National Petroleum Council

Facing The Hard Truths About Energy

A Comprehensive View To 2030 Of Global Oil And Natural Gas

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The Secretary’s Suggested Questions

- What does the future hold for global oil and natural gas supply?

- Can incremental oil and gas supplies be brought on-line, on time, and at a reasonable price to meet future demand without jeopardizing economic growth?

- What oil and gas supply and/or demand-side strategies does the Council recommend the U.S. pursue to ensure greater economic stability and prosperity?
How This Study Is Different

Integrated, In-Depth Analysis

- Over 100 studies incorporated to include both public and aggregated proprietary outlooks
- Not another forecast of supply, demand or price

Diversity of Expertise

- 350 participants with backgrounds in all aspects of energy including efficiency, economics, geopolitics, environment

Technology Assessment

- Identified achievable opportunities and likely deployment timing
- Looked across the energy spectrum, including both supply and demand
How This Study is Different

65% participants from outside of oil and gas industry

350 + participants, plus input from 1000 + others
Coal, Oil, and Natural Gas Will Remain Indispensable

1980: 288 QUADRILLION BTU
2004: 445 QUADRILLION BTU
2030: 678 QUADRILLION BTU

Source: IEA REFERENCE CASE
The world is not running out of energy resources, but there are accumulating risks to continuing expansion of oil and natural gas production from the conventional sources relied upon historically. These risks create significant challenges to meeting projected total energy demand.
Large Oil Resource Base

TRILLION BARRELS - OIL

ULTIMATE RECOVERABLE RESOURCE (MEAN)

Source: USGS

Global Oil and Gas Study
Risks Reflected in Range of Production Projections

* Source: NPC Data Warehouse.

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Global Gas Resource Endowment

Trillion Standard Cubic Feet (TCFs)  
(not to scale)

In-Place = ~50,000

Remaining Resources = ~15,000  
(largely conventional)

DECREASING PROBABILITY OF RECOVERABLE VOLUMES

INCREASING GEOLOGIC UNCERTAINTY

Produced =  
~3,000 TCF

Remaining Proved Reserves = ~6,400

Source: USGS.

Global Oil and Gas Study
To mitigate these risks, expansion of all economic energy sources will be required, including coal, nuclear, biomass, other renewables, and unconventional oil and natural gas. Each of these sources faces significant challenges including safety, environmental, political, or economic hurdles, and imposes infrastructure requirements for development and delivery.
All Sources of Energy Will Be Needed

Source: IEA REFERENCE CASE

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Contribution of Unconventional Liquids

Global Production

Source: Data From EIA 2007 Reference.
Massive Infrastructure Investments Required

Global Oil and Gas Study
"Energy Independence" should not be confused with strengthening energy security. The concept of energy independence is not realistic in the foreseeable future, whereas U.S. energy security can be enhanced by moderating demand, expanding and diversifying domestic energy supplies, and strengthening global energy trade and investment. There can be no U.S. energy security without global energy security.
A majority of the U.S. energy sector workforce, including skilled scientists and engineers, is eligible to retire within the next decade. The workforce must be replenished and trained.
U.S. Human Resources Challenge

Over half of the workforce eligible to retire in next 10 years

Source: U.S. Dept of Labor.
Policies aimed at curbing carbon dioxide emissions will alter the energy mix, increase energy-related costs, and require reductions in demand growth.
Growing concern that climate is warming and CO$_2$ concentrations in the atmosphere play a role.

The challenge of significantly reducing CO$_2$ emissions is unprecedented and will require:

- Global, broad actions on multiple fronts
- Long time horizons
- Major additional investments
Range of Global Supply Projections – Gas

Source: NPC Survey for the Oil & Gas Study.

Global Oil and Gas Study
Coal Supply Projections

(All Forecasts Normalized to 6.5 BST in 2005)
Hydrogen Fuel Outlook


Global Oil and Gas Study
Five Core U.S. Strategies
The Five Core U.S. Strategies

• Moderate Demand by Increasing Energy Efficiency
• Expand and Diversify U.S. Energy Supply
• Strengthen Global and U.S. Energy Security
• Reinforce Capabilities to Meet New Challenges
• Address Carbon Constraints

There Is No Single, Easy Solution
Expand and Diversify Supply

For each strategy, the Council provides in-depth recommendations, such as:

Diversify long-term energy production

- Accelerate development of energy from biomass
- Enable the long-term environmental viability of coal for power, fuel, and feedstock
- Expand domestic nuclear capability
There Is No Single, Easy Solution

• All five strategies must be addressed together

• Global cooperation required

• Begin now and plan for sustained commitment
Additional Information and Comments

“Facing the Hard Truths About Energy”

Please refer to the NPC Website for a complete list of available resources:

http://www.npc.org

Send your follow-up questions and comments to:

comments@npc.org