Alaska and Interior Energy Study
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1. The Oil Market
2. N.G. Alternatives
3. Propane, LPG
4. A Focused LPG Project
The Oil Market
Summer 014

July – August

- No OPEC action, Dollar stable

- Supply: +0.2%

- Oil price: -10%

UNUSUAL
World Recession

Europe:
Russia:
Brazil:
Japan:

in Recession

China?
Supply

Price ↓

- 28% invest. ↓
- Oil projects stop
- Few new oil shale projects

Less Supply
Volatility

World growth↑
Supply decline↓

PRICE SHOCK
$120/Bbl

1 – 5 years
Maelstrom

oil shock:

wage-price spiral:

1970s INFLATION
INFLATION:

- Oil ↑
- Wages ↑
- Costs ↑
- Interest rates ↑
Natural Gas Alternatives
The Arctic Fox Pipeline
High Pressure Pipeline

Fairbanks
2-3 years

Dense phase
Drop out liquids
Open Season Done

~ $3/4 billion
12 inch to Fairbanks

~ $2 billion
18 inch to Anchorage
Low Pressure Pipeline

Anchorage (Fairbanks) $10 billion
5 – 7 years

Utility Grade
Natural Gas

36 inches

No OPEN Season
Big Pipeline
Big Line Eventually

Japan, Korea
(90% of LNG)
Going nuclear

Build in
20 – 40
years

$60 billion
48 inches

RUSSIA, PANAMA, CANADA
AUSTRALIA, M.E.
LNG Trucking
Trucking Costs

- Well head $4/mcf
- Liquefaction $1.5/mcf
- Trucking $7/mcf
- Capital $5/mcf
- Distribution $9.5/mcf

TOTAL: $27/mcf
PROPANE
LPG
(Liquid Petroleum Gas)
Propane an Odd Element

LPG, **Liquid** Petroleum Gas?:

- Cars?
- Power?
- Processes?
- Equipment?
- BBQ?
Propane is Ubiquitous

Oil Shale

lots of LPGs

propane supply inundation
Propane is Portable

Rail Belt

Roadways

Riverine Systems

Coastal Regions
Propane is Flexible

Propane (residential)
Butane (industrial)
Mixture (other)

$C_3H_8$ propane
$C_4H_{10}$ butane
Propane is Fast

Dedicated Project

1-2 years

pay off in three (or less)
Propane is Reasonable

Propane Historic Prices
Mont Belvieu, TX Propane Spot Price FOB (2014 Dollars per Gallon)

- 2008: Shale Gas Explosion
- 2009 - 2014: Propane Reversion Price $1/gl or $11/mcf
Propane like Natural Gas

Propane (LPG) is similar to Natural Gas

EXCEPT:

Cheaper for Alaska
Quicker for Alaska
Doable for Alaska
A Focused LPG (propane) Project
Source

Canadian Hub
WEST COAST
Prince Rupert

Port of Vancouver BC
or Port of Seattle
Logistics

Fairbanks

Rail

Barge

Alaska Marine Highway?

Prince Rupert
Barge Concept

Normal Barge

Dedicated Rail Only Barge,
two levels
$22 million, 8 knots

Dedicated Articulated Barge, $25 million, 14 knots
Filling on Board

Fill on the Barge at Prince Rupert

tanker rail cars do not disembark
Alaska Entry

Port of Whittier
Barge-to-Rail
Example of Disembarkation

Whittier

Off-Load direct to track
Rail to Fairbanks

Alaska Railroad makes money
Interior

Fairbanks

North Pole Terminal
Alaska Distribution

Coastal Highway

Roadways

Rail Belt

Riverine System

Independent trucks

No Piped Distribution lowers costs
Key

Make Start up
Fit to Fairbanks

Then Expand Incrementally

5 BCF/yr increments
Economics

CAPEX:
~ $50 million (2 barges)

OPEX:
~$15 million/year

Revenue
~$30 million/year

~Three Year Payoff
Finance

State Leverage:
$50 million participation

Alaskans Save:
$20 million/yr

Alaska Rail, Alaska Marine HWY, AK State: Make money
Residential

$1.4/gal at North Pole
($15/mcf)

$1.7/gal at Resident
($18/mcf)

As more residences use it
Industrial

Gold mining expansion

Induce refinery Re-opening

Interior Power

Trans-Alaska Pipeline heat
Specs to Suit

Each Tanker with specific products

$C_3H_8$ propane

$C_4H_{10}$ butane
Fill tanks all year

Nenana Propane Terminal

Nenana Storage Tanks

Riverine System
Supplement

Propane to pipeline distribution:
• For winter peak
• Inject into system
• Add Btus

Anchorage Needs
Conclusion
Problem

High Heating Cost

Pollution
Propane Advantage

Propane Niche

Energy at $15/mcf

Fit the odd Interior market
Solution

- Cheap
- One transaction
- Barge to Whittier
- Rail to Fairbanks
- Hit $15/mcf
1-2 Years

Project ready in 1-2 years

Pay-off in three years

Fairbanks

Prince Rupert
Leverage

State participation

$50 million

Potential saving:

$100s millions
Multiple Markets

- Cold Foot
- Houston
- Dawson, CN
- Tanana
- Juneau, Valdez, Anchorage
Multiple Dimensions

- Heat
- Industry
- Mining
- Pipeline
- cars?