

ALASKA LNG



Alaska Miners Association, November 9, 2017

Presented by: Frank Richards, P.E., Senior Vice President, Alaska Gasline Development Association

TWO PARALLEL PROJECTS

ALASKA LNG

ASAP

- AGDC's Priority Project
- Commercialization of 35TCF of Stranded Natural Gas
- Provides gas for in-state needs
- Beginning EIS process
- Backup Project
- Provide gas for in-state needs
- Final EIS at end of 2017
- Record of Decision 1Q 2018

Only one project will be built

PROJECT OVERVIEW



Producing Fields

- ~35 TCF discovered North Slope resource.
- Anchored by Prudhoe Bay and Point Thomson for 20 years.
- Confirmed use of existing North Slope facilities.
- Peak Workforce: 500-1,500 people.

Gas Treatment Plant

- Located at North Slope.
- Remove CO₂ / H₂S; Compress for re-injection.
- Footprint: 150 - 250 acres.
- Peak Workforce: 500 - 2,000 people.
- Required Steel: 250k - 300k tons.

Pipeline

- Large diameter: 42" operating at >2,000 psi.
- Capacity: 3.3 billion cubic feet per day.
- Length: ~800 miles (similar to TAPS).
- Peak Workforce: 3,500 - 5,000 people.
- Required Steel: 600k - 1,200k tons.
- State off-take: ~5 with initial off-take of 250-500 MCF/d.

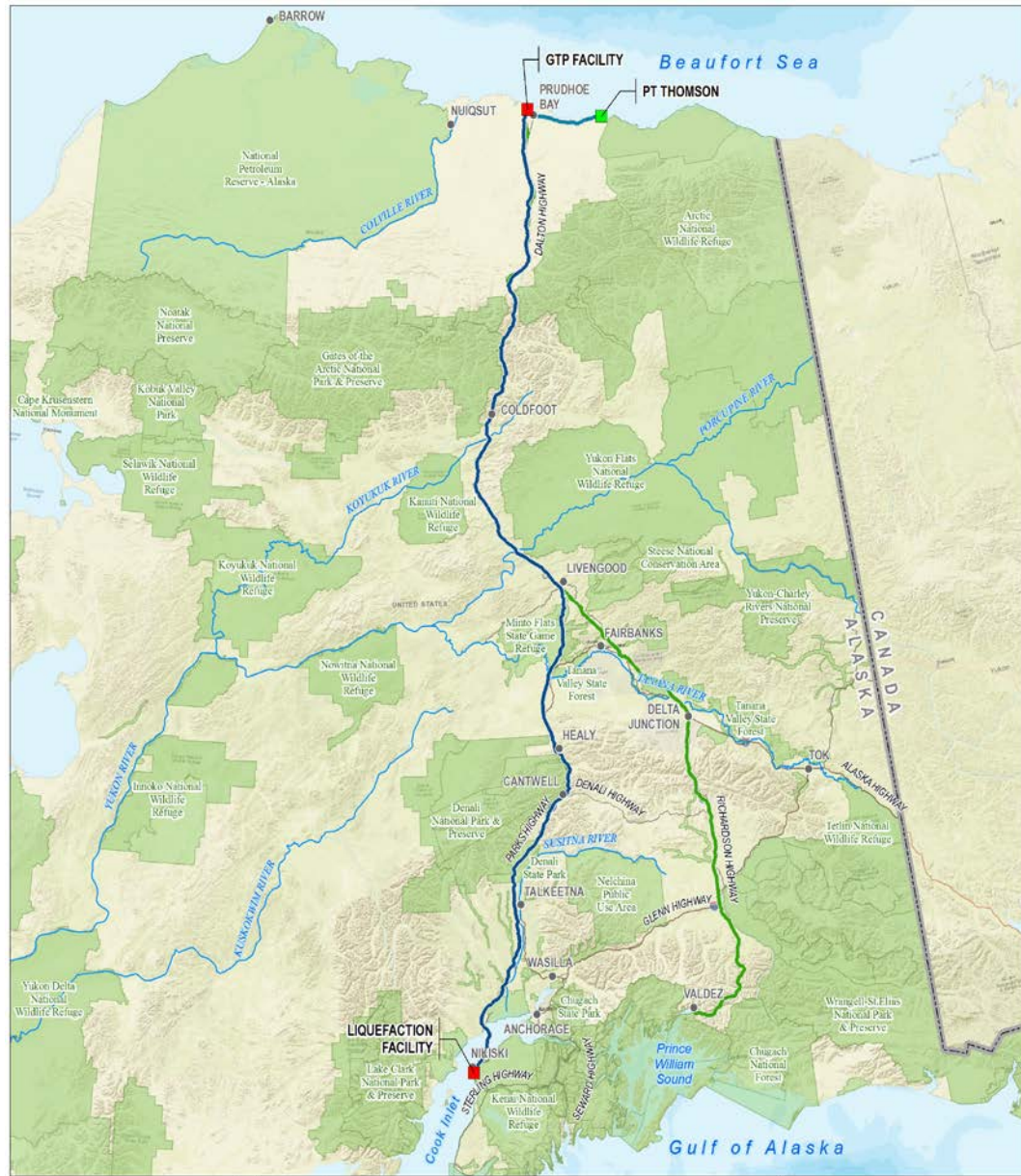
Liquefaction Plant

- Capacity: up to 20 MTA.
- 3 trains (6.67 MTA/train).
- Footprint: 640 - 1,000 acres.
- Peak Workforce: 3,500 - 5,000 people.
- Required Steel: 100k - 150k tons.

Storage / Loading

- Terminal: 2 x 240,000 m³ LNG Storage Tanks.
- 1 loading jetty with 2 berths; 15 - 20 tankers per month.
- Peak Workforce: 1,000 - 1,500 people.

THOROUGHLY STUDIED ROUTE



- Pipeline route goes through an existing and well-defined transportation/utility corridor.
- Previous environmental reviews:
 - Alaska Natural Gas Transportation System (ANGTS) FEIS 1976.
 - Trans-Alaska Gas System (TAGS) FEIS 1988.
 - Alaska Stand Alone Pipeline (ASAP) FEIS 2012.

FERC Natural Gas Act Section 3 application:

- Filed on April 17, 2017.
- 60,000+ pages.
- Anticipating publication of Environmental Impact Statement (EIS) schedule.

Continued engagement through application review:

- Responding to 801 environmental data requests.
- Engaging with regulatory agencies.

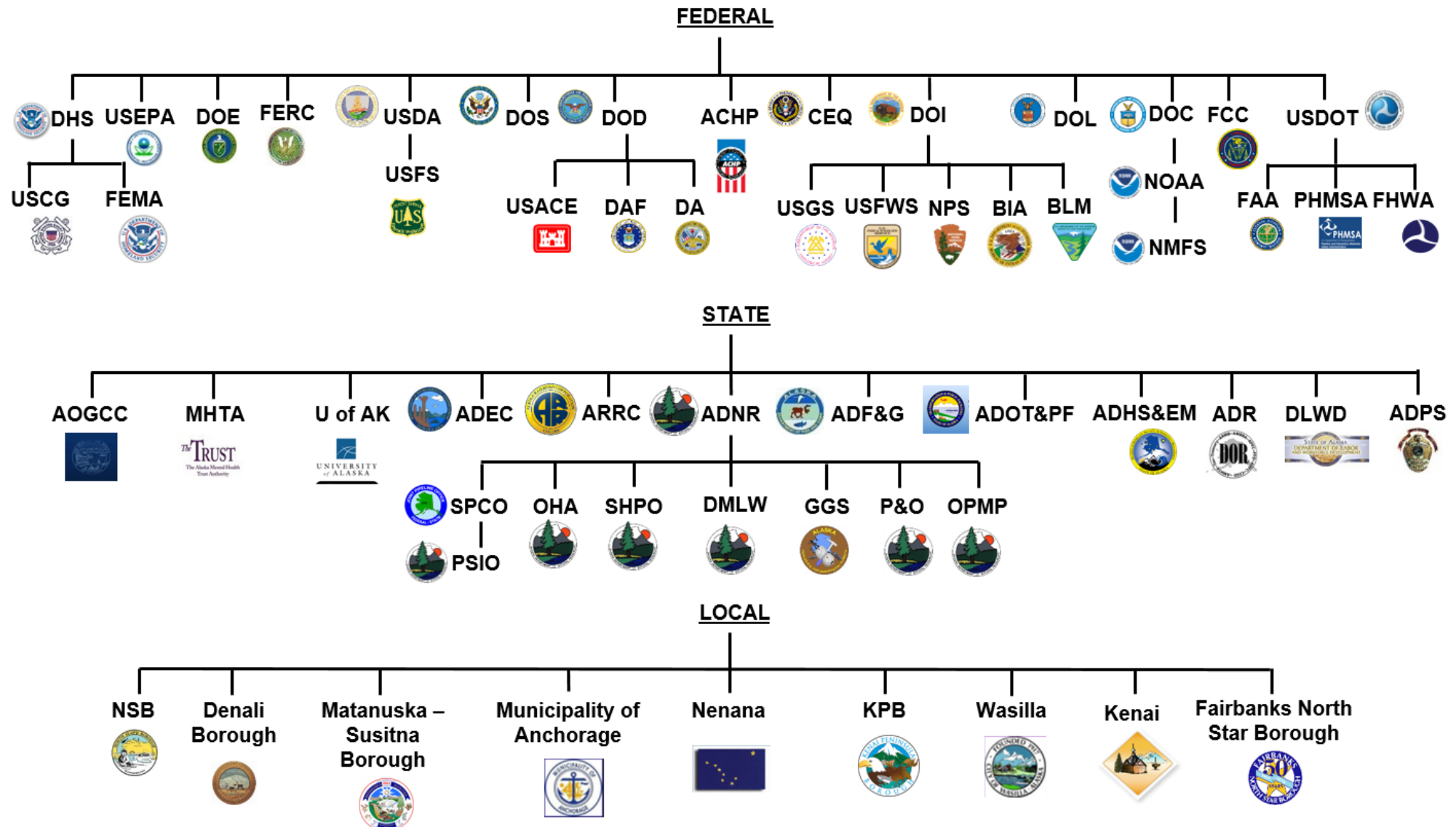


- **FERC is the lead federal agency that prepares the Environmental Impact Statement (EIS) for the integrated Alaska LNG infrastructure. Agencies use the EIS for their National Environmental Policy Act (NEPA) process.**
- **Major federal permits and authorizations:**
 - Pipeline Hazardous Materials Safety Administration (PHMSA) special permits.
 - Army Corps of Engineers Section 404 Wetlands Permits.
 - Bureau of Land Management Right-of-Way Lease.
 - National Marine Fisheries Incidental Harassment Authorization.

REGULATORY PROCESS – FERC

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.



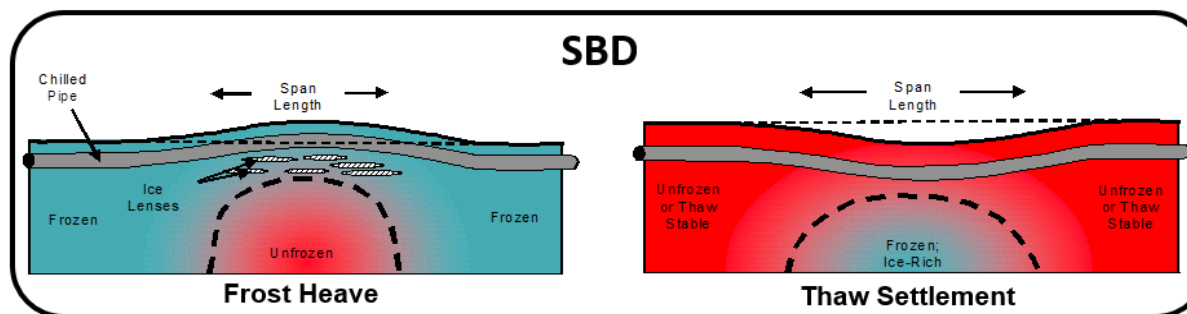
PHMSA SPECIAL PERMITS OVERVIEW

Alaska LNG Pursuing 5 PHMSA Special Permits:

Technical Area	Relief from CFR 192 and 193	Affected Pipeline Length
Strain-Based Design	External loads that result in axial strains > 0.5% (49 CFR §§ 192.103 and 192.317)	34 miles (total)
Mainline Block Valve	20-mile spacing in Class 1 (49 CFR § 192.179)	Class 1: ~ 99% of total length
Crack Arrestor Spacing	8-pipe length spacing (49 CFR § 192.112)	Majority of length, except proximity to key infrastructure: TAPS, bridges, HCAs
External Coating	Pipe must be protected against external corrosion by a non-shielding coating (49 CFR § 192.112)	Three Layer Polyethylene (3LPE) coating proposed (vs. PHMSA preferred Fusion Bonded Epoxy [FBE])
Pipe-in-Pipe	Pipe must not be covered (49 CFR § 193.2167) and must have drained impoundment (49 CFR § 193.2173)	< 1 mile from LNG tank to loading berth



1. Fusion Bonded Epoxy 2. Copolymer Adhesive 3. Polyethylene



Fixing America's Surface Transportation Act (FAST-41)

- Trump Administration recommended.
- Application: August 7th – Acceptance: August 17th.
- Enhanced coordination.
- Increased accountability.
- Permitting dashboard.
 - Permitting timetable within 60 days.
 - Comprehensive schedule for ALL federal permits.
- Steering Committee reports to White House.
- Transparency for public.
- Requires federal agencies to report to OMB, if delays.
- State permitting agencies may participate.

Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure — August 15, 2017

- Major Goals:
 - Environmental reviews & authorizations ~ 2 years.
 - Performance accountability.
 - Develop and follow permitting timetable.
 - One federal decision.
- CEQ-led Interagency Working Group.
- Energy Corridors of Federal Lands.
 - Expedited environmental reviews.
- All federal authorizations within 90 days of Record of Decision.

- **Congressional Delegation:**
 - Denali Park provision in Senate Energy Bill.
 - Looking at ANGPA (2004) revisions.
 - Nominees briefed on Alaska LNG.
- **White House Meetings and Working Session:**
 - Council on Environmental Quality – NEPA and Wetlands Policies.
- **Trump Administration Cabinet Members:**
 - Strong support with action:
 - Rationalized permitting process.
 - New policies and EO's executed.
 - Agencies working to support.

EPA Region 10 Designated Yukon River Basin ARNI:

- EPA raised issue on ASAP Project, likely precursor to Alaska LNG.
- Allowed under MOU between EPA and Army Corps of Engineers.
 - Clean Water Act Section 404 (b)(1)
 - Issue: Fill in wetlands.
- Encompasses entire Yukon River watershed (~200,000 square miles).
- EPA reversed 2012 FEIS opinion.
- Contrary to Presidential Executive Order.
 - “Coordinated, consistent, predictable, and timely review.”
- ARNI may have broad reaching impacts for any development in Yukon River Basin.
- AGDC/GOA addressed concerns with EPA Administrator Pruitt.

AGDC Project Management Team (PMT):

- Took ownership of all Alaska LNG content.
- AGDC core PMT providing oversight and direction to 3rd party contractors.
- Utilizing Pre-FEED 3rd party contractors.
- Reviewing cost estimates and construction execution plans.
- Developing phased development plans.
- Integrating ASAP environmental data into Alaska LNG regulatory process.

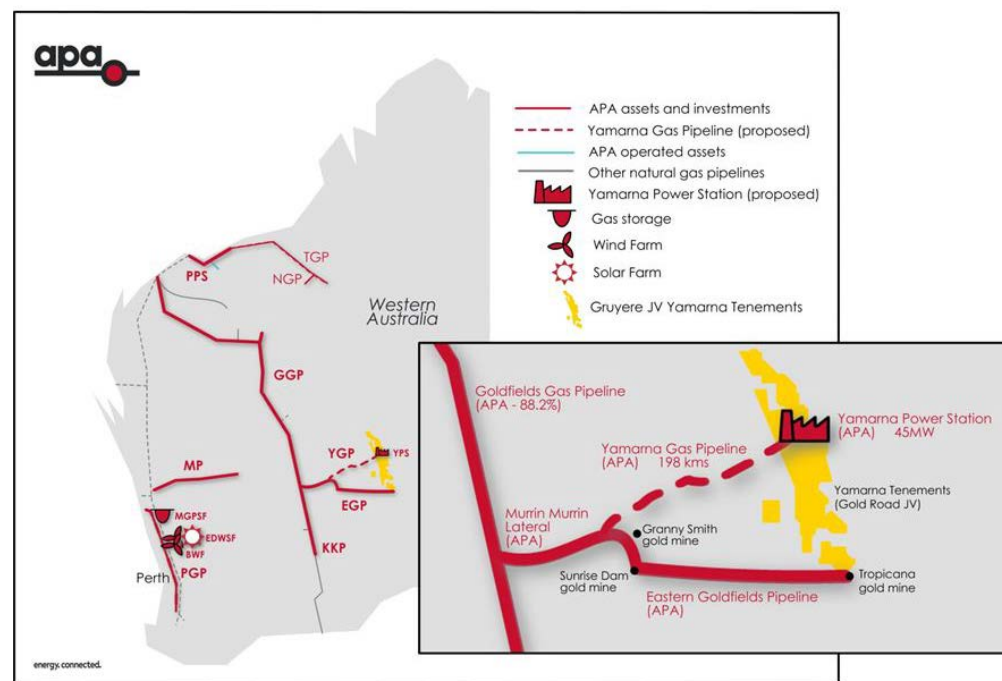


Reliable, affordable, long-term energy to power Alaska's mines

- Mines currently drawing power from the Railbelt electrical grid are positioned to benefit from direct access to natural gas.
- Mine prospects throughout Alaska's Interior become more viable as natural gas access reduces energy costs.

Goldfields Gas Pipeline (GGP) Example of Alaska LNG Potential

- GGP enabled the development of numerous mines across Western Australia.
- “Goldfields Gas Pipeline needed the mines and the mines needed the pipeline.”



For more information, visit:

- Corporate website, **AGDC.us**
- Alaska LNG project website, **Alaska-LNG.com**

Call or write to us at:

- (907) 330-6300
- ExternalAffairs@agdc.us

ALASKA LNG