



# Natural Gas: Bridge to a Low-Carbon Future

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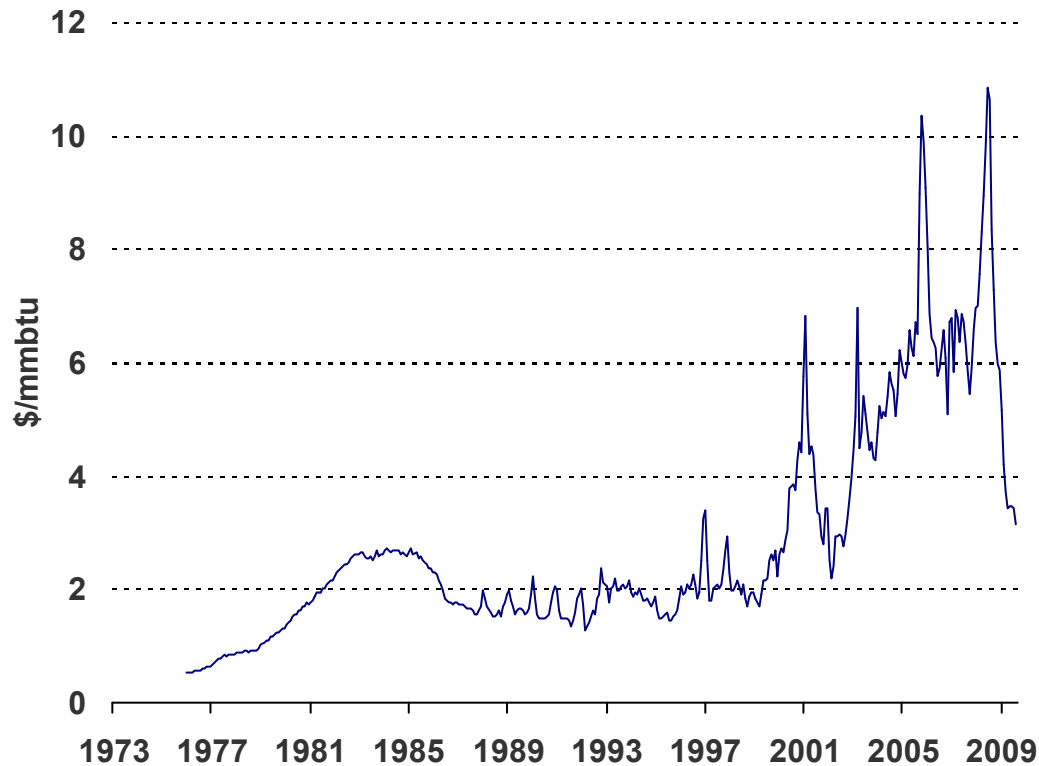
U.S. DEPARTMENT OF  
**ENERGY**

Oil and  
Natural Gas

- Administration's climate and energy goals
- Use less oil
- Natural gas as a source of energy independence
- Natural gas and renewables

# Both physical and commercial factors drive natural gas price volatility

**U.S. Natural Gas Prices**  
Dollars per Thousand Cubic Feet



Source: EIA

Gas is not a fungible international commodity

- Harder to store
- Traders can't close international price arbitrages
- Sensitive to weather
- Complex regulatory hurdles

The gas market in 2050 won't be the gas market of 2009.

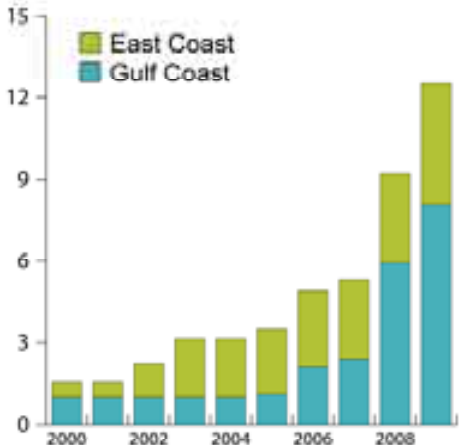
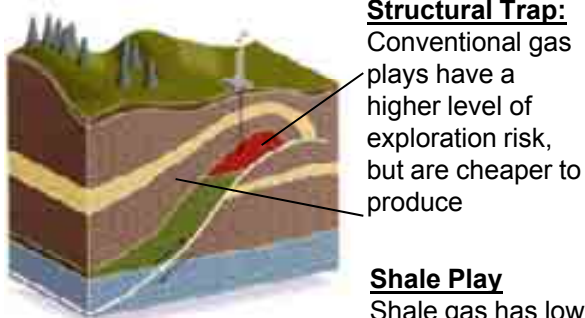
We can influence this evolution through technology and policy

Our incentives may not line up with the incentives of industry

# Markets will re-think “storage” ...

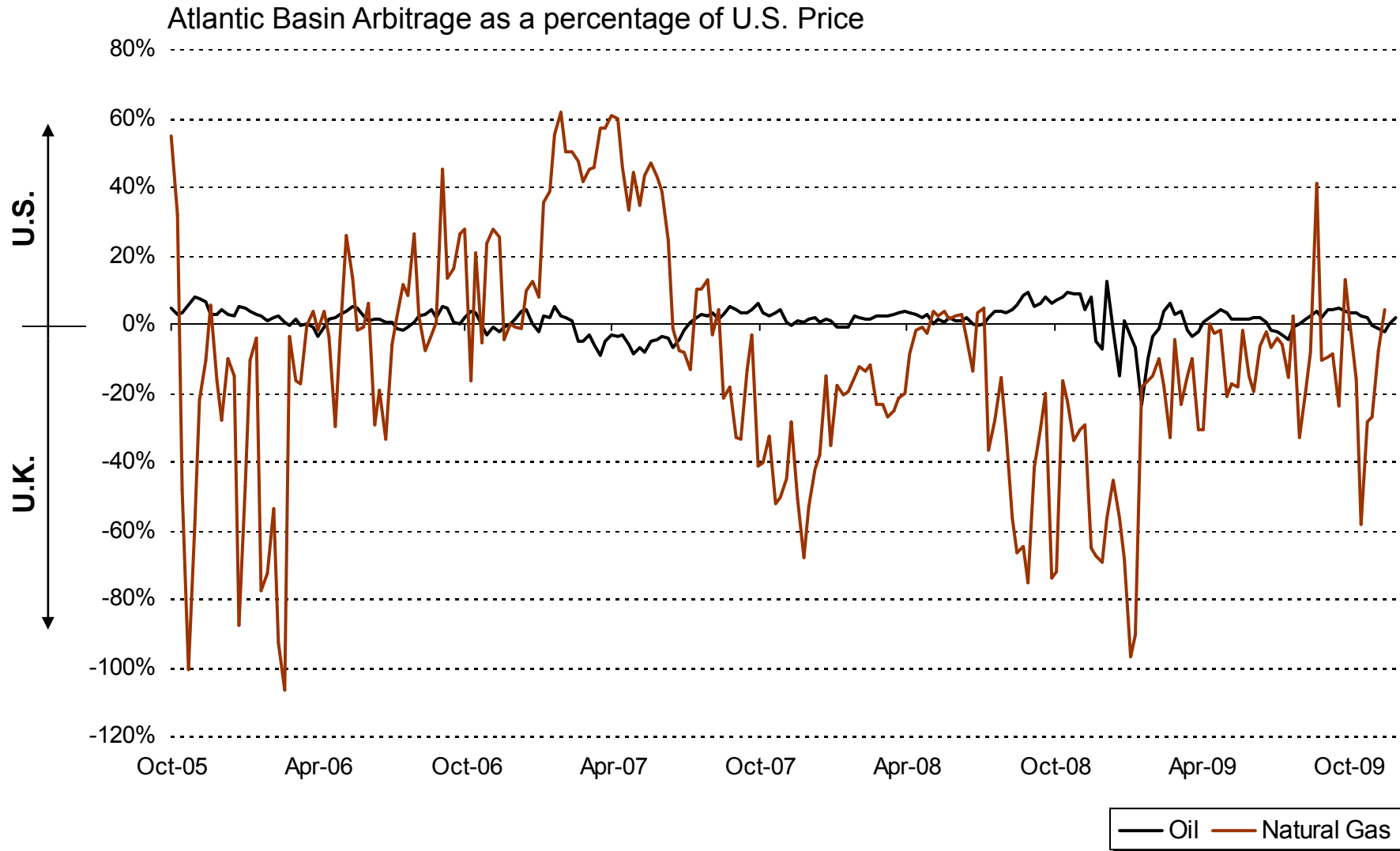
...both **Conventional**....

...and **Virtual**.

Working Gas Storage	LNG	Shale Gas
<p>Salt domes</p> <p>Depleted oilfields</p> <p>Levels closely followed by markets</p> <p><b>Total approx 3.8 TCF</b></p>	<p>Domestic LNG regasification capacity has increased dramatically.</p> <p>U.S. Capacity to Receive LNG Imports, 2000-2009 (Billion Cubic Feet per Day)</p>  <p>Sources: EIA, Department of Oil and Gas</p> <p>Many terminals are operating significantly below capacity.</p> <p><b>Total approx 5 TCF</b></p>	<p>There are a large number of shale prospects ready to develop as soon as the market signals upward price movement.</p>  <p><b>Structural Trap:</b> Conventional gas plays have a higher level of exploration risk, but are cheaper to produce</p> <p><b>Shale Play</b> Shale gas has low exploration risk, but is more expensive to produce (more wells, hydraulic fracturing)</p> <p><b>Total 250+ TCF?</b></p>

# Price Volatility: Oil vs. Natural Gas

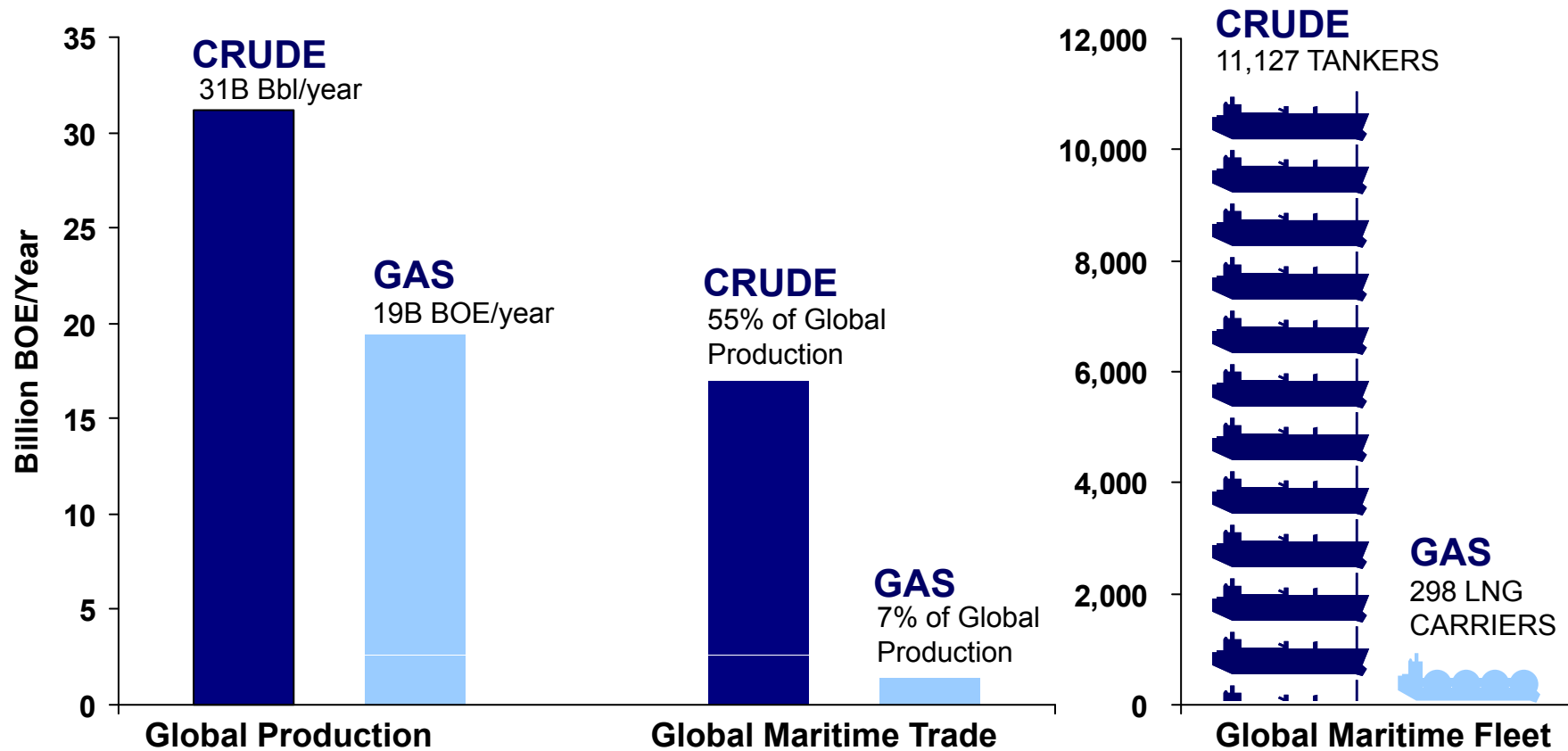
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Sources: Energy Information Administration, World Gas Intelligence

# Structural differences between oil and gas drive global arbitrage

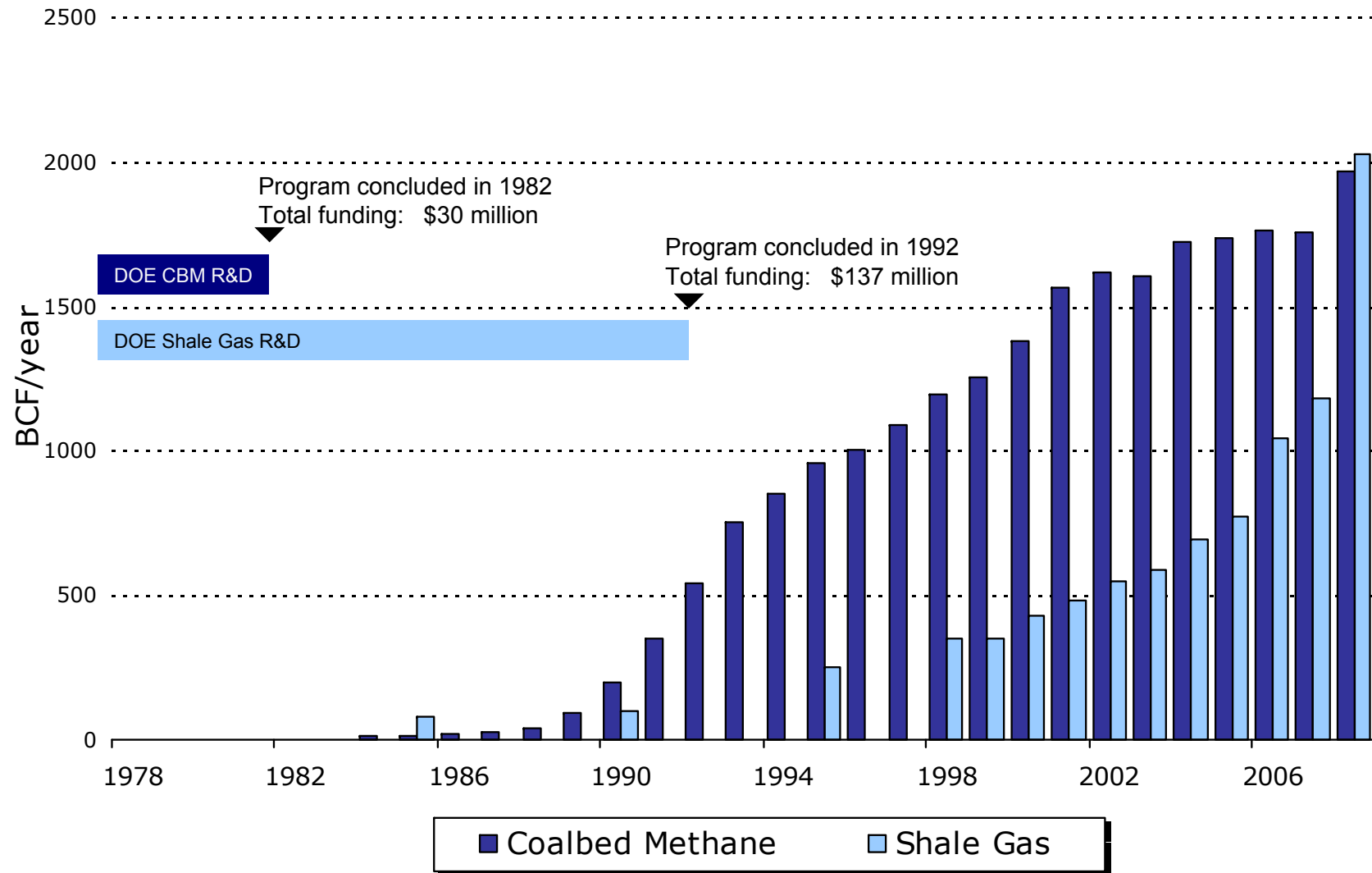
Oil and Natural Gas



Sources: EIA, BP Statistical Review of World Energy, June 2009, Pacific L.A. Marine Terminal LLC, GIIGNEL

# DOE has a successful track record of promoting innovation in the natural gas sector

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Sources: EIA, DOE Department of Fossil Energy

# Natural Gas Will be Essential Component of Low-Carbon Power Supply System

Oil and  
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Intermittency is an issue  
for solar and wind

Low-carbon portfolio:

- Renewable power
- Natural gas power
- New storage technology
- Large balancing areas





- LNG will continue to be important for the U. S. economy
- LNG is a price taker, but regas capacity provides supply which can reduce volatility
- LNG shipping is unique
- Building domestic resources increases security of supply