

Alaska LNG

Fueling Alaska's Future TM



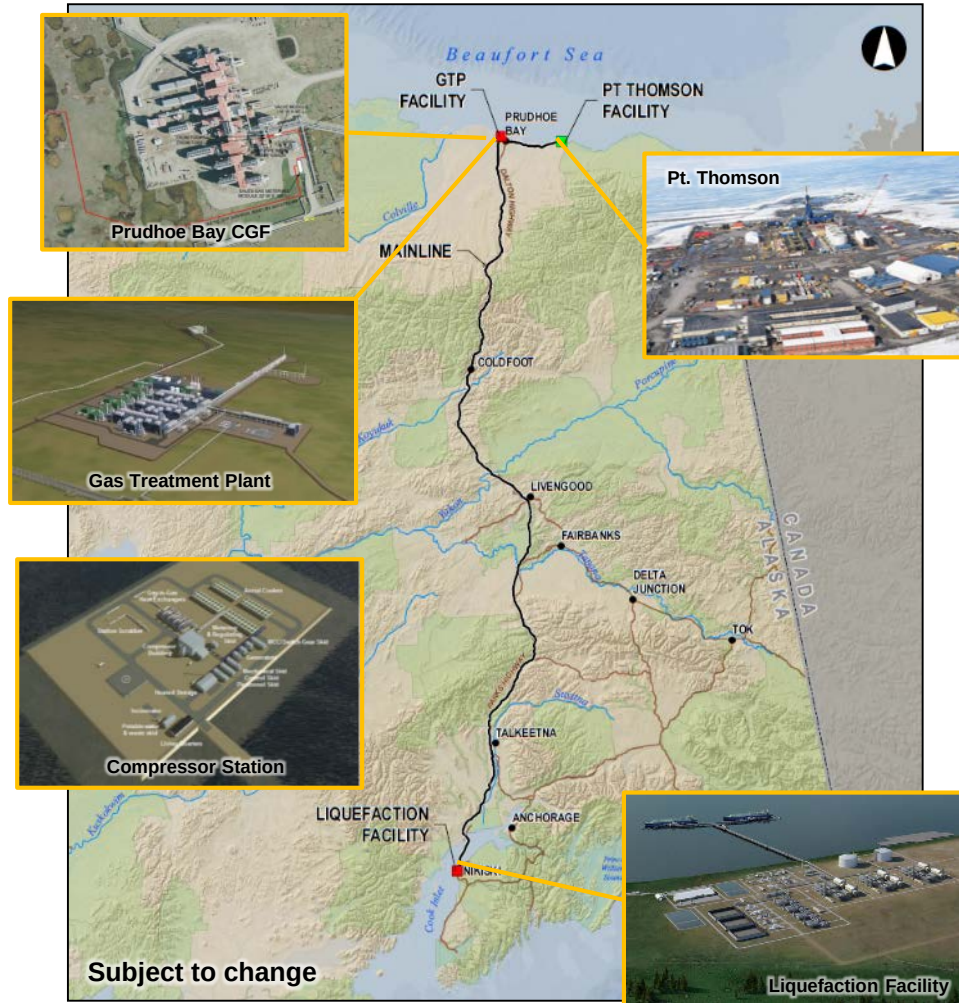
June 2016

AKLNG – Legislative Update

29Jun2016

Alaska LNG – Project Overview

An integrated liquefied natural gas export project providing access to gas for Alaskans



Source Fields

Point Thomson: Deliver natural gas to GTP

Prudhoe Bay: Deliver natural gas to GTP, receive CO₂ / impurities for further handling

Alaska LNG Project

Gas Treatment Plant (GTP): Clean, dehydrate, chill and compress 3.3 BCFD of natural gas and deliver to pipeline

Gas Pipeline: Transport 3.3 BCFD of natural gas over 800 miles to Nikiski, with ~5 offtake points for in-state gas delivery

Liquefaction Facility: Create, store, and load up to 20 million tons of LNG per year (15-20 LNG cargos per month)

Safety, Health and Environment Report:

- ✦ Strong safety culture and performance – no recordable incidents in 2016

Executive Summary:

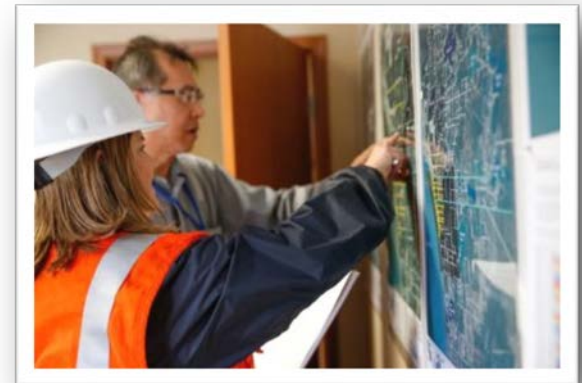
- ✦ Spent \$455M on Pre-FEED through May 2016 (\$107M spent on Concept)
- ✦ Initial design scope 91% complete, updated to reflect optimization work
- ✦ Finalizing integrated project design, confirmed 95% production efficiency
- ✦ Completed pipeline design analysis, confirmed 42" design basis

2016 Outlook – Complete Pre-FEED and progress EIS:

- ✦ Progressing field work to support Resource Report Draft 2
- ✦ Continue optimizing design to reduce project cost of supply
- ✦ Complete Joint Venture Agreement (JVA) Deliverables, including cost and schedule estimates

Key Messages:

- ✦ Alaska LNG is an integrated LNG project – *plants plus pipeline*
- ✦ Focus on lowest cost of supply to compete in a global market
- ✦ Alignment, Risk and Cost reduction (ARC) remain key to success



LNG Plant and Marine Terminal Update Alaska LNG™

Base case design established, progressing Optimization work

Progressing key LNG deliverables

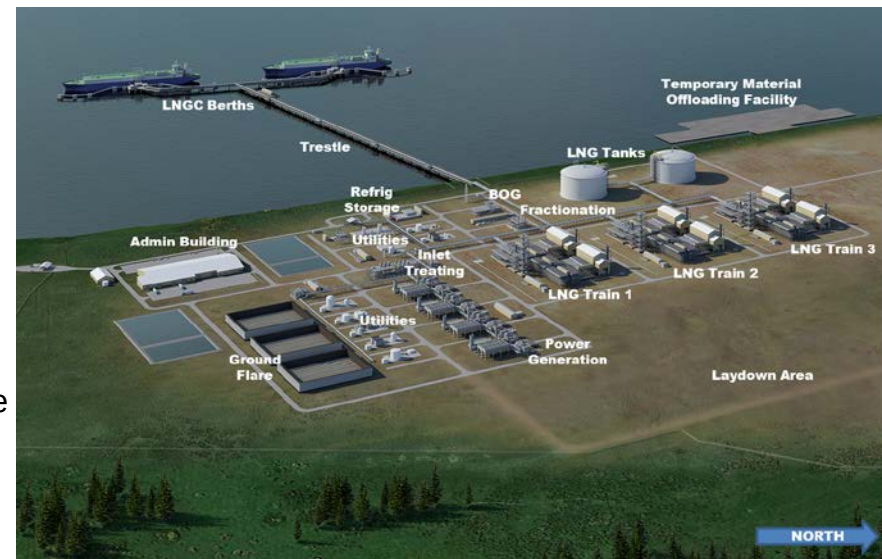
- ✦ Completed contractor cost estimate and schedule for review
- ✦ Developed updated LNG plot plan reflecting optimization work
- ✦ Received tank design deliverables

Continuing to improve marine terminal design / operations

- ✦ Finished marine transportation modeling, MOF location study
- ✦ Eliminated need for service vessel facility / ice mitigation structure

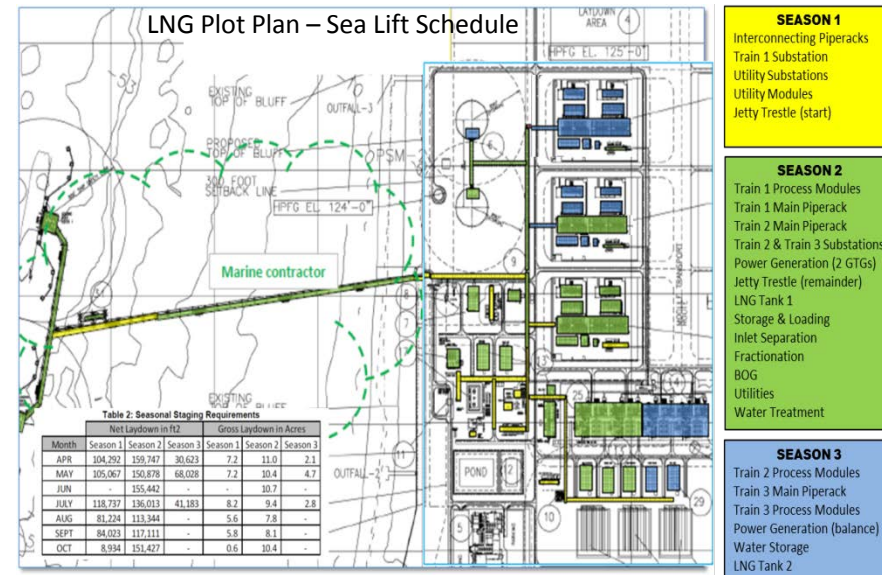
Focused 2016 activity in support of Resource Reports

- ✦ Soil characterization and measurement for dredging / disposal
- ✦ 50 onshore boreholes / 9 km seafloor mapping / 51 offshore vibracores / 62 grab samples



Optimization Savings

- ✓ Technical qualification of gas turbine drivers - reduced kit
- ✓ Use of current limiters to eliminate electrical equipment
- ✓ Modularization improvements – revised layout, density
- ✓ Reduced material offloading facility size
- ✓ Evaluated alternative ice management options
- ✓ Optimized LNG storage capacity / design
- ✓ Evaluated LNG tank technology – reduced cost, schedule
- ✓ Completed layout / equipment improvements



Pipeline Update

Initial design scope complete, advancing Optimization work

Comprehensive pipeline sizing study confirmed 42" system

- ✧ Completed cost / schedule impacts of 48" pipeline
- ✧ 42" lowers cost of supply / execution risk
- ✧ 42" system includes expansion capacity

Pipeline materials design and full scale testing complete

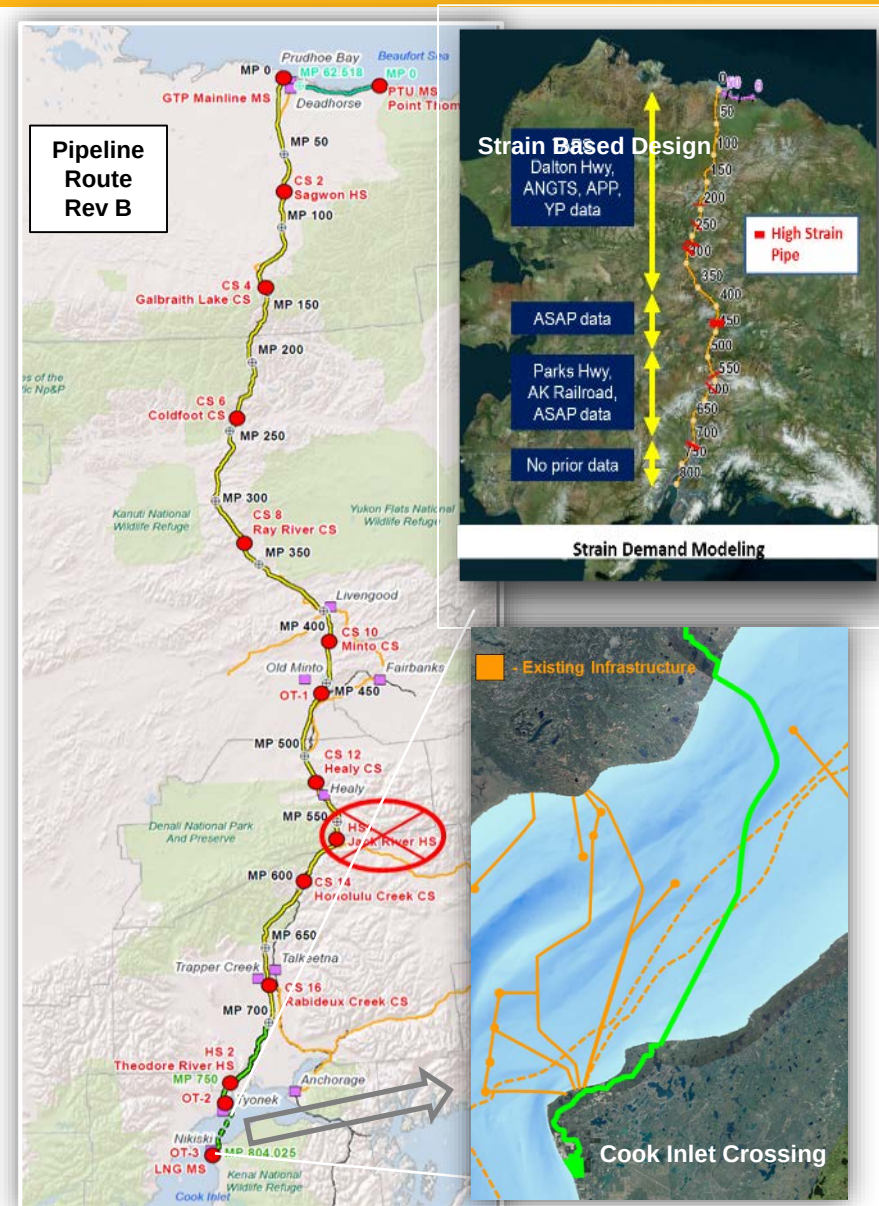
- ✧ Issued compressive and tensile strain testing results
- ✧ Completed strain based design optimization, ~300 mi reduction

Continued coordination with federal pipeline regulator

- ✧ Finalizing pipeline documentation for FERC & PHMSA filings
- ✧ Field work on water crossings, compressor stations, FERC visits

Optimization Savings

- ✓ Right-of-way gravel quantity reduced
- ✓ Reworked access road specifications
- ✓ Eliminated heater station, optimized hydraulics
- ✓ Reduced length of sections requiring strain based design
- ✓ Continued routing cooperation / data sharing with ASAP
- Optimizing construction of pipeline segments
- Optimizing timing / order of compressor station construction



Gas Treatment Plant Update

Completed base Pre-FEED deliverables

- ☀ Confirmed GTP site location / optimized layout

Progressing GTP optimization

- ☀ Evaluating execution plans, sea lift schedules to reduce risk
- ☀ Working module weight / design to further reduce cost

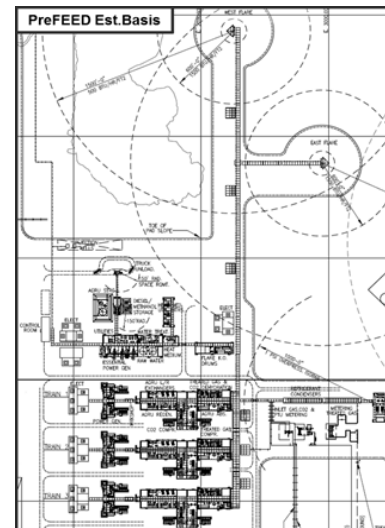
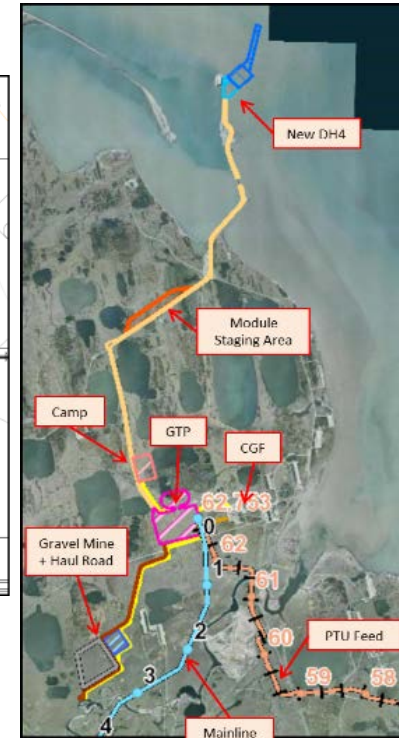
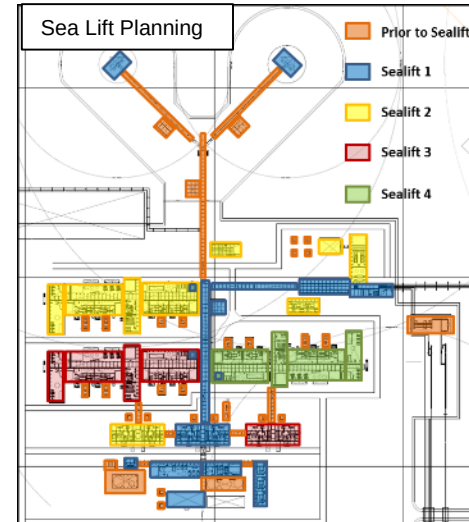
Strong coordination with PBU, PTU on key interface activities

Provide support for regulatory submittals / complete field work

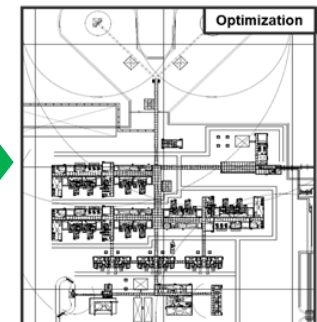
- ☀ Focused summer field work to support FERC requirements
- ☀ Progressing engineering environmental program at West Dock
- ☀ Confirm gravel and water requirements / source

Optimization Savings

- ✓ Reduced total module weight / layout optimization
- ✓ Electrical design - met required load with min equipment
- ✓ Machinery selection – highest reliability / lowest cost
- ✓ Reviewed plan utilities for optimization opportunities
- ✓ Optimized field erection scope to reduce cost / risk
- ✓ Streamlined project execution plan to identify lowest cost



Reduced GTP Footprint
Results of Optimization Activities



Project Execution Status

Increased execution certainty for labor, logistics and fabrication

- ✧ Modeled supply / demand – Identified key risks / strategies
- ✧ Provided consistent basis for execution, contracting, cost, schedule

Logistics:

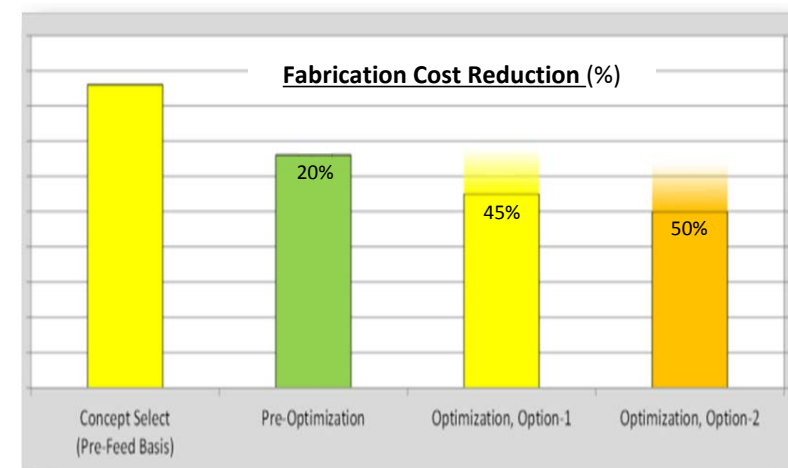
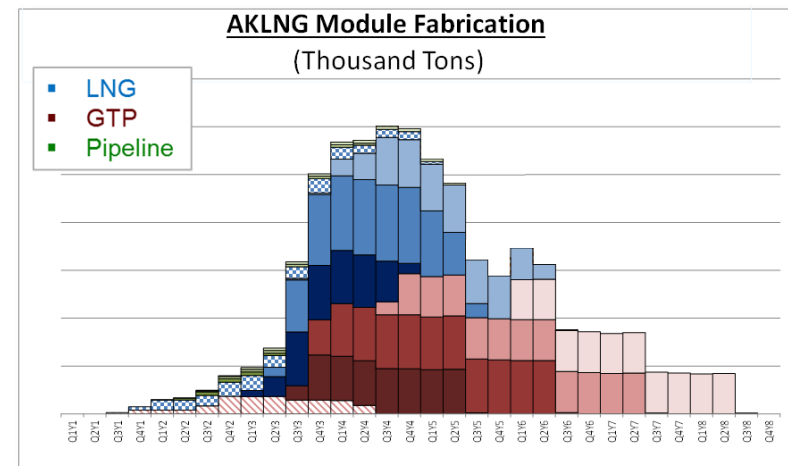
- ✧ Estimated volumes for key logistics demand including 225,000 truckloads, 40,000 railcar loads, 3,000,000 MT of ocean containers
- ✧ Completed modeling of market capabilities (supply/demand)
- ✧ Developed integrated strategies for people and material transport (marine, road, air, rail), fuel (supply, storage, distribution), and common infrastructure (roads, camps, etc).

Labor:

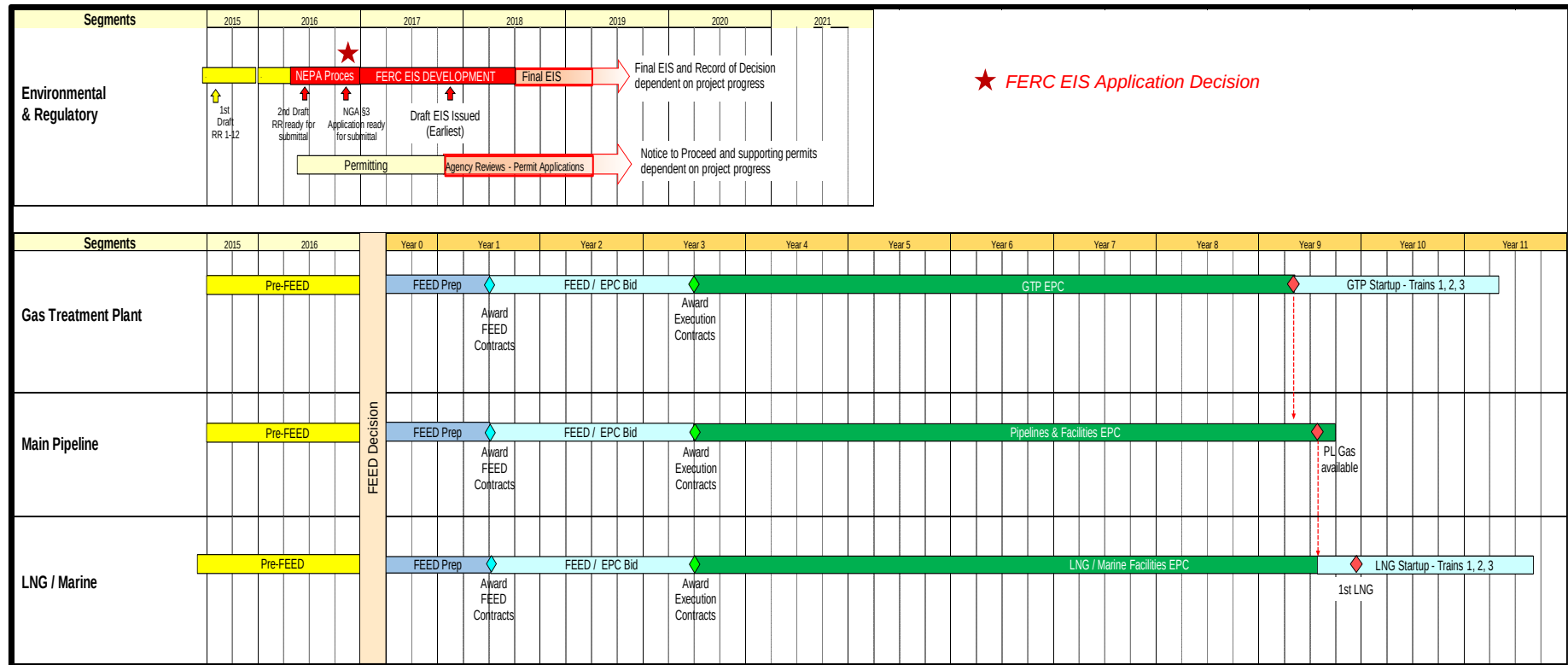
- ✧ Developed strategies to address key labor study findings on demand and supply / training (peak monthly labor level of 12,000 persons)
- ✧ Continuing coordination with AK Dept. of Labor

Fabrication:

- ✧ Modeled supply / demand to test viability of modularization program
- ✧ Finalizing strategy to manage 350,000 MT fabrication scope across qualified yards, including AK, as common basis for execution plan



Project Schedule



- ✦ Continued focus on optimizing integrated project schedule to reduce cost and execution risk
- ✦ Regulatory schedule has decisions points (resource reports, EIS application) requiring applicant support
- ✦ Integrated schedule provides estimated durations of key project phases to start-up
- ✦ Schedule serves as the basis for final JVA Deliverables

2016 Field Work

- ✦ Advancing work to de-risk project / meet FERC requirements
- ✦ Leveraging key learnings to improve performance / reduce cost
- ✦ Confirming pipeline routing and siting of project facilities
- ✦ Continued geotechnical / geophysical (G&G) site analysis

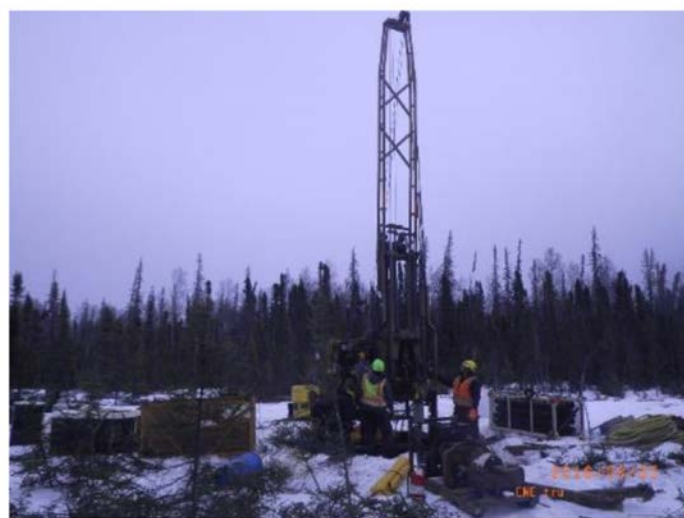
Continued focus on safety – successful contractor onboarding

Federal Environmental Regulatory Agency (FERC) filing

- ✦ Completing final reviews of second draft Resource Reports
- ✦ Capturing stakeholder input

Environmental Field Work Summary

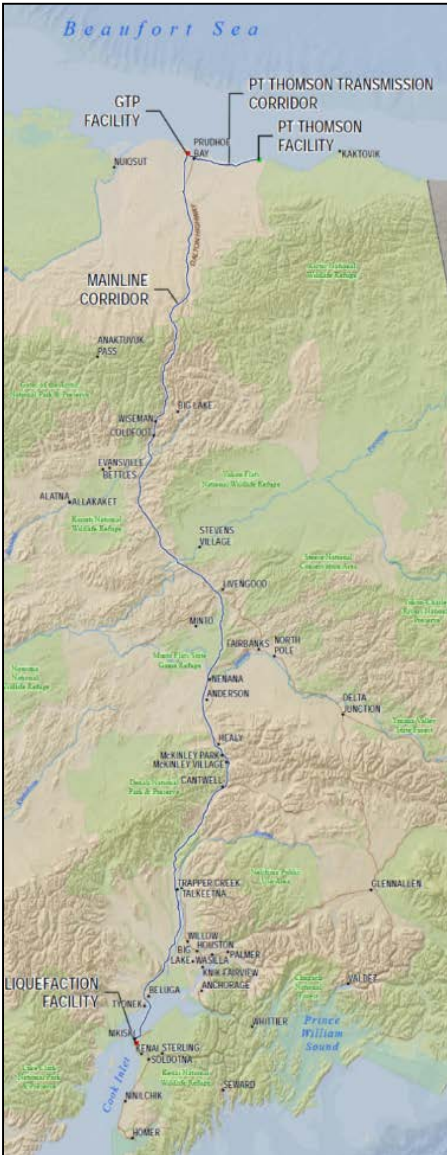
Studies	2012-15	2016 Plan
Cultural Resource Survey (acres)	40,556	9,500
Phase 2 Archeology (sites)	24	59
Stream Fisheries Investigations (#)	176	0
Wetlands Verification (#)	507	107
Paleontology (acres)	556	110
Noise Monitoring (# sources)	19	0
Environmental Due Diligence (acres)	154	0
Stream Hydrology (#)	78	0

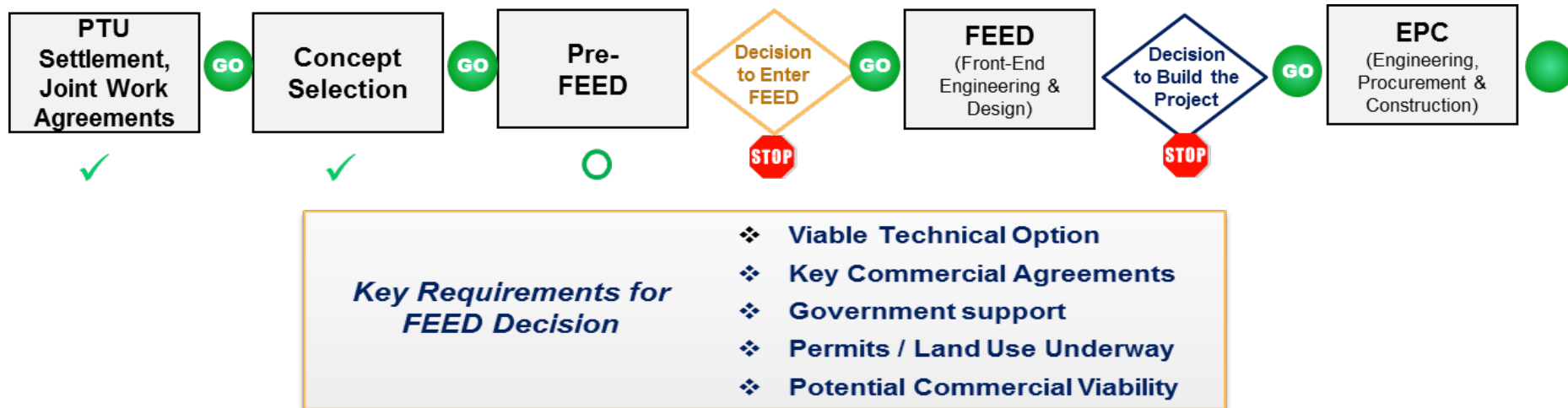


Alaska LNG™



- ✧ Village and tribal outreach ongoing
- ✧ Alaska Native regional and village corporation interaction / consultation
- ✧ Alaska business executive sessions in Fairbanks, Kenai, Juneau and Anchorage
- ✧ FERC agency workshop on NEPA process
- ✧ Community meetings supporting pipeline routing and field program
- ✧ Community meetings and personnel in Nikiski to support lead plant location
- ✧ Regulatory engagement meetings
- ✧ Traditional Knowledge, community health and subsistence field work nearing completion
- ✧ Cultural resource advisors engaged to support environmental studies





Summary

- ✦ Project work progressing well; system design and execution planning work nearly complete
- ✦ Continuing to evaluate opportunities to reduce project cost of supply, increase competitiveness
- ✦ Regulatory and field work progressing to support completion of Draft 2 of the NEPA Pre-File Resource Reports
- ✦ Expect to complete Pre-FEED deliverables as planned in Pre-FEED Joint Venture Agreement (JVA)
- ✦ Alignment, Risk, and Cost (ARC) principles remains critical to AKLNG success