

There is no Silver Bullet



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There is no single solution to our dependence on oil.

- Crude oil is versatile, it is used in many processes and products from electricity generation to asphalt.
- Crude oil production, refining, and distribution infrastructure is mature and reliable.
- Crude oil is still relatively cheap despite predictions on the limitations of known resources.

Then, Why do we need alternatives.?

- Environmental concerns, cancer, asthma and other illnesses are directly related to air pollution from petroleum fuels.
- Economics, wild fluctuations in crude oil prices can not be tolerated. The world economy is dependent on energy prices.
- Energy Independence, energy security can and will affect our economic and national security interests.

Two Oxymoron's



Alternative Fuels have limitations.

- Natural Gas- liquid or gaseous, can not be used in many of the products or processes that use crude oil. This is true for Hydrogen and Propane as well.
- Bio fuels are dependent on crude oil for efficiency and production. They can affect our food supply and our economy.
- Propane is dependent on oil and gas production. Not renewable.

Alternative Fuel limitations

- Fuel cells hold great promise but cost, size, and durability issues limit their practical application.
- Hydrogen is stable as a gas but increasingly volatile as a liquid. Cost to produce and transport will affect viability.
- Electricity- storage, on board production, and consumption create range limitations. Battery production and disposal is not clean. Wind and Solar can supplement.

We can't park our fleets



Natural Gas as a pathway to the future.

- Natural gas vehicles exist now and can be produced in sufficient quantity at affordable prices.
- Natural gas has been running \$1.00 -\$2.00 per gallon cheaper than gas and diesel.
- Home refueling reduces the need for commercial infrastructure.

Typical CNG vehicles



CNG Storage



Home Refueling



Commercial stations exist.



What about Supply?

- The Colorado-based Potential Gas Committee (PGC) has released its biennial report, analyzing potential resources for domestic natural gas in the US. According to the committee's assessment, the U.S. currently has a total potential gas supply of 2,074 trillion cubic feet, up 35 percent from the last estimated released in 2007. The U.S. currently uses about 23 TCF of natural gas per year.

Enter LNG

- Liquefied Natural Gas (LNG) solves many of the range issues related to CNG storage. LNG reduces compression and maintenance costs.
- LNG can be produced from a number of additional sources and is transportable which will help to stabilize pricing.
- LNG from landfills and other waste sources is renewable and sustainable. We should not import LNG in place of Crude Oil.

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Thank You
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