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# New Dynamics of Supply and Demand



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March 14, 2005

National Paint and Coatings Association Board

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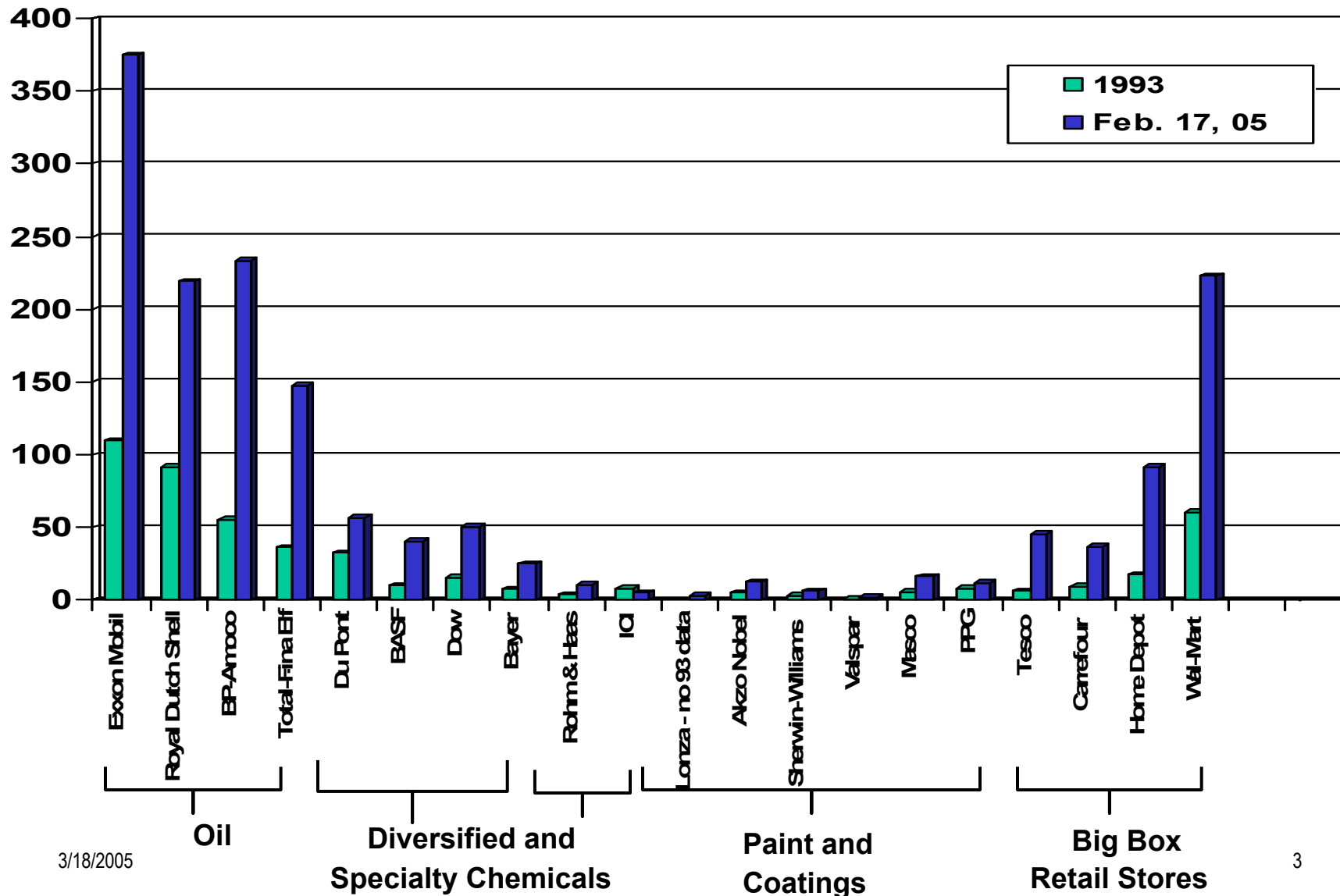
# 2005 Industry Dynamics

- How did we get here?
- What's the outlook?
- What can anybody do about it?



# Margin Squeeze in Value Chain

Market capitalization of major diversified chemicals value chain players



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# How Did We Get Here?

- Dramatically higher & volatile H&E environment
- Demand growing in multiple sectors
- Underinvestment in petrochemicals, and in fact, some industry rationalization

**= Very tight supply/demand for 2005-?**

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# What's the Outlook?

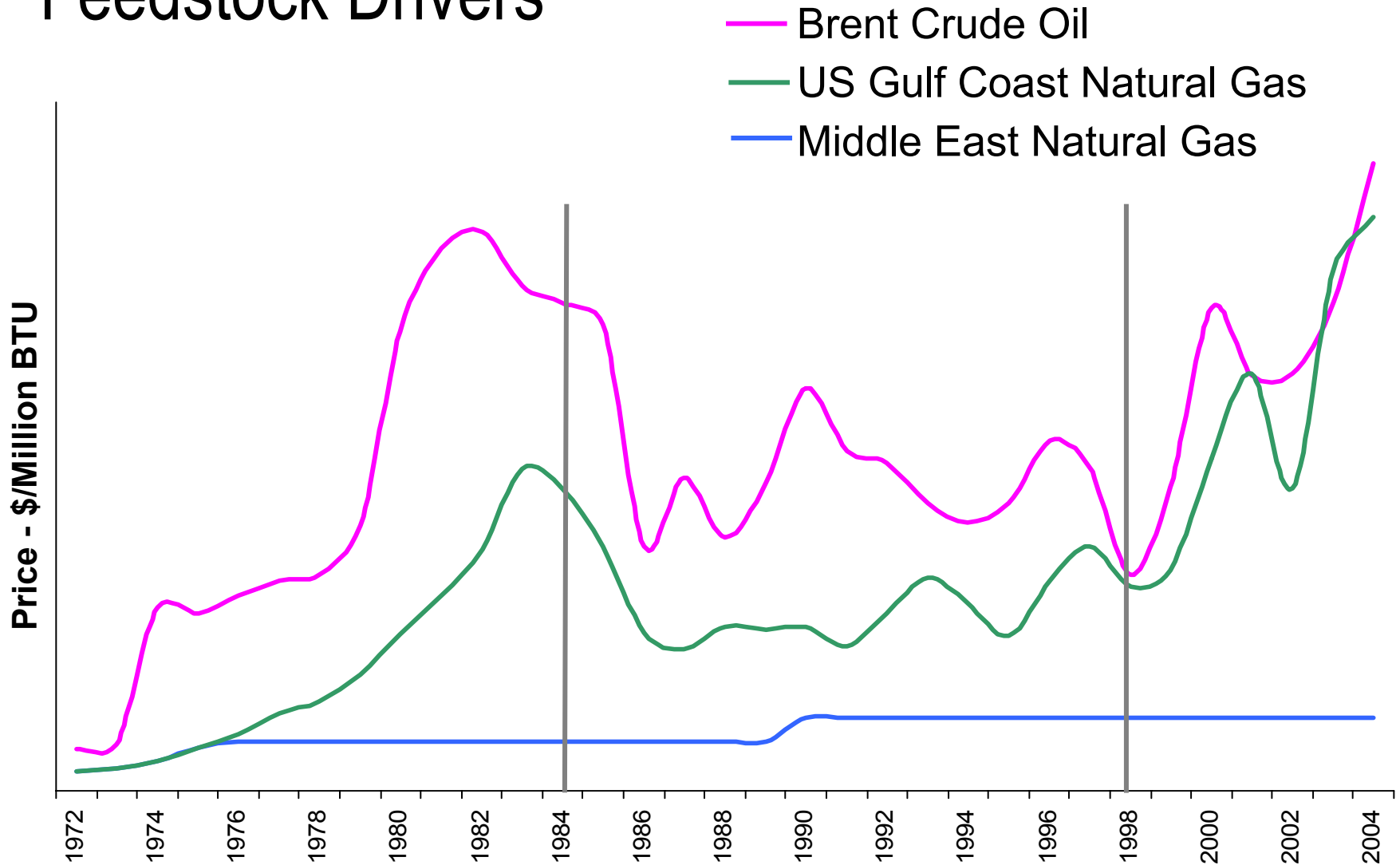
Supply/demand for:

- Energy
- Basic building blocks
- Monomers & Intermediates
- Polymers & Specialty Chemicals



# Hydrocarbon & Energy History

## Feedstock Drivers



## U.S. Natural Gas demand driven by marketing and politics

- Natural gas industry, environmental activists tout natural gas as clean alternative to coal, nuclear, etc.
- Federal government policy encourages consumption of gas, but at the same time restricts access to domestic reserves.



# Natural Gas in the US: *“The Other Energy Crisis”*

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## North America natural gas prices higher than other industrial nations

	<u>\$/MM Btu</u>
U.S.	5 – 7+
Canada	4 - 5
Germany	3.50 - 4
Mid East	1 - 2
Malaysia	2

Chemical industry will preferentially invest in countries with lower energy costs.

# Petrochemicals

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## What's the Outlook?

### Supply/demand for:

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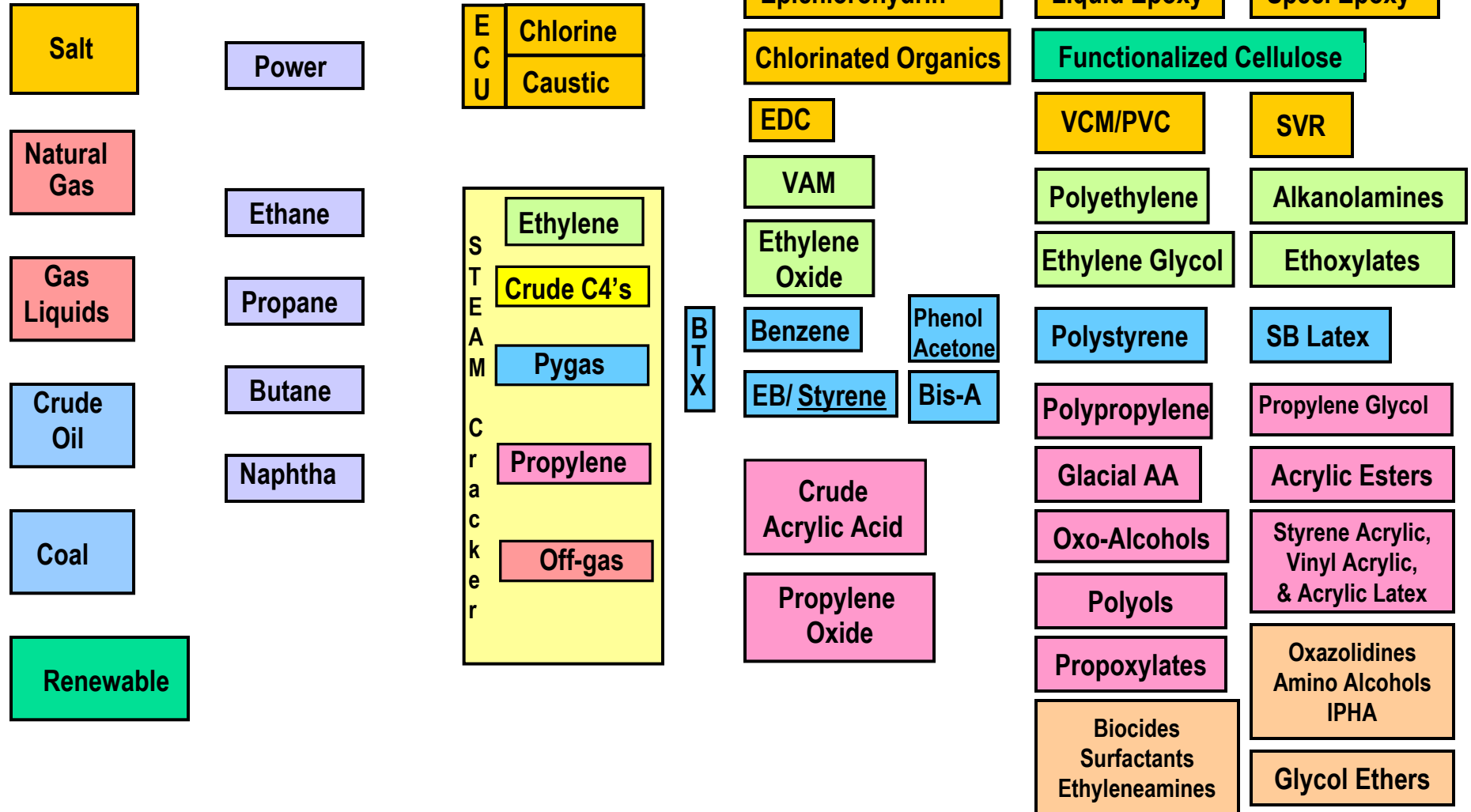
# Dow Coatings Product Integration (partial)

## Natural Resources

## Feedstocks

## Intermediates

## Derivatives



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# Supply/Demand and Operating Rates for key raw materials:

*chlorine, ethylene, propylene, benzene, styrene, cumene EO, PO, crude acrylic acid*

- Across the board, operating rates are increasing and supply/demand is getting tighter
- This has a direct effect on pricing and product availability. Product prices are affected when any part of the value chain becomes constricted.
- When intermediates go short, downstream derivatives compete on margin delivered for the limited supply.



# Reference Resources

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The following firms provide supply/demand and operation rate information for key raw materials.

- **CMAI – Chemical Market Associates, Inc.**  
Provides consulting services for the worldwide petrochemical, plastics, fibers and chlor-alkali industries.
- **Nexant (CHEMSYSTEMS)**  
Consulting services to the Electric Power, Petrochemical, Petroleum, and Chemical Industries.
- **PCI JACOBS Alliance**  
Consulting services in processing and markets for basic chemicals, fuels, petrochemicals, chemical intermediates, fibers, resins and refinery streams.
- **PTM – Parpinelli TECNON International**  
Petroleum and Petrochemical Consulting.

# Actions

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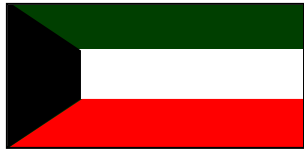
## What is Dow doing?

- Advocating shape of U.S. energy policy
- Sourcing feedstocks from Middle East: joint ventures in Oman, Kuwait
- Studying Coal-to-Olefins project in China
- Investing in LNG Terminal in Texas
- Working closely with our strategic customers during times of tight supply



# Middle East and China

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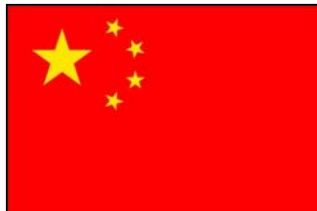


**MEGlobal** – JV with Petrochemical Industries Company of Kuwait for MEG and DEG

**OLEFINS 2** – Expansion of PIC JV: 850KTPA C<sub>2</sub>, 600KTPA EO/EG, PE expansion, 450KTPA EB/Styrene



**Oman Petrochemicals Industries Company** -- JV with the government of Oman and the Oman Oil Company to design, build and operate a petrochemical complex in Oman, including a gas separation plant, pipeline to the coast, gas cracker and 3 world-scale PE units



**Coal-to-Olefins project** – Feasibility study with the Shenhua Group, the largest coal producer in China

# Importing LNG via Ship

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- 4 LNG marine terminals in U.S. today
- New LNG terminal planned for Freeport, Texas
  - Imports from South America, Africa and the Middle East.
  - Dow secured a 20-year terminal use agreement starting in 2007: up to 500 million cubic feet per day, and commitment to reserve throughput capacity for 1.8 million tons/year.
  - Dow also acquired 15% interest.



# Actions for Everyone!

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## Energy Policy



CONSUMERS ALLIANCE FOR  
**Affordable Natural Gas**

- Change the debate!
  - Shift from producer/environment-focus to consumer/jobs-focus
  - Work with non-traditional Champions and Allies (i.e. manufacturing state Congressmen; consumer advocates)
  - Join the Consumers Alliance for Affordable Natural Gas
- Testify before Congress
- Provide position papers, issue education, expertise
- Support development of pro-consumer natural gas bill
- Mobilize grassroots political action: employees, retirees

# Consumer Alliance for Affordable Natural Gas

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- American Forest and Paper Association
- American Chemistry Council
- Association of American Railroads
- Bayer
- Crompton
- Dow Chemical
- DuPont
- Eastman Chemical
- Nova Chemicals
- Praxair
- Rohm and Haas
- Society of Plastic Industries



CONSUMERS ALLIANCE FOR  
**Affordable Natural Gas**

# Actions for Everyone!

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## Goal: An Energy Bill in 2005

### Key elements

- **Promote energy efficiency and conservation:** Promote efficient generation, and efficiency standards for equipment and appliances.
- **Increase Fuel Diversity:** Promote greater use of clean coal, nuclear, and renewable energy
- **Improve infrastructure:** Increase transmission and storage capacity.
- **Increase gas supply:** LNG imports, coal-bed methane, a new political consensus on development of domestic natural gas resources
- **Market Transparency:** Measures to assure a true market for natural gas and reduce volatility.



# Discussion

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