ALASKA
GASLINE
DEVELOPMENT CORP.

THE ALASKA LNG OPPORTUNITY:

DEVELOPING A WORLD-CLASS LNG EXPORT PROJECT
HOUSTON, ALASKA MAY 11, 2017

www.agdc.us

AGDC CORPORATE OVERVIEW

Alaska Gasline Development Corporation (AGDC)

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

Objectives of AGDC

- Operate as a State Corporation.
- Develop state resources for the benefit of Alaskans.

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.

AGDC CORPORATE HISTORY

- 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

Hugh Short
Vice Chairman

Joey Merrick
Secretary-Treasurer

Heidi Drygas

Marc Luiken

Warren Christian

David Wight

COMMUNITY ADVISORY COUNCIL

- Tim Navarre (Chair)
- Jason Mayrand
- Qaiyaan Harcharek
- Gov. Bill Sheffield
- Dan Coffey
- Don Dyer
- Joe Bovee/Kathryn Martin
- Matt Larkin
- Rocky Riley
- Ron Long
- Sarah Obed
- Terry Hinman

AGDC'S TWO MAJOR PROJECTS

- **AGDC is the owner of two Projects**

Alaska LNG

- ✓ State's <u>priority</u> project
- ✓ Below $45 billion for LNG export project
- ▪ December 2016 became state-led

ASAP

- ✓ State's <u>back-up</u> project
- ✓ $10 billion in-state gas pipeline
- ▪ Currently 100% state owned

- **Either project is capable of delivering gas to Alaskans – but the projects vary significantly in size, scope and cost**
- **AGDC is also responsible for planning and developing gas off-takes within Alaska regardless of which project is built**

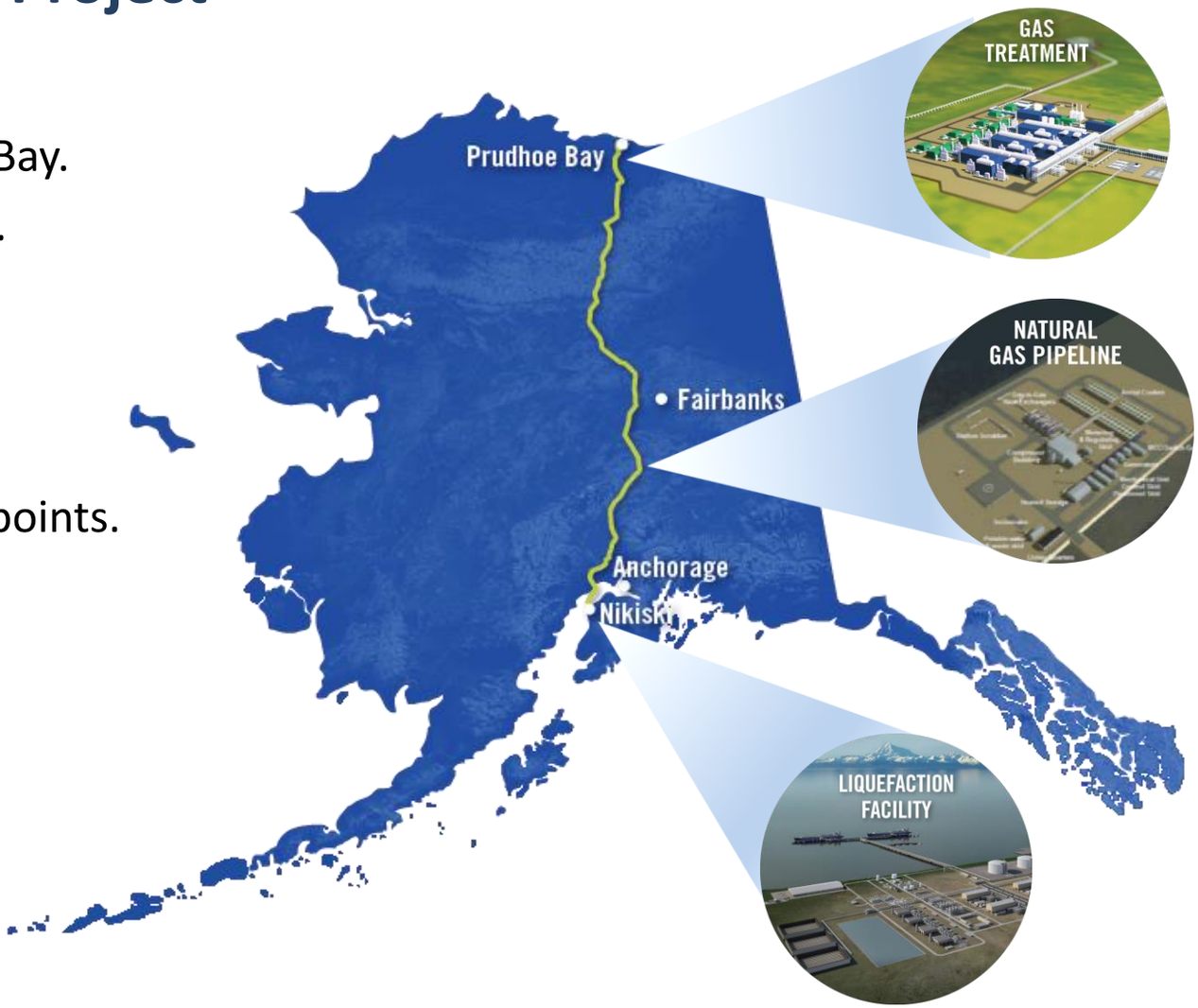
ALASKA LNG PROJECT

ALASKA GASLINE DEVELOPMENT CORP.

Integrated Gas Infrastructure Project

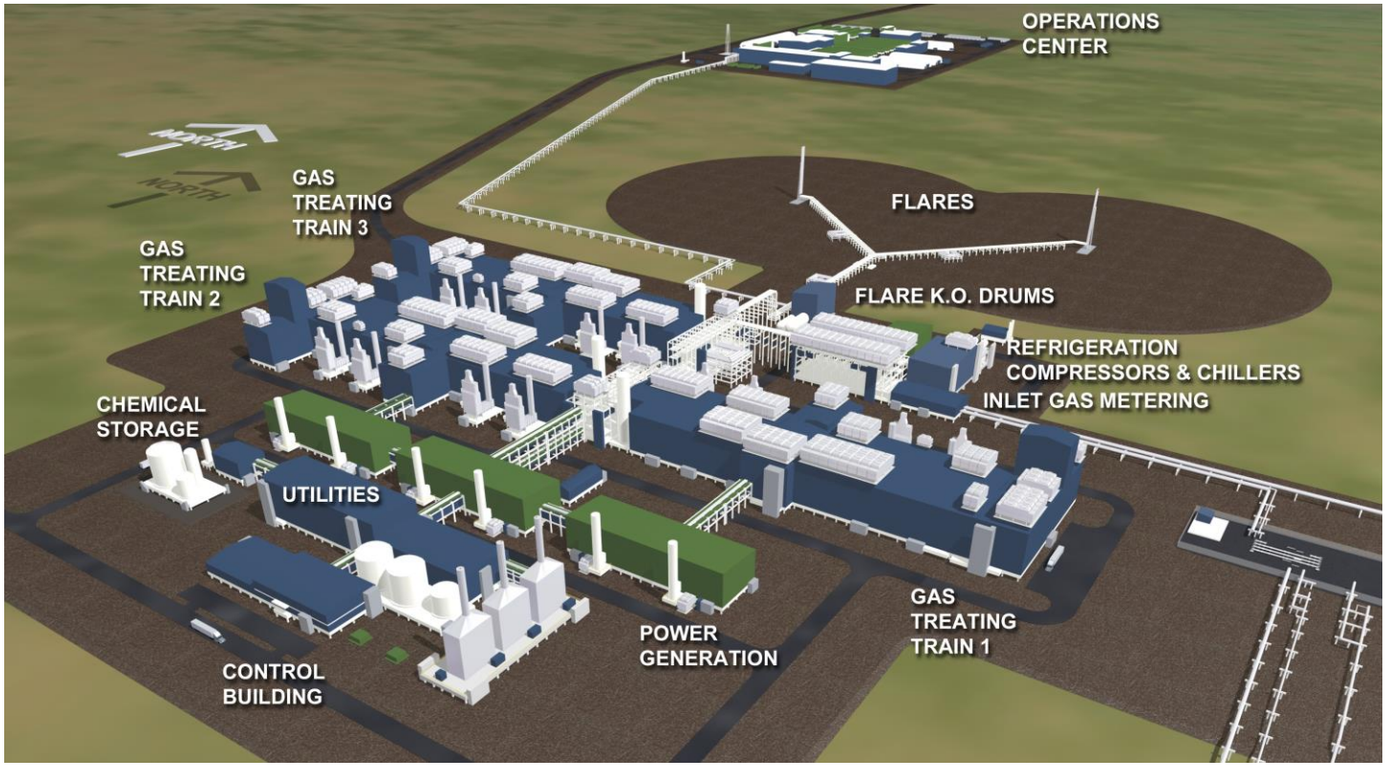
- **Gas Treatment Plant**
  - ✓ 200 acre site at Prudhoe Bay.
  - ✓ Condition up to 3.5 Bcf/d.
- **Pipeline**
  - ✓ 800-miles (1,287 km).
  - ✓ 42-inch pipe (1.1m).
  - ✓ Multiple in-state offtake points.
- **LNG Production Facility**
  - ✓ Located in Nikiski, Alaska.
  - ✓ 600-900 acre site.

Produce up to 20 MMTPA



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

GTP OVERVIEW



Summary

- 8 year execution phase schedule, with 4 major sealifts.
- Highly Modularized .
- About 200 acres of land required.
- Treatment to remove CO_2 and H_2S.
- Glycol dehydration to remove water from CO_2 and treated gas .
- Power plant: decentralized distribution system optimized to reduce capex and increase uptime.
- Compression optimized to reduce capex and increase uptime.
- Waste heat recovered from gas turbines.
- Common propane refrigeration system to chill treated gas for permafrost protection.

PIPELINE DESIGN BASIS

ALASKA GASLINE DEVELOPMENT CORP.

Point Thomson Transmission Line

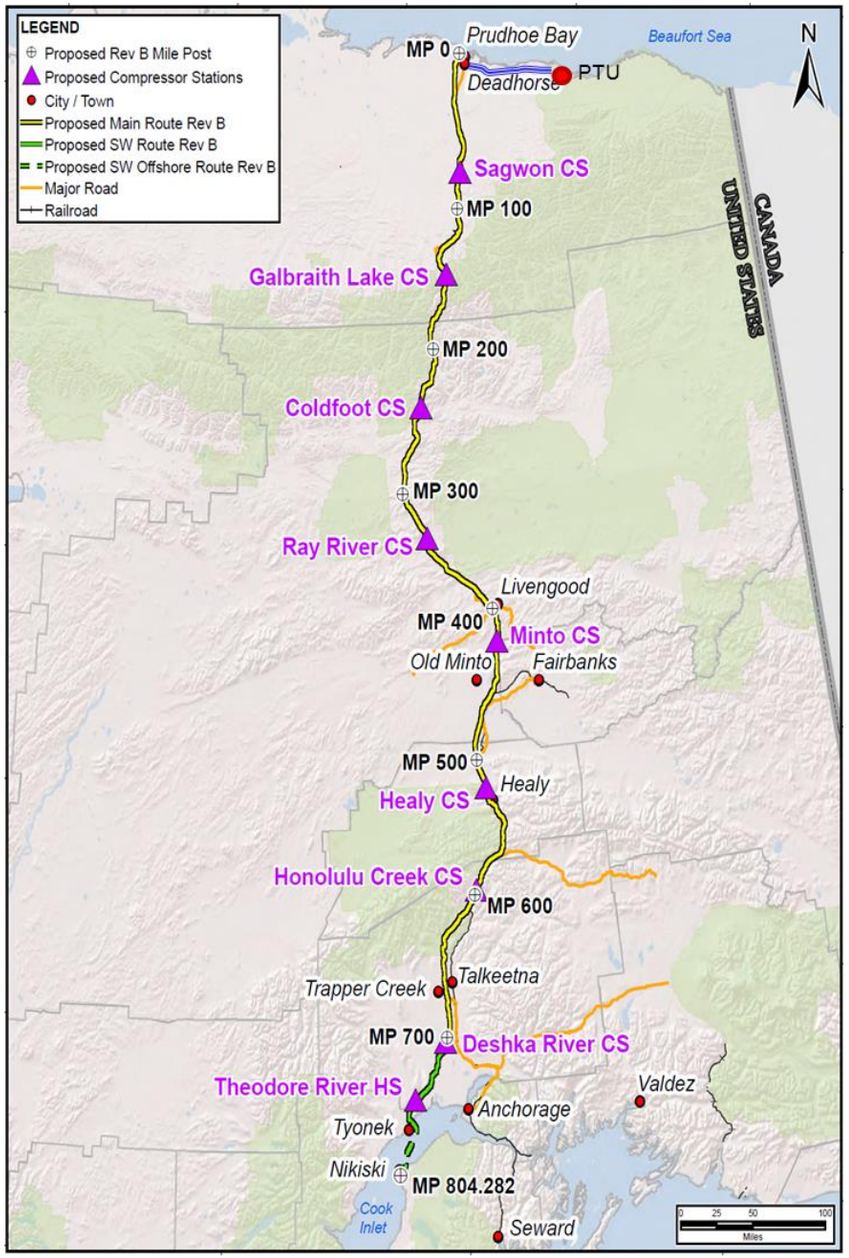
- 63 miles from PTU to GTP (above-ground).
- 32-inch outside diameter, MAOP 1,130 psig.

Onshore Mainline & Facilities

- 800 miles from GTP to LNG Plant.
  - ✓ Buried except at fault crossings, etc.
- 60-inch x 1 mile above ground pipeline to transport feed gas from existing PBU Central Gas Facility.
- 32-inch x 53 mile above ground pipeline to transport feed gas from new PTU Gas Expansion Facility.
- 42-inch outside diameter, MAOP 2,075 psig.
- Eight compressor stations, one heater station.
- Meter stations.
- 31 mainline block valve stations.
- Offtake valves for in-state supply.
- Common routing with ASAP to Trapper Creek.

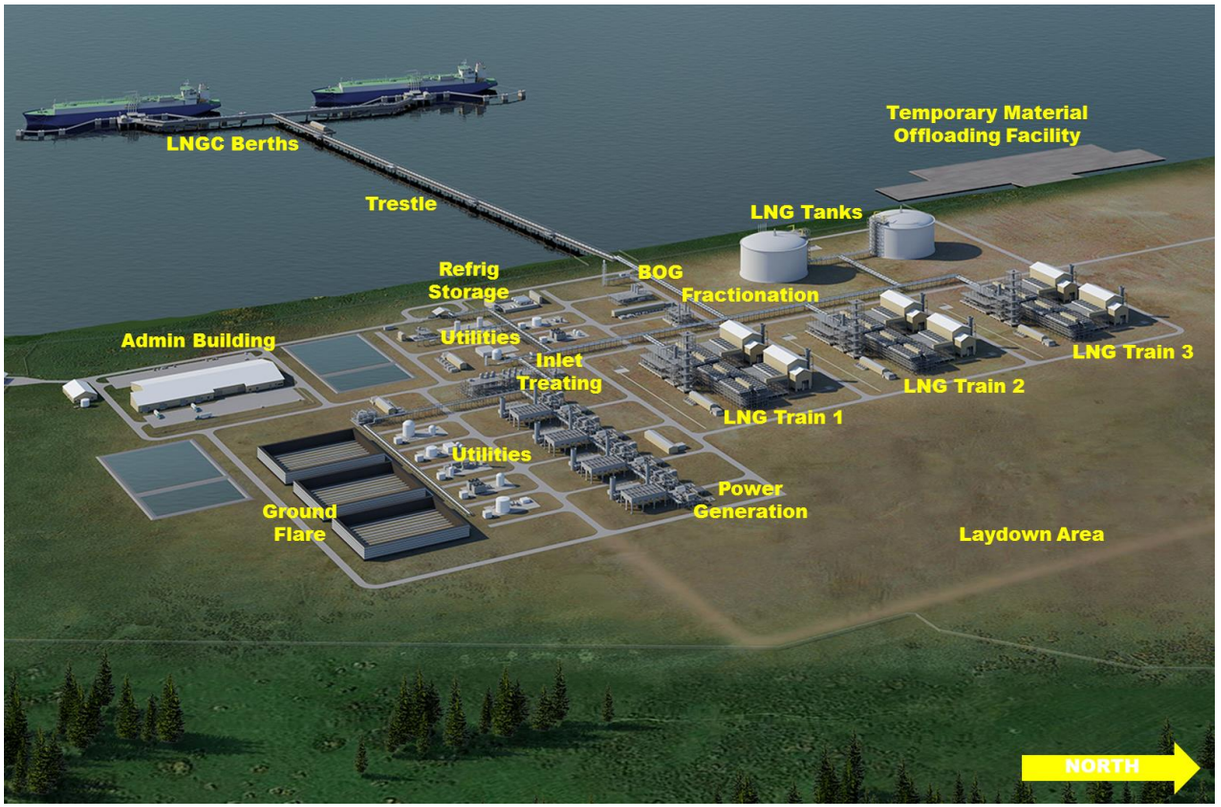
Offshore Mainline

- ~28 miles across Cook Inlet.
- 42-inch outside diameter, MAOP 2,075 psig.
- Heavy-wall pipe with additional wall thickness.
- 6-inch concrete coating.



MAOP = Maximum Allowable Operating Pressure; PSIG = Pounds Per Square Inch

LNG PLANT FACILITIES



Summary

- Highly modularized – max weight about 6,400 tons.
- 3 train liquefaction plant – 6.7 MMTPA each.
- About 600-900 acres of land required.

Design Basis

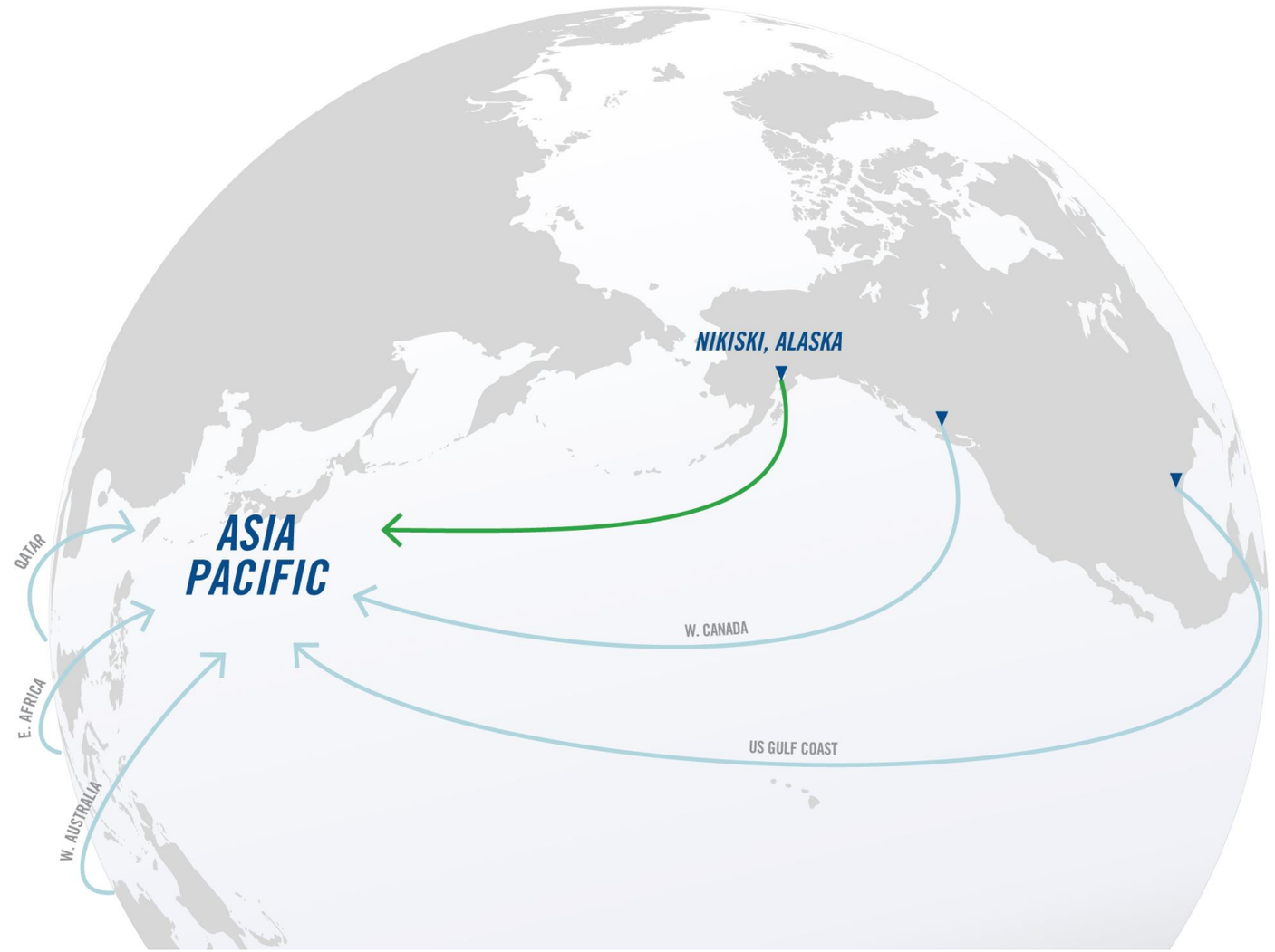
- APCI –C3MR™ process.
- Power plant (combined cycle), with distribution system optimized to reduce capex; Black-Start tie in to local utility.
- 2 x 240,000 cubic meter LNG storage tanks.
- Marine jetty with 2 loading berths, LNG loading rate 12,500 cubic meters per hour.
- Jetty to accommodate LNG carriers (LNGCs) from 125,000 cubic meters to 217,000 cubic meters.

Execution Basis

- Material Offloading Facility to support the unloading of bulk materials, modules, and construction equipment; Temporary facility.

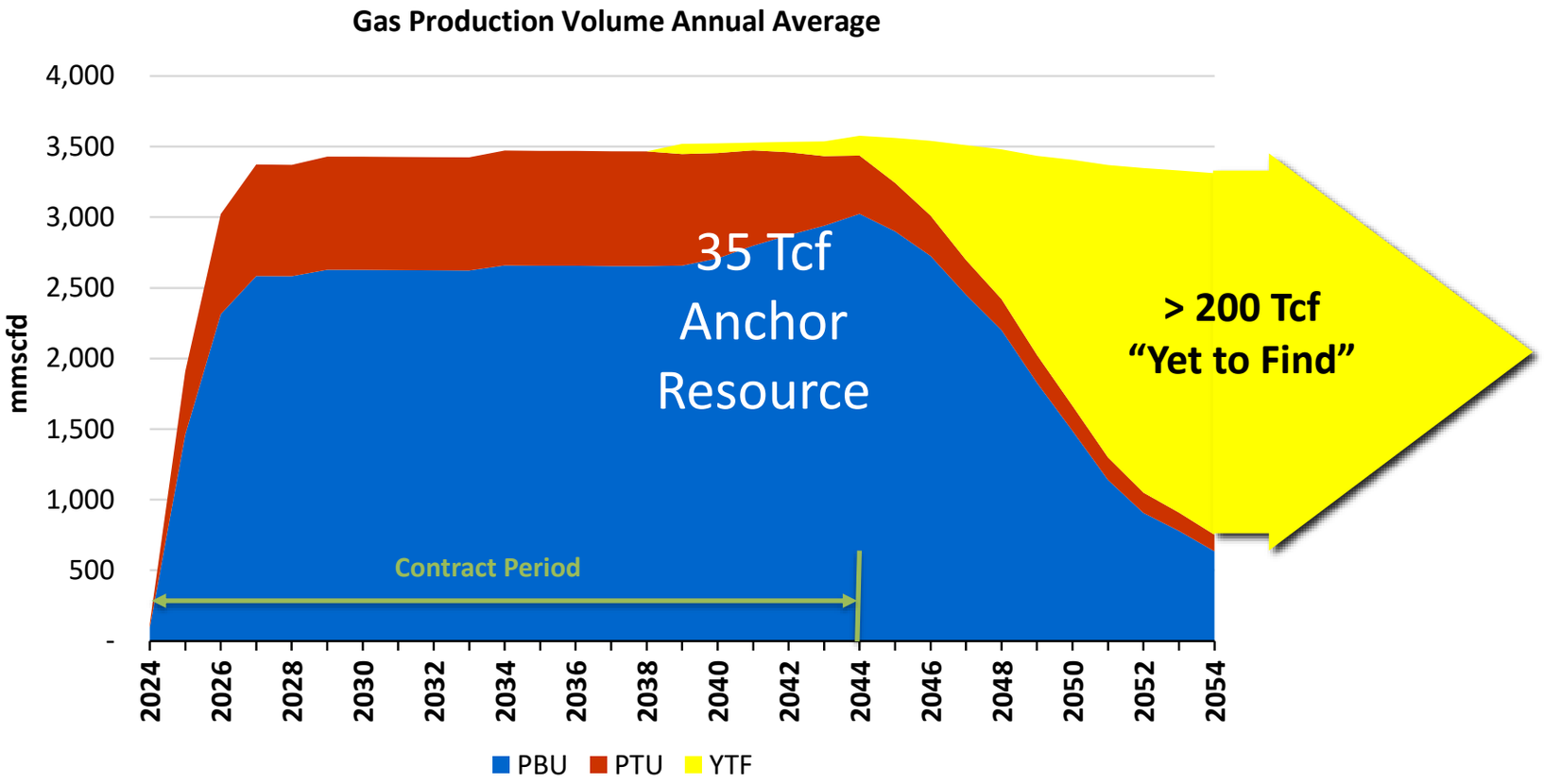
MMTPA = Million Metric Tons Per Annum

ALASKA LNG'S ADVANTAGES



- Ability to offer flexible pricing structures.
- Enormous well-proven, low-risk, producible gas resource.
- Known and stable regulatory and governmental process; plus royalty regime.
- Proximate, country-to-country direct transport; four decades of uninterrupted LNG exports.
- Sites, pipeline route extensively studied and engineered.
- Ability for phased development.
- Cold climate increases LNG production efficiency.
- Valuable contributor to bilateral trade relationships.

ANCHORED BY SECURE RESOURCE



Note: Anchor Resource includes PBU (24.8 Tcf), PTU (8 Tcf), Other developed fields (1.8 Tcf)
For illustration purposes, Other developed fields are included under PBU as developed resources.

- Secure, known resources in Prudhoe Bay (PBU) and Point Thomson (PTU) fill the project for 20 years and continue to anchor the project beyond 25 years.
- Even a ten percent success in Yet-to-Find discoveries would back-fill the spare capacity for another 25 years.

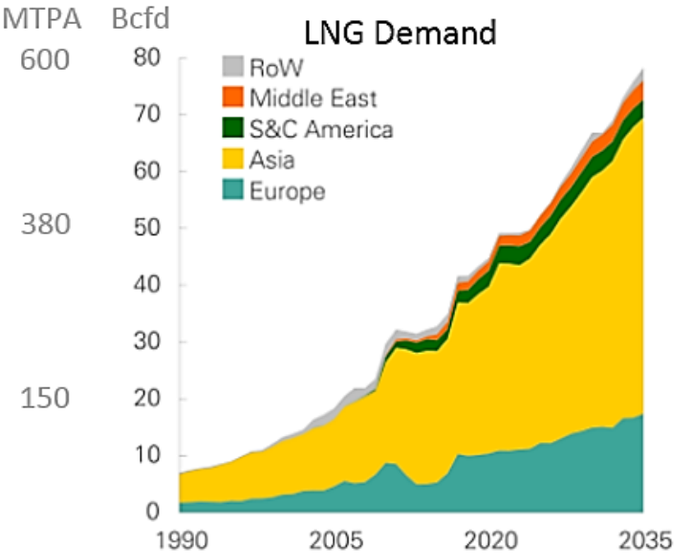
Tcf = Trillion Cubic Feet

LNG DEMAND CONTINUES TO GROW

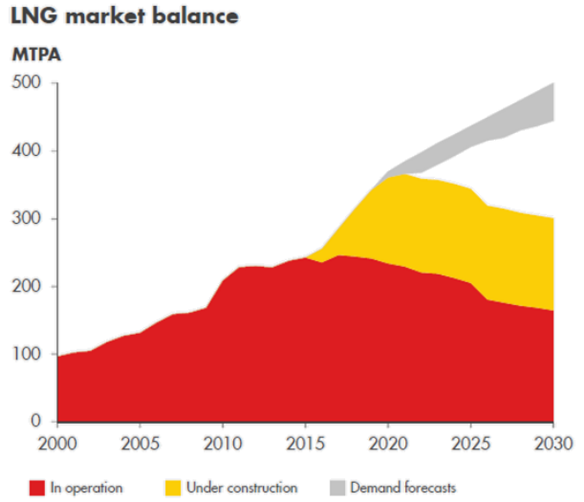
ALASKA GASLINE DEVELOPMENT CORP.

LNG Demand is Growing

- New sources of LNG will be needed at the same time Alaska LNG starts operation.
- Most new demand will be in Asia where Alaska LNG has a geographic shipping advantage.
- Competition from projects across the globe:
  - ✓ **US Gulf Coast:** numerous projects underway and planned.
  - ✓ **Canada / Pacific Northwest:** Complex land, access and regulatory issues have caused delays.
  - ✓ **Russian Arctic:** First icebreaker class LNG vessels undergoing sea trials.
  - ✓ **East Africa:** Coral Floating LNG moves toward final approval with BP buying the offtake.
  - ✓ **Oceana:** Cost overruns have plagued Australia as Papua New Guinea moves toward expanded capacity.

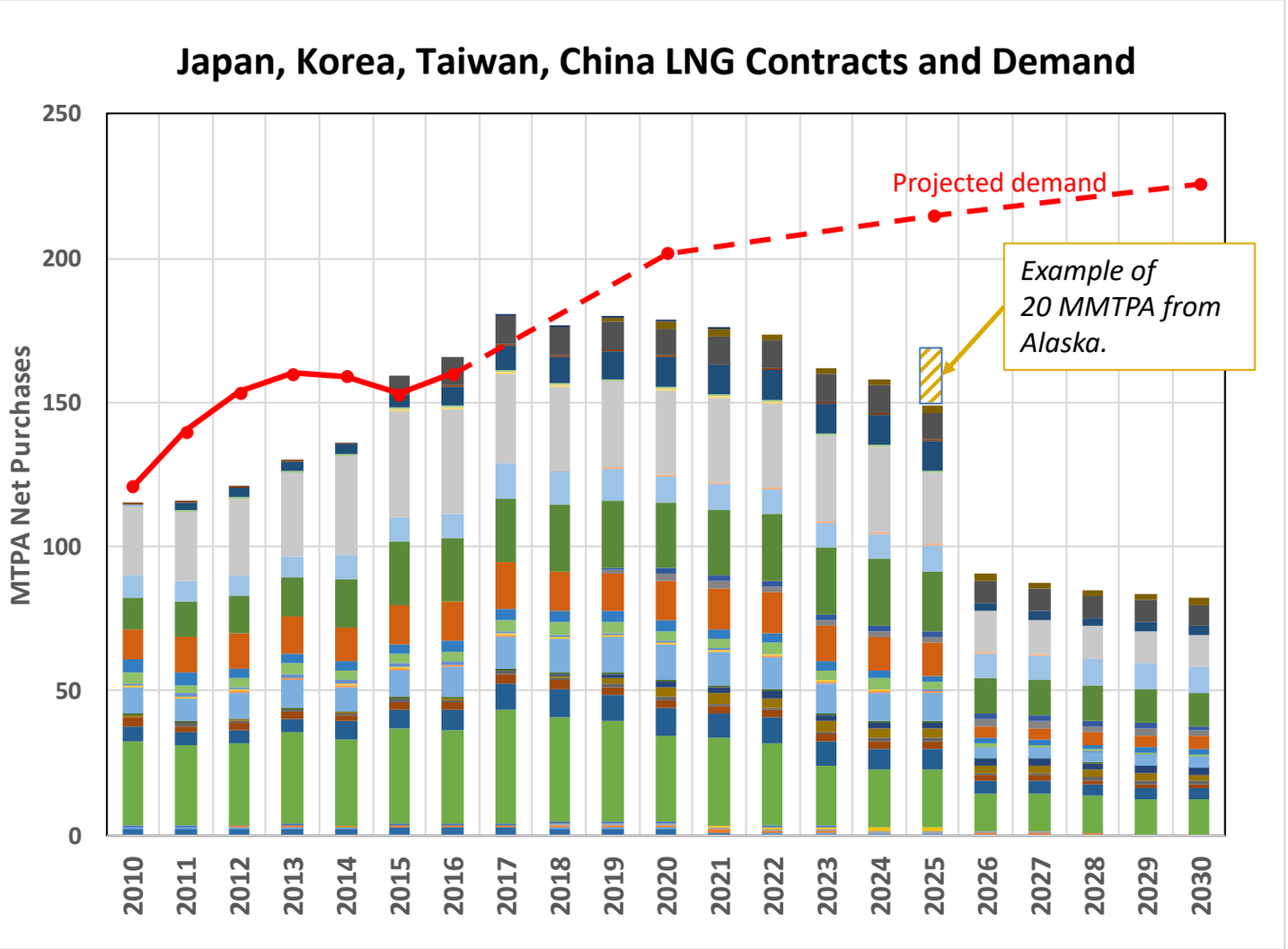


Source: BP plc



Source: Royal Dutch Shell plc

ASIA LNG CONTRACTS EXPIRING

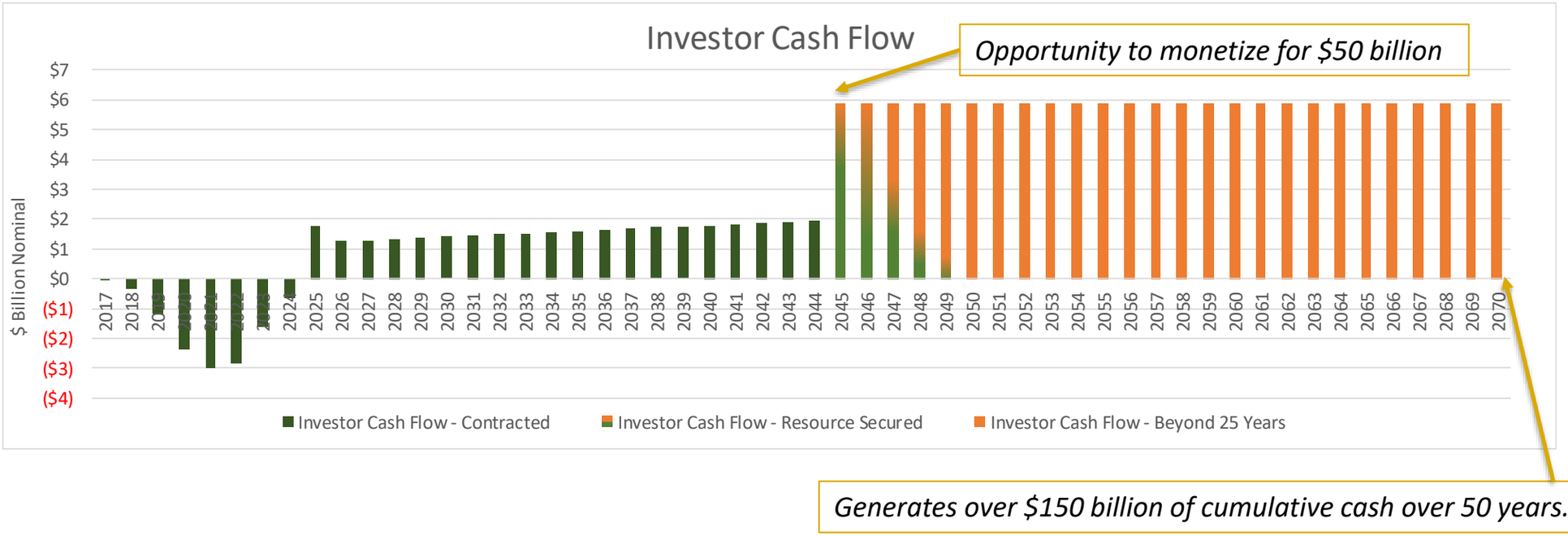


Note: Colored bar segments represent individual Asian LNG buyers
Source: Global NatGas Advisors LLC Analysis

- Market opportunity for Alaska LNG exists across Asia.
- Existing contracts expire in the same timeframe as a projected global shortfall in LNG supply.
- Japan, Korea, Taiwan and China together have contracted supply gaps of over 70 MMTPA by 2025.
- Global demand grew 7.5% in 2016, with Japan, Korea, Taiwan and China collectively up 4.6%.

MMTPA = Million Metric Tons Per Annum

INVESTOR ECONOMICS



Contract Period

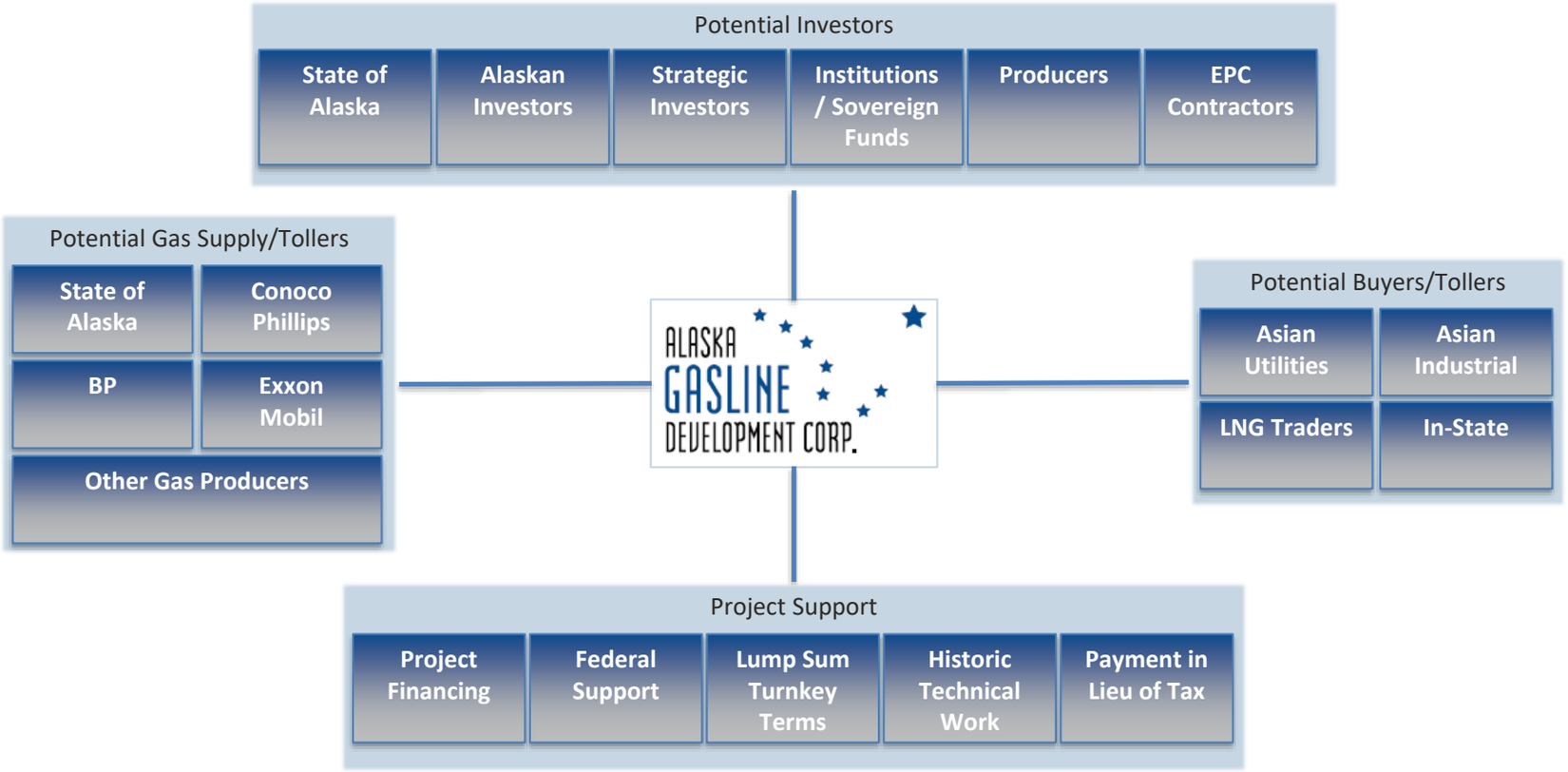
- A 20 year firm contact period.
- Acceptable return on investment.
- Secured by “ship or pay” terms.
- Approx. 25 Tcf of gas.

Beyond Contract Period

- Debt paid off during contract period releasing more revenue to equity owners.
- 30 Tcf (10 Tcf of known, 20 Tcf of Yet-to-Find) needed to operate an additional 25 years – 10% of potential Yet-to-Find.
- Asset Value at 2045 could be $50 billion.
  (Assumes 10% return over following 20 years, same tolls and volumes)

Tcf = Trillion Cubic Feet

AGDC BRINGS THE PIECES TOGETHER



AGDC is positioned to act as a developer, pulling together:

- Appropriate allocation of risk.
- Ability to attract a wider range of investors.
- A stronger focus on the Asia market.
- Best in class project management approach through engagement with Engineering, Procurement, Construction (EPC) firms to manage construction risk.

FERC REGULATORY PROCESS

- **Submitted April 17, 2017.**
- **~50,000 pages.**
- **FERC's Next steps:**
  - ✓ 90 days to review.
  - ✓ Prepare Notice of Schedule for EIS.
  - ✓ Prepare Draft EIS.
    - Public Meetings.
    - Respond to Comments.
  - ✓ Issue Final EIS.
  - ✓ FERC issues order authorizing construction.

EIS = Environmental Impact Statement

FERC

- **FERC ensures the safe operation and reliability of LNG terminals in the U.S.**
- **FERC comprehensive siting process requires close collaboration between Federal, State, and local regulatory agencies.**
- **FERC review process ensures LNG terminals and associated LNG vessel traffic meet safety and environmental requirements during construction and operation.**
- **FERC is the lead federal agency that will prepare an Environmental Impact Statement (EIS) for the integrated Alaska LNG project.**

Resource Reports

- Project Description.
- Environmental Impacts Analysis:
  - ✓ *The Physical Environment*: Water, Soils, Geology, Air Quality, Noise.
  - ✓ *The Biological Environment*: Wetlands, Vegetation, Fish, Terrestrial and Marine Wildlife.
  - ✓ *The Human Environment*: Socioeconomics, Cultural Resources, Land Use, Recreation, Public Health & Safety.
- Alternatives.
- Engineering & Design.

Federal Permit Applications

- U.S. Army Corps of Engineers 404/10.
- PHMSA Special Permit Application.
- BLM – Federal Grant of Right-of-Way.
- USCG Waterway Suitability.

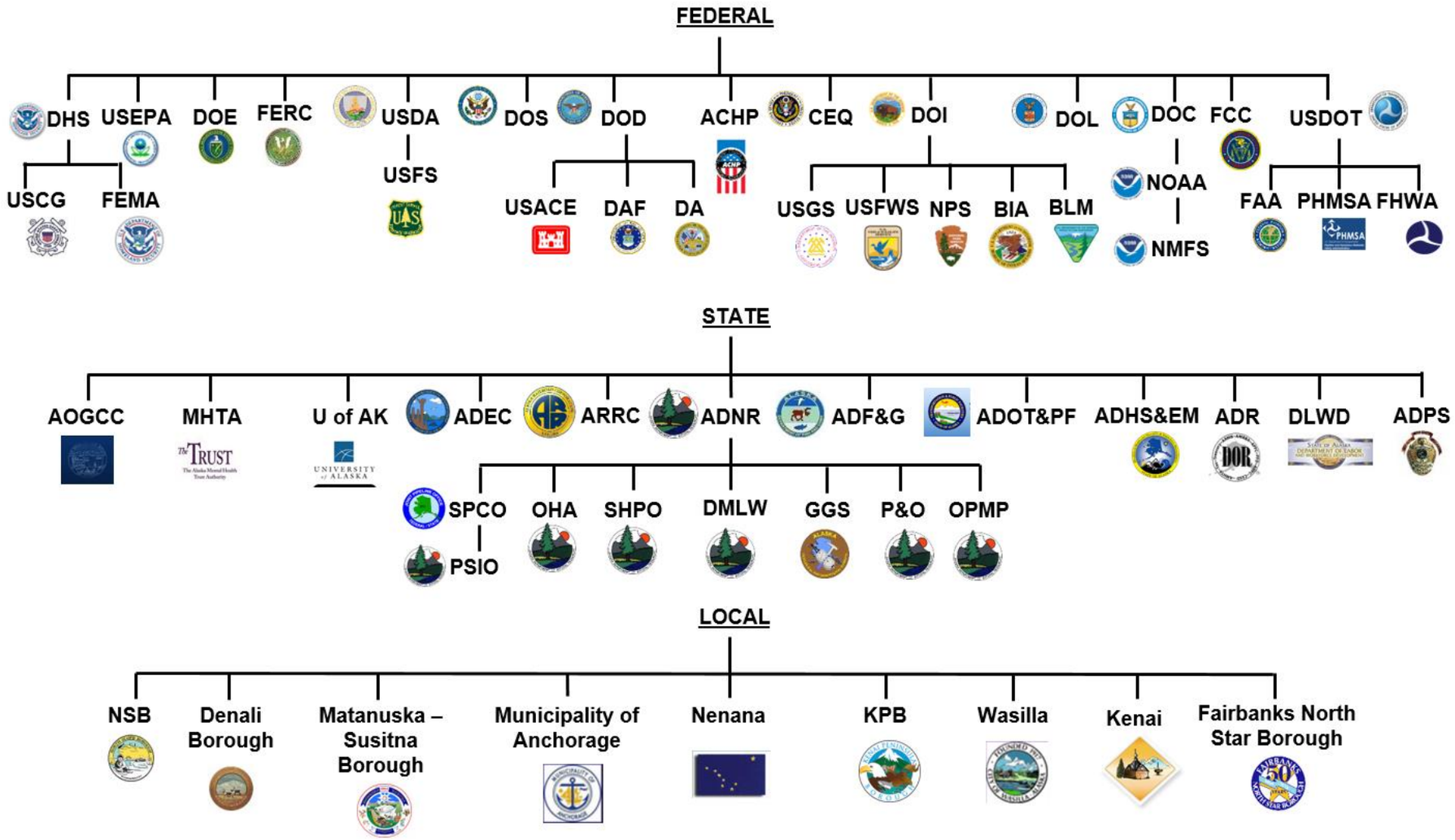
Additional Federal Consultations

- National Historic Preservation Act.
- Endangered Species Act species - USFWS & NMFS.
- Essential Fish Habitat – NMFS.

REGULATORY AGENCIES INVOLVED

ALASKA GASLINE DEVELOPMENT CORP.

FERC leads NEPA process – umbrella for creation of all other permit applications; requires collaboration with cooperating and reviewing federal, state, Alaska Native and local entities.



ALASKA LNG: BENEFITS TO ALASKANS

Creates construction and long-term jobs

- During the peak of construction Alaska LNG could create between 9,000 to 12,000 direct jobs.
- 700 to 1,000 long-term jobs created during the project operating phase (+ 30 years).

Long-term secure source of natural gas for in-state demand

- Alaska LNG can supply stable, low price natural gas for all current and future Alaska demand.
- Mitigates risk of Cook Inlet decline.
- Allows new communities and industries to use natural gas.

Increase North Slope oil production

- Extends the period Prudhoe Bay is economic to operate.
- Gas sales an additional source of revenue for new fields, improving their economics.
- Gasline will increase the probability of finding oil while exploring for gas that can be monetized.

Increase revenue to the State of Alaska

CONTACT AGDC

ALASKA GASLINE DEVELOPMENT CORP.

- ❑ **TOLL FREE: (855) 277-4491**
- ❑ **PHONE: (907) 330-6300**
- ❑ **EMAIL: ExternalAffairs@agdc.us**
- ❑ **BY MAIL:**

  Alaska Gasline Development Corporation
  Calais Building One
  3201 C Street, Suite 200
  Anchorage, AK 99503

ALASKA MOVING FORWARD

FOR MORE INFORMATION

Sign up for AGDC's distribution list and receive information including meeting alerts, newsletters, news releases, and other public information.
Visit: www.agdc.us to sign up!