05/30/13
LNG UPDATE & REPORT ON 17TH INTERNATIONAL CONFERENCE AND EXHIBITION ON LIQUEFIED NATURAL GAS

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Changes in the global LNG market

And what they could mean for Alaska

Presentation for Senate and House Resources Committees - Thursday, May 30, 2013

By Larry Persily, Federal Office for Alaska Gas Line Projects

ALASKA NATURAL GAS
TRANSPORTATION PROJECTS
OFFICE OF THE FEDERAL COORDINATOR

It's all about the market

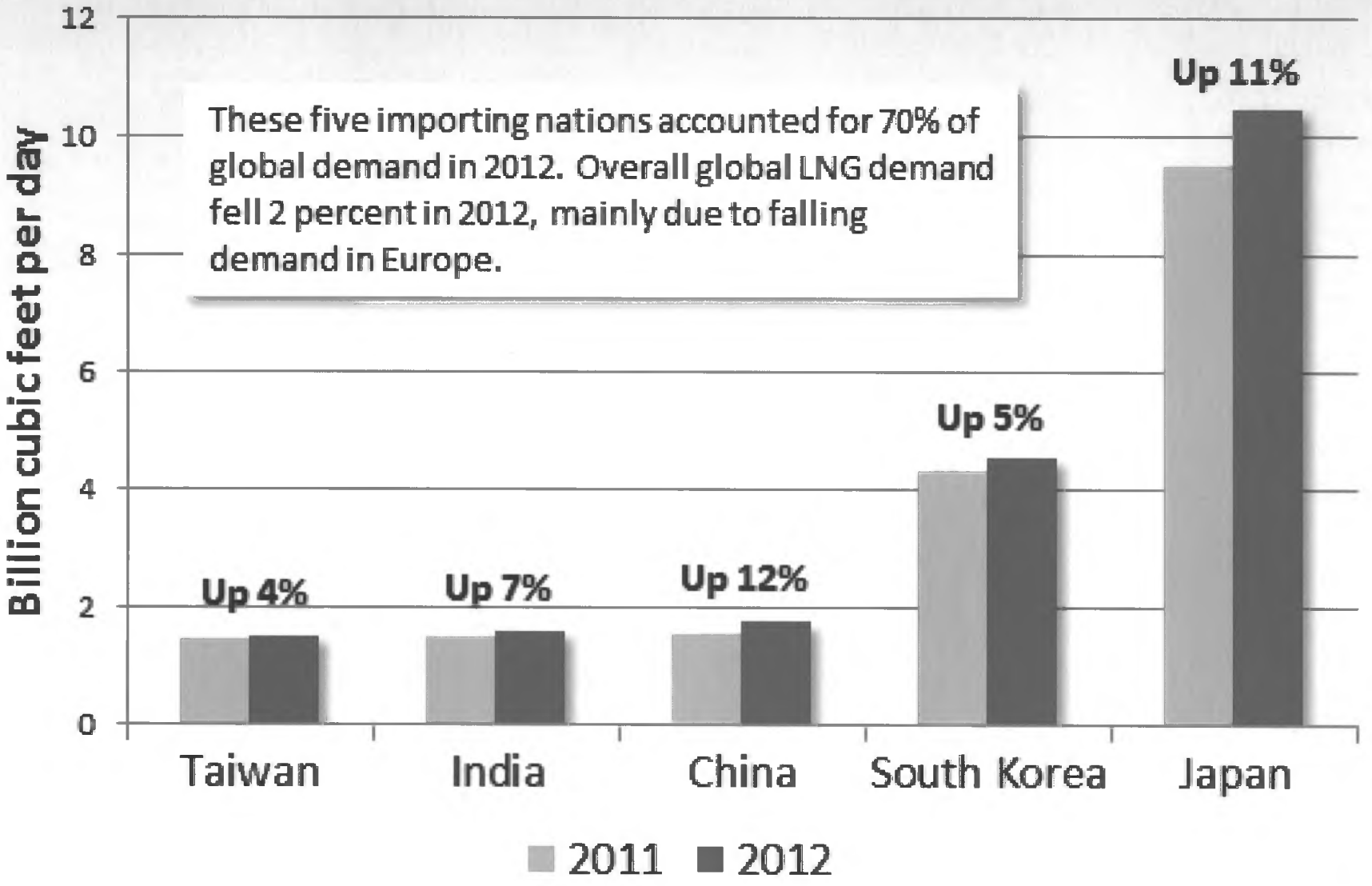
- Competition for LNG customers is intense
- Both demand and supply are growing
- Alaska must be cost-competitive to have a chance
- Japan Ministry of Economy, Trade & Industry official:

  "We will tell the Russians we have U.S. shale gas.

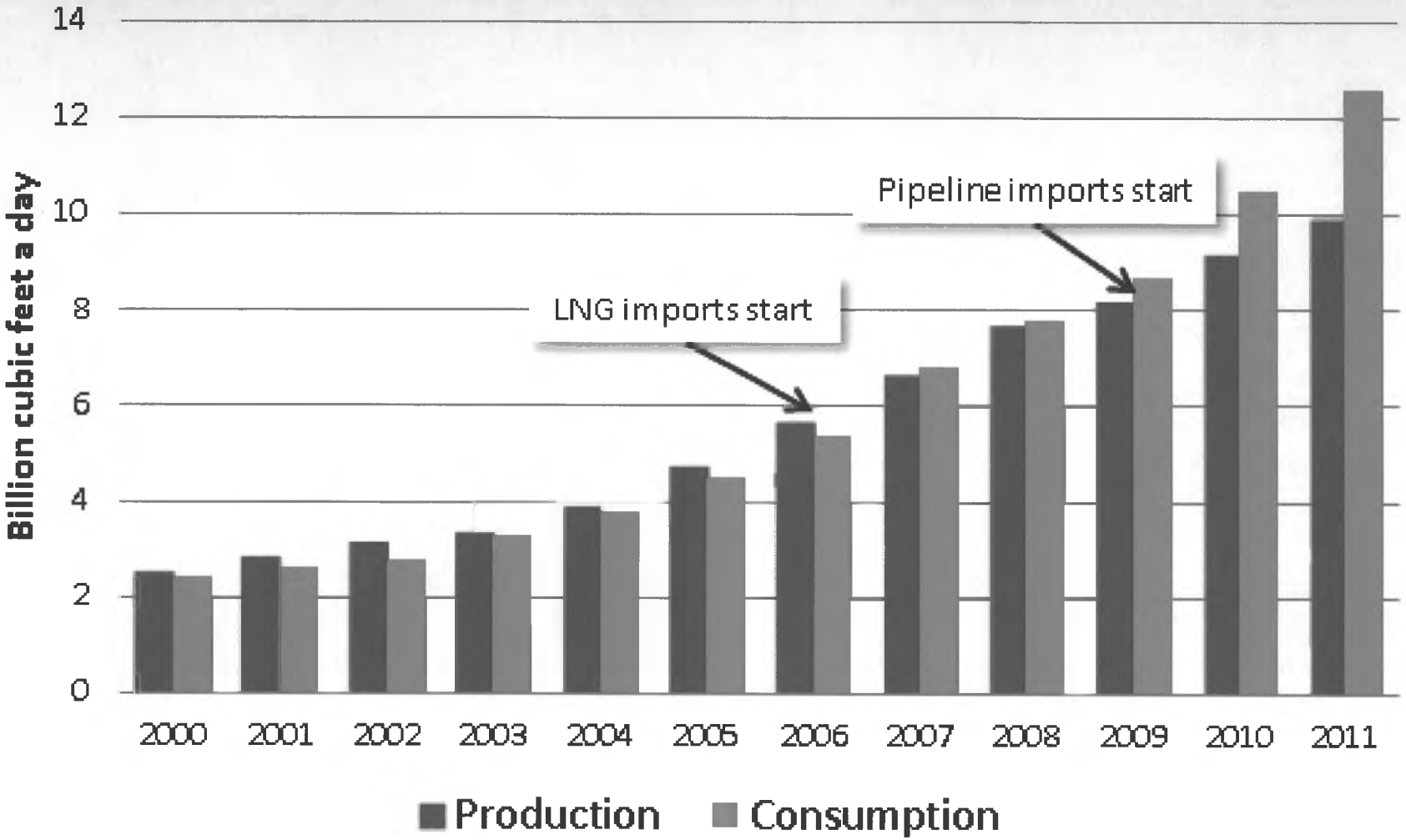
  We will tell the Americans we can also buy Russian gas.

  We will demand the steepest discounts."

Asian LNG imports increased 2011 to 2012

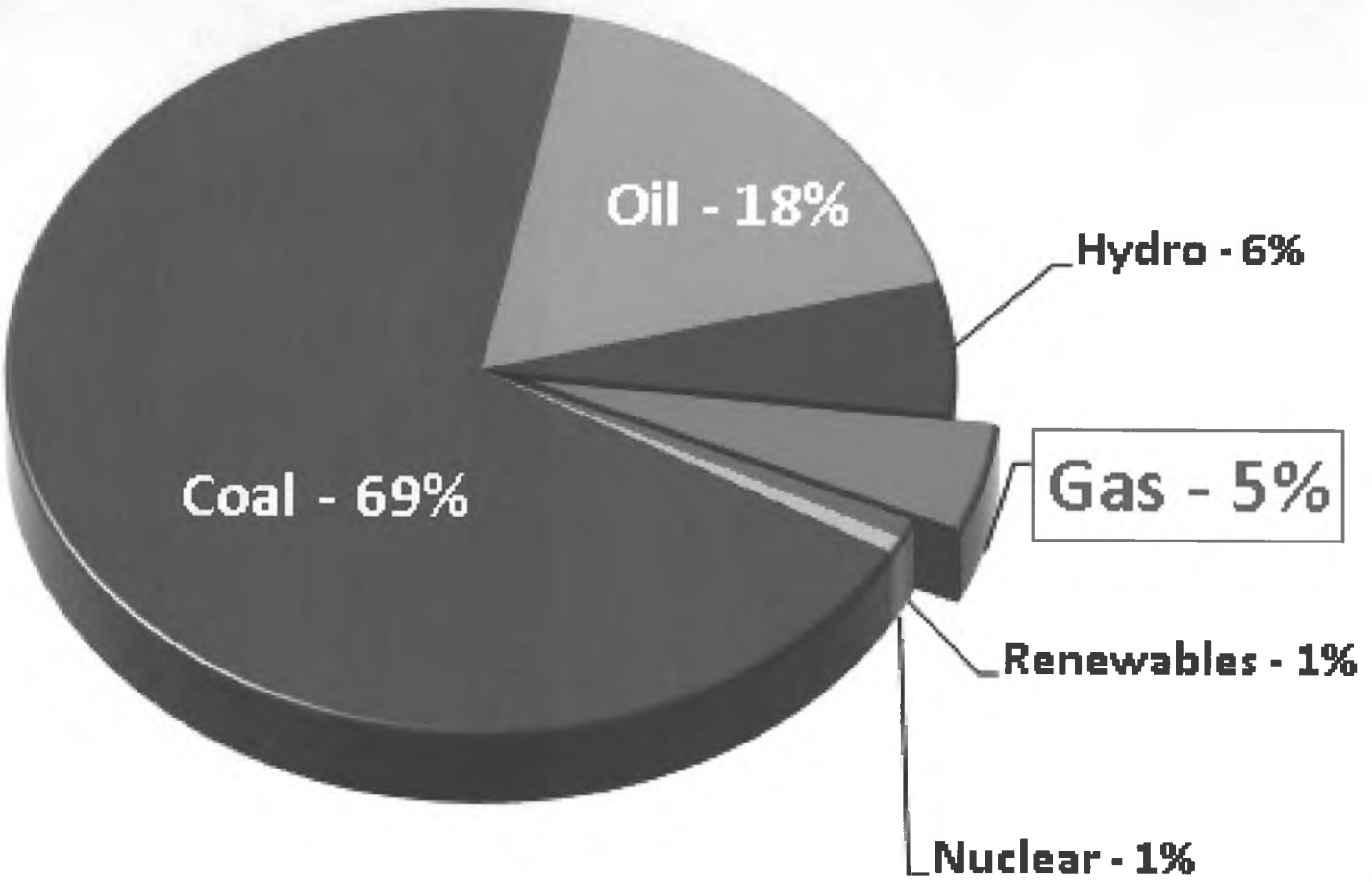


China's gas consumption outpaces production



Gas fuels small share of China's energy

2011



Alaska's competitors

- Qatar, with more than 10 bcf a day capacity
- Australia, adding $200 billion in export capacity; expected to overtake Qatar by end of decade
- Angola LNG to come online 2013
- Papua New Guinea scheduled to start up 2014
- The window: Australia, Angola, Papua New Guinea coming into market 2010s; Alaska looking to 2020s

More competition

- At least three LNG terminals proposed in Russia
- All looking to sell gas into Asian markets
- Mozambique, Tanzania with 120 tcf of discoveries
- Israel, Eastern Mediterranean could be on the list
- British Columbia projects lining up to win approval:

  Chevron, Apache, Shell, Malaysia's Petronas,

  BG Group, Korea Gas, PetroChina, Mitsubishi

Lower 48 exports

- Cheniere (Louisiana) to start shipments 2015
- Freeport (Texas) received export approval May 17
- Total authorization 3.6 bcf a day, at full capacity
- Both projects fully subscribed for LNG output
- Still 19 more applications await Energy Department
- Analysts forecast up to 8 bcf/d capacity by 2020

They all have problems

- All is not lost for Alaska
- Our competition has just as many problems as us
- High costs, some politics, environmental issues, expensive pipelines, distance to markets, long development times, domestic energy needs
- Sales contracts to creditworthy customers before developers approve the final investment decision

Australia's problems

- Cost overruns in overheated construction market
- Projects under way: 43%, 25% and 15% overruns
- Earlier talk of expansion fading, as are new projects
- Environmental concerns build over coal-seam gas
- Domestic users worry about LNG-based pricing
- Locals complain about jobs going overseas for plant modules and floating LNG processing ships

Canada's problems

- Shale plays are undeveloped and very remote
- One estimate for production costs: $3.50 to $4.50
- Pipelines to Kitimat / Prince Rupert; 290 / 470 miles across two mountain ranges; $1.5 billion - $4 billion
- Project developers say they need oil-linked prices
- First Nations troubled over tanker traffic, air quality

Russia's problems

- Gazprom loves its high prices
- Russian government needs Gazprom's revenues
- Others want to break Gazprom export monopoly
- Buyers not so trusting of Gazprom or Russian politics
- Costly pipelines needed to ship gas to Pacific Coast
- One project estimated at $50 billion
- Russia-Japan, Russia-China not best of friends

East Africa's problems

- Undeveloped nations; lack roads, ports, power
- Clear, predictable, stable legal framework needed
- Deep poverty a challenge for any development
- World Bank: Tanzania 134th and Mozambique 146th out of 186 nations in its 'Doing Business 2013' report
- Tanzania residents this month protested against gas pipeline plan, demanding more local benefits

Lower 48's problems

- Long, costly tanker run from Gulf Coast to Asia
- Voyage three times as far as from Alaska
- Some tanker estimates as high as $4 per million Btu
- Higher U.S. natural gas prices, plus transportation, will cut into price advantage for exports to Asia
- At $6 Henry Hub, Lower 48 LNG could be $14 in Asia
- Rising domestic gas price could limit LNG exports

Lower 48's problems

- Politics always a problem
- Fracking opponents continue fight against exports
- Litigation can delay development, raise costs
- Energy Department and Congress continue to look at how LNG exports might hurt U.S. gas supply, price
- Energy Department has approved second project, but 19 more applications still await export decision

Alaska's advantages

- Closer to Japan than U.S. Gulf Coast, East Africa, British Columbia, Yamal Peninsula in Arctic Russia
- Gas production costs lower than undeveloped fields in British Columbia, Russia and other remote plays
- Proved reserves provide certainty of supply
- Oil pays the bills for North Slope infrastructure
- Known political and legal structure; no surprises

Alaska's disadvantages

- The obvious one: 800 miles of multibillion-dollar steel pipe across the Arctic, buried in permafrost
- High construction costs
- Seasonal restrictions on work
- Limited window for barge deliveries to North Slope
- Stronger environmental laws than most countries

LNG pricing

- The grip of strict, oil-linked pricing is slipping
- Gas utilities, power generators, manufacturers, fertilizer plants, home owners cannot afford $18 gas
- Asia LNG buyers looking for price relief, maybe a blend of oil and North America gas prices — at least softening the percentage at high oil prices
- Governments support pushback against oil-linkage

The 'what ifs' that matter

- China: Shale gas; economic growth; coal
- Pipeline gas from Russia to China and Japan
- Future of Japan's nuclear plants
- European shale gas and economic recovery
- Does Gazprom get into a bidding war on price
- Asian government price controls on gas
- The delivered price of a million Btu of Alaska gas

www.arcticgas.gov

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ALASKA NATURAL GAS
TRANSPORTATION PROJECTS
OFFICE OF THE FEDERAL COORDINATOR

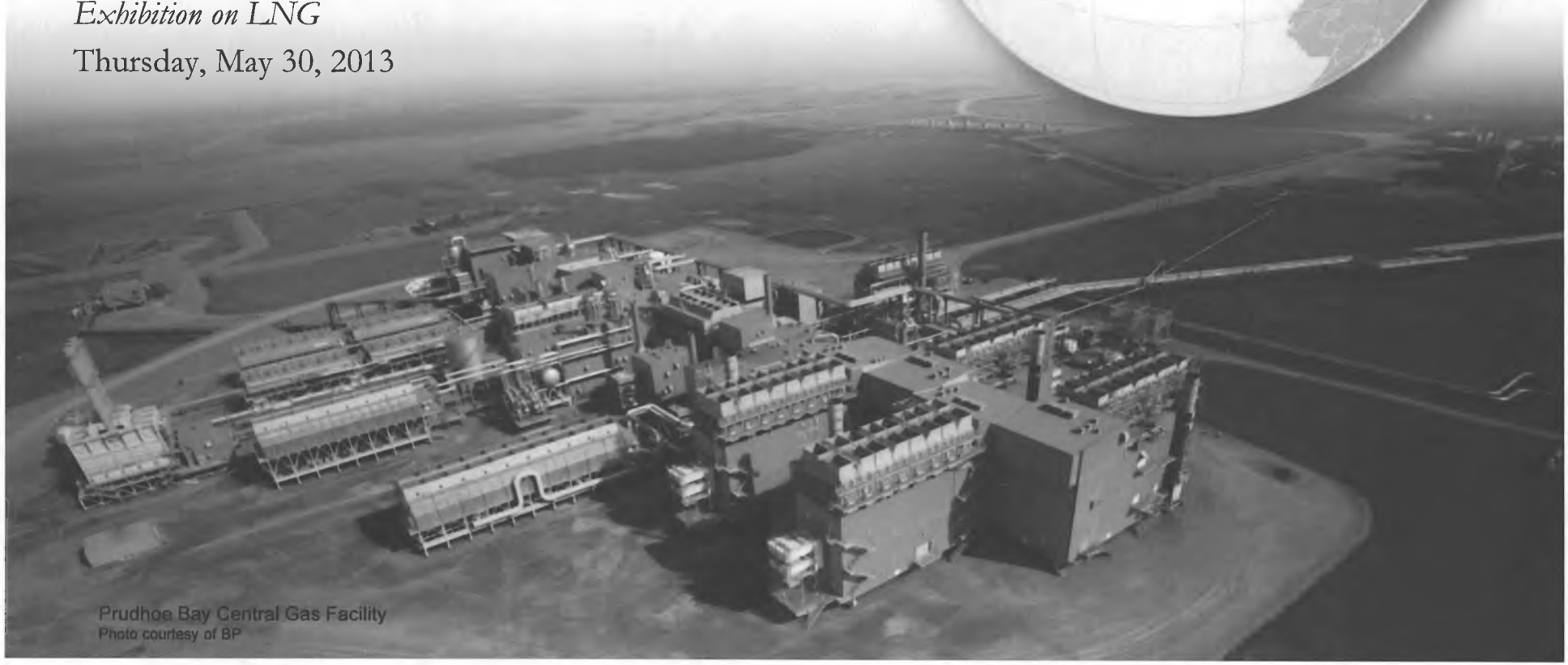
Commercializing Alaska LNG

Daniel S. Sullivan
Commissioner, Alaska Department of Natural Resources

Joint Senate and House Resources Committee

LNG Update & Report on the 17th 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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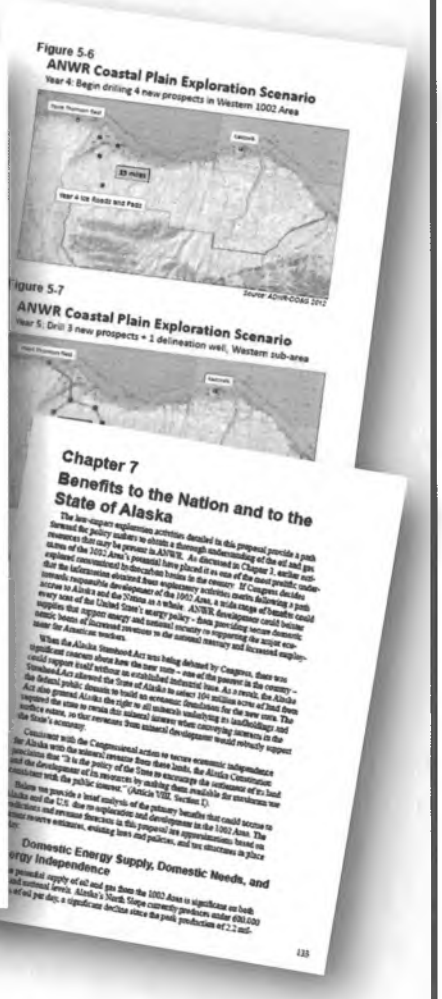

Natural Resource and Energy Issues

- Oil & Gas Resource Evaluation & Exploration Proposal for the Arctic National Wildlife Refuge 1002 -

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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_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 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

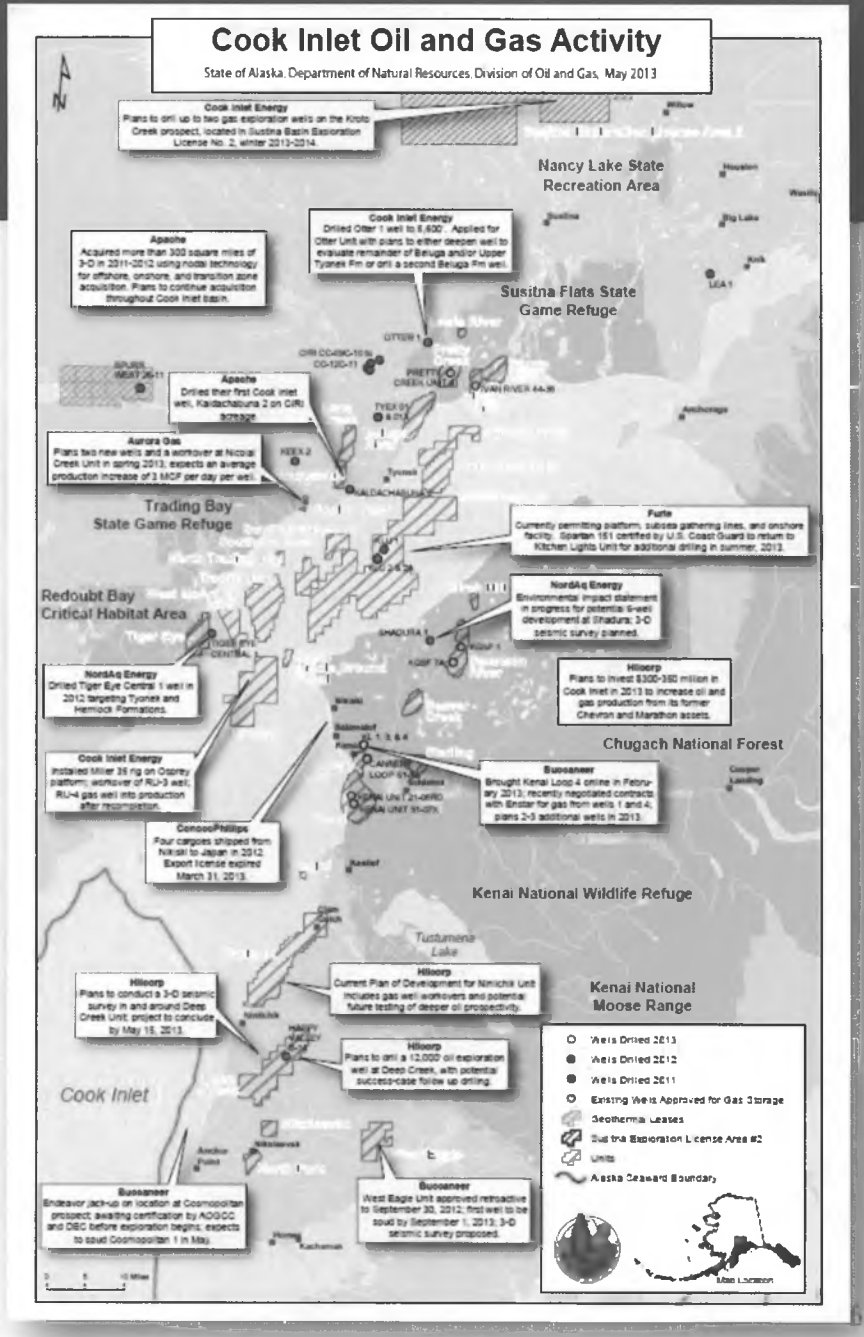
***Oil and Gas Journal*, May 20, 2013: "Alaskan Government proposes new ANWR crude oil resources study"**

"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-

***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…"

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 17th International Conference & Exhibition on LNG

LNG 17 ★ GNL 17
HOUSTON 2013

- 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
08:00–08:45	**Spotlight Session: The New Map of Global Gas** **Moderator:** Steven Miles, Baker Botts Daniel Yergin, Vice Chairman, IHS and Founder, IHS Cambridge Energy Research Associates	General Assembly Theater, level 3
09:00–12:00	**Liquefaction, Machinery & Onshore Facilities** **Chair:** Jim Solomon, Director LNG, Air Products and Chemicals, Inc **Vice-Chair:** Moritaka 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 **Pluto 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 Brussot and Dominique Gadelle, Technip **Design Selection of the Cameroon LNG Plant** Max Nussbaum, Cameroon LNG **Refrigeration Compressor Driver 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
09:00–12:00	**Commercial Trends** **Chair:** Nanang Untung, 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:** Bii Hauhe, 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, Shell: Trading – LNG **Expansion and Evolution of the Asia Pacific LNG Markets** Hiroshi Hashimoto, Institute of Energy Economics, Japan **Circumstances Influencing the Development and End-Use of Natural Gas from Shale Formations in the United States** Mitchell Baer, U.S. Department of Energy **Arun LNG Plant – The First Time in LNG History, Export is Converted into Import Terminal** Dana Pirba, PT Pertamina (Persero) **Will LNG Exports from North America/East Africa Drive Global Price Integration?** Kyoichi Miyazaki, Poten & Partners, Inc **LNG for Power in Small Emerging Markets** David Haug, Arctas	Ballroom B, level 3
09:00–12:00	**Role of LNG in Growing Global Gas Demand** **Co-Chairs:** 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 Ladislaus, Oxford Institute for Energy Studies **Workshop Panel:** Shigeru Muraki, CEO, Tokyo Gas Domenico Dispenza, President, GIIGNL Kathleen Eisbrenner, CEO, Next Decade Maarten Wetselaar, Executive Vice President, Integrated Gas, Shell Rein Baker, Managing Director, Société Générale Jason Bonnett, Partner, Baker Botts	Ballroom C, level 3
12:00–14:00	**Delegate Luncheon**	Hall A, level 1
14:00–14:45	**Spotlight Session: The North American LNG Market – Imports, Exports or Both?** **Moderator:** Pat Roberts, Managing Director, LNG Worldwide Ltd Belay Seyoum, Head of Global LNG, BG Group Janine McArdle, Senior Vice President - Gas Monetization, Apache Corporation	General Assembly Theater, level 3

TIME	SESSION	LOCATION
	Continues: Phil Ribbeck, President, Repsol Energy North America Dan Sullivan, Commissioner, Alaska Department of Natural Resources	
15:00–18:00	**Safety, Health and Environment** **Chair:** Alain Gay, Head of LNG Technical Department, Esany **Vice-Chair:** John Driscoll, VP Engineering Services, BP Exploration Operating Company Limited **Vice-Chair:** *Lasimi Agoudji, Director of Shields (GLTK) 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 (GIIGNL)** 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 Ibata **LNG Ship Insulation 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 Petti, Sandia National Laboratories	Ballroom A, level 3
15:00–18:00	**Market Dynamics** **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** Aziz Abuljaci, Qatargas **LNG Trade Flows** Hans Stens, 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, Petronet LNG Limited **Evolution of the Spot Trade Since Fukushima** Simon Ellis, ICIS Heren **Zeebrugge LNG Terminal: From the Rogas Terminal to the Veritable LNG Hub in North-Western Europe** Pierajar Reniet, Fluxys **North American LNG Exports: How Disruptive for How Long?** Christopher Goncalves, Barclays Research Group, LLC	Ballroom B, level 3
15:00–18:00	**LNG AS A TRANSPORTATION FUEL** **Chair:** Bruno Dabouis, Vice President, Bureau Veritas Marine Division **Vice-Chair:** Karen Hamberg, Vice President, Sustainable Energy Futures, Westport Innovations Inc. **Vice-Chair:** Andrew Clifton, General Manager, SIGTTO **LNG as a Marine Fuel** Frederick Adamchak, Poten & Partners Inc. **LNG as Marine Fuel: Challenges to be Overcome** Pablo Servidimos, Total Gas & Power **GNVERT/GDF Suez Promotes LNG as a Fuel for Heavy Trucks by Partnering up with Truck Manufacturers** Charlotte Hubert, GNVERT GDF Suez **LNG as a Fuel for Demanding High Horsepower Engine Applications: Technology and Approaches** Paul Bommas, 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 Skramstad, DNV	Ballroom C, level 3

Report on the 17TH 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 bp

March 30, 2012

Governor Sean Parnell
550 West 7th 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 w
North Slope oil and gas. This will be key toward reaching yo
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 s
have aligned on a structured, stewardable and transparent ap
commercialize North Slope natural gas resources within an AG
rapidly evolving global market, large-scale liquefied natural ga
central Alaska will be assessed as an alternative to gas line exp
to broadening market access, a south-central Alaska LNG appr
with in-state energy demand and needs. We are now working
commercialization project concept selection, which would incl
an assessment of major project components including in-state
global LNG trends, and LNG tidewater site locations, among ot

Commercializing Alaska natural gas resources will not be easy.
issues that must be resolved, and we cannot do it alone. Unpre
capital for gas development will require competitive and stable
Alaska first be established. Appropriately structured, stable fisc
new opportunities around the world, and will play a pivotal role
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

EXPLORATION & PRODUCTION

Point Thomson gets going

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

By WESLEY LOY
For Petroleum News

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.

The work includes building an access road to the remote eastern North Slope field, and assembling hundreds of "vertical support members" on which a planned Point Thomson pipeline will be mounted.

ExxonMobil has secured all the major permits for the long-awaited Point Thomson project.

ExxonMobil has dozens of contractors at work on aspects of the Point Thomson development.

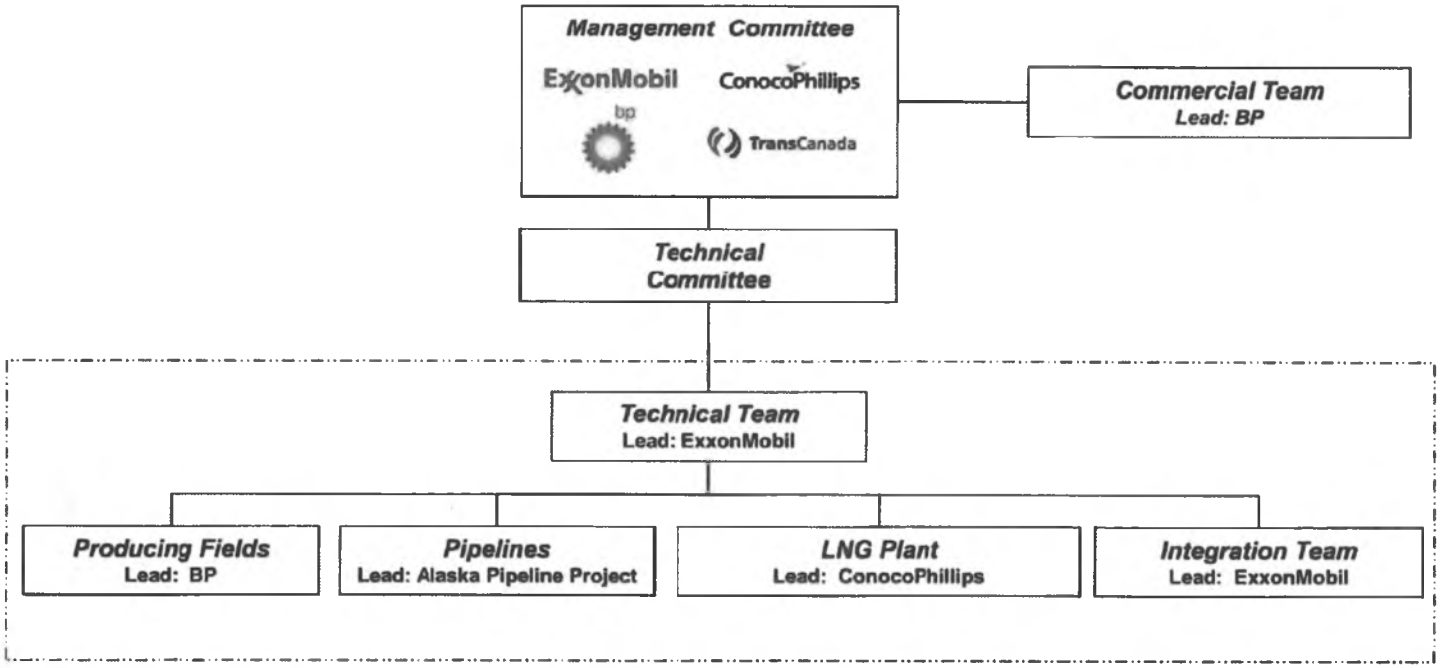
"Depending on weather conditions, our winter construction season will likely run until late April or early May," Kim Jordan, an ExxonMobil spokeswoman in Houston, told Petroleum News in a recent email. "Our work this winter will focus on infrastructure development. Planned on-site activities include constructing gravel roads, an expanded ice pad, construction camps, and an airstrip. Pipeline support members also will be installed

see THOMSON GETS GOING page 21

COMMERCIALIZING NORTH SLOPE GAS
- SIGNIFICANT PROGRESS: THIRD QUARTER -

Attachment 1

Southcentral Alaska LNG – Integrated Team



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

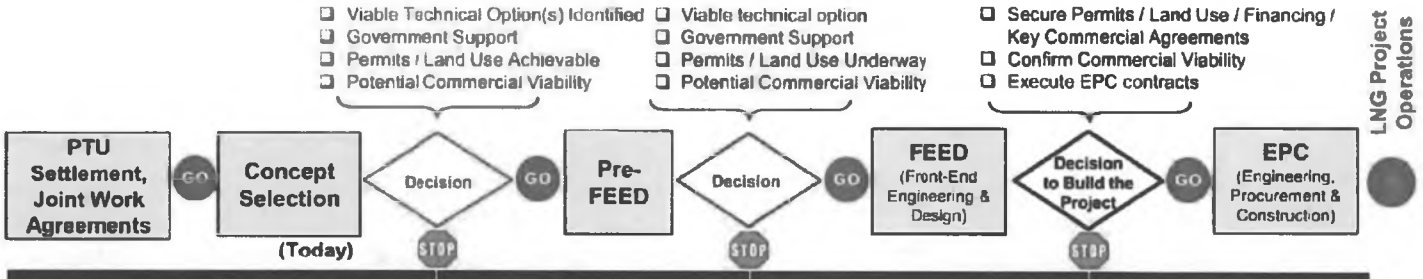
- Joint work commenced March 31, 2012 after completion of the Pt. Thomson Settlement / joint work agreements
- Cooperative effort among the leading North Slope producers and a leading North American pipeline company
- Identified potentially viable LNG project options to monetize ANS natural gas
- Used 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

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

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

COMMERCIALIZING NORTH SLOPE GAS
- GOVERNOR'S 2013 BENCHMARKS -

ExxonMobil ConocoPhillips BP TransCanada

February 15, 2013

Governor Sean Parnell
550 West 7th 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

"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***

Proposed Alaska LNG Project Concept

Pipeline	**Diameter**: 42"
	Design Rate[1]: 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**[1]: 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
State Off-takes	**Off-takes**: 5 points along pipeline route
	Design Rate: 250 – 500 million standard cubic feet per day, based on demand
Capital Investment	**Estimate**[2]: $45 – $65 USD Billion

Companies release new details on pipeline

Published: February 19, 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, solidifying 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 7 key details including the size of the pipe, daily volume of gas, updates on the gas treatment and liquefaction process 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 Parnell request in a letter to Parnell. They said they were looking at a 42-inch diameter pipeline that would carry up to 3.1 B 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 said last fall an initial round of benchmarks aimed at getting done 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 $60 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 gasline 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 "peek a bit of a skeptical eye" when hearing about progress on a line that has yet to be pumped.

"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_2 using existing injection systems as appropriate

PBU Central Gas Facility Tie-in

6

Work Product In Progress

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

7

Work Product In Progress

COMMERCIALIZING NORTH SLOPE GAS
- CONCEPT SELECTION: DOWNSTREAM -

SCLNG - Concept Summary – Downstream

Alaska SCLNG Project
Concept Information

LNG Plant and Storage

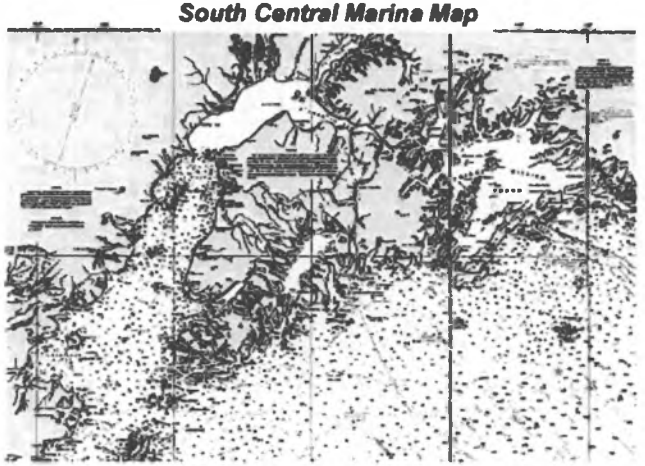
- Three 5.8 million tons per annum (MTA) LNG trains
  - Plant receives 2.2 - 2.5 billion cubic feet per day to liquefy
  - LNG production varies with ambient temp (4.9 - 6.3 MTA)
  - Small volume of stabilized condensate produced (~1,000 bbl/day)
- Integrated utility system with all utilities on site
- 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 Marina Map



8

Work Product In Progress

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

Ignik Pad
Photo courtesy of DOE

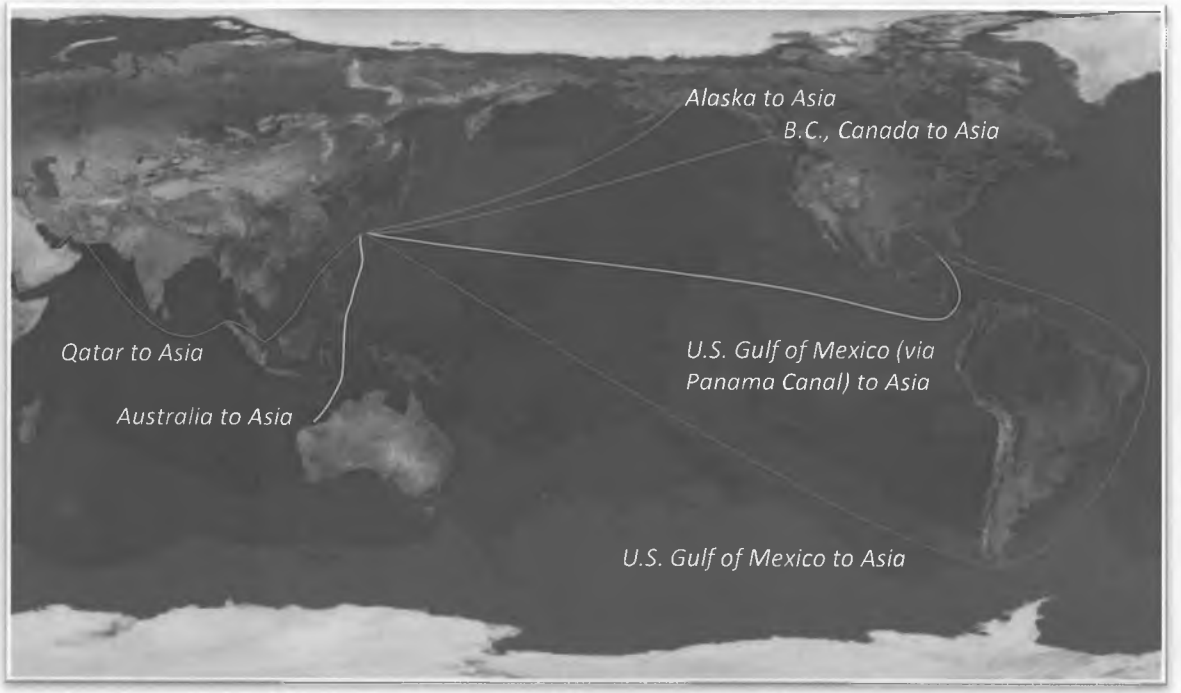
COMPARATIVE ADVANTAGES OF AK LNG
- EXCEPTIONAL RECORD OF RELIABILITY -

- 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 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



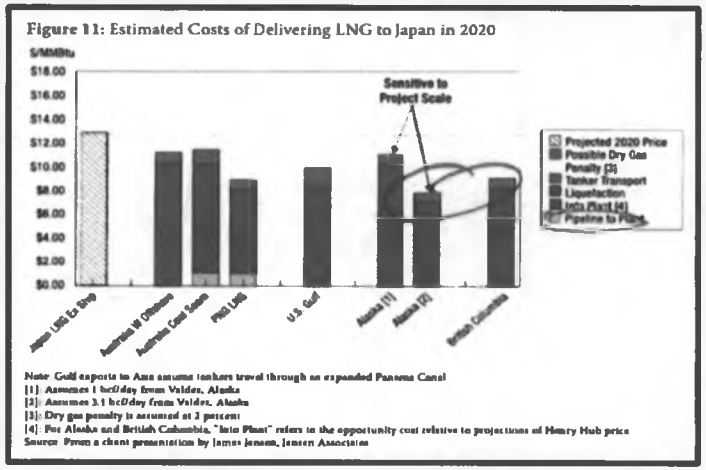
- Proximity/shipping costs are very low
- Use of existing infrastructure and pipeline routes reduces costs
- Cold weather efficiencies significantly decrease processing costs compared to warmer climates

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

Wood Mackenzie *"Alaskan LNG Exports Competitiveness Study, AGPA, Final Report, July 27, 2011"*
Brookings Institution, *"Liquid Markets: Assessing the Case for U.S. Exports of Liquefied Natural Gas,"* May 2012

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

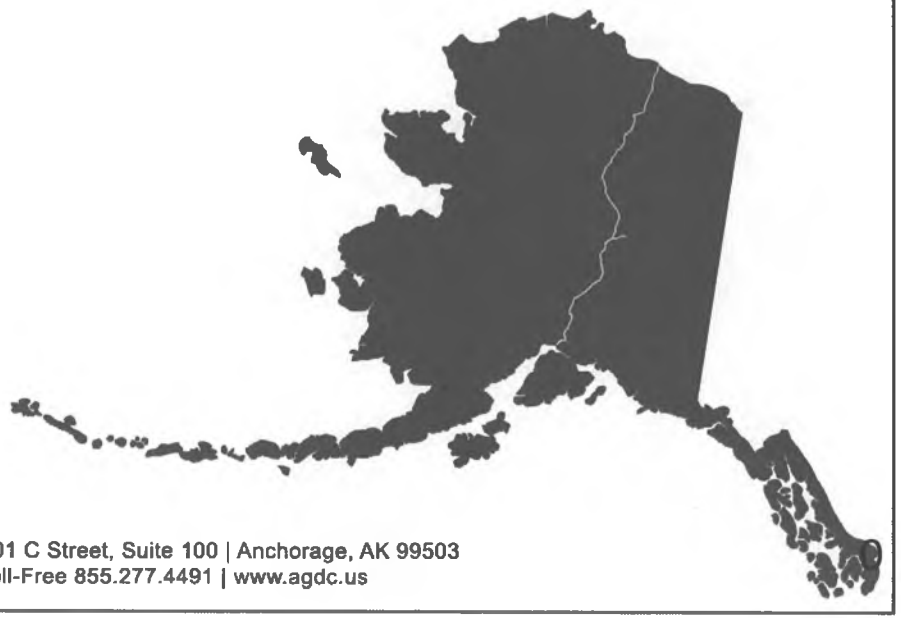
ASAP

Alaska's In-State Gas Pipeline

Joint Senate and House Resources Meeting

AGDC Update

May 30, 2013



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Governor Parnell Signs HB4

ASAP

HB4 2013 Enabling Legislation

Key legislation components to advance the project:

- New regulatory framework for contract carriers
  - Contract carrier status allows AGDC to enter into long-term contracts
- Ability to enter into confidential agreements (similar to AGIA)
- Authorizes AGDC to issue bonds
- Sufficient funding to advance project through Open Season
- Authority to determine ASAP ownership structure—key to attracting shippers/buyers and financing
- Procurement code and administrative procedures aligned with oil & gas industry standards
- Establishes a new corporation under Alaska Department of Commerce, Community and Economic Development
- Creates 7 member Board of Directors to provide oversight
  - 5 public members and 2 Cabinet members

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S. 157: Denali National Park Improvement Act

- Secretary of the Interior to issue a right of way for a natural gas pipeline through Denali National Park
- Allows for construction of distribution and transmission pipelines for use by the Park
- Must comply with Title 11 of ANILCA
- Must comply with National Environmental Policy Act
- Subject to terms and conditions the Secretary deems necessary
- Passed out of Committee on Energy and Natural Resources

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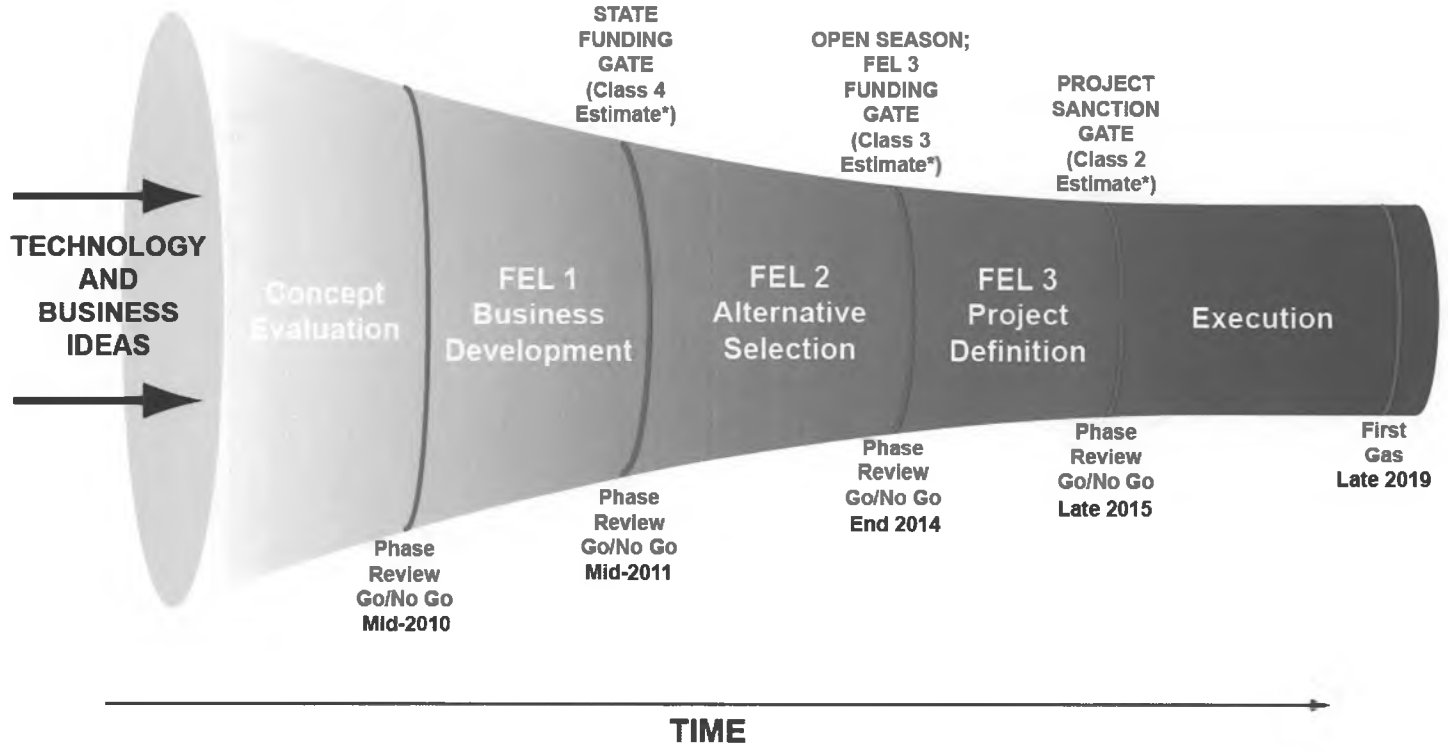
Stage Gate Approach

Front-End Development Progressively Narrows Uncertainty of Cost and Schedule



*Refers to AACE cost estimate classes (Association for the Advancement of Cost Engineering). The lower the class number, the higher the confidence in the accuracy of the estimate.

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Work Underway

- Preparing for new AGDC organizational structure
  - Business and Project Execution Plans
  - New Policies & Procedures
- Initiating commercial engagement with new confidentiality authority
- 2013 major work activities (Funding available July 1)
  - Advancing FEL-2 (Pre-FEED) facilities and pipeline engineering
  - Program management contractor solicitation
  - Open season management contractor solicitation
  - Construction planning and logistics
  - Regulatory engagement – PHMSA special permit
  - 2013 summer/winter field programs

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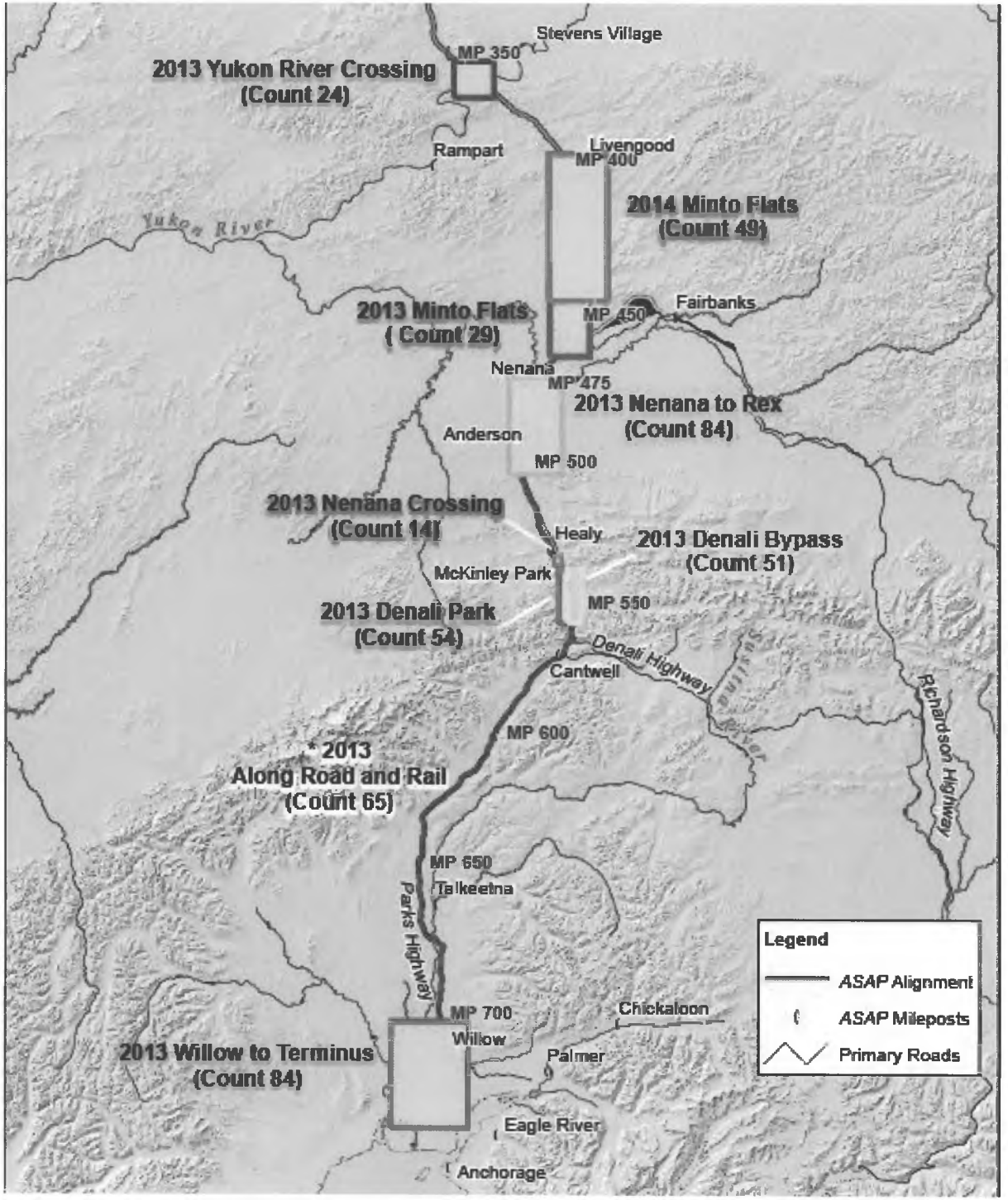
2013 Field Program

- 444 geotechnical boreholes from Yukon River to Point Mackenzie
- Geohazard investigation
- Stream crossing surveys
- Terrain unit mapping
- Cultural resource surveys
- Routing surveys



Geotechnical Boreholes 2013/2014

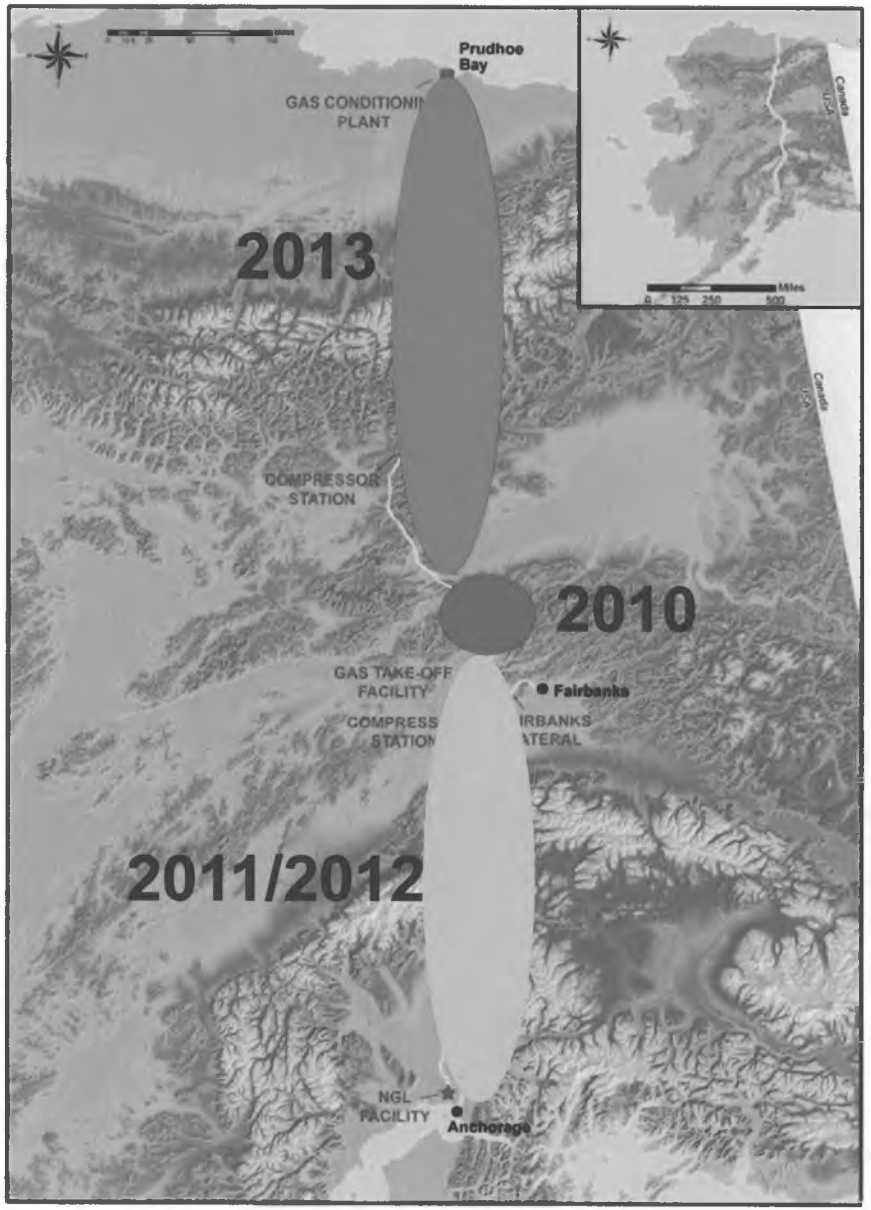
Geohazard Investigation

Division of Geological & Geophysical Surveys (DGGS)

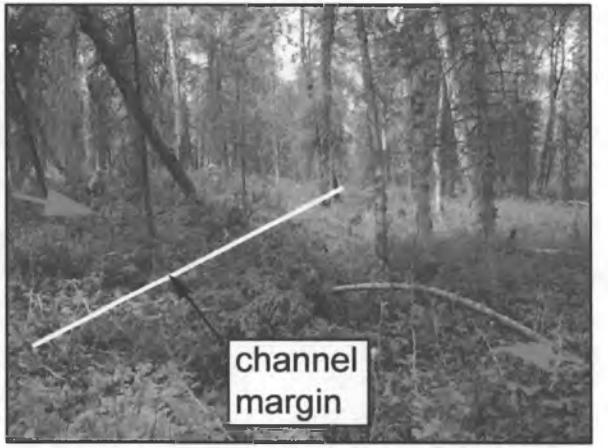
- Acquired Lidar data along entire route
- Completed field programs in 2010, 2011, and 2012
- 2013 field program begins June 1

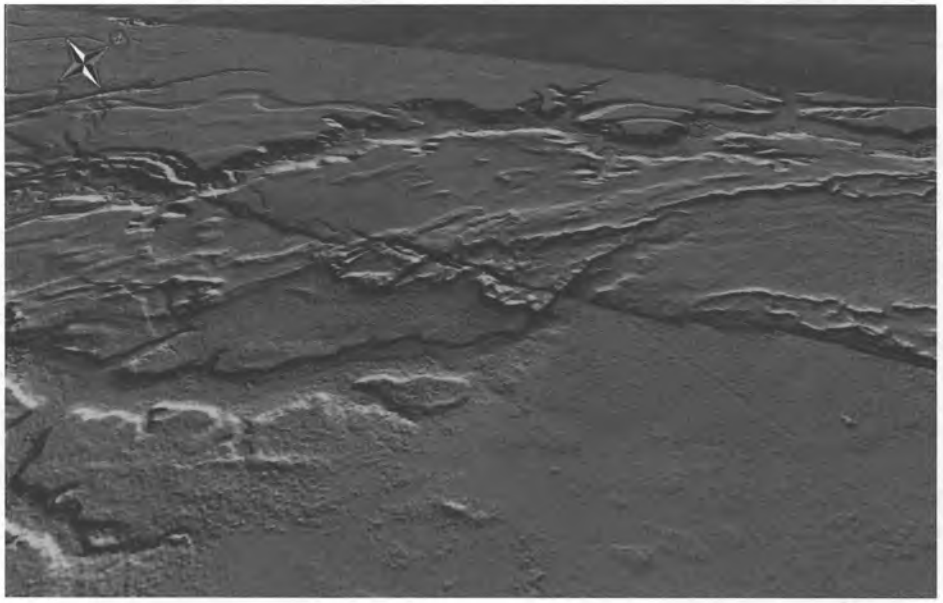
<u>Outcomes of above activities include</u>:

- Characterization of locations and relative activity of geologic hazards
- Maps and reports evaluating potential effects of hazards to pipeline route feasibility, design, and construction

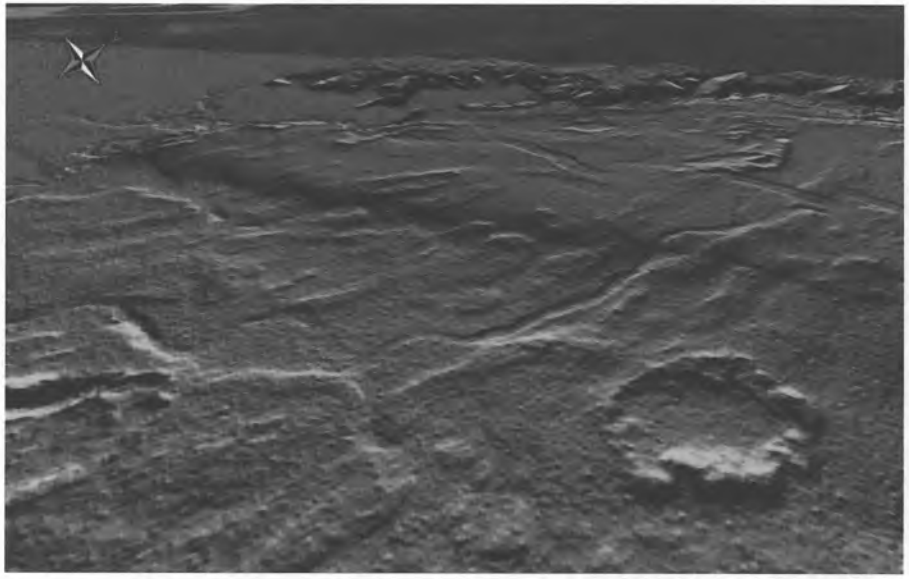


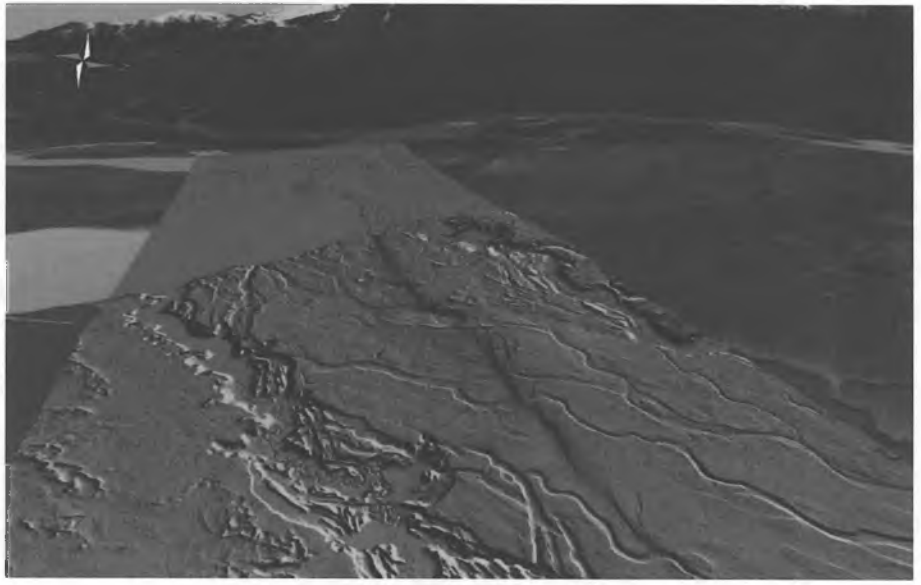
Geohazard: Castle Mountain fault



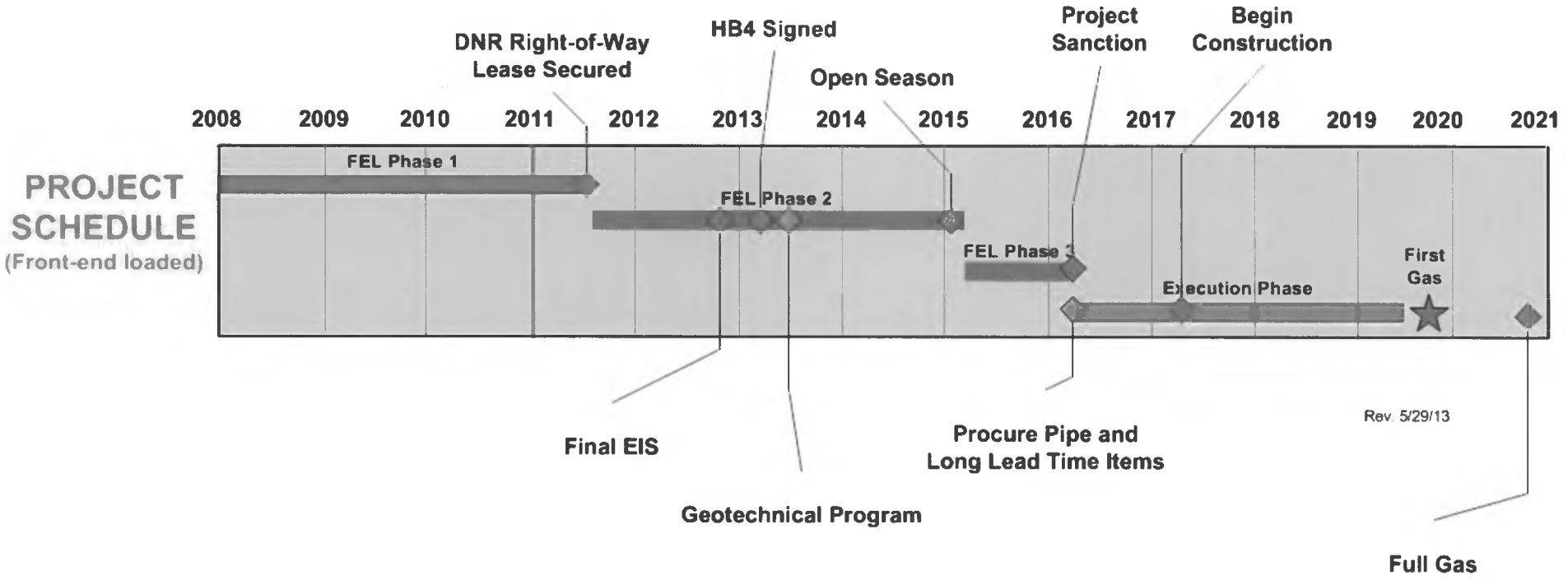


Lidar images of the Castle Mountain fault





ASAP Schedule



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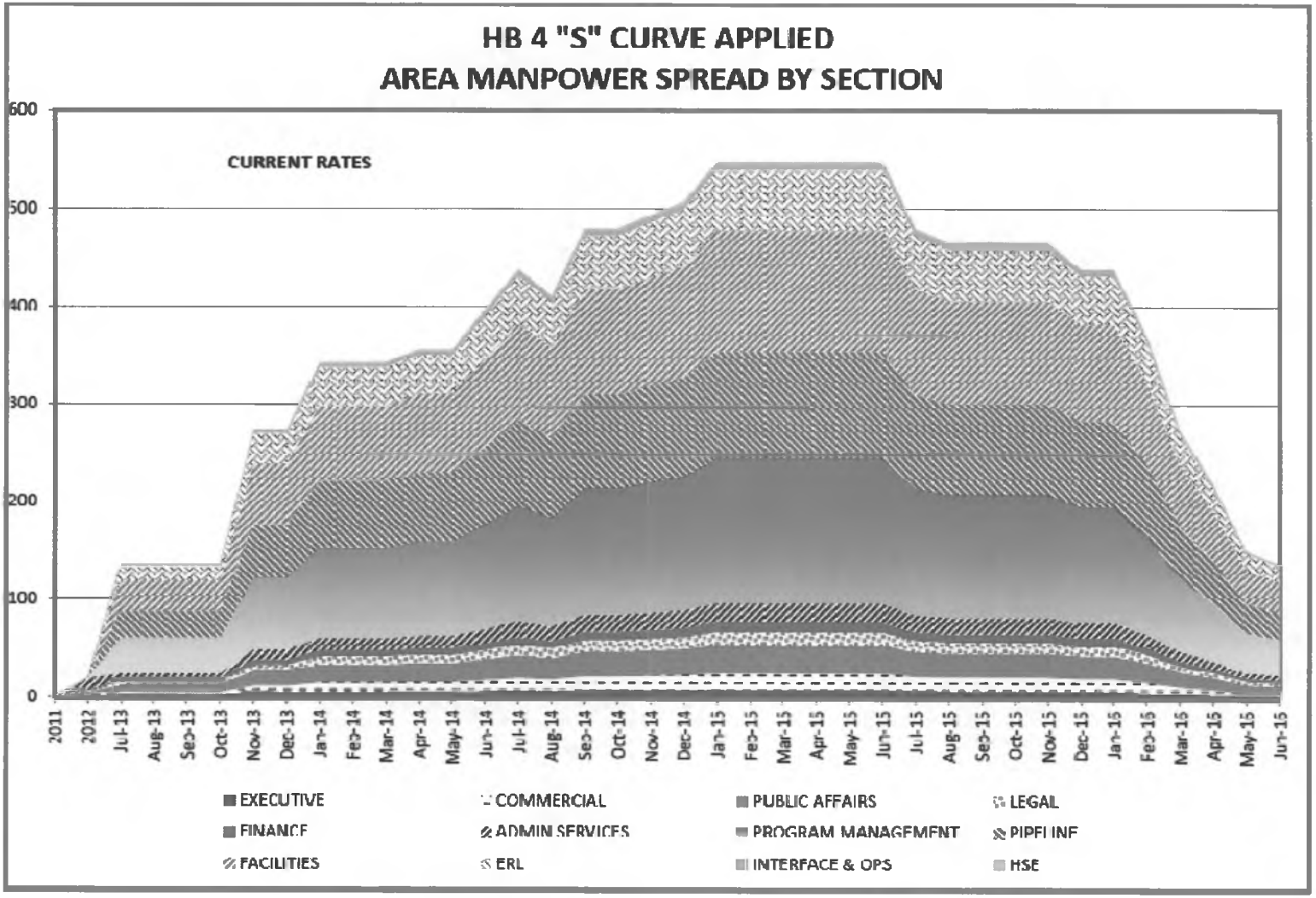
FEL 2 & FEL 3 Manpower Projections



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Thank You

Alaska Gasline Development Corporation

ASAP Project Office

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Phone: (907) 330-6300 • Website: www.agdc.us

Frank Richards, P.E.

Government Affairs & Pipeline Engineering Manager

Phone: (907) 330-6352

Alaska South Central LNG (SCLNG) Project

Overview for Alaska Legislators

May, 2013

Alaska SCLNG Project - Overview

- BP, ConocoPhillips, ExxonMobil and TransCanada are working together to progress an Alaska LNG project:
  - 300+ people developed concept, $35M spent thru Apr13
  - Key third party contractors engaged (URS, Fugro, exp)
  - Leveraging Denali, APP, related material ($700M past work)

- Concept work has defined key issues:
  - Integrated Basis of Design heat/material balance complete
  - Potential integration into existing operations
  - Required gas treating plant design (North Slope location)
  - Pipeline size and routing options (800+ miles, 42" x80 pipe)
  - LNG plant design (15-18 million tons per annum – "MTA")
  - Gas off-take capacity for secure Alaska fuel supply
  - Preliminary capital estimate - $45-65 Billion (2011 dollars)

- Key project issues to address:
  - "Mega-project" challenges (labor, resources, equipment, etc)
  - Commercial and fiscal issues
  - Uncertainty related to permitting timing

- Forward Plans:
  - Planning the 2013 Summer Field Season
  - Use "Phased/Gated" process to advance project
  - Continue working together to optimize design

Alaska SCLNG Plant
Conceptual Layout

Results of
URS ArcGIS
Location Suitability
Screening Study

SCLNG Concept Summary - Upstream

PTU (62 miles east of PBU/GTP area)

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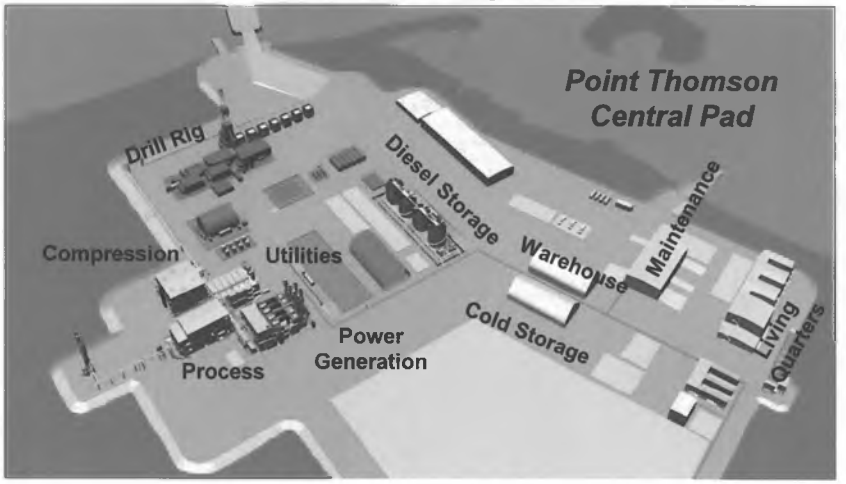

PBU Tie-in (adjacent to proposed GTP location)

- 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_2 using existing injection systems as appropriate

PBU Central Gas Facility Tie-in

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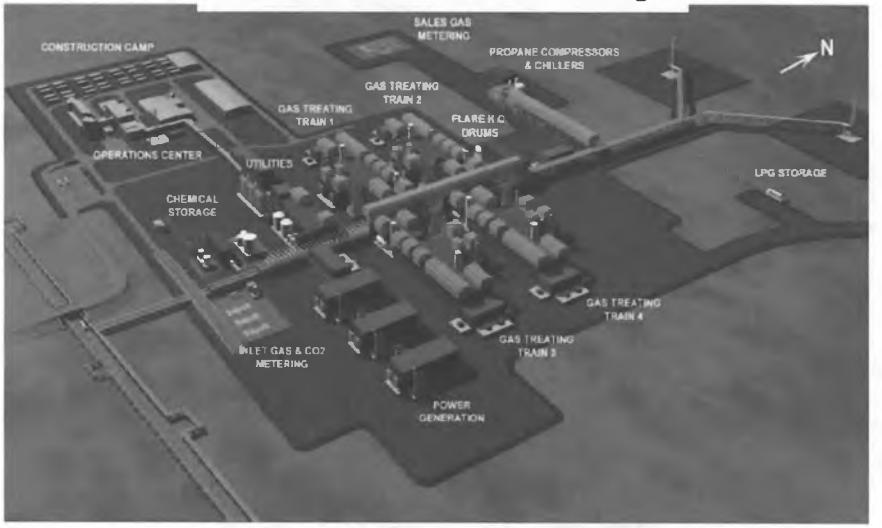
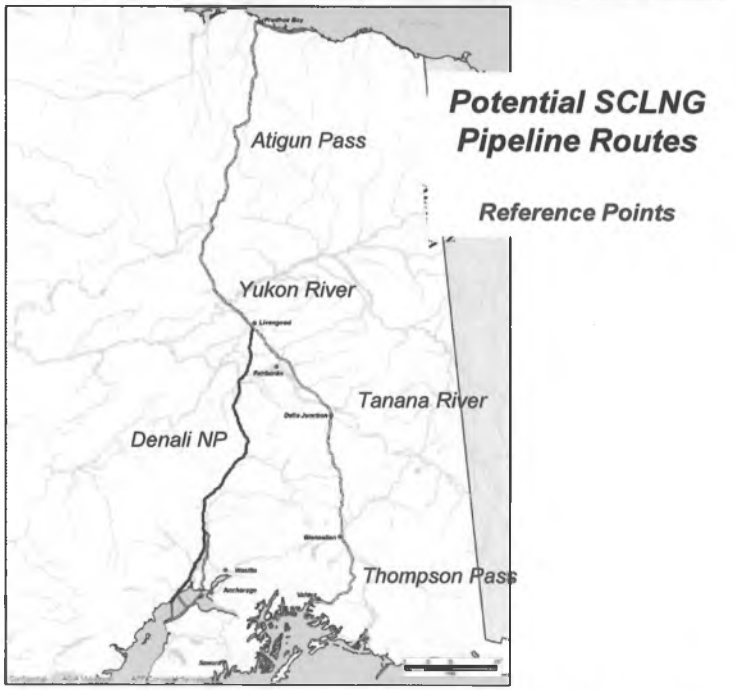
- Peak workforce – 500-2,000 people

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



Work Product In Progress

SCLNG - Concept Summary – Downstream

LNG Plant and Storage

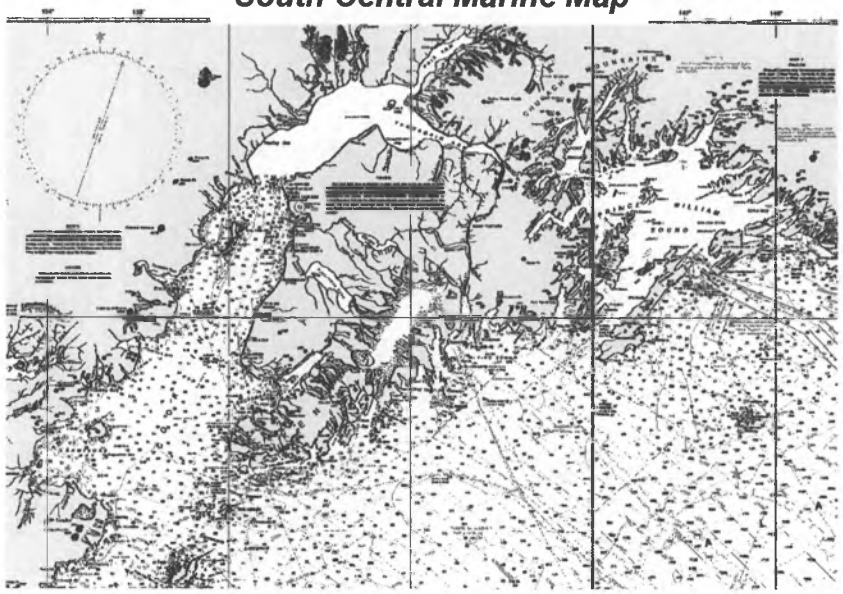
- Three 5.8 million tons per annum (MTA) LNG trains
  - Plant receives 2.2 - 2.5 billion cubic feet per day to liquefy
  - LNG production varies with ambient temp (4.9 - 6.3 MTA)
  - Small volume of stabilized condensate produced (~1,000 bbl/day)
- Integrated utility system with all utilities on site
- 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

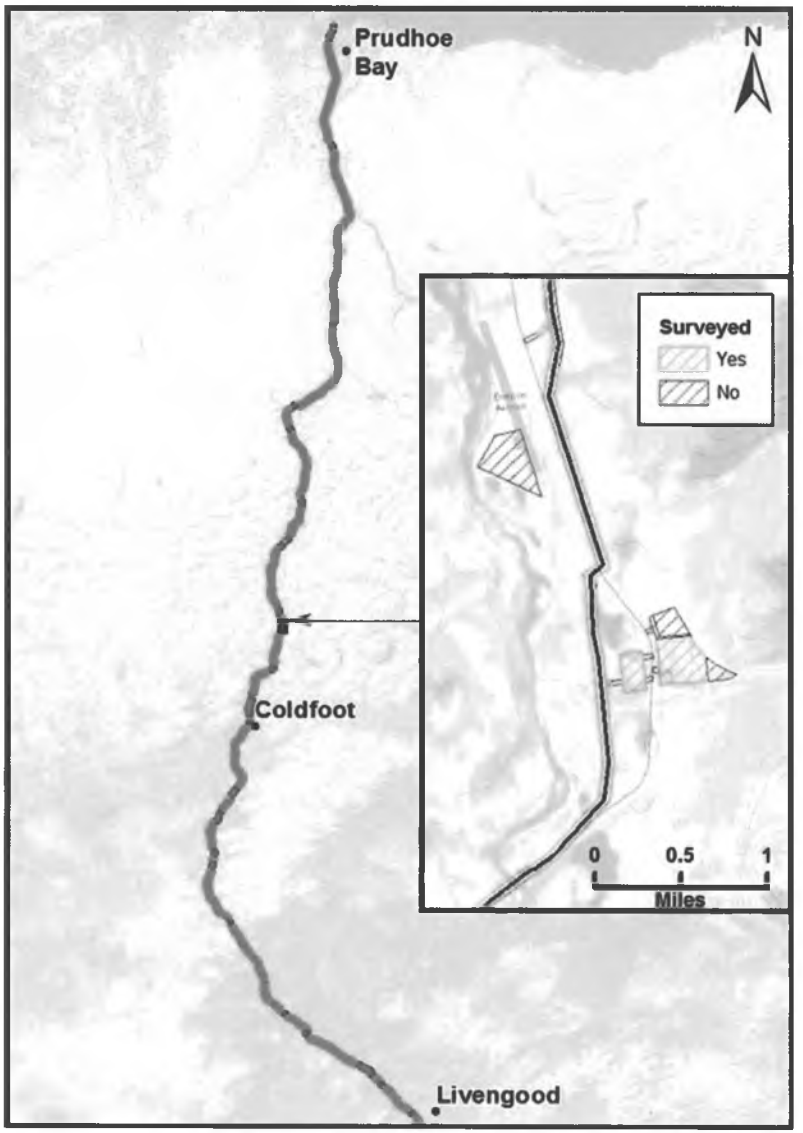


SCLNG – Safe 2013 SFS Program

- Key plans and documents
  - Safety / training plan
  - Execution Plan
  - Regulatory Roadmap
  - Individual Agency Permit Plans
  - Field Data and Survey Protocols
  - Preliminary title research
- Pre-Field work
  - Safety training and stewardship
  - Land access permitting
  - Logistics and transportation
  - Contracting and controls
  - Data management and delivery
- Key challenges
  - Remote locations
  - Multiple field crews
  - Minimize impact
  - Summer season duration

SCLNG - 2013 Summer Field Season Scope

- Planning, logistics, and permitting to support survey work
- Public and agency engagement to support survey work and ongoing project planning
- 2013 Summer Field Season work:
  - Cultural Resources: > 6,500 acres
  - Hydrology: 37 field targets
  - Lakes: 17 field targets
  - Fisheries: 20 field targets
  - Traditional knowledge, subsistence, and ethnographic surveys



Work Product In Progress

Alaska South Central LNG (SCLNG) Project

Overview for Alaska Legislators

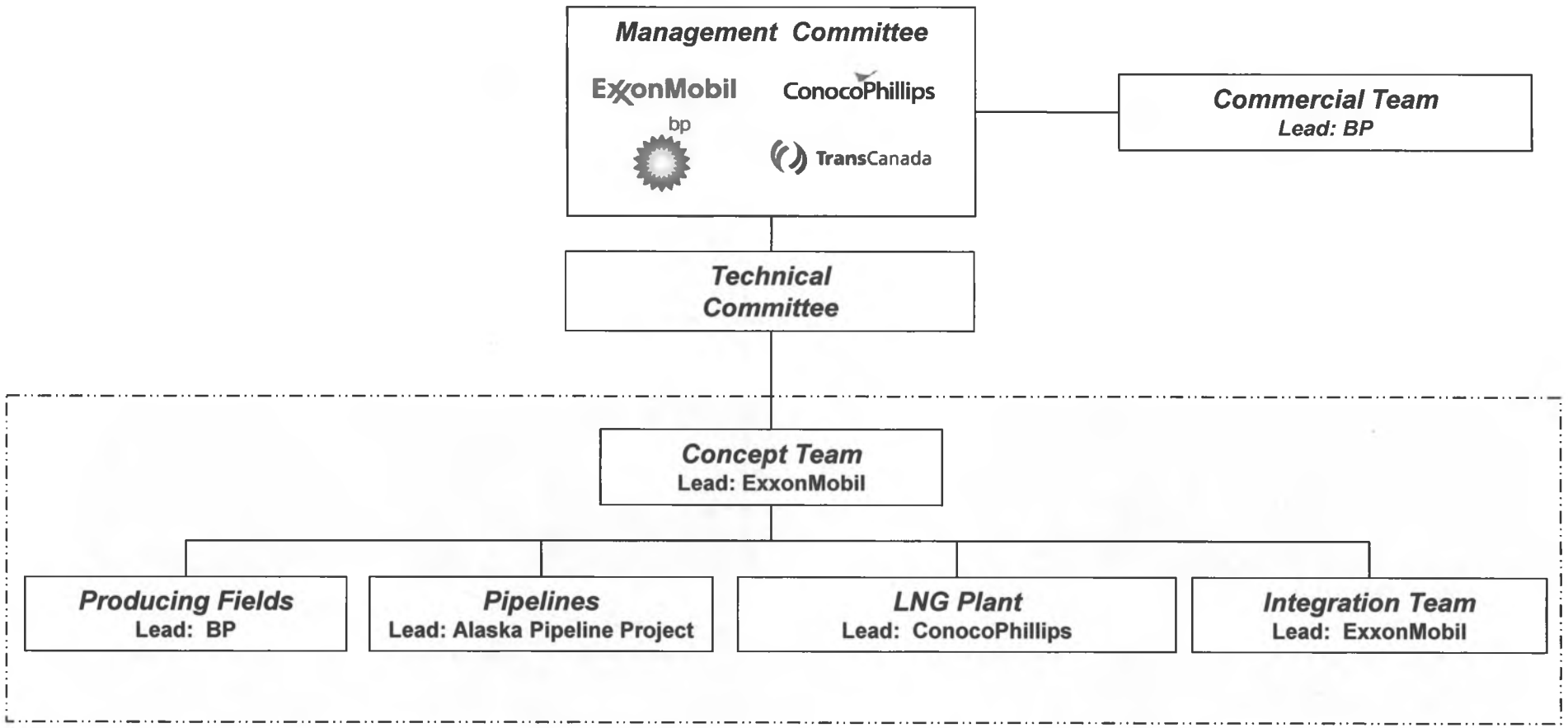
Back-Up Material

Attachments to Oct-12 Letter to Governor Parnell

May, 2013

Attachment 1

Southcentral Alaska LNG – Integrated Team



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

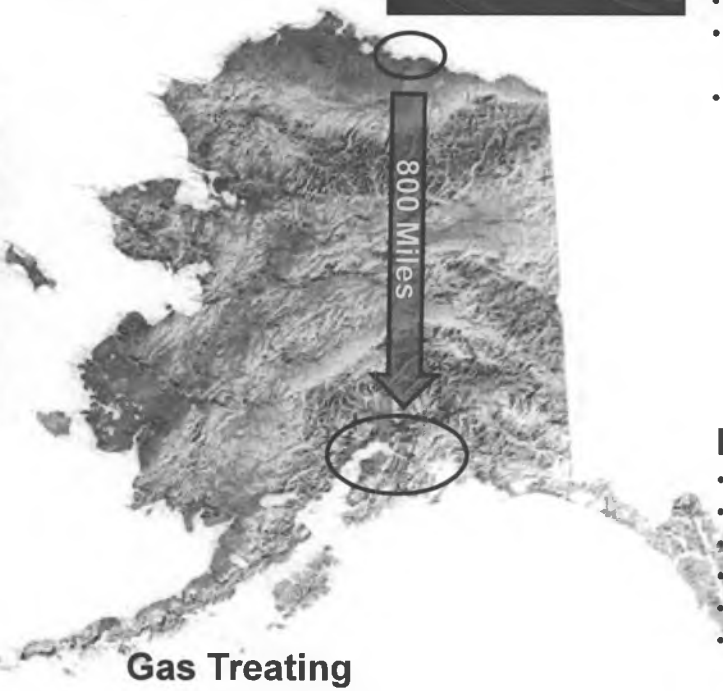
- **Joint work commenced March 31, 2012 after completion of the Pt. Thomson Settlement / joint work agreements**
- **Cooperative effort among the leading North Slope producers and a leading North American pipeline company**
- **Identified potentially viable LNG project options to monetize ANS natural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

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

Pipeline

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

Gas Treating

- Located at North Slope or Southcentral LNG site
- Remove CO_2 and other gases and dispose / use
- Footprint: 150 - 250 acres
- Peak Workforce: 500 - 2,000 people
- Required Steel: 250,000 - 300,000 tons
- Among largest in world

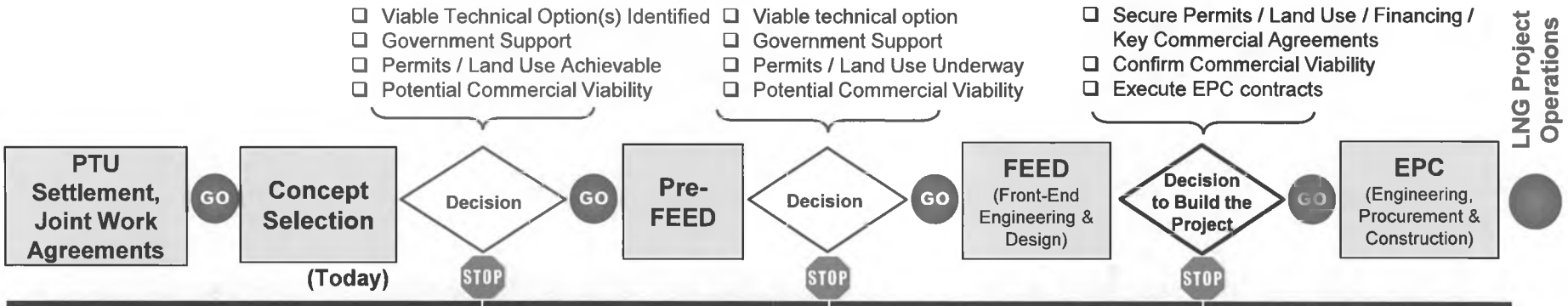
Estimated Total Cost: $45 – $65+ Billion **Peak Construction Workforce: 9,000 – 15,000 jobs**
Operations Workforce: ~1000 jobs in Alaska

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

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

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

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

Alaska/Japan LNG Opportunity
Resources Energy, Inc.
Presentation to Joint Senate/House Resources

May 2013

Key events bring Japan to examine ALASKA LNG

* Fukushima disaster in March 2011
* Reliable and economical energy to replace nuclear power
* LNG is the best choice before establishing green energy for the future
* Distributed power requirement in municipals not relying on power companies

History of our Alaska involvement

* Contact to DOE - September, 2011
* First meeting with ANGDA – December, 2011
* MOU between ANGDA and REI – December, 2011
* Pre-Investigation Report based on the MOU – March, 2012
* Start Negotiation with DNR – April, 2012
* Execution of Cooperation Agreement – December 20, 2012
* Start of Feasibility Study – January, 2013
* Completion of Feasibility Study – April, 2013
* Consortium finalization in Japan - ongoing

Objectives of Feasibility Study

REI will conduct a comprehensive feasibility study of Alaska LNG Project for the following objectives.

I. Verify, feasibility/viability of the Project for investment evaluation, to the members of Japan; potential partner companies, national & local governments and institutional financing agencies.

II. Verify, Alaska as a long-term stable LNG source with cost competitiveness, to potential Japanese LNG buyers.

III. Verify, benefits of U.S. & Japan natural resources alliance by expanding partnership with State of Alaska, US Federal Government and Japanese Authorities(Hyogo and others).

Possible LNG Plant Site

* Adjacent to the existing marine terminal of Valdez is the most appropriate LNG plant site from following points of view – existing infrastructure, soil condition, marine conditions
* North of Kenai LNG plant in Nikiski is the best alternative LNG plant site among Port Mackenzie, Tyonek and Nikiski from the views of land conditions and marine conditions especially in winter.

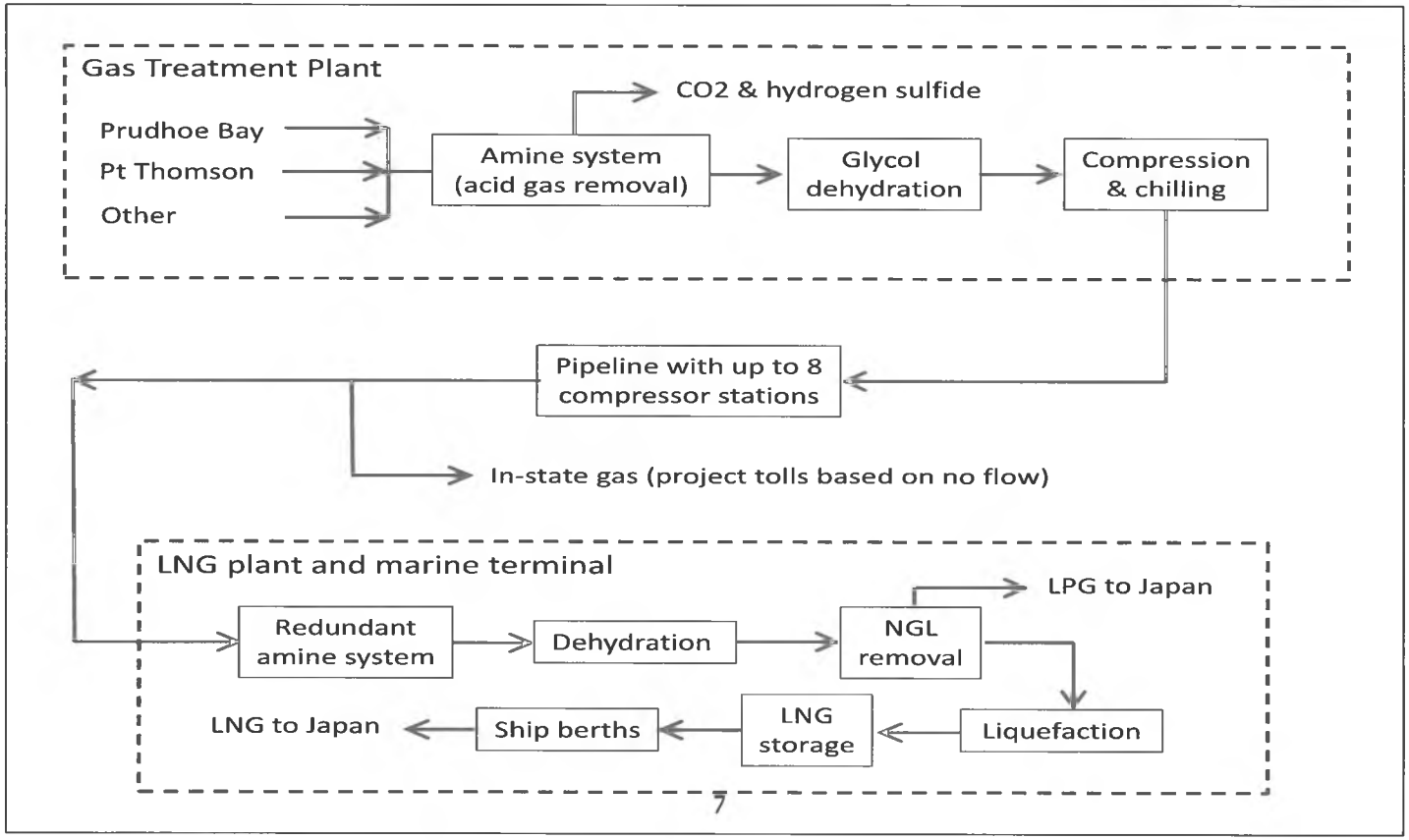
Valdez Base Case and Nikiski Alternative Case

Following two cases were reviewed in the Feasibility Study:

	Case 1	Case 2
LNG Plant site	Valdez	Nikiski
Pipeline Route and Diameter	Prudhoe Bay – Valdez 42'	Prudhoe bay – Nikiski 36'
Size of LNG Train	5 Million Tons/Year	3.75 Million Tons/Year
Total Trains	4 Trains (20 Million Tons/Year)	4 Trains (15Million Tons/Year)

FS Block Flow Diagram

FS was executed by following flow diagram



Major Permits and Approvals on LNG Project

Major permits and approvals which must be obtained:

Table 1. Major Permits, Approvals, and Consultations

Key Topic	Agency	Citation	Agency Action	Remarks
FEDERAL				
LNG Facility Approval	FERC	Section 3 of the Natural Gas Act	Issue Authorization of Siting, Construction, and Operation of LNG Terminal Facility	
NEPA Compliance	FERC	NEPA 40 CFR 1500-1508	Prepare and Issue EIS	DOE, U.S. Department of Transportation (USDOT), Coast Guard, USACE, and U.S. Environmental Protection Agency (EPA) are typically Cooperating Agencies
Export LNG to Other Countries	DOE	Part 590 DOE Regulations	Approval to export natural gas to non-Free Trade Agreement (FTA) countries (and FTA countries)	
Marine Structures	USACE	Section 10 of the Rivers and Harbors Act of 1899 33 CFR 320 to 330	Issue permit for activities that would occupy, fill, or grade land in a floodplain, streambed, or channel of a stream or other waters of the United States.	
Wetlands	USACE	Section 404 of Clean Water Act (CWA)	Authorizes placement of fill or dredged material into Waters of the U.S. (including wetlands)	
Wetlands	EPA	Section 404 of CWA	Can veto wetland permits issued by USACE	

Gas Supply

- Following table shows the Oil & Gas reserves of the North Slope

Source：2009 Annual Report of DNR, Alaska and others

Oil and Gas Fields	Working Interests (*operator) and current situation	Gas Reserves (tcf)	Oil Reseves (billion bbls)
Prudhoe Bay	BP* 26.36% ConocoPhillips 36.08% ExxonMobil 36.40% Chevron 1.16% (Oil 380 Mb/d, Gas reinjected)	24.5	2.45
Kuparuk River	ConocoPhillips*54.15% BP 38.39% Chevron 4.95% ExxonMobil 2.51% (Oil 140 Mb/d、Gas reinjected)	0.6	0.99
Point Thomson	ExxonMobil* 56.76% BP 27.06% Chevron 11.72% ConocoPhillips 3.21% and others (Under development)	8.0	0.41
NPRA		—	0.14
Others		1.7	1.18
Total		34.8	5.17

Gas Supply (2)

* There are several discovered but undeveloped gas fields in the North Slope as shown below (Source: DOE/NETL-2007/1280)

* Possible Reserves(bcf)
* Onshore
  * Gubik 600
  * Kavik 115
  * Square Lake 58
  * Meade 20
  * Umiat 5
  * East Umiat 4

* Outer Continental Shelf (OCS)
  * Burger 14 Tcf

Gas Supply (3)

* The 2011 annual report of Alaska DNR shows the following undiscovered, technically recoverable resources of conventional gas which was compiled based on the data of USGS and BOEM:

* North Slope Onshore & State Waters
* Gas, bcf
* Central North Slope 37,516
* Nat'l Petrol Reserve Alaska 52,839
* ANWR Coastal Plain 8,605

* Total – North Slope Onshore 98,960

* Arctic Alaska Outer Continental Shelf (OCS)

* Chukchi Shelf 76,770
* Beaufort Shelf 27,640
* Hope Basin 3,770

* Total – Arctic OCS (offshore) 108,180

* TOTAL – Arctic Alaska 207,140 bcf

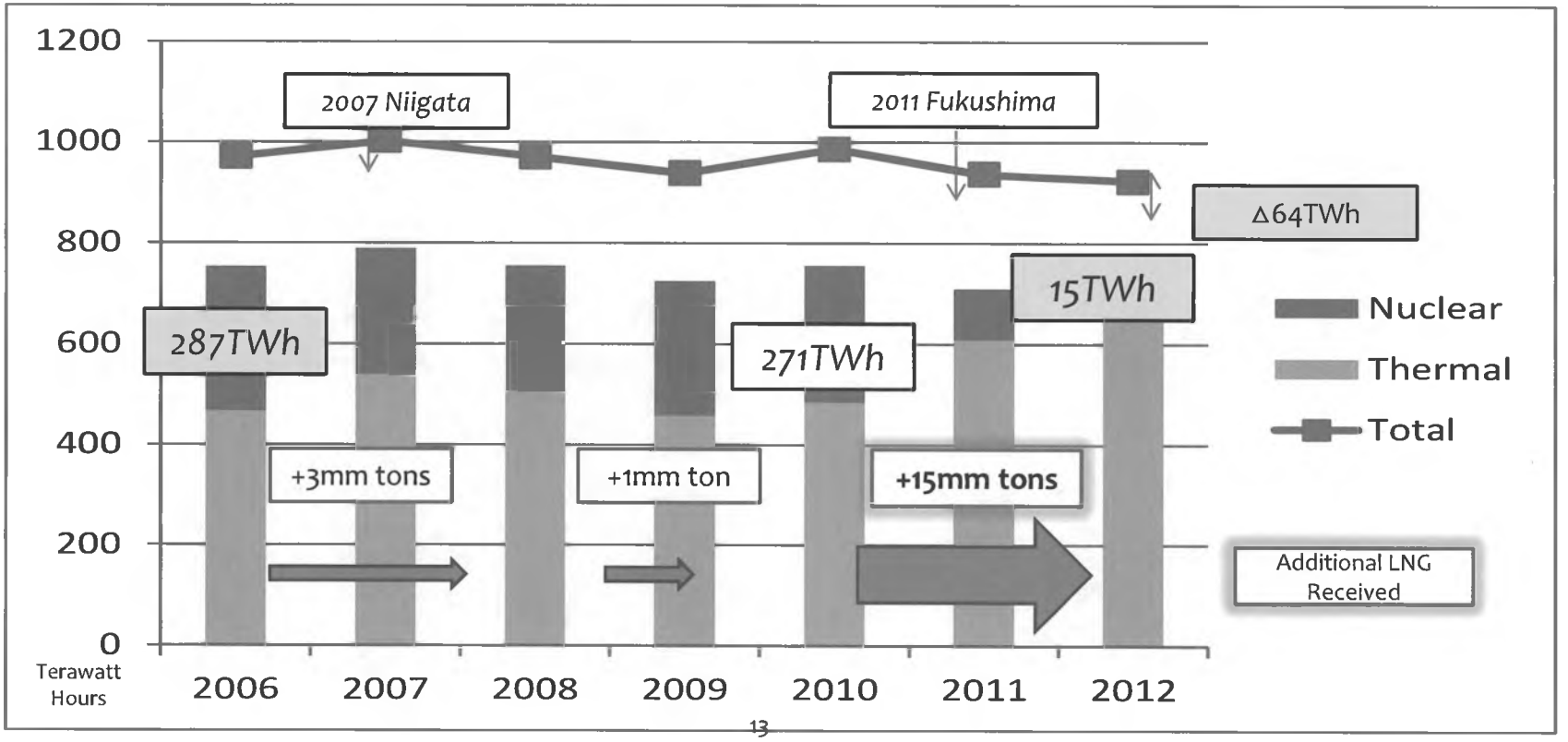
Gas Supply (4)

* We have had informal discussions with the Producers with no definitive arrangements for the supply of gas to date. We will continue our discussions with the producers to move forward in a mutually beneficial arrangement in a reasonable period of time to supply gas to our planned LNG plant.
    * In order to acquire the supply gas, we have to evaluate carefully all the available options and have to approach the owners of the gas with the alternative that adds the most overall strategic and commercial value to us, and it should be accepted by the current gas owners in a reasonable period of time.
* There will be three options for consideration: (1) acquisition to the rights of gas reserves, (2) farm-in to the owner's lease or purchasing owner's share and (3) gas purchase and sales agreements with the owners.

Japan Electricity Generation 7 Year Trend

Before Kashiwazaki ~ After Fukushima

287 TWh (2006) ***Nuclear Generation*** *(2012) 15TWh*



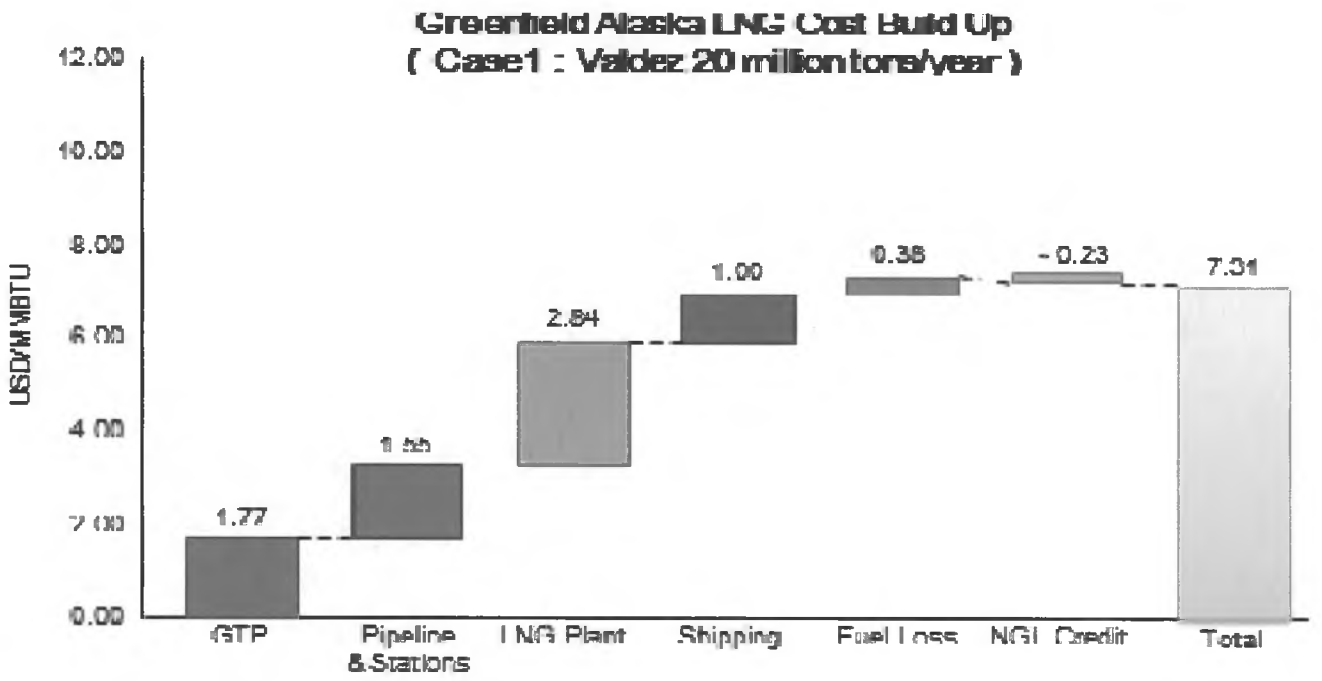
Tariff Assumptions

Valdez and Nikiski

LNG Plant sites

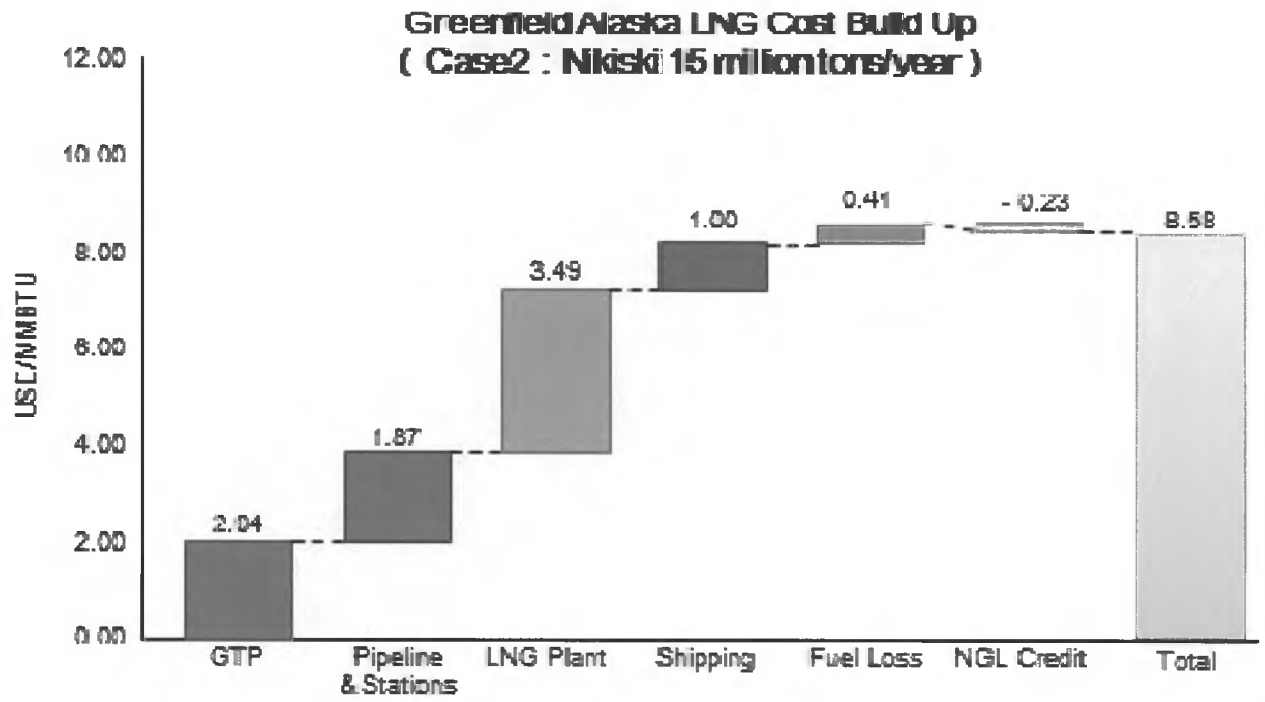
Alaska LNG Cost Build Up

Gas Securement at Competitive Pricing is Critical - Valdez

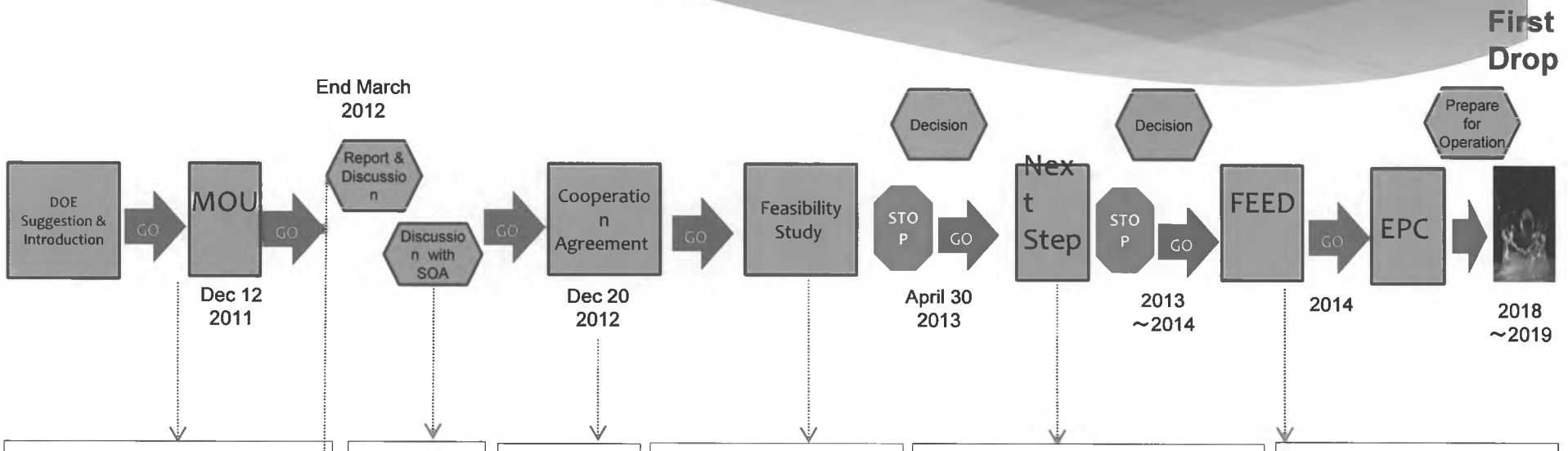


Alaska LNG Cost Build Up

Gas Securement at Competitive Pricing is Critical - Nikiski



FS Result and Recommendation
North Slope Natural Gas Export to Japan



- MOU Between ANGDA & REI
- Conduct Pre-investment Study for NS LNG Project and Japanese Market Study

- Established viability and reliability of project for Japanese Long Term Energy Supply.
- Prepared Report for SOA and Japanese Industry

- Preparation of Feasibility Study
- Pipeline Route, Plant Site, Process of liquefaction

Cooperation Agreement Between REI and SOA

<u>Feasibility Study Result</u>
- CIF Japan Price : Around $9-10 MMBTU
- Site: Valdez or Nikiski
- Construction:Max 6yr
- Permission Max 3yr
- Demand: Enough
- Marine Transportation: Feasible
- LNG Production target 2018-2019
- Confirm Commercial Viability

- Agreement with SOA for Participation for FEED of LNG Plant
- Agreement between SOA and JBIC
- Securing Gas Supply
- LNG Process Selection
- Pipeline Route Selection
- Selection of Pipeline
- Establishment of Alaska Consortium
  SOA, Gas Holder, Gas Producer Pipeline Co., Native Corp., Investor
- Establishment of Japan Consortium
  Electric Co., Gas Co., Industrial User,
  Local Gov., Gov. Agency

- Permission
- Gas Purchase Agreement
- LNG Sales Purchase Agreement
- Transportation Agreement
- Finance Agreement
- DOE Export License
- Land Use Approval

REI
Alaska-Japan LNG Project

ALASKA/Japan LNG Project
Next Steps

* Discussion of Feasibility Study details with potential Consortium Members in Japan
* Solidify Financial participants to enable the next phase – FEED (targeted to start prior to the end of 2013)
* Need clarity on Pipeline Alignment in Alaska
* Secure Natural Gas at upstream and wellhead
* LNG Plant - Japan has major share of LNG plant, but must have Alaskan investment

ALASKA LNG Market in Japan

* Electric Utilities
* City Gas Companies
* Municipal & Private Power Sectors
* Storage(Underground) and Distribution in Japan
* Industrial users, others

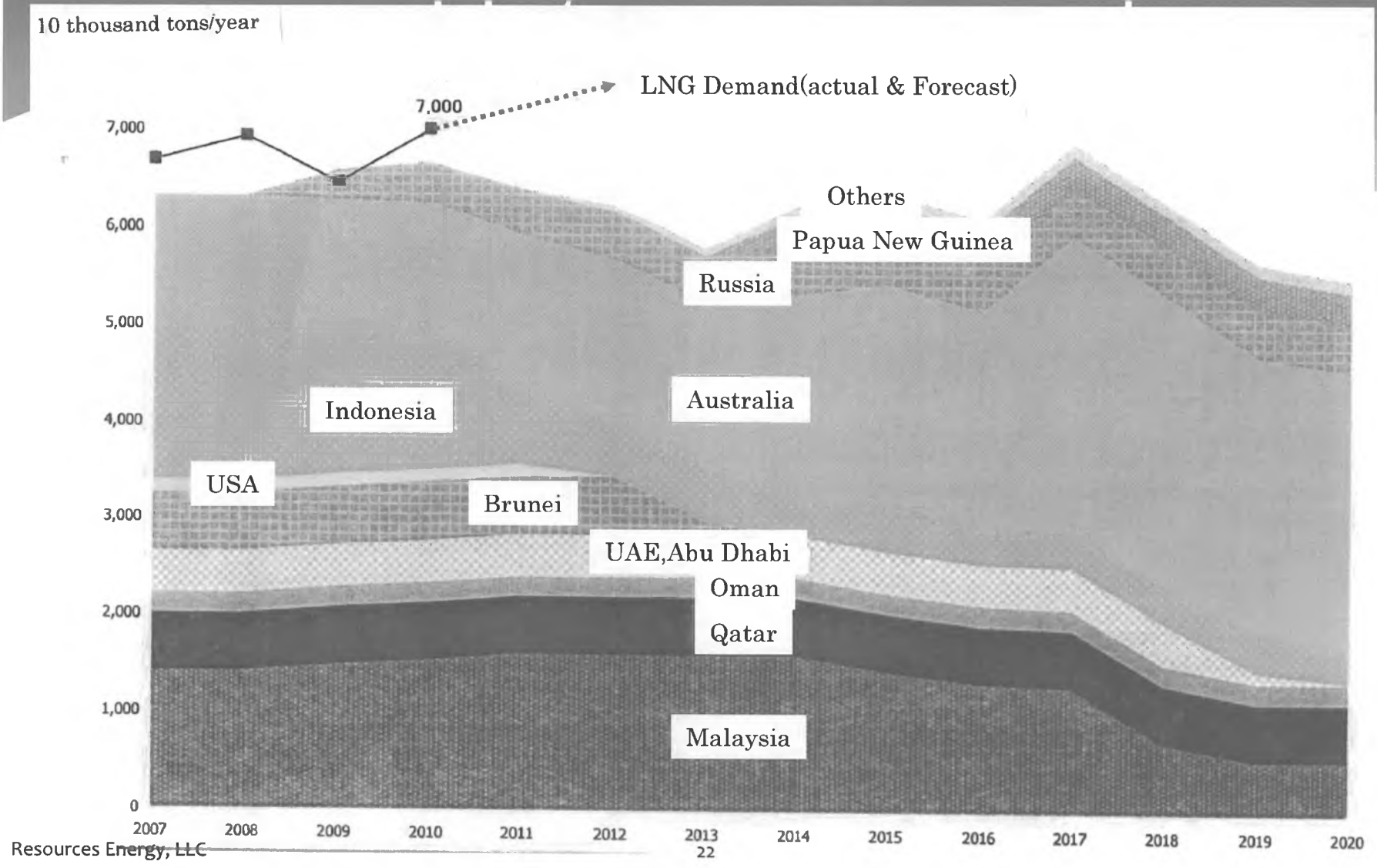
ALASKA LNG Project (Project Concept)

* Secure Natural Gas at upstream and wellhead
* Natural gas to LNG plant to be constructed through pipeline(tariff base)
* Build, Own and Operate LNG Plant (Japan has major share of LNG plant, but must have Alaskan share)
* Transport LNG to Japan by LNG vessels
* Storage and Distribution in Japan

Worldwide Competition
LNG Markets and timing window

* Timeline of first LNG deliveries from Alaska to Japan – ***prior to 2020*** is CRITICAL
* Worldwide competing projects are coming online and are a direct threat to the Alaska LNG project
* Producers have competing interests in other LNG projects worldwide – may not have the same timeline priority as Resources Energy

LNG Supply Sources to Japan



Worldwide LNG Competition (1) Australia

Project Name	Capacity (million tons/year)	Status	Start Year of LNG Production	Actual Estimate
Gorgon T1-3 (A)	5 x3	Under Construction	2014	2015
QCLNG T1,2 (A)	4 x 2	Under Construction	2014	2014
APLNG T1 (A)	4.5	Under Construction	2015	2016
GLNG (A)	3.9 x 2	Under Construction	2015	2015
APLNG T2 (A)	4.5	Under Construction	2016	2018
Ichthys (A)	4.2 x 2	Under Construction	2017	2016
Prelude (A)	3.4	Under Construction	2017	2016
Wheatstone (A)	4.5 x 2	Under Construction	2017	2016
Browse (A)	4 x 2	FEED	2018	2020+
Arrow (A)	4 x 2	FEED	2015	2018
Gorgon T4 (A)	5	before FID		2020+
Wheatstone T3 (A)	4.5	before FID		2020+
Gorgon T5 (A)	5	before FID		2020+
Pluto T2 (A)	4.8	before FID		2020+
Bonaparte (A)	2	before FEED	2018	2018
QCLNG T3 (A)	4	before FEED		2020+
Fisherman's Landing (A)	3.8	before FEED		2020+
Darwin (A)	3.8	During Production	2006.2	2006.2
NWS T1-T5 (A)	3.5 x 5	During Production	1989	1989
Pluto (A)	4.8	During Production	2012.4	2012.4

Worldwide LNG Competition (2) North America

Project Name	Capacity (million tons/year)	Status	Start Year of LNG Production	Actual Estimate	DOE/FERC Approval
Sabine Pass (U) *1	4.5 x 2	Under Construction	2015	2015	done
Freeport (U) *2	4.4 x 3	Under Construction	2018	2018	FTA countries
Lake Charles (U)	5 x 3	Under Construction	2019	2020	FTA countries
Cameron (U) *3	4 x 3	FID	2016	2018	filing
Cove Point (U) *4	5	FID	2016	2018	FTA countries
Kitimat © *5	5 x 2	Before FID	2018	2020+	Export Permit done
Shell ©	10	Before FID			?
Nexen ©	?	Before FID			?
Petronas ©	3.5 x 2	Before FID	2015	2020+	?
	*1 EPC is Bechtel ordered in November 2011				
	*2 OG and CE will respectively take 4.4 Million tons of LNG				
	*3 MSK and MBK will take 8 million tons of LNG				
	*4 TG and Sumitomo will take 3.2 Million tons of LNG				
	*5 Recently ConocoPhillips bought share from Encana and EOG				

Alaska Department of Natural Resources in the News

Office of the Commissioner

April 16, 2013

DNR, DOE SIGN AGREEMENT ON UNCONVENTIONAL ENERGY RESOURCES

(Anchorage, AK) – The Alaska Department of Natural Resources and the U.S. Department of Energy's Office of Fossil Energy today entered into an agreement to work together – and with potential investors – to study unconventional energy resources in Alaska's Arctic.

The memorandum of understanding was signed in Houston today by DNR Commissioner Dan Sullivan and DOE Acting Assistant Secretary for Fossil Energy Christopher Smith. This week, Sullivan and Smith are delivering speeches in Houston at LNG 17, the world's biggest natural gas conference this year.

"This is a clear example of how the state and the federal government can work together on energy issues that will play a critical role in Alaska's future," said Commissioner Sullivan.

"As a state, we want to responsibly develop and commercialize all of the North Slope's energy resources, which include gas hydrates, shale and viscous oil, and other unconventional energy resources. Simultaneously, the Department of Energy is strongly interested in demonstrating that these resources can be developed on an economic scale," Sullivan said.

"Forming good working relationships with state and local partners is critical to the Energy Department's efforts to responsibly and sustainably develop all of America's rich energy resources," Acting Assistant Secretary Smith said.

"By establishing a framework for our continued work with the State of Alaska, we will advance America's energy development and research, including our understanding of methane hydrates – a vast, untapped potential energy resource. And this agreement will help ensure Alaska continues to play a critical role in supplying America's and the world's energy needs," Smith said.

In signing the MOU, DNR commits to helping DOE with its ongoing assessment of unconventional energy resources and DOE's field evaluation of potential unconventional energy production technologies on the North Slope. This includes facilitating access to state lands and assisting with permitting and logistical issues, as well as providing expert review and interpretation of scientific data and reports by Division of Oil and Gas and Division of Geological and Geophysical Survey scientists.

Through its National Energy Technology Laboratory, DOE will have the lead role in developing research and development projects and providing scientific oversight of the field studies. In the agreement, DOE commits to sharing the available technical data with the State of Alaska.

"Alaska DNR and DOE/FE may also endeavor together to highlight the potential of all of Alaska's natural resources, including conventional resources such as natural gas, and unconventional resources such as gas hydrates and viscous oil, as important supply sources to meet domestic energy demands and to ensure domestic economic and energy security," the agreement states.

"This MOU highlights all of the energy resources of Alaska – from our huge conventional resource fields and natural gas opportunities to unparalleled on-shore methane hydrate resources. It is critical for the state and DOE work together to promote all of these opportunities. Responsible development of conventional resources today will support research advancements and unconventional breakthroughs in the future," Sullivan said.

Visit the National Energy Technology Laboratory website to find out more about the DOE's unconventional energy research on the North Slope.

###

Department of Natural Resources
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DOE Accord Seeks Accelerated Development of Alaska's Vast Unconventional Energy Resources

April 16, 2013 - 9:30am

Acting ASFE, Christopher Smith, and Alaska Department of Natural Resources Commissioner, Dan Sullivan, sign an MOU at the LNG 17 Global Conference in Houston, Texas, pledging to work together in the effort to get more of Alaska's fossil fuels into the energy stream. Photo courtesy of LNG 17.

MEDIA CONTACT

Jenny Hakun
FE Office of Communications
202-586-5616

Washington, DC - Development of potentially vast and important unconventional energy resources in Alaska – including viscous oil and methane hydrates – could be accelerated under a Memorandum of Understanding (MOU) signed today by the state's Department of Natural Resources (DNR) and the U.S. Department of Energy (DOE).

The purpose of the MOU is to "improve cooperation and collaboration" between Alaska's DNR and DOE's Office of Fossil Energy (FE) related to research and development (R&D) as well as "information sharing" connected to the development of unconventional energy resources in the state.

The Alaska North Slope has two of the largest conventional oil fields in North America (Prudhoe Bay and Kuparuk) as well as several other smaller but still significant fields. The state also has significant unconventional petroleum and natural gas resources, including both viscous oil and methane hydrate deposits.

Viscous oil is a type of "heavy" or thicker oil similar in consistency to syrup that presents some special technical and economic challenges for recovery. On the North Slope, it has been estimated that as much as 20 billion to 25 billion barrels of viscous oil are contained within shallow, regionally extensive sands.

Essentially molecules of natural gas trapped in ice crystals, methane hydrates represent a potentially enormous energy resource, possibly exceeding the combined energy content of all other fossil fuels. The U.S. Geological Survey (USGS) has estimated a potentially recoverable resource of 85 trillion cubic feet of gas in favorable hydrate accumulations on the Alaska North Slope alone.

Under the agreement, DOE's Office of Fossil Energy will be responsible for developing R&D opportunities in Alaska and providing scientific expertise and resources in support of projects. This will be achieved by FE's National Energy Technology Laboratory (NETL) through collaborations with various federal, industry, international and academic partners.

Alaska will "use its best efforts to resolve land access issues, arrange for the leasing of state land, and coordinate infrastructure, logistics, permitting and regulation where appropriate. These efforts

will support "the assessment of unconventional energy resources" and "the field evaluation of potential production technologies" through scientific tests, and may involve "facilitating access to land within existing units, un-leased acreage and leased acreage on state lands."

Alaska will also support DOE by providing "scientific review and interpretations of data through the divisions of Oil and Gas and Geologic and Geophysical Surveys." Alaska will also participate in periodic reviews of all scientific data and reports collected or created during the course of the MOU, signed by Alaska DNR Commissioner Daniel S. Sullivan and Christopher A. Smith, DOE's acting Assistant Secretary of Fossil Energy, at the 17th International Conference and Exhibition on Liquefied Natural Gas (LNG-17) in Houston, Texas.

DOE is one of the world's leading unconventional oil and natural gas R&D institutions. Among other areas, FE scientists have worked actively with researchers in other nations (mainly Japan, Korea, India, China, Canada), as well as with USGS, the Bureau of Land Management the Bureau of Ocean Energy Management and other federal agencies, to advance methane hydrate technology. The Methane Hydrate Research and Development Act of 2000 established DOE (through the efforts of FE and NETL) as the lead U.S. agency for methane hydrate research and development.

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Prepared Testimony of David Roby, Sr. Reservoir Engineer
Representing the Alaska Oil and Gas Conservation Commission
Topic: The role of the Alaska Oil and Gas Conservation Commission in approving gas sales.

Before I begin, Commissioner Foerster asked me to express her regrets that she couldn't be here today.

The AOGCC is a quasi-judicial regulatory agency that is tasked with overseeing certain aspects of oil and gas and geothermal activity on all lands within the State of Alaska. The AOGCC's authority includes issuing permits to drill wells and perform work on existing wells, regulating the injection of fluids for enhanced recovery, underground storage, and some waste disposal operations, and regulating operations to prevent waste and maximize ultimate recovery.

That last part is what is of relevance to today's discussion. The AOGCC has a statutory obligation to ensure that oil and gas resources are not wasted and that total hydrocarbon recovery is maximized for fields and pools. I'm going to talk today a little about what the AOGCC has done in the past, is doing today, and will do in the future in regards to gas offtake and ensuring we meet our mandate to prevent waste and increase ultimate recovery. I will focus on gas offtake from oil fields because by far the two largest known accumulations of conventional gas in the state, Prudhoe Bay and Point Thomson, are classified by the AOGCC as oil fields.

On June 1st, 1977, the AOGCC issued Conservation Order No. 145 establishing pool rules for the Prudhoe Oil Pool and set maximum offtake rates of 1.5 million barrels of oil per day and 2.7 billion cubic feet of gas per day, which was to cover the field's fuel gas needs and provide 2 BCFPD for gas sales that were expected to begin about 5 years after oil production commenced. Obviously, those initial plans changed. Over the years the pool rules for the Prudhoe Oil Pool have been amended several times, but the offtake rates have never been modified and are still in effect today.

About 8 years ago the AOGCC began to seriously look into whether the gas offtake rate for the Prudhoe Oil Pool should be revised. This ended up being a multi-year process that involved the AOGCC hiring a contractor to help us evaluate the reservoir model that the Prudhoe Bay working interest owners have developed and various gas sales scenarios that were run through the simulation model. In a nutshell we found that there is a large variation in the total hydrocarbon recovery between the various scenarios and some of the key factors are when the gas sales start, what the rate of gas sales are, and what is done to accelerate oil production prior to commencement of gas sales. On July 10th, 2007, the AOGCC issued a decision that no revision to the gas offtake rate was necessary at that time. A key conclusion from that decision was that there was "insufficient information on which to justify increasing the offtake rate above 2.7 bscfd, but [the Prudhoe Oil Pool Gas Offtake Study] concluded that an early, high rate gas sale could result in the loss of a substantial volume of hydrocarbons, but even greater volumes could be lost if gas sales are too delayed." The AOGCC still believes this conclusion to be valid and we don't believe there's any point in looking in to revising the offtake rate until a firm plan can be presented since there are so many variables to consider when determining if a gas offtake plan is a good one or a bad one.

Additionally, it has been the AOGCC's position that any gas sales plan from Prudhoe, even one that called for gas offtake rates less than the 2.7 BCFPD currently "authorized" would require AOGCC review because the conditions and assumptions that the 2.7 BCFPD rate were based on are no longer valid. For example, the Prudhoe Oil Pool is now expected to produce around 14 billion barrels instead of the 9 billion that was originally expected, the reservoir pressure is now significantly lower than it was then, the gas composition has changed due to cycling gas through the reservoir, and the method of field development has changed from a waterflood to an enhanced oil recovery process using miscible gas injection.

There are actually numerous small sales of gas occurring on the North Slope that the AOGCC has authorized because either the rates involved are de minimis, this includes the "sale" of gas from the Colville River Unit to the village of Nuiqsut that was necessary to meet a contractual obligation to provide the village with free gas and sales of fuel gas from the Kuparuk River Unit to the Oooguruk and Nikaitchuq Units, or because it was expected that the sale from one field to another would allow for a net increase total hydrocarbon recovery, this includes gas shipped from Prudhoe Bay to the Kuparuk River and Northstar Units that is used for enhanced oil recovery purposes.

In order to receive a gas offtake allowable an operator must make an application to the AOGCC and provide supporting documentation that shows that waste will be prevented and that ultimate recovery of hydrocarbons will be maximized. The AOGCC will then schedule a hearing on the matter and provide the opportunity for public comments and testimony. We will then review all the information available to us and make a decision on whether or not to grant a gas offtake allowable, and if so what rate to authorize.

The amount of time it would take the AOGCC to complete its review is dependent on many factors. Generally speaking, the larger the gas offtake volume requested and the larger the volume of hydrocarbons in the field the more complex, in depth, and time consuming the AOGCC review process will be. The AOGCC's review process will also be impacted by the completeness and quality of the application received from the operator.

In anticipation of someday receiving applications for very high gas offtake rates for the Prudhoe Bay and Point Thomson fields the AOGCC undertook reservoir studies of both fields so that we would have a better understanding of the impacts that major gas sales might have on those fields. The study of Prudhoe Bay was completed in 2007 and the Point Thomson study is ongoing but nearing completion. Both of these studies were multi-year projects, so completing them ahead of an application for a gas offtake allowable should allow for the AOGCC to act upon those applications much more quickly than would otherwise be possible.

This concludes my prepared testimony and I would be happy to answer any questions you may have.