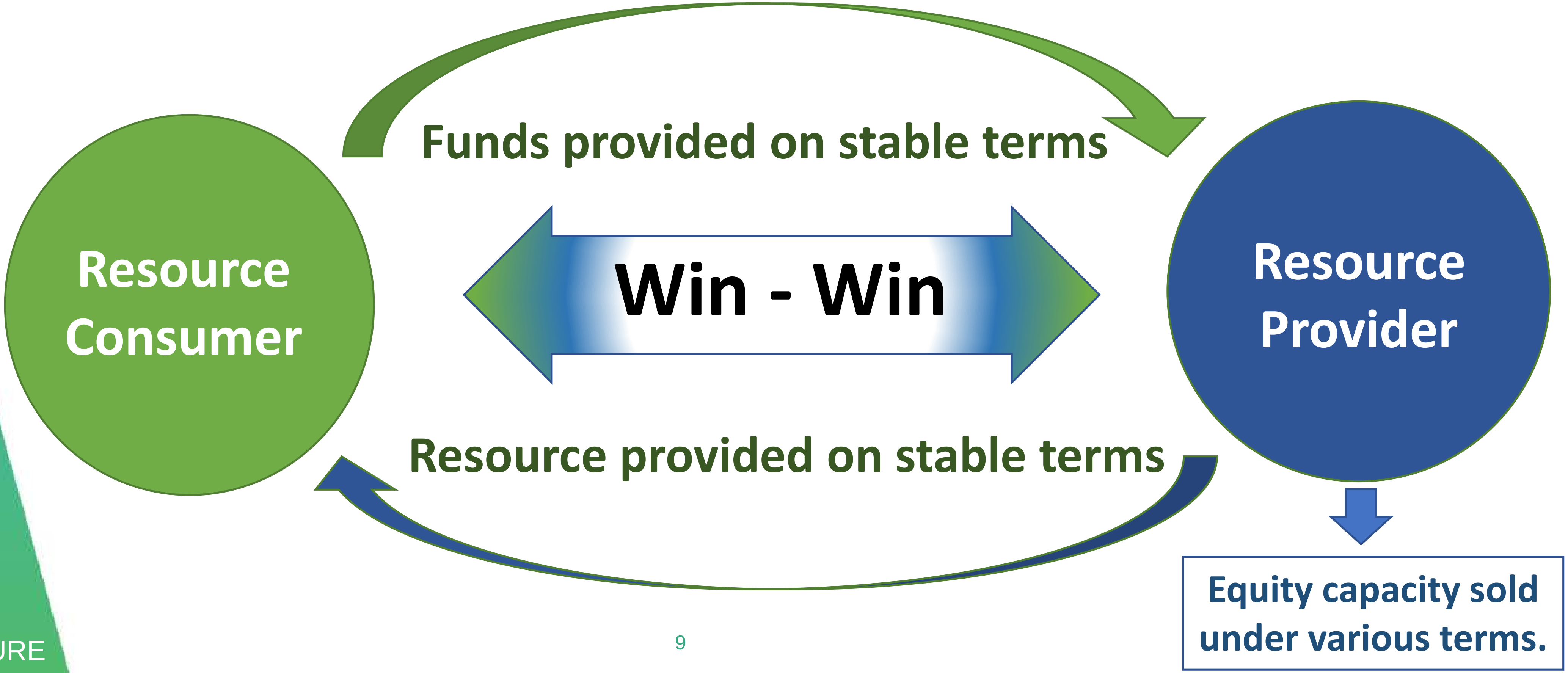
Energy Price Volatility serves Neither Resource State nor Consumer State

- Price volatility brings a "resource curse" on resource owners:
  - Binge spending and big plans during high-priced years;
  - Austerity and budget cuts during lean times.
- For consumers, inverse relationship between energy prices and GDP links energy price volatility to economic uncertainty.

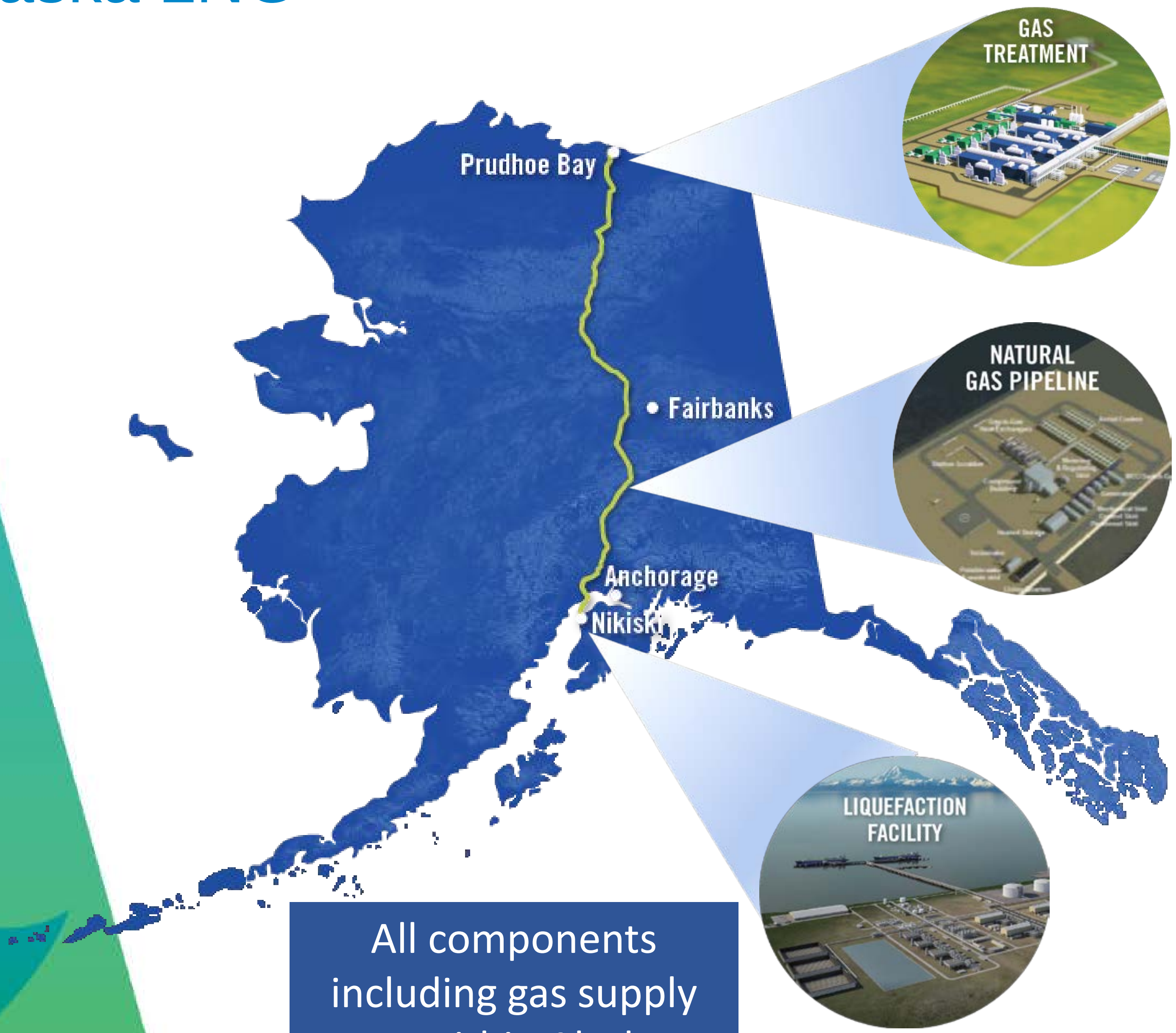


Win-Win Outcome for Consumer and Provider

- Resource owners need capital for resource development.
- Resource consumers can use capital to obtain resources at stable prices.
- Using state-sponsored funding to obtain resources can result in economic stability for both sides; a “win-win” situation.



Alaska LNG

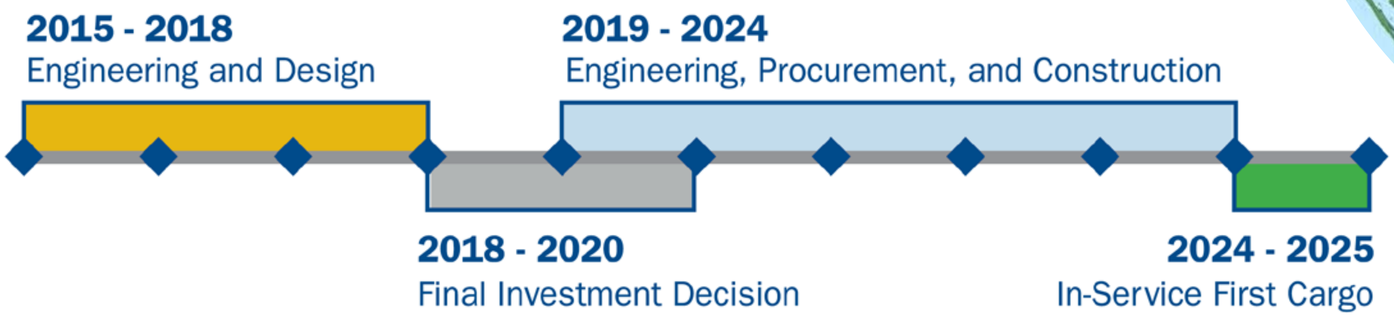


- **Gas Treatment Plant:**
  - ✓ Amine CO_2 plant, 3.5 Bcf/d.
  - ✓ Remove all CO_2.
- **Pipeline:**
  - ✓ 807-mile, 42-inch pipe.
  - ✓ Established corridor.
- **LNG Production Facility:**
  - ✓ 20 MTPA; 3 trains with phased development opportunity.
  - ✓ 480,000 m^3 LNG storage.
  - ✓ Two berths; 217,000 m^3 vessels.
- **In-service 2024 – 2025.**

All components including gas supply are within Alaska.

Alaska LNG Project Overview

- An integrated infrastructure and energy project that will monetize Alaska's immense, but stranded, North Slope gas resources.
- Priced as infrastructure for foundation customers.
- Commercial window of 2024-2025.



ASIA'S CLOSEST, MOST DIRECT, U.S. LNG.

2024-2025

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Joint Development Agreement

Joint Development Agreement signed November 9, 2017

Alaska LNG is supported by the U.S. and China governments.

SINOPEC 中国石化

中国投资有限责任公司
CHINA INVESTMENT CORPORATION

中国银行
BANK OF CHINA

THE SEAL OF THE STATE OF ALASKA

ALASKA GASLINE DEVELOPMENT CORP.

THE RIGHT COMPANIES TO MOVE THE PROJECT FORWARD

Major National Buyers See the Benefit

PetroVietnam

KOGAS

Tokyo Gas

Conclusion

- **Resource owners and consumers have common goals.**
- **Stable energy prices can provide a stable economy.**
- **Long-term agreements help build the necessary infrastructure.**
- **The state resource owner can lead or assist in the active development of the necessary infrastructure and agreements to help commercialize the resource.**

Resource Development Should be a Win - Win

THANK YOU!

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