



Natural Gas and the Clean Energy Economy

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10 September 2010



U.S. DEPARTMENT OF
ENERGY

Oil and
Natural Gas

Supporting the President's goals

Energy

“The nation that leads the clean energy economy will be the nation that leads the global economy. And America must be that nation.”

Innovation

“We need to encourage innovation... And no area is more ripe for such innovation than energy.”



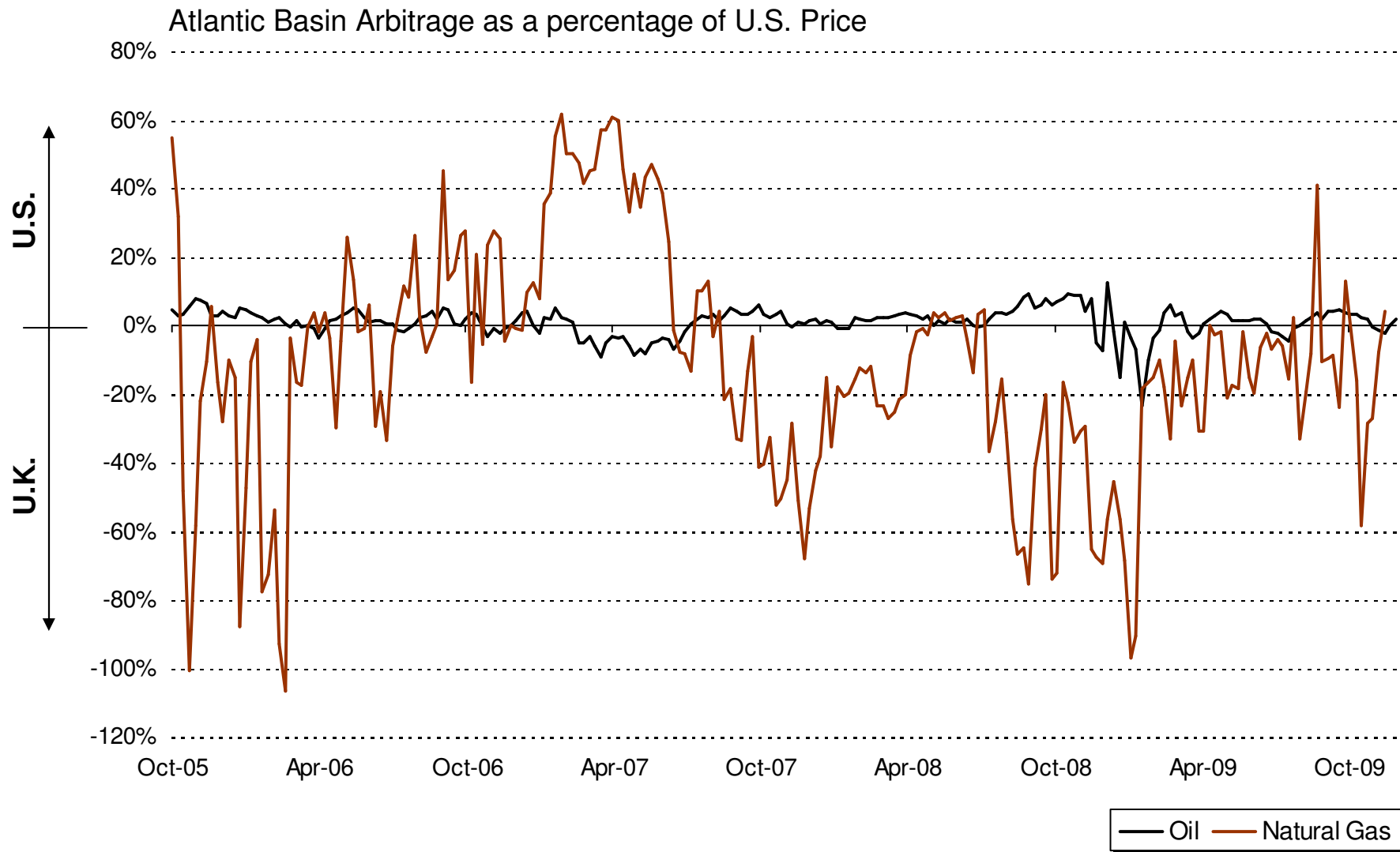
Security

“...a clear goal: securing all vulnerable nuclear materials around the world in four years, so that they never fall into the hands of terrorists.”

- *State of the Union, January 27, 2010*

Oil markets are global, but gas markets are fundamentally domestic.

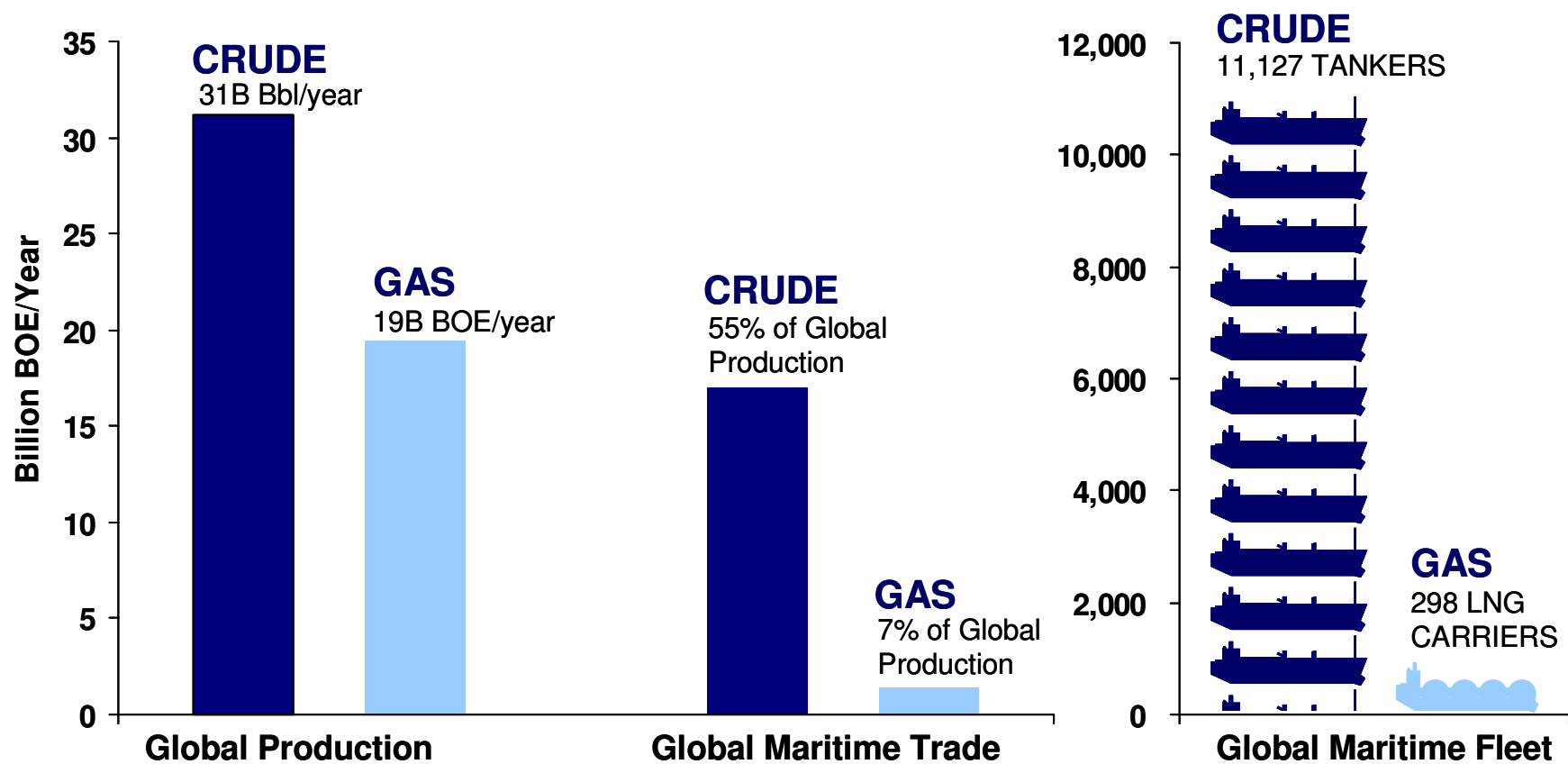
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Sources: Energy Information Administration, World Gas Intelligence

Crude vs. Gas: Production, Maritime Trade and Global Fleet

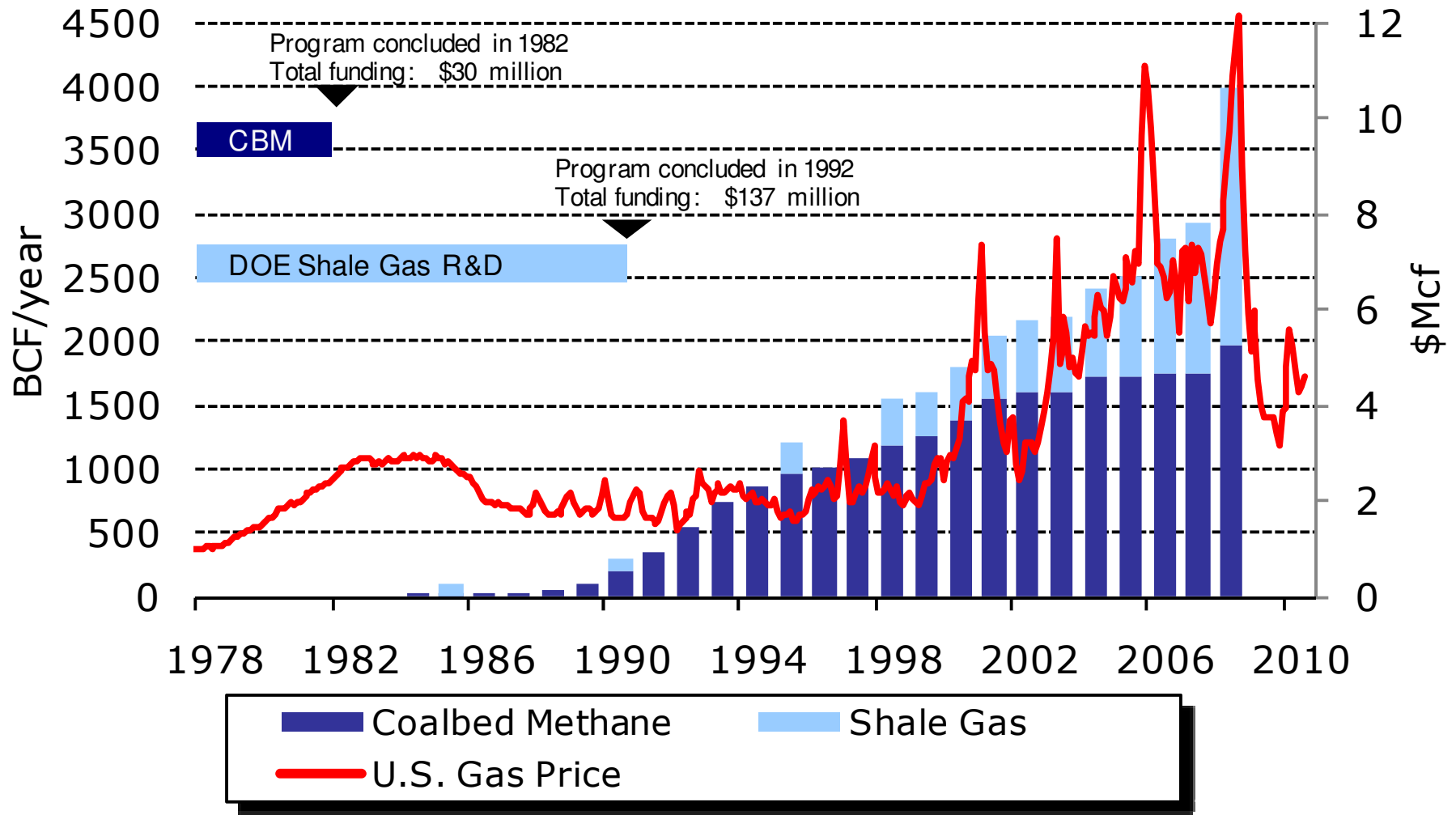
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Sources: EIA, BP Statistical Review of World Energy, June 2009, Pacific L.A. Marine Terminal LLC, GIIGNEL

Shale Gas has impacted price levels and price volatility

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

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Intermittency is an issue
for solar and wind

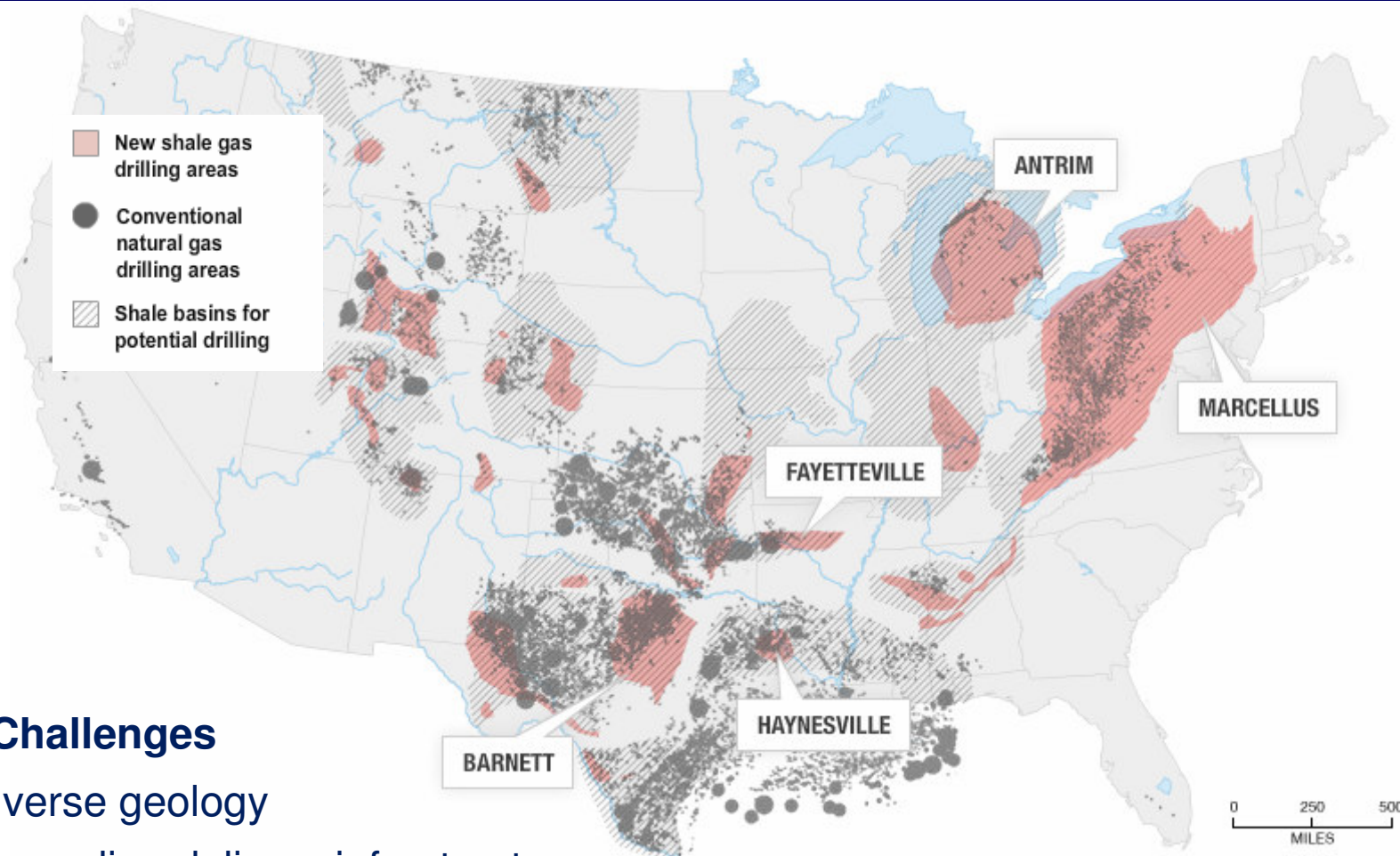
Low-carbon portfolio:

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



Abundant, Widely Disbursed U.S. Shale Gas Resources

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Key Challenges

- Diverse geology
- Expanding delivery infrastructure
- Conserving and protecting water resources
- Mitigating urban/rural community impacts
- Public education

Water issues can be divided into four broad categories:

1. Access to water for fracturing

Water is an increasingly scarce commodity. Regulations for managing the use of water often undervalue the resource.

2. Ecologically sound completion of wells through groundwater zones

Multiple layers of steel and concrete protect fresh water formations as wells pass through groundwater zones. Clear regulations must be developed to ensure consistent standards.

3. Conduct of hydraulic fracturing operations in pay zone

Water, a proppant (usually sand) and chemicals are used to fracture the rock which facilitates the flow of natural gas. This occurs thousands of feet below the surface, far beneath aquifers which supply drinking water.

4. Handling, treatment, and re-use of water from operations

Sustainable disposal and/or reuse of produced water – consisting of formation water and flowback from fracturing operations (including sand and chemicals)

Shale gas has global implications



Gas supply from Russia, 2006 (EIA)

Germany	36%
Italy	25%
France	20%
Czech Rep	79%
Poland	47%
Hungary	54%
Slovakia	100%
Austria	74%
Finland	100%
Romania	28%
Bulgaria	96%

- Environmental sustainability
- Safety
- Economic stability
- National security

Questions?



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