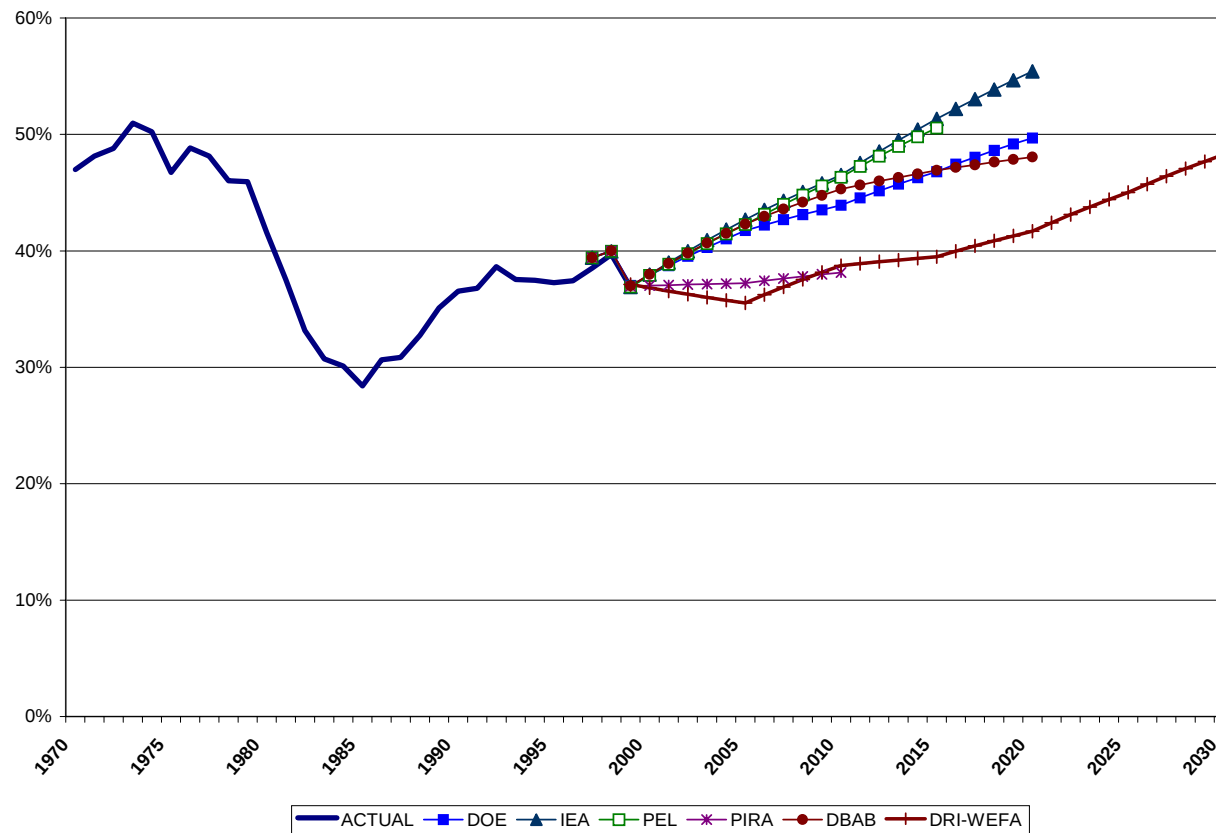
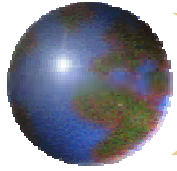
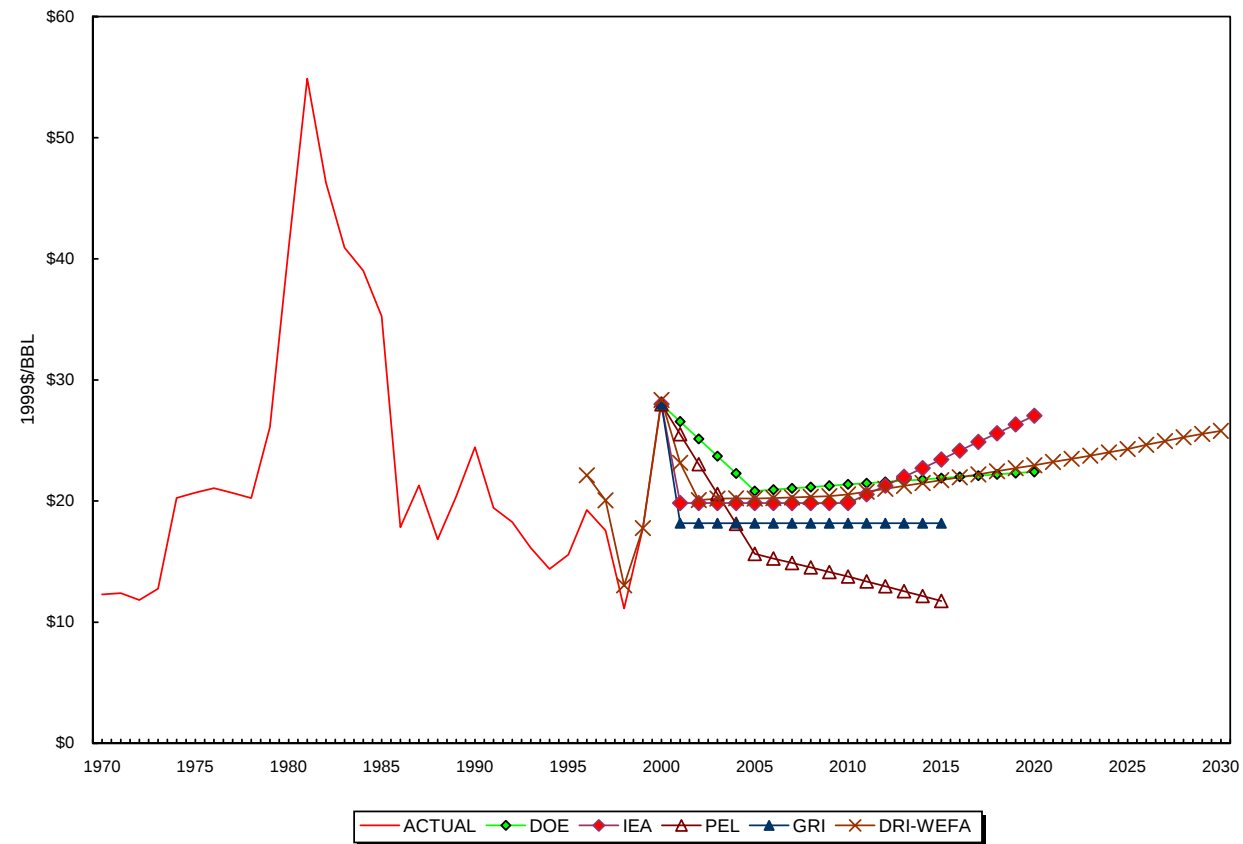


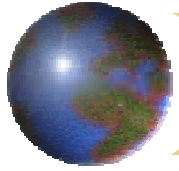
# *OPEC MARKET SHARE*





# *PRICE OUTLOOK*





# *OPEC MARKET SHARE*

## ✚ DEMAND LEVEL

### ✚ MACROECONOMY

- LEVEL OF GROWTH
- POTENTIAL FOR NEW SHOCKS

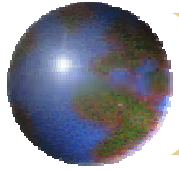
## ✚ NON-OPEC SUPPLY

- PRICE/MNOC INVESTMENT
- DEEPWATER, FSU
- GTL, TAR SANDS

## ✚ OPEC INVESTMENT

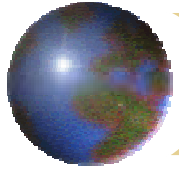
### ✚ POLITICAL REGIME (VENEZUELA OR ALGERIA?)

- APPLIES TO NON-OPEC TOO



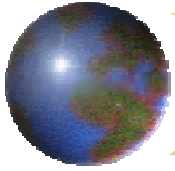
# *IMPORTANCE OF POLITICS*

- **“...there is no guarantee that the current free-market orientation of economic ideology will not swing back towards the left and greater governmental interference in markets or ownership of industry....Also, though, continuing economic problems due to international debt, the recession, bank failures, etc., may cause...policymakers in many developing countries to abandon efforts at market reform.” Lynch 1991**

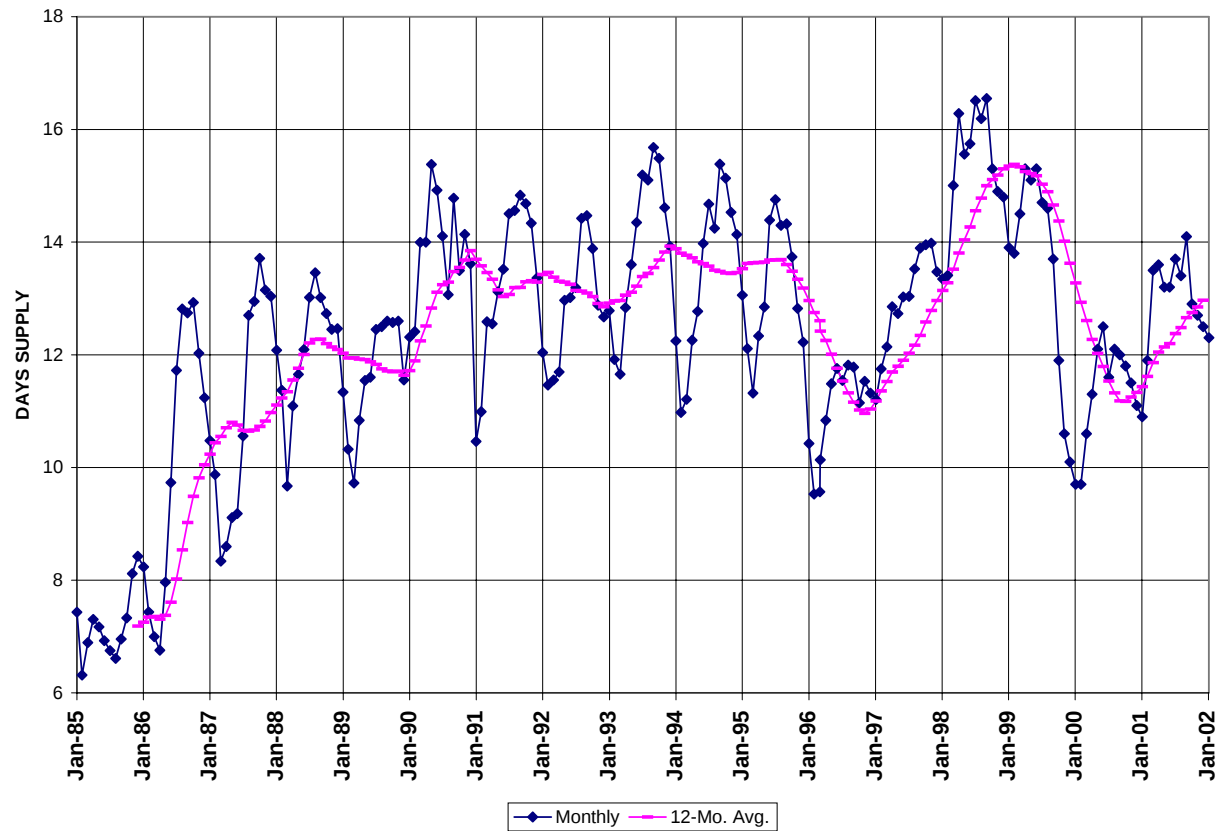


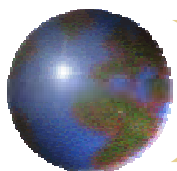
## *SHORT-TERM MARKET OUTLOOK*

- ✚ FEARS OF TIGHTENING LATE IN 2002
  - ▣ GOOD OPEC DISCIPLINE
  - ▣ ECONOMIC RECOVERY (?)
- ✚ POSSIBLE NEW COLLAPSE?
  - ▣ VENEZUELA, ALGERIA, NIGERIA  
CHEATING
  - ▣ RUSSIA, OTHER NON-OPEC SOARING
  - ▣ PRICE IMPACT ON DEMAND

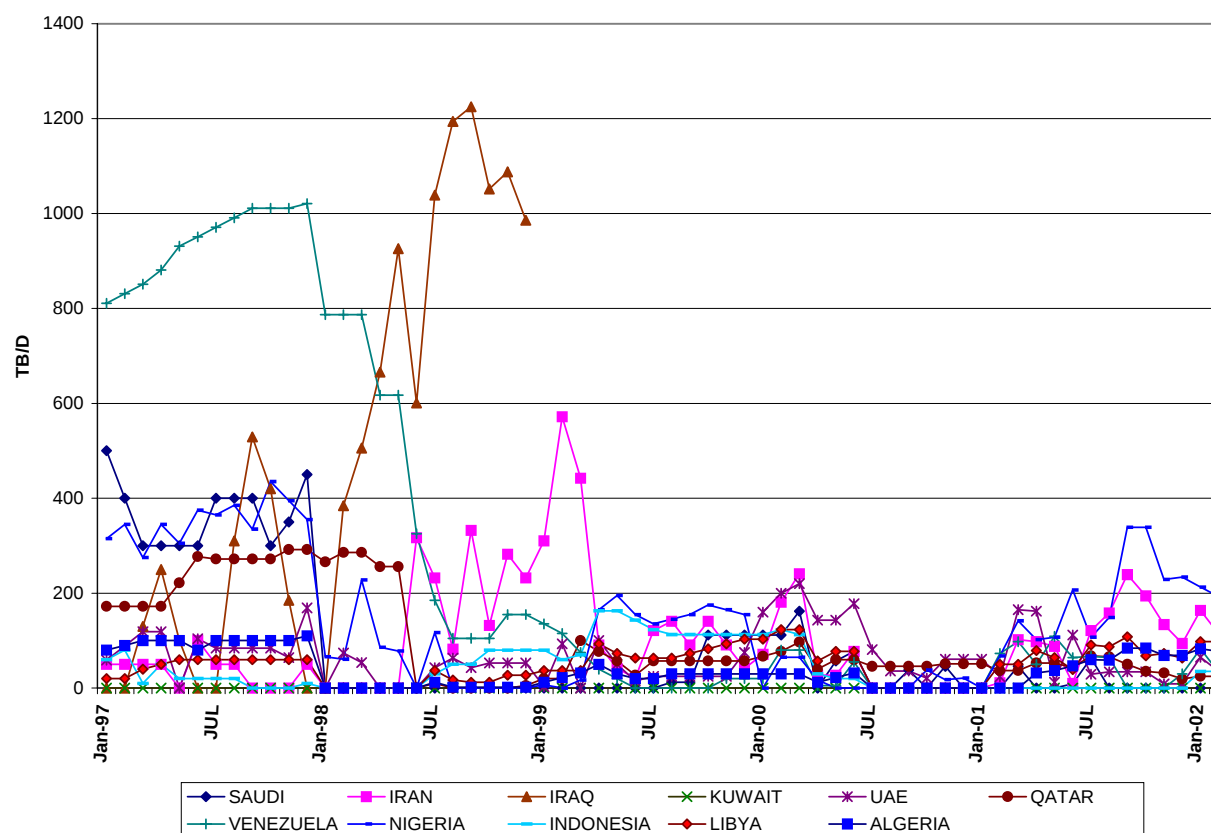


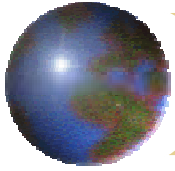
# *USABLE COMMERCIAL INVENTORIES*



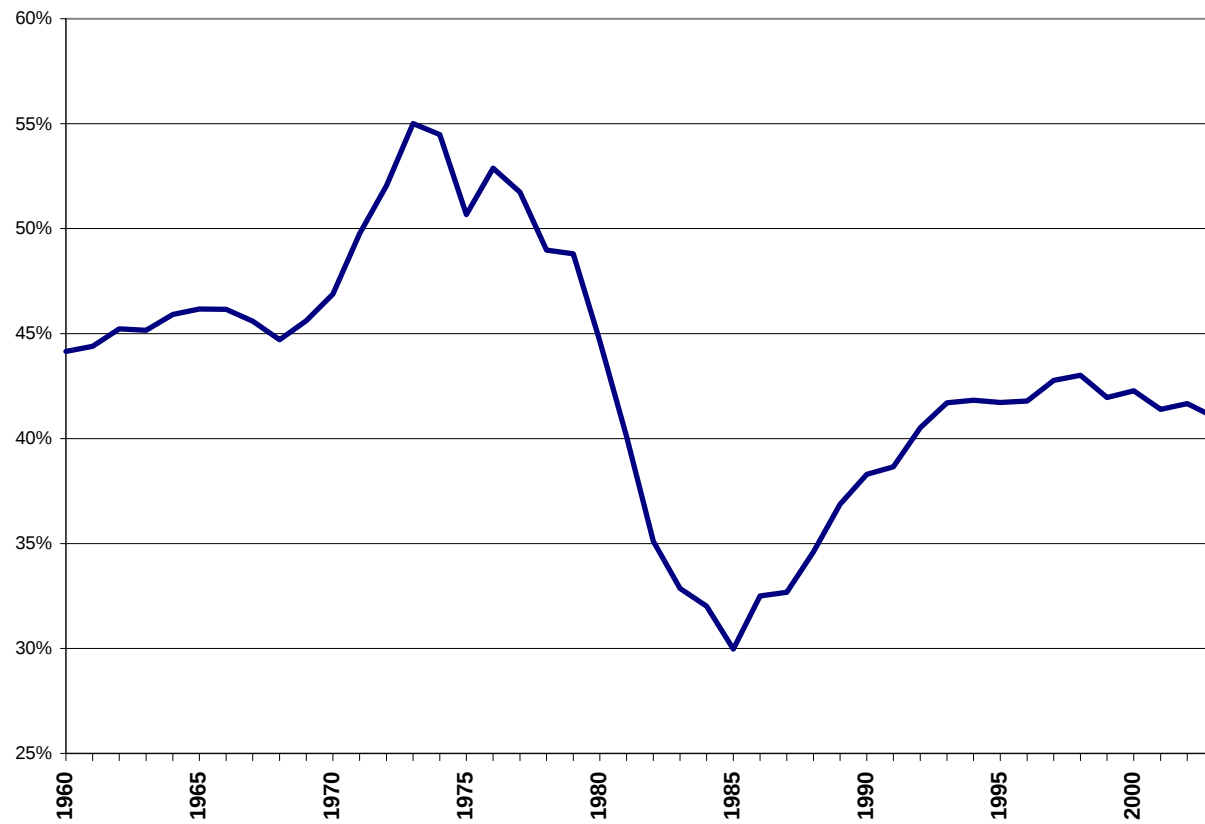


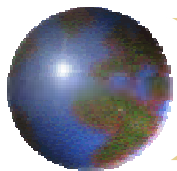
# *PRODUCTION OVER QUOTA*





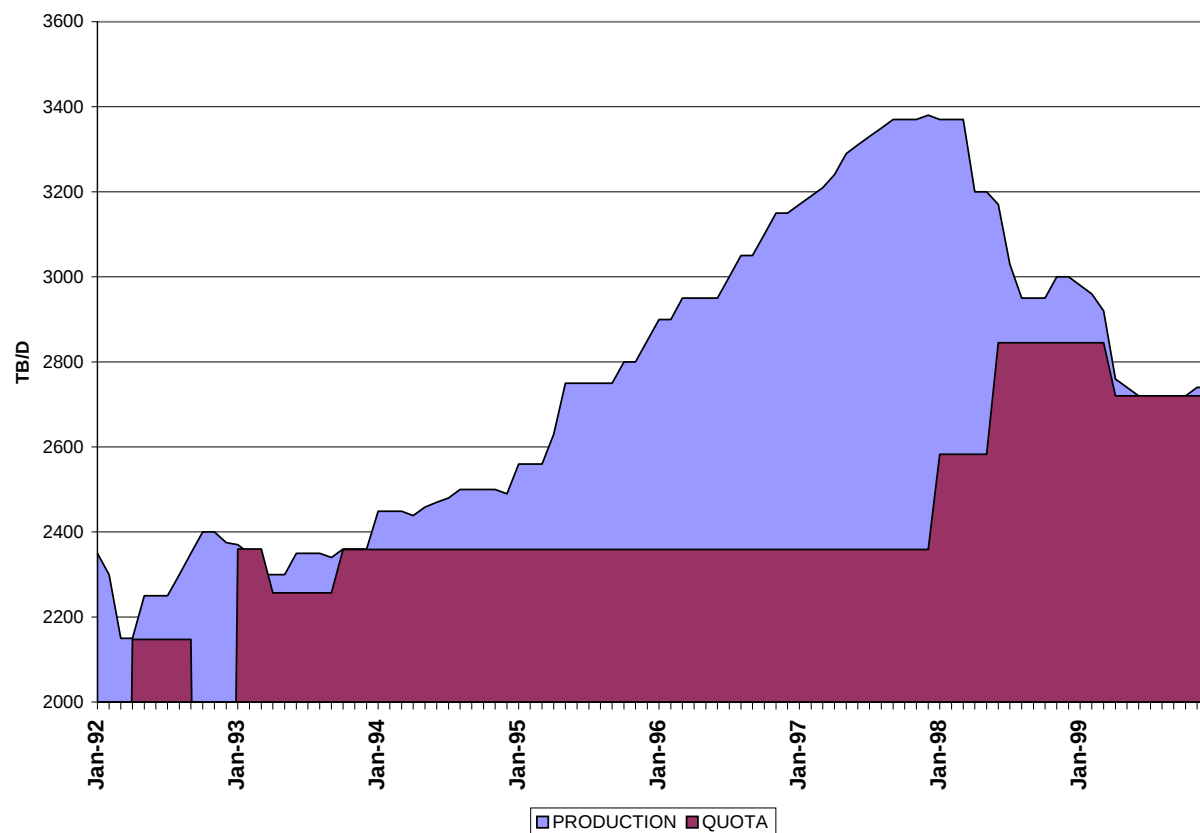
# *OPEC MARKET SHARE*

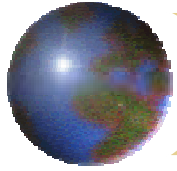




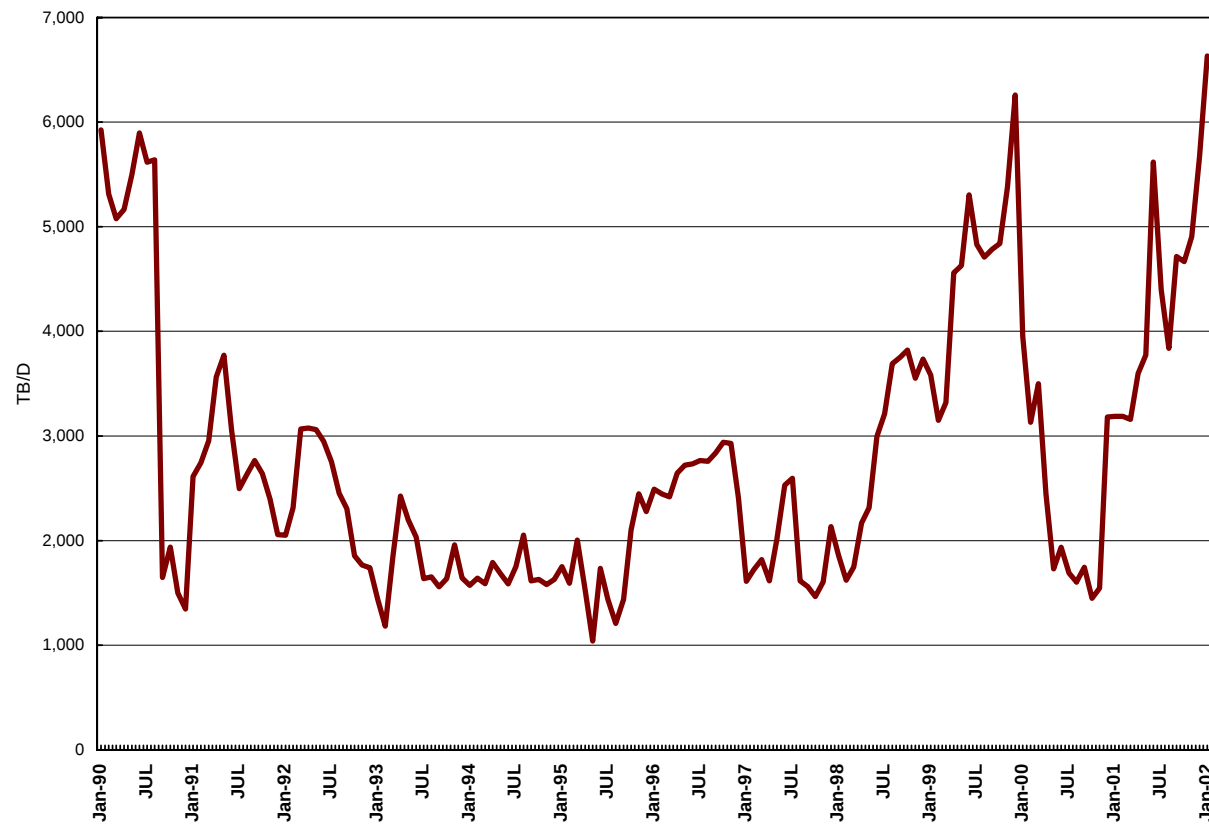
# *PAST AS PROLOGUE?*

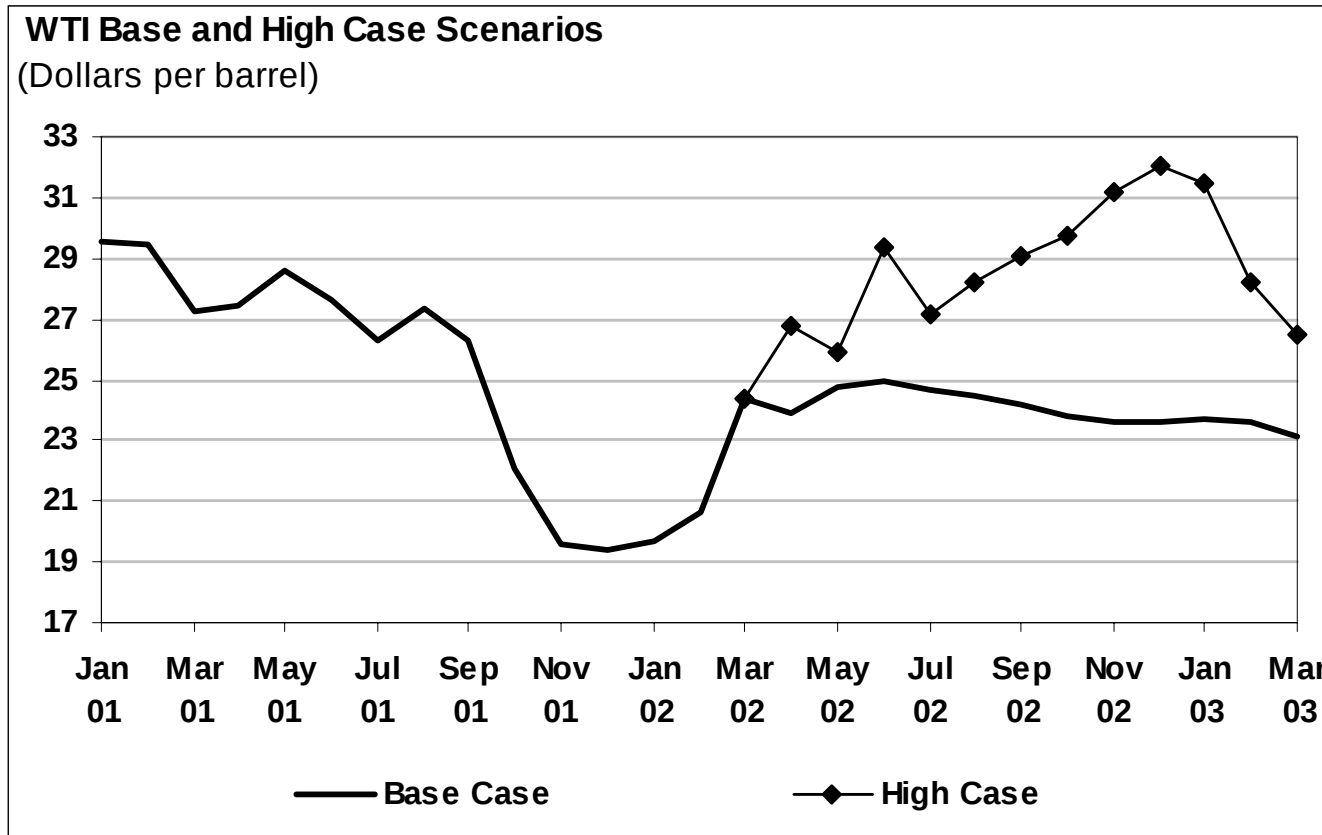
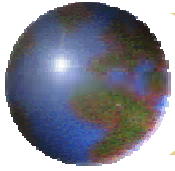
## *VENEZUELAN BEHAVIOR UNDER GIUSTI*

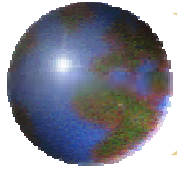




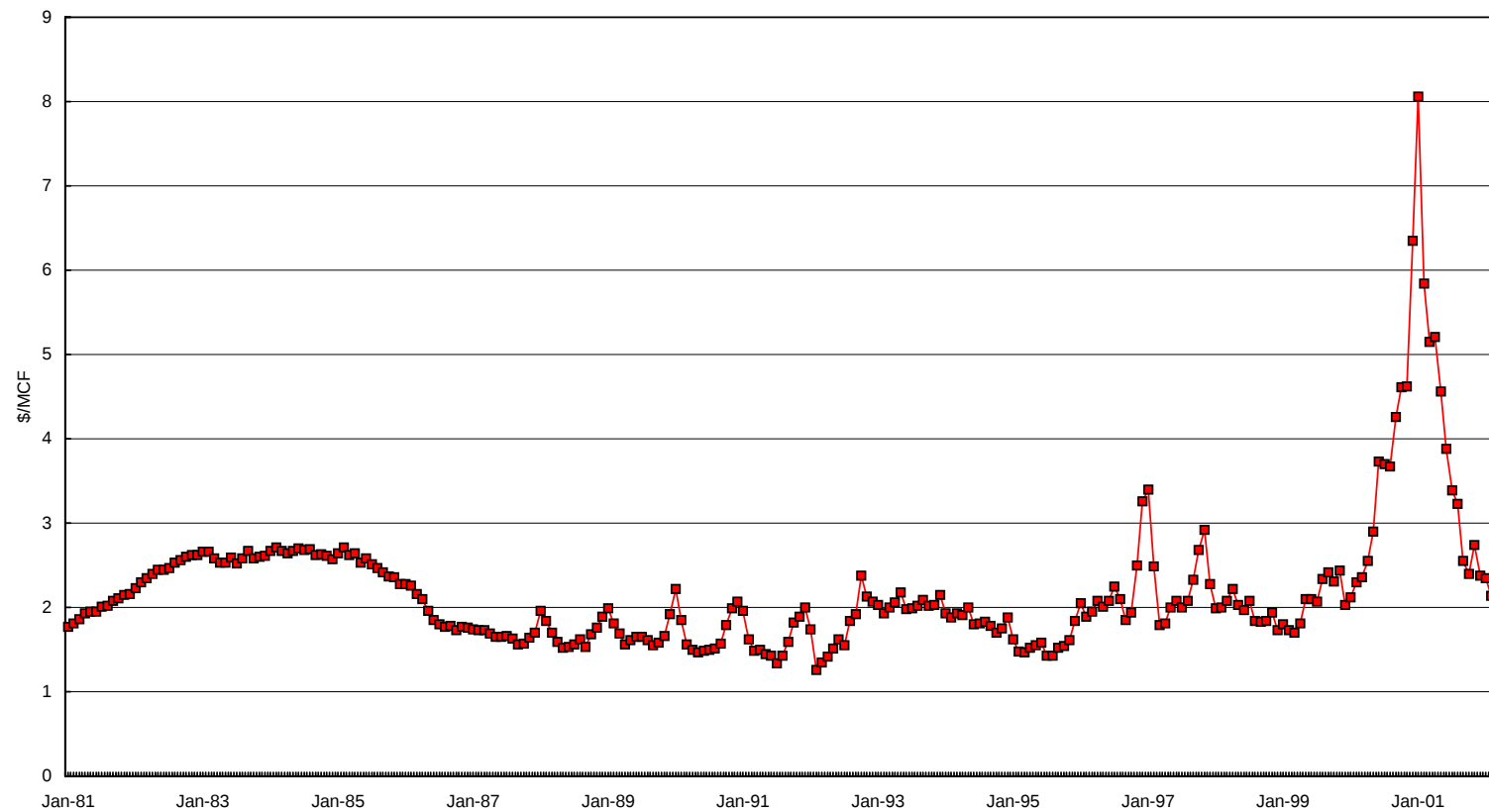
# *OPEC SURPLUS CAPACITY*

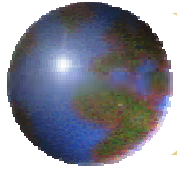






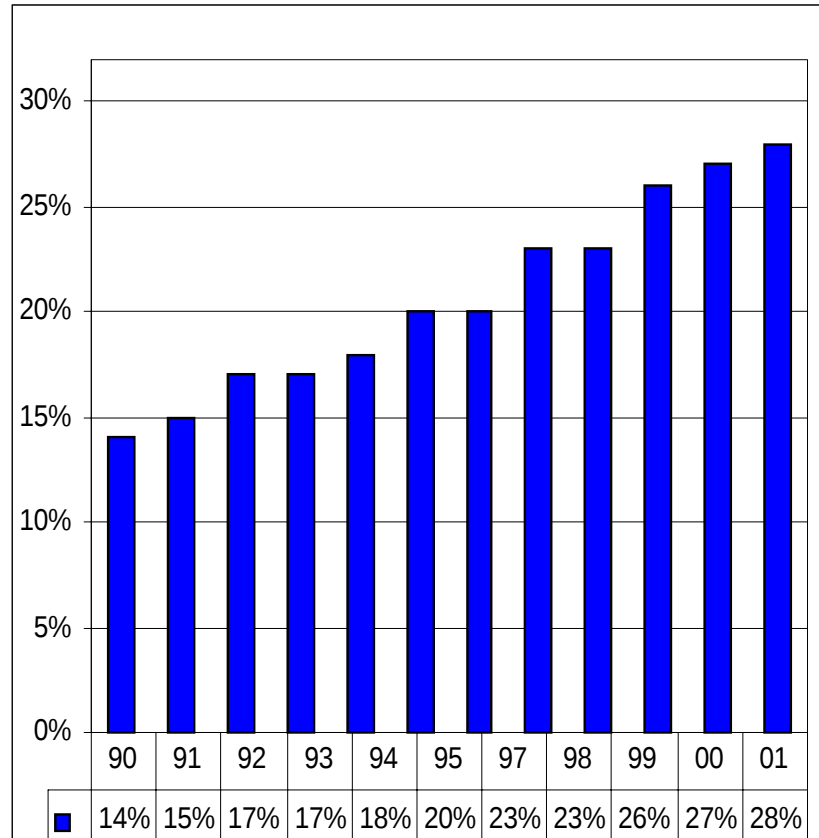
## *US GAS MARKET IN TRANSITION?*



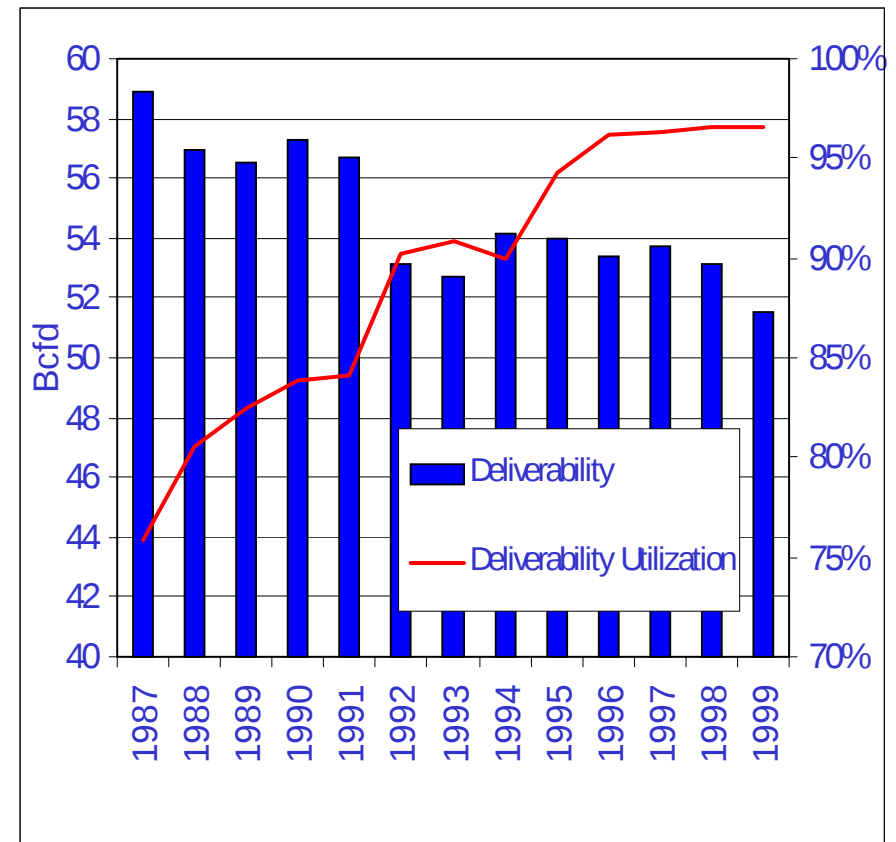


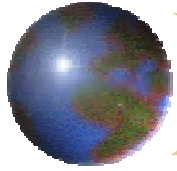
## *The evidence of serious supply constraints have been strong since 1996.*

### US Decline Rates Have Increased



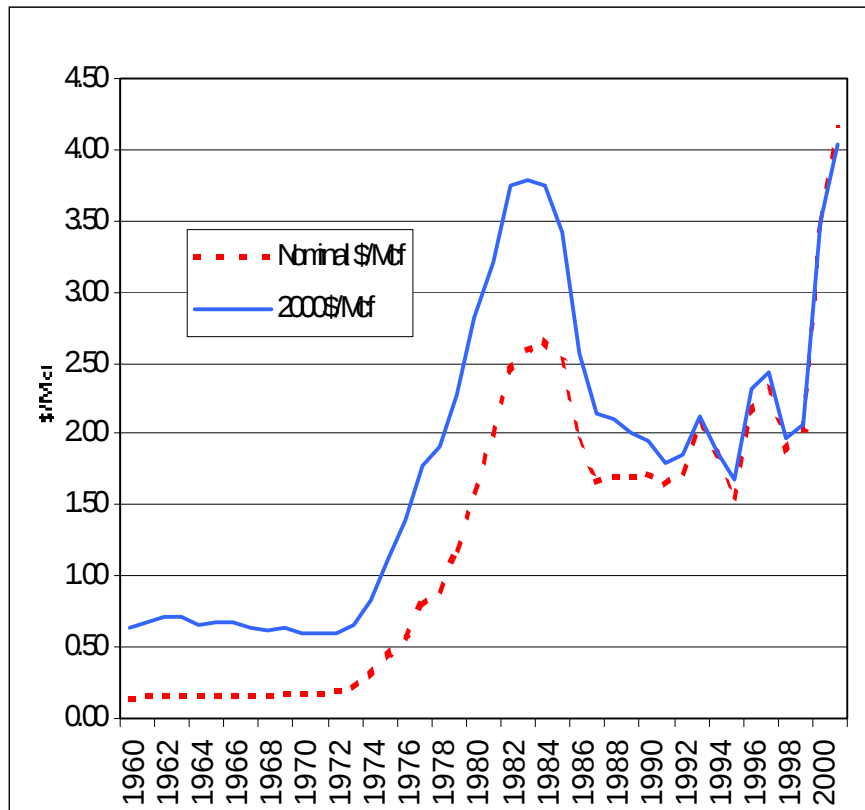
### US Deliverability and Utilization



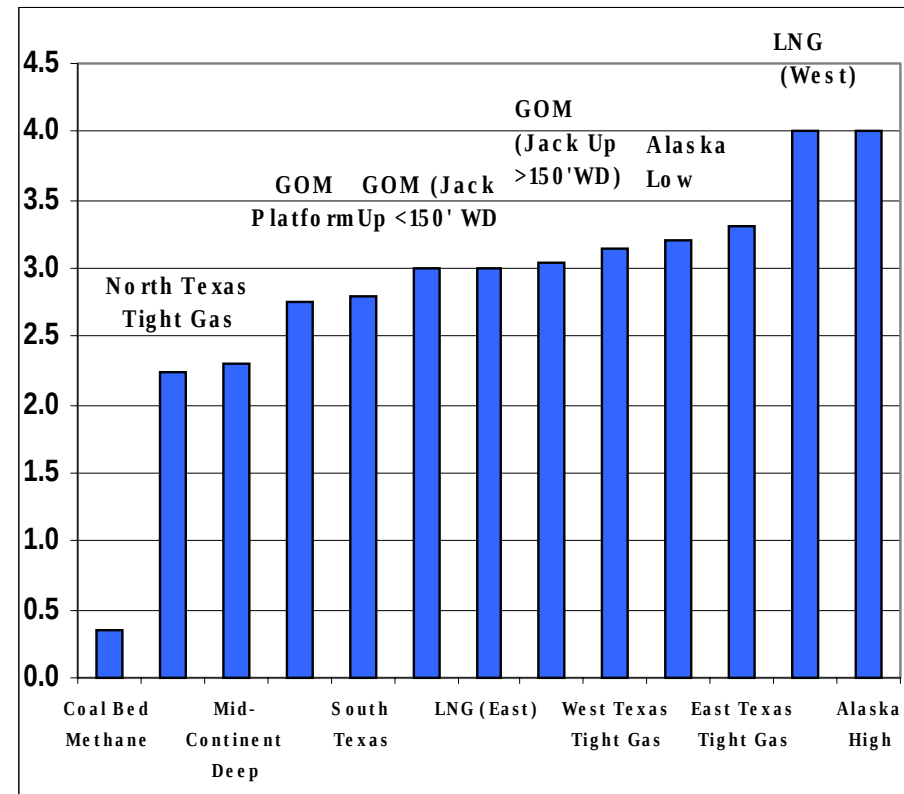


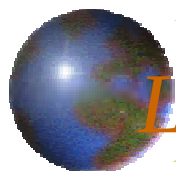
# Supply costs are rising. Will prices support LNG and Alaska?

**Average Wellhead Prices (1960 - 2001)**

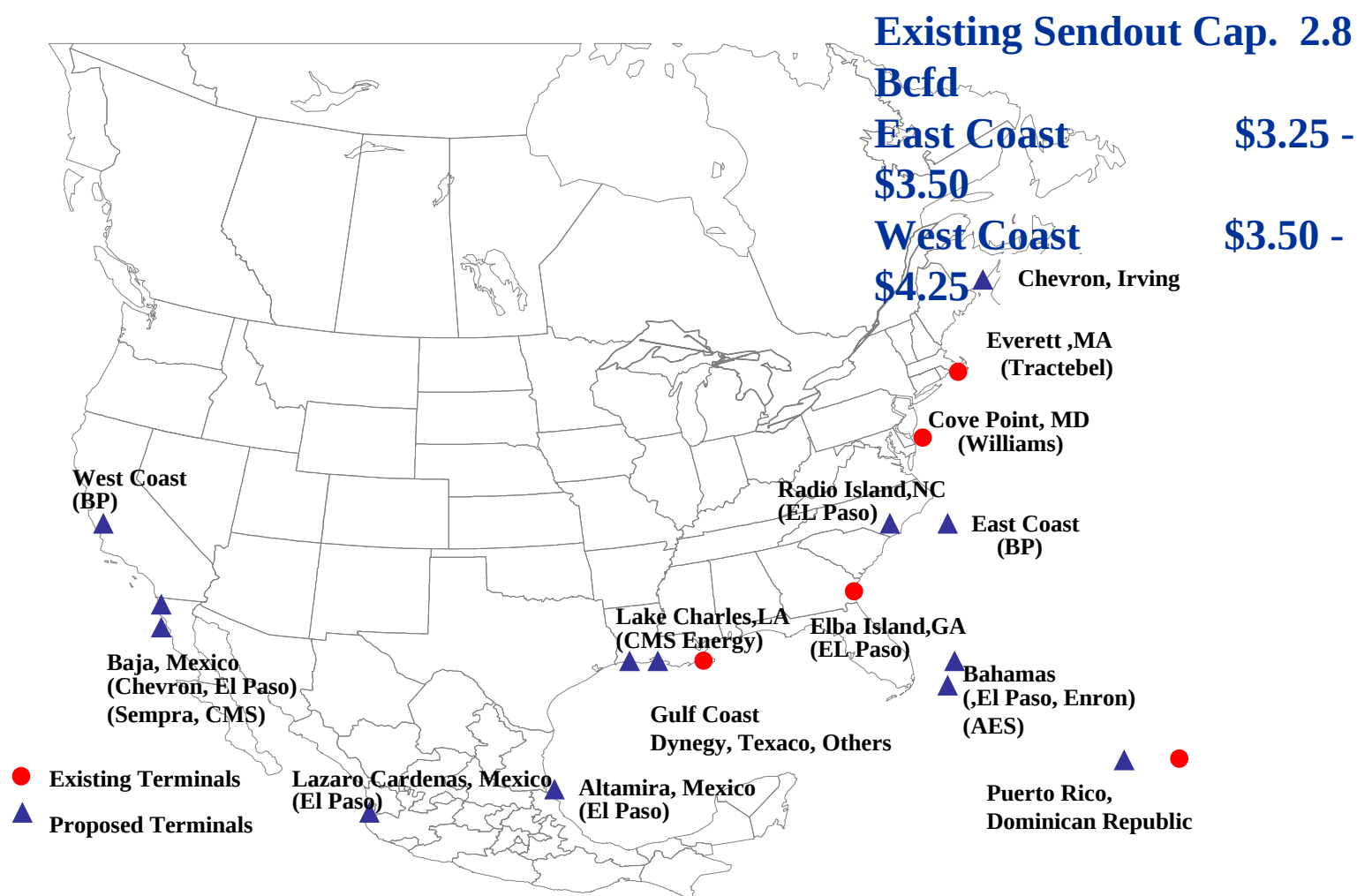


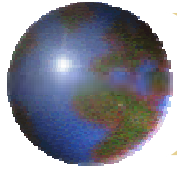
**Marginal Supply Cost (\$2000/MMBtu)**





*LNG growth will add about 2.5 to 3 Bcfd  
over the next decade (15+MT LNGe)*

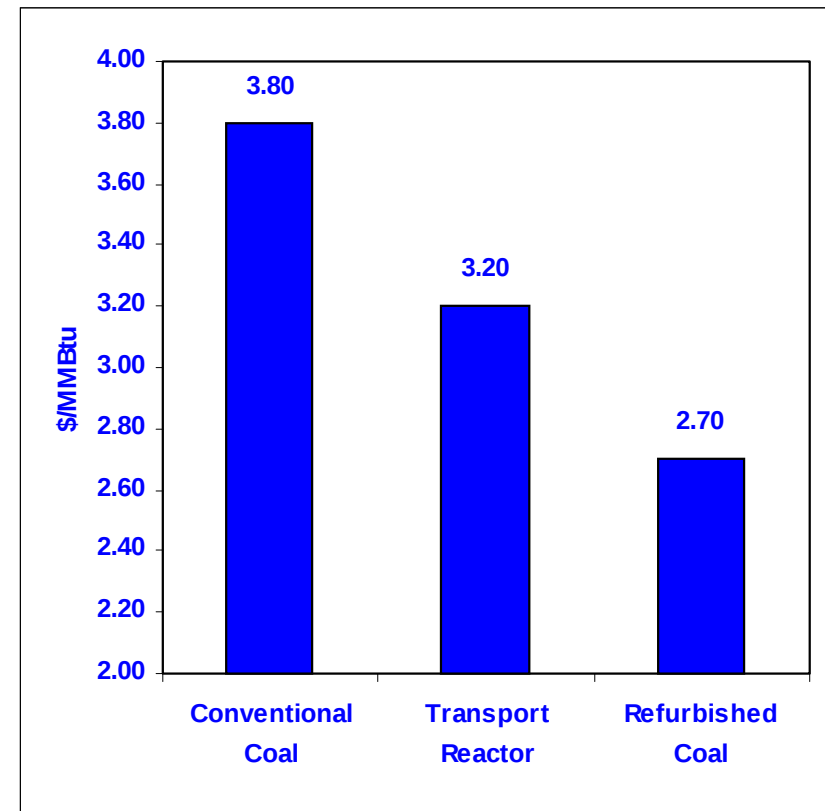


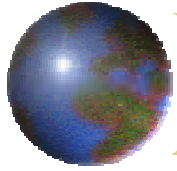


## *Demand side response will limit gas price increases*

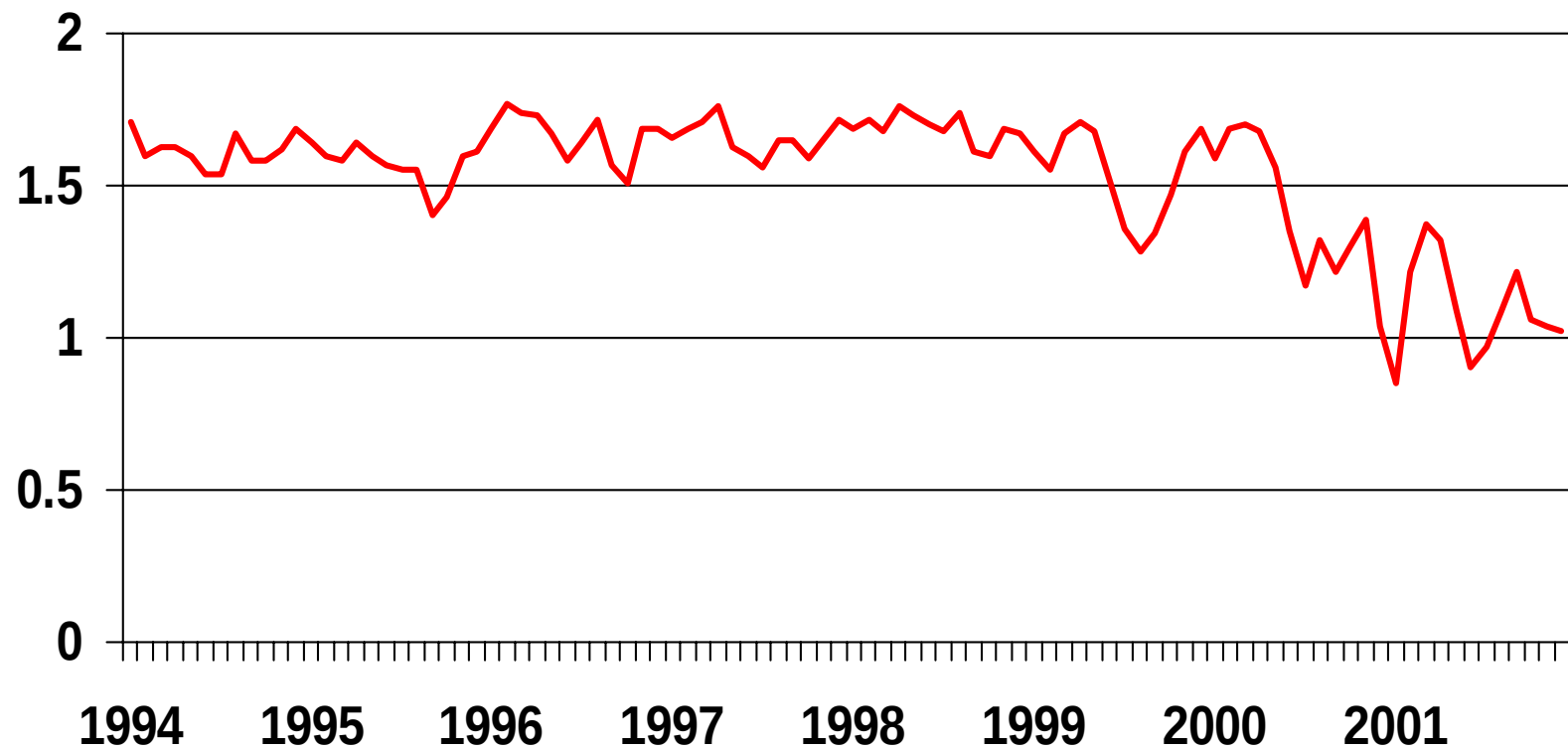
- Conventional Coal \$3.80 delivered.
- New Source Review
- Refurbished coal capacity is competitive at \$2.70 per MMBtu delivered (10% capacity increase).
- Transport reactor is being tested using oil cracking technology to gasify coal.

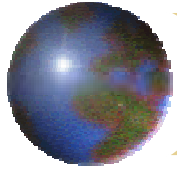
### **Delivered Gas Prices that Make Coal Competitive**





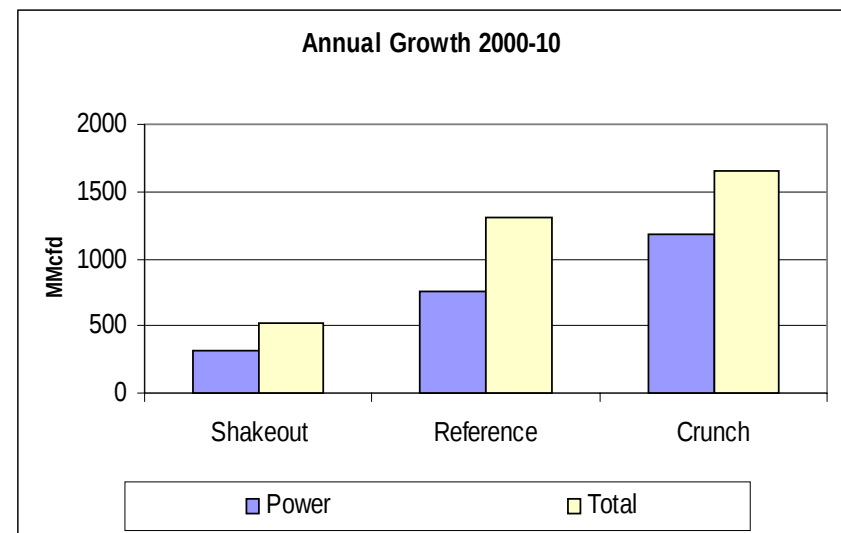
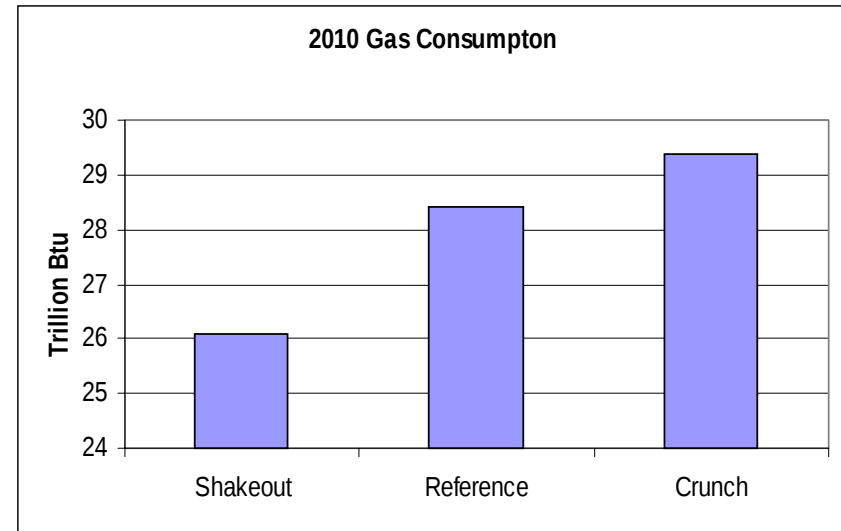
*US Natural Gas Use in Ammonia  
Production Decreases With High Gas  
Prices in 2000 and 2001 (Bcf/day)*

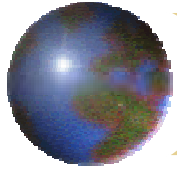




## *Gas consumption for power generation is a major source of growth and uncertainty*

- Gas consumption for power generation is the major source of growth (60% of total).
- Since gas is the marginal fuel, slight changes in generation from other fuels or changes in the electric power growth rate has a major impact.
- Projected growth rates for power generation range from 1.8% to 2.8% per year.
- Scenarios range from optimism to pessimism about coal, nuclear, and power growth rates.



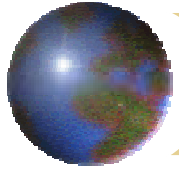


## *Both supply and demand side uncertainties create a great deal of uncertainty*

- Prices in 2010 (\$1.90 to \$3.65 per MMBtu)
- Need to develop deep wells offshore and onshore, LNG terminals will have to be built
- Growth in supply depends on new discoveries
- Demand response
  - Coal fired plants are likely to play a larger role than many project
  - Increased efficiency in industrial sector
- Environmental Regulations

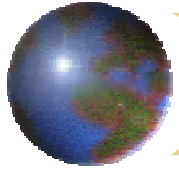
|  |            | Average Wellhead Prices<br>\$2000/MMBtu |      |      |      |      |
|--|------------|-----------------------------------------|------|------|------|------|
|  |            | 2000<br>(Actual)                        | 2005 | 2010 | 2015 | 2020 |
|  | AEO        | 3.69                                    | 2.48 | 2.67 | 2.81 | 3.11 |
|  | AGA        | 3.69                                    | 2.39 | 2.46 | 2.55 |      |
|  | DRI*WEFA   | 3.69                                    | 2.91 | 2.95 | 3.07 | 3.16 |
|  | GRI        | 3.69                                    | 2.12 | 2.09 | 2.00 |      |
|  | NPC (Ref)  | 3.69                                    | 2.64 | 3.13 | 3.67 |      |
|  | NPC (High) | 3.69                                    | 2.90 | 3.65 | 4.37 |      |
|  | NPC (Low)  | 3.69                                    | 2.26 | 2.28 | 3.07 |      |
|  | NRCar*     | 3.69                                    |      | 2.12 |      | 2.12 |
|  | Average    |                                         | 2.53 | 2.94 | 3.08 | 2.80 |
|  | Deflator   | 1.00                                    | 1.14 | 1.26 | 1.41 | 1.57 |

\* Forecast were developed in 1999.



## *CONCLUSION (1): THINGS HAVE CHANGED*

- MARKETS TIGHTER THAN BEFORE
  - CAPACITY UTILIZATION VERY HIGH  
COMPARED TO 1980S, EARLY 1990S
- OPEC MORE COHESIVE
- POLITICAL TREND REVERBERATING  
TOWARDS INTERVENTION IN  
MARKETS



## *CONCLUSION (2): THE MORE THEY ARE THE SAME*

- ⊕ PRICE EFFECTS STILL POWERFUL
  - ⊞ AND UNDERESTIMATED
- ⊕ GOVERNMENTS NOT AS BAD AS BEFORE
- ⊕ UNCERTAINTIES ENORMOUS
  - ⊞ POLICY, PRICE, TECHNOLOGY, EVEN GDP GROWTH
- ⊕ ANALYSIS IS THE ANSWER (RELATIVELY)