ALASKA NATURAL RESOURCES TO LIQUIDS (ANRTL)

NORTH SLOPE GAS TO LIQUIDS (GTL) PLANT PROPOSAL FINISHED FUELS AGAIN MADE ON THE NORTH SLOPE

Web May 2017

THE ISSUE

Oil fields on the North Slope **produce** over 500,000 BBL/D of crude oil but must **import** tens of thousands gallons per day of Diesel, Gasoline and Methanol from **800 +** miles away to support **Daily** operations

ANRTL's PROPOSAL

1. BUILD A GTL PLANT ADJACENT TO THE PBU FS3 AT NO COST TO PBU OWNERS AND COMMENCE COMMERCIAL OPERATIONS WITHIN 2 YEARS OF EXECUTION OF FIRM SUPPLY & MARKET AGREEMENTS PLUS FINAL PERMITTING;

2. SUPPLY PBU OWNERS WITH AN EQUAL OR BETTER QUALITY LOWER COST GASOLINE AND METHANOL AT THE GTL PLANT TAILGATE UNDER A LONG TERM MARKET AGREEMENT;

3. ENTER INTO A LONG TERM NATURAL GAS SUPPLY AGREEMENT WITH THE PBU OWNERS TO SUPPLY ANRTL'S GTL PLANT;

4. INITIALLY START THE GTL PLANT SUPPLYING METHANOL AND GASOLINE AND WITHIN 18 ADDITIONAL MONTHS HAVE ULSD AT THE TAILGATE OF THE ANRTL GTL PLANT; AND

5. WORK WITH OTHER NORTH SLOPE COMPANIES TO UTILIZE TO THE MAXIMUM EXTENT POSSIBLE EXISTING NORTH SLOPE PRODUCT STORAGE AND TRANSPORT.

ANRTL – WORKING WITH EXISTING NS COMPANIES

CONVERTING NATURAL GAS INTO DIESEL, GASOLINE AND METHANOL FOR THE LOCAL MARKET ELIMINATING OVER 900 MILES OF TRANSPORT (ONE WAY) PLUS MILLIONS OF MILES PER YEAR OF TRANSPORT EMISSIONS WHILE STILL UTILIZING LOCAL TRANSPORT AND STORAGE

Colville Storage Tanks North Slope Alaska

Alaska High Cost Fuels

Alaska has some of the **highest wholesale fuel costs** in the world.

Transport can add an **additional** $1.00 to $1.25/gallon to the already high fuel cost.

ANRTL proposes to supply ULSD, Gasoline and Methanol to North Slope Operators at a discount to the delivered cost of these three products.

The amount of the discount will vary with the price of crude oil.

ANRTL GTL PLANT LOCATION LOCATION LOCATION

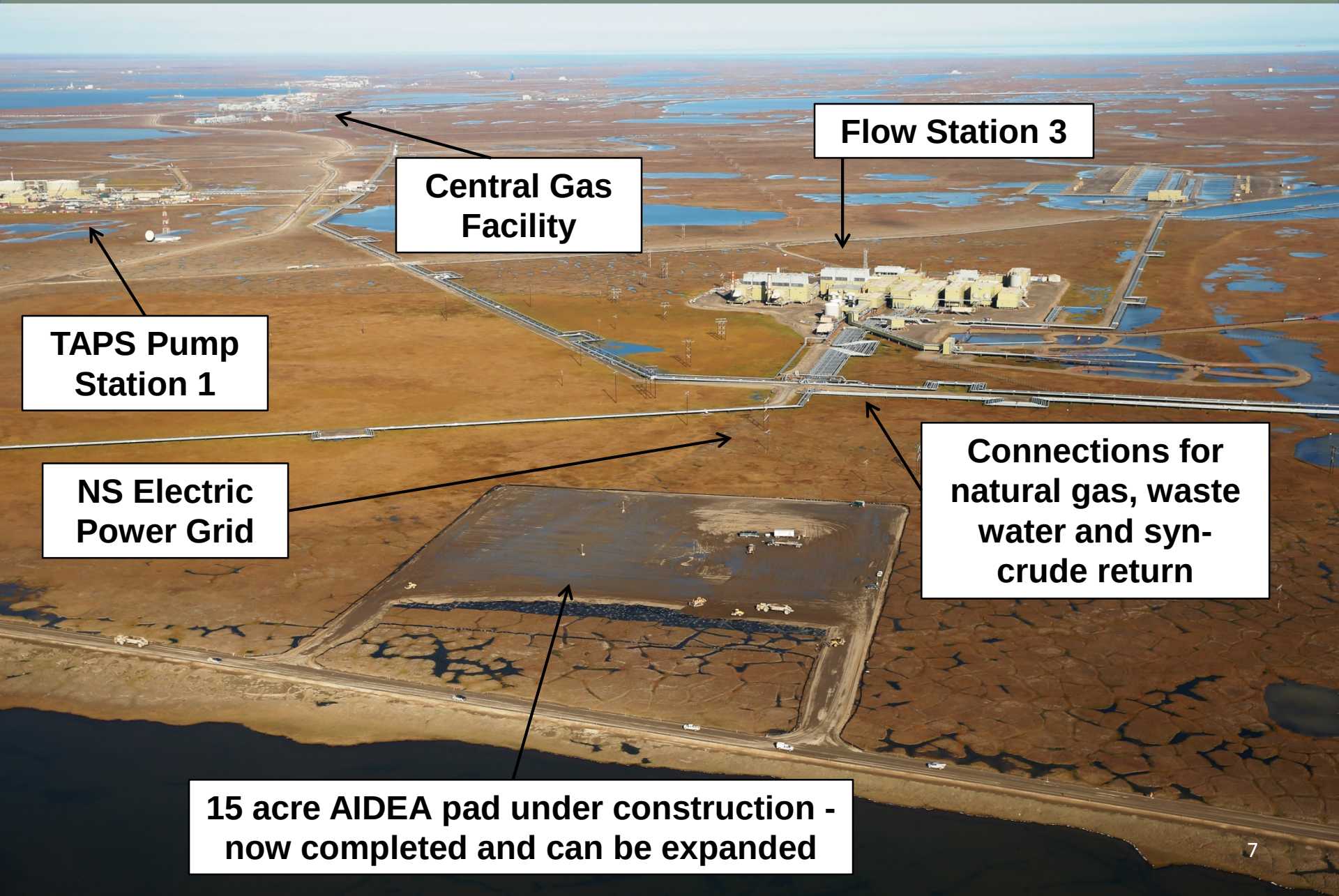
1. ANRTL's GTL plant will be located on an existing Pad located within the Prudhoe Bay Oil Unit and approved by BP as operator of the PBU.

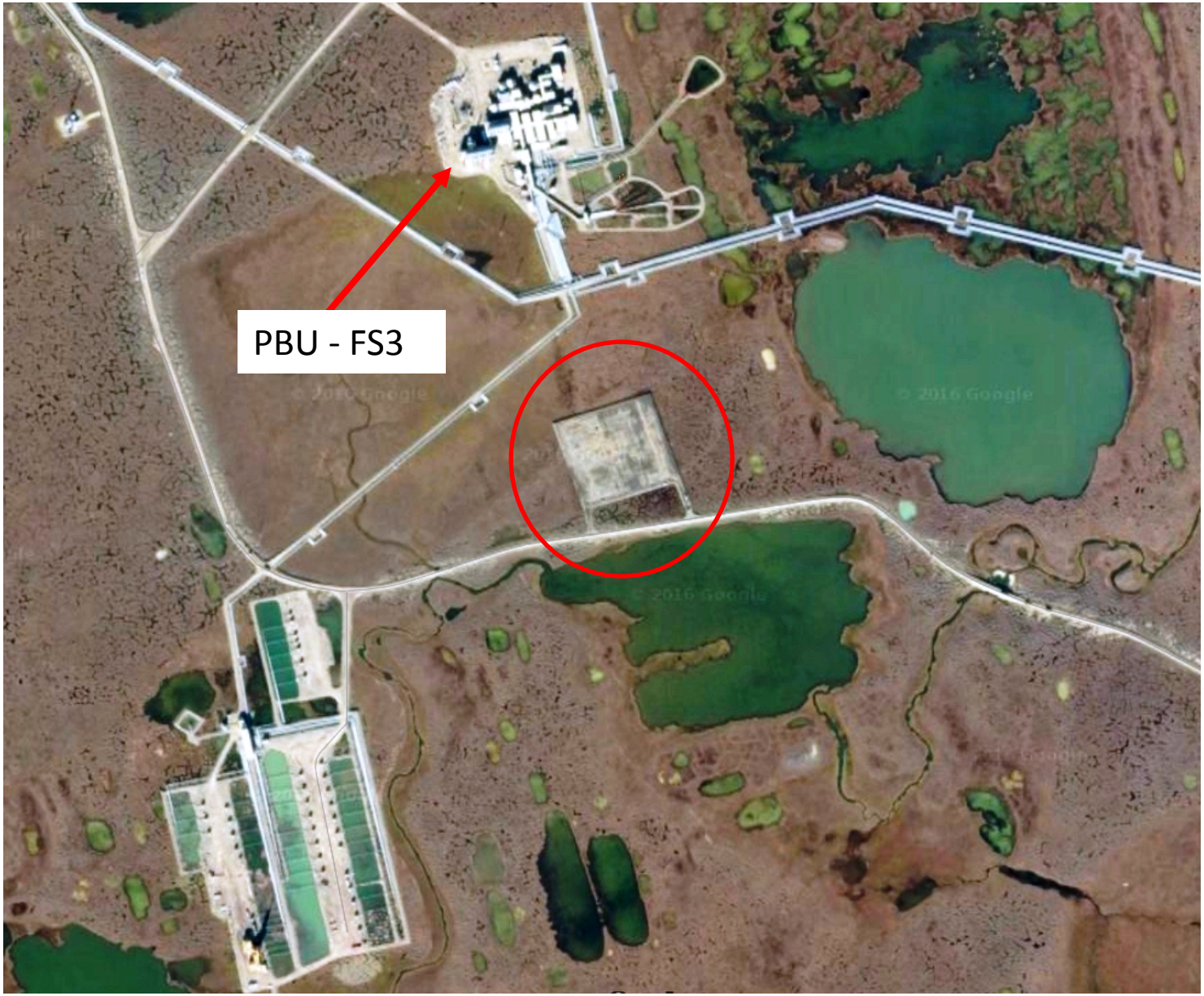
2. The Pad is within close proximity to the source of natural gas supply, waste water disposal lines, electric power grid, CO_2 injection line and TAPS pump station 1 for delivery of syn-crude if it is marketed off the PBU.

3. The Pad is owned by the Alaska Industrial Development and Export Authority (AIDEA) and the Pad comes with existing permits; and

4. The Pad is located on the existing North America road system, nearby tidewater docks for mega loads, adjacent to a large commercial airport and the area is serviced by over 6,000 skilled oil and gas workers.

NORTH SLOPE AIDEA PAD





Arial view of completed AIDEA Pad at PBU Flow Station 3

GAS TO LIQUIDS (GTL)

"METHANE TO LIQUIDS"

THESE LIQUIDS CAN BE

- DIESEL
- GASOLINE
- METHANOL
- SYN-CRUDE

ANRTL - TECHNOLOGY

MAJOR COMPANIES IN THE WORLD HAVE FOCUSED ON MEGA GTL PLANTS IN THE RANGE OF 30,000 TO 140,000 BBL/D

MEANWHILE THE SHALE GAS AND SHALE OIL REVOLUTION HAS CREATED A DEMAND FOR SMALLER SCALE GTL PLANTS IN THE RANGE OF 200 TO 5,000 BBL/D

SMALL SCALE - WHILE NOT ENVISIONED FOR THE NORTH SLOPE THIS NEW TECHNOLOGY IS IDEAL FOR THIS SPECIFIC APPLICATION

ANRTL

GTL TECHNOLOGY
DIESEL (F-T)
GASOLINE (FTG)
METHANOL (FTM)

All commercial for over
60 years and now scalable

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

THE HAUL ROAD TO THE NORTH SLOPE

THE SIZE OF THE F-T, STG & STM MODULES AND REACTORS ARE DEPENDENT ON THE WEIGHT TO BE SHIPPED BY A STANDARD TRUCK ON AN EXISTING ROAD AND LIFTED BY A COMMONLY AVAILABLE CRANE

Haul Road on Left – TAPS on the Right
Brooks Range in the background

ANRTL's NORTH SLOPE GTL PLANT WILL ACCOMPLISH AT LEAST FIVE GOALS

1. DELIVERY OF LOWER COST ULSD, GASOLINE AND METHANOL TO THE OIL MAJORS ON THE NORTH SLOPE PLUS THE SOURCE OF THESE FUELS WILL BE 900 MILES CLOSER TO THE MARKET;

2. REDUCE CRUDE OIL PRODUCTION COSTS TO THE OIL OWNERS & INCREASE TAX REVENUES TO THE STATE;

3. ELIMINATE 10 TO 20 TANKER TRUCKS FROM THE HAUL ROAD PER DAY SAVING OVER 3 MILLION MILES/YR OF EMISSIONS PLUS ELIMINATE TRANSPORT CRASHES AND SUBSEQUENT FUEL SPILLS;

4. SUPPLY WILL NOT BE SUBJECT TO HAUL ROAD CLOSURES; AND

5. BE SEEN AS A NEW INVESTMENT ON THE NORTH SLOPE AS A RESULT OF SB-21.

MODULAR BUILDING

TO KEEP THE COST OF ANRTL'S NORTH SLOPE GTL PLANT DOWN PLUS ACCELERATE THE TIME FROM DESIGN TO COMMISSIONING

WE HAVE PURSUED MODULAR BUILDING TO REDUCE COSTS, CONSTRUCTION TIMING AND INCREASE PLANT RELIABILITY

GTL MODULES UNDER CONSTRUCTION

Module and vessel fabrication - progress
At Ventech, Pasadena, Texas



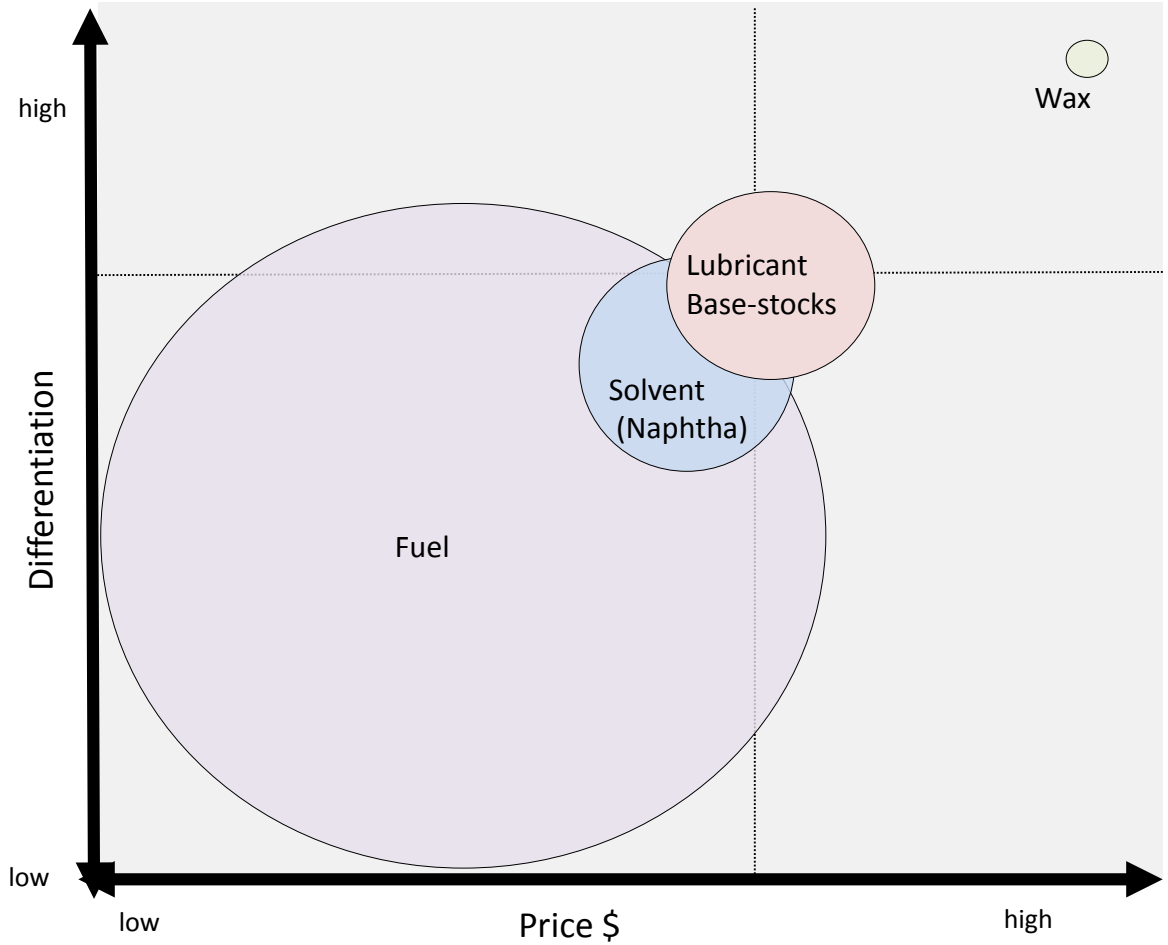

GTL modules under construction for a GTL project in the Oklahoma City area scheduled for startup 4Q 2016.

GOAL – LOWER COST'S TO PRODUCERS

ANRTL'S GOAL IS TO MAXIMIZE PLANT OUTPUT BY PRODUCING A RANGE OF PRODUCTS MOSTLY FOR CONSUMPTION ON THE NORTH SLOPE BUT SOME MAY BE AVAILABLE FOR BACKHAUL TO OTHER HIGH VALUE MARKETS

F-T PRODUCTS

opportunity to add value through differentiated products



Note: relative global market sizes are approximate and not to scale

- FT products are of the highest quality and command premium prices in most applications
- FT syn-crude offers many product options to add value depending on market need
- Specialty products are sold on performance at higher prices
  - E.g. wax pricing is up to 100% higher than diesel
- Specialty products pricing is less volatile and can add sustainable value to the total FT product mix

F-T WAX

BUILDING BLOCK FOR HIGH VALUE SYNTHETIC LUBE OILS

DRY BULK PRODUCTS

Four-Panel Super Sack container

1 Four-Panel Super Sack® Container

U-Panel Super Sack® Container

The popular Four-Panel Super Sack container is our original polypropylene design and has become the industry standard by which others are judged. The versatile, cost-effective four-panel construction is excellent for a variety of applications and is available custom designed or from our in-stock selection. The U-Panel variation consists of two side panels attached to a 'u-shaped' single piece 'side-bottom-side' unit. Consult Super Sack container specifications on pages 21 - 26 and our sizing chart on pages 28 - 29 to choose from our many features and sizing options.

Capacity

Volume: Two to 120 cubic feet.

Up to: 4,400 lbs.

TYPICAL BAG WILL HANDLE 4,400 LBS OF SOLIDS

POTENTIAL OF BACK HAULING

SOLID F-T WAX PRODUCTS FROM THE ANRTL NORTH SLOPE GTL PLANT

TRANSPORTED TO FAIRBANKS, ANCHORAGE AND OR TACOMA

TRUCK TRAFFIC DEADHORSE SOUTH BOUND

1. DRY BULK PRODUCT
    a) PREFER PRODUCT KEPT DRY
2. FLATBED
3. ENCLOSED TRAILER
4. BACKHAUL COST
    a) FAIRBANKS
    b) ANCHORAGE
    c) TACOMA, WA

SMALL SCALE GTL TECHNOLOGY

THREE LEADERS

PRIMUS GREEN ENERGY
A LEADER IN SMALL SCALE GTL TECHNOLOGY
FOCUSING ON METHANOL AND GASOLINE

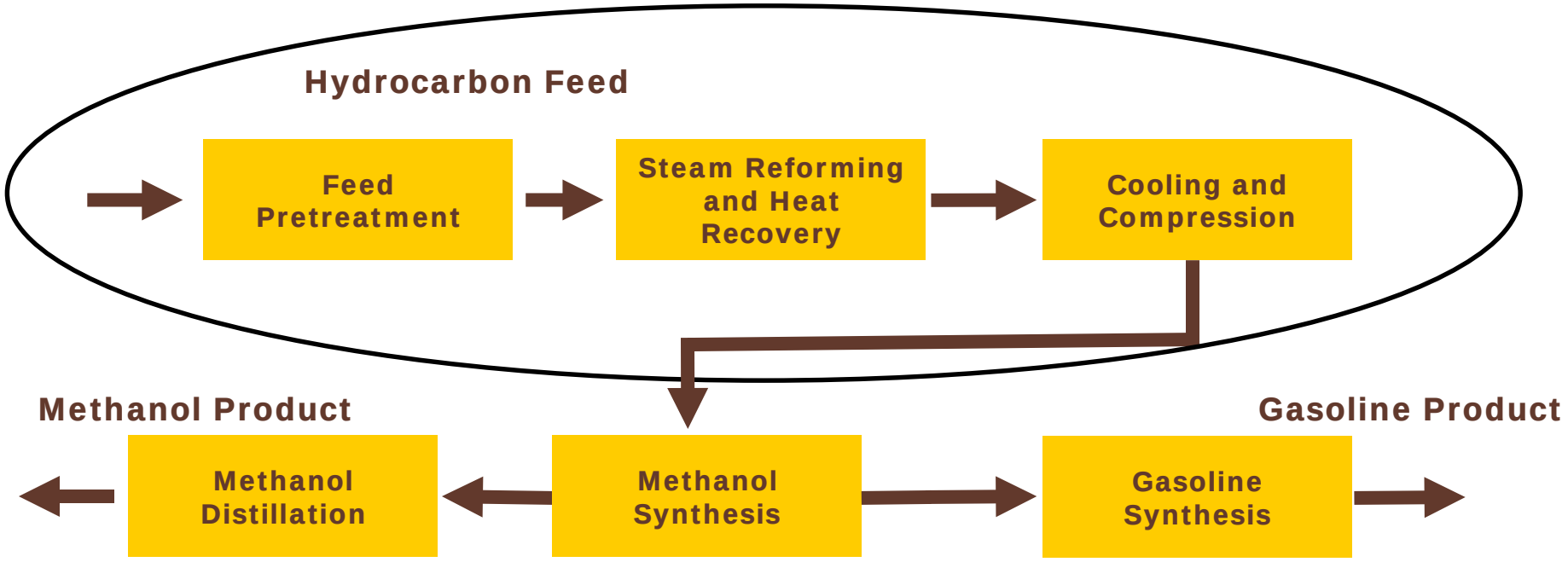
VELOCYS PLC
A LEADER IN SMALL SCALE GTL TECHNOLOGY
FOCUSING ON ULSD, DILUENT AND F-T WAX

INFRA GTL TECHNOLOGY
A LEADER IN SMALL SCALE GTL TECHNOLOGY
FOCUSING ON SYN-CRUDE, JET AND DIESEL

SUPPLY BEYOND ULSD

Methanol & Gasoline

- Process within oval is already at a GTL plant

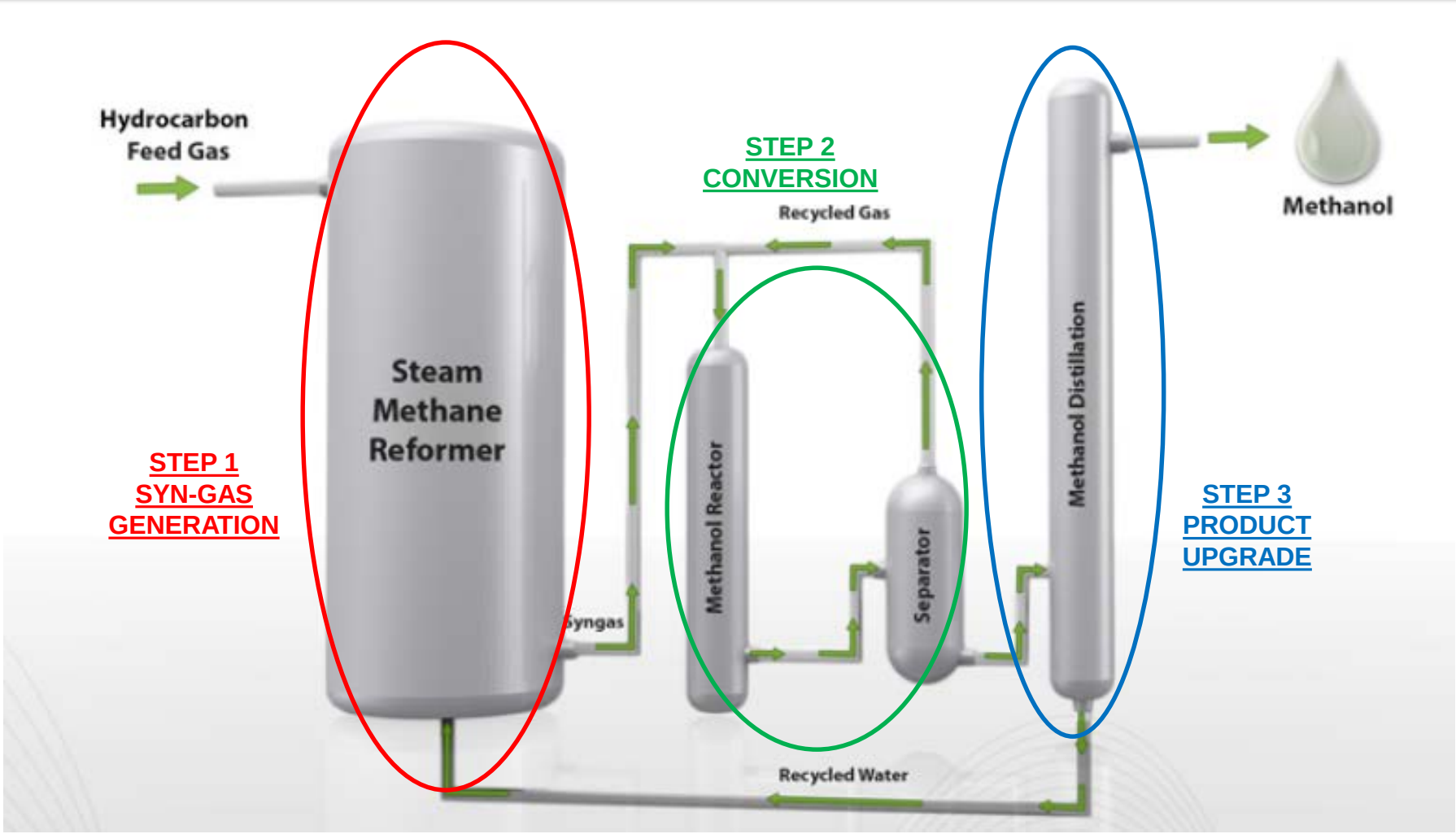


THE HYDROCARBON FEED SECTION OF THE GTL PROCESS REPRESENTS ~60% OF THE CAPEX OF A METHANOL - GASOLINE PLANT
ONCE YOU HAVE SYN-GAS YOU CAN EASILY MAKE THESE PRODUCTS !

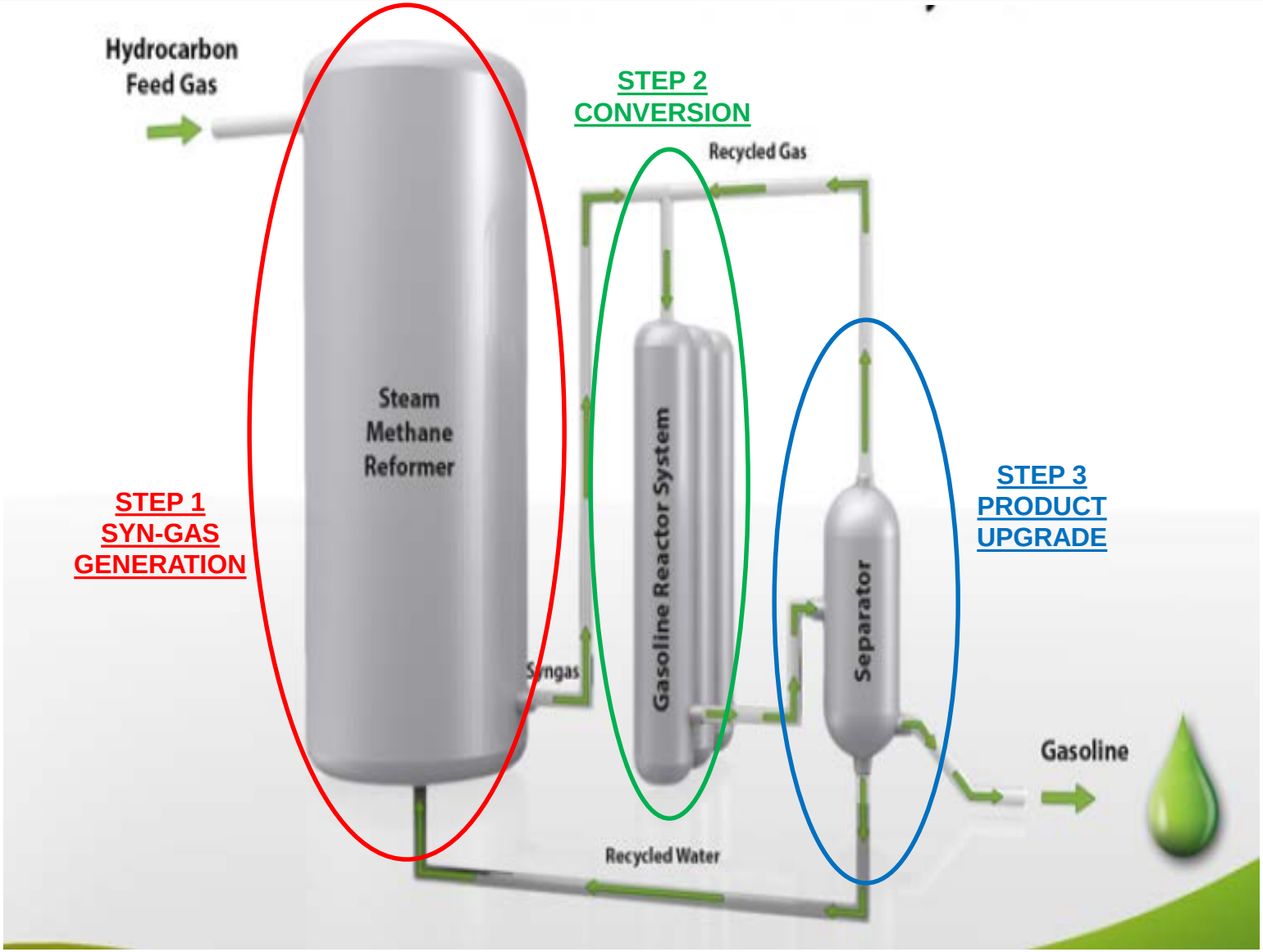
PRIMUS GREEN ENERGY

Primus 1,250 bbl/d full scale commercial plant in NJ used as a training center for new operators and for testing new catalysts

STM – METHANOL



STG - GASOLINE



VELOCYS F-T TECHNOLOGY

Final stages of the build of a commercial four-core FT reactor

INFRA GTL TECHNOLOGY

INFRA 100 bbl/d next demonstration plant in TX used as a reference plant

http://en.infratechnology.com/products/m100

https://www.youtube.com/watch?v=eEBbRi9koZA

THANK YOU

FOR ADDITIONAL INFORMATION ON AN ALASKA NORTH SLOPE GTL PROGRAM
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