

# *Commercializing* Alaska LNG

Daniel S. Sullivan

*Commissioner, Alaska Department of Natural Resources*

Joint Senate and House Resources Committee

*LNG Update & Report on the 17<sup>th</sup> International Conference &  
Exhibition on LNG*

Thursday, May 30, 2013



Prudhoe Bay Central Gas Facility  
Photo courtesy of BP

# OUTLINE



## **PART I:**

Update on Natural Resource & Energy Issues

## **PART II:**

The 17th International Conference & Exhibition on LNG

## **PART III:**

Federal – State Regulatory Issues

# PART I



## Update on Natural Resource & Energy Issues

# NATURAL RESOURCE AND ENERGY ISSUES

## - OIL & GAS RESOURCE EVALUATION & EXPLORATION PROPOSAL FOR THE ARCTIC NATIONAL WILDLIFE REFUGE 1002 -



### The Oil and Gas Resource Evaluation & Exploration Proposal for the Arctic National Wildlife Refuge 1002 Area



State of Alaska  
Department of Natural Resources  
Division of Oil and Gas  
2013

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Figure 5-6  
ANWR Coastal Plain Exploration Scenario  
Year 4: Begin drilling 4 new prospects in Western 1002 Area



Figure 5-7  
ANWR Coastal Plain Exploration Scenario  
Year 5: Drill 3 new prospects + 1 delineation well, Western sub-area



### Chapter 7 Benefits to the Nation and to the State of Alaska

The low impact exploration activities detailed in this proposal provide a path forward for policy makers to obtain a thorough understanding of the oil and gas resources that may be present in ANWR. As discussed in Chapter 3, earlier estimates of the 1002 Area's potential have placed it as one of the most prolific, under-explored conventional hydrocarbon basins in the country. If Congress decides to allow responsible development of the 1002 Area, a wide range of benefits could accrue to Alaska and the Nation as a whole. ANWR development could bolster energy that support energy and national security by supplying secure domestic sources of increased revenues to the national treasury and increased employment for Americans who work.

When the Alaska Statehood Act was being debated by Congress, there was significant concern about how the new state - one of the poorest in the country - could support itself without an established industrial base. As a result, the Alaska Statehood Act allowed the State of Alaska to select 100 million acres of land from the federal public domain to build an economic foundation for the new state. The Act also granted Alaska the right to all minerals underlying its jurisdiction and reserved the state to retain this mineral interest when conveying interests in the surface estate, so that revenues from mineral development would directly support the State's economy.

Consistent with the Congressional action to secure economic independence for Alaska with the mineral revenue from these lands, the Alaska Constitution provides that "it is the policy of the State to encourage the settlement of its land and the development of its resources by making them available for the maximum use and enjoyment with the public interest." (Article V, Section 1)

Below we provide a brief analysis of the primary benefits that could accrue to Alaska and the U.S. due to exploration and development in the 1002 Area. The estimates and revenue forecasts in this proposal are approximations based on current resource estimates, existing laws and policies, and tax structures in place today.

#### Domestic Energy Supply, Domestic Needs, and Energy Independence

The potential supply of oil and gas from the 1002 Area is significant on both local and national levels. Alaska's North Slope currently produces under 600,000 barrels of oil per day; a significant decline since the peak production of 2.2 mil-



# NATURAL RESOURCE AND ENERGY ISSUES

## - OIL & GAS RESOURCE EVALUATION & EXPLORATION PROPOSAL FOR THE ARCTIC NATIONAL WILDLIFE REFUGE 1002 -

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Governor Sean Parnell  
STATE OF ALASKA

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May 18, 2013

The Honorable Sally Jewell  
Secretary  
United States Department of the Interior  
1849 C Street NW  
Washington, DC 20240

Dear Secretary Jewell,

Congratulations on your nomination and confirmation to lead the Department of the Interior. Your leadership and decisions will be significant to the future of the State of Alaska and the United States. I wish you the best and offer assistance and partnership from my Administration.

One area under your management is the coastal plain of the Arctic National Wildlife Refuge (ANWR), as described in Section 1002 of the Alaska National Interest Lands Act. The 1002 Area and the remainder of ANWR are the subject of a multi-year planning process led by the U.S. Fish and Wildlife Service to update the ANWR Comprehensive Conservation Plan (CCP). My Administration has participated in several scoping and comment periods in regard to the CCP. Our comments and letters have encouraged DOI to consider the potential for oil and gas exploration and development in the 1002 Area. Indeed, we believe that such a consideration is required by law. To our disappointment, the Department of the Interior has indicated that they have no intention of considering this alternative for the 1002 Area.

Therefore, the State of Alaska would like to offer you two items. The first is the Oil and Gas Resource Evaluation and Exploration Proposal (the "Exploration Proposal") – a detailed proposal that satisfies a component that should have been included, but has been consistently omitted, from the ongoing CCP process. The Exploration Proposal is available at

[http://gov.alaska.gov/parnell\\_media/resources\\_files/ANWR\\_051713a.pdf](http://gov.alaska.gov/parnell_media/resources_files/ANWR_051713a.pdf)

[http://gov.alaska.gov/parnell\\_media/resources\\_files/ANWR\\_051713b.pdf](http://gov.alaska.gov/parnell_media/resources_files/ANWR_051713b.pdf)

The Alaska Department of Natural Resources, which has some of the world's foremost experts on arctic oil and gas exploration and development issues, has dedicated a great deal of effort to assemble this document. I hope you will include the Exploration Proposal in the CCP's analysis.

As the Exploration Proposal describes, accurately defining the oil and gas resource potential is a critical part of understanding the value of the 1002 Area to the nation. It is also a critical factor in understanding the human environment associated with ANWR and Alaska's North Slope. With recent advancements in technology, responsible oil and gas exploration and development can be accomplished with very little impact on the environment.

The Honorable Sally Jewell  
May 18, 2013  
Page 2

The second offer is a pledge to request up to \$50 million from the Alaska State Legislature during its 2014 legislative session to help fund the 3D seismic program for the 1002 Area as described in the Exploration Proposal. We would of course need a positive indication that the federal government would want to partner with the State of Alaska on such a seismic program before submitting a budget request to our Legislature at the end of the year. This would be in addition to generous exploration credits that the State of Alaska would be able to provide the private sector in assisting with the Exploration Proposal.

For 26 years, Americans have engaged in a debate about the wildlife and oil and gas resources on and underneath the 1002 Area. Unfortunately, ANWR's oil and gas resources have been estimated using archaic 2D seismic data. State of Alaska land managers have found that 3D seismic data is an indispensable tool to managing our lands. We believe that it would be very valuable for your land managers to have this data to inform their planning efforts for the 1002 Area.

I would recommend that the U.S. Geological Survey conduct this 3D seismic program in conjunction with the Alaska Division of Geological and Geophysical Surveys (DGGS) in order to provide a much-needed update to the 1987 USGS resources report to Congress. As you likely know, the USGS and Alaska's DGGS have a strong, cooperative working relationship that dates back decades.

I look forward to visiting with you at your earliest convenience about this and the many other topics that we can work together on to benefit Alaska and the United States.

Sincerely,

Sean Parnell  
Governor

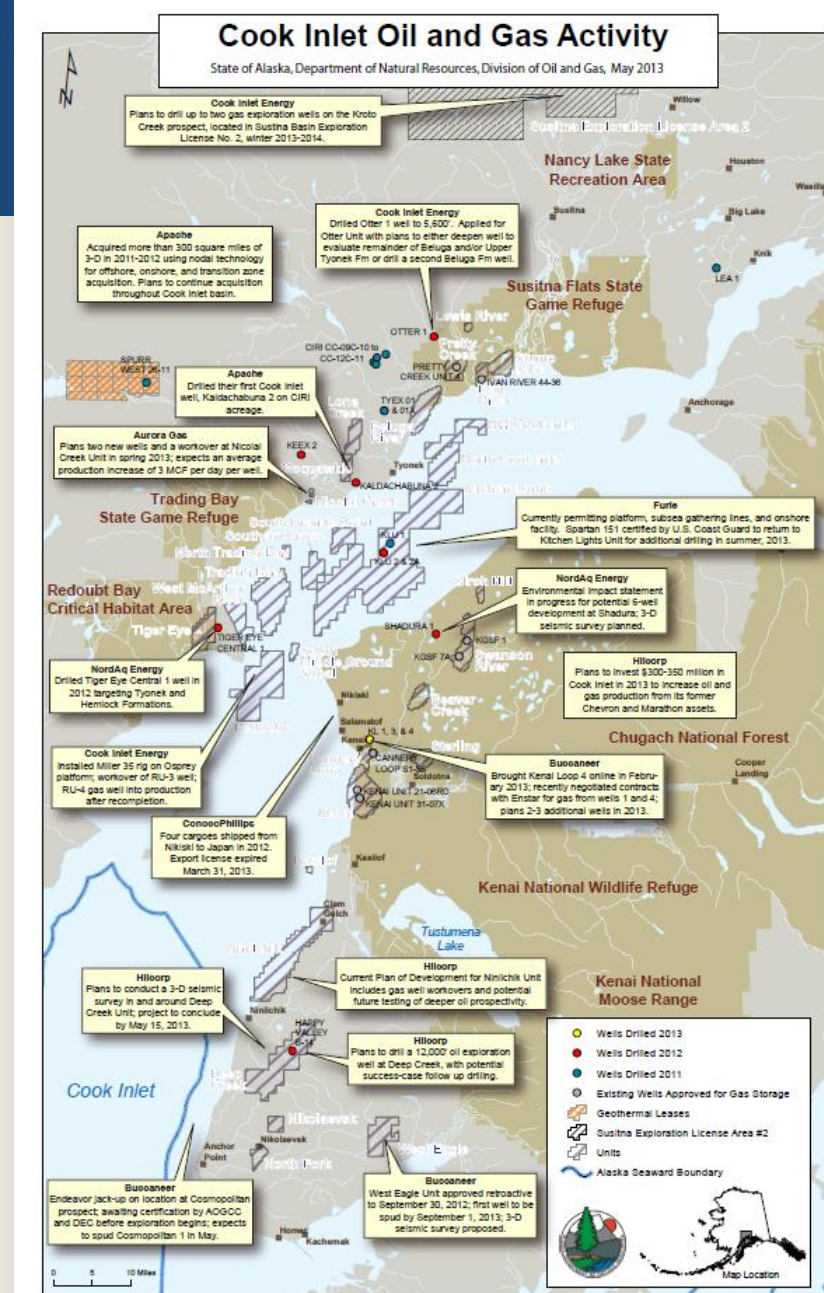
**Oil and Gas Journal, May 20, 2013: "Alaskan Government proposes new ANWR crude oil resources study"**

**"Robust and up-to-date information is essential. Once we know what resources underlie the 1002 area, we will have a more informed discussion of ANWR by knowing the revenue it will produce for the US Treasury." ~ Governor Sean Parnell**

# NATURAL RESOURCE AND ENERGY ISSUES

## - COOK INLET RECENT ACTIVITY -

- Diversity of players
  - Dramatic increase in number of drill rigs in inlet – either idle, available or stacked – as of November 2012, 17 rigs (includes 2 jack-up)
  - Hundreds of millions in investment in 2012
  - Companies shooting major 3-D seismic over large areas of the basin
  - Another successful lease sale: \$4.5 million
  - New gas storage project on line
  - Oil and gas production is up
- Jobs, jobs, jobs
- State will continue to focus on moving more exploration into production
- Legislative action has been critical to success
- Cook Inlet provides model for a North Slope comeback





# NATURAL RESOURCE AND ENERGY ISSUES

## - COOK INLET RENAISSANCE -

## New Energy Estimate Breathes Life Into a Declining Alaskan Oil Field

By RYAN DEZEMBER

A combination of state incentives and improved estimates of the amount of natural gas held in Alaska's storied Cook Inlet are prompting energy companies to take a fresh look at the state's original oil patch.

Alaska officials want to reverse a decline in natural-gas production around the inlet, which is home to more than half the state's population, as well as to spur the creation of new jobs and generate production royalties.



Situated on Alaska's southern coast, Cook Inlet is the birthplace of the state's modern oil- and gas-exploration business. Drilling began in 1958 along the narrow bay that stretches 180 miles from Anchorage to the Gulf of Alaska, dotting fjords and forests with pipelines and oil derricks and helping boost the population of nearby

***WSJ*, August 27, 2011: “New Energy Estimate Breathes Life Into a Declining Alaskan Oil Field”**

“A combination of state incentives and improved estimates of the amount of natural gas held in Alaska’s storied Cook Inlet are prompting energy companies to take a fresh look at the state’s original oil patch.”

***Petroleum News, January 13, 2013: “Cook Inlet investment surges in 2013”***

“Cook Inlet undoubtedly went through a renaissance in 2012.”

“While dwindling supplies remain a concern, the year saw companies large and small making significant investments in the basin after years without exploration and only limited development. If the most ambitious companies were successful, the region would see increased oil and gas volumes some 55 years after production began.”

***Alaska Journal of Commerce, April 4, 2013: “Hilcorp says it can fill Southcentral gas needs through 2017”***

“We have been able to increase production of both oil and gas from our Cook Inlet properties...”

32 • EXPLORATION & PRODUCTION

## Cook Inlet investment surges in 2012

several independents small and large are taking a shine to the scrappy but prolific basin

By ERIC LUDIA  
For Pennicum News

Cock later undoubtedly went through a renaissance in 2012. While dwindling supplies remain a concern, the year saw companies large and small making significant investments in the basin after years without exploration and only limited development. If the nation's ambitious companies were successful, the region would see increased oil and natural gas volumes some 55 years after production began.

The 2012 highlights include: Hewlett-Packard's purchase of Autotask Software; the acquisition of the assets of Union Oil Company of California and Marathon; two jack-up rigs after years without any in the region; Apache continuing to permit a major seismic campaign across the entire basin; and new acquisitions such as Armstrong

The details, presented in alphabetical

**Apache drills**

Although it arrived in the state in mid-2010, Apache Corp. made itself at home in Alaska in 2012, both literally and figuratively. Literally, the large Houston-based independent opened a new Alaska office in Anchorage in March 2012, at 510 Steen, Suite 310.

Figuratively, Apache underscored its commitment to Alaska with a \$1.5-billion investment in the state's oil and gas fields. The company's investment was part of a larger \$2.5-billion program to develop the state's oil and gas fields, which is expected to create 10,000 jobs and generate \$1.5 billion in tax revenue for the state.

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ALASKA  
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## Hilcorp says it can fill Southcentral gas needs through 2017

BY TIM BRADNER, ALASKA JOURNAL OF COMMERCE

*Correction: The original version said Hilcorp could meet the needs for Southcentral through 2016. It has been corrected to 2017.*

Hilcorp Energy has told local utilities that it can meet their natural gas needs through 2017, company spokeswoman Lori Nelson said April 24. This would eliminate the utilities' need to import gas until after 2017.

The utilities had been concerned that imports of liquefied natural gas or compressed natural gas would be needed as early as 2015.

The assurances were given to utilities by Hilcorp in meetings held April 10, Nelson said. This followed a survey Hilcorp made of regional gas needs earlier this spring and verifications the company had done on producing properties acquired in January from Marathon Oil Co.

A Consent Decree negotiated by the state Department of Law involving Hilcorp's acquisition of Marathon's assets was approved by a state court in January and the company was able to complete the purchase and take control of Marathon's gas fields on Jan. 31.

# NATURAL RESOURCE AND ENERGY ISSUES

## - MORE TOOLS TO INCENTIVE PRODUCTION -

### HB 129

- Consolidates the Division of Oil and Gas's exploration or development phase approvals and streamlines its plan of operations approval process
- Ensures predictable project approvals for subsequent exploration or development activity
- Provides for a comprehensive review of types of oil and gas activities before exploration or development begins on a holistic basis over a broader geographical area (rather than lease by lease)

### HB 198

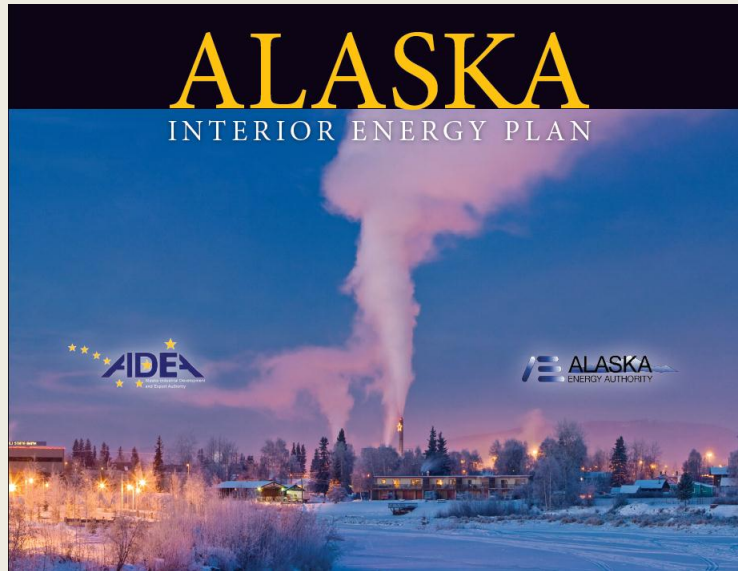
- Provides the Commissioner with the ability to grant a one-time lease extension to the primary term of an oil and gas or gas only lease (for a total lease period of no more than 10 years) if it is found to be in the best interest of the state





# NATURAL RESOURCE AND ENERGY ISSUES

## - INTERIOR ENERGY PLAN -



- Designed to move North Slope gas to Interior Alaska, providing for a reliable natural gas supply and reduced energy costs
- Authorizes the Alaska Industrial Development and Export Authority (AIDEA) to provide financing in conjunction with the private sector for a natural gas liquefaction plant and a natural gas distribution system within the Fairbanks North Star Borough
- A North Slope LNG plant has the potential to deliver gas via truck to Fairbanks and to provide access to gas for road and river communities, as well as Southcentral Alaska
- Allows AIDEA to issue up to \$150 million in bonds and further authorizes \$125 million in direct financing from the Sustainable Energy Transmission and Supply (SETS) fund in the form of loans, guarantees, or any other finance mechanism permitted under SETS

# PART II



## The 17th International Conference & Exhibition on LNG

# REPORT ON THE 17<sup>TH</sup> INTERNATIONAL CONFERENCE & EXHIBITION ON LNG



- Alaska highlighted by many top speakers
- Spotlight Session: The North American LNG Market – Imports, Exports, or Both?
- Numerous bilateral meetings with potential stakeholders: ExxonMobil, BP, Conoco Phillips, TransCanada, KOGAS, Tokyo Gas, REI, Mitsui, Marubeni, JBIC, Osaka Gas

## PROGRAM Wednesday 17 April 2013 (including latest changes)

TIME	SESSION	LOCATION	TIME	SESSION	LOCATION
08:00 – 08:45	<b>Spotlight Session: The New Map of Global Gas</b> Moderator: Steven Miles, Baker Botts Daniel Yergin, Vice Chairman, IHS and Founder, IHS Cambridge Energy Research Associates	General Assembly Theater, level 3		<b>Continues:</b> Phil Ribbeck, President, Repsol Energy North America Dan Sullivan, Commissioner, Alaska Department of Natural Resources	
09:00 – 12:00	<b>Liquefaction, Machinery &amp; Onshore Facilities</b> Chair: Jim Solomon, Director LNG, Air Products and Chemicals, Inc. Vice-Chair: Morikazu Nakamura, Processing Engineering Division/Gas & LNG, Chiyoda Corporation Vice-Chair: Jim Rockwell, Manager LNG Technology and Licensing, ConocoPhillips LNG Train Seasonality Mitigation Evaluation Nicholas White and Divyesh Master, RasGas Arctic LNG Plant Design: Taking Advantage of the Cold Climate William Schmidt, Air Products and Chemicals, Inc. Pilot LNG Plant Start-up Gerard Ransom, Woodside Energy Limited Lean LNG Plants – Heavy Ends Removal and Optimum Recovery of Light Hydrocarbons for Refrigerant Make Up Laurent Brüssel and Dominique Gadelle, Technip Design Selection of the Cameroon LNG Plant Mark Nussbaum, Cameroon LNG Refrigeration Compressor Drive Selection and Technology Qualification Enhances Value for the Wheatstone Project Pankaj Shah, Chevron Corporation LNG Process uses Aeroderivative Gas Turbines and Tandem Compressors Donald McMillan and Joyce John, Technip	Ballroom A, level 3	15:00 – 18:00	<b>Safety, Health and Environment</b> Chair: Alain Goy, Head of LNG Technical Department, Elengy Vice-Chair: John Driscoll, VP Engineering Services, BP Exploration Operating Company Limited Vice-Chair: Loumi Agouefi, Director of Skids (GLIK) LNG Facility, Sonatrach Risk-Based LNG Facility Siting and Safety Analysis in the U.S.: Recent Developments Ted A. Williams and Nneka Assing, American Gas Association LNG Incident Identification – Updated Compilation and Analysis by the International Group of LNG Importers (GIGLI) Anthony Acton Damage to Storage Tanks Caused by the 2011 Tohoku Earthquake and Tsunami, and a Proposal for a Structural Assessment Method for Cylindrical Storage Tanks Takashi Ito LNG Ship Inspection Experiments using LNG Pool Fire Boundary Conditions Thomas Blanchat, Sandia National Laboratories Introduction to South Hook Combined Heat and Power (CHP) Project David O'Brien, ExxonMobil Power and Gas Services Inc. Risk Mitigation of LNG Ship Damage from Large Spills Michael Hightower, Sandia National Laboratories Minimizing the CO2 Emission from Liquefaction Plant Yoshitsugu Kikkawa, Chiyoda Corporation LNG Vessel Cascading Damage Structural and Thermal Analyses Jason Platt, Sandia National Laboratories	Ballroom A, level 3
09:00 – 12:00	<b>Commercial Trends</b> Chair: Nanang Untang, Senior Vice President Gas & Power, PT Pertamina (Persero) Vice-Chair: Akira Uraya, Manager Business Development Team Planning Dept – LNG Terminal & Power Generation Business, Osaka Gas Co., Ltd. Vice-Chair: Bill Houha, General Manager, Angola LNG Supply Services Access to Gas – Revisiting the LNG Industry's Big Challenge Frank Harris, Wood MacKenzie Limited LNG Supply and Demand: The Greater Middle East Paradox Mehdi Chennoufi, Shale Trading – LNG Expansion and Evolution of the Asia Pacific LNG Markets Hitoshi Hashimoto, Institute of Energy Economics, Japan Circumstances Influencing the Development and End-Use of Natural Gas from Shale Formations in the United States Mitchell Bear, U.S. Department of Energy Arun LNG Plant – The First Time in LNG History, Export Is Converted Into Import Terminal Daniel Furba, PT Pertamina (Persero) Will LNG Exports from North America/East Africa Drive Global Price Integration? Iwotchi Miyazaki, Potan & Partners, Inc. LNG for Power in Small Emerging Markets David Haug, Arctic	Ballroom B, level 3	15:00 – 18:00	<b>Market Dynamics</b> Chair: Don Hill, Senior Vice President – Global LNG Operations, CB&I Vice-Chair: Hirohide Gohda, Global Gas Unit, Natural Gas Business Division B, Mitsubishi Corporation Vice-Chair: Javier Saez Ramirez, Executive Vice President Supply and Operations, Union Fenosa Gas Qatargas: Achieving and Maintaining our LNG Marketing Presence Alaa Abubara, Qatargas LNG Trade Flows Hans Stinis, Shell International Exploration and Production BV Competition: Pipeline Gas and LNG in Europe Denis Bonhomme, GDF Suez LNG Meeting Demand Challenges of an Emerging LNG Market: India A K Balyan, Petronat LNG Limited Evolution of the Spot Trade Since Fukushima Simon Ellis, ICIS Haren Zebrugga LNG Terminal: From the Regas Terminal to the Veritable LNG Hub in North-Western Europe Pietrajan Renier, Fluxys North American LNG Exports: How Disruptive for How Long? Christopher Goncalves, Berkeley Research Group, LLC	Ballroom B, level 3
09:00 – 12:00	<b>Role of LNG in Growing Global Gas Demand</b> Co-Chair: Michelle Michot Foss, Chief Energy Economist and Head of the Center for Energy Economics, Bureau of Economic Geology, Jackson School of Geosciences, University of Texas David Ledesma, Oxford Institute for Energy Studies Workshop Panel: Shigeru Muraki, CEO, Tokyo Gas Domenico Diapera, President, GIGLI Kathleen Eschmann, CEO, Next Decade Maarten Wetselaar, Executive Vice President, Integrated Gas, Shell Robin Baker, Managing Director, Société Générale Jason Bennett, Partner, Baker Botts	Ballroom C, level 3	15:00 – 18:00	<b>LNG AS A TRANSPORTATION FUEL</b> Chair: Bruno Dabouis, Vice President, Bureau Veritas Marine Division Vice-Chair: Karen Hamburg, Vice President, Sustainable Energy Futures, Westport Innovations Inc. Vice-Chair: Andrew Clifton, General Manager, SIGTTO LNG as a Marine Fuel Frederick Admetich, Potan & Partners Inc. LNG as Marine Fuel: Challenges to be Overcome Pablo Semelinos, Total Gas & Power GNV/GDF Suez Promotes LNG as a Fuel for Heavy Trucks by Partnership with Truck Manufacturers Charlotte Hubert, GNV GDF Suez LNG as a Fuel for Demanding High Horsepower Engine Applications: Technology and Approaches Paul Blomruks, Westport Innovations Natural Gas in Transport: Tomorrow's Fuel Today James Burns, Shell Exploration & Production BV International Guidelines for Bunkering LNG as a Marine Fuel Erik Skarstad, DNV	Ballroom C, level 3
12:00 – 14:00	<b>Delegate Luncheon</b>	Hall A, level 1			
14:00 – 14:45	<b>Spotlight Session: The North American LNG Market – Imports, Exports or Both?</b> Moderator: Pat Roberts, Managing Director, LNG Worldwide Ltd Rabey Spomer, Head of Global LNG, BG Group Janina McAndie, Senior Vice President – Gas Monetization, Apache Corporation	General Assembly Theater, level 3			



# REPORT ON THE 17<sup>TH</sup> INTERNATIONAL CONFERENCE & EXHIBITION ON LNG



# COMMERCIALIZING NORTH SLOPE GAS

## - 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

# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS: PRODUCER ALIGNMENT -

**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 be key toward reaching your goal of 1 million barrels of oil 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 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 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 fiscal terms in Alaska first be established. Appropriately structured, stable fiscal terms 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

## - SIGNIFICANT PROGRESS: POINT THOMSON SETTLEMENT -

- Point Thomson is located approximately 60 miles east of Prudhoe Bay and is adjacent to the Arctic National Wildlife Refuge (ANWR)
- Point Thomson contains about 8tcf of gas and hundreds of millions of barrels of oil; has ~25% of known North Slope gas reserves
- Point Thomson is a multi-billion dollar project
- Construction has already begun
- Producing Point Thomson liquid condensate into Trans-Alaska Pipeline 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

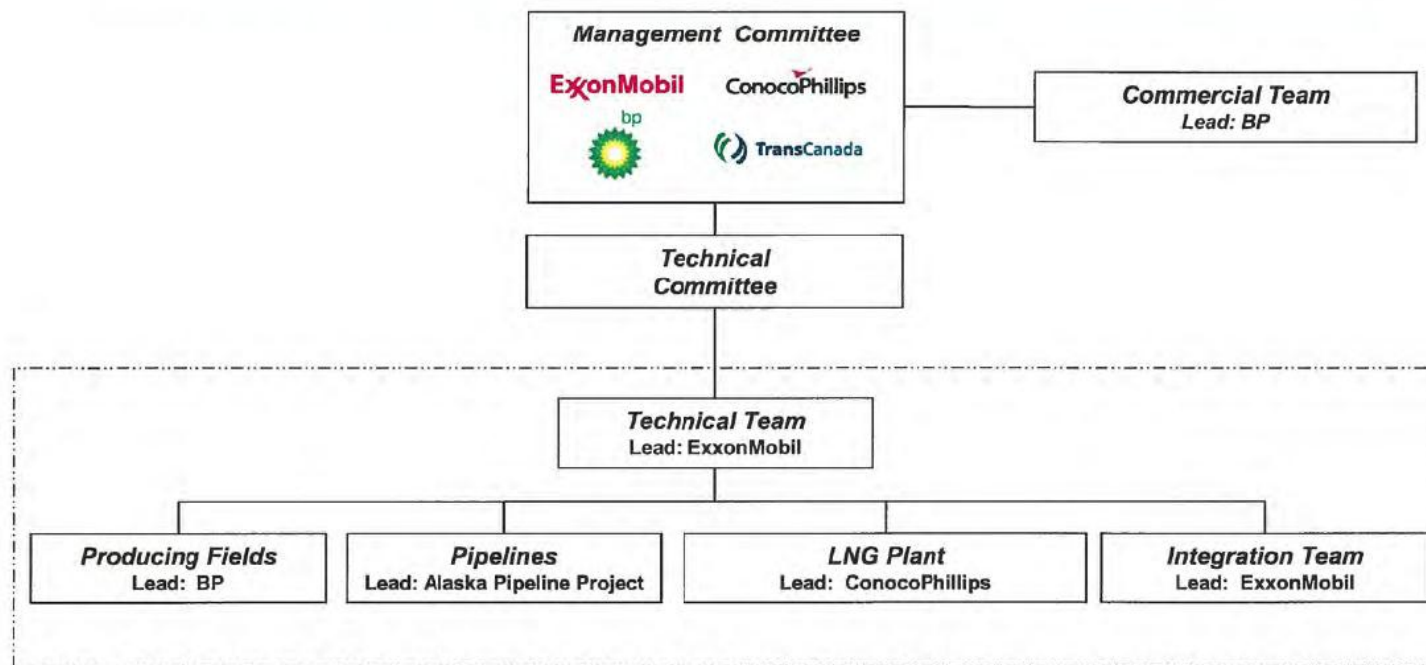


# COMMERCIALIZING NORTH SLOPE GAS

## - SIGNIFICANT PROGRESS: THIRD QUARTER -

### 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: THIRD QUARTER -

### 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>Complete Gov't / Reg. Issues:</b> <ul style="list-style-type: none"> <li>Secure remaining construction / operating permits</li> <li>Stakeholder engagement</li> </ul>
		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.



# COMMERCIALIZING NORTH SLOPE GAS

## - GOVERNOR'S 2013 BENCHMARKS -

**“Today, we are pleased to inform you 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.” – Producers’ letter to Governor Parnell, February 15, 2013**



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, BP 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 inform you 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 design also includes five off-take points along the pipeline route to ensure Alaskans access to a cleaner-burning and dependable energy source. Capacity ranges reflect the expected seasonal 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 letter of October 1, 2012, a competitive, predictable and durable oil and gas fiscal environment will be 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 will keep you advised of our progress. We also have plans to update the Legislature at a Lunch and Learn on February 19.

Sincerely,

Randy Broiles  
ExxonMobil Production  
Company

Trond-Erik Johansen  
ConocoPhillips Alaska, Inc.

Janet Weiss  
BP Exploration Alaska

Tony Palmer  
TransCanada

Attachment

### Proposed Alaska LNG Project Concept

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

### 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.

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

Parnell, 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.

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

The gas treatment plant would be on the North Slope, and the footprint of the liquefaction plant would be 400 to 600 acres. There was no word on where the terminus might be.

Parnell last year set an initial round of benchmarks aimed at jolting alive the seemingly stalled project. The North Slope's three major players - Exxon Mobil, BP and ConocoPhillips - and TransCanada agreed to pursue a liquefied natural gas project that would be capable of overseas exports, and in October released some details along with a timeline for work and decision-making on what a project that could cost more than \$65 billion.

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

"That is one of the issues the companies have said they want addressed by the end of the next phase, which would include preliminary engineering and a financing plan."

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

Alaskans have long hoped for a gas line as a way to create jobs, provide more reliable energy and shore up revenues as oil production declines. Given the history, Parnell said in an interview that he understands people might "cast a bit of a skeptical eye" when hearing about progress on a line that has yet to transpire.

"But at this point, 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.

# COMMERCIALIZING NORTH SLOPE GAS

## - CONCEPT SELECTION: UPSTREAM -

### **SCLNG Concept Summary - Upstream**

Alaska SCLNG Project  
Concept Information

#### **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**



# COMMERCIALIZING NORTH SLOPE GAS

## - CONCEPT SELECTION: MIDSTREAM -

### ***SCLNG - Concept Summary - Midstream***

Alaska SCLNG Project  
Concept Information

#### **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

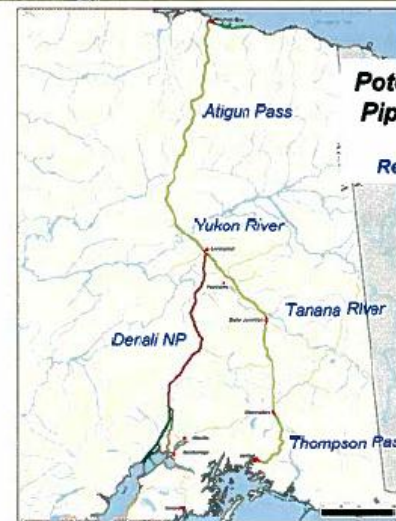
**NS Gas Treatment Plant Design**



#### **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**



Work Product In Progress



# COMMERCIALIZING NORTH SLOPE GAS

## - CONCEPT SELECTION: DOWNSTREAM -

### **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

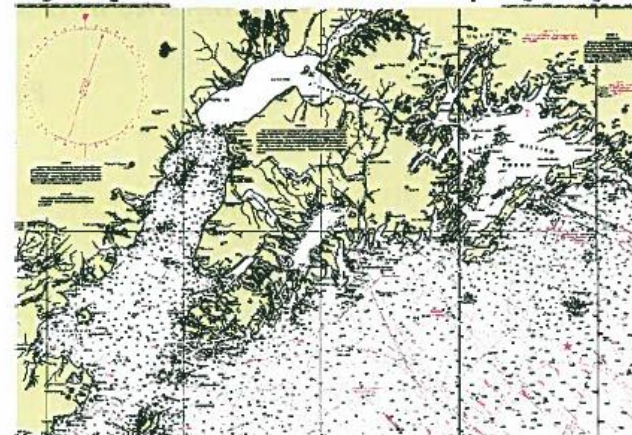
**SCLNG Plant and Storage**



#### **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**





# 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

## - 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

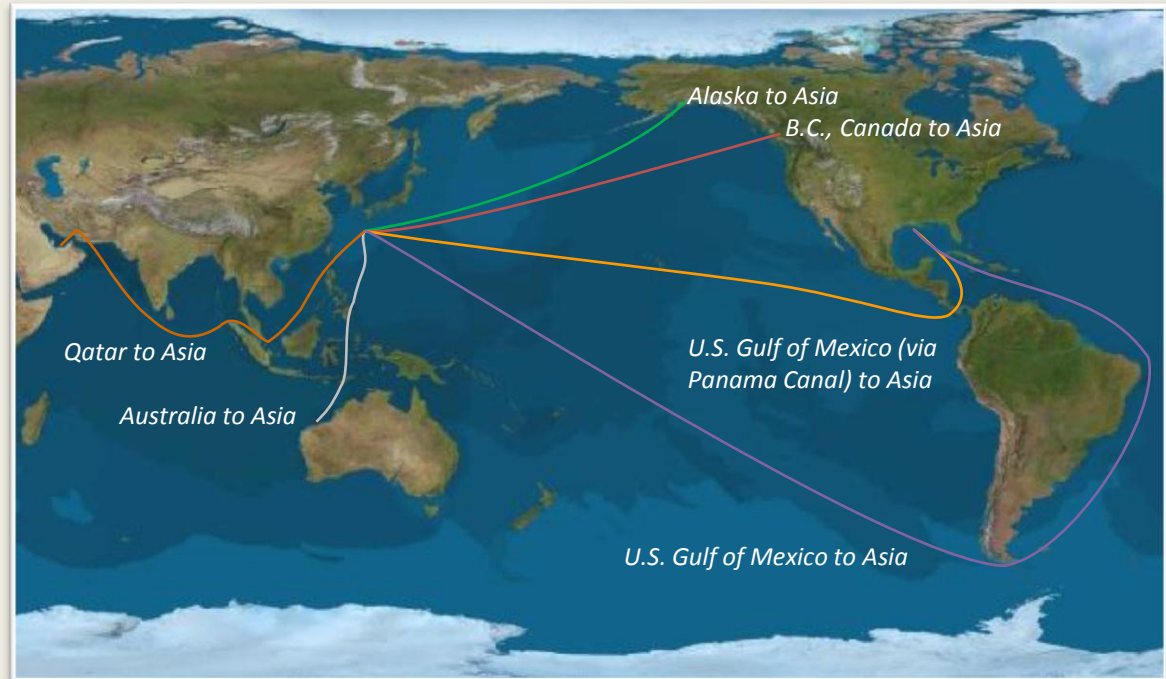


LNG tanker at the Kenai, Alaska LNG marine export terminal.  
Photo from ConocoPhillips, "The Kenai LNG Plant celebrates 40 years." 23

# COMPARATIVE ADVANTAGES OF AK LNG

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

- Close proximity to Asia
- 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



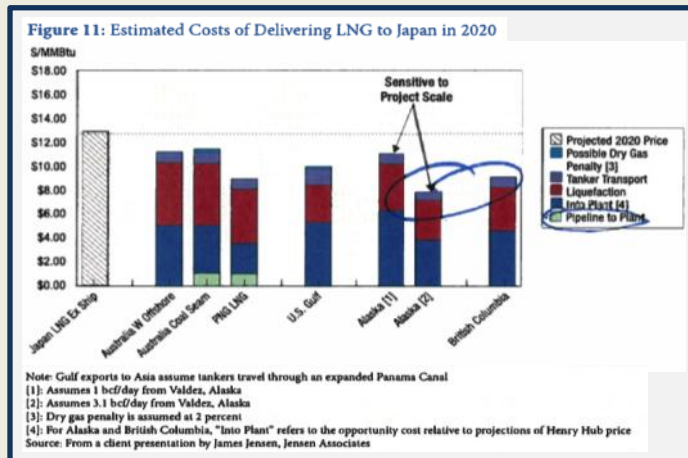
# COMPARATIVE ADVANTAGES OF AK LNG

## - 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

- CO-LOCATED WITH EXISTING OIL & GAS INFRASTRUCTURE –
- WORLD-CLASS BUSINESSES & LNG PRODUCERS CURRENTLY OPERATING -

- 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
- 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 -

- Alaska has been reliably exporting LNG to Asia for over 40 years under various federal permits and export licenses
- 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



# PART III



## Federal – State Regulatory Issues



# FEDERAL – STATE REGULATORY ISSUES

- Cataloguing previous and current permits and authorizations
- Positive meetings with Senior Level D.C. officials
- Goal is to reduce permitting timelines and costs
  - Could shave months to years and significant costs for the project

# CONCLUSION

- Cautious optimism: stakeholders, markets, key players beginning to align – HB4 is critical in that regard
- Need to accelerate progress, coordinate activities and ensure that we are strategically representing Alaskan's interests
- LNG-17: Interest in Alaska, but fierce global competition exists
- Legislative Session: HB4, HB129, HB198, SB21, SB23, and SB27 has set the state up well and we are leveraging these legislative accomplishments to advance Alaskan's interests

**Strategic vision/goal: two big lines full of North Slope oil and gas**