



# **ALASKA MOVING FORWARD: *DELIVERING NATURAL GAS TO THE WORLD***

**KENAI AND SOLDOTNA JOINT CHAMBER**

**NOVEMBER 2, 2016**



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- **Alaska Gasline Development Corporation**
- **Project Overview**
- **Global Competitive Advantages**
- **Alaska Benefits**
- **Current Progress and Facts**
- **Next Steps**
- **Questions**





# ALASKA GASLINE DEVELOPMENT CORPORATION



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

- ✓ Public corporation owned by the State of Alaska
- ✓ Empowered to expedite, finance, and build natural gas infrastructure



- **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.



## **ALASKA MOVING FORWARD**

- 2009 - Early beginnings
- 2010 - House Bill 369 creating AGDC
- 2013 - House Bill 4 AGDC receives power, authority, and funding to advance the Alaska Stand Alone Pipeline (ASAP) project.
  - ✓ House Bill 4 also established AGDC as an independent, public corporation of the State of Alaska.
- 2014 – Senate Bill 138 expands AGDC’s mission and authority for an Alaska liquefied natural gas (LNG) project on the State’s behalf.
  - ✓ This legislation also directs AGDC to assist the Department of Revenue and the Department of Natural Resources in maximizing the value of the State’s gas.



# AGDC Board of Directors



**Dave Cruz**  
Chairman



**Marc Luiken**



**Heidi Drygas**



**Warren Christian**



**Joey Merrick**



**Hugh S. Short**



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# AGDC Executive Management Team



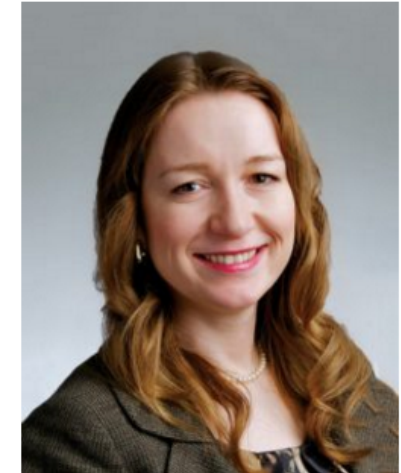
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**Frank Richards, PE**  
Senior VP Program  
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**Rosetta Alcantra**  
VP Communications



**Lieza Wilcox**  
VP Commercial and  
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**Fritz Krusen**  
VP Alaska LNG





# AGDC'S TWO MAJOR PROJECTS



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# AGDC's Two Major Project Options



Alaska LNG

# Project Comparison

|  | ASAP  | Alaska LNG   |
|--|---|--|
| <b>Project Sponsors</b>                        | State of Alaska (AGDC)  | State of Alaska (AGDC), BP, ConocoPhillips, ExxonMobil   |
| <b>Design Objective</b>                        | Utility grade “lean” gas for in-state markets   | Liquefied Natural Gas (LNG) for export markets   |
| <b>Facilities</b><br>Gas Conditioning Facility | <ul style="list-style-type: none"> <li>Gas Conditioning Facility and compression at Prudhoe</li> <li>Fluor solvent process</li> </ul> | <ul style="list-style-type: none"> <li>Gas Treatment Plant (GTP) at Prudhoe</li> <li>8 Compressor Stations</li> <li>Amine process</li> </ul> |
| Mainline                                       | 733 mile, 36” mainline  | ~800 mile, 42” mainline  |
| Lateral Line                                   | 30 mile, 12” lateral to Fairbanks   | N/A  |
| LNG Plant                                      | N/A   | LNG plant, storage tanks and 2 tanker berths at <u>Nikisk</u>  |
| <b>Terminus</b>                                | Near Big Lake   | Nikiski (Kenai Peninsula)  |
| <b>Design Capacity</b>                         | 500 million cubic feet/day design capacity  | ~ 3 billion cubic feet/day   |
| <b>Cost</b>                                    | ~ \$10 B  | ~ \$45 - \$65 B  |
| <b>Workforce</b>                               | Peak: 8,000<br>Operations: ~150   | Peak: 9,000-12,000<br>Operations: ~1,000   |
| <b>Construction</b>                            | 3 years   | 5-6 years  |

*ASAP and Alaska LNG are different projects.*



- **ASAP Project Description**

- ✓ Lean natural gas with design capacity of 500 million cubic feet per day
- ✓ Buried pipeline except at bridge and fault crossings
- ✓ Gas conditioning facility (GCF) near Prudhoe Bay, built from large modules
- ✓ 36-inch, 733 mile-long mainline pipeline
- ✓ 12-inch, 30 mile-long lateral line connecting to Fairbanks
- ✓ Mainline generally parallels portions of TAPS, the Dalton Highway, and the Parks Highway; connects to ENSTAR's distribution system at MP 39 of the Beluga Pipeline southwest of Big Lake

# Alaska LNG Project

- **Integrated gas infrastructure project:**

- ✓ **Gas Treatment Plant:**

- 200 acre site at Prudhoe Bay
- Deliver up to 3.5 Bcf/d

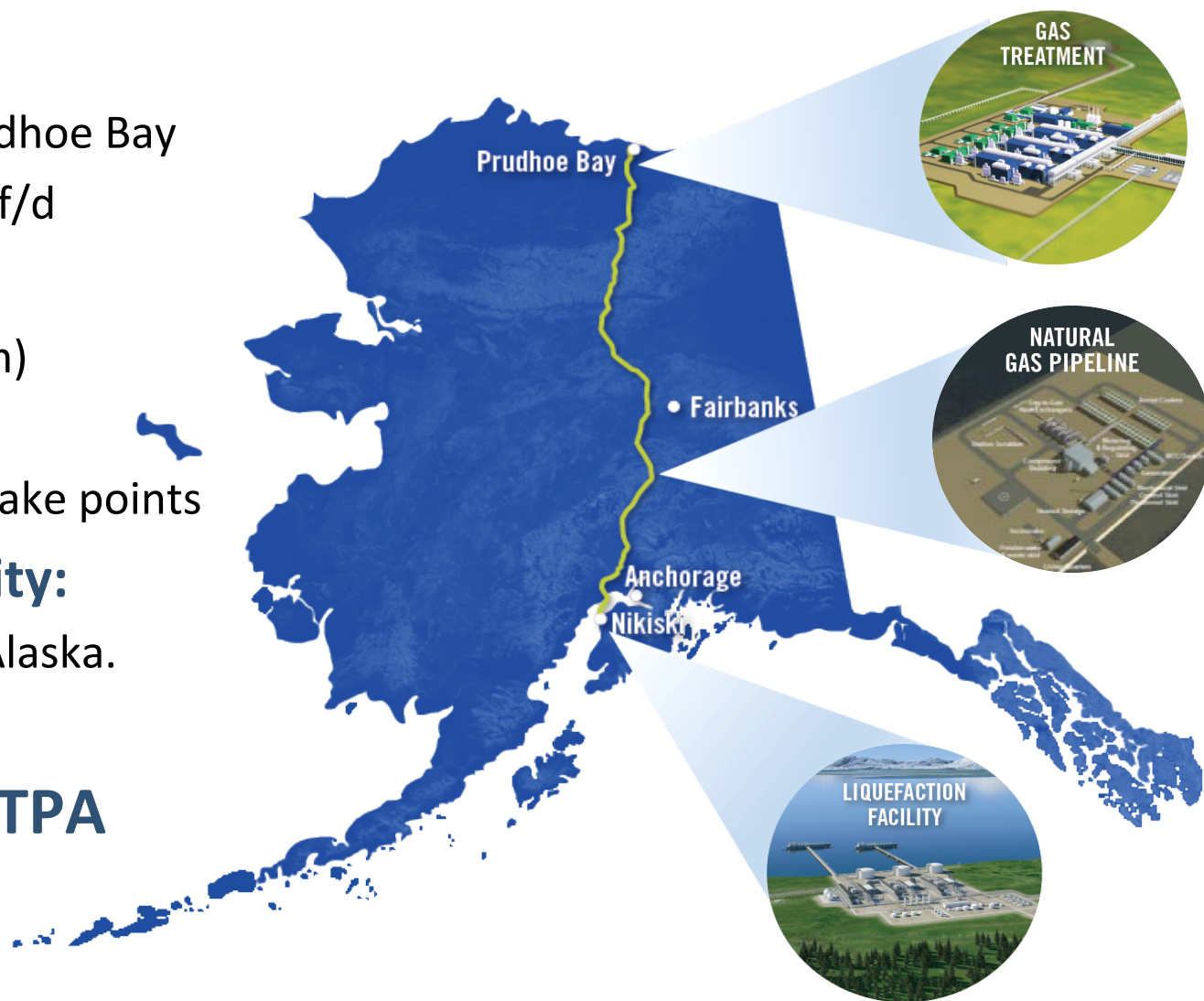
- ✓ **Pipeline:**

- 800-miles (1,287 km)
- 42-inch pipe (1.1m)
- Several in-state offtake points

- ✓ **LNG Production Facility:**

- Located in Nikiski, Alaska.
- 600 acre site.

- **Produce up to 20 MMTPA**



Bcf = Billion cubic feet    MMTPA = Million Metric Tons Per Annum

*Fully-integrated natural gas pipeline and liquefaction system.*

# The Gas Treatment Plant (GTP)

- Gas supply from Prudhoe Bay Unit (PBU) and Point Thomson Unit (PTU)
- Clean, dehydrate, chill and compress
- Treat gas to LNG quality





# The Pipeline

- 800-mile (1,287 km)
- 42-inch (1.1 m) diameter pipe
- 2,075 psig (143 bar) operating pressure
- Eight compressor stations
- Up to 3.5 Bcf/d capacity
- Pipeline materials design and testing completed
- Route primarily on state and federal lands

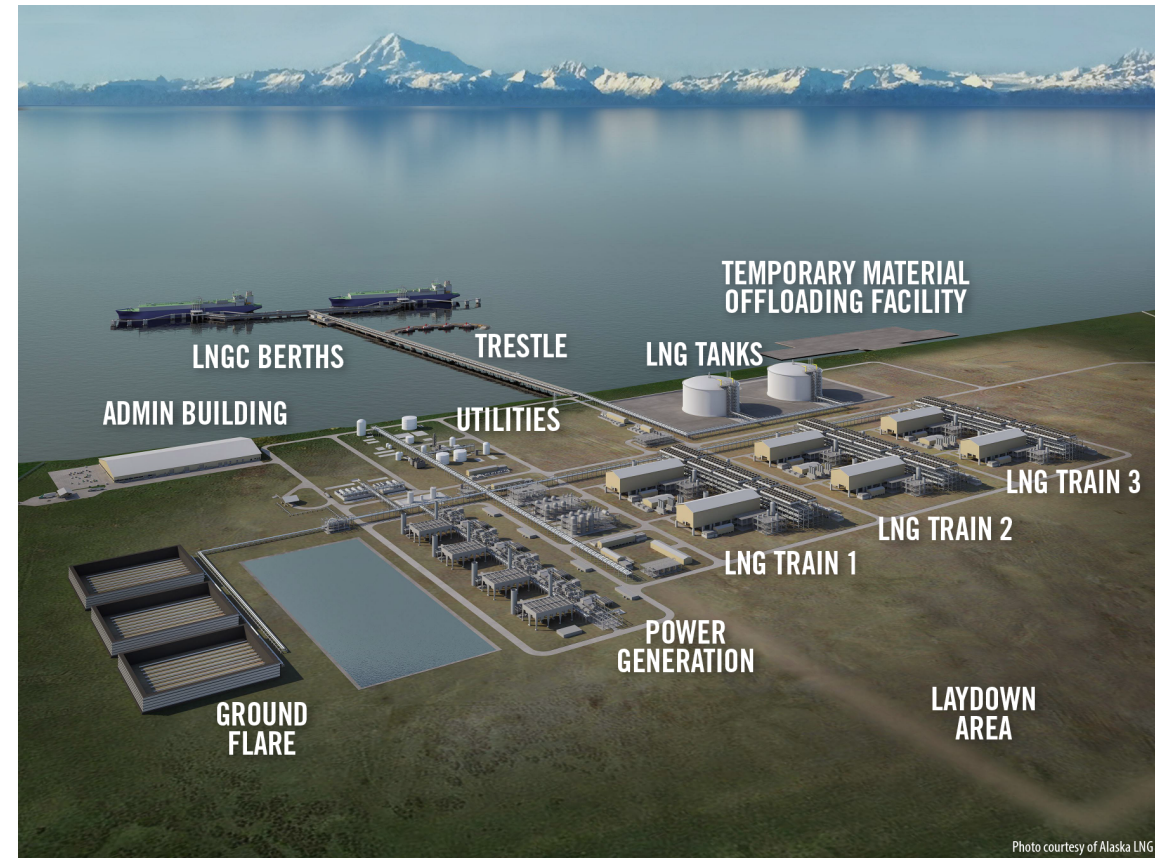


Bcf/d = Billion cubic feet per day

*Almost the entire pipeline is underground/subsea.*

# LNG Production Facility

- **Optimized facility designed by global prime contractors:**
  - ✓ Three liquefaction trains
  - ✓ Two 240,000 m<sup>3</sup> LNG storage tanks
  - ✓ Two LNG carrier berths:
    - Simultaneous loading
    - Up to 217,000 m<sup>3</sup> (Q-Flex)
  - ✓ Capacity of 20 MMTPA
  - ✓ 17-30 cargoes per month
- **60 square km of seafloor mapping / bathymetry concluded**



MMTPA = Million Metric Tons Per Annum

*Best available practices with global suppliers.*





# GLOBAL COMPETITIVE ADVANTAGES



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# Global Competitive Advantages

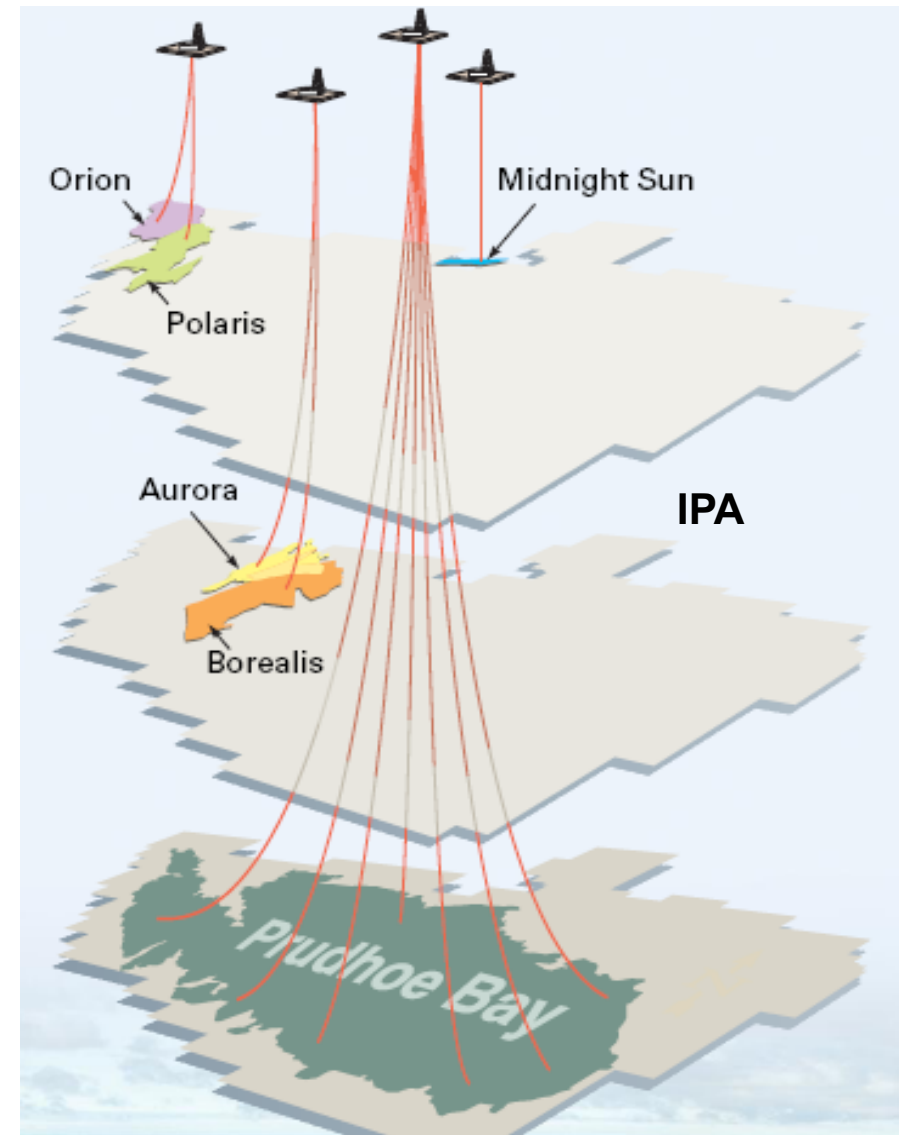
- Proven Gas Resources
- Existing Infrastructure
- Market Proximity and Arctic Climate
- Reliability, History, and Expertise
- Quality of Project Engineering
- Political Support and Stability



# Proven Gas Resources

- USGS estimates of Alaska North Slope gas:

- ✓ 35 Tcf proven
- ✓ 200+ Tcf conventional



Tcf = Trillion cubic feet

*Gas supply for generations.*

- Established infrastructure and massive proven gas resources on Alaska's North Slope:
  - ✓ Prudhoe Bay Unit (PBU)
    - Largest North American Field
    - 8 Billion cubic feet of gas produced and reinjected daily
  - ✓ Point Thomson Unit (PTU)
    - Started up in 2016 with condensate production
    - Ultimate development goal is natural gas sales
  - ✓ Trans-Alaska Pipeline
    - In operation since 1977
    - 17+ billion barrels of oil produced



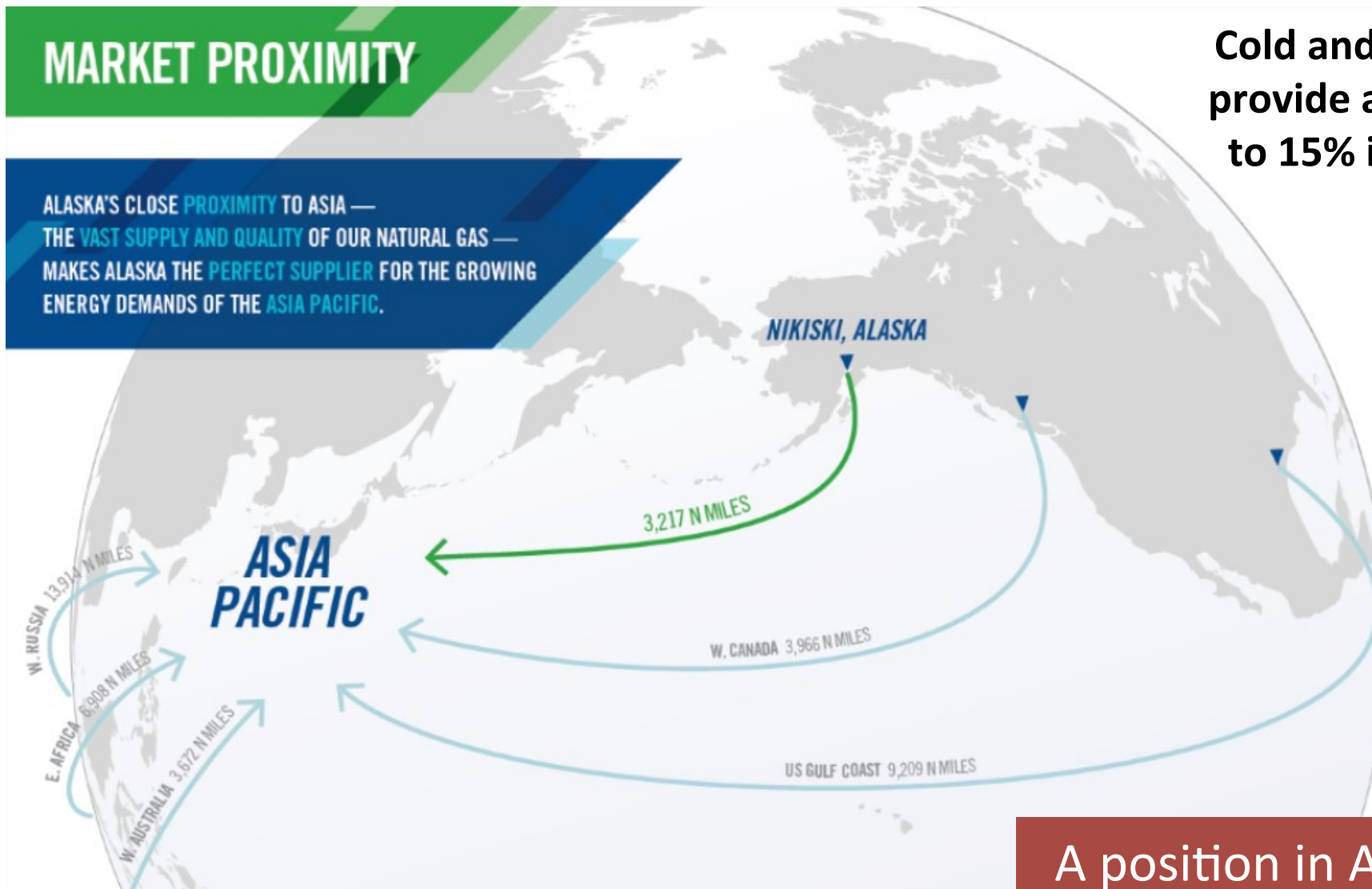


# Market Proximity and Arctic Climate

## MARKET PROXIMITY

ALASKA'S CLOSE PROXIMITY TO ASIA —  
THE VAST SUPPLY AND QUALITY OF OUR NATURAL GAS —  
MAKES ALASKA THE PERFECT SUPPLIER FOR THE GROWING  
ENERGY DEMANDS OF THE ASIA PACIFIC.

**Cold and dry arctic climate can  
provide an energy efficiency up  
to 15% in the winter months.**



**A position in Alaska provides for  
optimized logistics.**

*Nikiski, Alaska is located on the North Pacific Ocean,  
and presents one of the most expedient routes to Japan.*

- LNG Shipping:
  - ✓ More than 45 years of reliable and safe LNG exports
  - ✓ Since 1969
  - ✓ Over 1,300 successful shipments
  - ✓ Alaska was first LNG plant to service Asia-Pacific LNG market; Alaska has never missed a LNG cargo shipment to Asia





- Project has been thoroughly studied and analyzed:

- ✓ Over 1 million man hours invested in pre-FEED
- ✓ World-renown contractors involved in pre-FEED
- ✓ More than 193,000 acres mapped
- ✓ Over 300 streams surveyed
- ✓ Thousands of boreholes (10-150 feet deep) researched along the proposed route
- ✓ Data gathered to guide decisions on pipeline routing, construction laydown areas, to mitigate risk, and support regulatory requirements
- ✓ Over \$360 million has been invested in project development
- ✓ Extensive data available; more than 33,700 pages submitted to FERC (NEPA Pre-File)



- Alaska and the United States of America has a transparent democratic process including permitting and licensing



- A stable governmental process helps to ensure a project is safe from potential security threats





# ALASKA BENEFITS



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# Project Benefits for Alaskans

- Gas for Alaskans
- Environmental Energy Improvements
- Diversity of State Revenue
- Jobs and Workforce Development
- Economic Investment Incentives





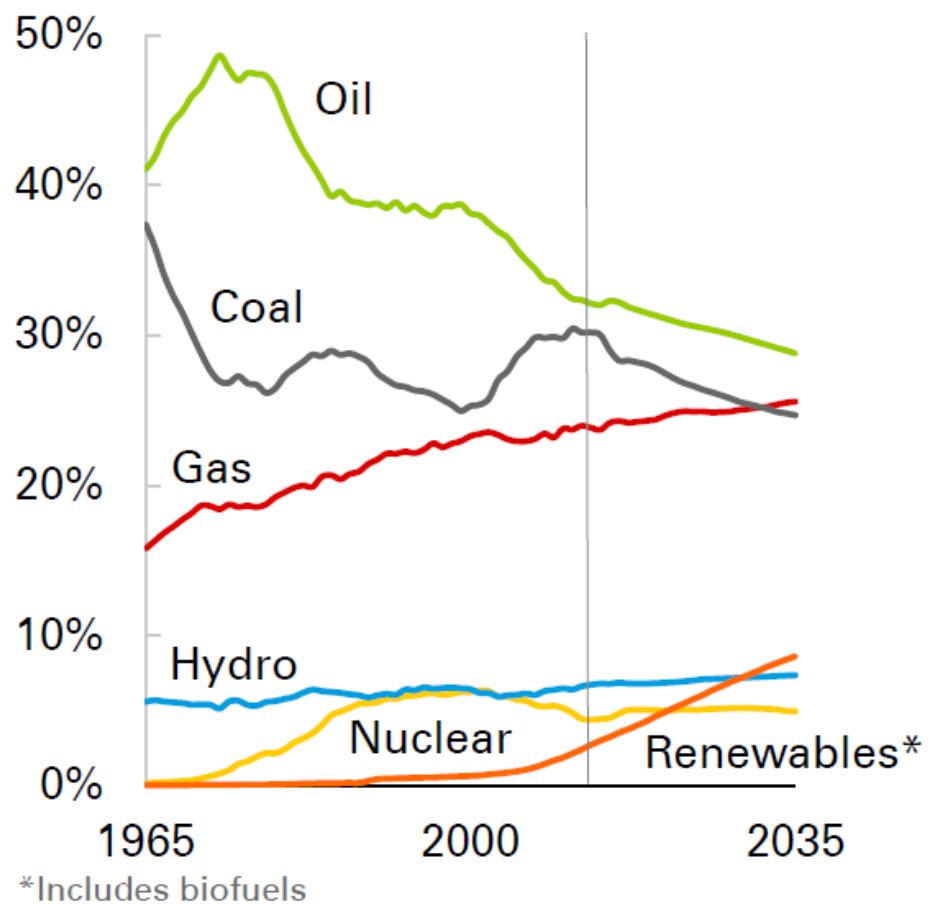
- Gas for Alaskans
  - ✓ Several interconnect points
- AGDC can serve as the State's Gas Aggregation service

Natural gas can provide  
energy cost savings  
for communities in Alaska.



# Environmental Energy Improvements

Natural Gas is the cleanest burning fossil fuel and is growing in worldwide usage.



Source: BP Energy Outlook 2016

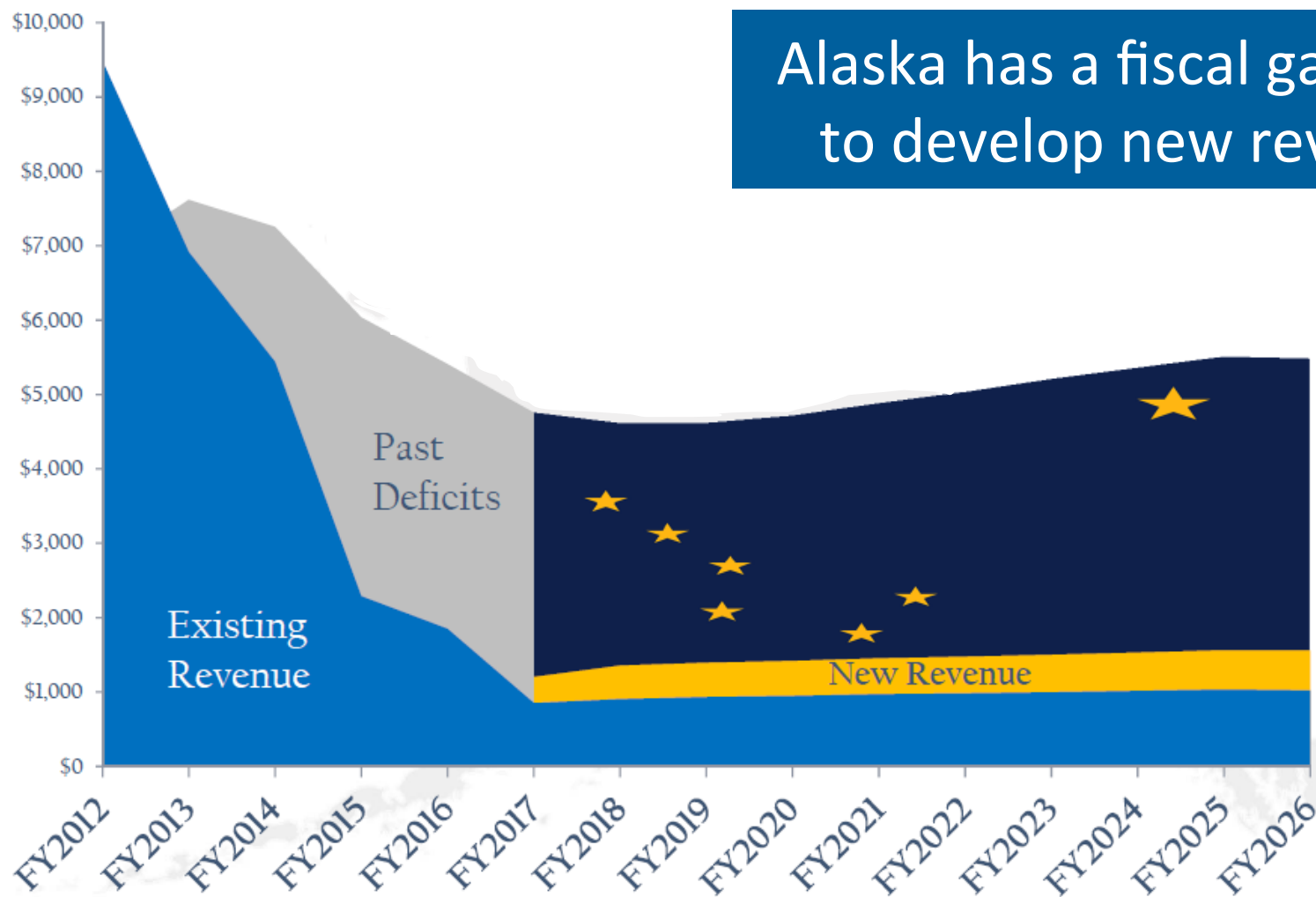


“Gas is the fastest growing fossil fuel (1.8% p.a.), with its share in primary energy gradually increasing.”

*Renewable energy and natural gas are on the incline.*

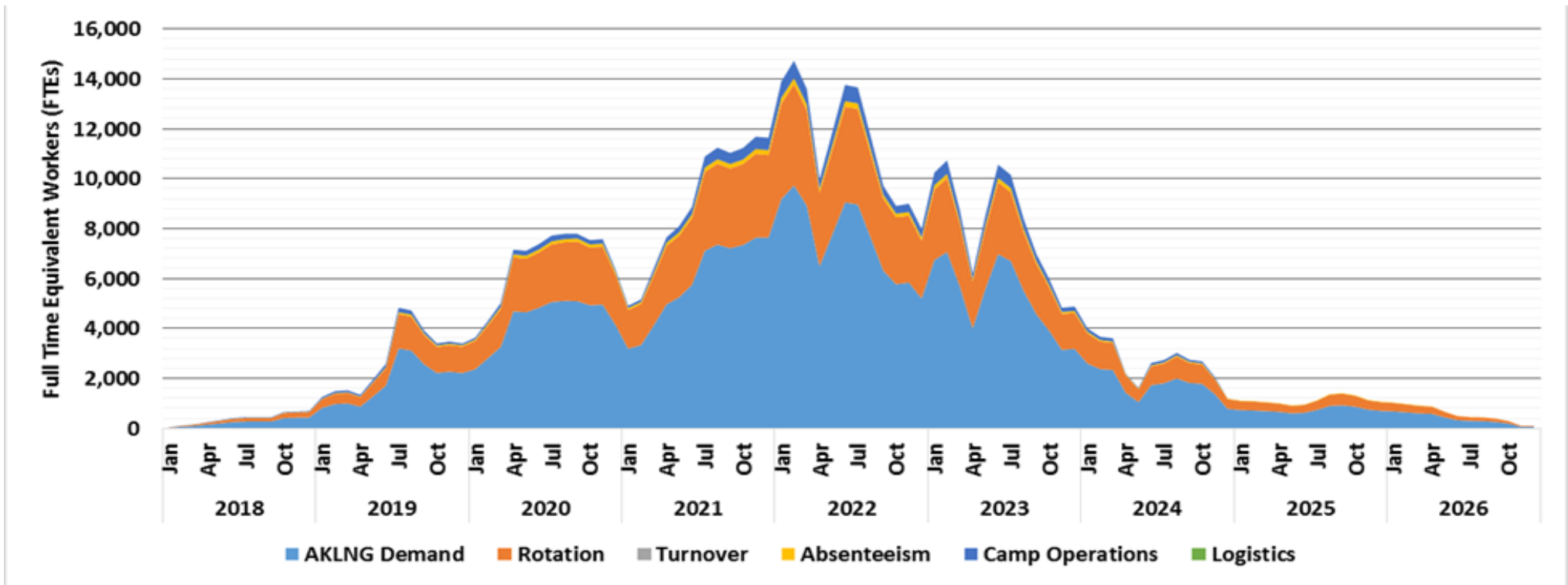


# Diversity of State Revenue



Source: State of Alaska Department of Revenue, ALASKA PERMANENT FUND PROTECTION ACT Presentation

## Alaska LNG Construction Labor Demand



Source: Alaska LNG Pre-FEED labor study to Department of Labor

- **Jobs:**

- ✓ Approximately 9,000-12,000 jobs during peak construction
- ✓ Estimated 1,000 permanent operations and maintenance (O&M) jobs
- ✓ Teamsters, Operating Engineers, Laborers, and Pipeliners will be the four largest expected peak craft needs





- Extended oil production from existing fields
- Stimulate new oil and gas exploration
- Provide low cost energy for mining opportunities throughout the State

Mining growth and infrastructure investment opportunities





# CURRENT PROGRESS AND FACTS

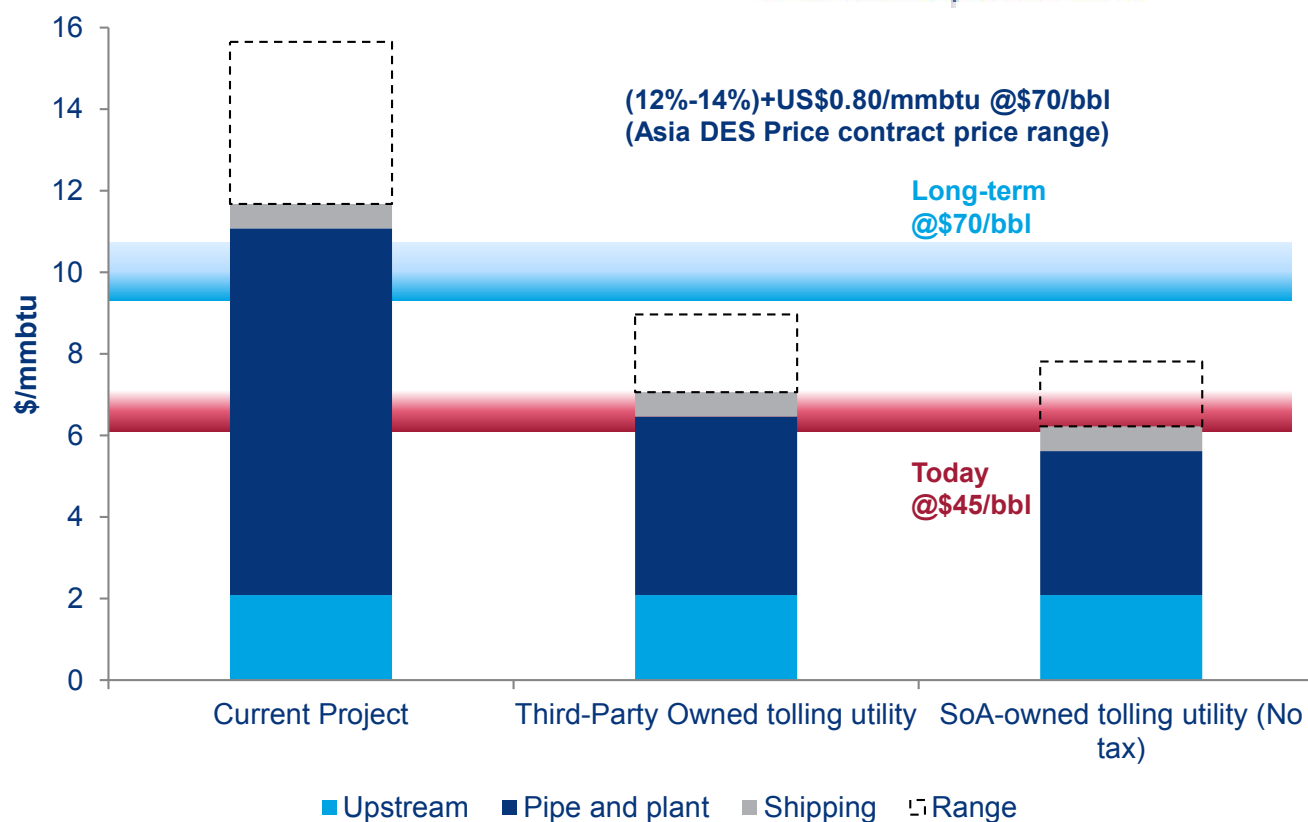


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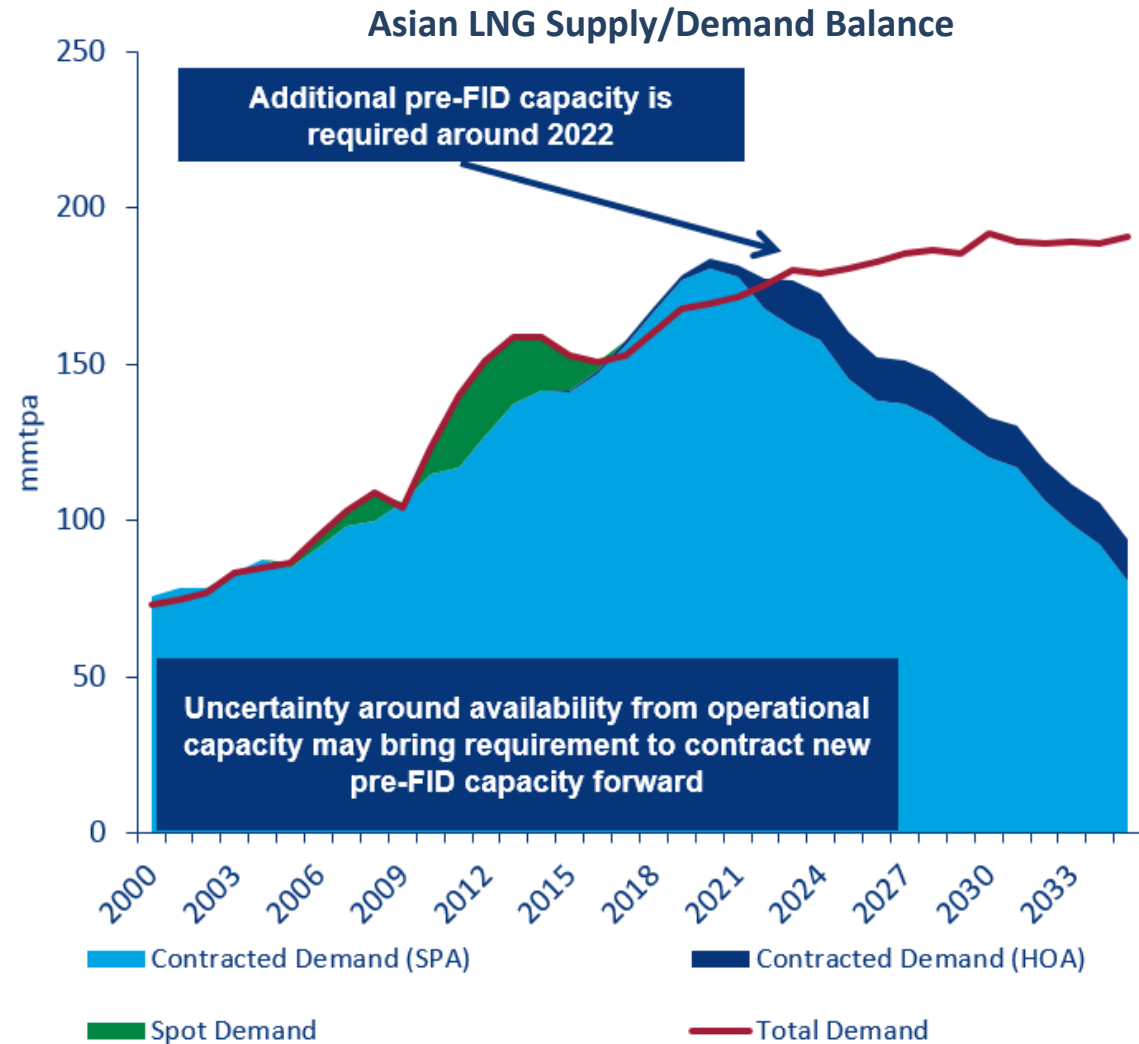
## The introduction of State ownership

- Most of the cost benefits are derived from project finance
- Lower returns on equity; customary for utility and infrastructure investors
- In addition a third-party toller, the State of Alaska could further reduce the cost of supply with a potential tax exemption



*Wood Mackenzie concludes the project would be competitive under a third party financing structure.*

- Current global surplus
- Equilibrium by 2022; new supply needed 2021-2025
- Many supply projects chasing demand
- Sellers must compete on more than just price

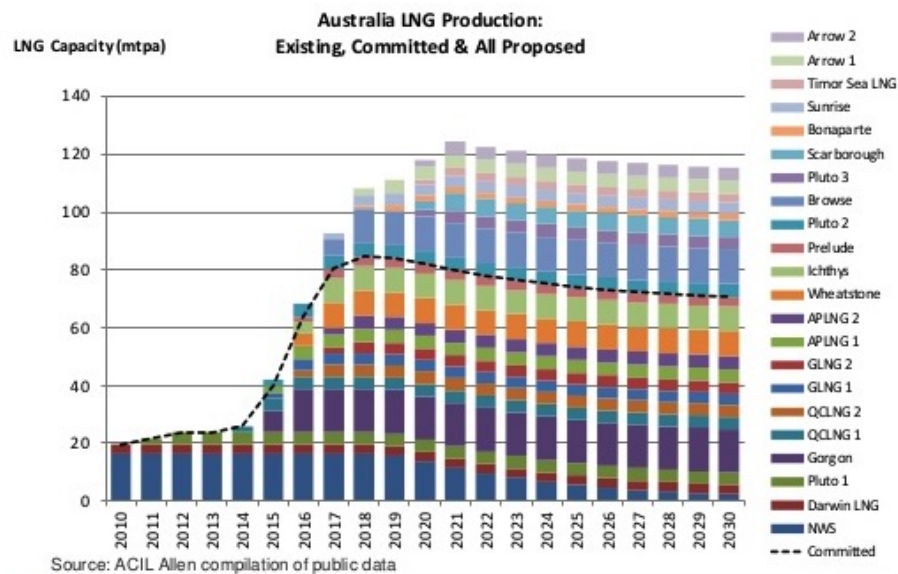


Source: Wood Mackenzie

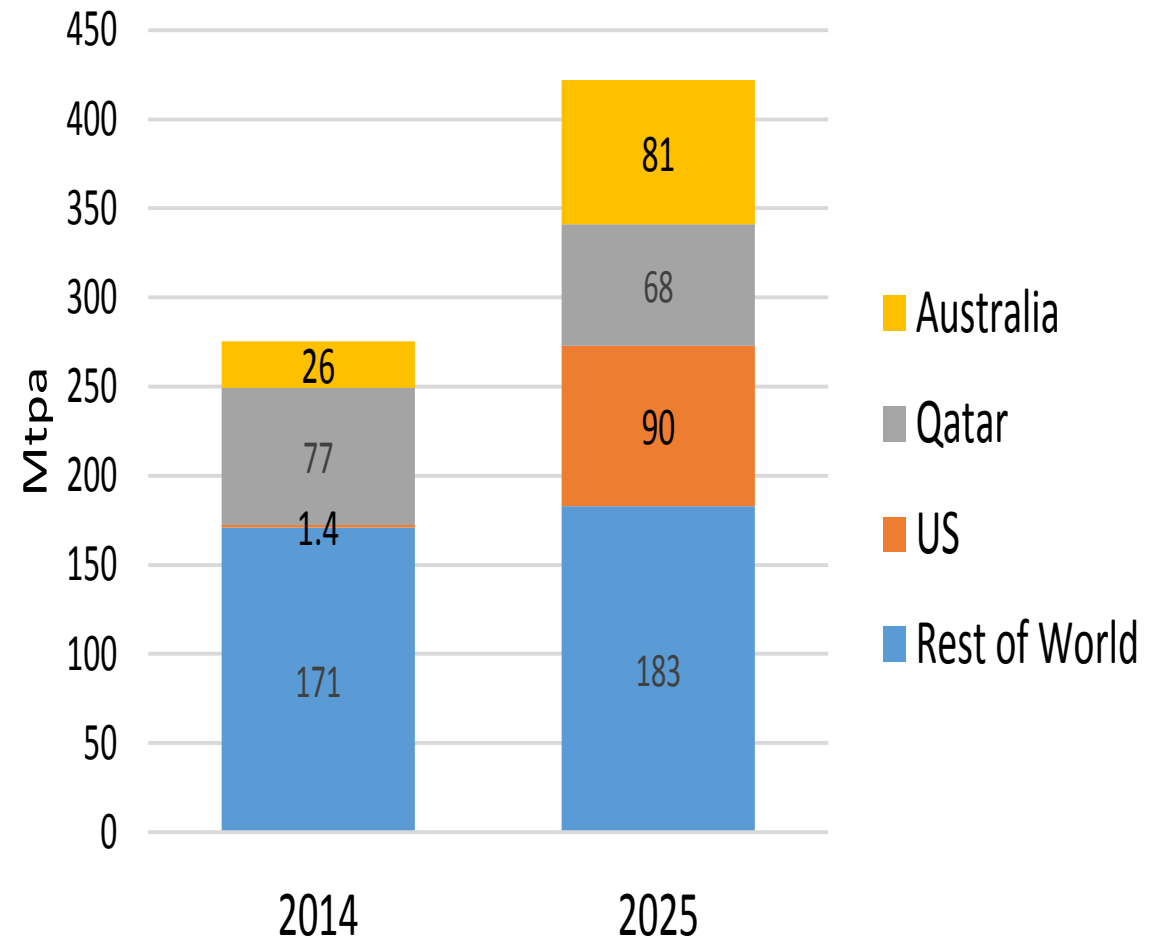


# Global Market Competition

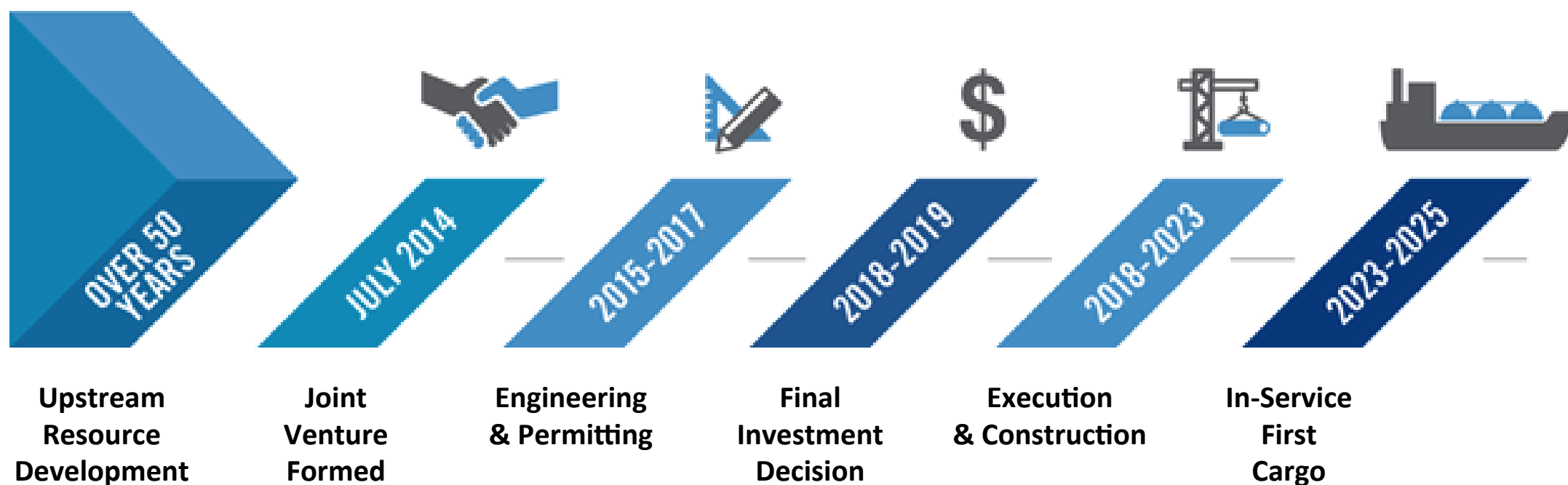
- Global competition comes from known sources
- Alaska's project can be competitive in a global market
- Alaska is in the best position to develop an economic project



## Potential LNG Supply Growth



# Target Completion Timeline



*AGDC is targeting a 2023-2025 in-service window.*

- AGDC plans to pursue a viable economic project and not “build it at any cost.”
- AGDC is willing to lead. We will augment are current technical, commercial, and project management expertise as necessary. AGDC does not plan to “go it alone.”
- Lowering the cost of infrastructure through third-party financing and reduced federal taxes through State ownership will raise the netback received by the State and producer parties.
- Co-venture producers of the Alaska LNG project suggested the project be transitioned to the State of Alaska. Producers didn’t “pull out.” They provided a path forward.
- Producers are supportive and working toward a seamless continuation.
- If we stop or slow this project, it could be stopped for decades.





# NEXT STEPS

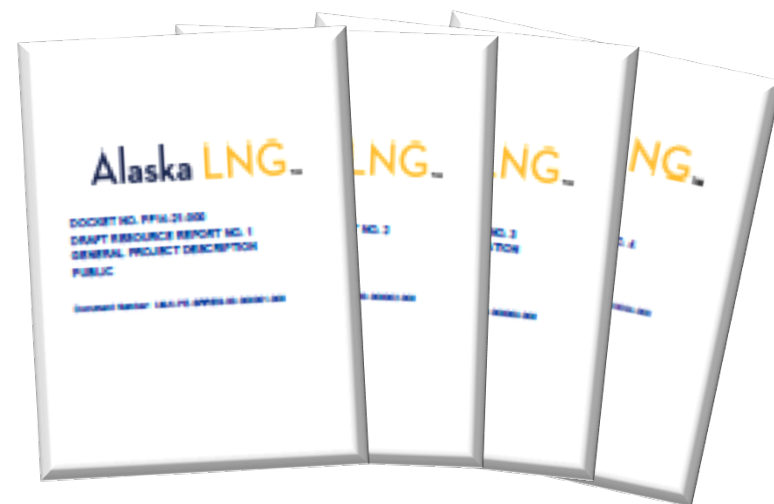


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# Project Next Steps

- Engineering
  - ✓ Pre-FEED essentially completed and major deliverables issued in September
- Federal Energy Regulatory Commission (FERC)
  - ✓ NEPA pre-filing process on schedule
  - ✓ Formal NGA filing targeting for 1Q2017
- Commercial Transition
  - ✓ Negotiating project leadership transfer to AGDC
  - ✓ Negotiating acquisition of project assets
- Marketing
  - ✓ Government: Government presentation support
  - ✓ Finalizing international marketing materials
- Financing
  - ✓ Progressing strategy development
  - ✓ Developing terms for project investors
  - ✓ Evaluating tax exemption options





<https://vimeo.com/185041599>



- Recent Asia-Pacific Conference
- Provided accurate information
- Reaffirmed market opportunity
- Positive response
- Alaska invited back to present at regional leadership summit

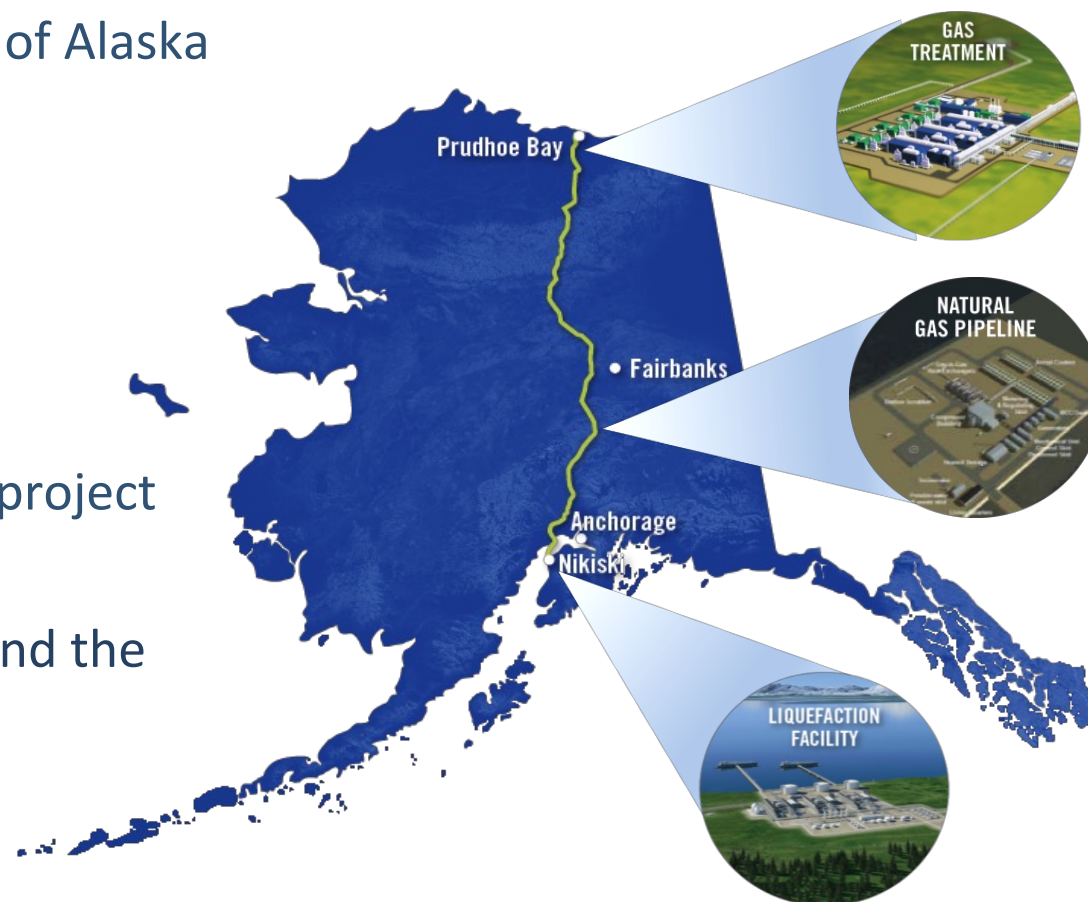


- Be informed
- Sign up for AGDC's news and important updates
- Notify your legislators about your support
- Attend local events
- Share accurate information your professional and social networks
- Stay engaged in the conversation



# Conclusion

- A project with major benefits for the State of Alaska
  - ✓ Economic diversity
  - ✓ Long term energy supply stability for homes and new industries
  - ✓ Direct and indirect quality jobs
  - ✓ Increased oil and gas production
- Competitive global landscape but Alaska's project can compete
- The project will not be built unless viable and the permanent fund is not a funding source
- The project must be attractive to customers and investors





## HOW TO CONTACT AGDC:

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