ALASKA NATURAL RESOURCES TO LIQUIDS (ANRTL)

NORTH SLOPE GAS TO LIQUIDS (GTL) PLANT PROGRAM

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

EXISTING NORTH SLOPE SUPPORT COMPANIES

1. We have approached Delta Western (Saltchuk) to store and distribute methanol to North Slope Oil Operators;
2. We have approached Colville to store and distribute ULSD and gasoline to North Slope Oil Operators;
3. We will work with Delta Western and Colville to store, supply and distribute methanol, gasoline, ULSD and other fuels from the ANRTL GTL plant to markets outside of the North Slope Operators.

Alaska Has High Cost Fuels!

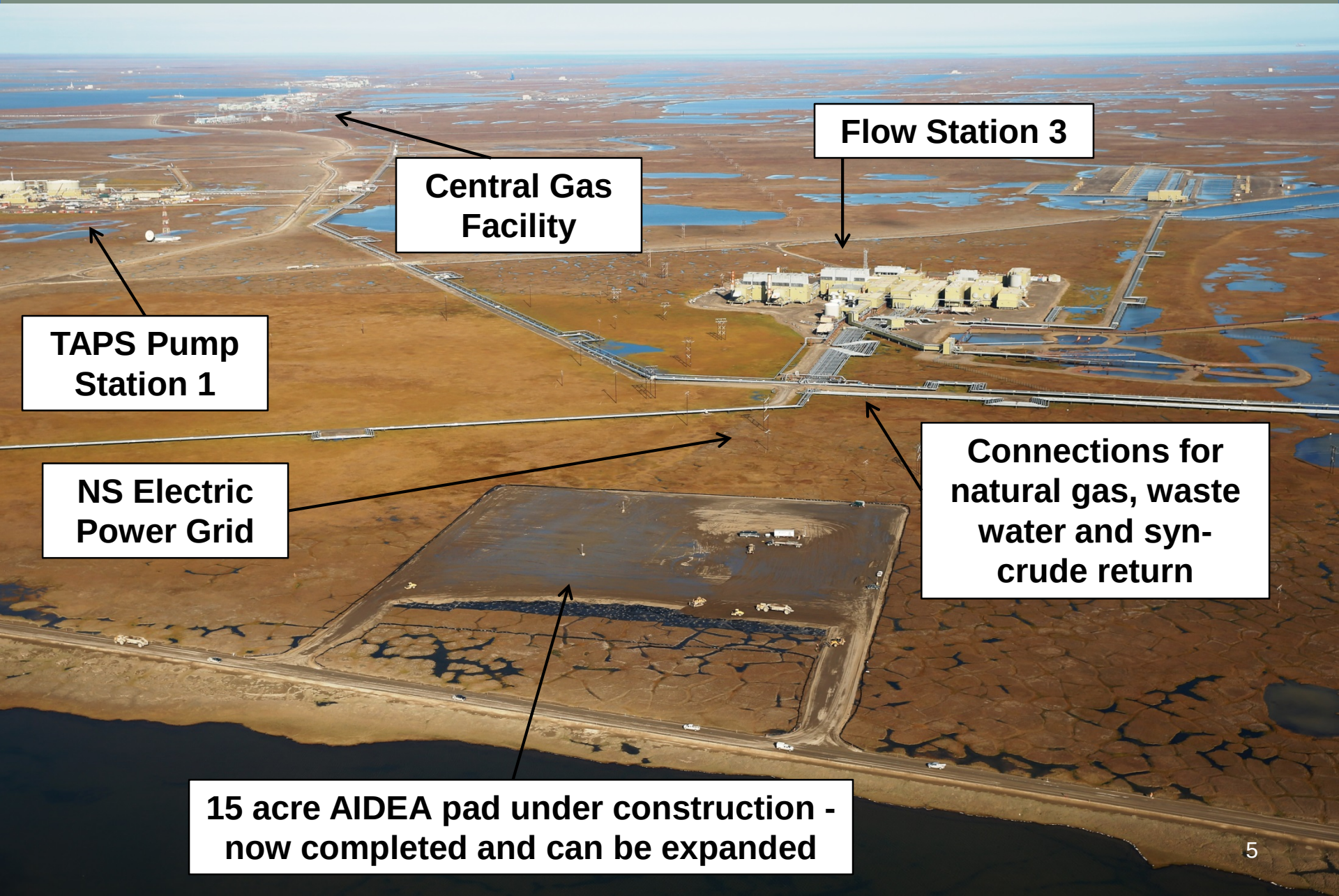
Alaska has some of the **highest wholesale fuel costs** in the world.

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

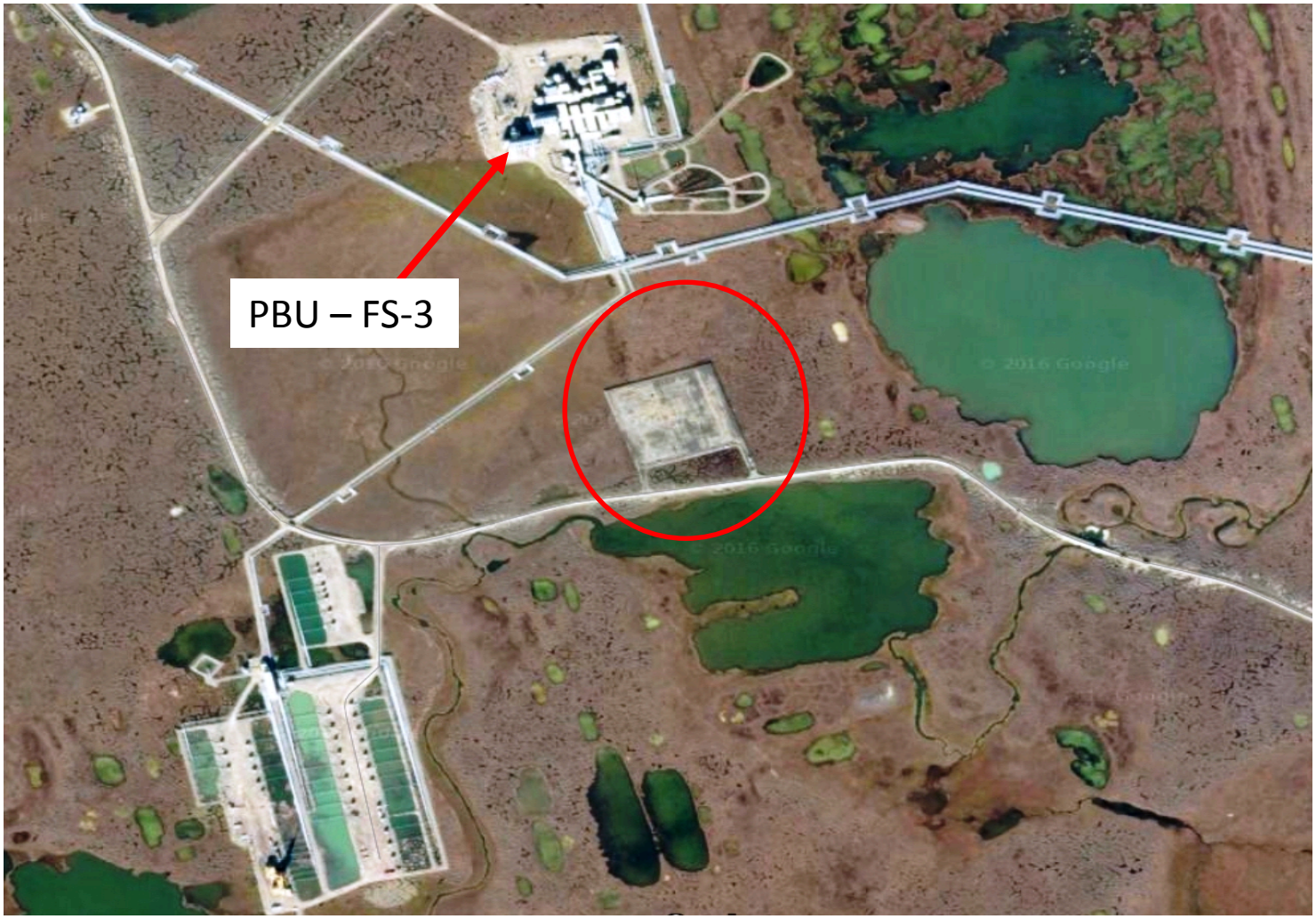
ANRTL proposes to supply ULSD, Gasoline and Methanol to North Slope Operators at a discount to the delivered cost of these products.

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

AIDEA PAD IDEAL LOCATION FOR A GTL PLANT



Arial View of Completed AIDEA Pad at PBU Flow Station 3



AIDEA Pad has sat for over 1 year and is ready for plant installation

GAS TO LIQUIDS (GTL)

THESE LIQUIDS CAN BE

- DIESEL
- NAPHTHA
- GASOLINE
- METHANOL
- SYN-CRUDE

ANRTL – A GTL DEVELOPER WHO SELECTS THE BEST TECHNOLOGY FOR EACH PROJECT

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

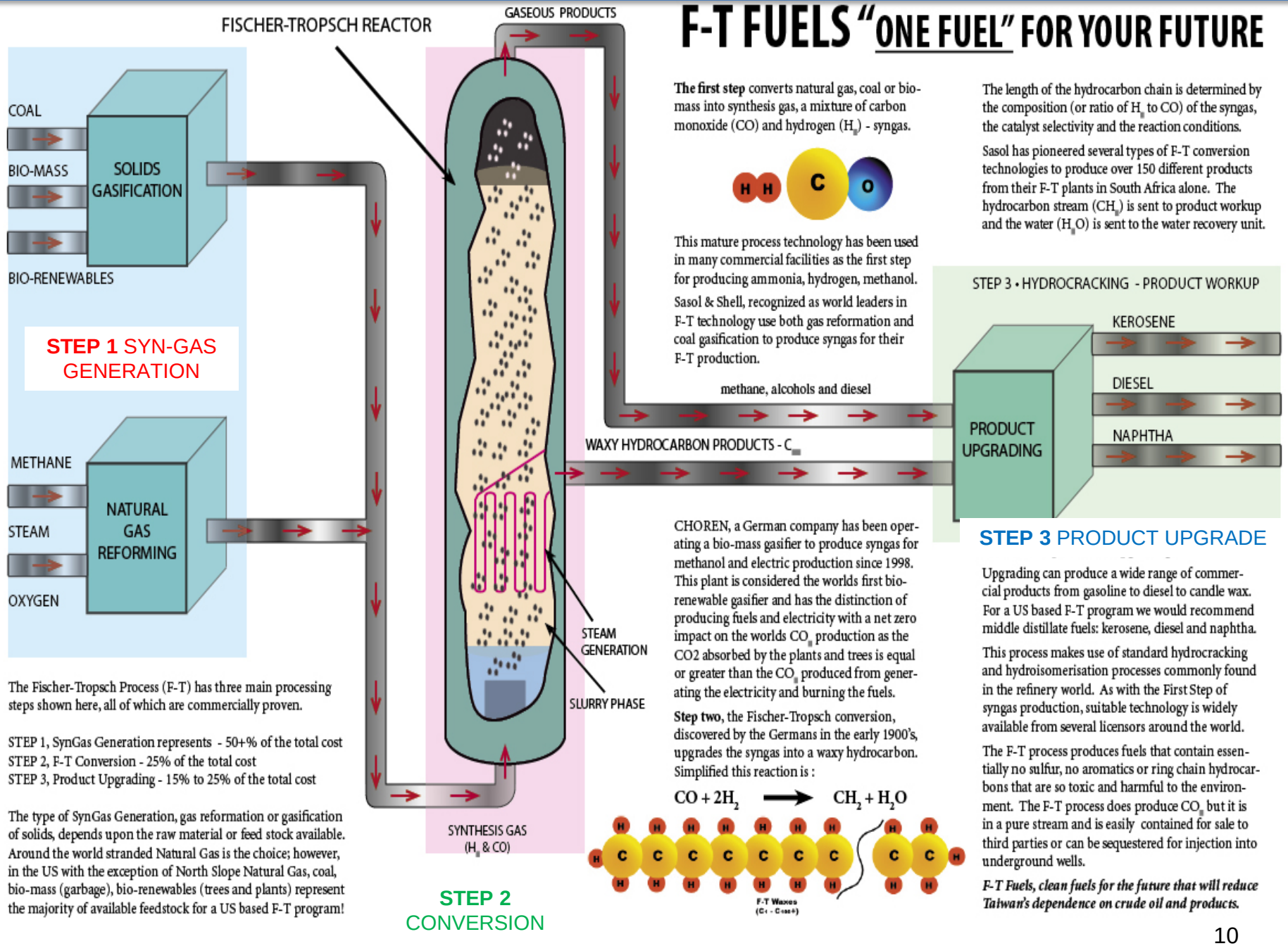
All commercial for over
50 years and now scalable

VELOCYS PLC

3 core 125 bbl/d F-T reactor pictured above a 4 core 175 bbl/d is available and a 6 core 250 bbl/d reactor soon. A - 4 core F-T reactor weighs approximately 23 tons

Sasol 17,000 bbl/d pictured above 33’ Diameter, 196’ Tall, 2,200 tons can only be delivered via ship/barge at a tide water location

ALL GAS TO LIQUIDS PROCESSES ARE THREE STEPS – WITH STEP 1 IDENTICAL



F-T FUELS "ONE FUEL" FOR YOUR FUTURE

The first step converts natural gas, coal or bio-mass into synthesis gas, a mixture of carbon monoxide (CO) and hydrogen (H_2) - syngas.

This mature process technology has been used in many commercial facilities as the first step for producing ammonia, hydrogen, methanol.

Sasol & Shell, recognized as world leaders in F-T technology use both gas reformation and coal gasification to produce syngas for their F-T production.

methane, alcohols and diesel

The length of the hydrocarbon chain is determined by the composition (or ratio of H_2 to CO) of the syngas, the catalyst selectivity and the reaction conditions.

Sasol has pioneered several types of F-T conversion technologies to produce over 150 different products from their F-T plants in South Africa alone. The hydrocarbon stream (CH_2) is sent to product workup and the water (H_2O) is sent to the water recovery unit.

CHOREN, a German company has been operating a bio-mass gasifier to produce syngas for methanol and electric production since 1998. This plant is considered the worlds first bio-renewable gasifier and has the distinction of producing fuels and electricity with a net zero impact on the worlds CO_2 production as the CO2 absorbed by the plants and trees is equal or greater than the CO_2 produced from generating the electricity and burning the fuels.

Step two, the Fischer-Tropsch conversion, discovered by the Germans in the early 1900's, upgrades the syngas into a waxy hydrocarbon. Simplified this reaction is :

$$CO + 2H_2 \longrightarrow CH_2 + H_2O$$

F-T Waxes (C_1 - C_{100+})

Upgrading can produce a wide range of commercial products from gasoline to diesel to candle wax. For a US based F-T program we would recommend middle distillate fuels: kerosene, diesel and naphtha.

This process makes use of standard hydrocracking and hydroisomerisation processes commonly found in the refinery world. As with the First Step of syngas production, suitable technology is widely available from several licensors around the world.

The F-T process produces fuels that contain essentially no sulfur, no aromatics or ring chain hydrocarbons that are so toxic and harmful to the environment. The F-T process does produce CO_2 but it is in a pure stream and is easily contained for sale to third parties or can be sequestered for injection into underground wells.

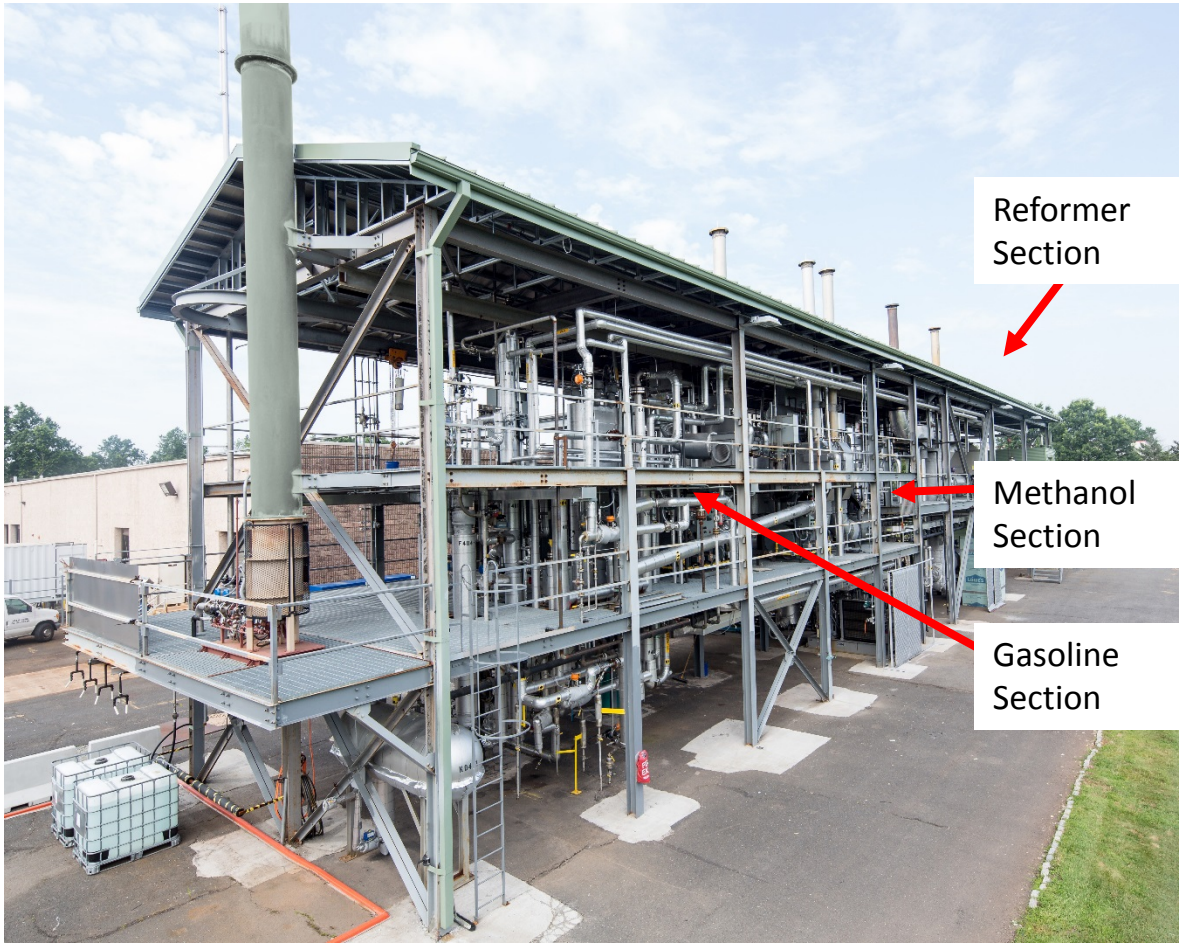
F-T Fuels, clean fuels for the future that will reduce Taiwan's dependence on crude oil and products.

The Fischer-Tropsch Process (F-T) has three main processing steps shown here, all of which are commercially proven.

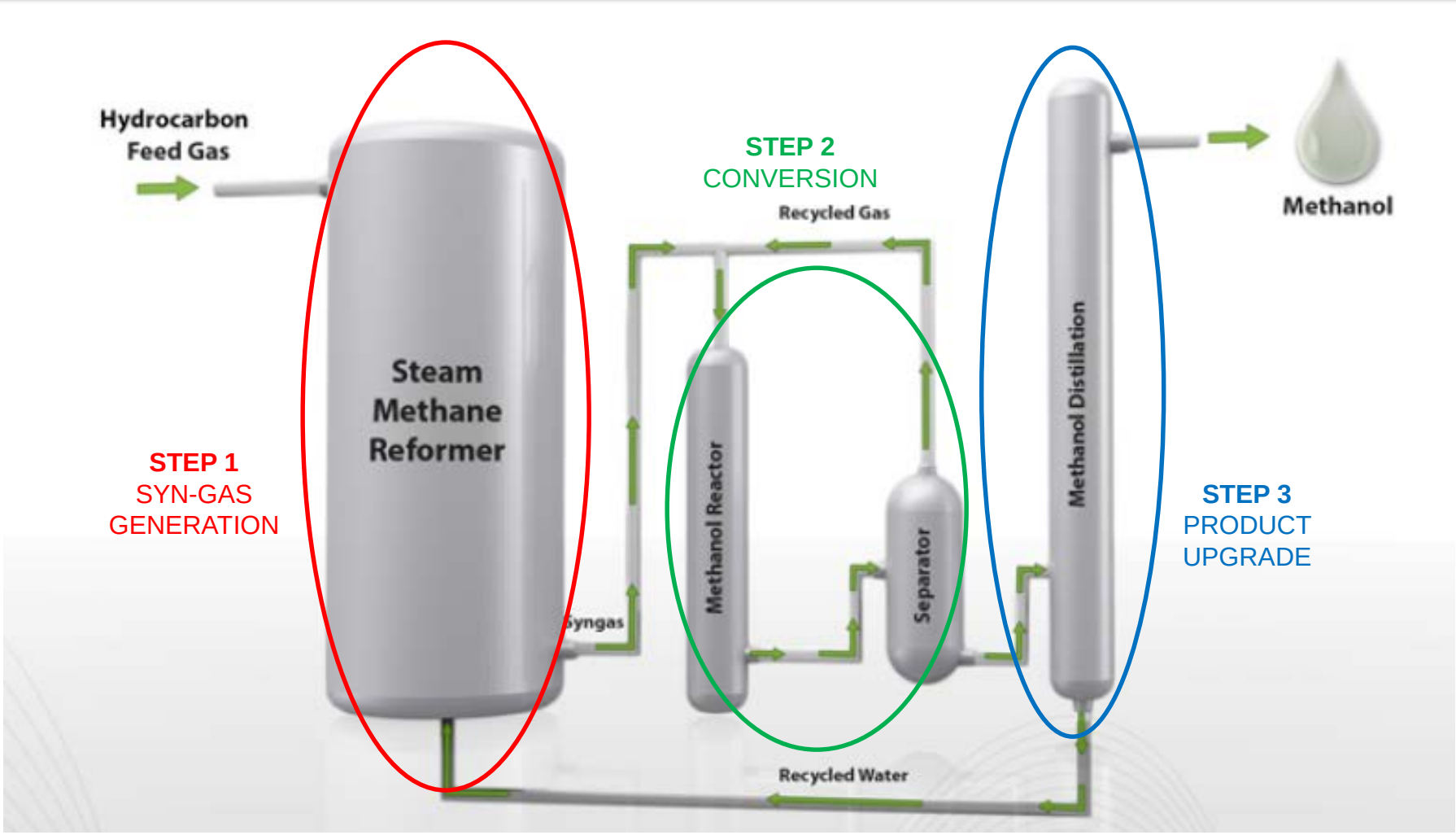
STEP 1, SynGas Generation represents - 50+% of the total cost
STEP 2, F-T Conversion - 25% of the total cost
STEP 3, Product Upgrading - 15% to 25% of the total cost

The type of SynGas Generation, gas reformation or gasification of solids, depends upon the raw material or feed stock available. Around the world stranded Natural Gas is the choice; however, in the US with the exception of North Slope Natural Gas, coal, bio-mass (garbage), bio-renewables (trees and plants) represent the majority of available feedstock for a US based F-T program!

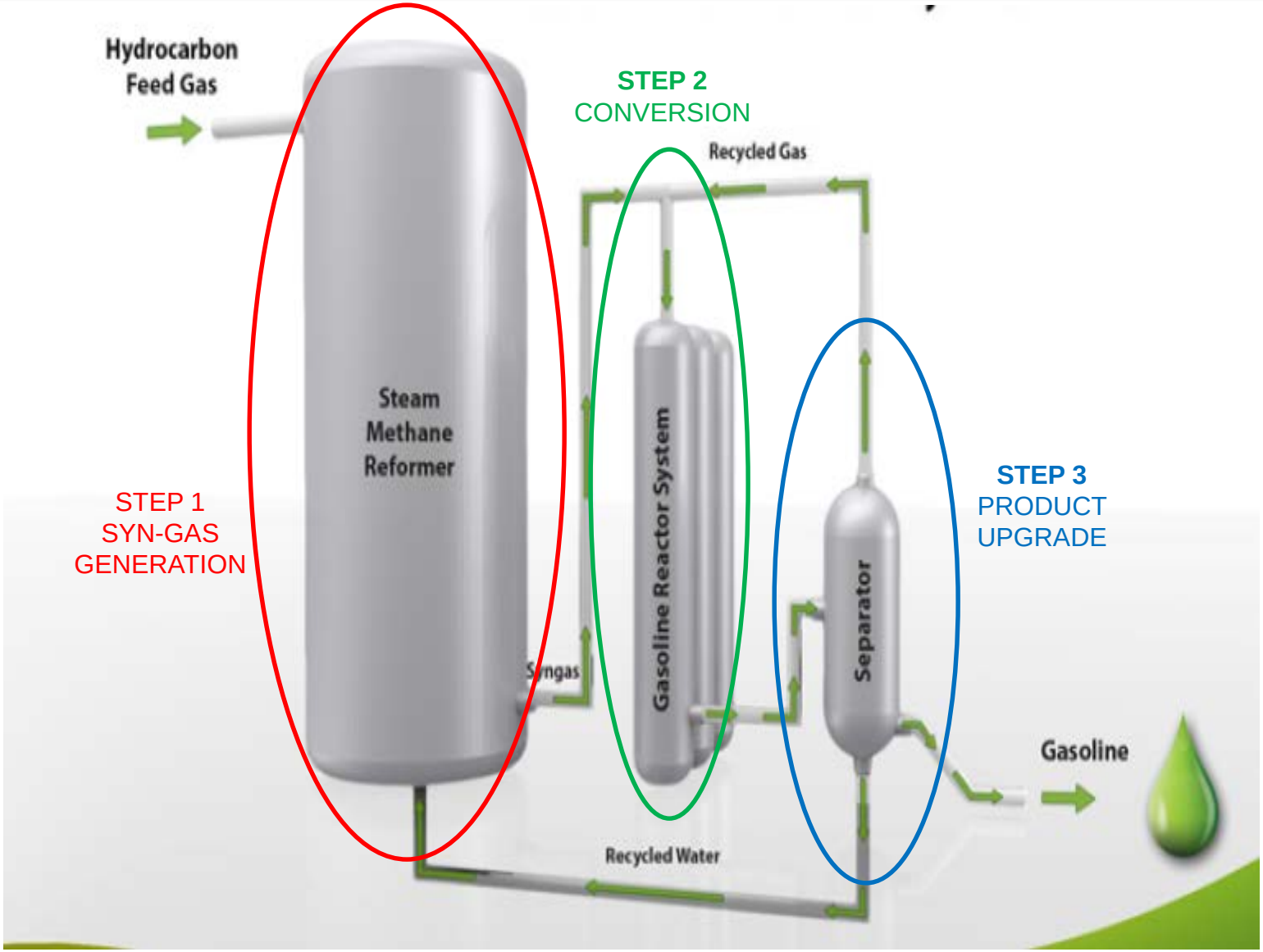
PRIMUS GREEN ENERGY
STG, STM and MTG



STM – METHANOL



STG - GASOLINE



THANK YOU

FOR ADDITIONAL INFORMATION ON AN ALASKA NORTH SLOPE GTL PROGRAM
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