

GTL vs LNG

VALUE (\$) VS EFFICIENCY

IS THE LNG PROCESS MORE EFFICIENT - WITH 80 % OF THE WELL HEAD ENERGY REACHING THE MARKET ?
IS THE GTL PROCESS LESS EFFICIENT - WITH 70 % OF THE WELL HEAD ENERGY REACHING THE MARKET ?

TECHNICALLY, LNG IS A MORE EFFICIENT PROCESS IF YOU JUST LOOK AT DELIVERED ENERGY TO THE MARKET
IT IS HOWEVER TOTALLY FALSE IF YOU LOOK AT THE **VALUE (\$)** OF THE DELIVERED ENERGY IN THE MARKET

LNG BEGINS LIFE AS NATURAL GAS 🔥 AND ENDS LIFE AS NATURAL GAS 🔥

GTL BEGINS LIFE AS NATURAL 🔥 AND ENDS LIFE AS A REFINED PRODUCT SUCH AS DIESEL 🚰

WHILE BOTH ARE CARBON BASED, THEIR **VALUES (\$)** ARE TOTALLY DIFFERENT

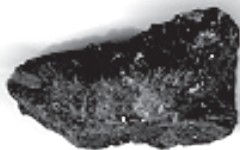
AS AN EXAMPLE:

A LUMP OF COAL AND A DIAMOND ARE BOTH CARBON BASED. UNDER TREMENDOUS PRESSURE AND HEAT (A MANUFACTURING PROCESS), A LUMP OF COAL CAN BECOME A DIAMOND. WHICH HAS MORE VALUE, A LUMP OF COAL OR A DIAMOND? DOES IT MATTER THAT A DIAMOND IS A FRACTION OF THE SIZE OR WEIGHT OF THE ORIGINAL LUMP OF COAL?

IF GTL PRODUCED DIESEL IS MORE VALUABLE THAN LNG DERIVED NATURAL GAS SHOULD YOU CARE IF THE GTL PROCESS IS LESS EFFICIENT IN CONVERTING ENERGY SO LONG AS THE VALUE RECEIVED FOR THE ORIGINAL ENERGY IS GREATER.

WHICH WOULD YOU PREFER ?

A LUMP OF COAL



OR A DIAMOND



LNG PRODUCED NATURAL GAS 🔥

OR GTL PRODUCED DIESEL 🚰

**THE CHOICE SHOULD BE SIMPLE
GO FOR THE HIGHER NETBACK VALUE (\$)**

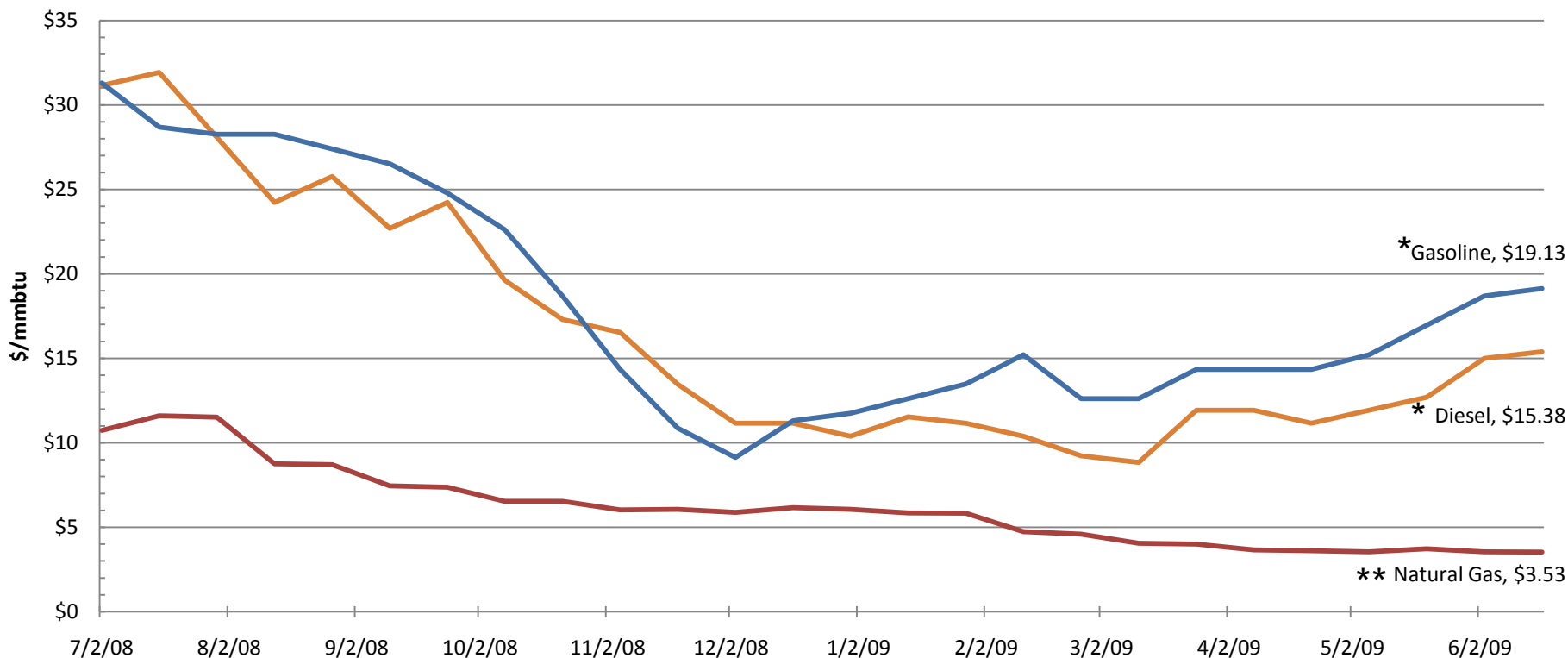


Natural Gas Always Sells at a Discount to Gasoline and Diesel on a mmbtu Basis in the Market¹



¹ Natural gas is sold \$/mmbtu (million Btu's) based upon the energy content of the natural gas as measured in Btu's or British Thermal Units. Gasoline and diesel are sold on the basis of \$/gallon but each contain a certain amount of Btu's 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.

Comparison of Diesel - Gasoline - Natural Gas on a mmbtu basis



* Gasoline, \$19.13

* Diesel, \$15.38

** Natural Gas, \$3.53

* California wholesale rack price at refinery outlet

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