



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 municipalities 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.

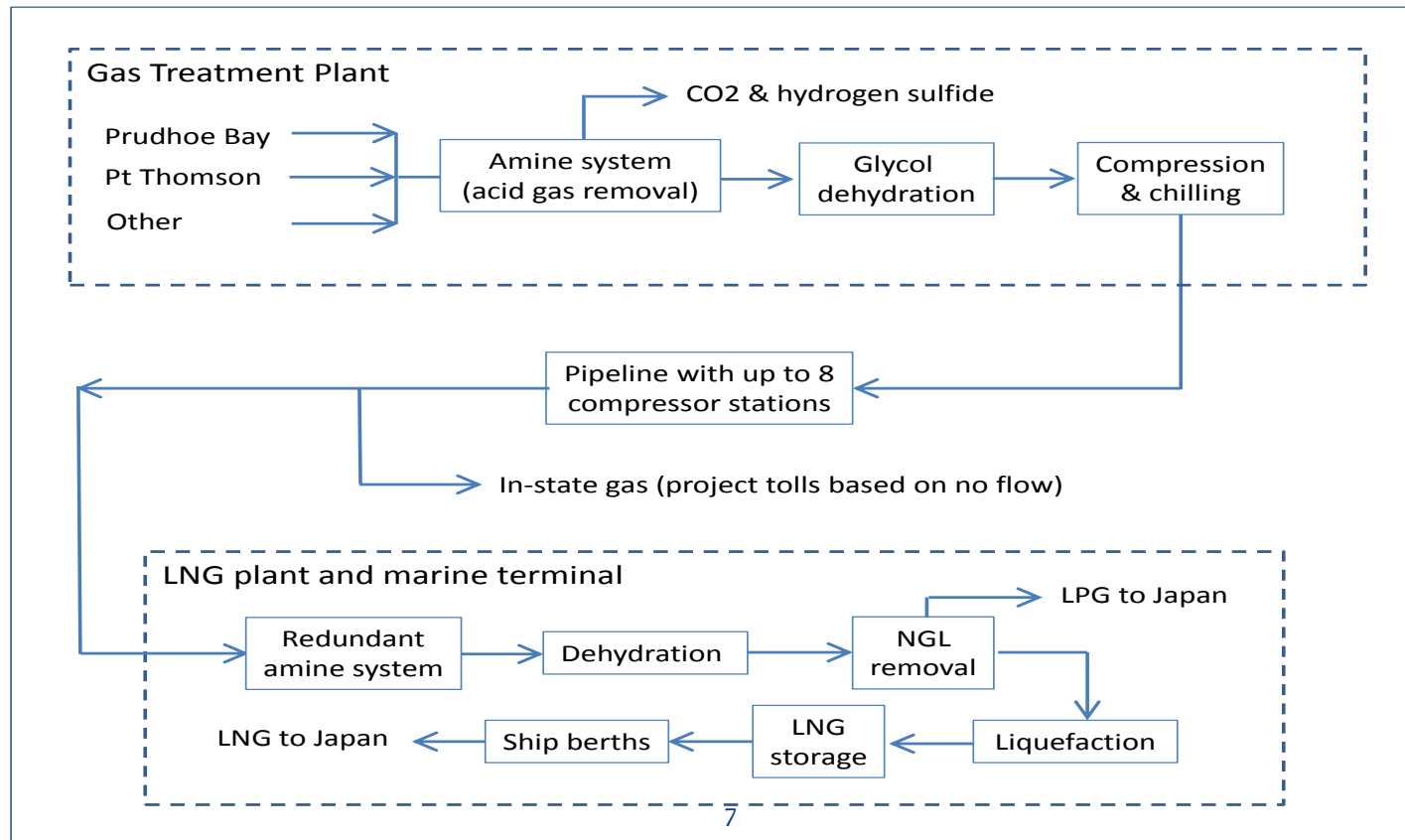
Valdez Base Case and Nikiski Alternative Case

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 (15 Million Tons/Year)

FS Block Flow Diagram

FS was executed by following flow diagram



Major Permits and Approvals on LNG Project

Resources Energy

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
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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

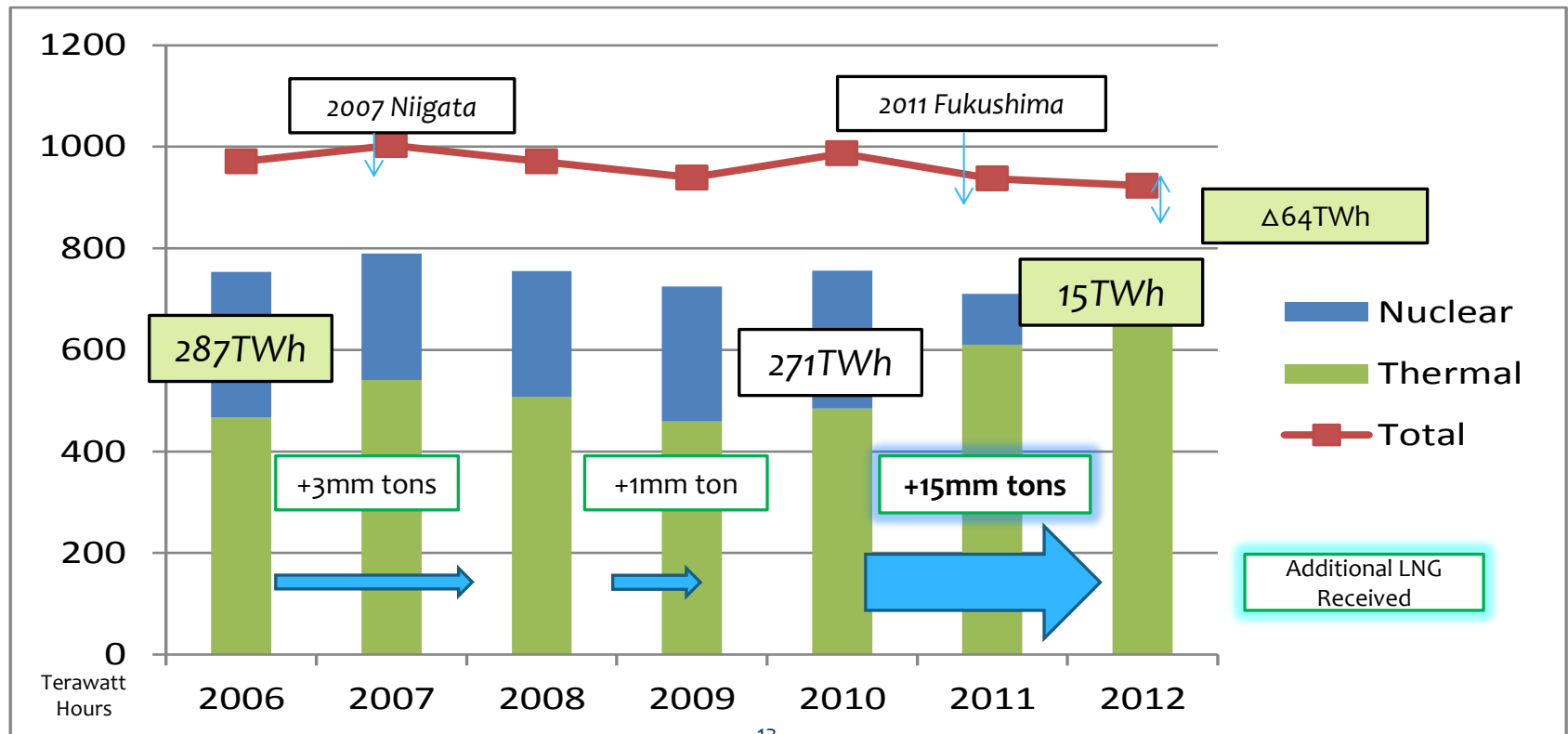
Gas Supply (4)

- * 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



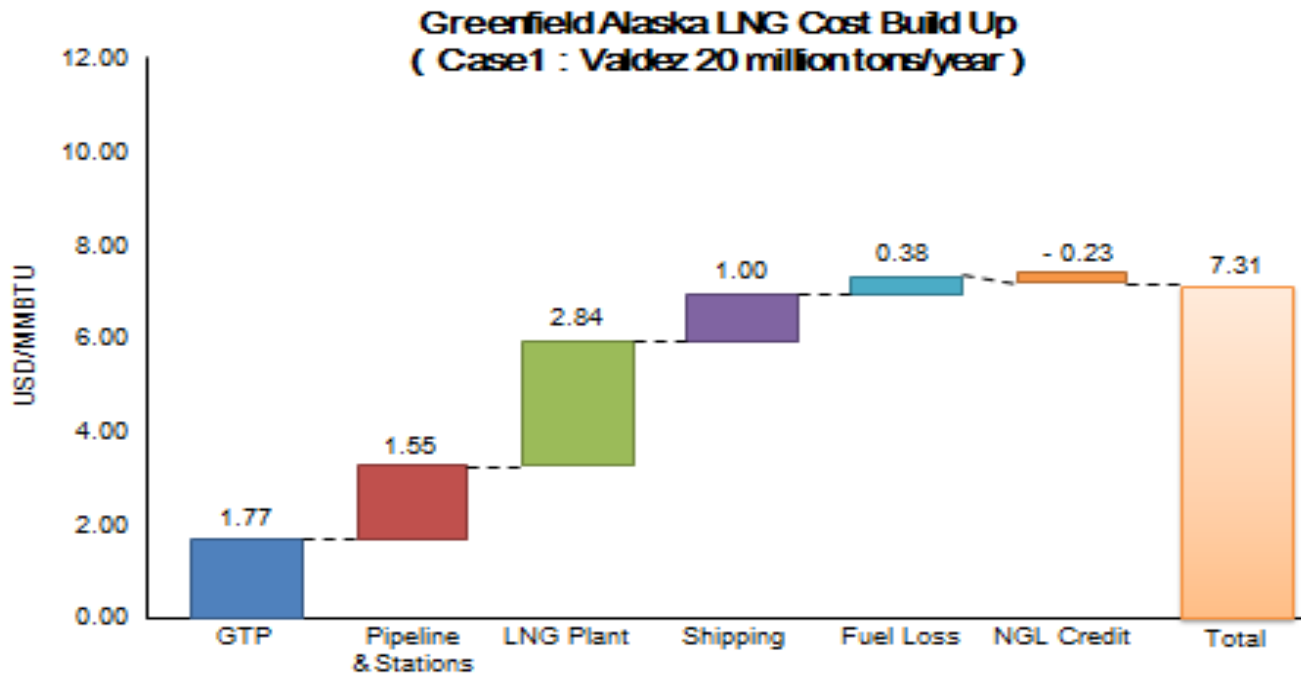
Tariff Assumptions

Valdez and Nikiski

LNG Plant sites

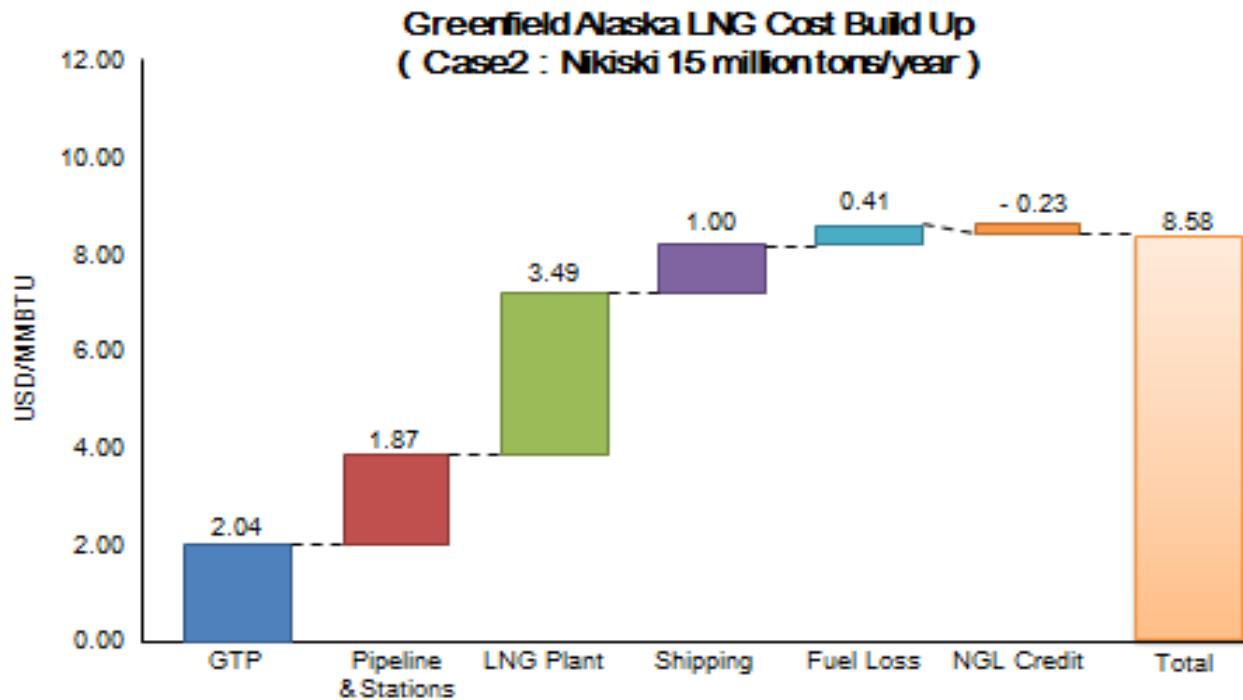
Alaska LNG Cost Build Up

Gas Securement at Competitive Pricing is Critical - Valdez



Alaska LNG Cost Build Up

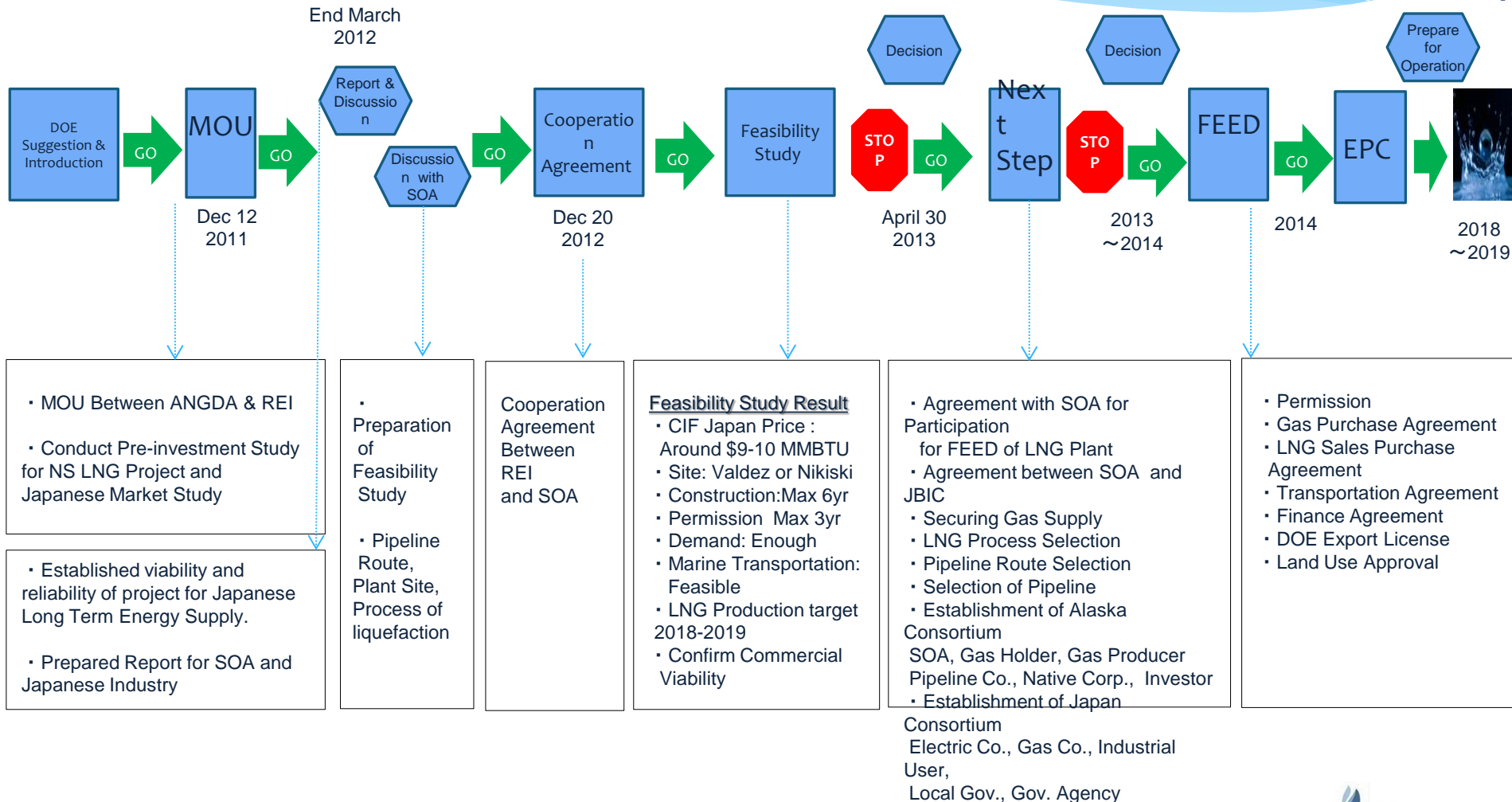
Gas Securement at Competitive Pricing is Critical - Nikiski



FS Result and Recommendation

North Slope Natural Gas Export to Japan

First Drop



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)

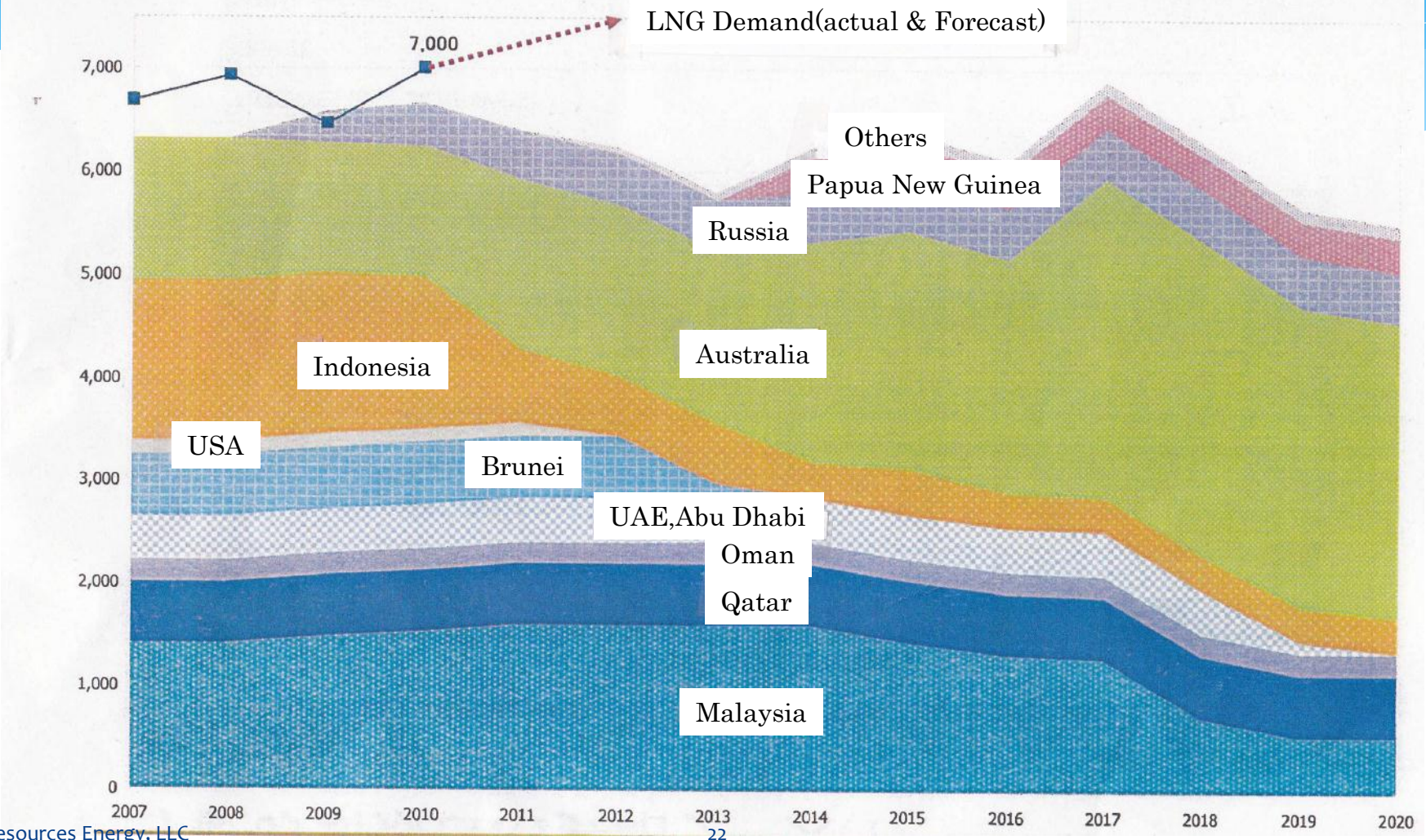
- * Secure Natural Gas at upstream and wellhead
- * Natural gas to LNG plant to be constructed through pipeline(tariff base)
- * Build, Own and Operate LNG Plant (Japan has major share of LNG plant, but must have Alaskan share)
- * Transport LNG to Japan by LNG vessels
- * Storage and Distribution in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

10 thousand tons/year



Worldwide LNG Competition (1)

Australia

Project Name	Capacity (million tons/year)	Status	Start Year of LNG Production	Actual Estimate
Gorgon T1-3 (A)	5 x 3	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				