

Alaska South Central LNG (SCLNG) Project

Overview for Alaska Legislators

February, 2013

Alaska SCLNG Project - Overview

- BP, ConocoPhillips, ExxonMobil and TransCanada are working together to progress an Alaska LNG project:
 - 300+ people developed concept, \$25M spent thru Jan13
 - Key third party contractors engaged (URS, Fugro, exp)
 - Leveraging Denali, APP, related material (\$700M past work)
- Concept work has defined key issues:
 - Integrated Basis of Design heat/material balance complete
 - Potential integration into existing operations
 - Required gas treating plant design (North Slope location)
 - Pipeline size and routing options (800+ miles, 42" x80 pipe)
 - LNG plant design (15-18 million tons per annum – "MTA")
 - Gas off-take capacity for secure Alaska fuel supply
 - Preliminary capital estimate - \$45-65 Billion (2011 dollars)
- Key project issues to address:
 - "Mega-project" challenges (labor, resources, equipment, etc)
 - Commercial and fiscal issues
 - Uncertainty related to permitting timing
- Forward Plans:
 - Use "Phased/Gated" process to advance project
 - Continue working together to optimize design









Module Hook Up – Plug and Play



SCLNG Concept Summary - Upstream

PTU (62 miles east of PBU/GTP area)

- Initial Production System (IPS) project in progress - 2016 SU
- Preliminary SCLNG design basis for PTU:
 - Leverage IPS facilities, add fourteen 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

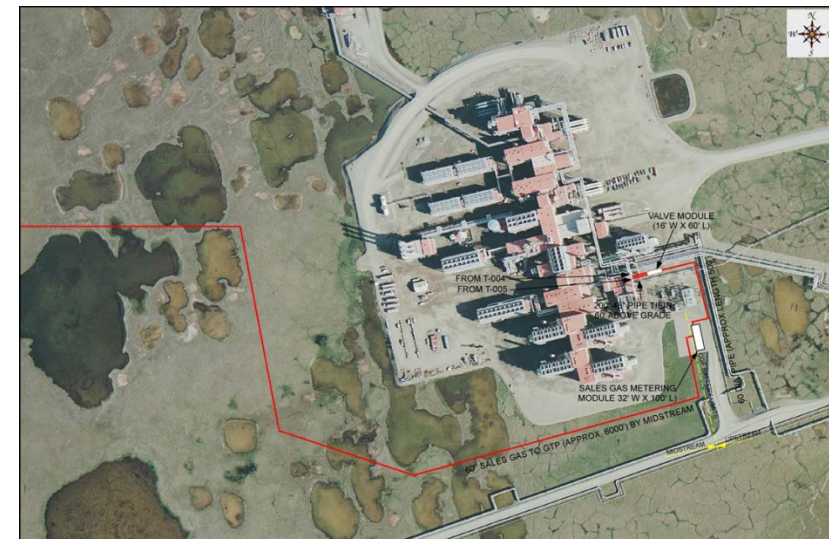
PTU Field Layout



PBU Tie-in (adjacent to proposed GTP location)

- Installation / tie-in managed by Prudhoe Bay Operator
 - Tie into existing CGF, deliver gas to new Gas Treatment Plant
 - Gas project / deliveries tied to future PBU operations
- Preliminary plan is to inject CO₂ using existing injection systems as appropriate

PBU Central Gas Facility Tie-in



NS Gas Treatment Plant

- Designed to remove gas impurities
- Four amine trains with compression, dehydration and chilling
- Prime power generation (5 units, 54kHP)
- All required utilities, infrastructure and camps
- Facility will be modularized, sealifted to location
- Peak workforce – 500-2,000 people

NS Gas Treatment Plant Design

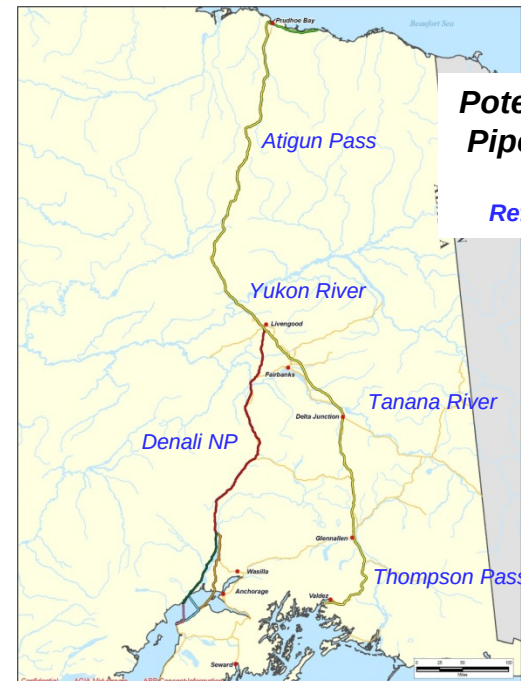


Gas Pipeline and Compression Stations

- 800+ mile 42" x80 pipeline
- 3-3.5 billion cubic feet gas per day
- Eight compressor stations (30kHP each)
- Pipeline contents will be treated gas, impurities removed
- Designed to manage continuous and discontinuous permafrost regions
- Expansion potential with additional compression if appropriate
- Five off-take points for Alaska gas delivery
- Peak workforce – 3,500 - 5,000 people

**Potential SCLNG
Pipeline Routes**

Reference Points



LNG Plant and Storage

- Three 5.8 million tons per annum (MTA) LNG trains
 - Plant receives 2.2 - 2.5 billion cubic feet per day to liquefy
 - LNG production varies with ambient temp (4.9 - 6.3 MTA)
 - Small volume of stabilized condensate produced (~1,000 bbl/day)
- Integrated utility system with all utilities on site
- Two-three 160,000 cubic meter LNG storage tanks
- Peak workforce – 3,500 – 5,000 people

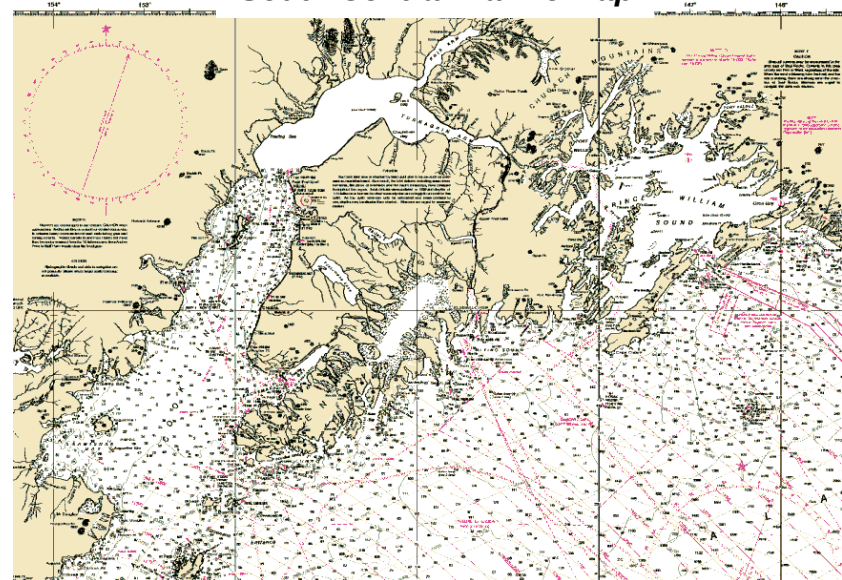
SCLNG Plant and Storage



Marine Offloading Facility

- Conventional jetty and trestle design
- Two berths
- Design based on 15-20 LNG carriers
- Marine support system includes required tugs, security boats
- Peak workforce – 1,000 – 1,500 people

South Central Marine Map



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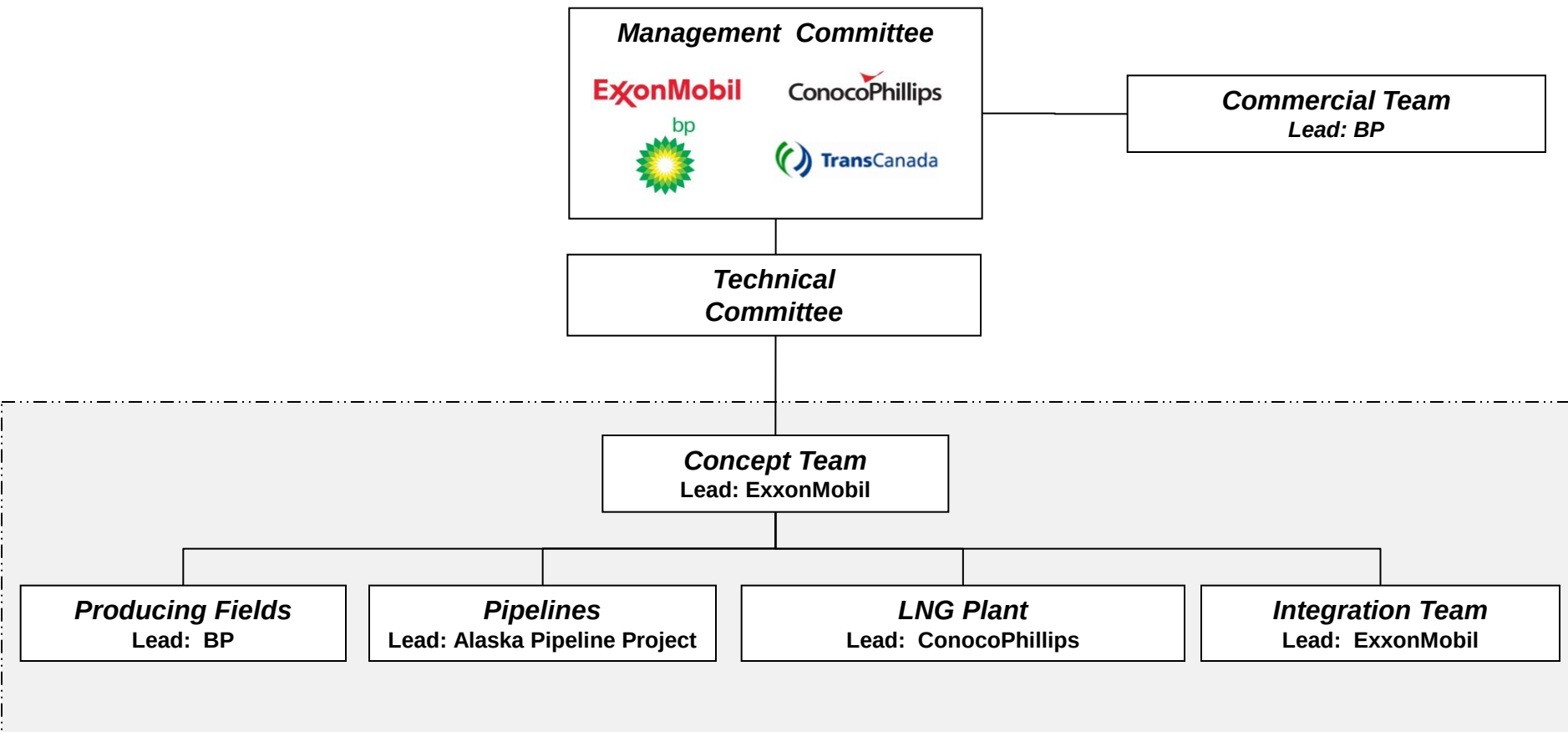
Overview for Alaska Legislators

Back-Up Material

Attachments to Oct-12 Letter to Governor Parnell

February, 2013

Southcentral Alaska LNG – Integrated Team



Multimillion Dollar, Four-Company Effort – 125+ Employees, 100+ Contractors

- Joint work commenced March 31, 2012 after completion of the Pt. Thomson Settlement / joint work agreements
- Cooperative effort among the leading North Slope producers and a leading North American pipeline company
- Identified potentially viable LNG project options to monetize ANS natural gas
- Used company strengths, shared information / expertise; built upon past efforts, sought out new ideas

Alaska Southcentral LNG – Project Concept Description

Liquefaction Plant

- Capacity: 15 – 18 million tonnes per annum (MTA)
3 trains (5-6 MTA / train)
- Potential areas: 22 sites assessed in Cook Inlet, Prince William Sound and other Southcentral sites
- Footprint: 400 - 500 acres
- Peak Workforce: 3,500 - 5,000 people
- Required Steel: 100,000-150,000 tons



Storage / Loading

- LNG Storage Tanks, Terminal
- Dock; 1 - 2 Jetties
- Design based on 15– 20 tankers
- Peak Workforce: 1,000-1,500 people



Producing Fields

- ~35 TCF discovered North Slope resource
- Additional exploration potential
- Anchored by Prudhoe Bay and Pt. Thomson with ~20 years supply available
- Use of existing and new North Slope facilities
- Confirmed range of gas blends from PBU/PTU can generate marketable LNG product
- Peak Workforce: 500 – 1,500 people



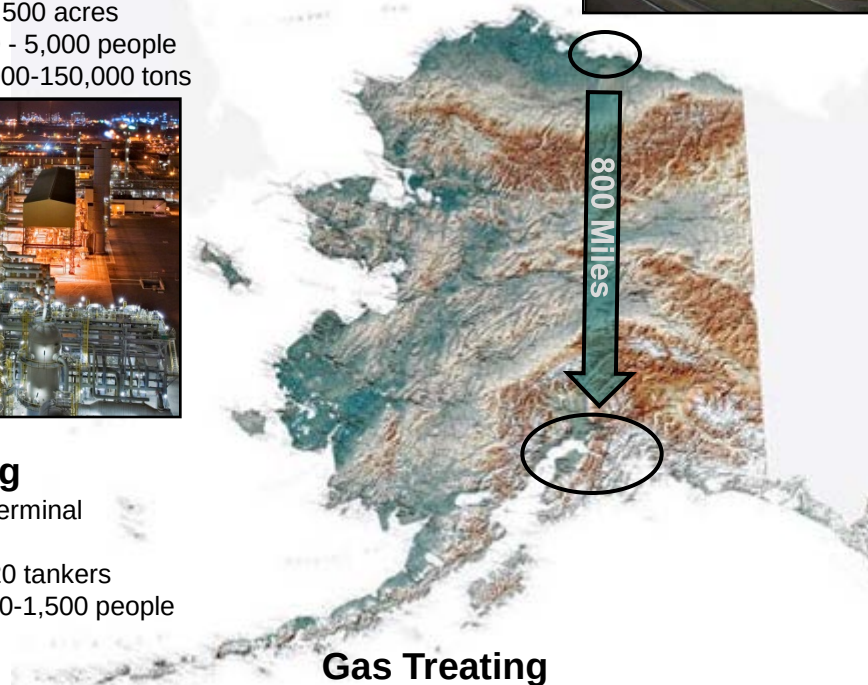
Pipeline

- Large diameter: 42"- 48" operating at >2,000 psi
- Capacity: 3 - 3.5 billion cubic feet per day
- Length: ~800 miles (similar to TAPS)
- Peak Workforce: 3,500 - 5,000 people
- Required Steel: 600,000 - 1,200,000 tons
- State off-take: ~5 points, 300-350 million cubic feet per day, based on demand



Gas Treating

- Located at North Slope or Southcentral LNG site
- Remove CO₂ and other gases and dispose / use
- Footprint: 150 - 250 acres
- Peak Workforce: 500 - 2,000 people
- Required Steel: 250,000 - 300,000 tons
- Among largest in world



Estimated Total Cost: \$45 – \$65+ Billion

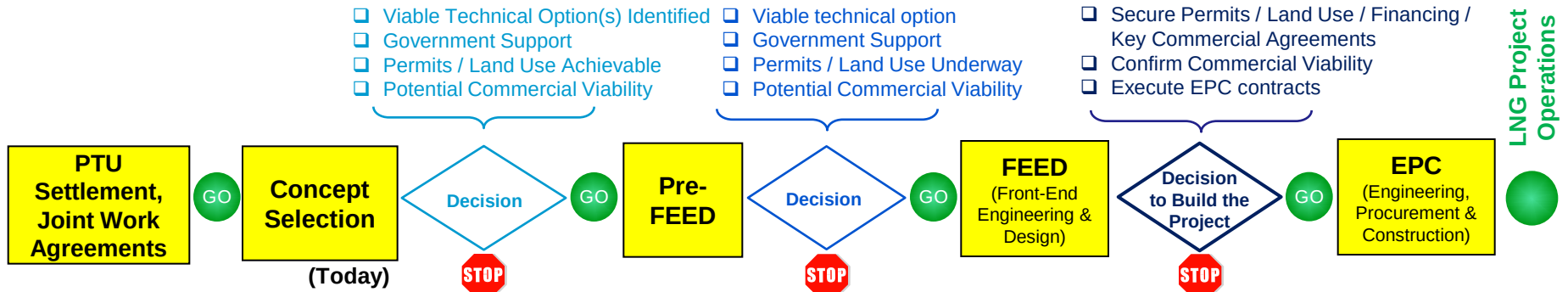
Peak Construction Workforce: 9,000 – 15,000 jobs

Operations Workforce: ~1000 jobs in Alaska

Descriptions and costs are preliminary in nature and subject to change. Cost range excludes inflation.

Southcentral Alaska LNG – Work Plans / Key Decision Points

Requirements to Take Next Step:



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	
	Start individual gas / LNG sales / shipping efforts		Execute individual gas / LNG sales / shipping agreements	
	Screen commercial viability		Confirm commercial viability	
	Assess commercial viability		Implement business structure & agreements	
	Commission / start-up		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.