ANGTL PROPOSES A 80,000 + BBL/D GTL PLANT IN SOUTHCENTRAL TO ANCHOR A GAS LINE

WHY GTL's? WHY SOUTHCENTRAL FIRST?

THINK VALUE ADDED

ALASKA RESOURCE DEVELOPMENT "A LEGACY DECISION FOR ALASKA"

MAY 2010

ANGTL'S GOALS FOR ALASKA AND U.S.

1. MAKE ALASKA THE ENERGY RESOURCE PROVIDER FOR AMERICA
2. MAXIMIZE DEVELOPMENT AND MARKETING OF ALASKA RESOURCES
3. MAXIMIZE THE VALUE OF ALASKA RESOURCES
4. REDUCE U.S. DEPENDENCE ON IMPORTED ENERGY
5. MAKE ALASKA RESOURCES AVAILABLE TO MORE ALASKANS
6. PROVIDE JOBS AND CAPITAL EXPENDITURES FOR FUTURE ALASKANS
7. MAKE CLEANER FUELS FOR AMERICANS
8. SUPPLY U.S. MILITARY WITH BATTLE FIELD FUEL OF THE FUTURE
9. LET 300 MILLION AMERICANS HELP SUPPORT ALASKA ENERGY RESOURCE DEVELOPMENT IN EXCHANGE FOR ALASKA REDUCING U.S. DEPENDENCE ON IMPORTED ENERGY

WHO IS ANGTL ?

ALASKA NATURAL GAS TO LIQUIDS

1. CAME TO ALASKA IN 1997 PROPOSED DEVELOPMENT OF NORTH SLOPE NATURAL GAS VIA THE GTL PROCESS TO KEEP TAPS OPEN FOR 70 + YEARS
2. PARTNERED WITH SASOL TO STUDY NORTH SLOPE GTL's
3. WORKED WITH CONGRESSMAN DON YOUNG AND CONGRESS TO OBTAIN ALTERNATIVE FUEL STATUS FOR GTL's
4. WORKED WITH SENATOR TED STEVENS AND CONGRESS TO OBTAIN ENERGY CREDITS FOR F-T FUELS MADE FROM COAL
5. PERFORMED A PRE-FEASIBILITY STUDY FOR A 80,000 BBL/D CTL PLANT NEAR BELUGA/TYONEK ON SHORES OF THE COOK INLET
6. PREPARED A NORTH SLOPE GTL OPTION FOR ALASKA LEGISLATURE TO COMPARE AGAINST AGIA GAS PIPELINE PROGRAM
7. DEVELOPED A PLAN FOR MILITARY TO BE ABLE TO SUPPORT F-T FUELS

Fischer-Tropsch Fuels
A National Path to:

- Energy Self-sufficiency
- Eliminate the Refinery Gap
- Reduce Balance of Payments Deficit
- Mitigate Global Warming
- Reduce Air Pollution
- Increase Automotive Fuel Efficiency & Performance
- Enhance National Security
- Increase Domestic Employment
- Augment Local Tax Base
- Keep TAPS open and flowing for 70+ years

WHAT IS THE F-T PROCESS?

The Fischer-Tropsch Synthesis
GTL – CTL - BTL

$$2\,CO(g) + H_2(g) \rightarrow (\text{-}CH_2\text{-})_n(l) + CO_2(g) + H_2O$$

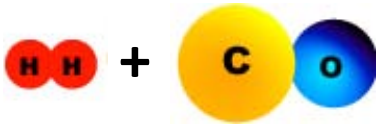
Okay, don't let the chemistry scare you!

Let's take a look……

Three Steps in GTL/BTL/CTL Refining to make F-T Fuels

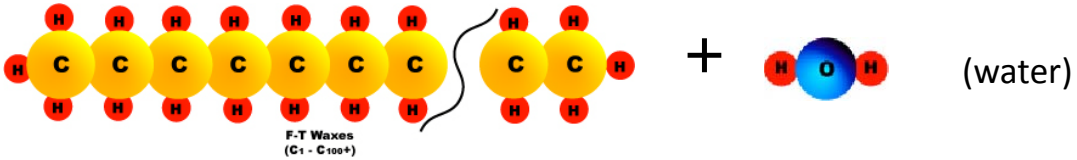
The F-T Processes use 3 distinct steps, all commercially proven to convert a carbon based gas, liquid or solid into synthetic transport fuels like gasoline, diesel and jet fuel:

- Step 1 - Syn-Gas generation (H_2 & CO)



(if a solid you gasify "coal or biomass" – if a gas or liquid you reform "natural gas")

- Step 2 - The F-T reaction (form long paraffin chains ➡ "wax")



- Step 3 - Product upgrading (hydrocracking of the long chain F-T paraffin "wax" to produce the desired end product – similar to a crude oil refinery)
  - Kerosene – Diesel – Gasoline - Jet Fuel – Naphtha
    C_{10}-C_{13} C_{14}-C_{20} C_5-C_{10} C_{10}-C_{13} C_4-C_{10}

A FEW OF THE F-T PLANTS ACROSS THE WORLD

South African Secunda 150,000 BPD Coal to Liquids (CTL)

South African Mossgas 47,000 BPD Gas/Condensate to Liquids (GTL)

Shell Bintulu 15,000 BPD Gas to Liquids (GTL)

CHOREN Freiberg 500 BPD Biomass to Liquids (BTL)

SYNTHETIC DIESEL

F-T DIESEL
AS CLEAN AS CNG

U.S. EPA* APPROVED

NON-TOXIC

AND CAN BE

U.S. FDA APPROVED

ZERO SULFUR

ZERO AROMATICS

70 + CETANE

PM10 ≤ CNG

*EPA Water Docket, EB 57 located at 401 M Street SW Washington DC, 20460 Reference Docket No. W-98-26 in UNOCAL data file 4.A.a.3, Vol 13

WHERE TO BUILD GTL PLANTS

ONE OF THE MOST PRESSING ISSUES WITH THE MANUFACTURE OF F-T IS WHAT TO DO WITH THE PRODUCED CO_2 MOSTLY FROM CTL LITTLE FROM GTL

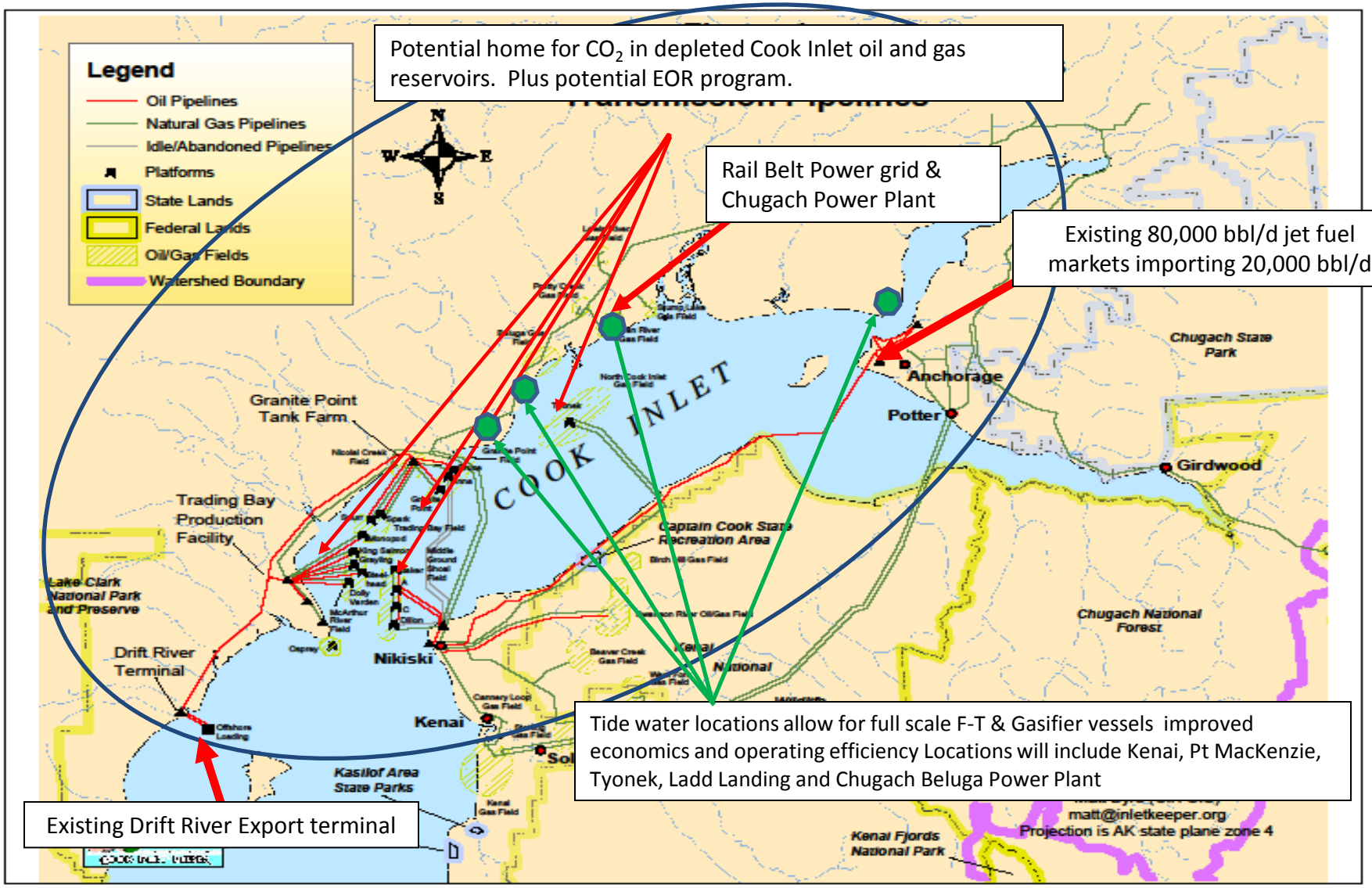
THE BEST LOCATION IN ALASKA IS PRUDHOE BAY – LARGEST SINK TO STORE CO_2 PLUS WILL INCREASE OIL PRODUCTION AND MORE IMPORTANTLY KEEP THE TAPS LINE RUNNING FOR DECADES BY BATCH PIGGING OF GTL's AND NGL's TO VALDEZ

SECOND LOCATION THE COOK INLET – SMALL SINK FOR CO_2 PLUS EASY EXPORT TO WEST COAST MARKETS PLUS WASTE HEAT ELECTRIC POWER HAS A READY MARKET EXISTING 80,000 BBL/D JET FUEL MARKET WITH OVER 20,000 BBL/D CURRENTLY IMPORTED FROM OUTSIDE ALASKA

SOUTHCENTRAL ALSO HAS THE ADDED ADVANTAGE OF SUPPORTING A GAS LINE ALONG THE RAIL BELT. THE SOUTHCENTRAL GTL PLANT CAN SERVE AS THE BLUE PRINT FOR A NORTH SLOPE GTL PROGRAM – ULTIMATE GOAL

A SINGLE 80,000 BBL/D GTL PLANT IN SOUTHCENTRAL WILL NOT BREAK THE FEDERAL BANK WHEN SCORING THE COST OF ECONOMIC UPLIFT

WHY THE COOK INLET?



COOK INLET TIDE WATER LOCATION

33’ Diameter, 180’ Tall, can only be delivered via ship/barge at a tide water location

Drift River Export Terminal - no ice issues
no new piers/harbors to permit or
possibly a new export terminal at Point Mackenzie

WHY SOUTHCENTRAL GTL's

1. MARKET DEMAND FOR TRANSPORT FUELS IS REAL
2. GTL's HAVE A HIGHER MARKET VALUE
3. FEDERAL ECONOMIC SUPPORT AVAILABLE
4. GTL PLANT CAN JUSTIFY A BULLET GAS LINE
5. BULLET LINE - PRE-BUILD OF ALASKA GAS LINE
6. GTL's CAN SUPPLY MILITARY DEMAND
7. BLUE PRINT FOR NORTH SLOPE GTL PROGRAM
8. VALUE ADDED PRODUCTS

MARKET DEMAND IS REAL

The US imports 1- 2% of its natural gas needs but almost 70% of its transportation fuel needs

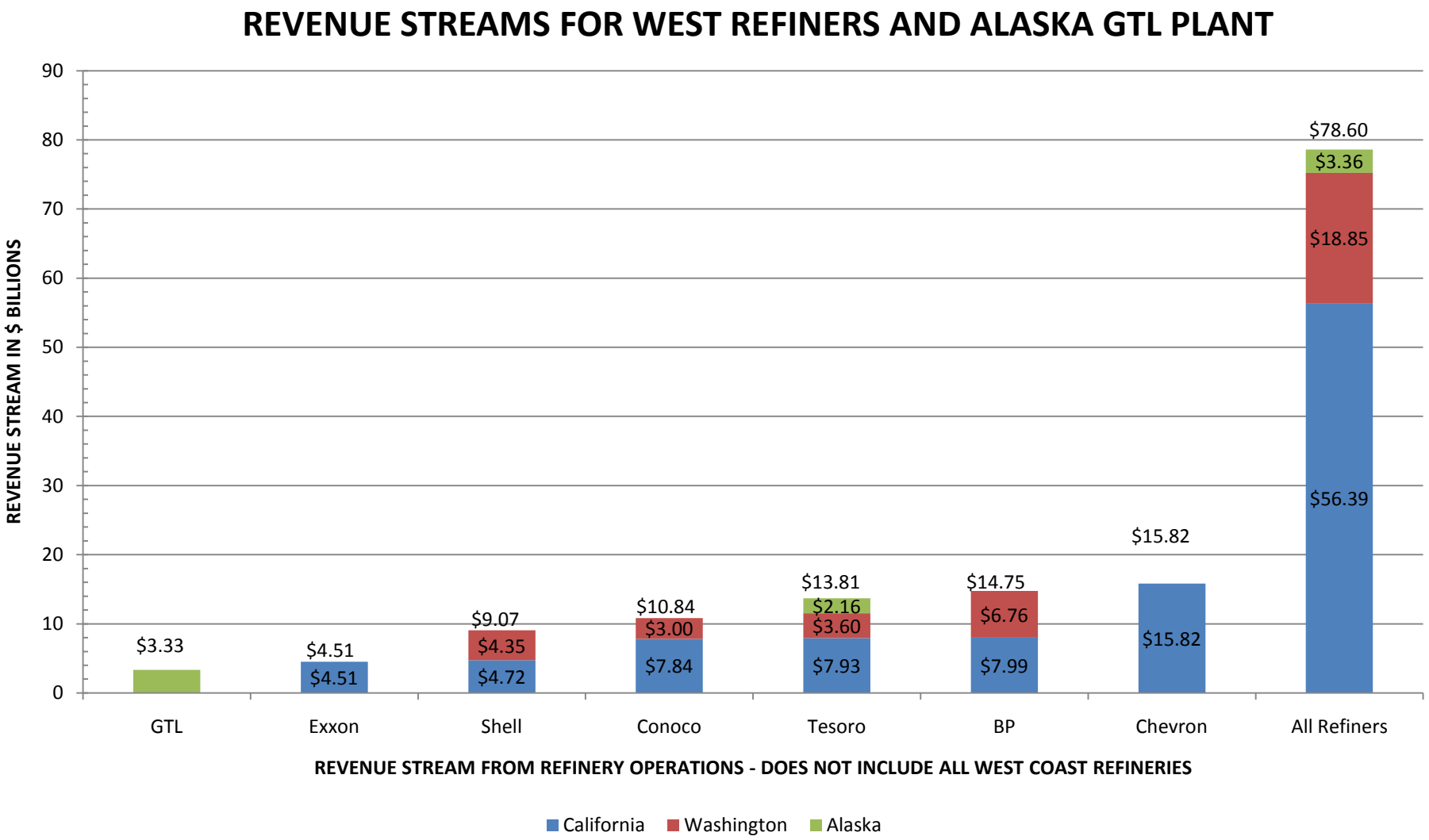
~15 MILLION BARRELS PER DAY
~220 BILLION GALLONS PER YEAR

SOUTHCENTRAL GTL PLANT AT 80,000 BBL/D
1 BILLION GALLONS PER YEAR

CALIFORNIA MARKET 22 BILLION GALLONS PER YR
In 1980 California imported ~ 2% of its crude oil & transportation fuels
2008 California imported ~ 48% of its crude oil and transportation fuels

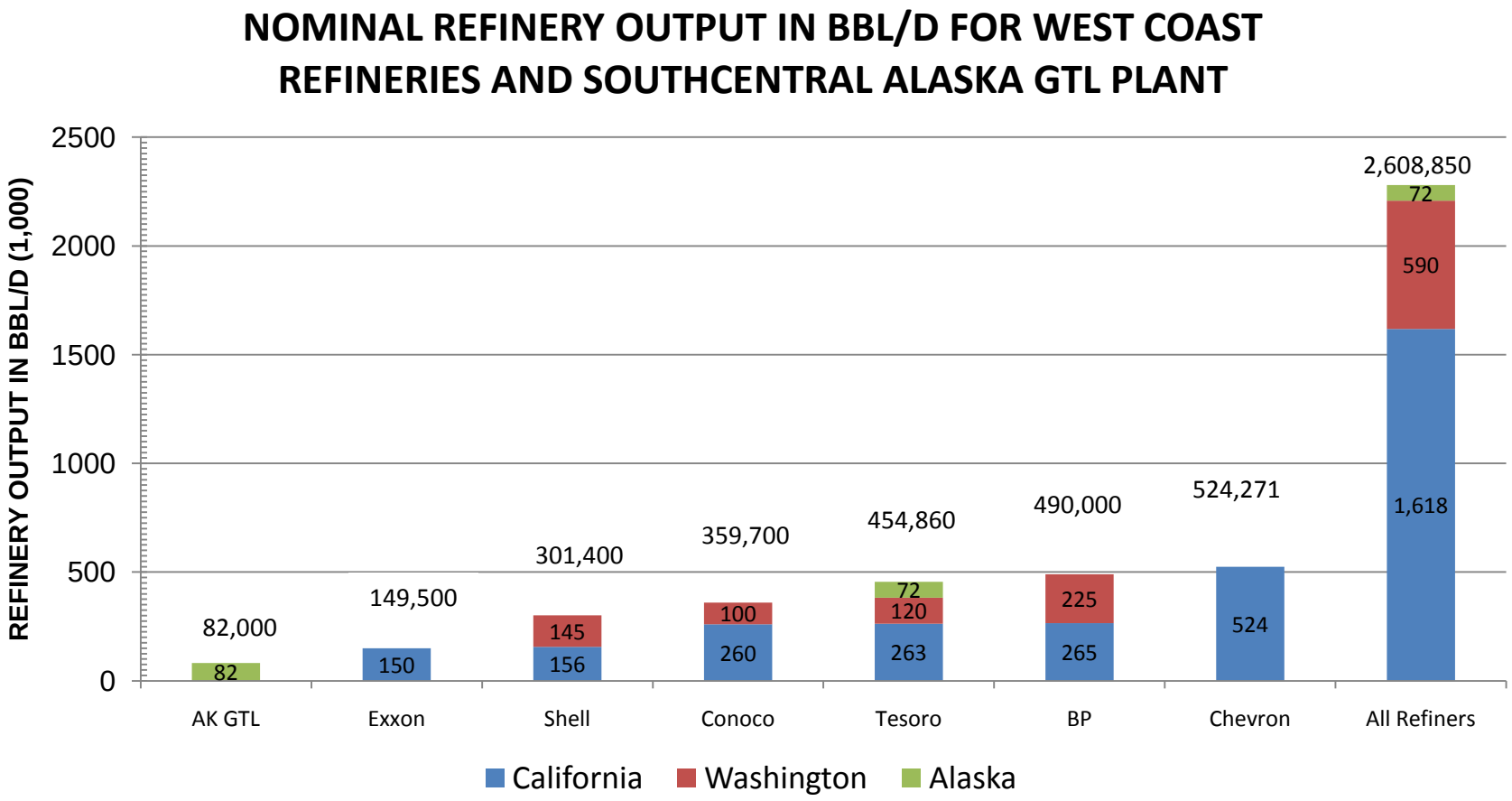
ANCHORAGE JET FUEL MARKET 1 BILLION GAL PER YR
ANGTL GTL Plant located 5 + miles from Anchorage Airport
Alaska largest refinery Flint Hills rumored to be shut down by 2015
supplies up to 40,000 bbl/d of Anchorage area jet fuel market

COMPARISON OF REVENUE STREAMS



TRANSPORT DIESEL FUEL $2.05/GAL CA; $2.04/GAL WA; GAS PIPELINE $2/MCF TARIFF TRANSPORTING 1 BCF/D

COMPARISON OF REFINERY OUTPUT



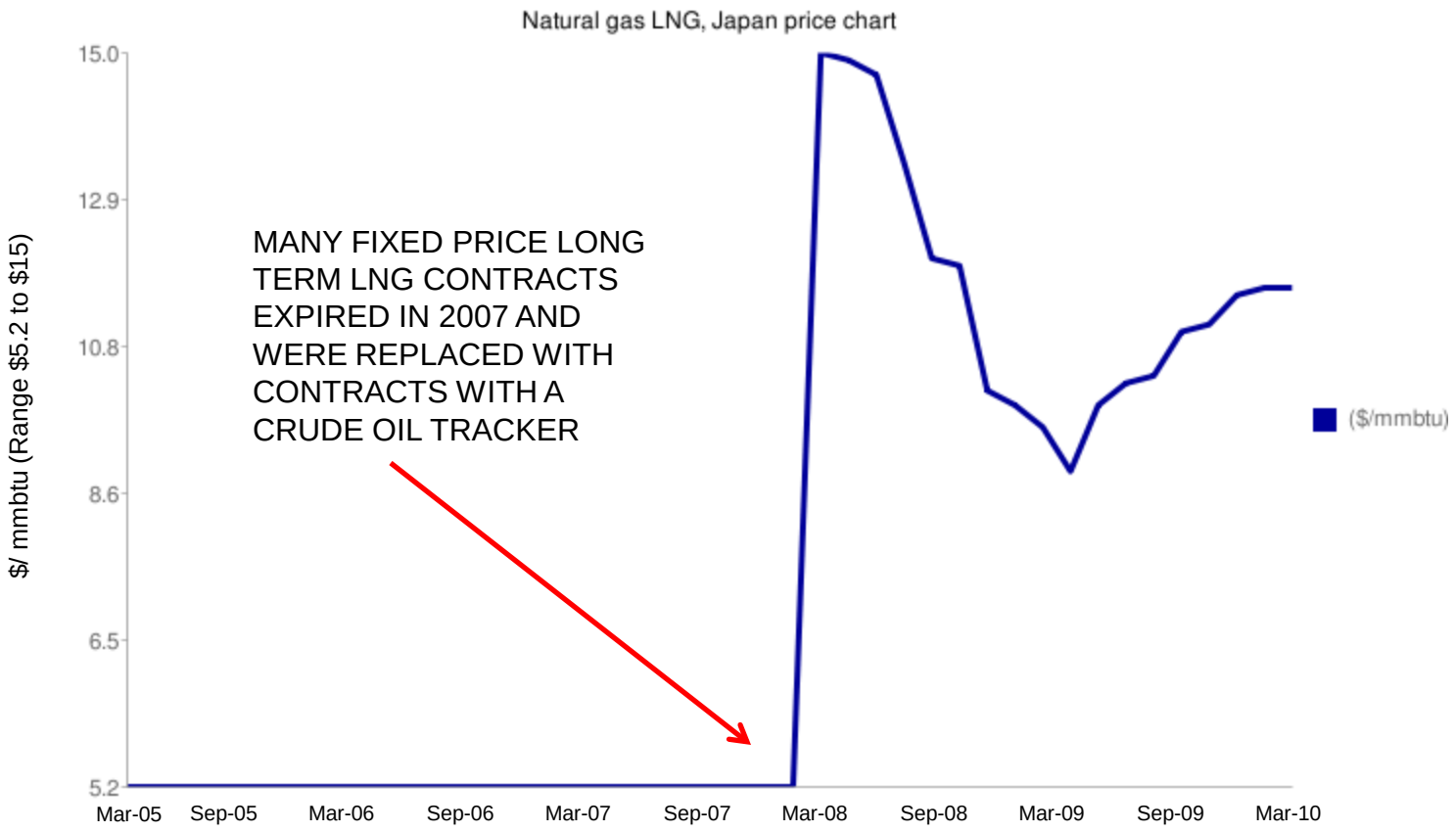
REFINERY OUTPUT FOR WEST COAST REFINERIES WITH OIL AND GAS OPERATIONS IN ALASKA - DOES NOT INCLUDE ALL WEST COAST REFINERS

MARKET DEMAND IS REAL
BUT NOT IN ALASKA
ANY MAJOR INDUSTRIAL CUSTOMER WILL HAVE TO EXPORT
SHOULD IT BE TO ASIA?
OR
THE U.S. WEST COAST

WHY SOUTHCENTRAL GTL's

1. MARKET DEMAND FOR TRANSPORT FUELS IS REAL
2. GTL's HAVE A HIGHER MARKET VALUE
3. FEDERAL ECONOMIC SUPPORT AVAILABLE
4. GTL PLANT CAN JUSTIFY A BULLET GAS LINE
5. BULLET LINE - PRE-BUILD OF ALASKA GAS LINE
6. GTL's CAN SUPPLY MILITARY DEMAND
7. BLUE PRINT FOR NORTH SLOPE GTL PROGRAM
8. VALUE ADDED PRODUCTS

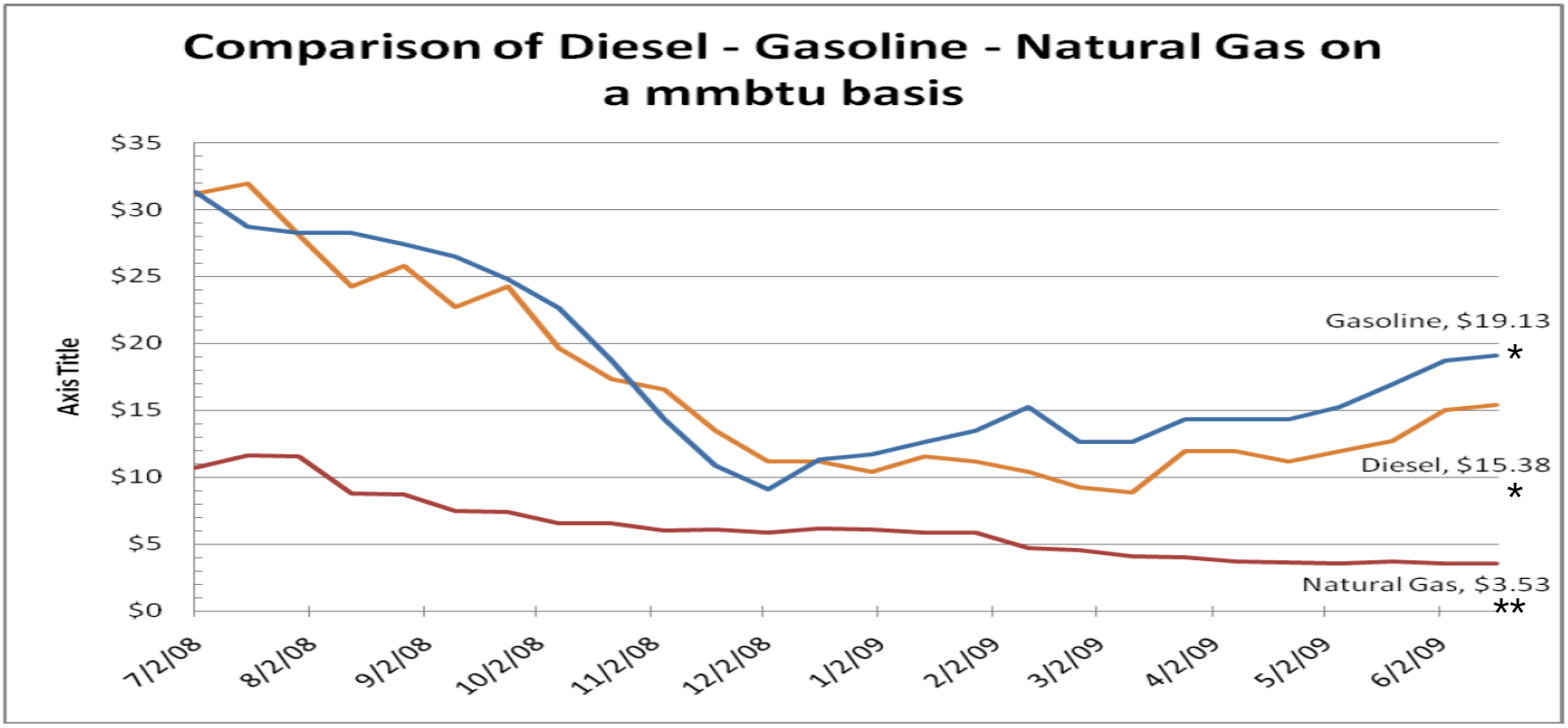
LNG DELIVERED TO JAPAN



5-year commodity price chart for Natural gas LNG, Japan

Gasoline and Diesel Always Sell at a Premium to Natural Gas on a mmbtu Basis in the Lower 48 Market[1]

[1] *Natural gas is sold $/mmbtu (million BTUs) based upon the energy content of the natural gas as measured in BTUs or British Thermal Units. Gasoline and diesel are sold on the basis of $/gallon but each contain a certain amount of BTUs per gallon. When you convert $/gallon for gasoline or diesel to $/mmbtu you can directly compare the value of natural gas to gasoline and diesel.*



* California wholesale rack price at refinery outlet

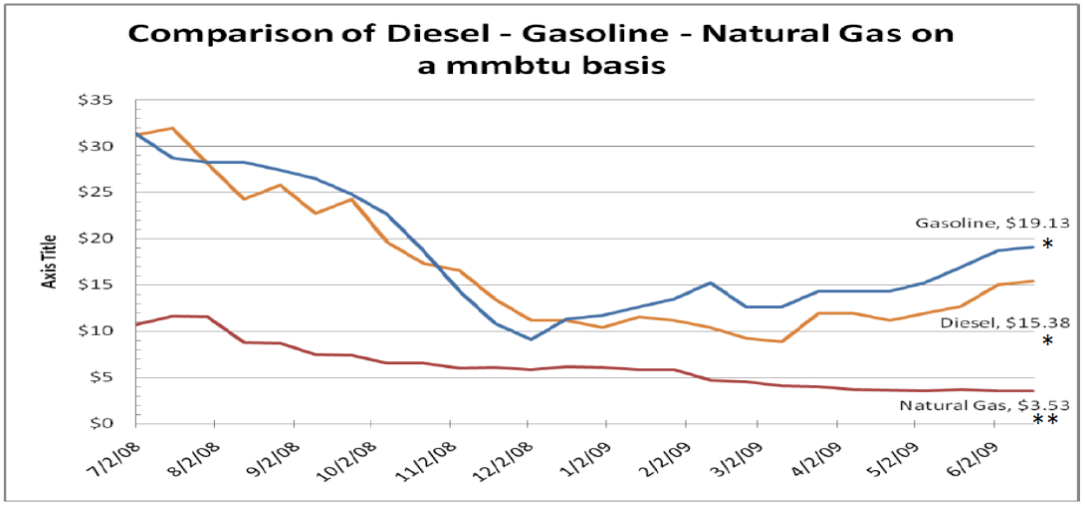
** Avg of AECO, Henry Hub, CA City Gate and US wellhead

DIESEL FUEL MARKET PRICE IN CALIFORNIA IS THE HIGHEST IN AMERICA AND THE WORLD

CALIFORNIA DIESEL FUEL QUALITY DEMANDS LOWEST AROMATIC LEVELS IN WORLD

F-T DIESEL HAS ZERO AROMATICS & ZERO SULFUR

WHAT IS THE VALUE ADDED OF THE FINISHED FUELS?



$11.85 TO $15.60 PER MILLION BTU

WHY SOUTHCENTRAL GTL's

1. MARKET DEMAND FOR TRANSPORT FUELS IS REAL
2. GTL's HAVE A HIGHER MARKET VALUE
3. FEDERAL ECONOMIC SUPPORT AVAILABLE
4. GTL PLANT CAN JUSTIFY A BULLET GAS LINE
5. BULLET LINE - PRE-BUILD OF ALASKA GAS LINE
6. GTL's CAN SUPPLY MILITARY DEMAND
7. BLUE PRINT FOR NORTH SLOPE GTL PROGRAM
8. VALUE ADDED PRODUCTS

WE HAVE A CHOICE

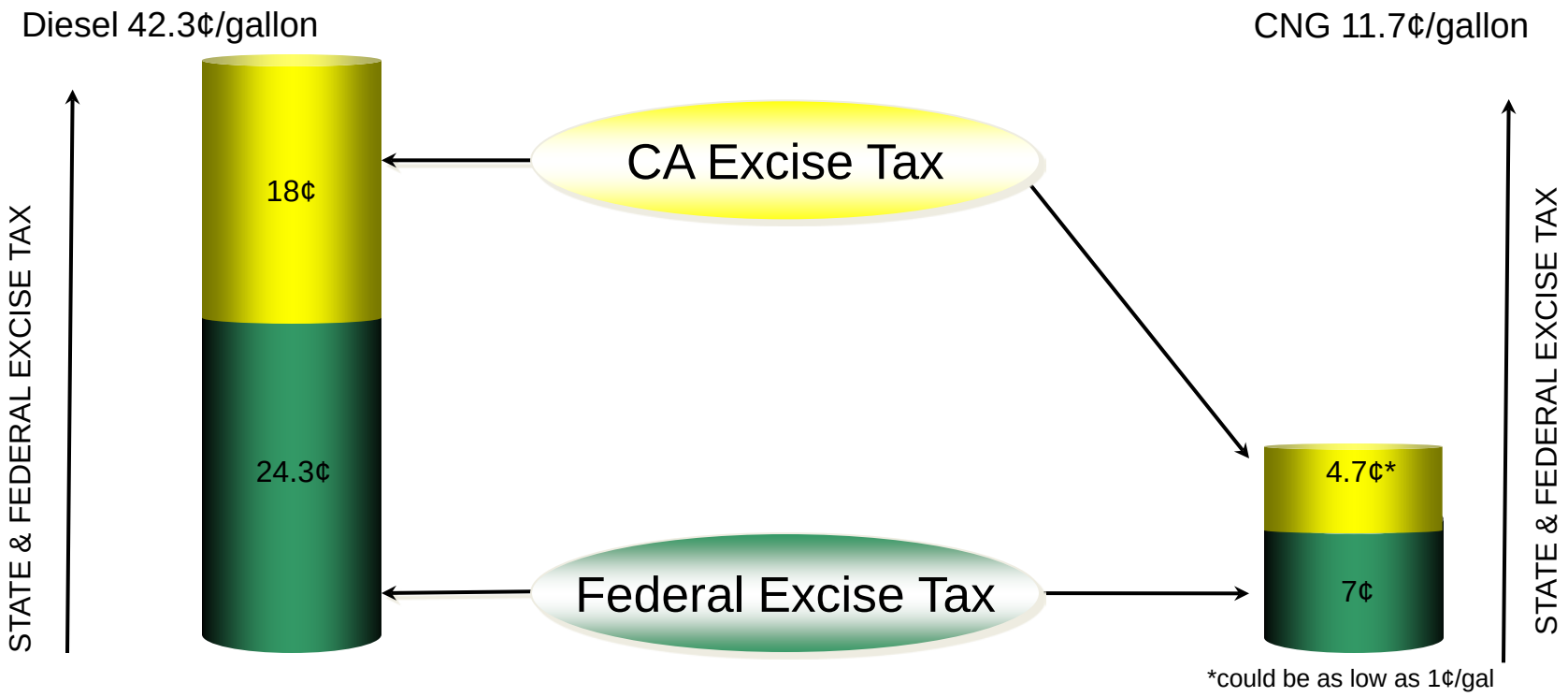
DO WE WANT 600,000 ALASKANS TO TAKE ALL THE FINANCIAL RISK OF A BULLET GAS LINE – KEEPING TAPS FLOWING FOR 70 + YEARS

OR

WOULD WE PREFER 300 MILLION AMERICANS HELP WITH THE FINANCIAL RISK

FEDERAL AND STATE (CA) TRANSPORTATION EXCISE TAX RATES FOR PETROLEUM BASED DIESEL AND CNG IN THE SAME VEHICLE

~savings 31¢/gal - $13/bbl

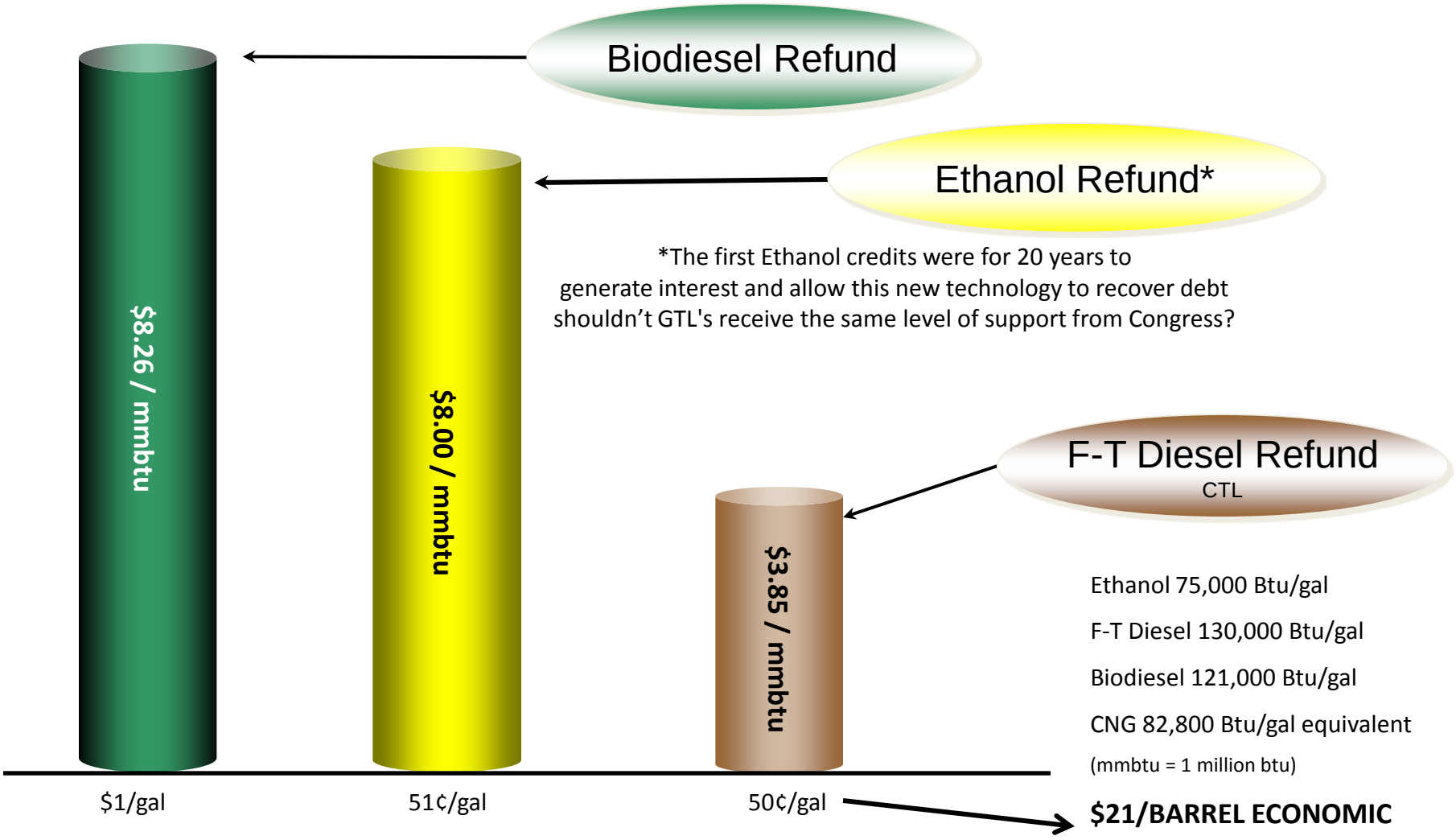


ALL ALTERNATIVE TRANSPORTATION FUELS ARE TAXED
AT LOWER RATES THAN CRUDE OIL BASED FUELS

SHOULDN'T GTL's BE TAXED AT THE SAME RATE AS CNG?

Current Energy Credits for F-T Fuels (CTL)
On a $/million btu basis vs Biodiesel & Ethanol

(At the Federal level only)



*The first Ethanol credits were for 20 years to generate interest and allow this new technology to recover debt shouldn't GTL's receive the same level of support from Congress?

Ethanol 75,000 Btu/gal

F-T Diesel 130,000 Btu/gal

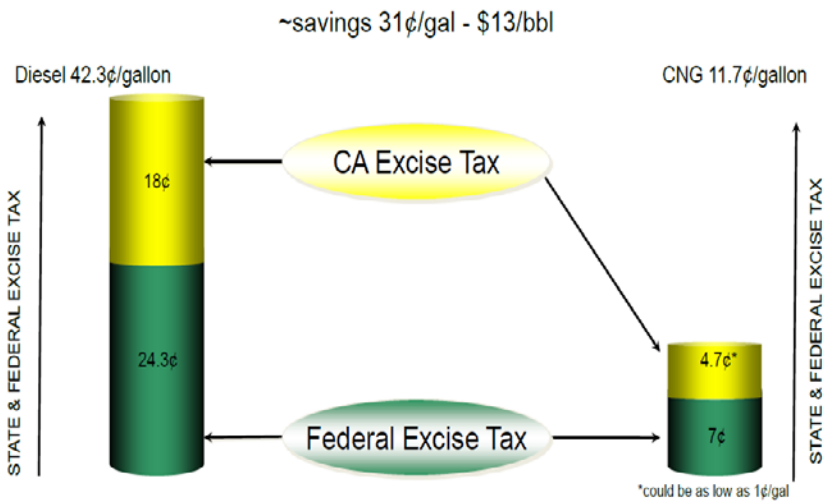
Biodiesel 121,000 Btu/gal

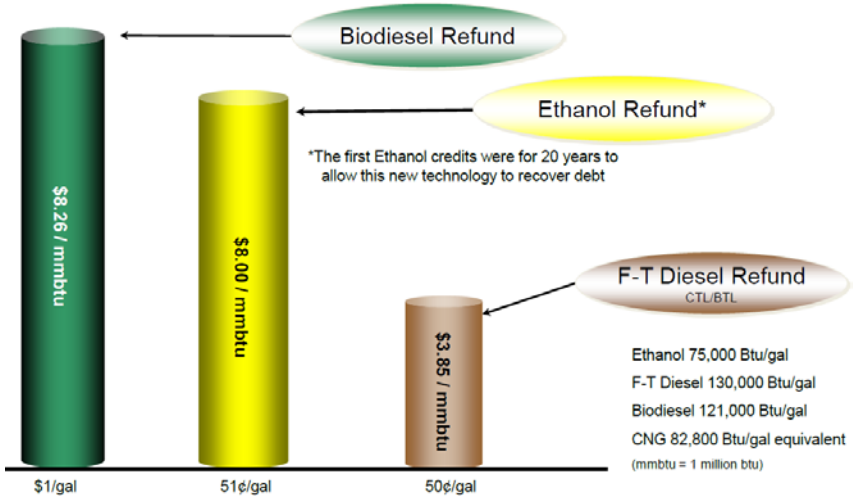
CNG 82,800 Btu/gal equivalent

(mmbtu = 1 million btu)

$21/BARREL ECONOMIC UPLIFT FOR F-T FUELS

WHAT IS THE VALUE OF THESE TWO ECONOMIC UPLIFTS?





OVER $4.00 PER MILLION BTU
~ $700 MILLION/ YR IN
FEDERAL UPLIFT

LET 300 MILLION AMERICANS HELP SUPPORT THE ALASKA BULLET GAS LINE AND GTL PLANT DELIVERING GTL FUELS TO U.S. WEST COAST NOT JUST 600,000 ALASKANS

WHY SOUTHCENTRAL GTL's

1. MARKET DEMAND FOR TRANSPORT FUELS IS REAL
2. GTL's HAVE A HIGHER MARKET VALUE
3. FEDERAL ECONOMIC SUPPORT AVAILABLE
4. GTL PLANT CAN JUSTIFY A BULLET GAS LINE
5. BULLET LINE - PRE-BUILD OF ALASKA GAS LINE
6. GTL's CAN SUPPLY MILITARY DEMAND
7. BLUE PRINT FOR NORTH SLOPE GTL PROGRAM
8. VALUE ADDED PRODUCTS

IF THE ECONOMIC SUPPORT FOR THE 1 BCF/D BULLET LINE COMES FROM FEDERAL ALTERNATIVE FUEL PROGRAMS IS THE ALASKA BULLET LINE IN VIOLATION OF AGIA

”WE THINK NOT”

MULTIPLE PIPELINE PROPOSALS

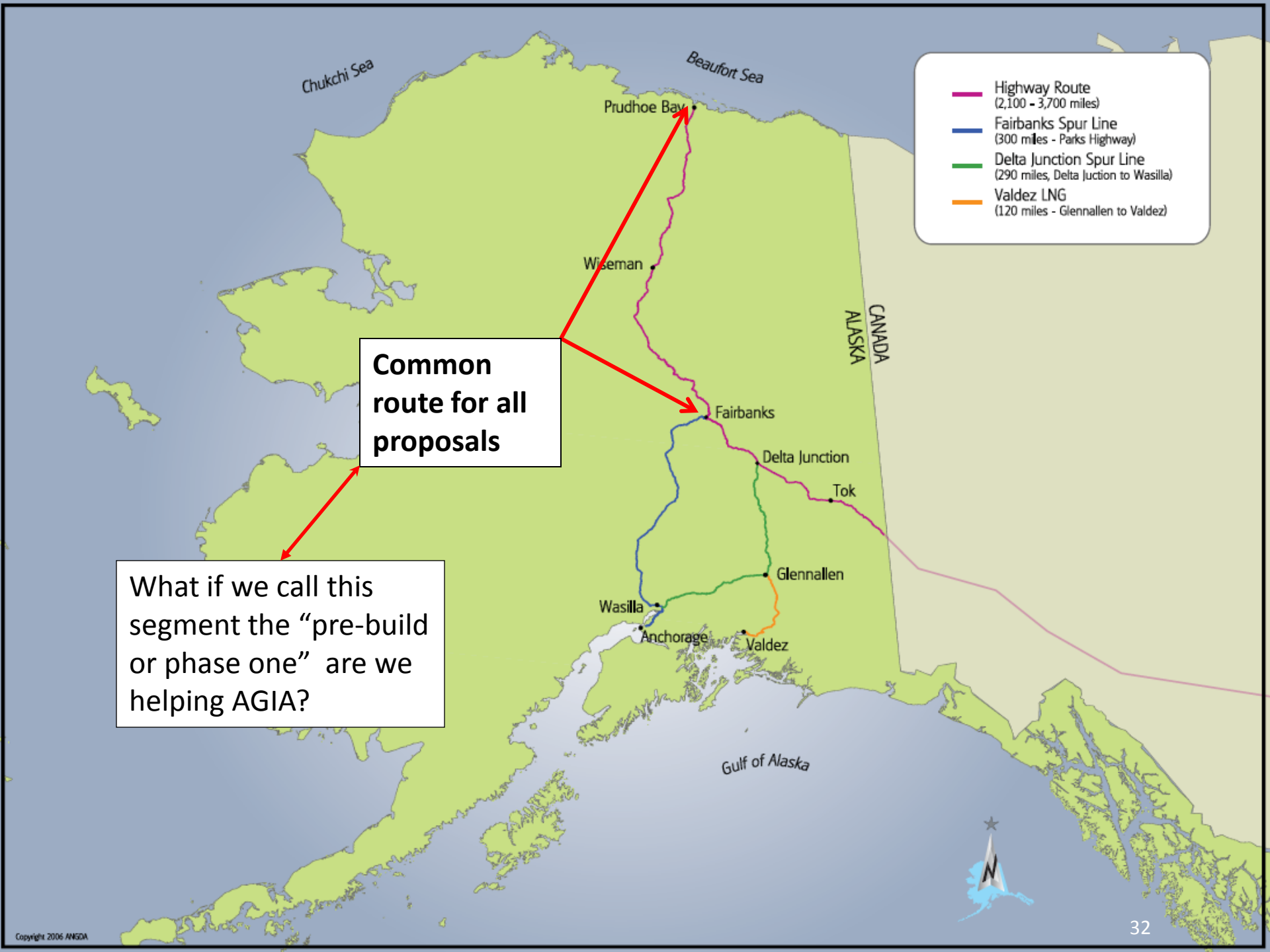
HOW DO WE BRING THEM ALL TOGETHER ?

THE ALASKA GAS LINE

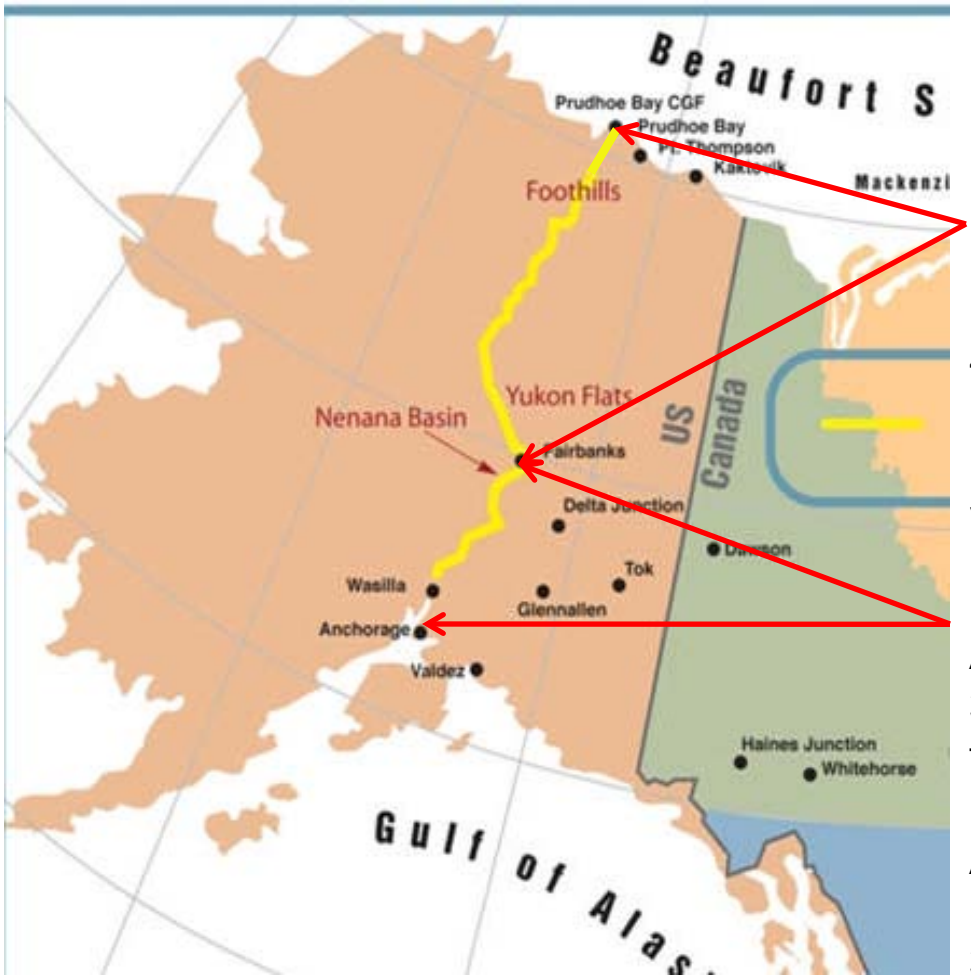
2 - PIPELINE DEVELOPERS
(AGIA – DENALI)

1 - BULLET LINE PROPOSAL
2 - SPUR LINE PROPOSALS
1 - LNG PROPOSAL

ALL USE A COMMON ROUTE FROM THE NORTH SLOPE TO FAIRBANKS


Chukchi Sea
Beaufort Sea
Prudhoe Bay
Wiseman
Fairbanks
Delta Junction
Tok
Glennallen
Wasilla
Anchorage
Valdez
Gulf of Alaska
CANADA
ALASKA
Highway Route
(2,100 - 3,700 miles)
Fairbanks Spur Line
(300 miles - Parks Highway)
Delta Junction Spur Line
(290 miles, Delta Juction to Wasilla)
Valdez LNG
(120 miles - Glennallen to Valdez)
Common route for all proposals
What if we call this segment the "pre-build or phase one" are we helping AGIA?
N
Copyright 2006 ANGDA

PRE-BUILD & BULLET GAS LINE FROM NORTH SLOPE TO SOUTHCENTRAL

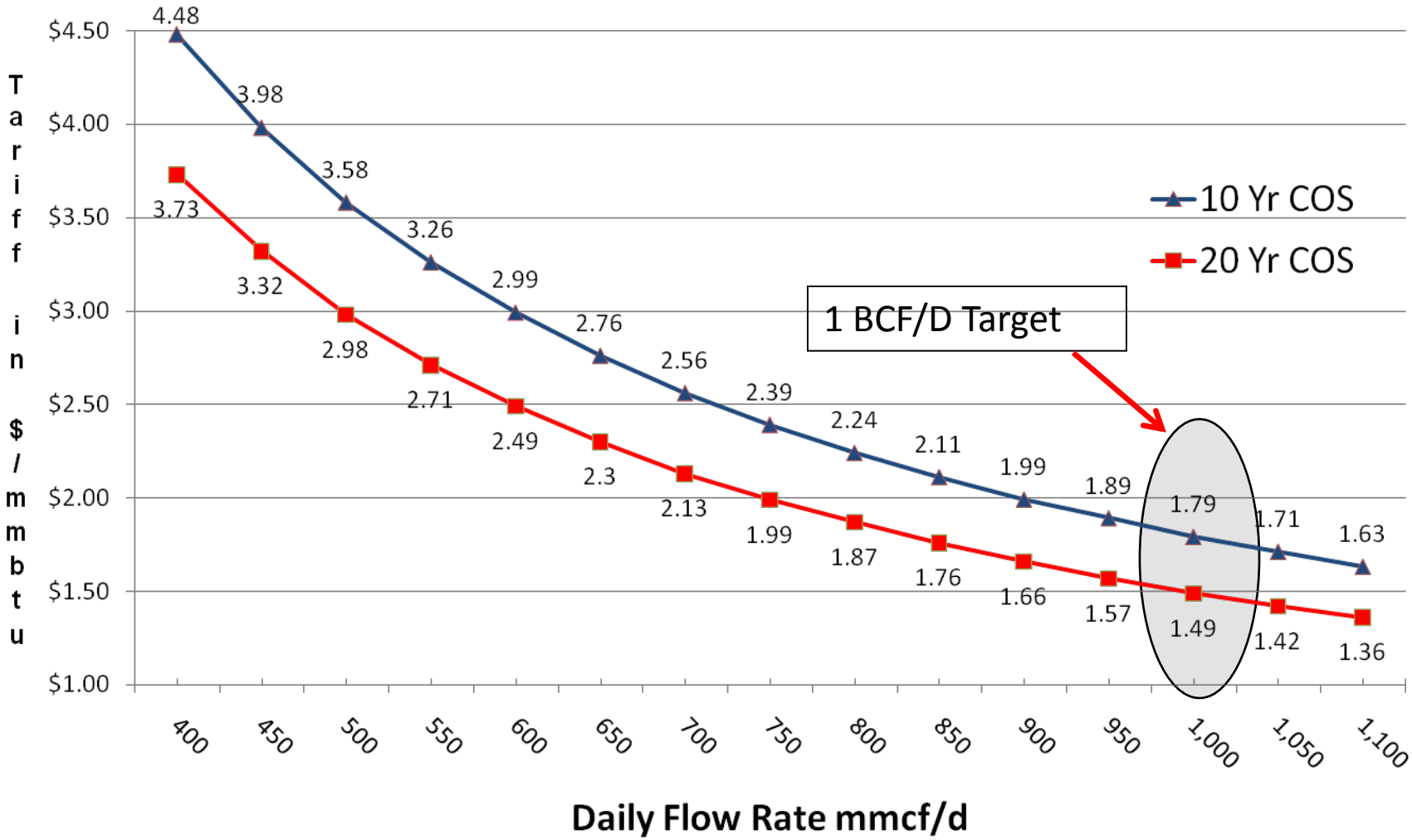


Northern Line
"PRE-BUILD"
North Slope to Fairbanks ~ 500 mi route follows TAPS right of way – 48" pipeline

Southern Line
"BULLET LINE"
Fairbanks to Anchorage ~ 350 mi route follows the Parks Highway or Alaska Rail Road recommend a 36" pipeline line

WE NEED AT LEAST
1 BCF/D OF MARKET TO KEEP
THE BULLET TARIFF AT OR
BELOW $2/MMBTU

Alaska Bullet Line Service Tariffs



Data supplied by Enstar with a 800 + Mile distance Prudhoe Bay to MP 39 Parks Highway with a 24" Pipeline

Pre-Build Gas Line

48” with one compressor station the right way to go

(assume 1440 psi inlet and 900 psi delivery pressure – 500 miles)

- 48” from the North Slope to Fairbanks no compression
  - Capacity 1.25 bcf/d
- 48” from North Slope to Fairbanks with 5-8 compression stations
  - Capacity 4 bcf/d
- 48” from the North Slope to Fairbanks with 8-12 compression stations
  - Capacity 5 bcf/d

- 24” from the North slope to Fairbanks no compression (500 psi delivery)
  - Capacity .2 bcf/d (202 million per day)
- 24” from the North Slope to Fairbanks with 10 -15 compressor stations
  - Capacity 1 bcf/d

The point of this that a 24” gas line is maxed out at 1 bcf/d whereas a 48” line can transport 1 bcf/d with no additional compression and with one, two, four, six or ten additional compression stations can transport from 2 bcf/d to 5 bcf/d. Lets build a system that can be expanded easily

A 48” line is expandable whereas a 24” line is not

WHY SOUTHCENTRAL GTL's

1. MARKET DEMAND FOR TRANSPORT FUELS IS REAL
2. GTL's HAVE A HIGHER MARKET VALUE
3. FEDERAL ECONOMIC SUPPORT AVAILABLE
4. GTL PLANT CAN JUSTIFY A BULLET GAS LINE
5. BULLET LINE - PRE-BUILD OF ALASKA GAS LINE
6. GTL's CAN SUPPLY MILITARY DEMAND
7. BLUE PRINT FOR NORTH SLOPE GTL PROGRAM
8. VALUE ADDED PRODUCTS

F-T FUELS FOR U.S. MILITARY

The U.S. Military is in the final stages of selecting F-T fuels as the fuel of the future for the military. Why, because F-T fuels, primarily diesel can be used in an airplane, helicopter, truck, tank or ship with no modifications. F-T jet fuel is currently approved for a 50-50 blend in all aircraft around the world.

There are no F-T plants currently in the U.S.

The military can not pay a premium fuel but can enter into long term contracts

The military can enter into call contracts to reserve a future call on capacity. This capacity can be airline seats, cargo capacity, container units, fuel tanker all at the market price for said capacity and in the future, an F-T fuel supply.

ANGTL has proposed to the Military a long term call on 35,000 bbl/d of F-T refining capacity at market price.

This 35,000 bbl/d of F-T can be blended with an equal amount of petroleum based fuels to provide 70,000 bbl/d for Pacific Rim military needs.

WHY SOUTHCENTRAL GTL's

1. MARKET DEMAND FOR TRANSPORT FUELS IS REAL
2. GTL's HAVE A HIGHER MARKET VALUE
3. FEDERAL ECONOMIC SUPPORT AVAILABLE
4. GTL PLANT CAN JUSTIFY A BULLET GAS LINE
5. BULLET LINE - PRE-BUILD OF ALASKA GAS LINE
6. GTL's CAN SUPPLY MILITARY DEMAND
7. BLUE PRINT FOR NORTH SLOPE GTL PROGRAM
8. VALUE ADDED PRODUCTS

WHERE ARE THE MAJORS ON GTL's

1. In 2003/04 ConocoPhillips and ExxonMobil signed agreements to build 160,000 bb/day and 150,000 bbl/day GTL plants in Qatar. They would not have made these commitments if they did not believe in GTL's plus possess the skills to build world-scale GTL plants.
2. Shell Oil, has a 15,000 bbl/d GTL plant in Malaysia, is building a 140,000 bbl/d GTL plant in Qatar as well as planning a CTL plant in China.
3. Chevron, Sasol's world wide GTL partner, is planning a 34,000 bbl/d GTL plant in Nigeria and planned a 100,000 bbl/d GTL expansion with Sasol and a new 120,000 bbl/d GTL plant both in Qatar.
4. Marathon completed a pre-FEED study for a 120,000 bbl/d GTL plant in Qatar in 2003.
5. BP and Statoil are working on barge mounted GTL plants.

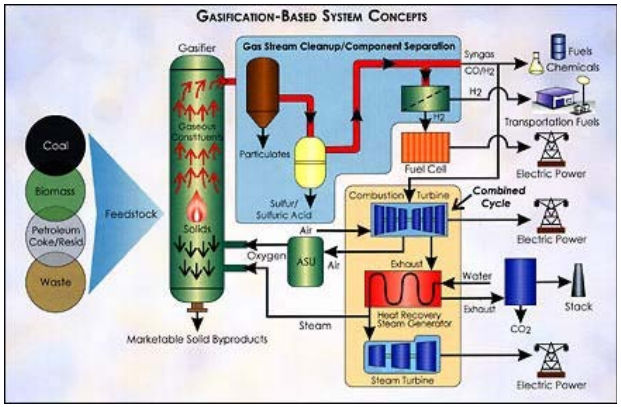
Clearly, the North Slope majors possess all the skills necessary to build GTL plants worldwide including in Alaska. The economics of building in Alaska are there. But North Slope producers are also west coast refiners. Is it possible that they do not want the competition? Is it possible that they do not to reduce U.S. Dependence on imported crude oil?

WHY SOUTHCENTRAL GTL's

1. MARKET DEMAND FOR TRANSPORT FUELS IS REAL
2. GTL's HAVE A HIGHER MARKET VALUE
3. FEDERAL ECONOMIC SUPPORT AVAILABLE
4. GTL PLANT CAN JUSTIFY A BULLET GAS LINE
5. BULLET LINE - PRE-BUILD OF ALASKA GAS LINE
6. GTL's CAN SUPPLY MILITARY DEMAND
7. BLUE PRINT FOR NORTH SLOPE GTL PROGRAM
8. VALUE ADDED PRODUCTS

VALUE ADDED INDUSTRIES

- The Sasol CTL plants in South Africa produce over 100 different value added products from effluent streams.
- The North Dakota Gasification plant uses the Lurgi process to convert 6 million tons per year of lignite coal to syngas and liquids. The average daily production at Great Plains is about 160 million cubic feet of high quality pipe line natural gas.
- Many by-products are also produced at the plant, including: ammonium sulfate, anhydrous ammonia, carbon dioxide, dephenolized cresylic acid, krypton and xenon gases, liquid nitrogen, naphtha, phenol, and methanol.



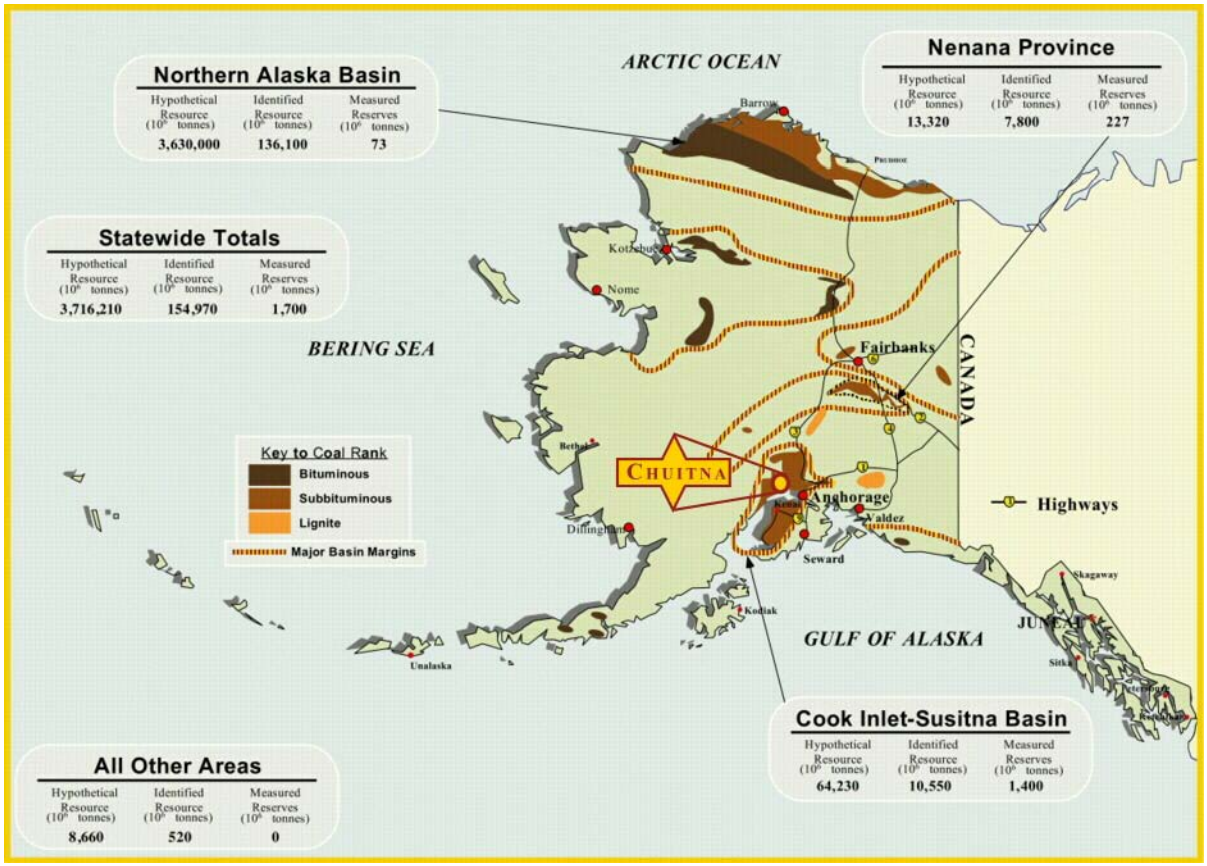
ONE ADDITIONAL POINT

ALASKA IS THE OPEC OF COAL

ALASKA HAS MORE POTENTIAL COAL RESOURCES THAN THE REST OF THE WORLD

GASIFY THIS COAL AND SEND THE SYNGAS TO PRUDHOE BAY, SEQUESTER THE CO_2 AND MAKE EVEN MORE F-T FOR THE U.S.

THINK OUT SIDE OF THE BOX
Alaska's Coal Resources & Reserves



AN ALASKA LEGACY PROJECT

Estimated Recoverable Coal Reserves

(10^9 tonnes)

World Total	**1,038**
North America	**256**
United States	**246+Alaska**
Alaska (measured)	**2**
Alaska Estimated	**200**

Note: The Northern Alaska Basin could potentially have upwards of 1.5 to 2.5 trillion tons of bituminous coal reserves – more coal than the total proven reserves in the world today!

This Alaska coal represents almost 5 trillion barrels of F-T fuels equal to the total world proven crude oil reserves of 5 trillion

SUMMARY

- **ALASKA CAN SUPPLY THE U.S. WITH ITS TRANSPORT ENERGY NEEDS**
- **FAIRBANKS NEEDS AN ALTERNATIVE SUPPLY OF NEW ENERGY**
  - **THIS ENERGY MUST BE CLEAN BURNING**
- **SOUTHCENTRAL NEEDS ADDITIONAL NATURAL GAS SUPPLIES TO**
  - **STEM THE LOSS OF INDUSTRY, AND**
  - **TO PROVIDE RESIDENTIAL AND COMMERCIAL CUSTOMERS WITH LONG TERM WINTER DELIVERABILITY AND RELIABILITY**
- **ALASKA'S LARGEST CRUDE OIL REFINERY MAY CLOSE**
  - **FLINT HILLS REFINERY A MAJOR FUELS SUPPLIER IN ALASKA IS STRUGGLING,**
- **THE U.S. WEST COAST FUELS MARKET EXCEEDS 1.8 MILLION BBL/D**
  - **THE ALASKA GTL PLANT ONLY REPRESENTS 3.9% OF THIS EXISTING MARKET**
  - **PAC-RIM MILITARY SUPPLY IS SEEKING 70,000 BBL/D OF A 50-50 F-T BLEND BY 2018**
- **A SOUTHCENTRAL GTL PLANT CAN ANCHOR A 1 BCF/D BULLET GAS LINE**
  - **70 TO 75% OF ALASKA'S POPULATION WILL POSITIVELY DIRECTLY BENEFIT FROM A BULLET GAS LINE AND GTL PLANT – 100% WILL RECEIVE BENEFITS**
  - **THE ALASKA LEGISLATURE IS PROPOSING A $470 MILLION STATE TAX CREDIT FOR GTL'S**
- **THE MAJORITY OF THE ECONOMIC SUPPORT FOR A BULLET LINE COMES FROM OUTSIDE ALASKA - 300 MILLION AMERICANS WILL SUPPORT THE ALASKA PROGRAM IN EXCHANGE FOR REDUCING U.S. IMPORTS OF CRUDE**
  - **IF THE ECONOMIC SUPPORT FOR THE BULLET LINE COMES FROM FEDERAL ALTERNATIVE FUEL PROGRAMS DOES THE PROJECT VIOLATE THE AGIA TERMS - NO**

THANK YOU

FOR ADDITIONAL INFORMATION ON AN ALASKA GTL OR CTL PROGRAM CONTACT ANGTL AT OFFICE (907) 264-6709 OR E-MAIL RPETERSON@ANGTL.COM