



LNG Alaska

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Senate Resources Committee
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Overview



- ❑ Introduction
- ❑ Perspective on Cook Inlet gas supply
- ❑ Supply push/demand pull
- ❑ Changing LNG industry
- ❑ Three strategic pillars
- ❑ Employment and Trade
- ❑ Conclusion





Introduction



- ❑ **LNG Alaska** is an alliance between LNG Central and Buccaneer Alaska.
- ❑ **Objective:** To increase the market reach of Alaskan natural gas through improved LNG production and delivery infrastructure.



Perspective on Cook Inlet Gas



- ❑ The decline of Cook Inlet gas has become the scape goat for justifying many alternative energy projects.
 - ***“WHEREAS supplies of natural gas are precipitously declining in Cook Inlet...”*** (ARCTEC resolution authorizing participation in pipeline open season from the north.)
 - ***“Limited and declining Cook Inlet gas deliverability”*** (Black & Veatch study supporting the hydro project.)
 - ***“Our only option to solve with certainty our gas supply needs is through the importation of LNG and we see no way around that,”***
Dan Helmick, manager of regulatory affairs for Anchorage Municipal Light & Power.
- ❑ Implications:
 - Cook Inlet gas is **starting from a point of negative public perception.**
 - Somewhat of a self-fulfilling prophecy – fear of no gas chases demand away, which leads to lack of interest to develop more gas.
 - Increased demand will bring supply development.



Supply Push/Demand Pull



- ❑ Cook Inlet gas producers will commit supply to a market expansion program.
- ❑ Creating sustainable demand will sustain new supply development in the Cook Inlet.
- ❑ Enabling Solution: **LNG Alaska**
 - New, efficient, modular liquefaction.
 - Expanded LNG use within the state.
 - ✓ Trucks, rail, and barge deliveries.
 - ✓ Remote storage and revaporization at select locations.
 - ✓ Fuel terminals for truck and marine use.
 - Continued potential for LNG exports.
 - Option for LNG imports.



LNG Alaska is Infrastructure



LNG Alaska is infrastructure - capable of liquefying natural gas (LNG), transporting the LNG to in-state markets, and providing export for access to global markets.

LNG Alaska



LNG Production

LNG Transport

LNG Delivery

- ❑ 22 nations now import LNG – double from just 10 years ago; 30 floating regas facilities planned.
- ❑ “Mid-scale” LNG facilities (the size of Kenai, at 1.6 Million tons per year) are now modular and manufactured in factories – including fully contained units in a floating application.
- ❑ LNG is now being used as a transportation fuel in road, off-road, and marine applications.
 - Emission reduction and cost savings.
 - Norway shifting to gas fueled transportation.
 - Cruise ships and freighters adding LNG fuel capability.





Three Strategic Pillars

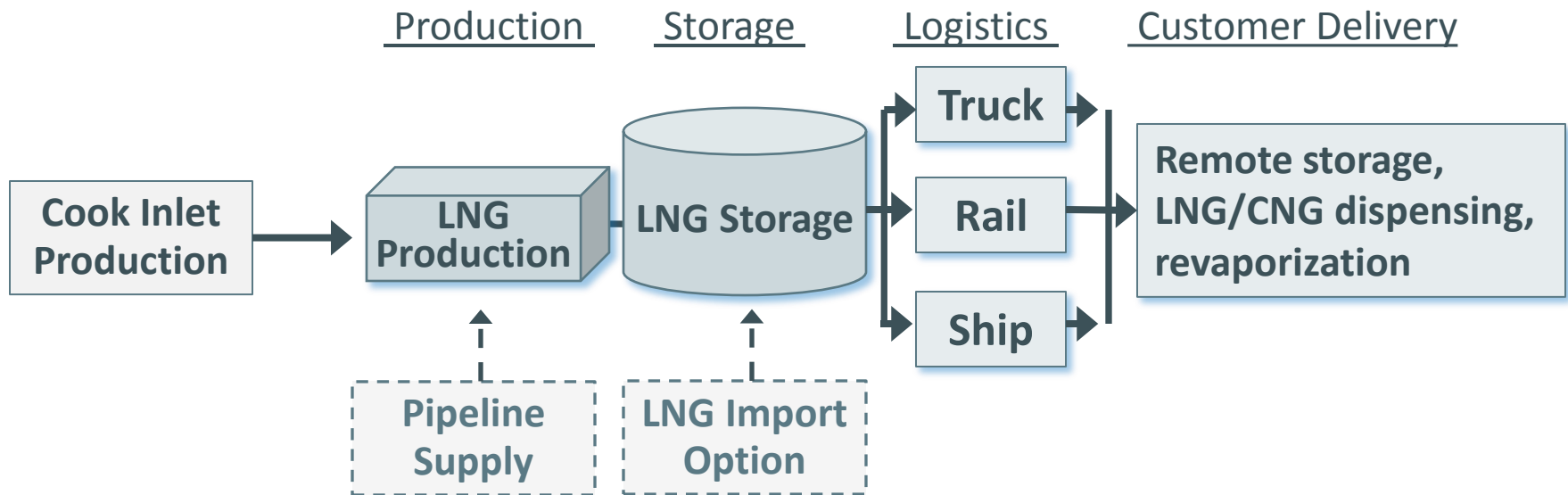


- ❑ The **LNG Alaska** program is built on a foundation of three strategic pillars:
- **1. Fairbanks Initiative** - LNG from the south for power generation and fuel oil displacement.
 - **2. Coastal and Transportation Initiative** - LNG by barge to select coastal towns as a cheaper and cleaner replacement for diesel fuel; fuel for the Alaskan Marine Highway and other transportation markets.
 - **3. Export/import Initiative** - exports of LNG as well as imports if needed.

Although each of the pillars has viability on a stand-alone basis, together they form a stronger and complimentary foundation.

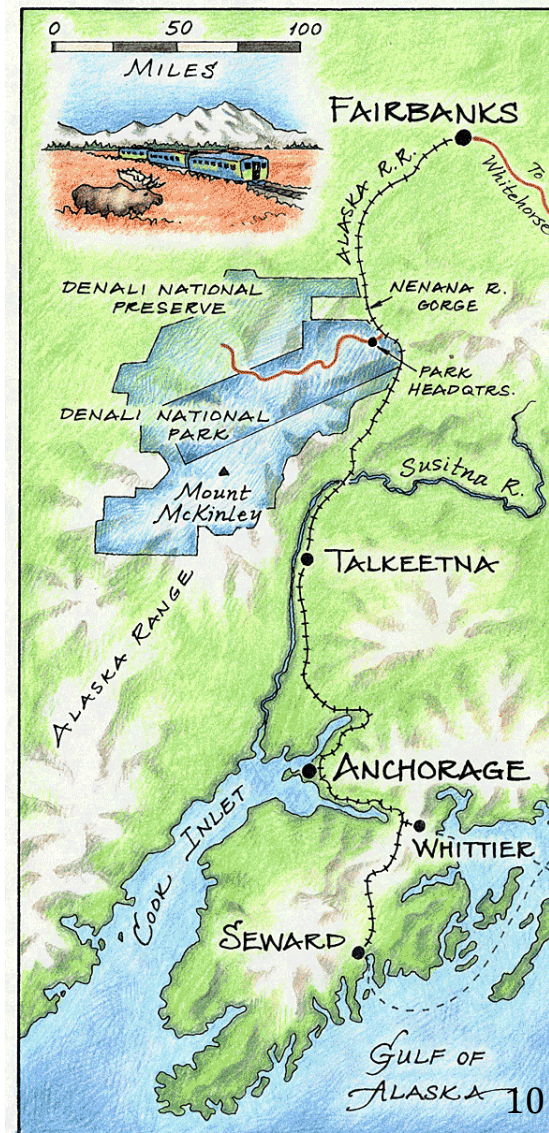


- ❑ Cook Inlet production is liquefied and stored, then moved by truck, rail, and ship to customer delivery points for use as LNG or revaporized to natural gas.
- ❑ The infrastructure investment can be used with pipeline supply or even imported LNG for **long term reliability**.



Fairbanks Initiative

- ❑ Fairbanks and the Railbelt Region is an important market for the **LNG Alaska** plan.
- ❑ Railbelt Region is considering multiple options to address energy supplies and costs.
- ❑ **LNG Alaska** can deliver LNG to Fairbanks cheaper and more reliably than a northern alternative.
- ❑ A mid-scale LNG facility in the south can be built and operated at a lower cost than in the north; delivery costs are less and more reliable (road and/or rail);
- ❑ Supporting legislation has been enacted (such as Senate Bill 42 establishing the Railbelt Energy Fund to help with studies and grants for power projects).





Coastal & Transportation



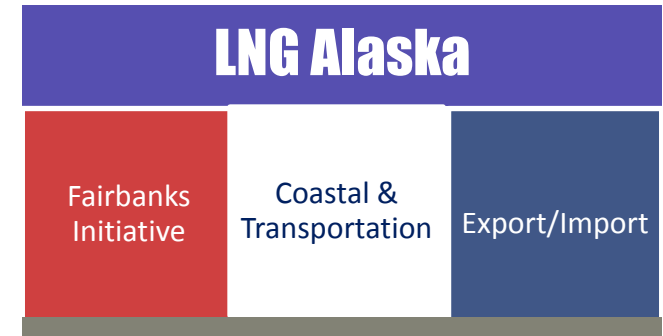
❑ The Coastal region has two primary target markets for an LNG/gas market expansion program:

❑ Power generation:

- Target diesel fired power plants on coastal cities accessible by barge.
- Seven to ten cities with power demand large enough to justify effort.
- Some potential for the Denali Commission to assist with studies and potentially funding. (Federal-State partnership for cost shared infrastructure.)

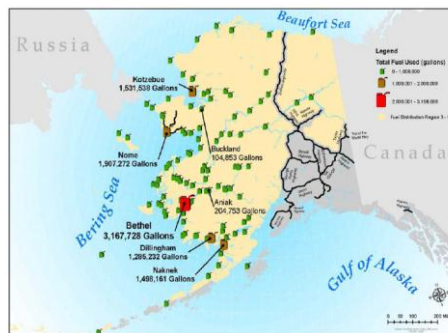
❑ Transportation Fuel

- Initial focus on large marine market, then large trucks
- Primary target: Alaska Marine Highway System



- ❑ Power generation in coastal and rural Alaska is largely fueled by local and imported diesel fuel.
- ❑ The high price of fuel (\$30/MMBtu) and power has been a contentious issue for western Alaskans.
- ❑ The Norwegian conversion from oil to gas is a good example applicable to Alaskan coastal towns.

Target Towns	Gallons/yr (MM's)		Gal/d		Gas Equivalent	
	Diesel	LNG	000's	Bcf	MMcf/d	
Bethel	7	12	33.1	0.905	2.48	
Kotzebue (Red dog mine)	16	28	75.6	2.069	5.67	
Other	10	17	47.2	1.293	3.54	
	33	57	155.9	4.3	11.7	



Source: Map developed by Alaska Map Company with 2006 PCE information on utility fuel consumption.



Target: Transportation

- ❑ LNG is a growing transportation fuel for on-road, off-road, and marine use.
- ❑ On road users are typically large trucks; off-road markets are typically mining vehicles.
- ❑ Marine applications include tugboats, workboats, and ferries.
- ❑ **The Alaska Marine Highway System would be an ideal demand because of its large load and scheduled route.**



Source: Map developed by Alaska Map Company with data from USGS and Alaska DNR.

- ❑ Alaska Marine Highway fleet is old.
- ❑ State commissioned study to design fuel-efficient vessels to replace aging fleet.
- ❑ Dual fueled diesel/LNG marine engines have been in operations for years and meet 2014 emissions requirements (mandatory for U.S. and Canada).
- ❑ **Perfect opportunity** for the State of Alaska to use dual-fueled LNG vessels as the new class of clean, energy efficient, Alaska class ferries for the modern Alaska Marine Highway.

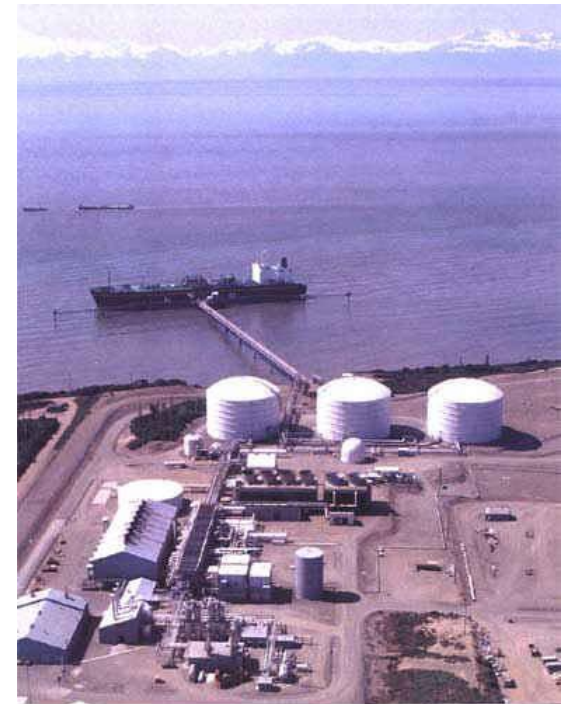




Export/Import Potential



- ❑ Modularized LNG allows expansion of the facility to fit market demands.
- ❑ The existing export facility at Kenai would make a good “staging area” for the **LNG Alaska** plan, but may not be readily available.
- ❑ An alternative site with marine access will be investigated.
- ❑ The marine jetty and storage tanks can be used for imports for supply reliability.



Kenai Export Terminal, Alaska
Photo courtesy of CH-IV International, <http://ch-iv.com>

- ❑ **LNG Alaska** will help create jobs in the energy sector:
 - Increased Cook Inlet natural gas production activities.
 - LNG delivery operations.
 - LNG vehicle conversions and maintenance facilities.
 - Expanded natural gas distribution facilities.
- ❑ **LNG Alaska** will be beneficial from a trade standpoint.
 - Reduce imports of refined products.
 - Continued/increased international exports.

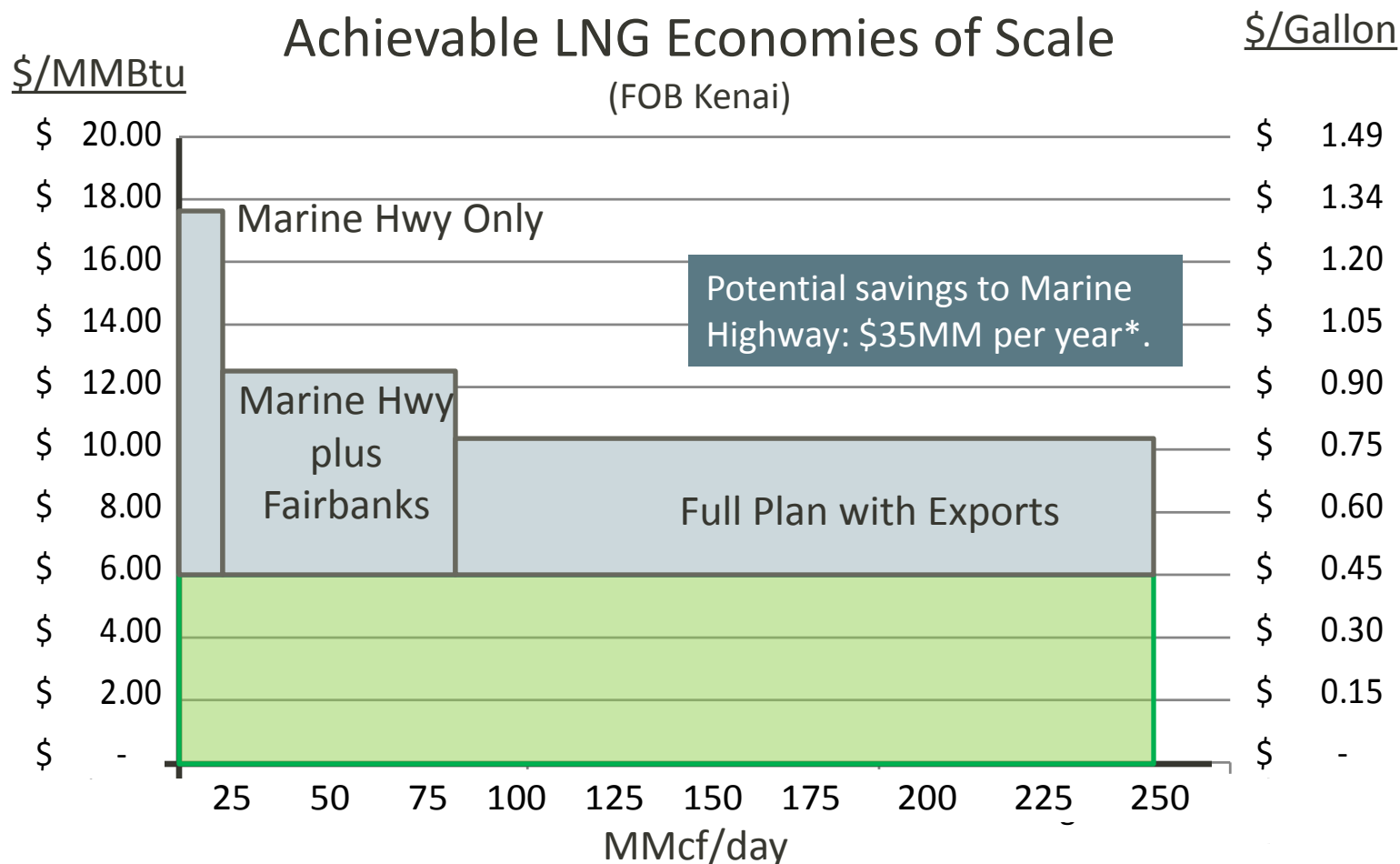




Economies of Scale



The **LNG Alaska** plan can result in significant fuel cost savings for Alaska customers.



*Based on Alaska Marine Hwy Annual report stating 25 MM gal diesel at \$100 MM cost.



Conclusion



- ❑ Alaska has significant gas potential in the Cook Inlet.
- ❑ Creating natural gas demand and market access will encourage gas production activities.
- ❑ Alaska's domestic gas reserves can be used to displace imported refined products, reduce pollution, and reduce the cost of energy to consumers.
- ❑ The **LNG Alaska** program will expand the gas market, help create jobs in the energy sector, and be beneficial to trade.
- ❑ Alaska has the necessary legislation and incentives in place to help accelerate the **LNG Alaska** program.
- ❑ **LNG Alaska** is ready to work with the state to implement a clean, and reliable natural gas expansion program.

Questions?



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Keith Meyer receiving the industry's first "LNG Company of the Year Award" in Rome, Italy 2007.



- Keith Meyer, LNG Central CEO.
- 30 years experience in international energy development, including gas pipelines, gas storage, power generation, LNG, petrochemicals, biofuels; international LNG and gas sales.
- Former Chairman Flex LNG; floating liquefaction.
- Former President Cheniere LNG, developer largest LNG receiving terminal in western hemisphere.
- Originator and co-patent holder of electronic LNG cargo slot bidding system (Inggateway.com).
- Former Vice President Trunkline LNG, receiver of Nigeria's first LNG cargo delivered; largest U.S. spot cargo importer.
- Rice University course instructor; frequent guest speaker and advocate to reduce gas flaring