

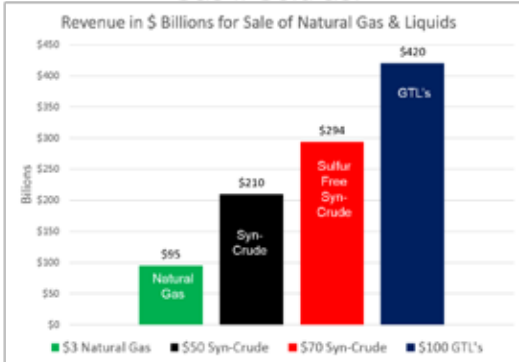
SUPPORTERS OF THE AK LNG PROJECT CRY FOUL!

WHY? BECAUSE WE ARE SHOWING GROSS REVENUES FOR EACH PROJECT WHEN THE LNG PROJECT SELLS ITS GAS IN APPROXIMATELY 25 YEARS AND THE GTL PROJECT SELLS ITS PRODUCTS IN JUST LESS THAN 45 YEARS

Project life gross revenues below

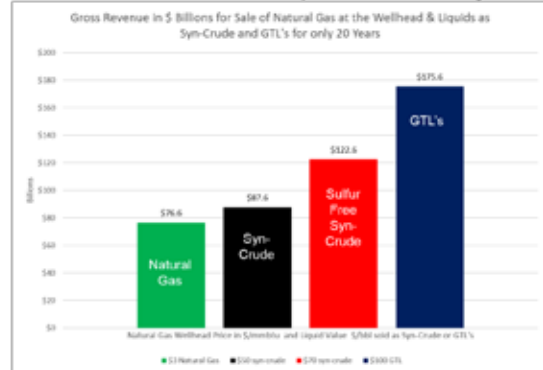
20 Yr. Project gross revenues below

Value of 35 Tcf of North Slope Natural Gas if Sold as:



\$3/mmbtu wellhead natural gas - 35 Tcf of natural gas will make 4.2 billion barrels of liquids sold at a crude value of \$50/bbl or zero sulfur crude at \$70/bbl or as GTL's (diesel, gasoline or jet fuel) at \$100/bbl

Value of North Slope Natural Gas if Sold as Gas or Liquids for 20 years



\$3/mmbtu wellhead natural gas - 35 Tcf of natural gas will make 4.2 billion barrels of liquid's sold at a syn-crude oil value \$50/bbl or \$70/bbl or as GTL's at \$100/bbl

How did we arrive at the two different Project lives?

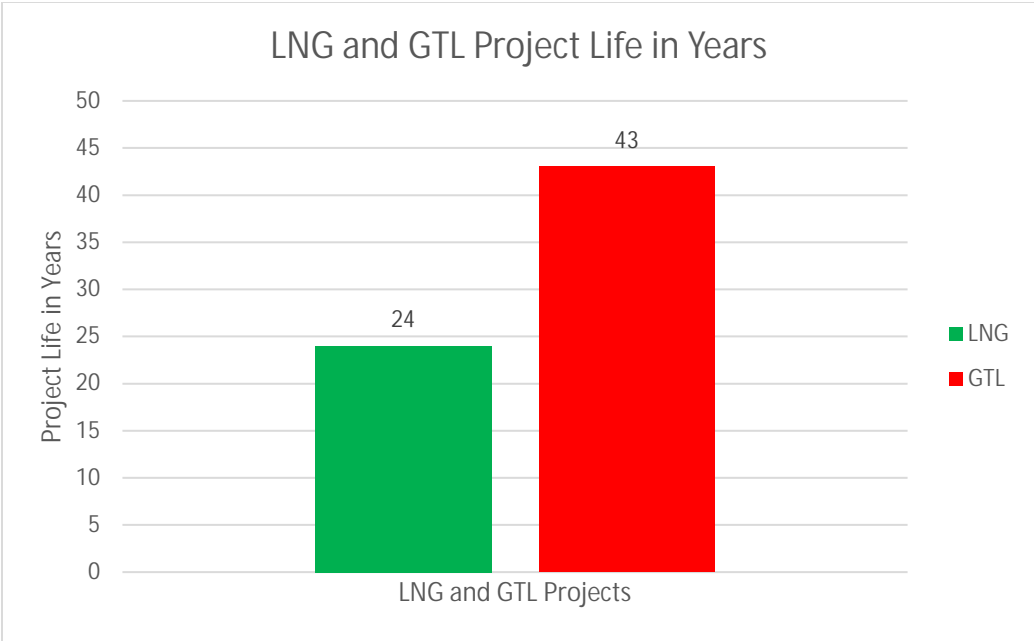
The LNG project is saying that they will start selling 3.5 billion cubic feet per day (bcf/d) of natural gas. Currently the North Slope has 35 trillion cubic feet (Tcf) of proven natural gas. In addition, the North Slope currently uses about 500 million cubic feet per day of gas to make electricity and provide heat to support its operations. This means that approximately 4 billion cubic feet per day of natural gas will be used. 4 bcf/d times 365 days is 1.46 Tcf per year. In just under 24 years you will run out of natural gas supply if they do not find new gas reserves on the North Slope.

AK LNG project life ~ 24 years.

The GTL project is proposing that it will use 2 bcf/d of natural gas to make up to 240,000 barrels per day (bbl/d) of liquids. The GTL project can be larger or smaller because it doesn't have to build a new pipeline. It uses the existing Trans-Alaska Pipeline System (TAPS). In addition to liquid products the GTL process produces large quantities of waste heat energy. Enough waste heat energy to run its GTL plant and possibly enough waste heat power to reduce North Slope natural gas consumption by half. Thus, with the GTL program, North Slope natural gas requirements will be approximately 250 million cubic feet per day. 2.25 bcf/d times 365 days is 0.821 Tcf per year. In just under 43 years you will run out of natural gas supply if they do not discover new gas reserves on the North Slope.

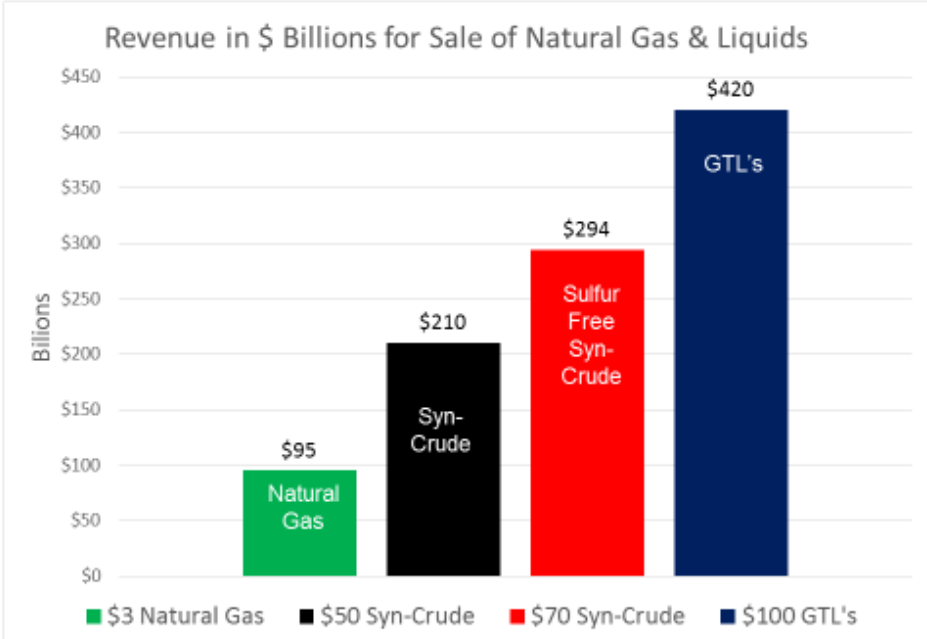
AK North Slope GTL project life ~ 43 years.

The chart below illustrates the two different project lives.



If you look at the gross revenues each project could generate over their project lives, the Alaska Gasline and LNG Export project could generate \$95 billion dollars if it receives the current Henry Hub price for natural gas at the wellhead. While the GTL project could generate \$210 billion in gross revenues if you sold the liquids as \$50/bbl crude oil or \$294 billion in revenue if you sold the liquids as a higher value zero sulfur synthetic crude oil for \$70/bbl or up to \$420 billion in gross revenues if you batched pigged all the GTL liquids down TAPS for sale as higher value refined products.

Value of 35 Tcf of North Slope Natural Gas if Sold as:

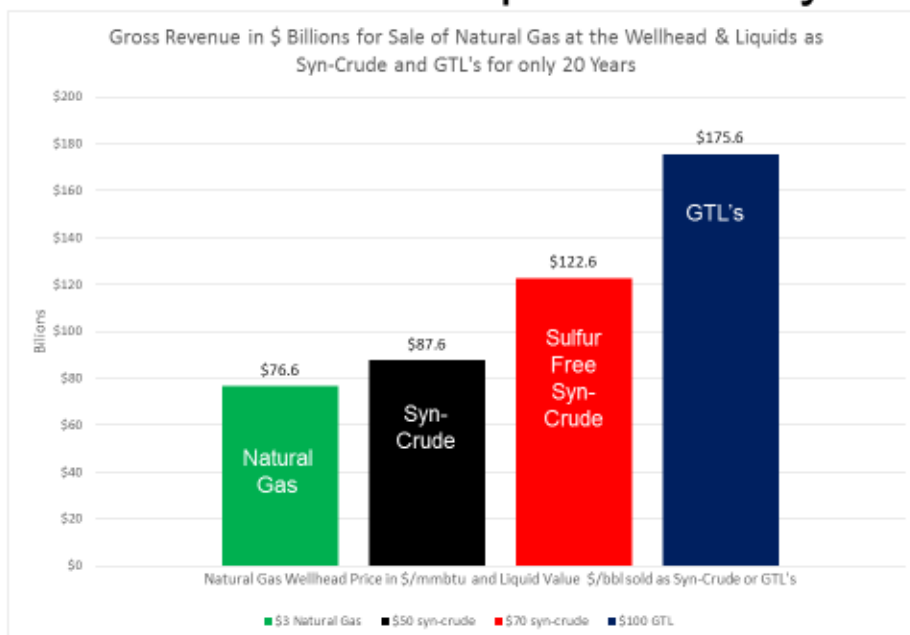


\$3/mmbtu wellhead natural gas - 35 Tcf of natural gas will make 4.2 billion barrels of liquids sold at a crude value of \$50/bbl or zero sulfur crude at \$70/bbl or as GTL's (diesel, gasoline or jet fuel) at \$100/bbl

Supporters of the Alaska Gasline and LNG Export project say that they generate this gross revenue in 24 years whereas the GTL project generates its revenues over 43 years, so their project is better. **Some would argue that it is better to have a longer life project with constant revenues for the future.** The real reason the AK LNG project life is shorter is that they must generate higher revenues through larger volume sales to pay off the expensive gas treating plant and gas pipeline that other LNG projects don't have to build. Since the GTL project is using the existing TAPS line they are only worried about paying off the GTL plant.

To provide a different analysis or way to view the economic benefits of both projects we chose to look at a generated gross revenue stream for 20 years and compare the two projects.

Value of North Slope Natural Gas if Sold as Gas or Liquids for 20 years



\$3/mmbtu wellhead natural gas - 35 Tcf of natural gas will make 4.2 billion barrels of liquid's sold at a syn-crude oil value \$50/bbl or \$70/bbl or as GTL's at \$100/bbl

The chart above shows that converting the natural gas into liquids still generates more revenue over 20 years than selling natural gas as a supply for an LNG project. More importantly the LNG project is shut down in 24 years due to the lack of a natural gas supply, while **the North Slope GTL plant project is still generating \$ billions more in revenue for an additional 19 years.**

Still the Alaska Gasline and LNG Export program supporters say we are only using a \$3/mmbtu price for natural gas at the North Slope. True, but even Keith Meyer, the new President of the Alaska Gasline Development Corporation, says he expects to get a Henry Hub price for natural gas. Some futures markets have the Henry Hub price at \$4 out to 2029 with the caveat that shale gas development in the U.S. may depress this number. Remember even Mr. Meyer misread the shale gas development potential when he promoted an LNG import plant on the U.S. Gulf Coast. He was 180 degrees out of the market. In addition, Japan and other LNG consuming nations are going to

push hard to eliminate crude oil prices as part of the calculated delivered price of LNG. Finally, Japan will re-start most of its nuclear plants in the next 3 to 5 years and more importantly gradually replace their old GE designed plants with fourth generation AP1000 plants owned by Toshiba.

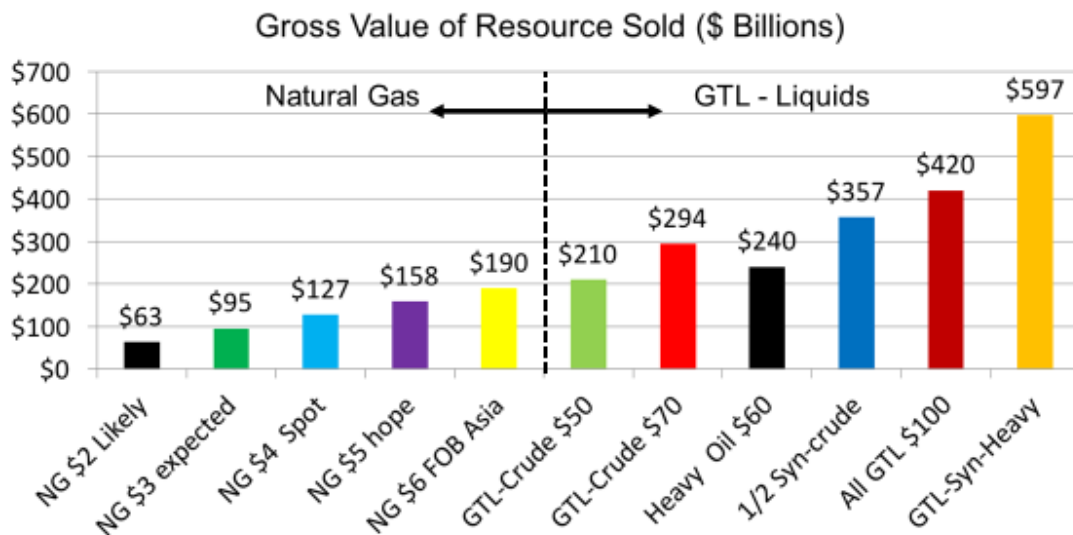
We have looked at various values for natural gas on the North Slope to compare with the liquids from the GTL program. The lowest value, \$2/mmbtu would represent a number today that this high CO₂ gas is worth on the North Slope. The \$4/mmbtu range represents the spot market for delivered LNG to Asian markets and the \$6/mmbtu range represents the current (August-September 2016) delivered price for LNG under longer term contracts. These last two numbers are delivered prices yet we are using them as wellhead prices. Using today's LNG prices in Asia, **the wellhead price on the North Slope would be negative.**

If the GTL process just produced liquids to send down TAPS, the project generates more revenues for the State of Alaska. *It does not however build a gas line down the center of the State to the population centers along the Rail Belt, which is why Administrations over the past 30 years have opposed a GTL solution.* A portion of the GTL stream called diluent (like gasoline) can be used to extract billions of barrels of heavy crude oil already identified on the North Slope. If you can only recover 4 billion barrels of the identified 30 billion barrels of heavy crude oil you could generate another \$200+ billion dollars of gross revenue.

The next chart shows the relative gross revenue streams that could be expected at various wellhead prices for natural gas (\$2 to \$6 / mmbtu) and values for the liquid stream if sold as syn-crude or GTL's and diluent was used to help recover heavy crude oil.

NORTH SLOPE NATURAL GAS MARKET OPTIONS

Value of 35 Tcf of North Slope Natural Gas if Sold at \$/mmbtu or as Liquid's



SUMMARY

Alaskans have dreamed of a gas pipeline to market for over 30 years but the cold cruel facts are that this gas is poor quality, has a high CO₂ content and is located a minimum of 800 miles from any potential market. People talk of 35 trillion cubic feet of natural gas and it sounds like a giant number until you realize that the single North field in Qatar has over 900 trillion cubic feet.

So long as the U.S. is a net importer of crude oil and products, then natural gas from the Alaska North Slope will always have a higher value being sold as liquids. Also, when you run out of natural gas on the North Slope you can float your GTL plant barges to a new location. With the gas pipeline and LNG export terminal you must spend \$ billions to remove the facilities and reclaim the land.

Bottom Line: A GTL program has higher gross revenues and a longer project life than selling LNG to Asian markets.