

# COMMERCIALIZING NORTH SLOPE GAS



## Senate In-State Energy Committee

Thursday, March 21, 2013

Juneau, Alaska

**Dan Sullivan, Commissioner**

*Alaska Department of Natural Resources*

*[www.dnr.alaska.gov](http://www.dnr.alaska.gov)*

# OUTLINE



**PART I:** Land and Resource Base

**PART II:** Commercializing North Slope Gas

**PART III:** Advocacy on the Comparative Advantages  
of Alaska LNG

**PART IV:** Moving Forward in 2013

# PART I



## Land and Resource Base

# STATE of ALASKA

## - DEPARTMENT OF NATURAL RESOURCES -

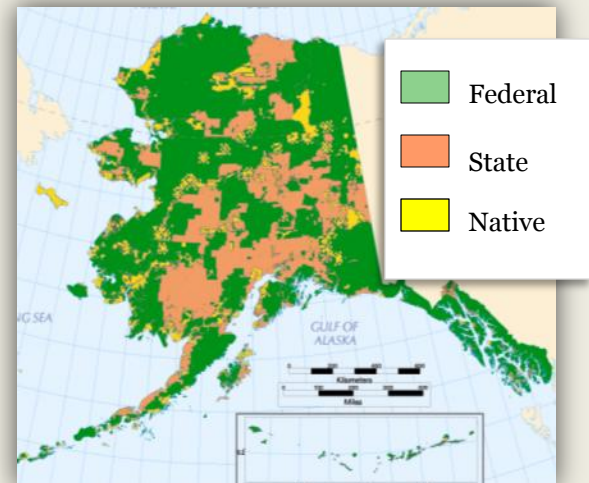


### Land Base

- 586,412 square miles—more than twice the size of Texas
- Is larger than all but 18 sovereign nations
- Has more coastline than all other U.S. states combined
- Has more than 3 million lakes and half of the world's glaciers
- Has approximately 40% of the nation's freshwater supply
- Is the least densely populated U.S. state

### Land Ownership

- *Federal Land*: more than 200 million acres
- *State Land*: Approx. 100 million acres of uplands, 60 million acres of tidelands, shore lands, and submerged lands, and 40,000 miles of coastline
- *Native Corporation Land*: 44 million acres



# ALASKA'S NORTH SLOPE OIL & GAS POTENTIAL

- USGS estimates that Alaska's North Slope has more oil than any other Arctic nation
  - **OIL:** Est. 40 billion barrels of conventional oil (*USGS & BOEMRE*)
  - **GAS:** Est. over 200 trillion cubic feet of conventional natural gas (*USGS*)
- Alaska has world-class unconventional resources, including tens of billions of barrels of heavy oil, shale oil, and viscous oil, and hundreds of trillions of cubic feet of shale gas, tight gas, and gas hydrates
  - Positive methane hydrate test production



*Compared to most hydrocarbon basins, Alaska is relatively underexplored, with 500 exploration wells on the North Slope, compared to Wyoming's 19,000.*

# PART II



## Commercializing North Slope Gas

# COMMERCIALIZING NORTH SLOPE GAS

## - 2012 STATE OF THE STATE AND BENCHMARKS-

### Key principles for any project

- Gas to address Alaska's in-state needs for abundant supplies of low-cost energy and economic growth
- Gas that will maximize the value of the state's massive resource base through high-volume and export markets
- A project that incentivizes exploration and investment in continued oil and gas development

### Governor's Roadmap to Gasline

1. Resolve Point Thomson
2. Align during the first quarter of 2012
3. Two projects—under AGIA and AGDC—complete discussions by third quarter of 2012 determining what potential exists to consolidate projects
4. Harden numbers on an Alaska LNG project by the third quarter of 2012, and identify a pipeline project and associated work schedule
5. If milestones are met, the 2013 Legislature takes up gas tax legislation designed to move the project forward

# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

**ExxonMobil**

**ConocoPhillips**



March 30, 2012

Governor Sean Parnell  
550 West 7<sup>th</sup> Avenue, Suite 1700  
Anchorage, Alaska 99501

Dear Governor Parnell,

Our three corporations, collectively and individually, value our relationship with Alaska and believe that its citizens across the state, as well as our shareholders around the world, share a common interest in responsible resource development. We write today to inform you of our progress in working together on the next generation of North Slope resource development.

Alaska's vast North Slope holds over 35 trillion cubic feet of discovered natural gas. To date, this gas has been used to enhance North Slope oil production, adding several billion barrels to Prudhoe and Kuparuk recoveries. However, under the right business climate, the full commercial potential of this world-class resource can be unlocked. North Slope gas commercialization will bring new job opportunities, increased state revenues, reliable in-state energy supplies and new exploration opportunities, which will benefit the entire state. North Slope oil and gas. This will be key toward reaching your goal of 1 million barrels per day through the Trans-Alaska Pipeline System.

Serious discussions between our companies have taken place along with the Alaska Pipeline Project (APP) parties who are supporting the AGIA License. We have aligned on a structured, stewardable and transparent approach with the aim to commercialize North Slope natural gas resources within an AGIA framework. As a result of the rapidly evolving global market, large-scale liquefied natural gas (LNG) exports from south-central Alaska will be assessed as an alternative to gas line exports through Alberta. In addition to broadening market access, a south-central Alaska LNG approach could more closely align with in-state energy demand and needs. We are now working together on the gas commercialization project concept selection, which would include an assessment of major project components including in-state pipeline routes and capacities, global LNG trends, and LNG tidewater site locations, among others.

Commercializing Alaska natural gas resources will not be easy. Unprecedented issues that must be resolved, and we cannot do it alone. Unprecedented capital for gas development will require competitive and stable financing in Alaska first be established. Appropriately structured, stable financing will create new opportunities around the world, and will play a pivotal role in making Alaska competitive in the global market and unlocking the economic potential of North Slope resources.

Point Thomson is an excellent example of a challenged, world-class resource. With approximately 25% of known North Slope natural gas, Point Thomson development is an important element in consideration of North Slope gas commercialization. However, economic models must span decades into an uncertain future to estimate economic returns. Your Administration has taken the lead in forging a Point Thomson settlement that will bring long-term resources, revenues and jobs to help Alaska's economy. With settlement now finalized, our companies are moving forward, as participating co-venturers, with the initial development phase at Point Thomson with confidence that North Slope gas development will ultimately bring the Point Thomson resource to market.

We agree the next generation of North Slope resource development is achievable, working together with the APP parties, as well as with the State of Alaska. Thank you for your leadership and your confidence in us to take on these challenges. We join you in a vision of prosperity and promise. There is much work to do and opportunities yet to discover.

Sincerely,

Rex Tillerson

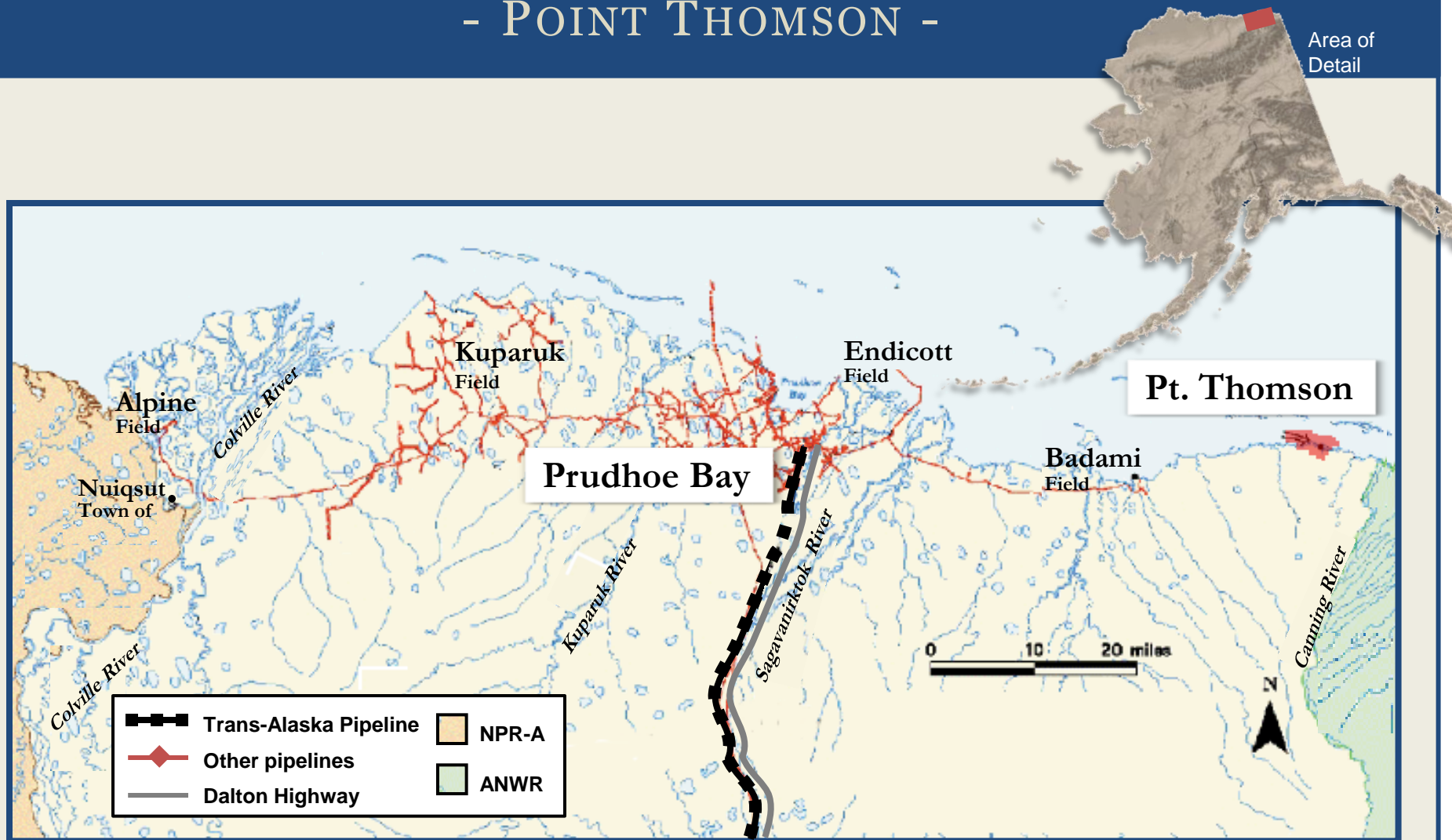
Jim Mulva

Bob Dudley

Serious discussions between our companies have taken place over the past several months, along with the Alaska Pipeline Project (APP) parties who are supporting the AGIA License. We have aligned on a structured, stewardable and transparent approach with the aim to commercialize North Slope natural gas resources within an AGIA framework. As a result of the rapidly evolving global market, large-scale liquefied natural gas (LNG) exports from south-central Alaska will be assessed as an alternative to gas line exports through Alberta. In addition to broadening market access, a south-central Alaska LNG approach could more closely align with in-state energy demand and needs. We are now working together on the gas commercialization project concept selection, which would include an associated timeline and an assessment of major project components including in-state pipeline routes and capacities, global LNG trends, and LNG tidewater site locations, among others.

# COMMERCIALIZING NORTH SLOPE GAS

## - POINT THOMSON -



# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

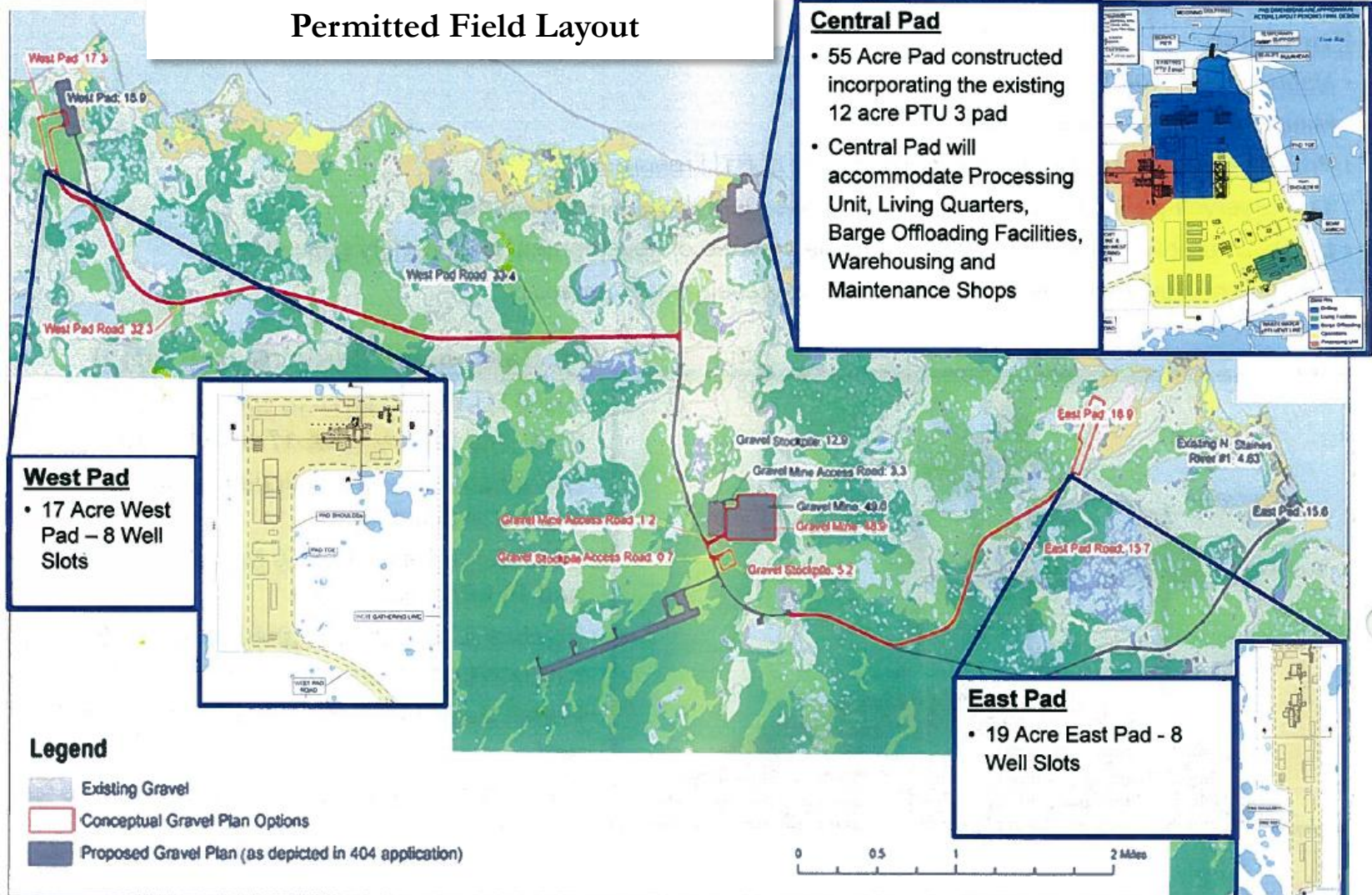
- Point Thomson is a multi-billion dollar project
- Beginning construction now
- Producing Point Thomson liquid condensate into TAPS as part of Phase 1
- Big prize – gas commercialization for LNG
- Significant portion of infrastructure being built for Phase 1 is applicable to a gas line or LNG project
- Three phases of development in 2012:  
explaining/defending settlement; permitting; and  
getting to work



# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

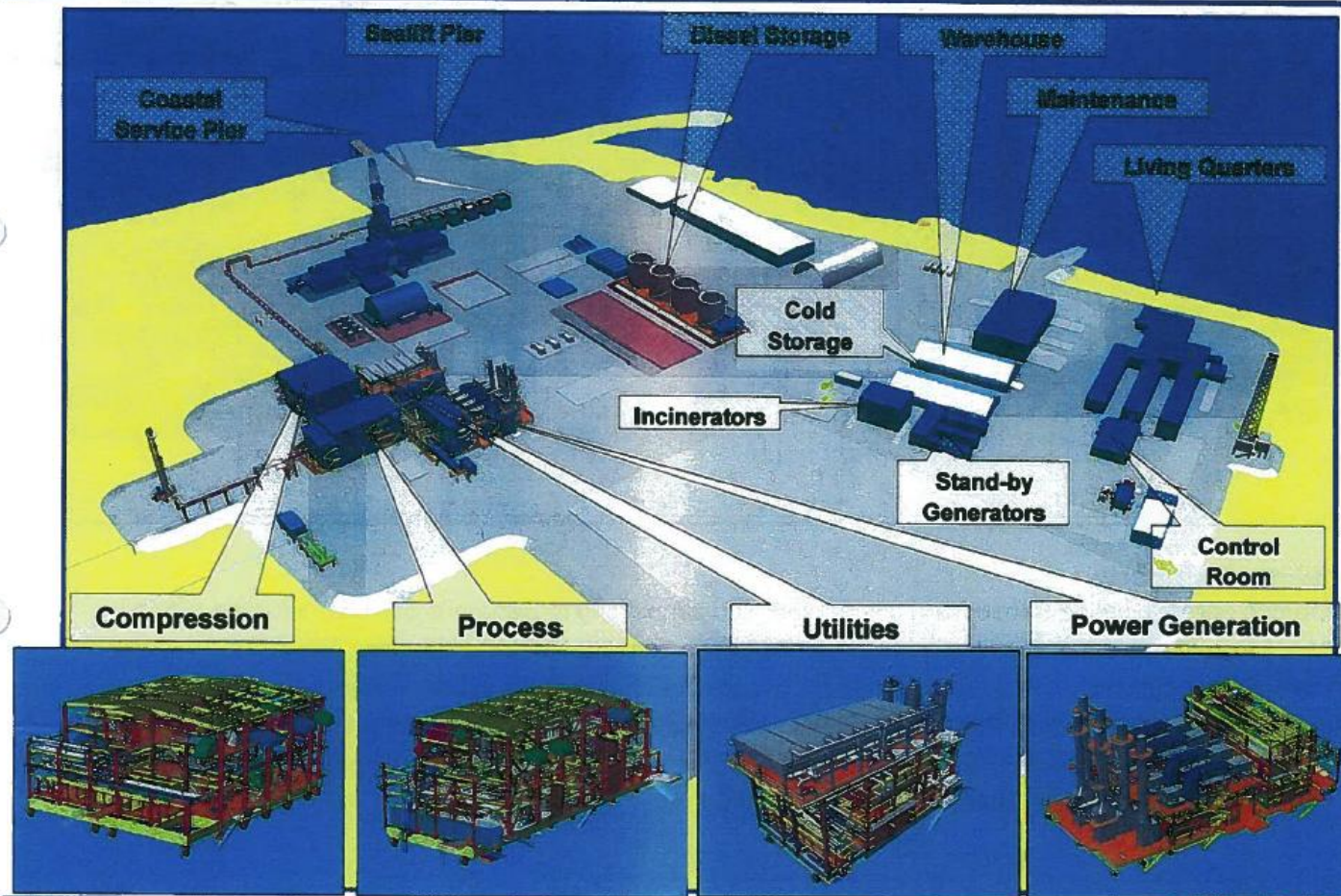
### Permitted Field Layout



# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

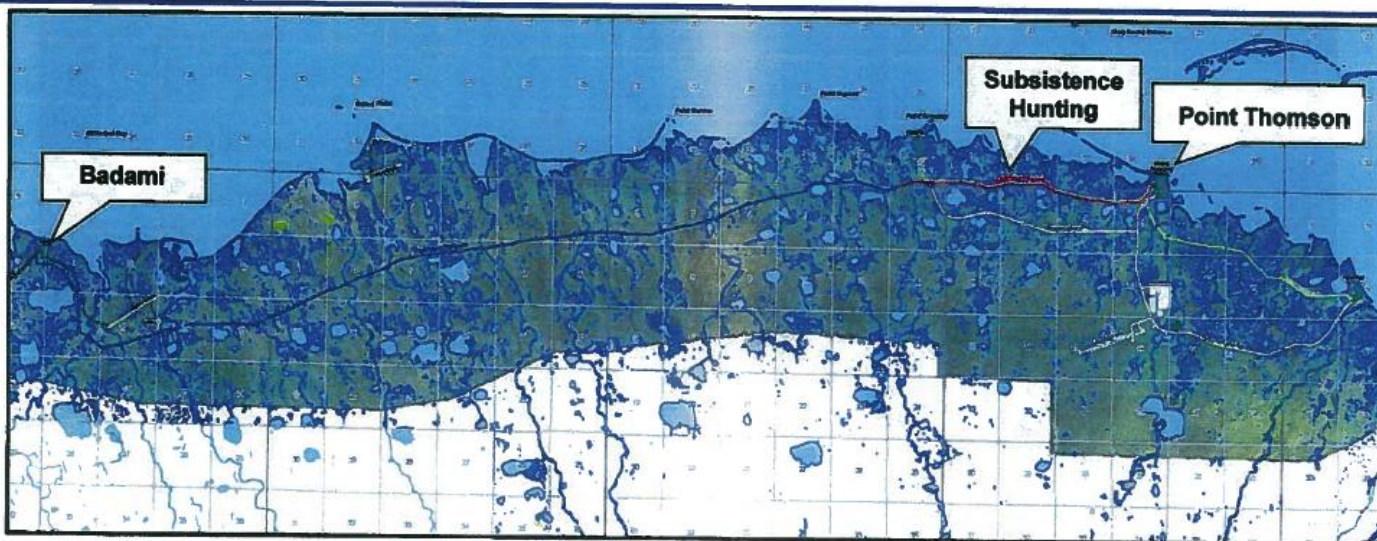
### Initial Production System at Central Pad



# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

### Point Thomson Export Pipeline (PTEP)



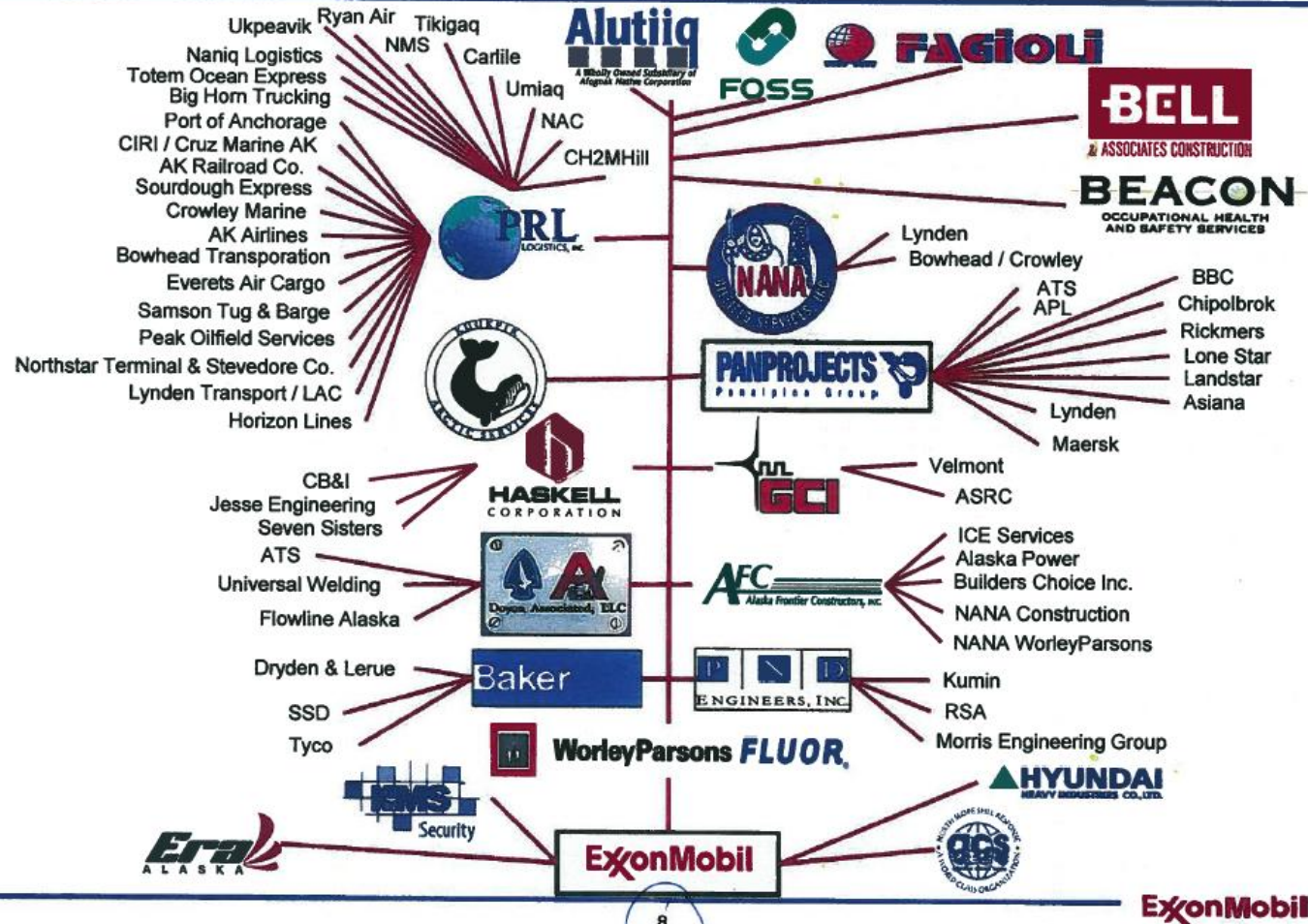
#### **Pipeline Summary:**

- Common carrier pipeline transporting condensate and connecting to Badami's Sales Oil Pipeline (BSOP)
- 12 inch export pipeline is 22 miles in length, sized for the expected full development (70kbpd)
- Above ground pipeline, over a relatively flat terrain; maximum difference in elevation is approx. 20 ft.
- Approximately 2,200 Vertical Support Members with minimum 7 foot clearance for animal migration
- First 5 miles of the export pipeline is within the subsistence hunting area of the Kaktovik Village
  - Increased pipe wall thickness from 0.406" to 0.500" after 'Bullet Impact Study'

# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

### Contractors



# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -



Petroleum News, January 20, 2013-

**"Point Thomson gets going"**

*"New field construction on Alaska's eastern North Slope cheers state officials"*

"Work to establish a new oil field at Point Thomson on Alaska's North Slope is starting to roll.

ExxonMobil, operator of the Point Thomson unit, has a variety of activities under way to take advantage of the winter construction season."



# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

**The State of Alaska has made significant progress on commercializing North Slope gas**

- Much of the upstream infrastructure is in place
- There is a renewed focus from key stakeholders on monetizing the massive reserves of North Slope gas
- Hundreds of millions of dollars have been spent on critical engineering and environmental regulatory and commercial work required for a gas project

***WSJ: Alaska, Gas Firms Clear Way For Pipeline***

*Point Thomson settlement  
“...paves the way for a pipeline project to ship natural gas from the North Slope, unleashing the state's massive gas reserves.” - WSJ, 3/30/12*

### **FT: Oil Groups Agree on \$40bn Alaska Gas Project**

*“ExxonMobil, BP and ConocoPhillips have reached agreement with the state of Alaska to take a significant step forward on a \$40bn-plus project to export liquefied natural gas to Asia, resolving a long-running lease dispute that had been holding up progress.*

*In a joint letter, the chief executives of the three companies said they were “aligned” on a plan to develop the huge gas reserves of Alaska’s North Slope, which until now have been stranded without a route to market.” - Financial Times, 3/30/12*



# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

**ExxonMobil**

**ConocoPhillips**



**TransCanada**

October 1, 2012

Governor Sean Parnell  
550 West 7<sup>th</sup> Avenue, Suite 1790  
Anchorage, Alaska 99501

Dear Governor Parnell:

On March 30, 2012, ExxonMobil, ConocoPhillips and BP submitted a letter informing you of progress in working together on the next generation of North Slope resource development. Since that time, the three producer companies and TransCanada, through its participation in the Alaska Pipeline Project (APP), have maintained momentum and executed important early work to select leading concepts for a potential project. We are writing to update you on the progress that has been made to date.

We established an integrated team, depicted on Attachment 1, to coordinate the efforts of over 200 professionals to date to progress this work. We have leveraged the respective talents and experience to advance a collective effort to select leading concepts for a liquefied natural gas (LNG) exports from Southcentral Alaska. We are writing to update you on the progress that has been made to date.

Our companies bring together specific expertise in Arctic operations and in LNG plant design and operation. Since our joint work on the North Slope has been ongoing, we have spent more than \$700 million in past work by our collective companies. This work was a direct result of our Producer Pipeline Team effort in 2001-02, the Denali Project contribution through AGIA). As a result, our work on an LNG project is critical as we consider decisions to move forward with an LNG development project.

- Developing a design basis for the pipeline, including permafrost
- Investigating multiple ways to remove and dispose of CO<sub>2</sub> and other contaminants
- Assessing use of existing and addition of new Prudhoe Bay field facilities
- Mapping multiple pipeline routing variations
- Assessing multiple pipeline sizes
- Providing for at least five in-state gas off-take points
- Completing preliminary geohazard and marine analysis of 22 LNG site locations
- Developing a design basis for the required LNG tanker fleet
- Evaluating multiple LNG process design alternatives
- Confirming a range of gas blends from the Prudhoe Bay and Point Thomson fields can generate a marketable LNG product

We have narrowed the broad range of alternative development concepts and assessed major project components, including the gas pipeline, gas treatment to remove CO<sub>2</sub> and other impurities, natural gas liquefaction, LNG storage, and marine terminal facilities as described on Attachment 2. Individually,

Governor Sean Parnell

- 2 -

October 1, 2012

each of these components would represent a world-class project. Combined, they result in a mega-project of unprecedented scale and challenge; up to 1.7 million tons of steel, a peak construction workforce of up to 15,000, a permanent workforce of over 1,000 in Alaska, and an estimated total cost in today's dollars of \$45 to \$65+ billion.

Additional accomplishments

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Alaska's North Slope natural gas resources must compete in the global energy markets in order to deliver state revenues, in-state energy supplies, new job opportunities and other economic benefits to Alaskans. While North Slope gas commercialization is challenging, working together, we can maintain the momentum toward our shared vision for Alaska. We will continue to keep you advised of our progress and stand committed to work with the State to responsibly develop its considerable resources.

Sincerely,

Randy Broiles  
ExxonMobil  
Production Company

Trond-Erik Johansen  
ConocoPhillips Alaska, Inc.

John Mingé  
BP Exploration Alaska

Tony Palmer  
TransCanada

Attachments

# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

The companies 3Q announcement attracted significant national and international press.

### *WSJ: Natural Gas Glut Pushes Export*

*"The long-awaited effort is expected to have a significant impact not just on Alaska and its economy, but also on U.S. construction and manufacturing companies that would supply steel and other materials for an 800-mile pipeline and the plant that would convert the gas into liquid for export on tankers." - WSJ, 10/4/12*

### *The Globe and Mail: Alaska plan intensifies gas race to Asia*

*"A massive new proposal to export natural gas from Alaska brings a major competitor into the race to carry North American gas to Asia, and adds pressure on Canadian export projects to build quickly or risk losing out..."*

*It is notable for the stature of its backers—BP PLC, Exxon Mobil Corp., ConocoPhillips Co. and TransCanada Corp., which have now joined forces after dueling for years over separate gas pipeline projects—and for its scale." - Globe and Mail, 10/4/12*



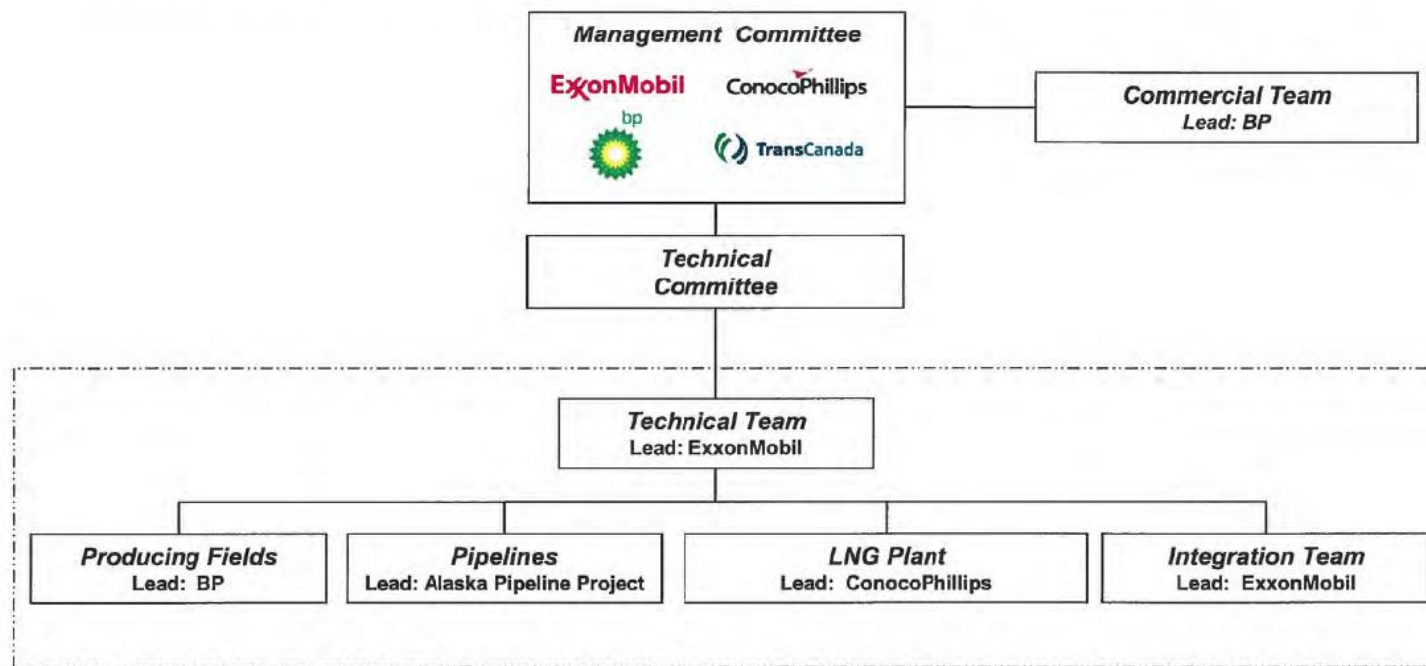
Photo: Getty Images courtesy of WSJ

# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

### Attachment 1

### 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

# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

### Attachment 2

## 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



### 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



### Storage / Loading

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



### 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

### 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



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.

# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS -

### Attachment 3

## 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	<b>Evaluate:</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>	<b>Progress:</b> <ul style="list-style-type: none"> <li>Preliminary engineering to refine concept</li> <li>Business structure</li> <li>Financing plan</li> </ul>	<b>Complete:</b> <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>	<b>Execute:</b> <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> <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>			<b>Advance Gov't / Reg. Issues:</b> <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>Complete Gov't / Reg. Issues:</b> <ul style="list-style-type: none"> <li>Secure remaining construction / operating permits</li> <li>Stakeholder engagement</li> </ul>
	Screen commercial viability	Assess commercial viability	Confirm commercial viability	Implement business structure & agreements
			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.

# PART III



## Advocacy on the Comparative Advantages of Alaska LNG

# STATE-BACKED EFFORTS & SIGNIFICANT STATE FINANCIAL RESOURCES

**The State of Alaska is leading two state-backed efforts to commercialize Alaska's abundant North Slope gas resources**

## **1. Alaska Pipeline Project (APP)**

- Private-sector led
- State funding and reimbursements up to \$500 million as an initial investment

## **2. Alaska Gasline Development Corporation (AGDC)**

- State funded
- Led by State of Alaska corporation (AGDC) whose mission is to commercialize North Slope gas resources
- Significant regulatory permitting progress

**The State of Alaska has significant financial assets to assist with these two efforts**

- Alaska owns royalty gas—12.5% to 20%—as part of the state's oil and gas leases to companies
- Alaska has the largest sovereign wealth fund in the United States—the Alaska Permanent Fund Corporation: \$40 billion
- Alaska has a budget reserve of \$20 billion
- Alaska has a retirement fund worth \$18 billion
- Alaska is triple-A rated

# COMPARATIVE ADVANTAGES OF AK LNG

## - HUGE GAS RESOURCE BASE -

- The North Slope of Alaska is estimated to have over 200 trillion cubic feet of conventional gas
- Conventional gas is not controversial—unconventional gas in the Lower 48 U.S. states remains controversial
- 35 trillion cubic feet of known reserves
- Prudhoe Bay reinjects 8 billion cubic feet of gas per day, which is enough to meet Canada's daily gas needs
- These numbers do not include the trillions of cubic feet of shale gas, tight gas, and gas hydrates estimated for the North Slope
- This is an almost inexhaustible supply of gas with new technology
- North Slope gas is “wet” gas with a high energy content (BTU value)
- An Alaska LNG project has complete certainty of supply; not all other projects do

# COMPARATIVE ADVANTAGES OF AK LNG

## - CO-LOCATED WITH EXISTING OIL & GAS INFRASTRUCTURE -

- Existing oil and gas infrastructure on the North Slope can be utilized for a large-scale LNG project
- The route for a large-scale LNG project would be the same or similar to the existing Trans-Alaska Oil Pipeline route, which will save on costs and have a limited impact on the environment



# COMPARATIVE ADVANTAGES OF AK LNG

## - EXCEPTIONAL RECORD OF RELIABILITY -

- Alaska has a longstanding tradition of reliably exporting LNG to Asia
  - Alaska has been exporting LNG to Japan for over 40 years
  - Alaska has transported 2.5 trillion cubic feet of gas to Asia (the majority to Japan) over this time
  - Alaska has never missed a LNG cargo shipment to Asia
- Alaska is the only place in the United States exporting LNG
- Alaska does not use gas supplies for political purposes

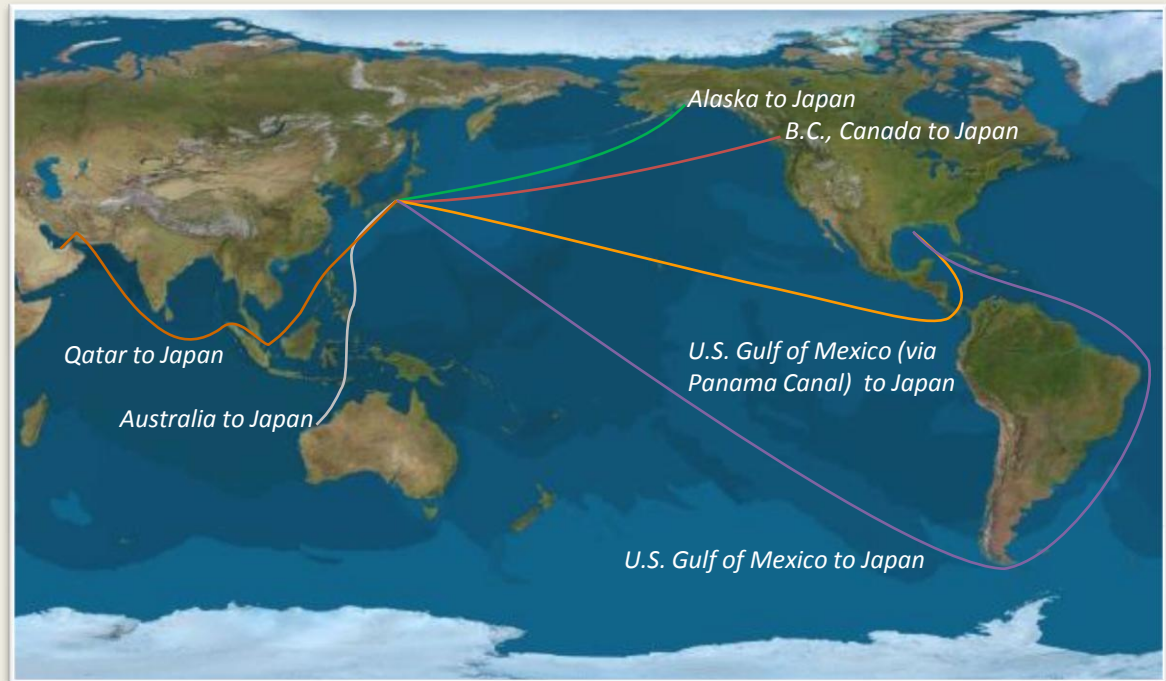


LNG tanker at the Kenai, Alaska LNG marine export terminal.  
Photo from ConocoPhillips, "The Kenai LNG Plant celebrates 40 years."

# COMPARATIVE ADVANTAGES OF AK LNG

## - GEOGRAPHIC PROXIMITY, POLITICAL/LEGAL STABILITY, & COST COMPETITIVENESS -

- Close proximity to Japan
- Avoids strategic shipping choke points that other sources of LNG must traverse
- Benefits from American legal and political stability and the rule of law
- No looming conflicts in the region
- Proximity/shipping costs are very low
- Use of existing infrastructure and pipeline routes reduces costs



- Cold weather efficiencies significantly decrease processing costs compared to warmer climates

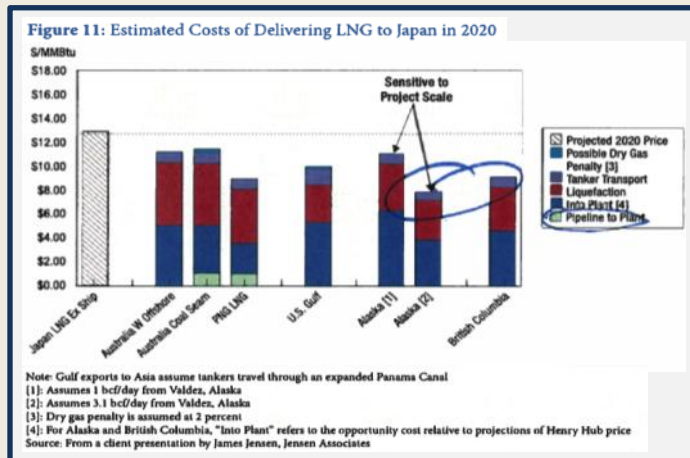
# COMPARATIVE ADVANTAGES OF AK LNG

## - COST COMPETITIVE COMPARED TO OTHER GLOBAL LNG PROJECTS -

### Recent Studies To Support Competitiveness

**Brookings Institution (2012)**, the public policy organization, published a policy brief that discussed the strong competitive position of a potential, large-scale Alaska LNG to Asia project.

- Alaskan exports may prove to be a source of strong competition at the margin for U.S. LNG in the Pacific Basin. An Alaska project may be one of the least costly alternatives for delivering LNG to Japan in 2020



**Wood Mackenzie (2011)**, the global research and consulting firm, completed a study for the State of Alaska to evaluate the economic competitiveness of Alaskan LNG exports relative to other projects.

- Alaskan LNG exports would be competitive and could generate between \$220 and \$419 billion
- Alaskan LNG exports have a delivered cost structure *below* \$10/MMBtu
- Most competing Australian projects and proposed North American LNG exports yet to secure Final Investment Decision are expected to deliver LNG to Asia at a cost of \$10-\$12/MMBtu under current gas price assumptions

# COMPARATIVE ADVANTAGES OF AK LNG

## -WORLD-CLASS BUSINESSES & LNG PRODUCERS CURRENTLY OPERATING -

- World-class businesses and LNG producers have already invested billions of dollars on LNG studies and oil and gas infrastructure in Alaska
- Companies are working closely together/integrating efforts
- Highly trained workforce in Alaska can ensure competitive labor costs
- Strong oil and gas service support industry already in place

# COMPARATIVE ADVANTAGES OF AK LNG

## - SIGNIFICANT PROGRESS ON EXPORT LICENSE AND OTHER REGULATORY MATTERS -

- Existing Alaska LNG export facility has a U.S. Department of Energy export license and has been reliably exporting LNG to Asia for over 40 years
- Not part of Lower 48 shale debate and controversy
  - Stranded gas—no effect on national gas market in the Lower 48 U.S. states
  - Large LNG Alaska project will get more gas to Americans, not less
- First Nation and Native land claim issues have already been resolved
- Previous and upcoming Environmental Impact Statements (EIS)—Yukon Pacific/AGDC
- Federal Energy Regulatory Commission (FERC) filing/resource reports
- State regulatory approvals are in place to produce and transport gas



# COMPARATIVE ADVANTAGES OF AK LNG

## - SIGNIFICANT PROGRESS ON EXPORT LICENSE AND OTHER REGULATORY MATTERS -

989  
Federal Register  
Vol. 53, No. 10  
Friday, January 15, 1988

### Presidential Documents

Title 3— Presidential Finding of January 12, 1988

The President

#### Presidential Finding Concerning Alaska Natural Gas

This Administration has been dedicated to encouraging free trade and to removing regulatory impediments that inhibit the development of our Nation's natural resources. Proven natural gas reserves in the Prudhoe Bay area of Alaska's North Slope represent approximately 15 percent of total U.S. gas reserves. In addition, undiscovered, recoverable supplies of natural gas in Alaska's North Slope may exceed 100 trillion cubic feet. It is the policy of this Administration to ensure the development of Alaska's natural gas resources in a manner that

**Accordingly, I find that exports of Alaska natural gas in quantities in excess of 1,000 Mcf per day will not diminish the total quantity or quality nor increase the total price of energy available to the United States.**

ensuring adequate supplies of natural gas, including oil from the North Slope of Alaska, to meet the demand of American consumers for the foreseeable future. This demand can be met by lower-48 production and already-approved Canadian imports. If necessary, this demand also can be met at lower delivered energy cost by coal, oil, imported liquefied natural gas (LNG), natural gas from Mexico, and other energy sources.

There exist adequate, secure, reasonably priced supplies of natural gas to meet the demand of American consumers for the foreseeable future. This demand can be met by lower-48 production and already-approved Canadian imports. If necessary, this demand also can be met at lower delivered energy cost by coal, oil, imported liquefied natural gas (LNG), natural gas from Mexico, and other energy sources.

Given these facts, exports of Alaska natural gas would represent a judgment by the market that the energy demands of American consumers can be met adequately from other sources at comparable or lower prices. Exports of Alaska natural gas would not diminish the total quantity or quality of energy available to U.S. consumers because world energy resources would be increased and other more efficient supplies would thus be available. Finally, exports would not increase the price of energy available to consumers since increased availability of secure energy sources tends to stabilize or lower energy prices.

Accordingly, I find that exports of Alaska natural gas in quantities in excess of 1,000 Mcf per day will not diminish the total quantity or quality nor increase the total price of energy available to the United States.

This finding removes the Section 12 regulatory impediment to Alaskan natural gas exports in a manner that allows any private party to develop this resource and sets up competition for this purpose. It is my belief that removal of this impediment to private sector development of Alaska's vast natural gas resources, using private sector resources with no government subsidy, will benefit our entire Nation.

1000 Federal Register / Vol. 53, No. 10 / Friday, January 15, 1988 / Presidential Documents

This finding represents a determination that the effects of exports of Alaska natural gas on American consumers would comply with the market criteria of Section 12 in the context of current and projected future energy markets and that such exports would be consistent with our comprehensive energy policy. It does not assess the merits or feasibility of a particular project, but rather lets the marketplace undertake a realistic consideration of various options concerning Alaska natural gas. The operation of market forces is the best guarantee that Alaska natural gas will be developed efficiently and that there is an incentive to find additional reserves.

I do not believe that the completion of the Alaska Natural Gas Pipeline will diminish our natural resources. To this end the Administration supports the removal of barriers to the private sector's development of Alaska's natural gas. In particular, I want to reaffirm our commitment to the "prebuild" portion of the pipeline guarantees.

Federal Register.

THE WHITE HOUSE,  
Washington, January 12, 1988.

*Ronald Reagan*

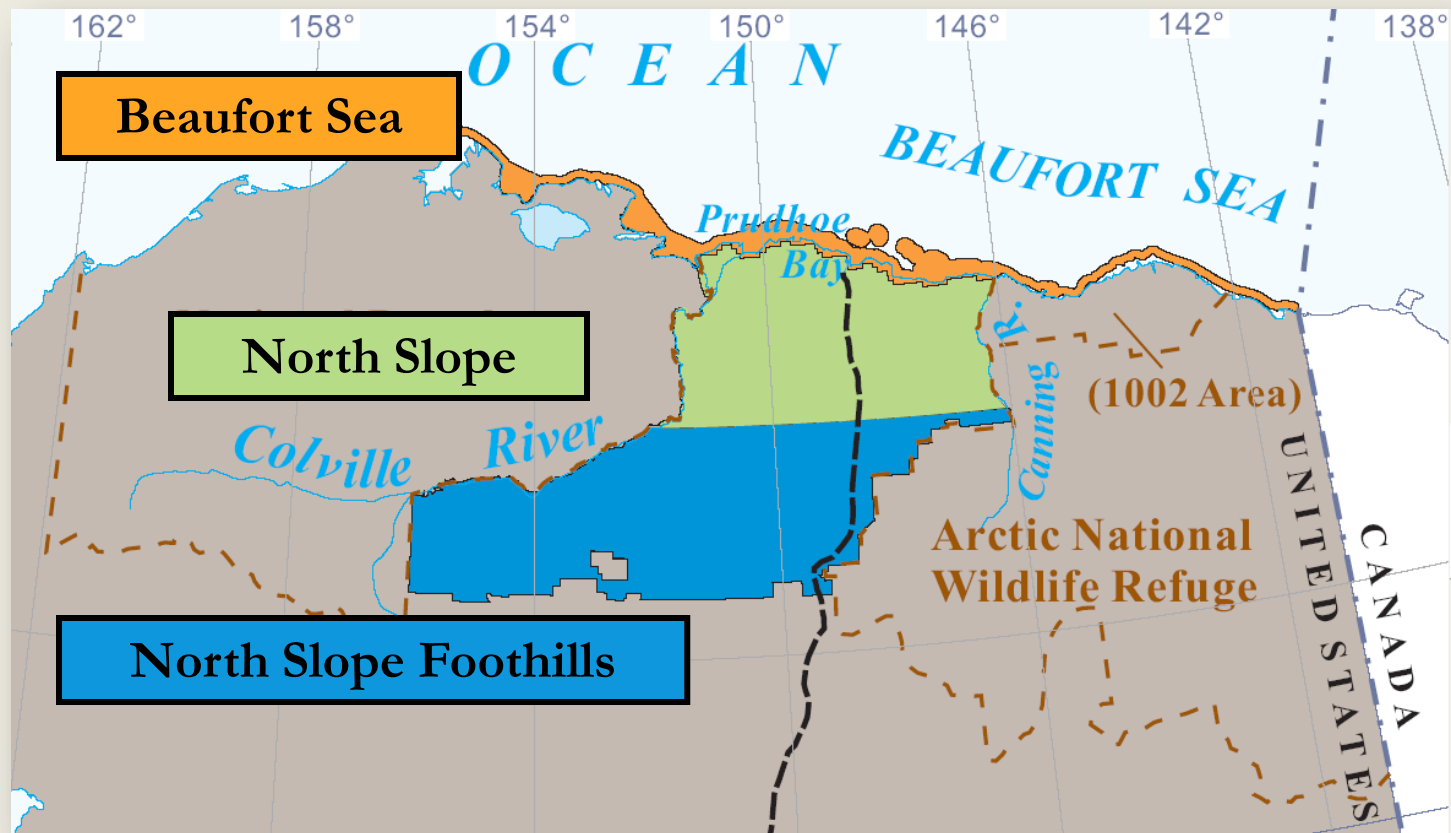
(PR Doc. 88-008)  
Filed 1-13-88; 2:30 pm  
Billing code 2195-C9-M

**Presidential Finding of January 12, 1988, set a strong precedent that may still be applicable today.**

# COMPARATIVE ADVANTAGES OF AK LNG

- DOWNSTREAM AND UPSTREAM  
INVESTMENT OPPORTUNITIES -

North Slope, North Slope Foothills, and Beaufort Sea  
Areawide Oil and Gas Lease Sales—*November 7, 2012*



# COMPARATIVE ADVANTAGES OF AK LNG

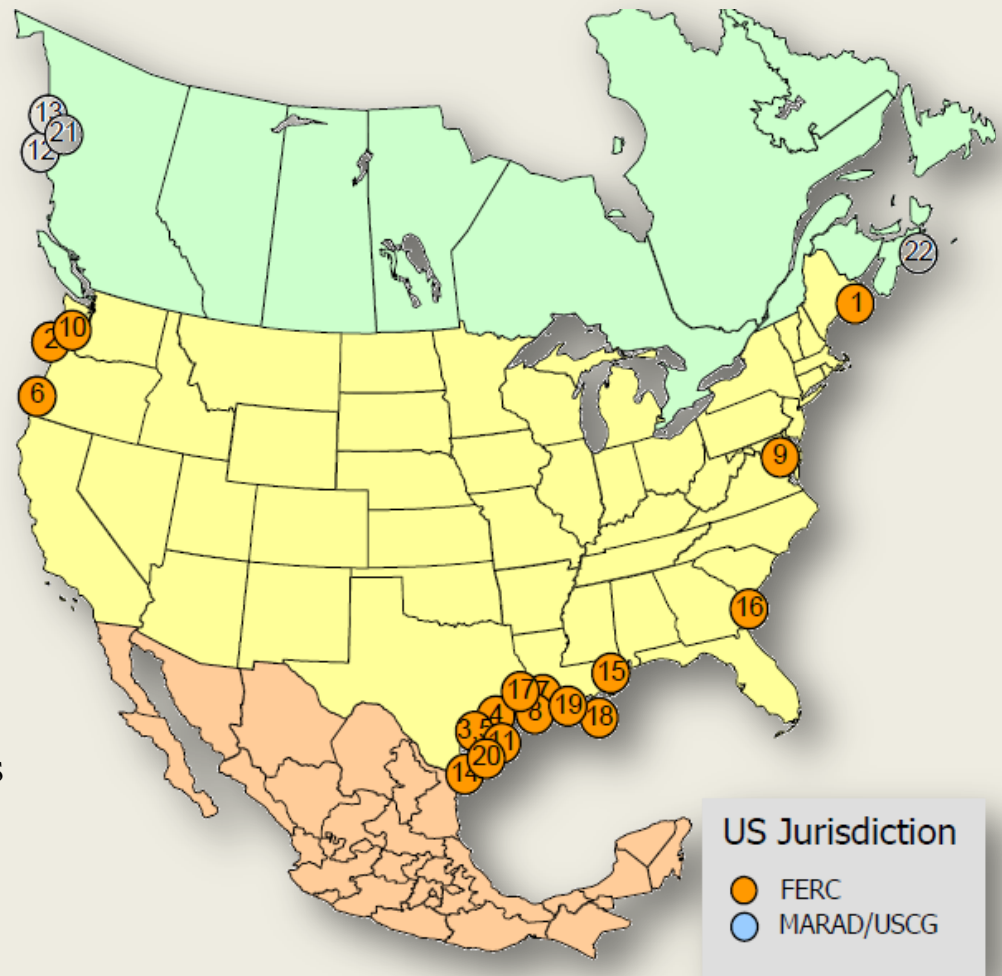
## - OTHER PROJECTS OR REGIMES IN COMPARISON -

### Western Canada/British Columbia

- Resource-risk
- First Nations land claim issues unresolved
  - “First Nations across Canada attempt to stall Northern Gateway, Kitimat, Enbridge,” Petroleum News, December 2, 2012

### Lower 48

- Shale gas controversy
- Regulatory issues and gas export limits
- Export infrastructure constraints



North American LNG Import/Export proposed terminals,  
U.S. Federal Energy Regulatory Commission

# COMPARATIVE ADVANTAGES OF AK LNG

## - OTHER PROJECTS OR REGIMES IN COMPARISON -

### Australia

- Cost overruns e.g., Gorgon
  - “Chevron’s Gorgon project cost up 40% to \$52 billion,” MarketWatch, *Wall Street Journal*, December 6, 2012
- Skyrocketing labor costs
  - “Price Crunch Looms for Australian LNG,” *Wall Street Journal*, September 24, 2012

### Russian Arctic

- Resource-risk
- Reliability
- Political and legal stability

### Qatar

- Political and legal stability
- Regional politics and lack of security

### Other US/Alaska Benefits

- U.S.-Korea Free Trade Agreement (FTA)
- No Committee on Foreign Investment in the United States (CFIUS) issues

### Seeing Results

- Kogas, REI, Mitsui

# PART IV



## Moving Forward in 2013

# GOVERNOR'S 2013 STATE *of the* STATE

## - BENCHMARKS FOR COMMERCIALIZING NS GAS -

1. Strengthen AGDC
2. **By February 15, private parties involved in APP must select a concept on an all-Alaska project; they must describe and detail the project and pipeline specifications. More specifically, telling us:**
  - the size of the pipe and the daily volume of gas
  - the location of the gas treatment plant and detailing the number of compressor stations to move the gas along
  - the size and scope of the liquefaction plant and LNG storage tanks
  - the number of off-take points to ensure that Alaskans can utilize our gas for our needs
3. **Spring 2013: Companies finalize an agreement to advance to Pre-FEED** (front-end engineering design)
  - Pre-Feed – hundreds of millions of private-sector dollars
4. **Producers ensure a full summer field season** (Summer 2013)
5. **“We can accelerate a merger between the State’s two parallel paths, and help avoid redundant costs between the projects.” – Gov. Parnell**

*“Most importantly, we want to ensure that APP’s concept components are designed to ensure Alaska’s gas goes to Alaskans first.”*  
– Gov. Parnell

# GOVERNOR'S 2013 STATE *of the* STATE

## - BENCHMARKS FOR COMMERCIALIZING NS GAS -

“Tonight, I set another important benchmark for the private parties involved in the Alaska Pipeline Project: By February 15 – one month from now – they must select a concept on an all-Alaska project.” – *Gov. Parnell, State of the State*



### Companies release new details on pipeline

Published: February 15, 2013

By BECKY BOHRER — Associated Press

JUNEAU, Alaska — The companies pursuing a major natural gas project in Alaska released new details of the effort Friday, satisfying the first in a new series of benchmarks laid out by Gov. Sean Parnell.

The good news today, and it's very good news, it's the first time in our state's natural gas history that companies who can build, fill and operate a large diameter pipeline have together selected a pipeline plan," he told a group in Fairbanks.

In his State of the State address last month, said he wanted to know by Friday details including the size of the pipe, daily volume of gas, updates on the gas treatment and liquefaction plants and the number of off-take points to allow for gas to be used in-state, for Alaskans energy needs.

Mobil Production Co., BP Alaska, ConocoPhillips Alaska and TransCanada Corp., responded to a request in a letter to Parnell. They said they were looking at a 42-inch diameter pipeline that would carry 1 to 3 1/2 billion cubic feet of gas a day and would have five off-takes along the route.

The treatment plant would be on the North Slope, and the footprint of the liquefaction plant would be 200 acres. There was no word on where the terminus might be.

Last year set an initial round of benchmarks aimed at jolting alive the seemingly stalled project. In Slope's three major players - Exxon Mobil, BP and ConocoPhillips - and TransCanada agreed some details along with a timeline for work and decision-making on what a project that could cost more than \$65 billion.

After, the companies reiterated their desire for a "competitive, predictable and durable oil and gas environment." They said that "will be required for a project of this unprecedented scale, complexity to compete in global energy markets."

One of the issues the companies have said they want addressed by the end of the next phase, is to include preliminary engineering and a financing plan.

The next benchmarks are for the companies to finalize an agreement to move into that next stage by the end of a full summer of field work. Once those are met, "the project will finally move at the pace of Alaskans demand and our future requires," he told the Fairbanks group.

He long hoped for a gas line as a way to create jobs, provide more reliable energy and shore up Alaska's oil production declines. Given the history, Parnell said in an interview that he understands "cast a bit of a skeptical eye" when hearing about progress on a line that has yet to be built.

At the same time, they (the companies) have done everything I've asked when it comes to moving the project forward, meeting the benchmarks. I think Alaskans should be encouraged in that," he said.

ExxonMobil ConocoPhillips bp TransCanada

February 15, 2013

Governor Sean Parnell  
550 West 7<sup>th</sup> Avenue, Suite 1790  
Anchorage, Alaska 99501

Dear Governor Parnell,

On October 1, 2012 we updated you on the progress ExxonMobil, ConocoPhillips, and TransCanada had made to advance North Slope natural gas development. At that time, we described our plans for progressing concept selection. Today, we are pleased to report that we have completed the concept selection phase.

Attached is a summary of the major project components, including the gas pipeline, gas treatment facilities and the liquefaction, storage and terminal facilities. The project includes five off-take points along the pipeline route to ensure Alaskans access to burning and dependable energy source. Capacity ranges reflect the expected sea variability. The conceptual design reflects the integrated teamwork of over 300 people on behalf of our companies.

Our companies are now working toward the next decision points. As outlined in our October 1, 2012, a competitive, predictable and durable oil and gas fiscal environment required for a project of this unprecedented scale, complexity and cost, to compete in global energy markets.

A successful Alaska LNG project would result in thousands of jobs and the opportunity for decades of domestically-produced natural gas for homes and businesses in Alaska. We remain committed to responsibly developing the State's considerable resources and to you advised of our progress. We also have plans to update the Legislature at a Legislative Hearing on February 19.

Sincerely,

Randy Broiles  
ExxonMobil Production Company

Trond-Erik Johansen  
ConocoPhillips Alaska, Inc.

Janet Weiss  
BP Exploration Alaska

Tony  
TransCanada

Attachment

### Proposed Alaska LNG Project Concept

Pipeline	Diameter: 42"
	Design Rate <sup>1</sup> : 3 – 3.5 billion cubic feet
	Length: ~800 miles (primarily underground)
	Compressor Stations: up to 8
Gas Treatment Plant	Location: North Slope, near Prudhoe Bay
	Footprint: 150 – 250 acres
Liquefaction Plant	Capacity <sup>1</sup> : 15 – 18 million tons per annum (MTA)
	Facility: 3 trains
Storage and Loading	Footprint: 400 – 600 acres
	LNG Storage Tanks: 2 tanks @ 160,000 cubic meters per tank
State Off-takes	Terminal: 1 loading jetty with 2 berths
	Off-takes: 5 points along pipeline route
Capital Investment	Design Rate: 250 – 500 million standard cubic feet per day, based on demand
	Estimate <sup>2</sup> : \$45 – \$65 USD-Billion

# CONCEPT SELECTION

## **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

### **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

### **Alaska SCLNG Project Concept Information**

**PTU Field Layout**



**PBU Central Gas Facility Tie-in**



# CONCEPT SELECTION

## SCLNG - Concept Summary - Midstream

## 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

## Gas Pipeline and Compression Stations

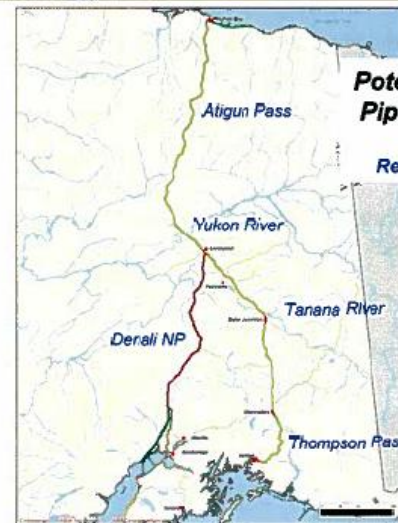
- 800+ mile 42" x80 pipeline
- 3-3.5 billion cubic feet gas per day
- Eight compressor stations (30kHP each)
- Pipeline contents will be treated gas, impurities removed
- Designed to manage continuous and discontinuous permafrost regions
- Expansion potential with additional compression if appropriate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

## Alaska SCLNG Project Concept Information

## NS Gas Treatment Plant Design



### Potential SCLNG Pipeline Routes



### Reference Points

Work Product In Progress

# CONCEPT SELECTION

## ***SCLNG - Concept Summary – Downstream***

Alaska SCLNG Project  
Concept Information

### **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

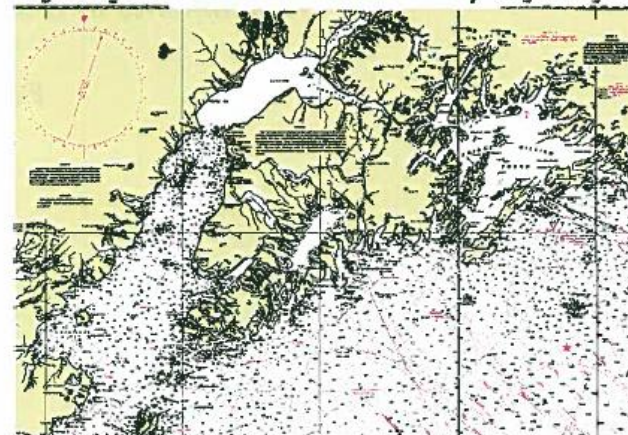
**SCLNG Plant and Storage**



### **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**



# CONCLUSION

- Alaska gas/LNG is back on the global stage
  - Interested buyers, e.g., KOGAS, REI, others
  - Prominent recognition at key conferences, e.g., LNG Producer-Consumer Conference (Tokyo), LNG17 (Houston)
- Strong progress from both state efforts—APP & AGDC
- Governor's Interior Energy Plan complements these efforts while addressing more immediate energy needs
- Continued alignment among key stakeholders and markets is critical
- All policy makers should encourage accelerated progress (particularly movement into Pre-Feed stage)
- Regulatory and permitting issues are also critical
- Most important—All Alaskans working together
  - Global competition is fierce
  - Window of opportunity is not open indefinitely
  - Fighting for—not over—a gasline