

# **Alaska South Central LNG (SCLNG) Project**

## ***Overview for Alaska Legislators***

**February, 2013**

- 
- Alaska SCLNG Plant**  
*Conceptual Layout*











## ***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

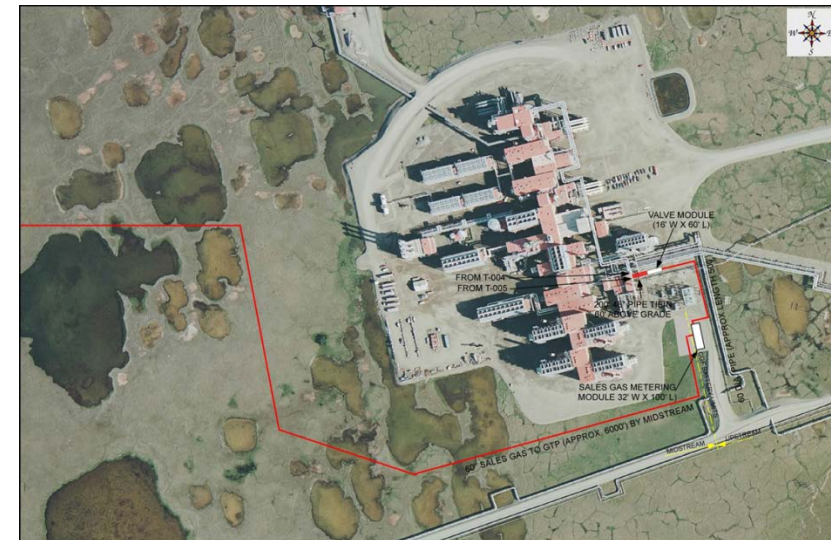
PTU Field Layout



## 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 CO<sub>2</sub> using existing injection systems as appropriate

PBU Central Gas Facility Tie-in





## NS Gas Treatment Plant

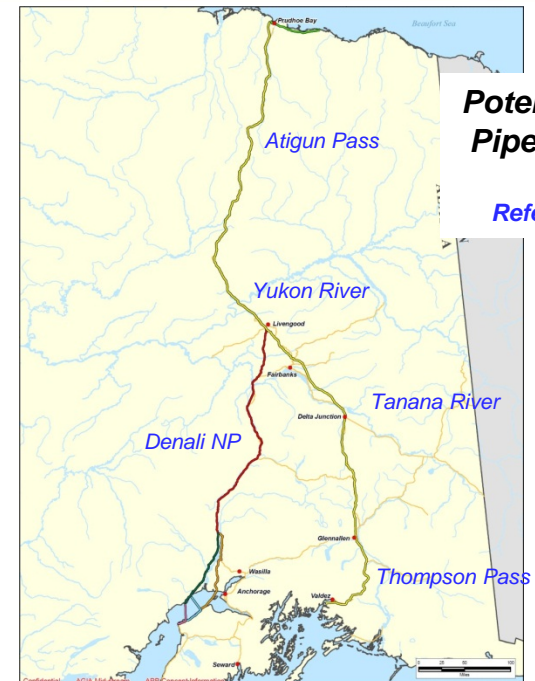
- Designed to remove gas impurities
- Four amine trains with compression, dehydration and chilling
- Prime power generation (5 units, 54kHP)
- All required utilities, infrastructure and camps
- Facility will be modularized, sealifted to location
- Peak workforce – 500-2,000 people

**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

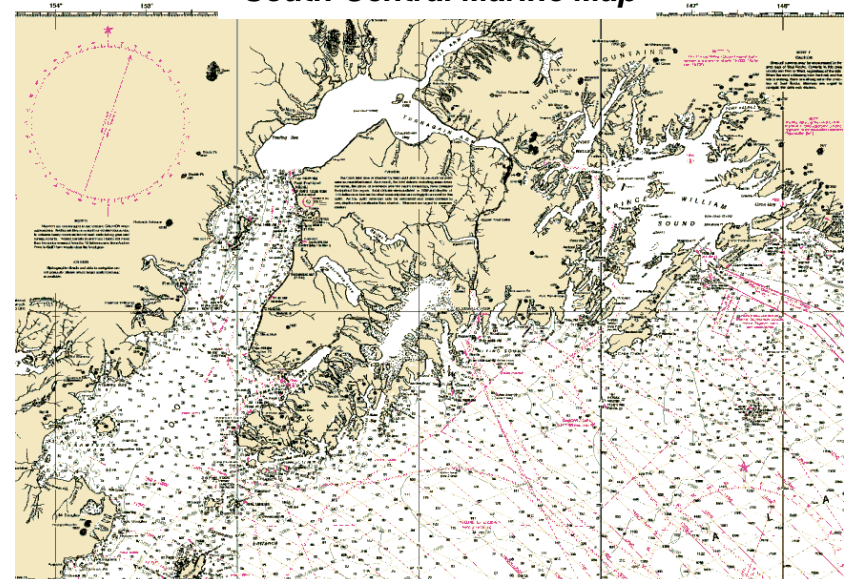
***SCLNG Plant and Storage***



## **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***



# **Alaska South Central LNG (SCLNG) Project**

## ***Overview for Alaska Legislators***

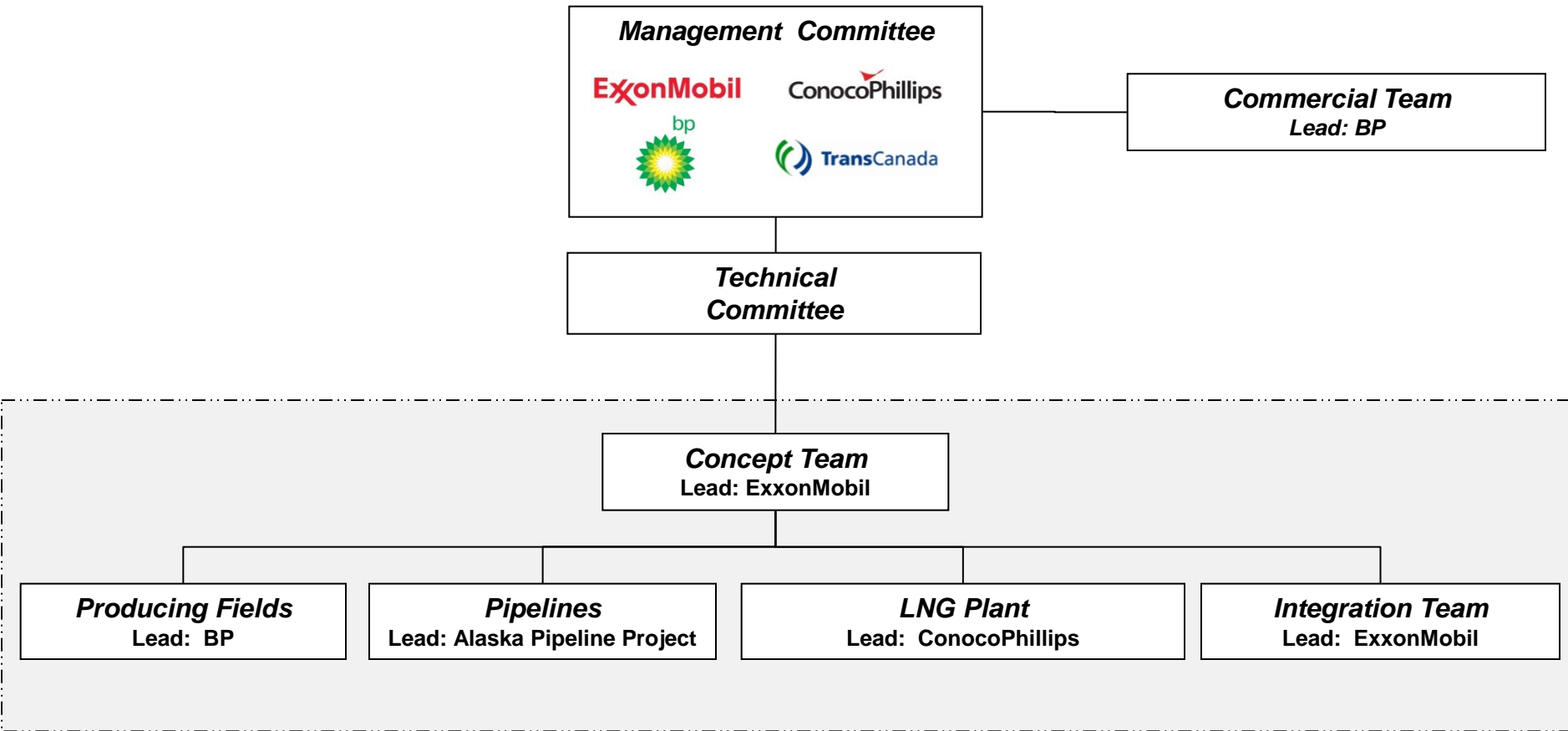
### **Back-Up Material**

#### ***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



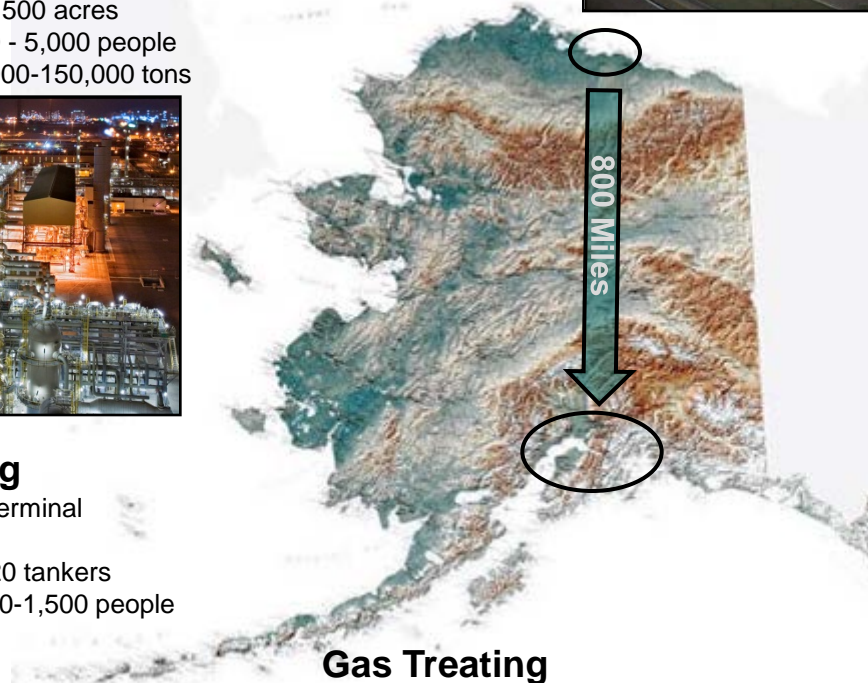
## Pipeline

- 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 CO<sub>2</sub> 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**

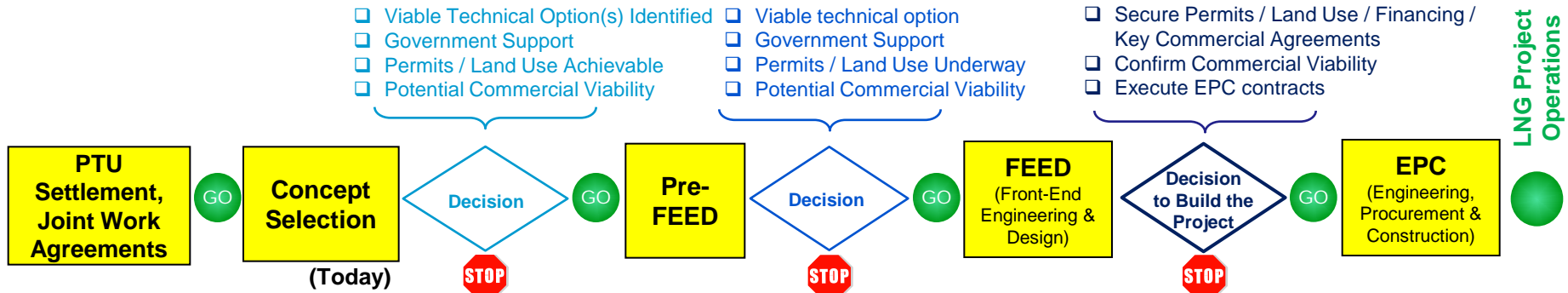
**Peak Construction Workforce: 9,000 – 15,000 jobs**

**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:



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

<b>Activities</b>	<b>Evaluate:</b>	<b>Progress:</b>	<b>Complete:</b>	<b>Execute:</b>
	<ul style="list-style-type: none"> <li>Range of technically viable options for major project components</li> <li>Business Structure</li> <li>In-state gas / export LNG demand</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary engineering to refine concept</li> <li>Business structure</li> <li>Financing plan</li> </ul>	<ul style="list-style-type: none"> <li>Front-end engineering &amp; design</li> <li>Major contract preparation</li> <li>Business structure</li> <li>Financing arrangements</li> </ul>	<ul style="list-style-type: none"> <li>Final engineering</li> <li>Financing</li> <li>Procurement</li> <li>Fabricate / Logistics / Construct</li> <li>Prepare for Operations</li> </ul>
	<b>Solicit Interest of Others</b>		<b>Solicit Interest of Others</b>	
	<b>Establish Government Support and Advance Regulatory Issues:</b>		<b>Advance Gov't / Reg. Issues:</b>	
	<ul style="list-style-type: none"> <li>Competitive oil tax environment; predictable / durable LNG project fiscal terms; AGIA Issues</li> <li>Assure ability to secure regulatory approvals / permits / land use</li> <li>Environmental activities / Technical data collection</li> <li>Stakeholder engagement</li> <li>File DOE Export License</li> </ul>		<ul style="list-style-type: none"> <li>Key permit / land use approvals</li> <li>Stakeholder engagement</li> <li>Secure DOE Export License</li> </ul>	
		<b>Start individual gas / LNG sales / shipping efforts</b>	<b>Execute individual gas / LNG sales / shipping agreements</b>	<b>Implement business structure &amp; agreements</b>
	<b>Screen commercial viability</b>	<b>Assess commercial viability</b>	<b>Confirm commercial viability</b>	<b>Commission / start-up</b>

\* 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.