

## Natural Gas, the Cleanest Hydrocarbon

Natural gas is made primarily of methane. It consists only of hydrogen and carbon. Burning methane produces only water and carbon dioxide. Carbon dioxide is the most significant greenhouse gas, however burning natural gas emits less of it than does either coal or oil. Sulfur, nitrogen, and mercury are not part of methane, and most methane deposits are relatively pure, or are easily purified. Thus, natural gas is by far the cleanest hydrocarbon.<sup>i</sup>

<b>World &amp; U.S. Natural Gas Reserves, Consumption and Supply:</b> <sup>ii</sup>		
	<u>World</u>	<u>United States</u>
2006 Reserves (cu. ft.)	6,405 trillion	209 trillion
2006 Consumption (cu. ft.)	101 trillion	22 trillion
Years of Supply	60	Less than 10

Once in a pipeline, natural gas is one of the easiest fuels to transport, and most homes, except in rural areas, already have a delivery pipe. In some areas, oil and propane are used instead of natural gas. Propane is refined from oil, not natural gas.

Because natural gas is diffuse, it is difficult to transport in significant quantities without a pipeline. (This is also why it is difficult to use methane to power automobiles – it is hard to carry enough to go very far.) In the past, significant natural gas reserves have been abandoned, vented into the atmosphere, or burned in flares because they were not close enough to a pipeline to be economically recoverable. This is now discouraged because methane is a potent greenhouse gas, with many times the greenhouse effect of CO<sub>2</sub>. The only reason CO<sub>2</sub> is the more important GHG is because of the huge amount that is emitted.

Natural gas pipelines cannot span oceans, so different methods were developed to transport natural gas across them. Natural gas is cooled until it condenses into liquid natural gas (LNG) at -258°F. This is really cold; it requires large plants and significant energy to do the cooling, and it makes metal brittle, which places severe constraints on LNG carrier ships. The U.S. currently has only 4 LNG receiving terminals, although permits for some 40 additional terminals are in the works. These represent significant capital investments, as LNG must be safely warmed before it can be fed into a pipeline.<sup>i</sup>

As we have discussed in previous white papers, the world is probably entering a period of escalating demand for oil, but decreasing supply. We further have discussed that there is pressure to hold-the-line on coal use because of its devastating environmental consequences. Thus, there will likely be pressure to increase our use of natural gas in substitution for these other fuels. There is some feeling that chances are good for discoveries of large new natural gas reserves.<sup>i</sup> But you can't count your chickens before they hatch, and such new discoveries may or may not materialize. Thus, increased gas usage holds the potential to put increased pressure on reserves, which already represent only a few decades' supply.

Natural gas is one of our least problematic sources of energy. It is important that we use it wisely.

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<sup>i</sup> Nersesian, Roy. (2007). *Energy for the 21<sup>st</sup> Century*. Armonk, NY: M.E. Sharpe.

<sup>ii</sup> BP: *statistical review of world energy, 2007*. <http://www.bp.com/statisticalreview>