

# ASPHALT SUPPLY IN A VOLATILE OIL WORLD

Bill Haverland

ConocoPhillips Company

# Issues to be Discussed

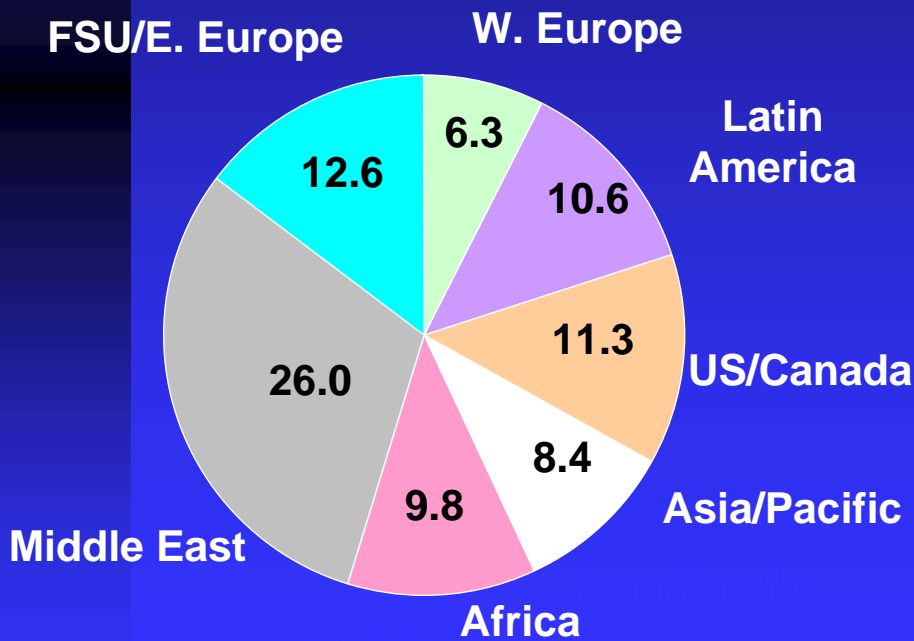
- Crude Oil Supply
- Crude Oil Pricing
- Refining Capacity
- Products Supply
- Products Pricing
- Future of the Industry

# CRUDE OIL SUPPLY

A WORLD LOOK

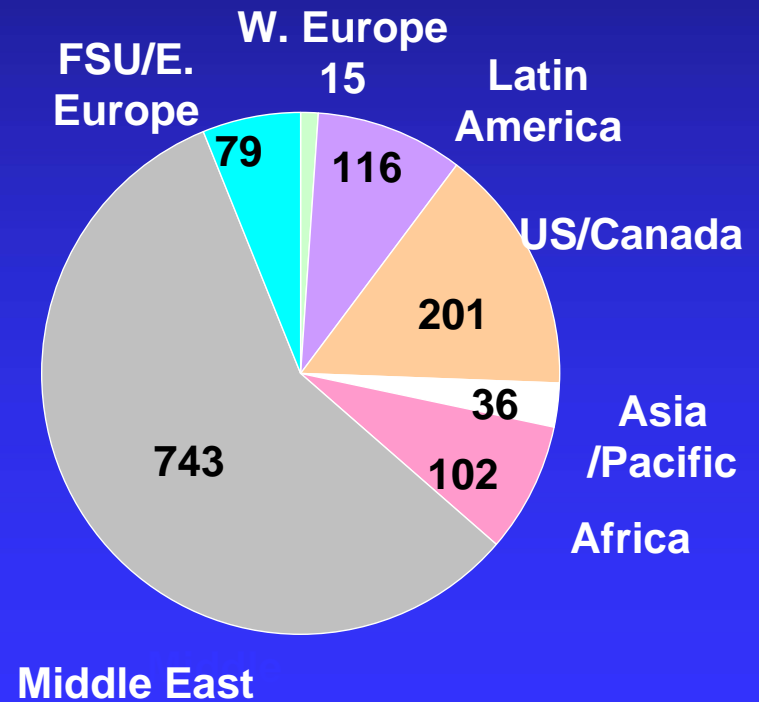
# Crude Oil Supply (2006)

## World Crude Oil Production Millions of Barrels Per Day



Total: 85MMB/D

## World Proven Crude Oil Reserves Billions of Barrels



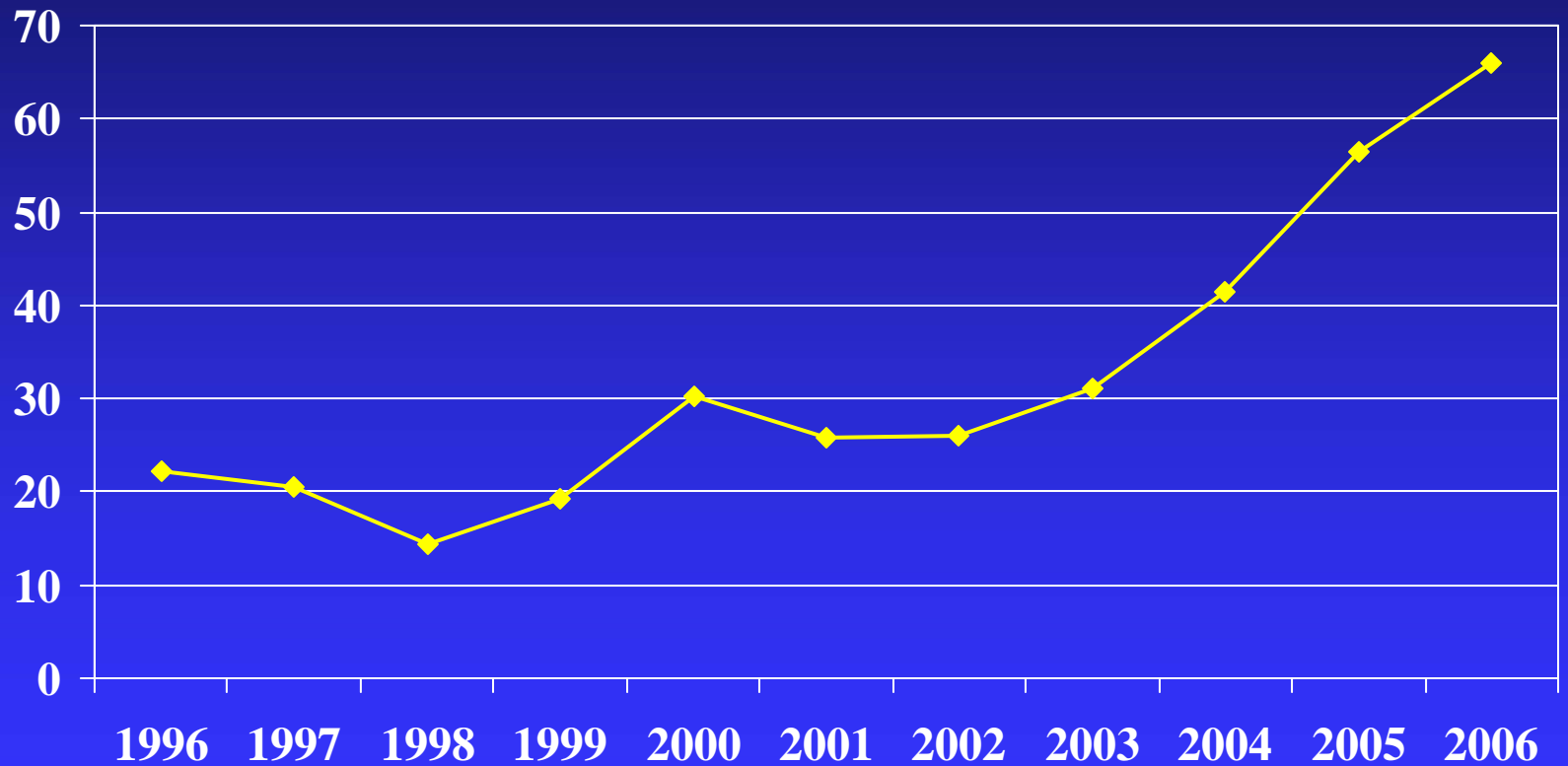
Total: 1,292 BB

# Crude Oil Demand

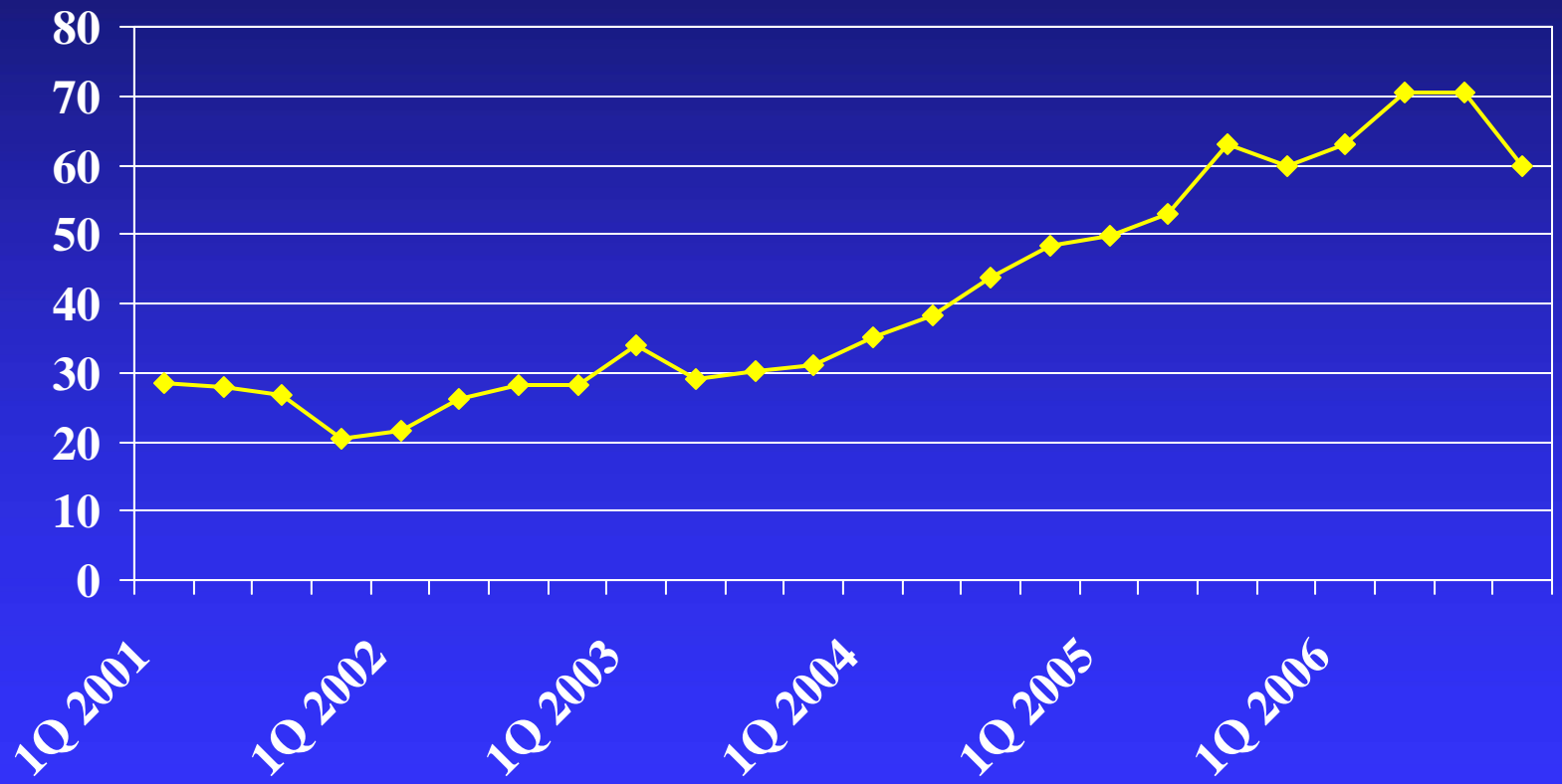
- Demand has risen by 7 MMBD (9%) since 2002.
- Demand at 85 MMBD or 98% of world daily delivery capacity.
- Vulnerable to supply disruptions caused by storms, accidents, breakdowns, political unrest.
- 65% of proven reserves within national oil companies and 16% held by Russia.
- Traditional companies have full access to 7% of reserves and 12% through partners (if allowed).

# CRUDE OIL PRICING

# WTI Price by Year



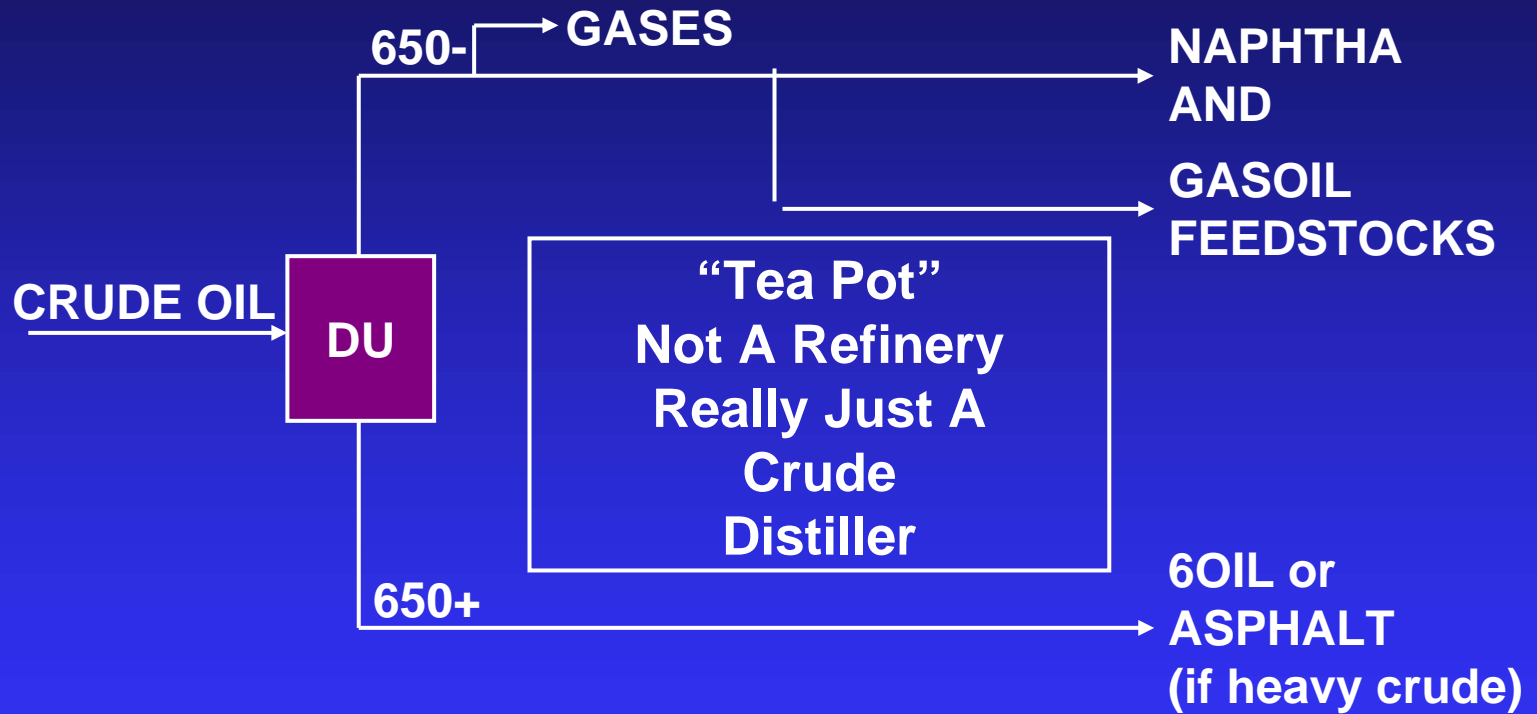
# WTI Price by Quarter



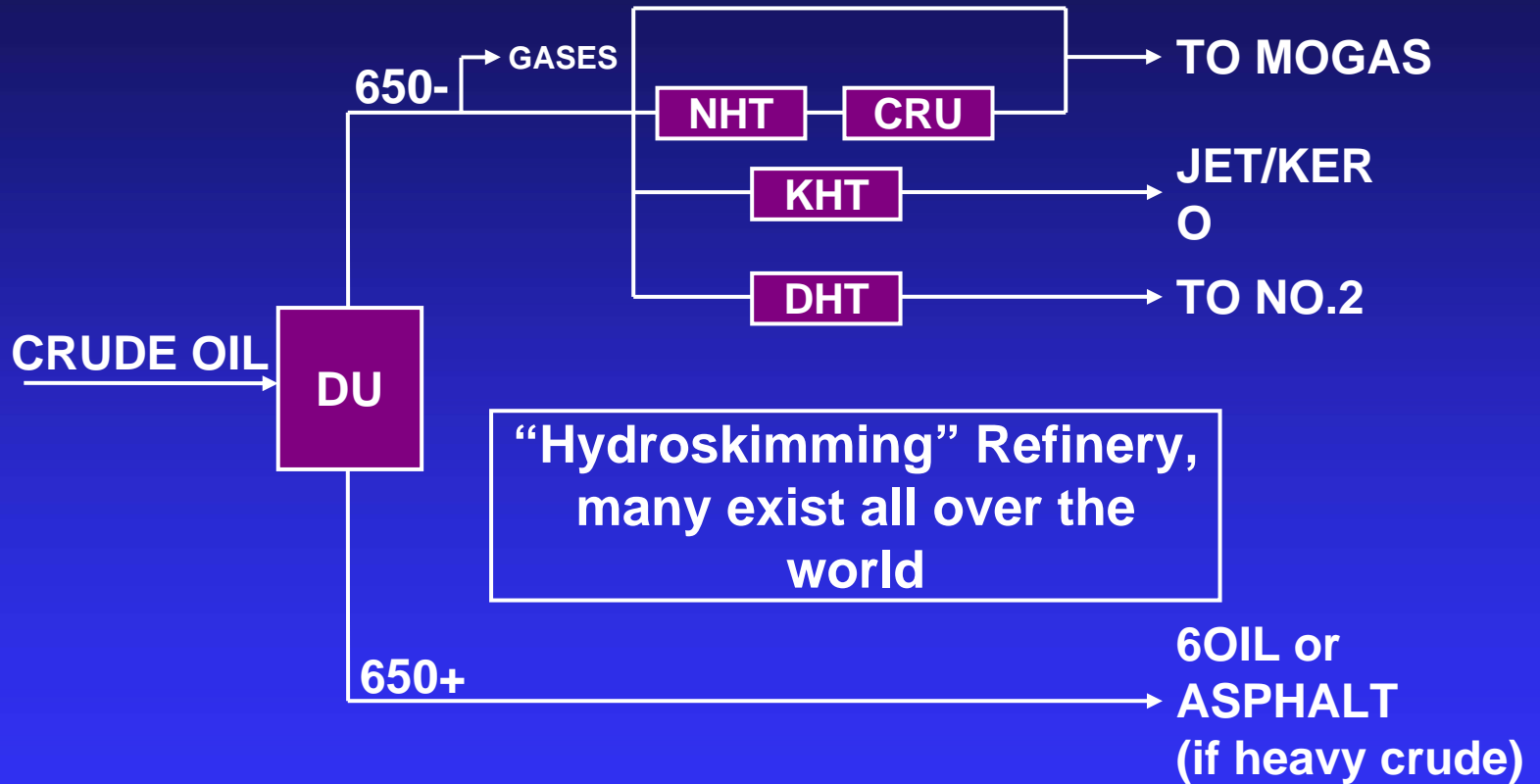


# REFINING CAPACITY

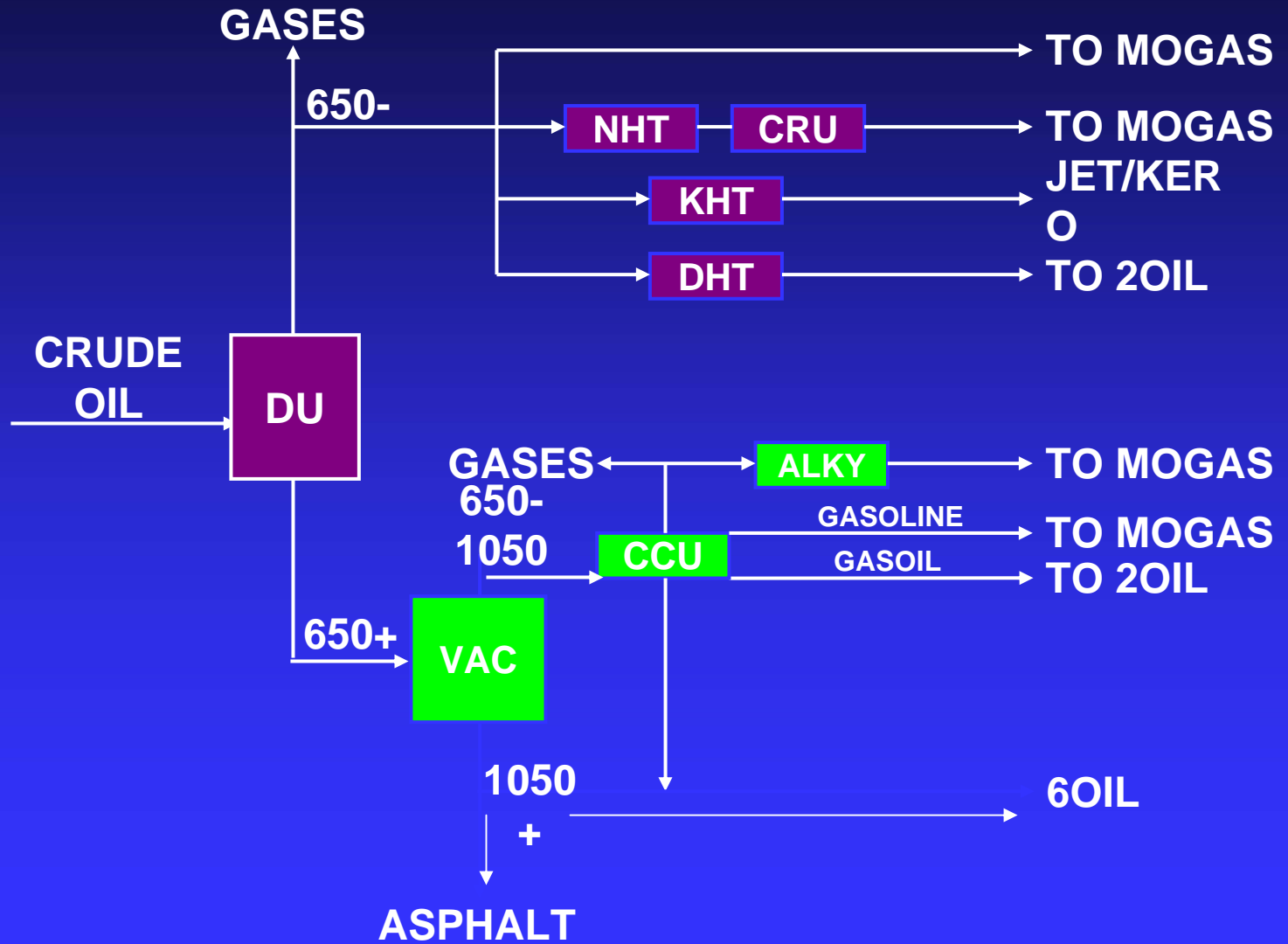
# Topping Refinery



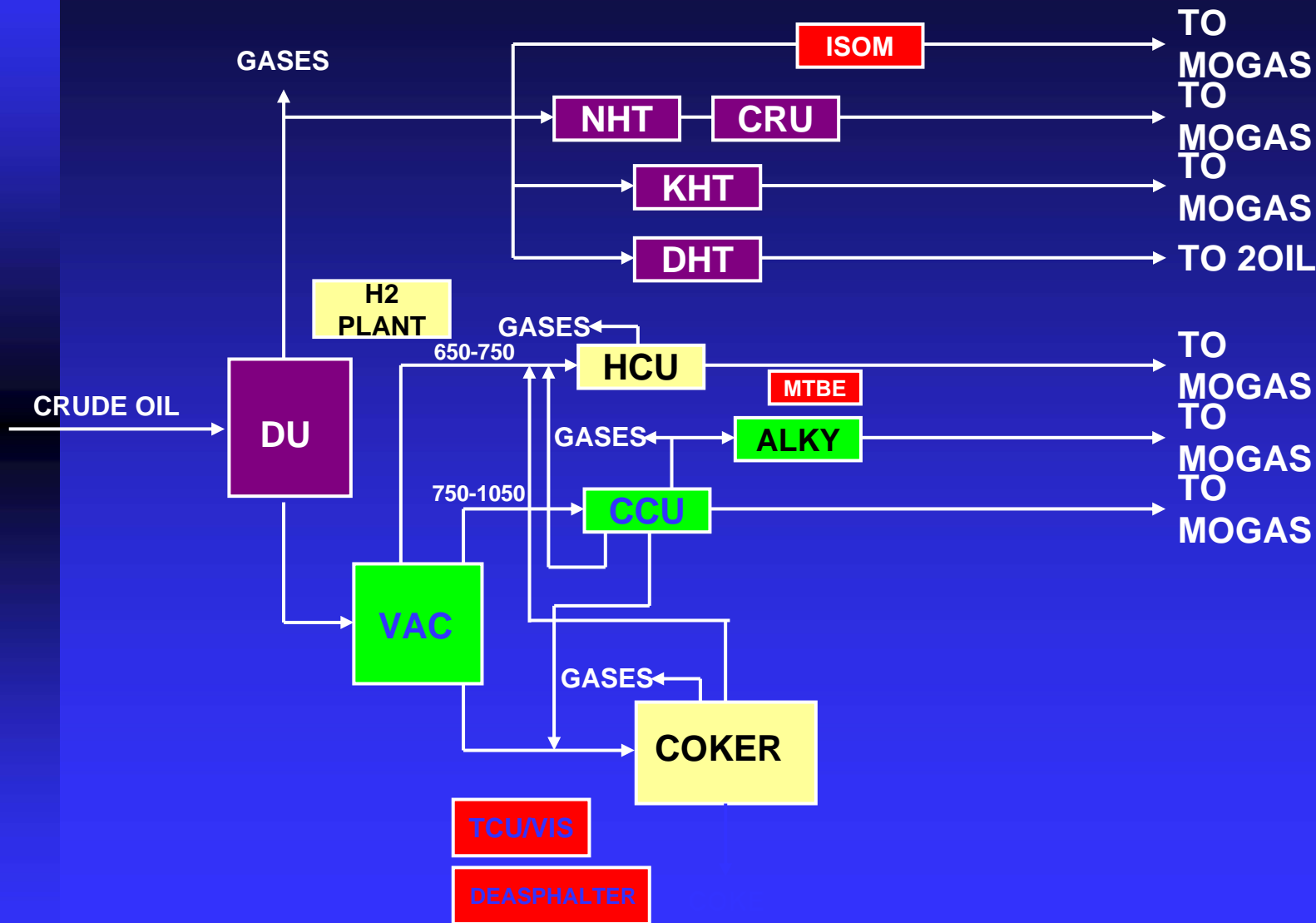
# Simple Refinery



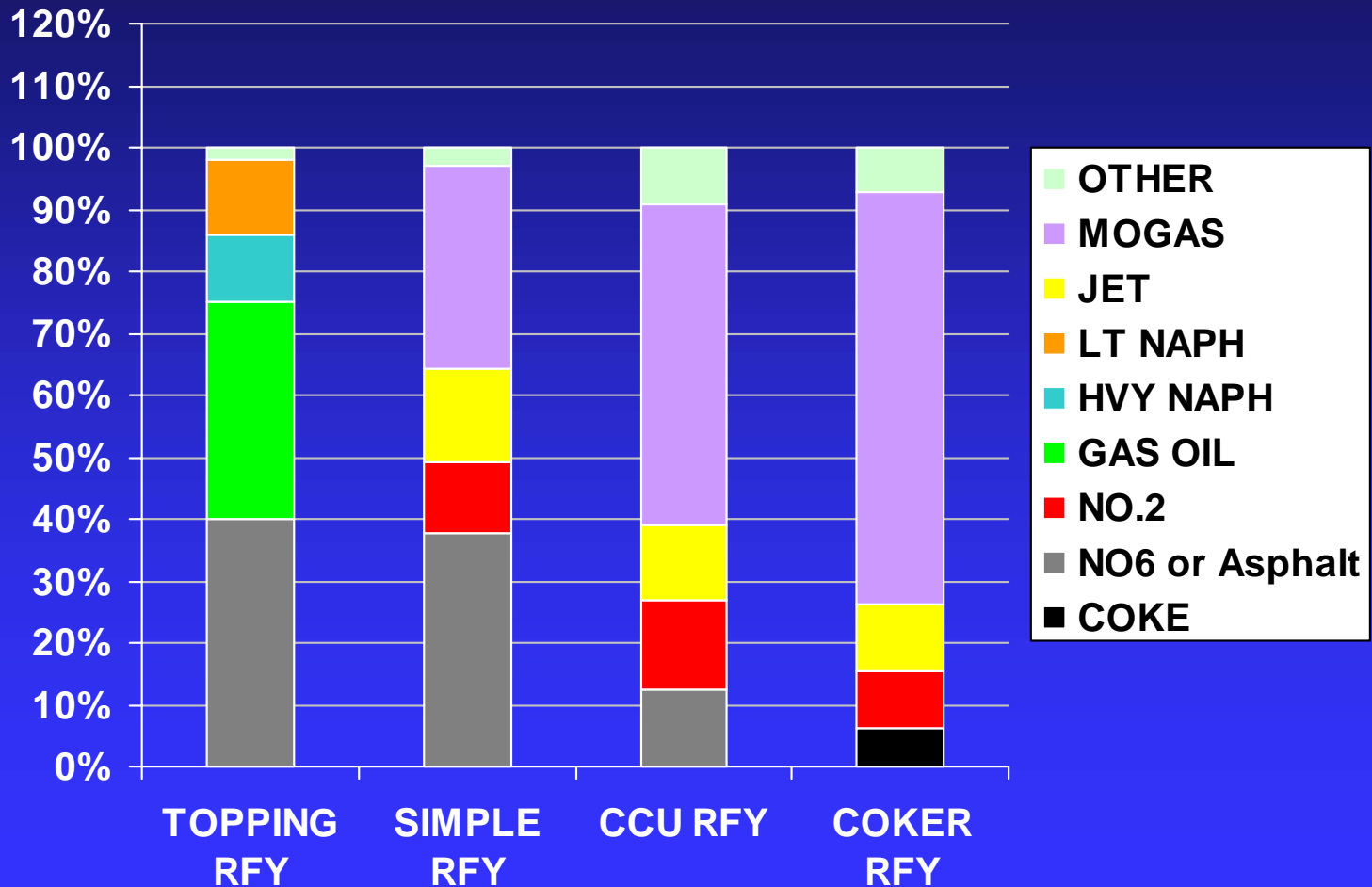
# CCU - "Complex" Refinery



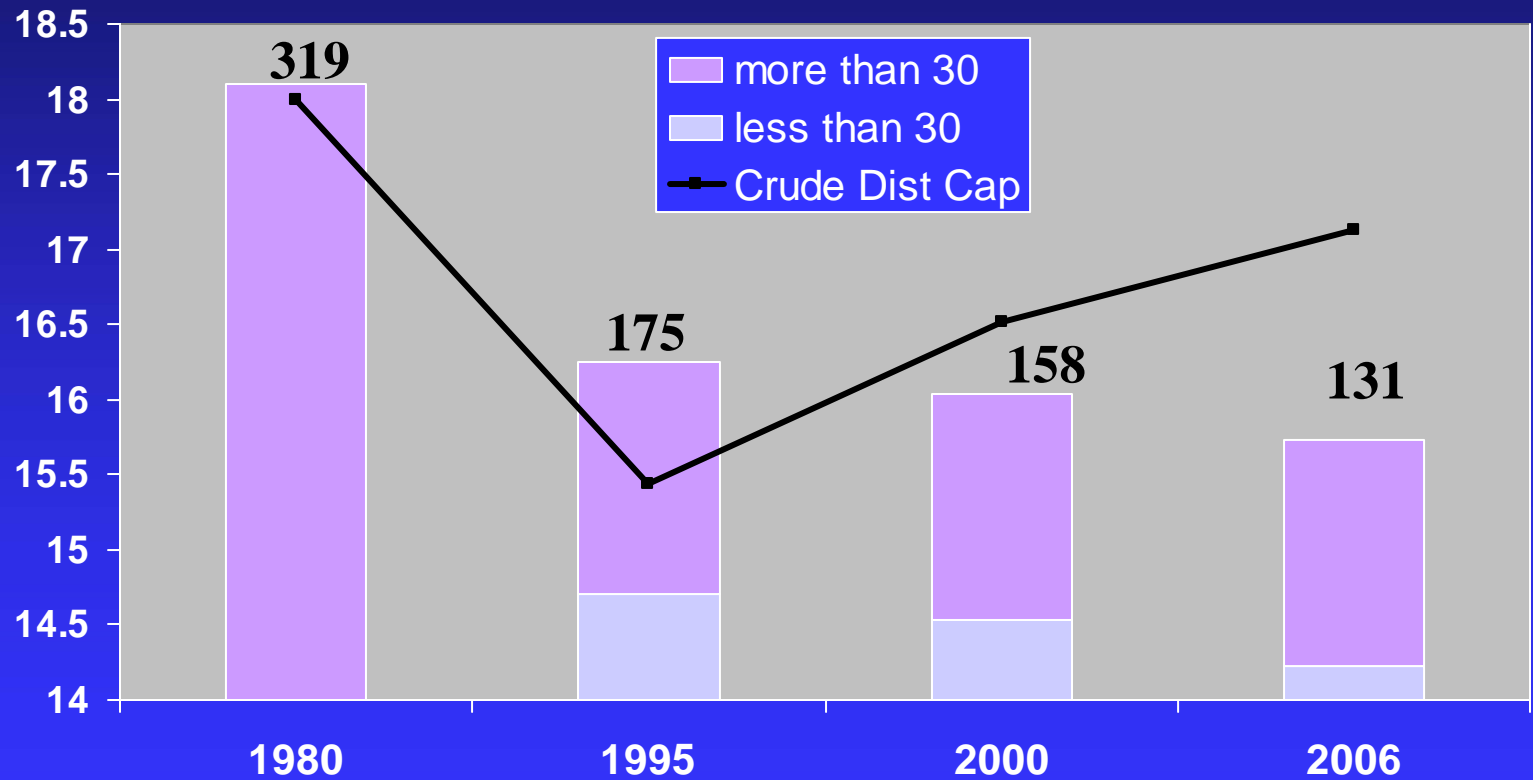
# CCU/HCU/Coker - “Very Complex” Refinery



# Refinery Yield (% of Crude Intake)



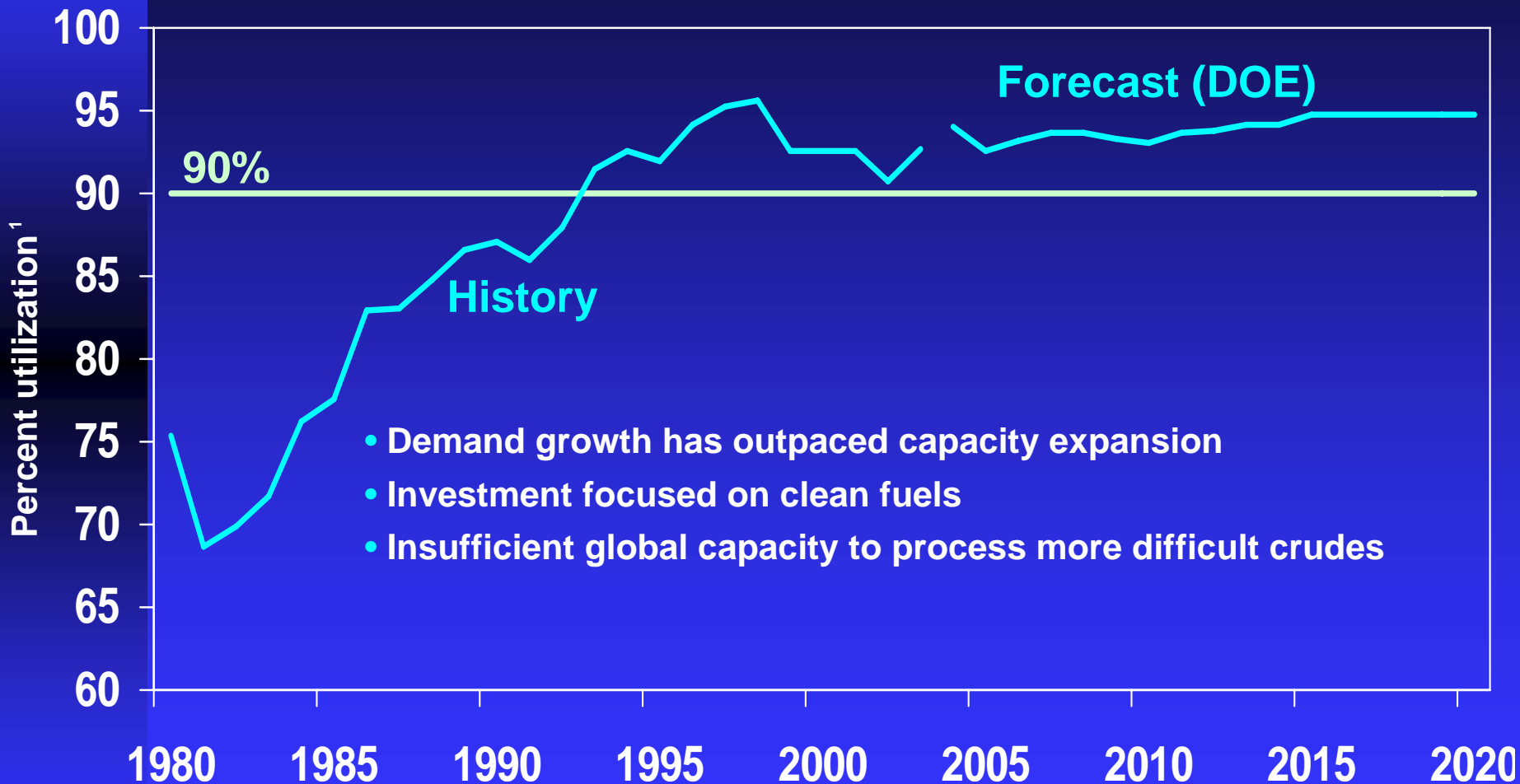
# U. S. Refining Capacity



Last New U. S. Refinery Built in 1976

Source: Oil & Gas Journal

# Total U.S. Capacity Utilization

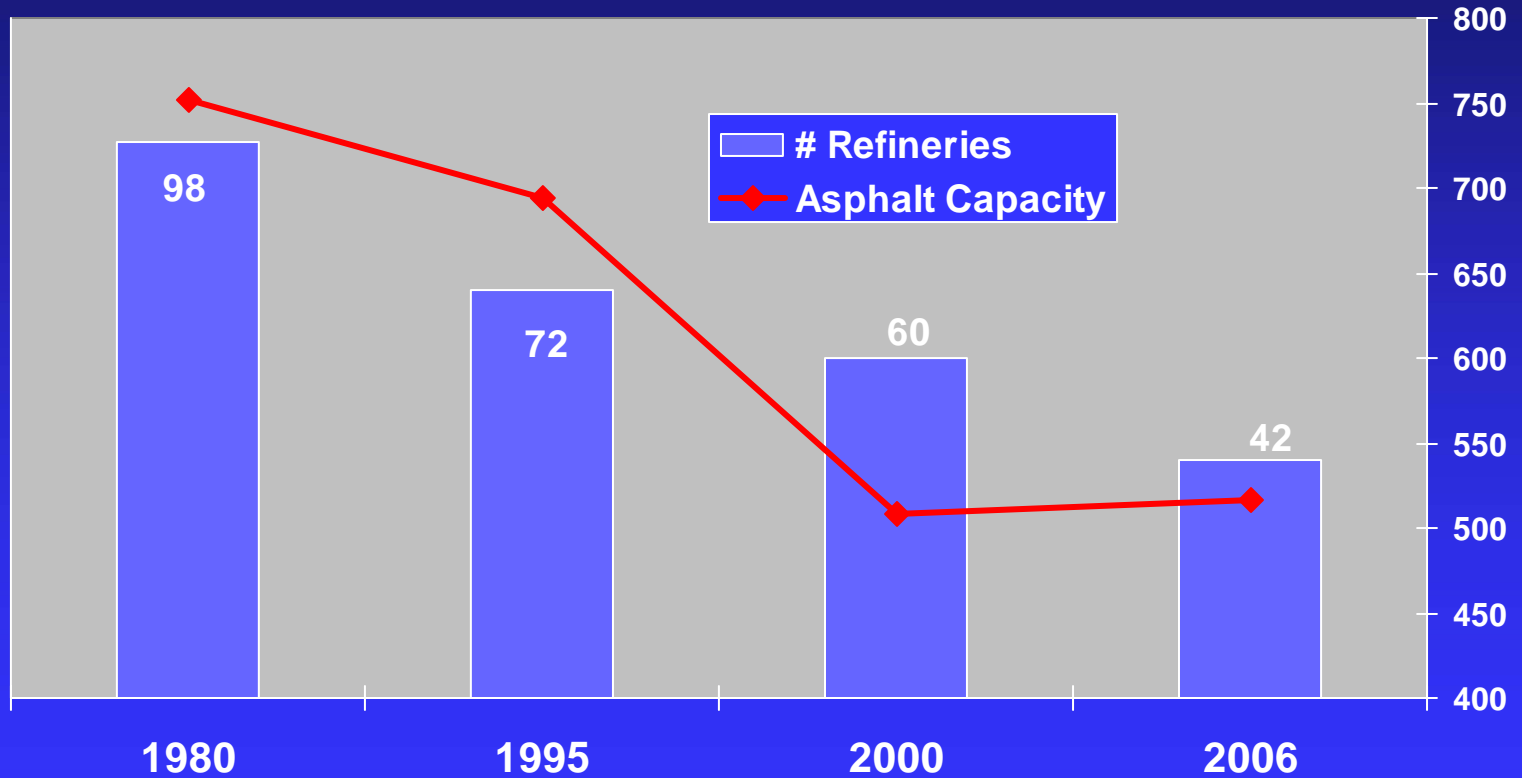


Source: U.S. Department of Energy

<sup>1</sup> Percent utilization defined as: gross input to refineries / operable capacity.



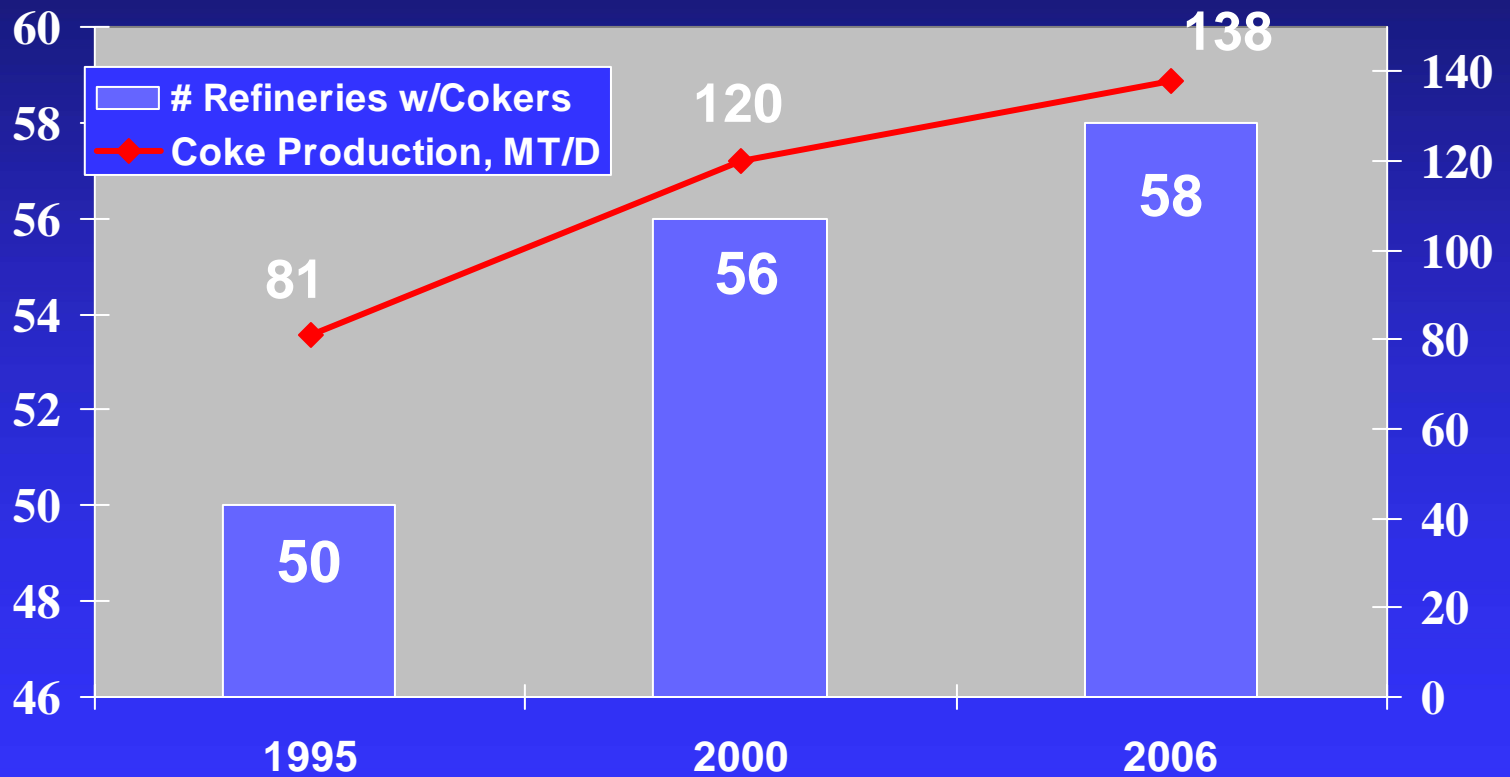
# U. S. Asphalt Refining Capacity



Production Range: 600 B/D to 60,000 B/D

Source: Oil & Gas Journal

# U. S. Refining Coking Capacity



# U.S. Coker Construction Projects 2005 - 2011

## ■ Engineering, Procurement & Const. Phase

■ Total Refineries: 245 MB per day

■ Asphalt Refineries: 135 MB per day

## ■ Planning or Early Engineering Phase

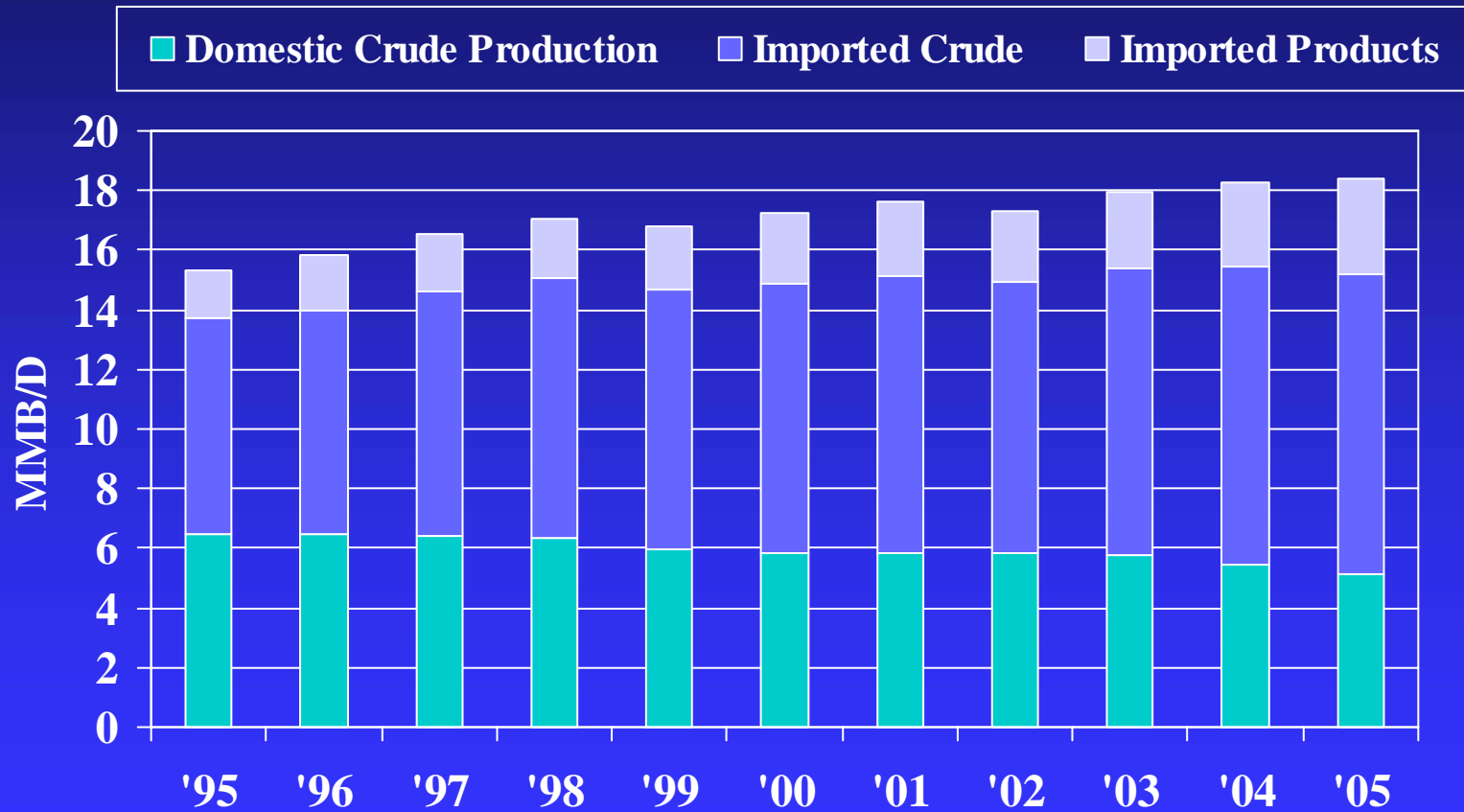
■ Total Refineries: 176 MB per day

■ Asphalt Refineries: 121 MB per day

\* Source: Argus Asphalt Report

# PRODUCTS SUPPLY/DEMAND

# Supply Source for U. S. Demand

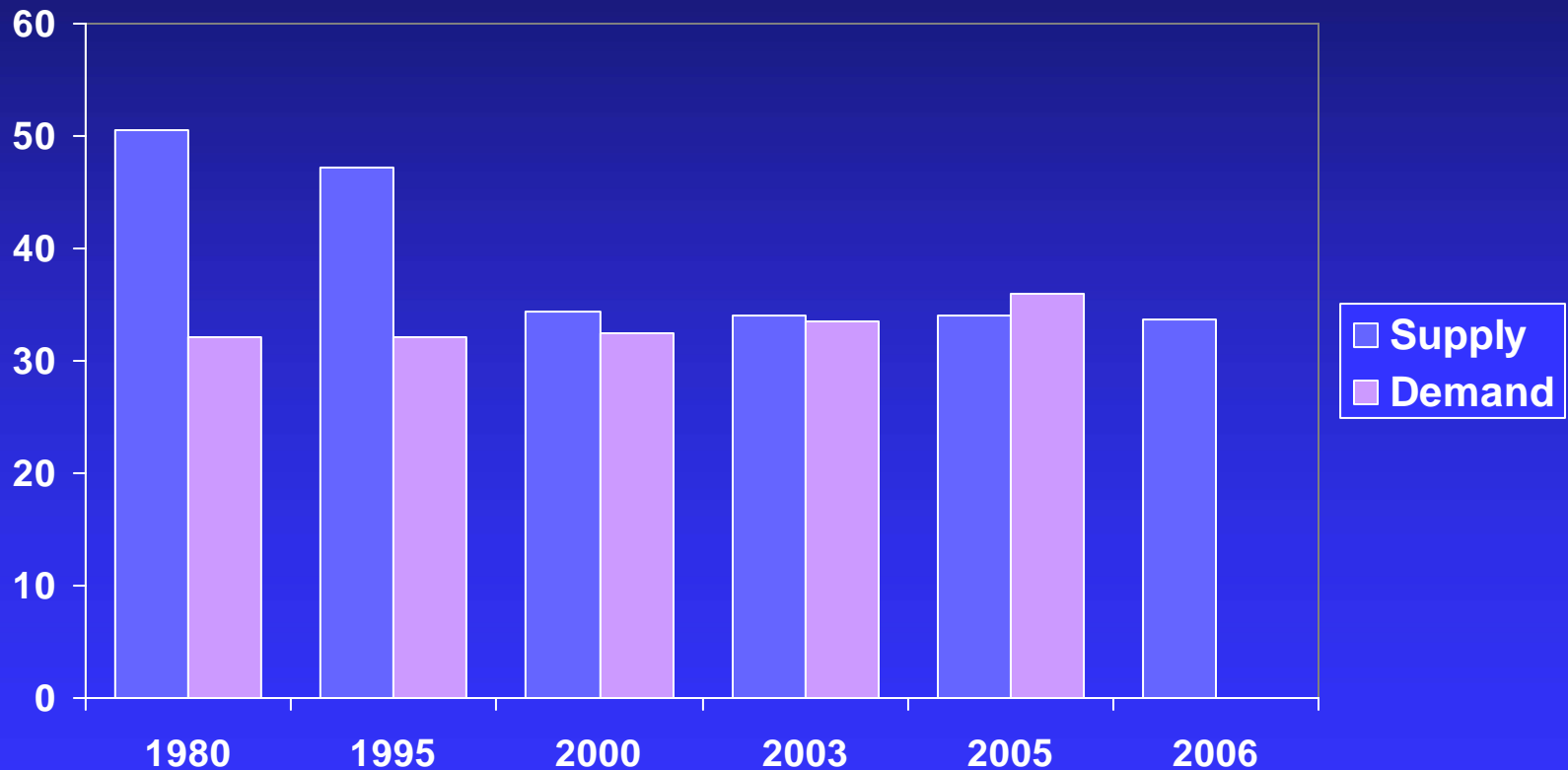


# U. S. Product Demand, MB/D



# Historical Asphalt Supply/Demand

Millions Tons - Liquid

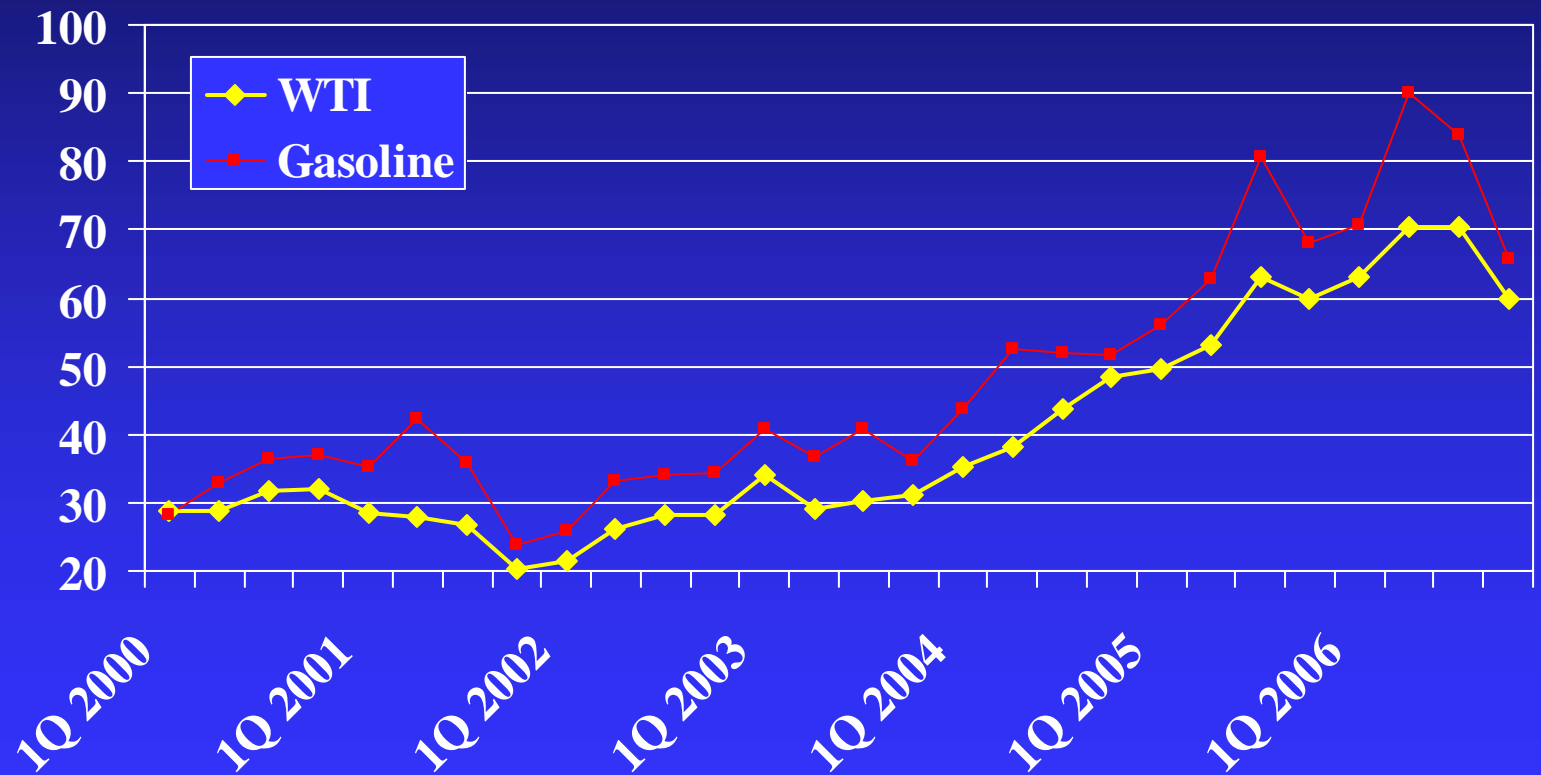


Source: Oil & Gas Journal

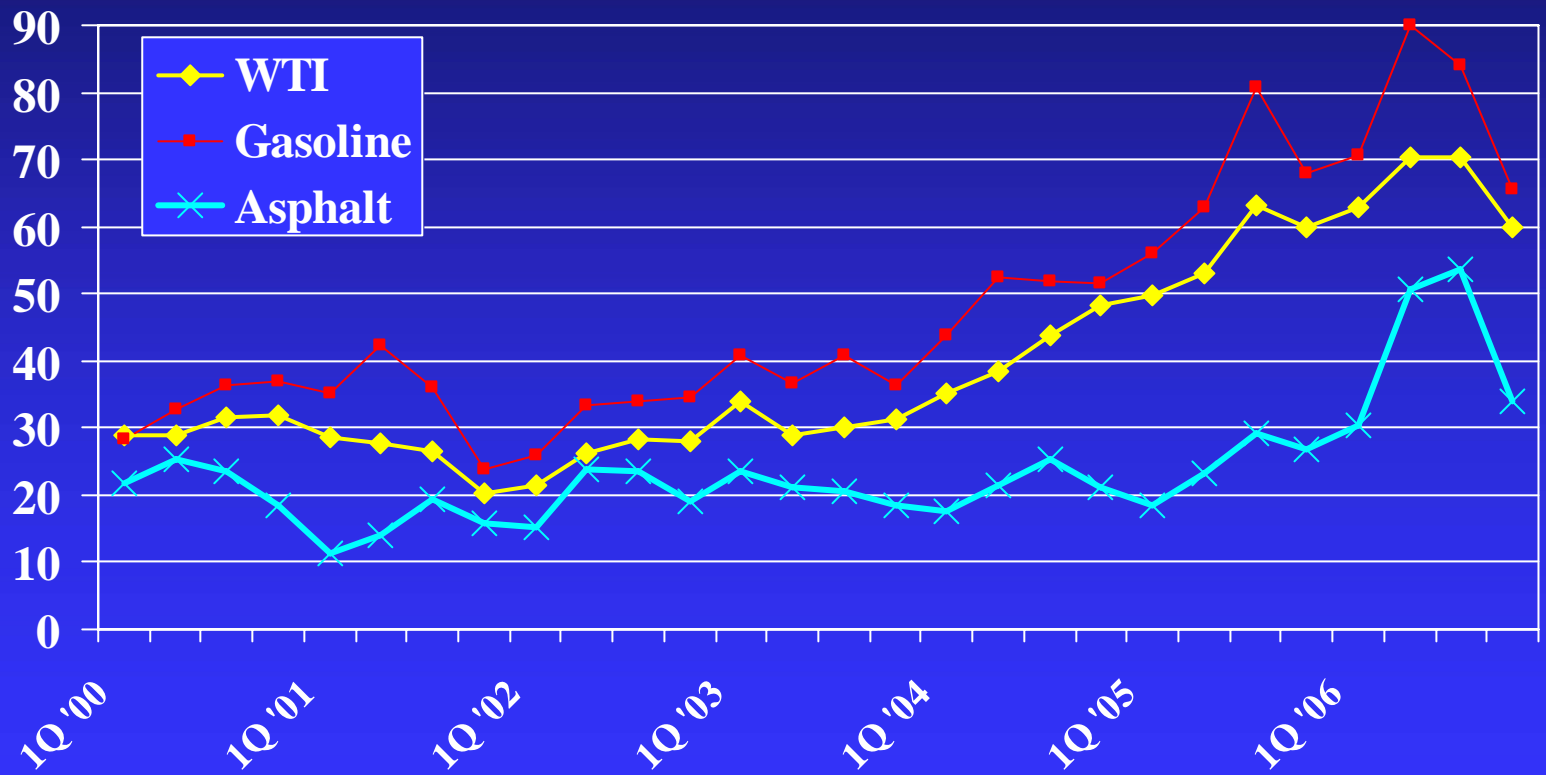
# PRODUCTS PRICING



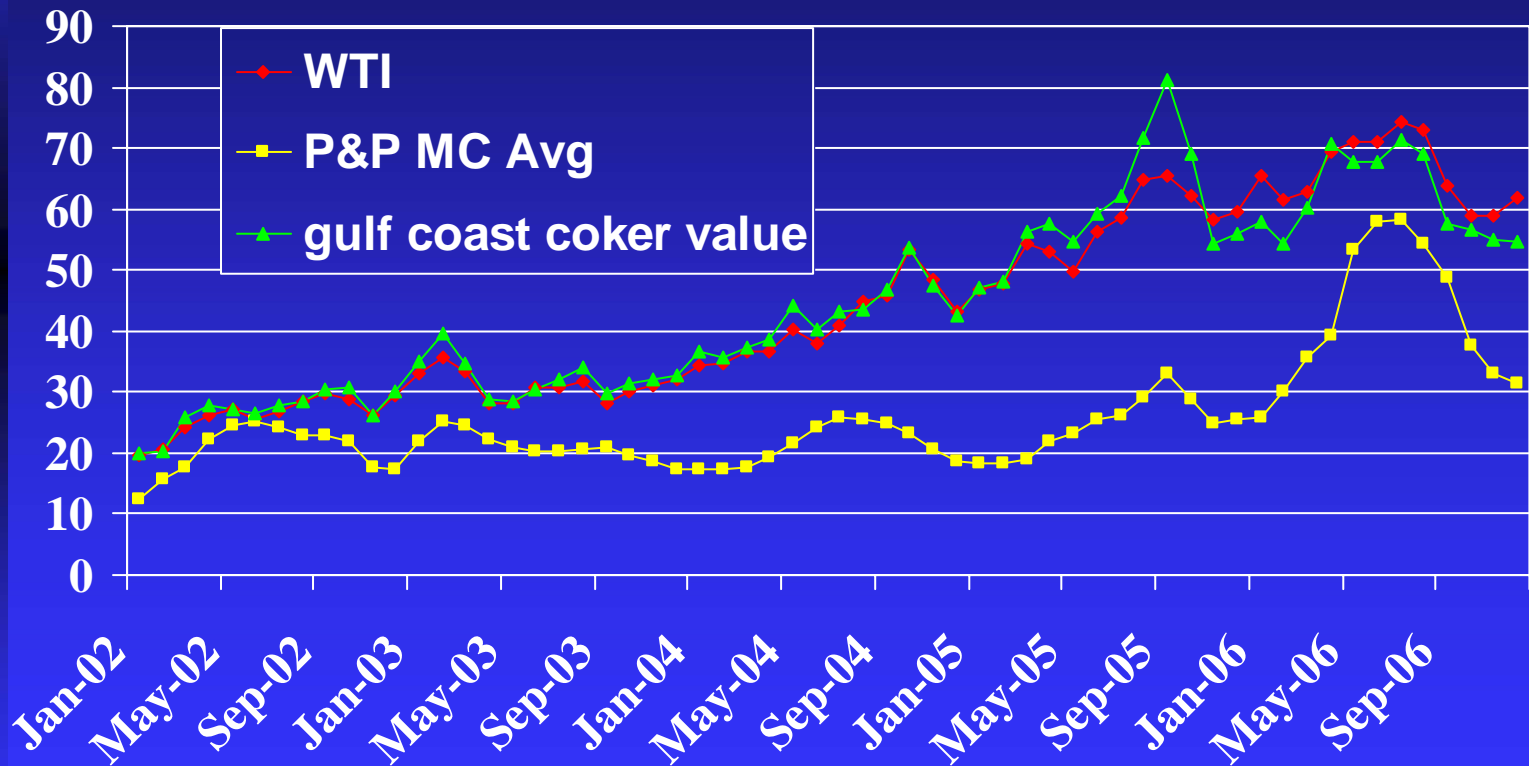
# Prices by Quarter



# Prices by Quarter



# Asphalt vs Coker Feed Value



# Economic Analysis – 2005 YE

## Gasoline/Diesel Pricing

- Jan., 06 Price: \$70.00/BBL
- Less Distribution: 6.00/BBL
- Net to Refinery: \$64.00/BBL

## Kansas Asphalt Pricing

- 12/05 YTD: \$32.94/BBL\*
- (\$35/Ton): 6.25/BBL
- \$26.69/BBL
- Lost Value: \$37.31/BBL

\* Source – Poten & Partners

# Coking Economics – 2005 YE

- 30,000 BBLs/Day Asphalt Production
- X 70% Gasoil Production
- 21,000 BBLs Gasoil for Gasoline/Diesel
- X \$37.31/BBL Gasoline/Diesel diff. To Asphalt
- \$783,510 per day added margin
- \$1 Billion / \$783,510 = 1,276 days (3.5 years payoff)

# Economic Analysis – Recent Update

## Gasoline/Diesel Pricing

- Jan., 07 Price: \$62.75/BBL
- Less Distribution: 6.00/BBL
- Net to Refinery: \$56.75/BBL

## Kansas Asphalt Pricing

- 12/06 MTD: \$49.11/BBL\*
- (\$35/Ton): 6.25/BBL
- \$42.86/BBL
- Lost Value: \$13.89/BBL

\* Source – Poten & Partners

# Coking Economics – Recent Update

- 30,000 BBLs/Day Asphalt Production
- X 70% Gasoil Production
- 21,000 BBLs Gasoil for Gasoline/Diesel
- X \$13.89/BBL Gasoline/Diesel diff. To Asphalt
- \$291,690 per day added margin
- \$1 Billion / \$291,690 = 3,428 days (9.4 years payoff)

# FUTURE OF THE INDUSTRY



# Current Realities

- Crude production at maximum rates based on existing infrastructure
- U.S. refining running at maximum capacity
- No new refineries in the near term
- Existing refinery expansions must fill gap
- Increase crude capacity and conversion capabilities to meet light product demand
- Asphalt must keep pace with conversion feed values to encourage production
- Asphalt not as politically charged as fuels

# Factors Influencing Asphalt Price

- Absolute price of crude (WTI benchmark)
- Light/Heavy crude price differential
- Light product “crack spread”
- Coking economics
- Impact of clean fuels (sweet crudes)
- Heavy crude availability (Venezuela)
- Transportation costs
- Supply/Demand

# Future For Asphalt

- More heavy crude being run (availability and price)
- Clean fuels capital behind refiners, up-graders next?
- Asphalt is more expensive in a \$60.00+ crude world
- Asphalt has to trend faster with crude oil prices
- Asphalt has to be more competitive with light products
- Transportation costs rising – Rail, Barge, Terminalling
- Refiners less willing to shoulder price risk
- State asphalt price indexes reduce supplier/contractor risk

# QUESTIONS

# Worldwide Coker Additions

- Refinery Coker Additions – 1,570M Barrels
- Crude Upgraders - 1,214M
- Total Resid Destruction - 2,784M\*

\*Reduces world asphalt and #6 oil supply

Source – Argus Asphalt Report

# Light-Heavy Product Price Spread Drives Refinery Investment Cycle

