Alaska LNG

"Gas for Alaskans, LNG for the World"

Legislative Briefing

September 29, 2014

Legislative Briefing Overview / Agenda:

- Safety overview / executive summary
- Schedule status
- Project components / recent progress
- Team status / build-up
- Regulatory status:
  - LNG export permit application submitted to Department of Energy (DoE)
  - National Environmental Policy Act (NEPA) pre-file accepted
- Cooperation framework with the Alaska Gasline Development Corporation (AGDC)
- 2014 Summer Field Season
- Website

Safety, Health and Environment Report:

- No health or environmental incidents to date
- One minor hurt (medical treatment) incident; worker scratched eye after removing safety glasses – shared lessons learned

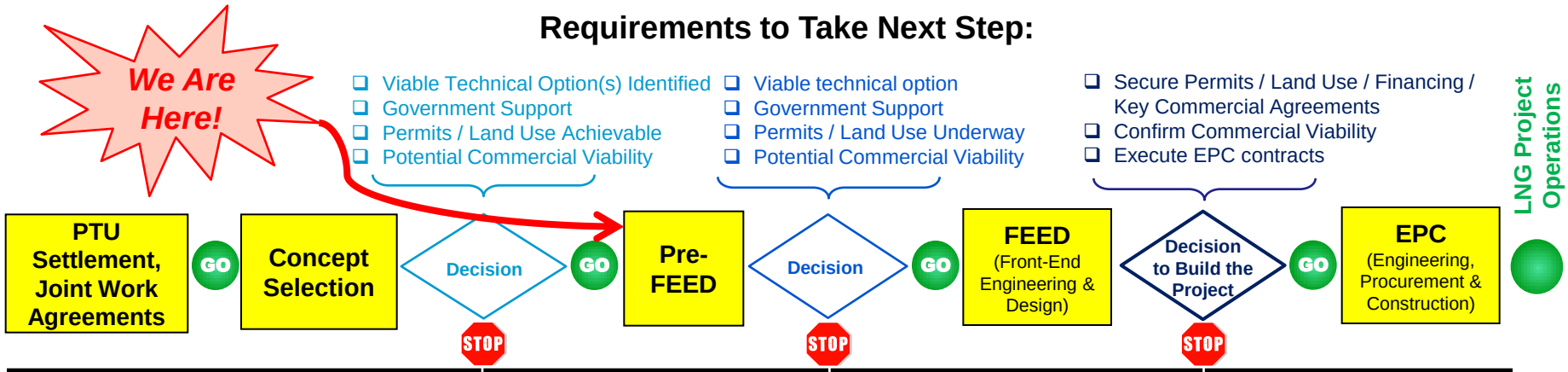
Executive Summary:

- Building pre-FEED team – 27 key leaderships roles staffed, adding 100+ team members in all skill areas
- Project spend exceeds $100M on concept, regulatory work to date, pre-FEED commitment is about five times this amount
- Progressing pre-FEED contracting; good support from primary contractors with demonstrated success in similar projects
- NEPA pre-file request approved by FERC on September 12, 2014 – process for Environmental Impact Statement (EIS)
- DoE posted export application to Federal Register on September 17, 2014 – process to secure right to export LNG

Key Messages In Recent Community Meetings:

- The Alaska LNG project participants represent the "owners" of ~99% of discovered NS gas – State of Alaska *plus* Producers
- Continued focus on the "ARC of Success" - required to compete globally
  - *Alignment* - All the owners working together with all the right stakeholders
  - *Risk reduction* - Identify and mitigate risks / uncertainty to support investment decision, ensure long-term success
  - *Cost reduction* - Gas is a globally traded commodity – low cost wins
- Alaska LNG is an LNG project (pipeline *plus* processing facilities)
  - Delivers gas to local and global markets – provides energy to improve standards of living
  - Provides economy of scale – critical to reduce costs / improve competitiveness

Alaska LNG – Work Plans / Key Decision Points (Oct12)



Peak Staffing:	~200	400 - 500	500 – 1,500	9,000 – 15,000
Cost ($):	Tens of Millions	Hundreds of Millions	Billions	Tens of Billions
Est. Engineering / Technical Duration*:		*12 - 18 Months*	*2 - 3 Years*	*5 - 6 Years*

Activities

Evaluate: • Range of technically viable options for major project components • Business Structure • In-state gas / export LNG demand	**Progress**: • Preliminary engineering to refine concept • Business structure • Financing plan	**Complete**: • Front-end engineering & design • Major contract preparation • Business structure • Financing arrangements	**Execute**: • Final engineering • Financing • Procurement • Fabricate / Logistics / Construct • Prepare for Operations
Solicit Interest of Others		**Solicit Interest of Others**	
Establish Government Support and Advance Regulatory Issues: • Competitive oil tax environment; predictable / durable LNG project fiscal terms; AGIA Issues • Assure ability to secure regulatory approvals / permits / land use • Environmental activities / Technical data collection • Stakeholder engagement • File DOE Export License		**Advance Gov't / Reg. Issues:** • Key permit / land use approvals • Stakeholder engagement • Secure DOE Export License	**Complete Gov't / Reg. Issues:** • Secure remaining construction / operating permits • Stakeholder engagement
	Start individual gas / LNG sales / shipping efforts	**Execute individual gas / LNG sales / shipping agreements**	**Implement business structure & agreements**
Screen commercial viability	**Assess commercial viability**	**Confirm commercial viability**	**Commission / start-up**

*** NOTE: Duration of various phases may be extended by protracted resolution of fiscal terms, permitting and regulatory delays, legal challenges, changes in commodity market outlook, time to secure long-term LNG contracts, labor shortages, material & equipment availability, weather, etc.**

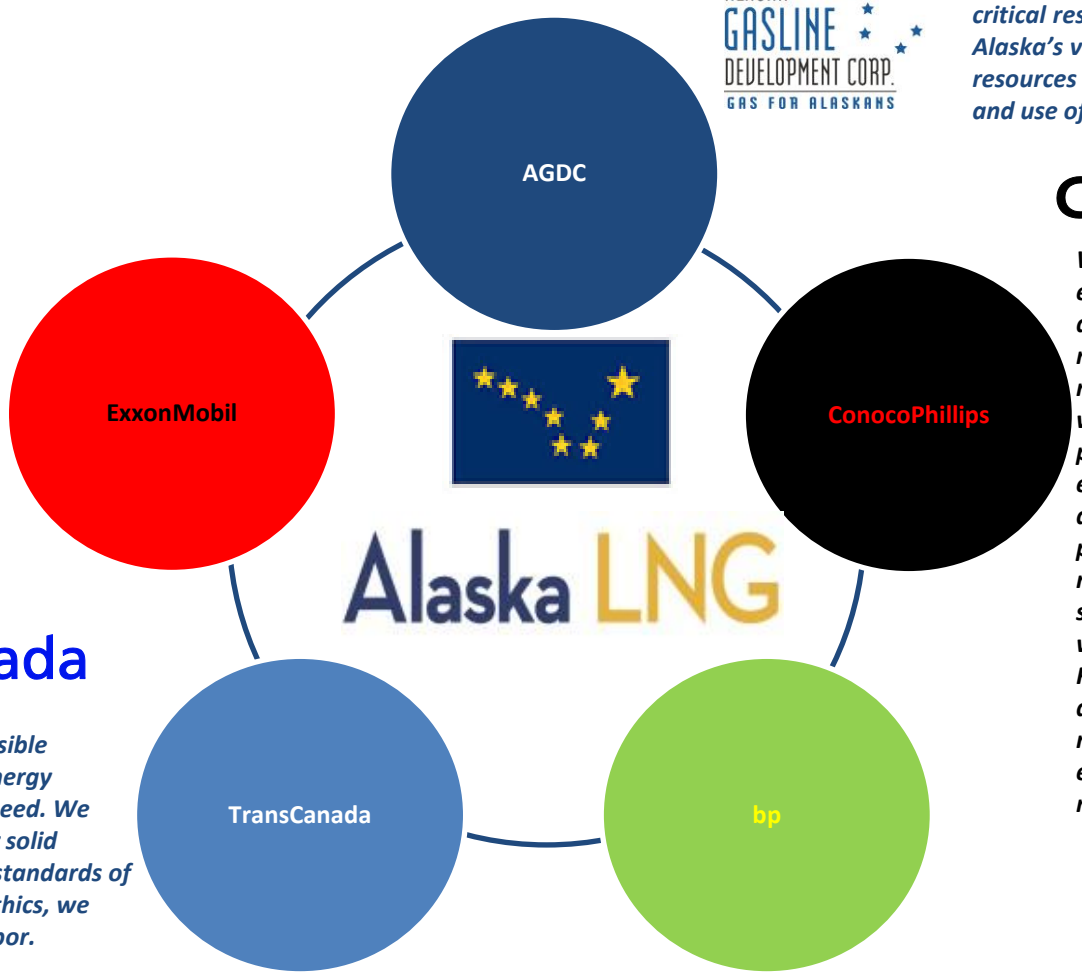
One Team - World Class Project Management

ALASKA GASLINE DEVELOPMENT CORP. GAS FOR ALASKANS

The Alaska Gasline Development Corporation (AGDC) is charged with the critical responsibility of ensuring that Alaska's vast North Slope natural gas resources are available for the benefit and use of Alaskans.

ExxonMobil

ExxonMobil is working to provide the energy needed for progress for today and tomorrow. We work every day to find, develop and deliver new supplies of energy to meet growing demand across the globe. Our success is underpinned by our strong safety performance, unwavering ethical behavior, good corporate citizenship, operational excellence and technology leadership.



ConocoPhillips

We exist to power civilization. We explore for, produce, transport and market crude oil, natural gas, natural gas liquids, liquefied natural gas and bitumen on a worldwide basis - the energy that plays a foundational role in enabling global economic development and human progress. We are active in a wide range of geologic and geographic settings, including some of the world's most challenging areas. From the frozen Arctic to the arid desert, we have a proven track record of responsibly and efficiently producing oil and natural gas.

TransCanada

TransCanada is a leader in the responsible development and safe operation of energy infrastructure that North Americans need. We are experts in our field, known for our solid financial track record, integrity, high standards of corporate governance and business ethics, we are committed to being a good neighbor.

We deliver energy to the world. We find, develop and produce essential sources of energy. We turn these sources into products that people need everywhere. The world needs energy and this need is growing. This energy will be in many forms. It is, and will always be, vital for people and progress everywhere. We expect to be held to high standards in what we do. We strive to be a safety leader in our industry, a world-class operator, a good corporate citizen and a great employer. We are BP.

bp

Development Concept

Alaska LNG

Development Concept Summary

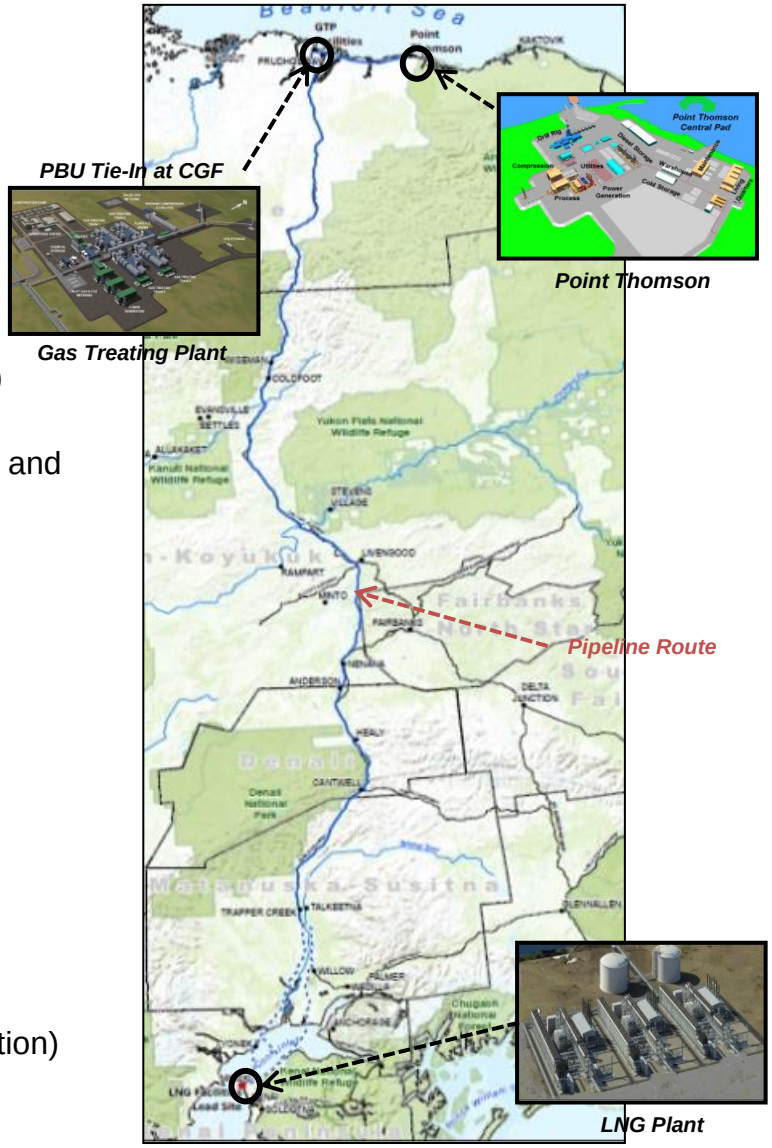
- PTU / PBU gas source (35 TCF)
- North Slope GTP near Prudhoe Bay Central Gas Facility (CGF)
- Re-inject CO_2 / H_2S in Prudhoe Bay Unit (PBU) – pressure support
- 800 mile 42”, 2075psig gas pipeline
- 8 compressor stations (30kHP compression plus cooling)
- Minimum of 5 domestic gas off-takes along pipeline route
- LNG plant site at East Cook Inlet (Nikiski area)
- 3 LNG trains capable of total of 20 million tonnes per annum (MTA)
- 3 storage tanks (165k m3)
- Single jetty with 2 berths for LNG vessels, tug, support vessel dock and material offloading facility

Strengths

- High resource confidence
- Opportunity to integrate with PBU
- Domestic gas delivery through rail corridor – *Gas to Alaskans*
- Proximity to Asian markets – *LNG to the World*
- Ambient temperature increases relative thermal efficiency

Challenges

- NS construction impacts, sea lift exposure (weather)
- Managing uncertainty / cost while securing required permits
- Addressing commercial, fiscal uncertainty
- Identifying and mitigating risks in design process (technical / execution)
- Delivering “cost of supply” that is globally competitive



LNG Plant Overview

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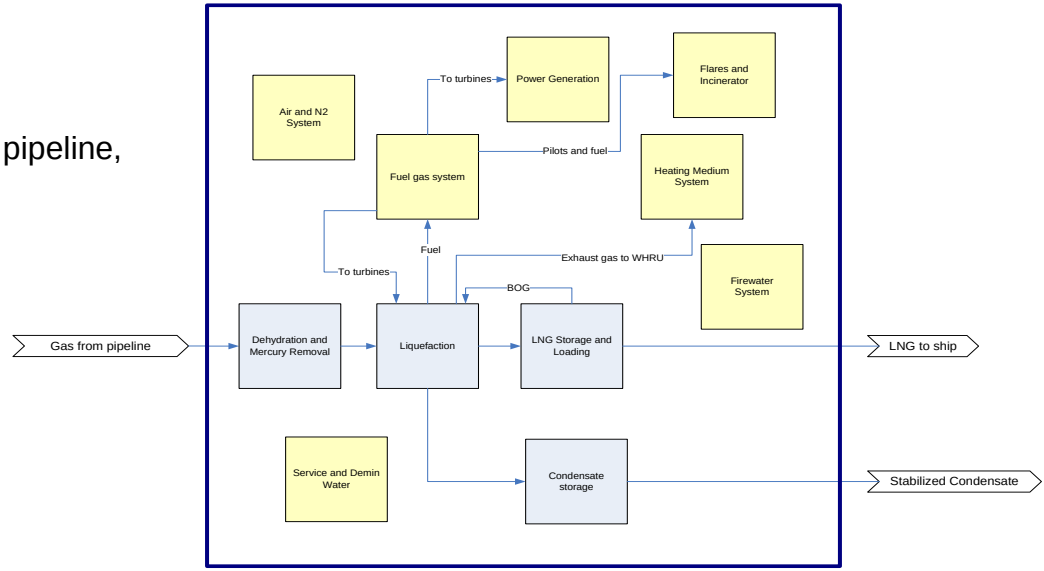
LNG Plant and Storage

- Three modularized ~6 MTA LNG trains (17-18 MTA total)
  - Air Products (APCI) process design
  - 20 MTA peak capacity (winter conditions – max rate)
  - Sub-arctic environment
- Integrated and self sustaining utility systems
- All treating on North Slope (inlet spec 50 ppm CO2 from GTP)
- Feed gas dehydration and mercury removal systems pretreatment
- ~1kbd stabilized condensate produced
- Three 160,000 cubic meter LNG storage tanks
- Facility layout must meet regulations for:
  - EPA emissions footprint
  - Limits for thermal radiation and vapor dispersion
- Major interfaces will include Local population, marine, pipeline, environmental, regulatory
- Design production efficiency: 94.5% (min) target
- Anticipated LNG plant staff when in full operation:
  - Day staff: 200
  - Shift personnel: 150



LNG Marine Overview

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LNG Marine Facility

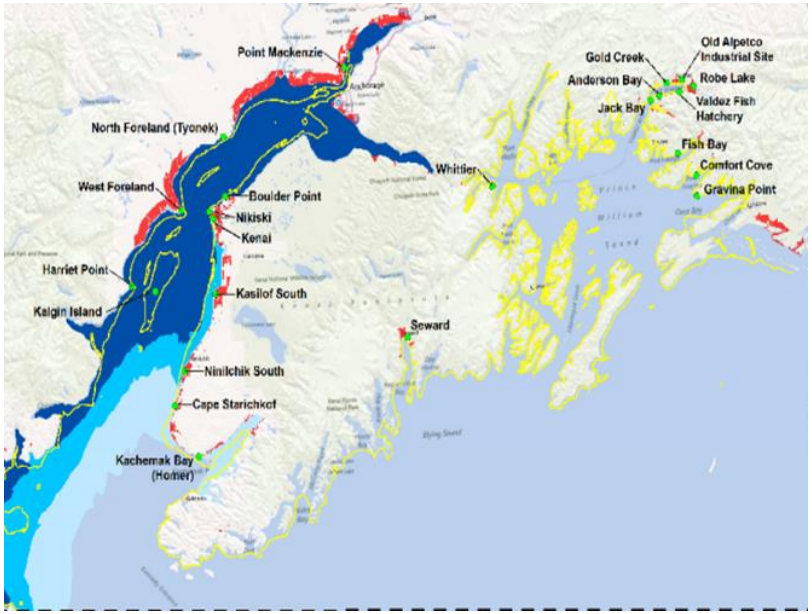
- Conventional berth and trestle design
- 2 berths (4 arms/berth)
- LNG loading rate: 12,500m³/hour
- Evaluating design for location of terminal and “marine offloading facility” (MOF)

Marine Vessels

- LNG carrier design range: 125,000 – 216,000 m³
- 15-18 LNG carriers (LNGC), design capacity - 160k m³
- Ice strengthened hulls
- Maximum LNGC draft: 12m (~40 feet)
- 4 tugs ~ 80+ thousand tons bollard pull
- Support vessels: line-handling / security vessels

Other Marine Scope Activities

- Design LNG plant facility MOF
- Plan transportation of all pipeline materials, modules and construction equipment to Alaska
- Develop guidelines/plans: marine safety, security, pollution prevention, emergency and pollution response as well as search and rescue in conjunction with USCG



LNG Carrier (LNGC) Sea Ice Modelling

Pipeline Overview

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Gas Pipeline & Compressor Stations

- Mainline: 800 mile buried 42” X80 pipeline to E. Cook Inlet based on initial receipt capacity of ~3.3 BCFD
- Point Thomson pipeline: 58 mi 30” X65 from Point Thomson Unit to GTP (initial receipt capacity of ~0.9 BCFD)
- Manage discontinuous permafrost (MP180-600)
- Expansion potential with additional compression (20-30%)
- 8 compressor stations (30kHP, Titan 250), 6 with gas cooling
- Heater stations (1-2) spaced as required
- Meter stations required
- Includes minimum of 5 off-take points for domestic gas

Pre-FEED Objectives

- Provide basis for FEED funding decision
  - Develop a single / optimized design basis for project
  - Class 4 cost estimate
  - Level 2 schedule
  - Develop design basis and plans for FEED
- Identification of 5 off-take points
- Engineering detail to support regulatory requirements
  - Federal Energy Regulatory Commission (FERC)
  - Pipeline Hazardous Material Safety Agency (PHMSA)
  - Other federal and State cooperating agencies

Gas Treatment Plant (GTP) Overview

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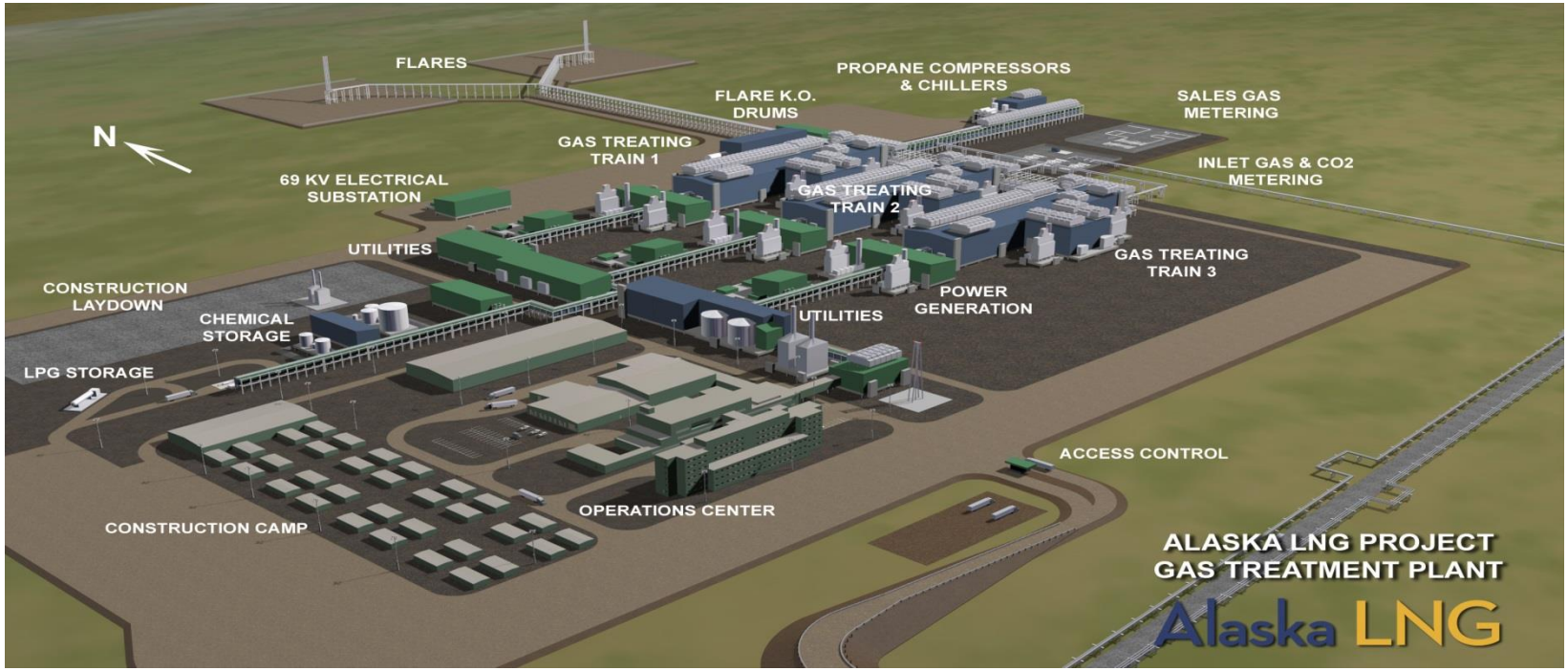
- Capacity - 3.7 BCFD treated gas peak winter rate
- Layout / design: 3 gas process trains
- Process configuration
  - Acid gas removal (CO_2/H_2S) to LNG spec
  - Sales gas and CO_2 dehydration: TEG
  - Sales gas chilling: propane refrigeration
  - Treated gas and CO_2 compression: gas turbine drive
  - Power generation: gas turbine generators
  - All required utilities, infrastructure and camps
- Key execution considerations:
  - Max use of modularization, for fabrication efficiency
  - Pre-commissioning at fabrication yards
  - Max module weight of 9k tons
  - Infrastructure upgrades to existing Prudhoe Bay dock, causeway, roads, bridges
  - Target 4 sealifts for ~275k tons of modules
- Contracting / purchasing / logistics
  - World-wide procurement
  - Multiple major fabricators and modules fab sites



PBU Interface Overview

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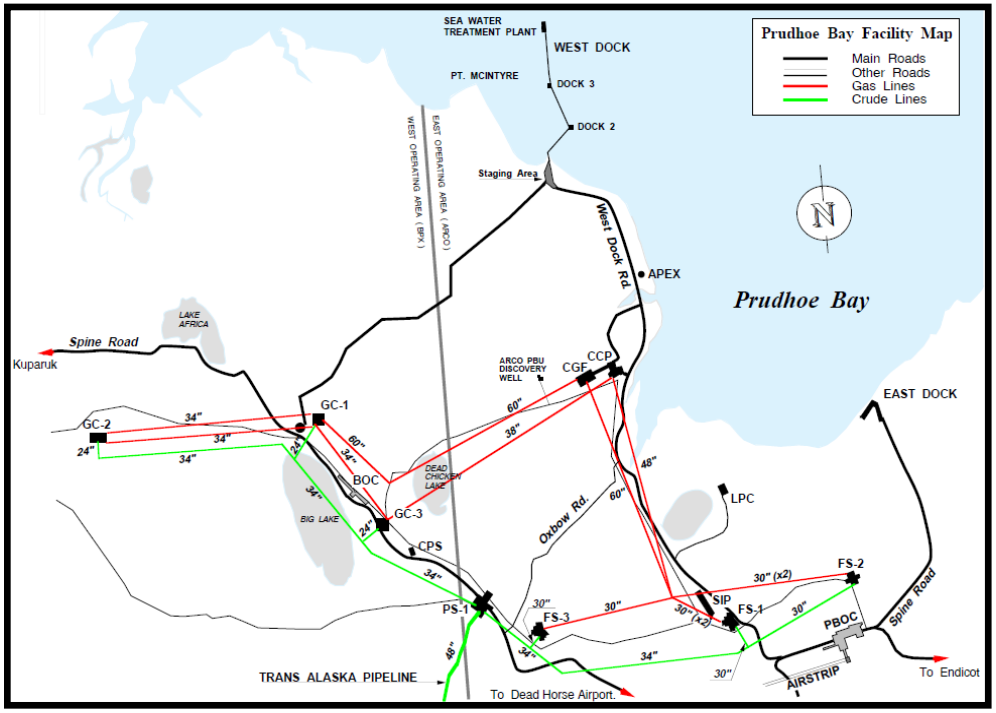
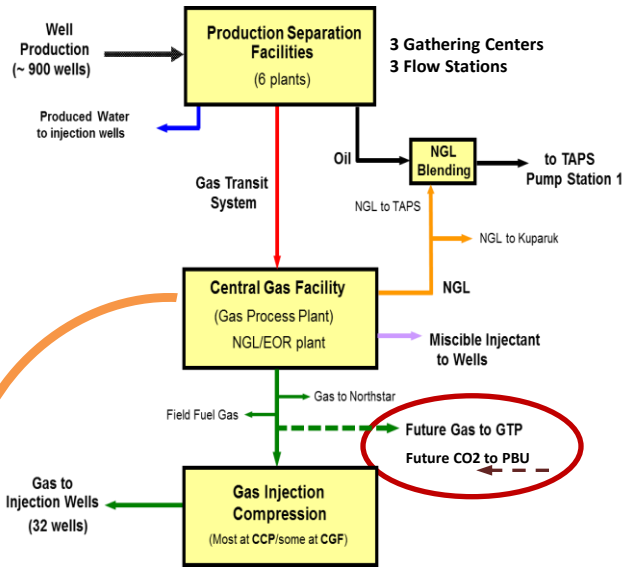
- Objective: Provide to the GTP on-spec gas with high-reliability of supply at the required rate (notionally 3.7+ BCFD max feed rate capacity)
- Responsible party: PBU Operator
- Major interfaces: GTP lines at CGF boundary, plus operations, regulatory, commercial and stakeholders
- Schedule: Installation work performed during turnarounds, where possible
- Evaluate, modify, and/or install PBU facilities to meet objectives, including:
  - CGF tie-ins, pipelines (48" and 60") and metering module
  - Module and pipelines for CO2 from GTP (~ 480 MCFD)



PBU Field Facilities



PTU Gas Expansion Overview

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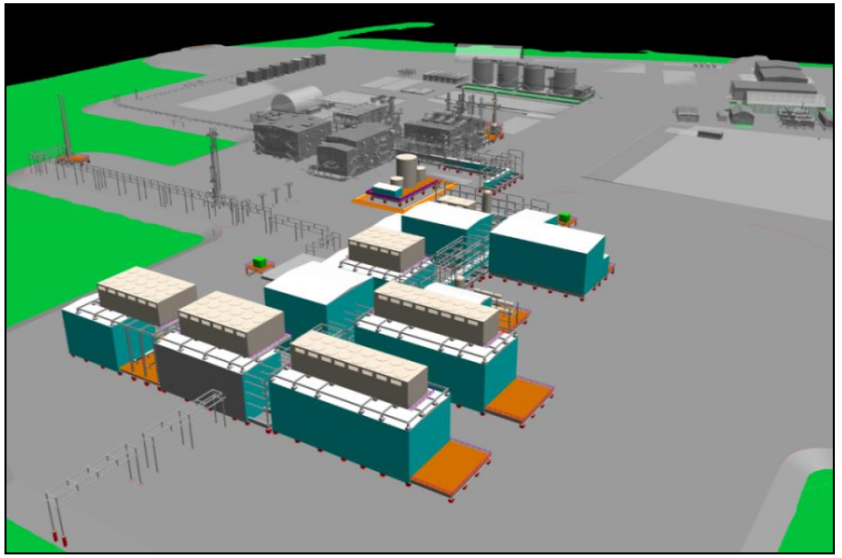
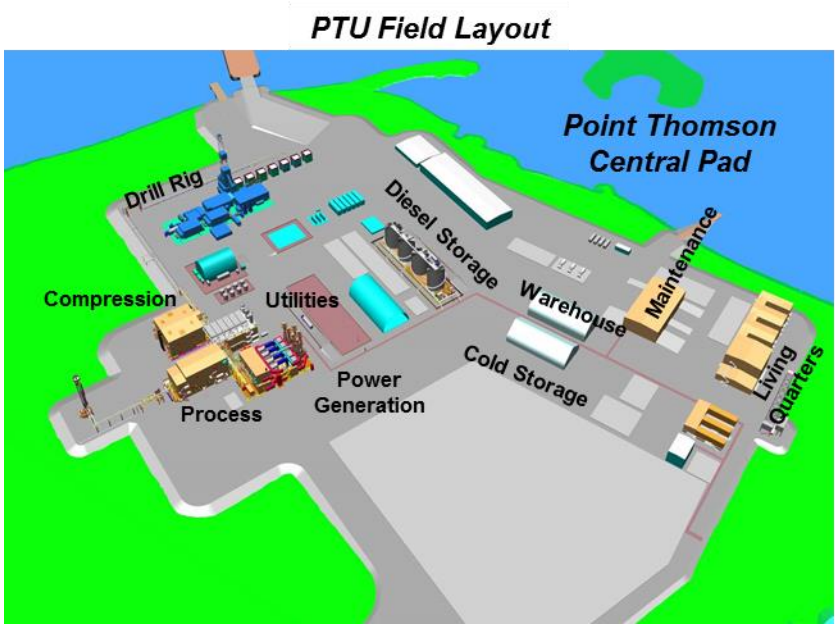
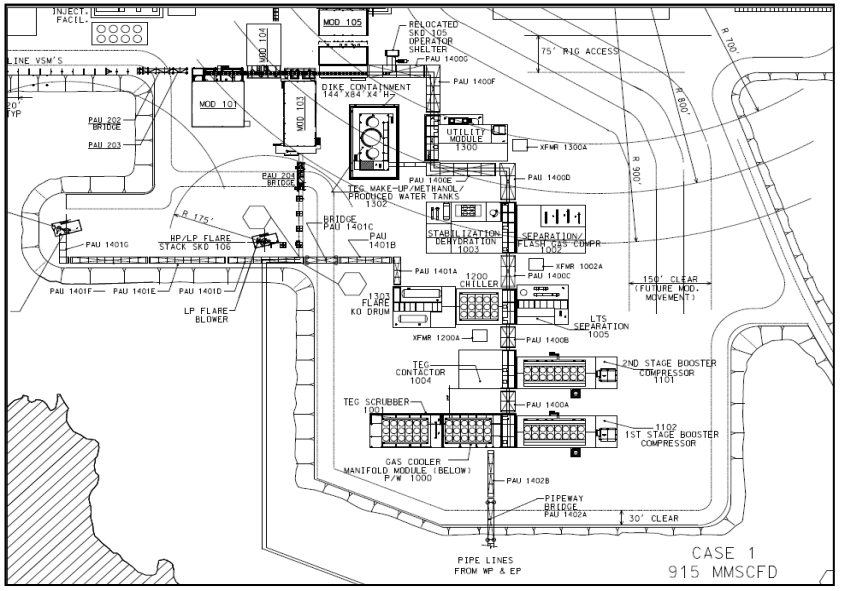
Preliminary Design Basis:

- Initial Production System (IPS) project in progress - 2016 SU
- Preliminary AK LNG design basis for PTU:
  - Leverage IPS facilities, add new wells
  - Add new gas facilities to existing central pad / facilities
  - New 30” gas line from PTU to GTP in Prudhoe Bay
  - Peak workforce – 500-1,500 people
  - Gas exported via Alaska LNG PT Transmission Line to GTP
  - Condensate exported via IPS liquids line into Badami line

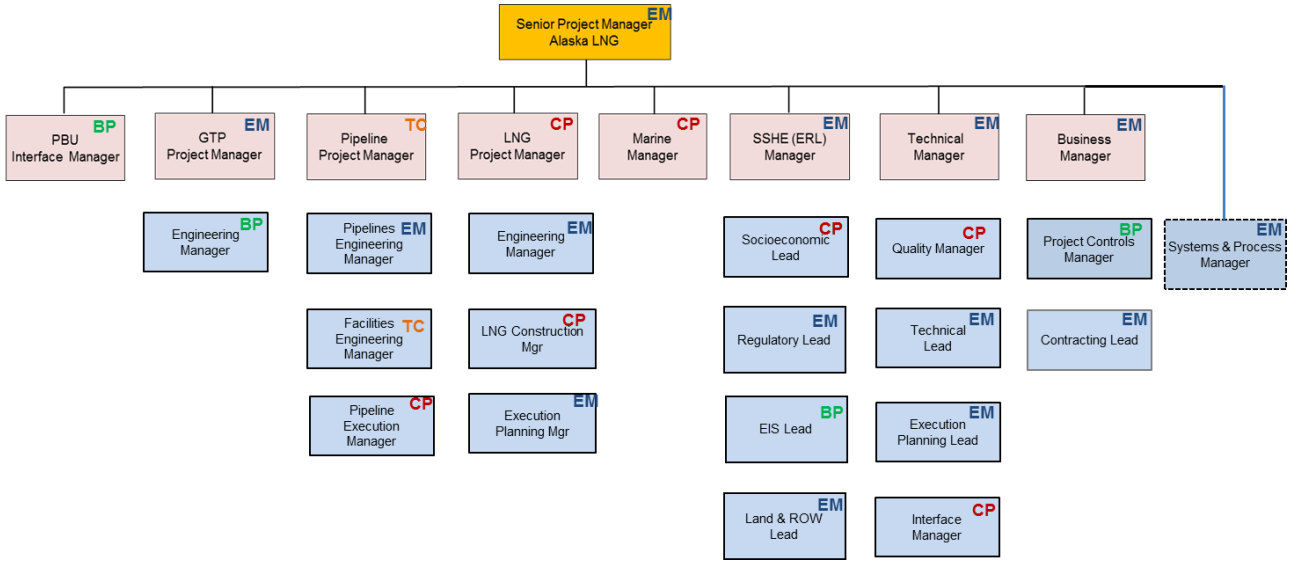






Project Team

- Fully integrated project team
  - All companies represented at all levels – “best player plays”
  - Leadership team in place (27 roles, over 800 years experience)
  - Leverage skills to meet common goal of delivering Alaska LNG
- Teams “co-located” to ‘take work to the people’
  - Integrate teams into contractors’ offices for key work scopes
  - All offices include representatives from each company
- Building project organizations
  - Over 100 full time employee positions filled
  - 3 offices: Anchorage, Calgary and Houston
  - Expect several hundred contractors for each project sub-component
  - Working to award contracts, staff contractors in 4Q14
  - Strong focus on Alaskan content and engaging Alaskan resources



Federal Regulatory Update

Alaska LNG

- LNG Export Application submitted to Department of Energy (DoE) on 16Jul14, with key requests
  - Critical milestone for Alaska LNG Project
  - Right to export 20 MTA of LNG for 30 years
  - Twelve (12) year period to commence operations
  - Confirmation of 1988 Presidential Finding allowing export
- DoE considering conditional approval, providing clear guidance on regulatory process to pursue export permit

The Alaska project has been in a gestation stage for a while. This is a private sector project and we want to do all we can to facilitate it, and not be seen as an obstacle.

- *Energy Secretary Ernest Moniz*
Anchorage, August 18, 2014

- NEPA Pre-File request approved by FERC 12Sep14, triggers ongoing community consultation with the following near term activities:
  - Execute FERC third party agent contract (end Sept)
  - Notify stakeholder and interested parties (mid-Sept)
  - Submit preliminary draft Resource Reports 1and 10 (Sep30)
  - Prepare monthly status report for FERC (starting Oct 30)
  - Project-led community meetings; FERC attends (Oct-Nov)
- FERC coordinates Federal oversight, interaction with all Federal agencies
- FERC works with Alaska LNG to guide regulatory process, build EIS to mitigate any potential environmental impacts

NEPA Resource Reports

1. **Project Description**
2. **Water Use & Quality**
3. **Vegetation & Wildlife**
4. **Cultural Resources**
5. **Socioeconomics**
6. **Geological Resources**
7. **Soils**
8. **Land Use, Recreation & Aesthetics**
9. **Air & Noise Quality**
10. **Alternatives**
11. **Reliability & Safety**
12. **PCB Contamination**
13. **LNG Information**

Alaska LNG / ASAP Cooperation Update

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All participants are interested in moving forward in an efficient, cost effective manner and in minimizing duplication of effort

Background

- Significant amount of baseline data exists from previous pipeline projects: *TAPS, APP, Denali* and *ASAP*
- Parties have developed a framework for sharing data and coordinating work efforts going forward

Objectives

- Maximize use of existing historical data and work product
  - *Geotechnical, hydrological, environmental, cultural* and *routing information*
- Minimize duplication of work between the ASAP and Alaska LNG projects
- Work towards common routing and alignment
- Reduce cost, environmental impacts, and safety risks
- Save time and advance schedules

Coordination Activities

- ✓ Identifying existing datasets and common work product
- ✓ Establishing data sharing protocols
- ✓ Coordinating 2015 field seasons and work activities
- ✓ Planning routing workshop to compare pipeline alignments
- ✓ Developing joint trenching equipment testing program

Summer Field Season Update

Alaska LNG

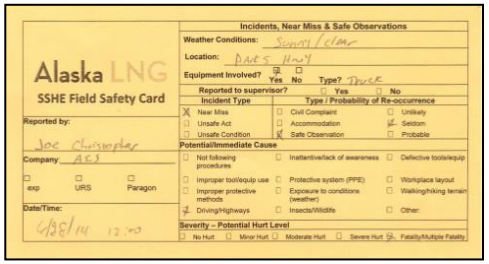
- SFS is a high visibility activity
- Results critical for FERC pre-file, stakeholder engagement process
- Accomplishments:
- Fieldwork Scope
  - Cultural resources: ~10,000 ac
  - Fisheries: >80 targets
  - Hydrology: ~30 targets
  - Wetland and vegetation mapping: ~200 targets
  - Contaminated sites: ~5 targets
  - Lakes: >20 targets
  - GTP technical hydrology and geotechnical studies
  - Socioeconomic-related surveys
  - Amblent air monitoring (planned)
  - Amblent noise surveys (planned)
  - Marine sediment and biological sampling (planned)
- Over 40 permit applications submitted and received
- Multiple successful internal and external VIP field visits

Summer Field Season Update

Alaska LNG

Ensuring field crew safety lays Alaska LNG foundation.

- Established strong SSH&E culture / performance: "C*ulture of Caring"*
  - Contractor joint SSH&E plan
  - Safety training
  - Safety coins
  - Observations and near-miss reporting
  - Peer assist visits
  - SSH&E awareness project items



- 140,000+ hours worked (over 60 work years)
- 317,500+ miles driven without accident (over 12 trips around the Earth)
- No lost time safety incidents, 1 hurt
- 335+ observations, analyzed for continuous improvement
- Focus on "escalation potential" of all incidents / observations
- "Half-Time Safety Stand Up" recognized safe performance

Summer Field Season – Commitment to Alaska

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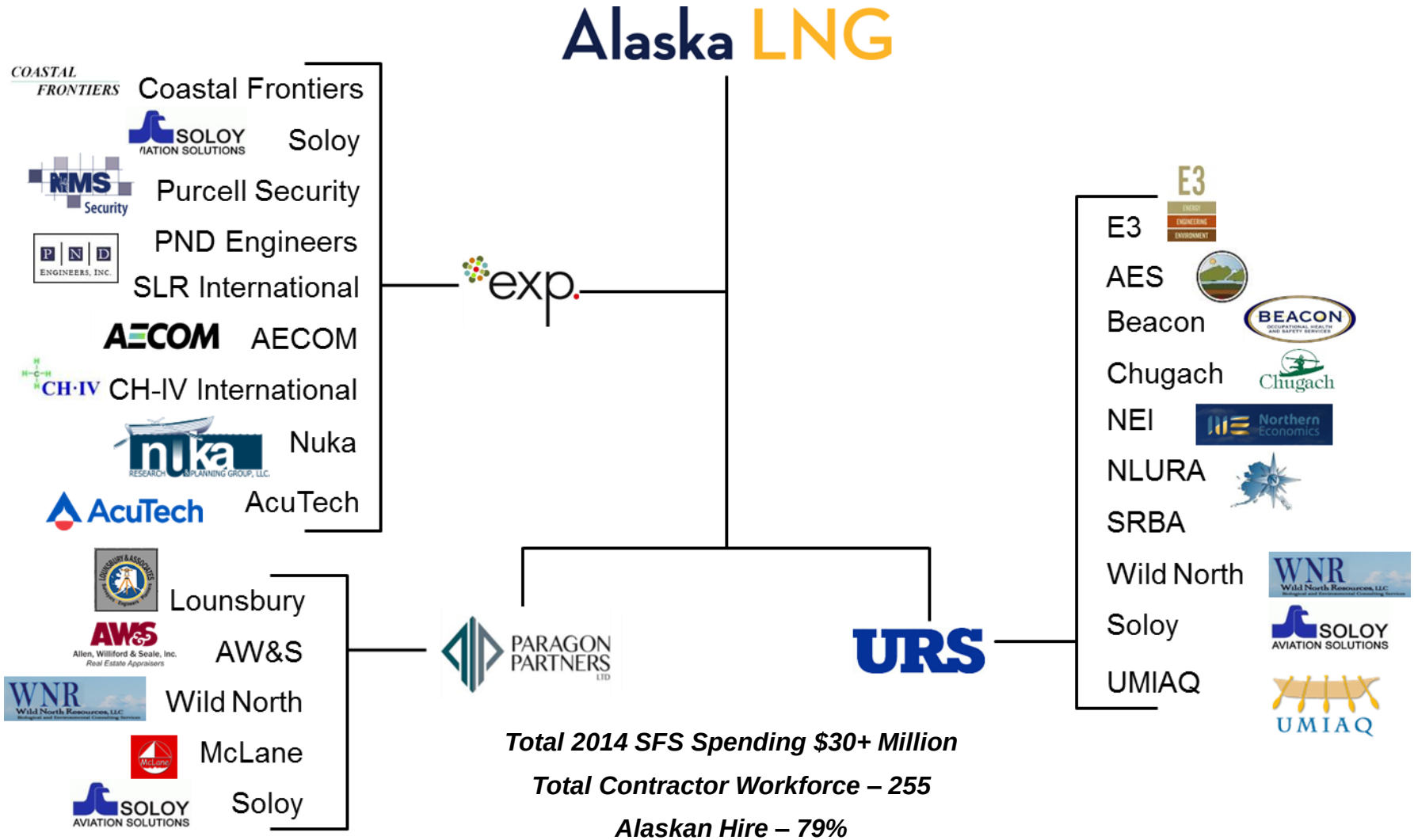


Total 2014 SFS Spending $30+ Million

Total Contractor Workforce – 255

Alaskan Hire – 79%

Summer Field Season Update

Alaska LNG

Website (ak-lng.com)

Alaska LNG

Fueling Alaska's Future

The Alaska LNG Project is about innovative people and technology coming together to develop Alaska's vast natural gas resources in a safe and efficient manner and about providing access to natural gas to Alaskans. The project's participants are the Alaska Gasline Development Corporation (AGDC) and affiliates of TransCanada, BP, ConocoPhillips, and ExxonMobil.

Benefits

The Alaska LNG Project is a proposed $45 to $65 billion liquefied natural gas export project – it would be the largest single investment in Alaska history. The project has the potential to create between 9,000 and 15,000 jobs during the design and construction phases; plus approximately 1,000 jobs for continued operations. In addition to generating billions of dollars in revenue for Alaska, the project will provide access to natural gas for Alaskans.

Learn More

Calendar

September 2014

25 Barrow Community Meeting
Barrow, AK | North Borough Assembly Large Conference Room

October 2014

1 Minto Community Meeting
Minto, AK | Minto Public School Library

9 Kenai Open House
Kenai, AK | Challenger Learning Center

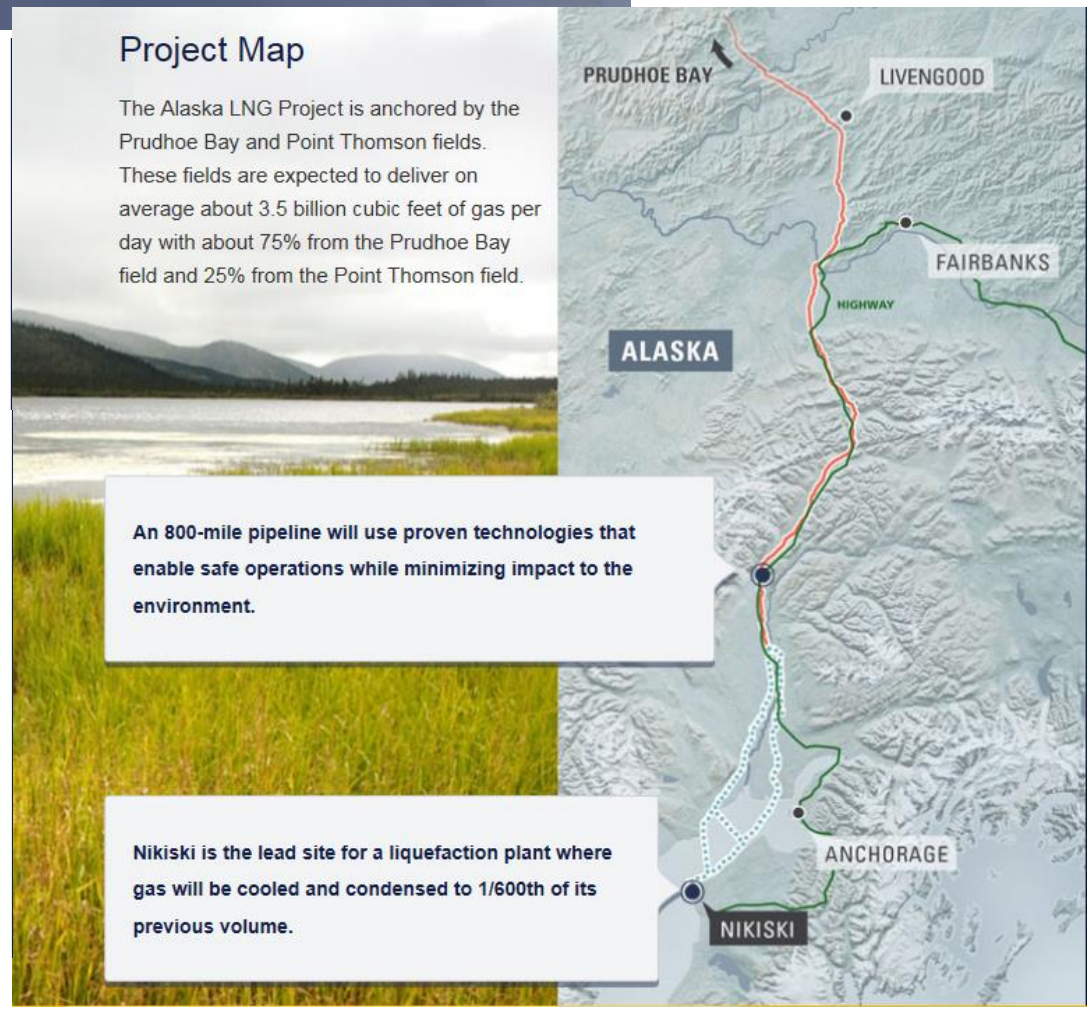
23 - 25 Alaska Federation Of Natives Convention
Anchorage, AK | Dena'ina Center

To view past events, click here.

Email: info@ak-lng.com

Project Map

The Alaska LNG Project is anchored by the Prudhoe Bay and Point Thomson fields. These fields are expected to deliver on average about 3.5 billion cubic feet of gas per day with about 75% from the Prudhoe Bay field and 25% from the Point Thomson field.



Background – Conversions

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platts

LNG conversion factors

	kWh	GJ	Therm	mn Btu	ft³	m³	t LNG	m³ LNG	t oe	b oe
1 kWh		0.0	0.03	0.003	3.337	0.095	6.66667E-05	0.000684182	0.0001	0.0006
1 GJ	277.8		9.479	0.95	909	26.25	0.019	0.040	0.024	0.175
1 therm	29.3071	0.1055		0.1	97.47	2.762	0.0019	0.0042	0.0025	0.0172
1 mn Btu	293.1	1.055	10		974.6588694	27.62	0.019	0.042	0.025	0.172
1 ft³	0.2997	0.0011	0.0102	0.001		0.0283	0.000021	0.000047	0.000025	0.000177
1 m³	10.58	0.0381	0.362	0.0362	35.3147		0.00073	0.00164	0.00090	0.00662
1 t LNG	15,000	52	517	52	48,690	1,379		2.2	1.3	9.5
1 m³ LNG	7,001	25	239	24	21,500	609	0.46		1	4
1 t oil equivalent	11,630	42	397	40	39,220	1,110	0.77	1.78		7.33
1 b oil equivalent	1,682	5.7	58.0	5.8	5,653.0	151.2	0.105	0.243	0.136	