

# ASPHALT SUPPLY IN A VOLATILE OIL WORLD

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# Issues to be Discussed

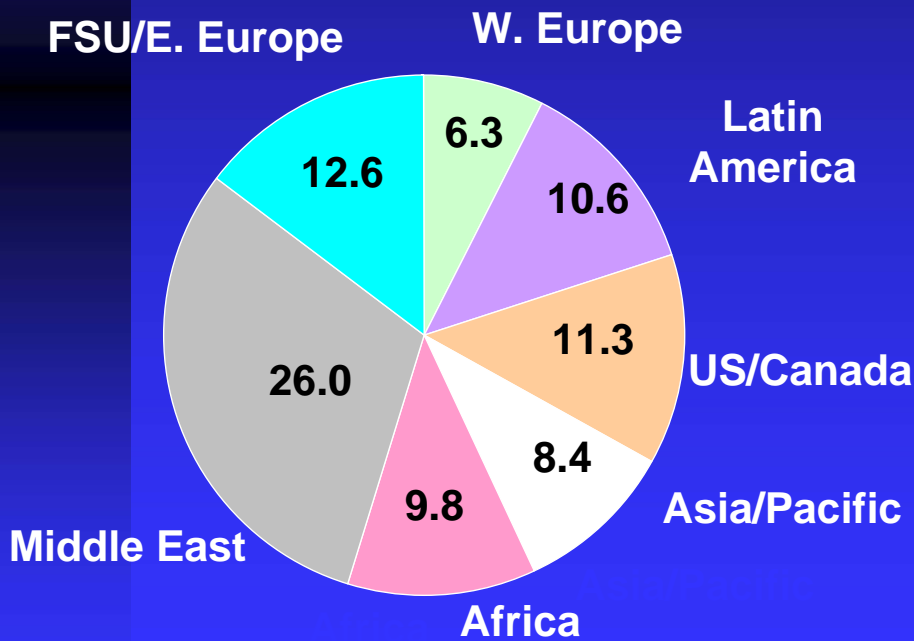
- Crude Oil Supply
- Crude Oil Pricing
- Refining Capacity
- Products Supply
- Products Pricing
- Future of the Industry

# CRUDE OIL SUPPLY

A WORLD LOOK

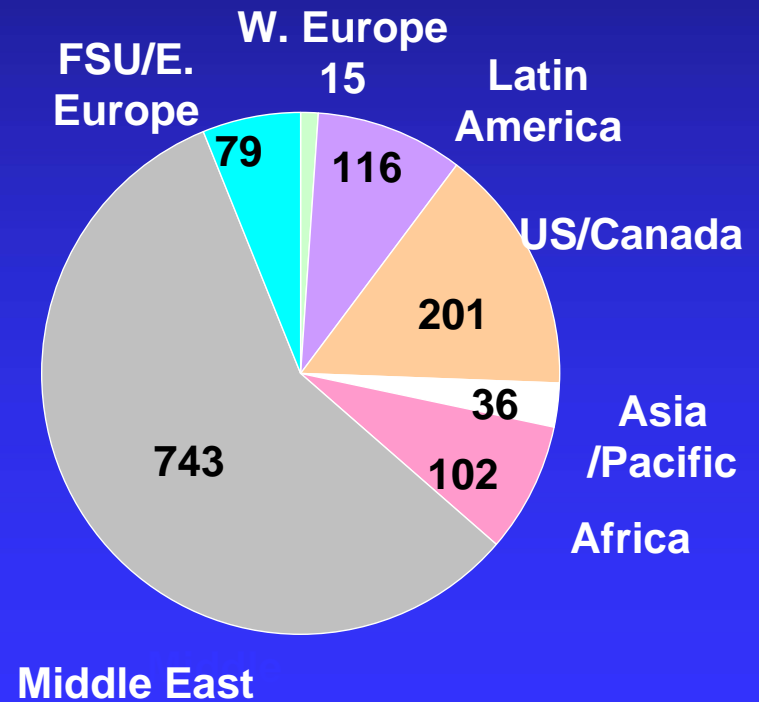
# Crude Oil Supply (2006)

## World Crude Oil Production Millions of Barrels Per Day



Total: 85MMB/D

## World Proven Crude Oil Reserves Billions of Barrels



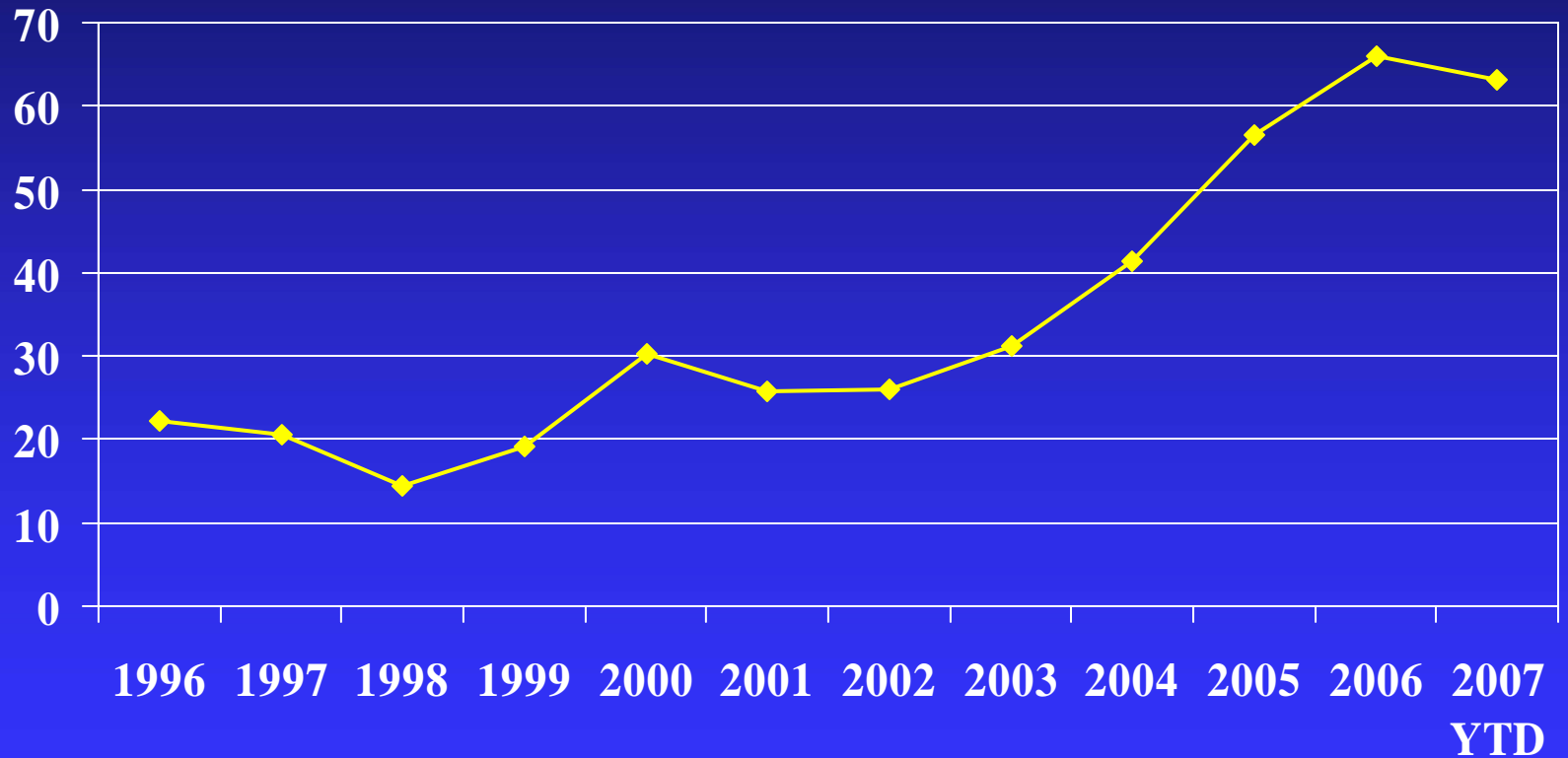
Total: 1,292 BB

# Crude Oil Demand

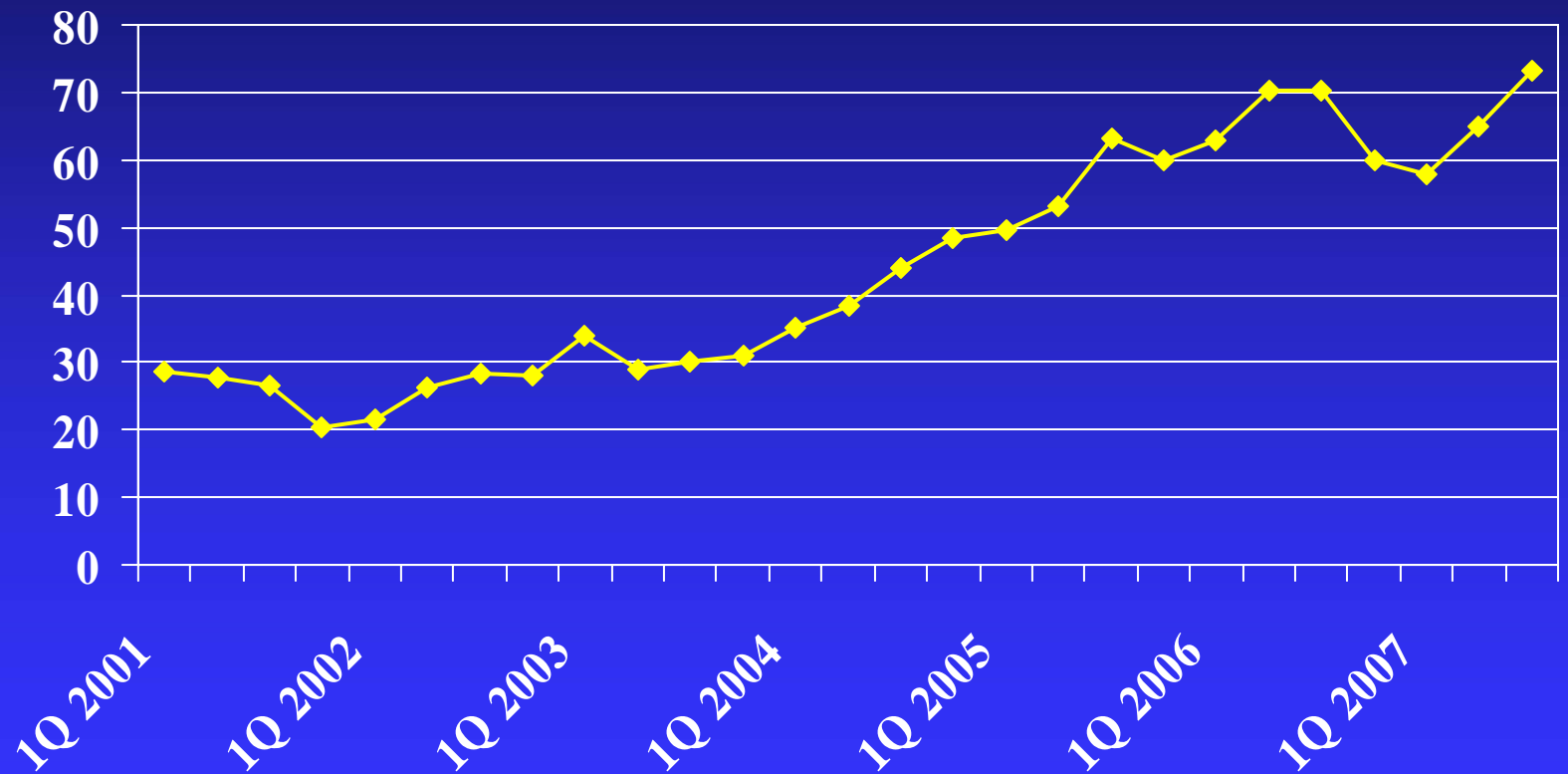
- Demand has risen by 7 MMB/D (9%) since 2002.
- Demand at 85 MMB/D or 98% of world daily delivery capacity.
- Vulnerable to supply disruptions caused by storms, accidents, breakdowns, political unrest.
- 65% of proven reserves within national oil companies and 16% held by Russia.
- Traditional companies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

# CRUDE OIL PRICING

# WTI Price by Year

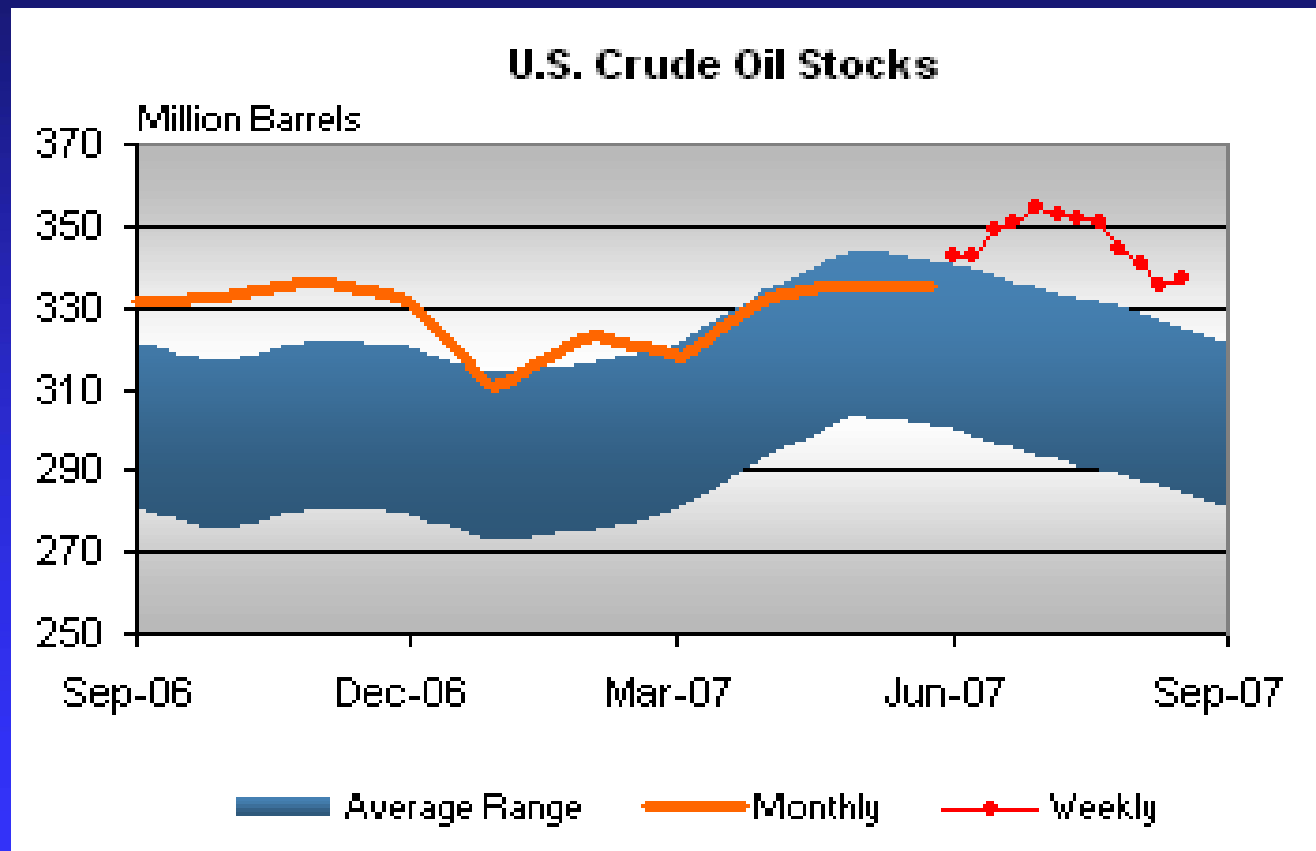


# WTI Price by Quarter



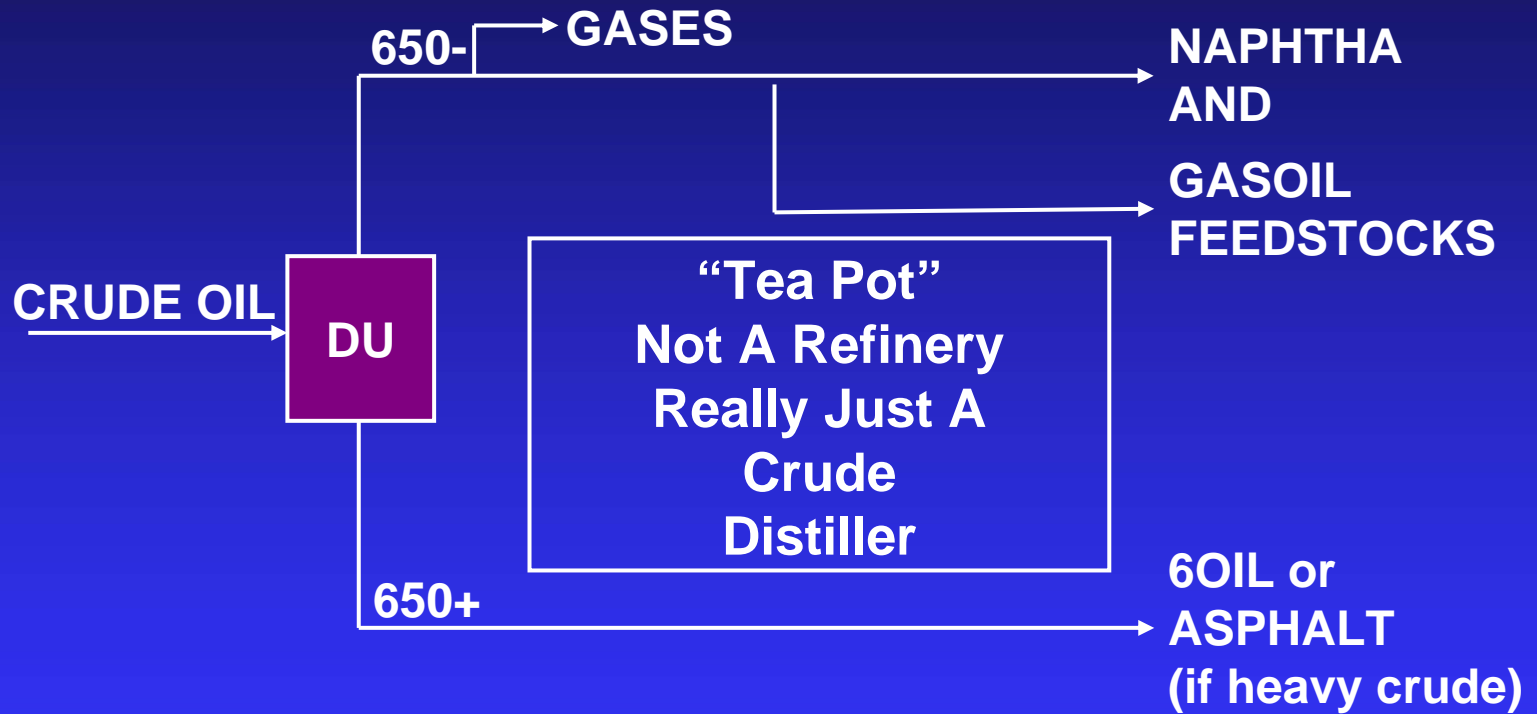


# Current Crude Pricing

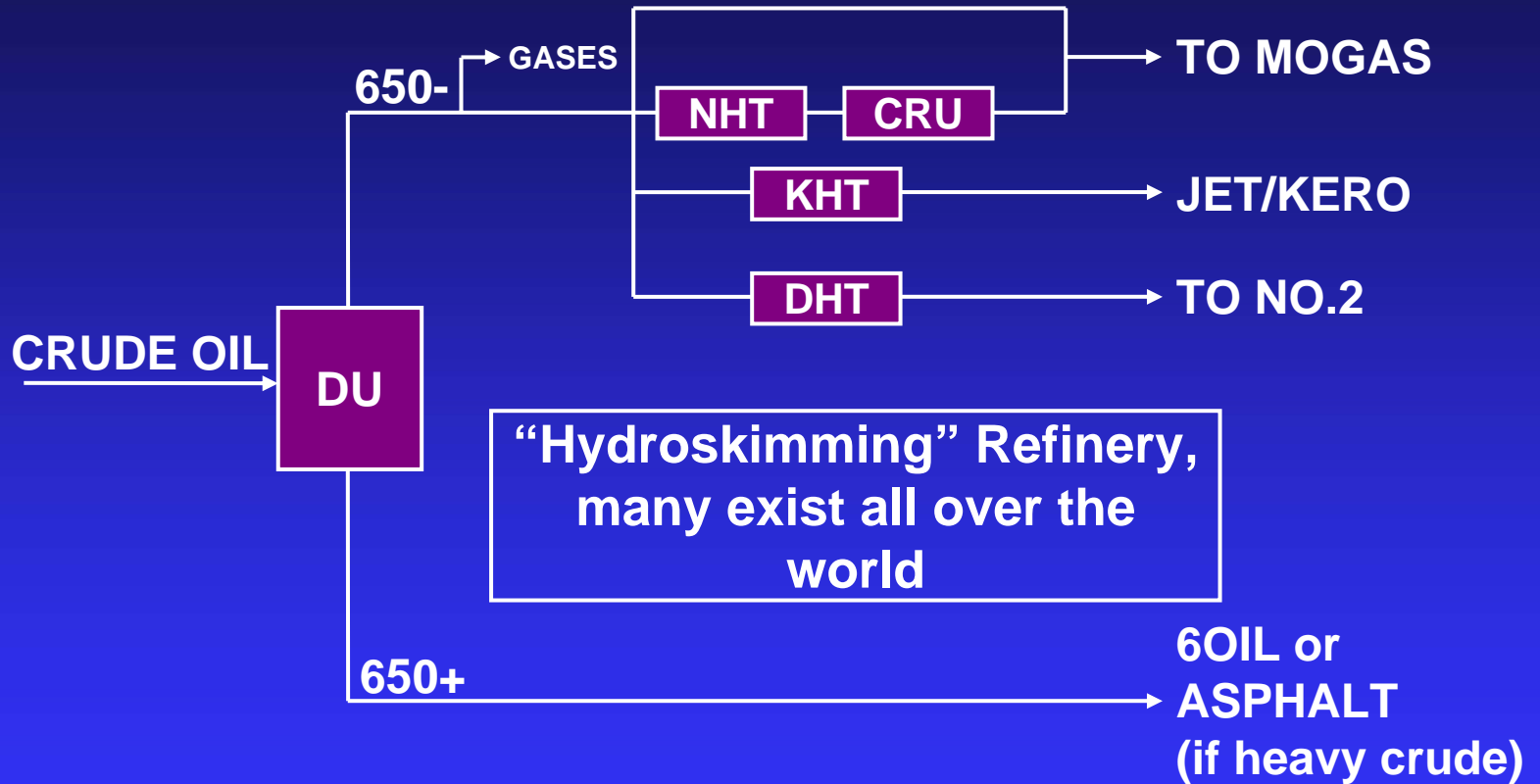


# REFINING CAPACITY

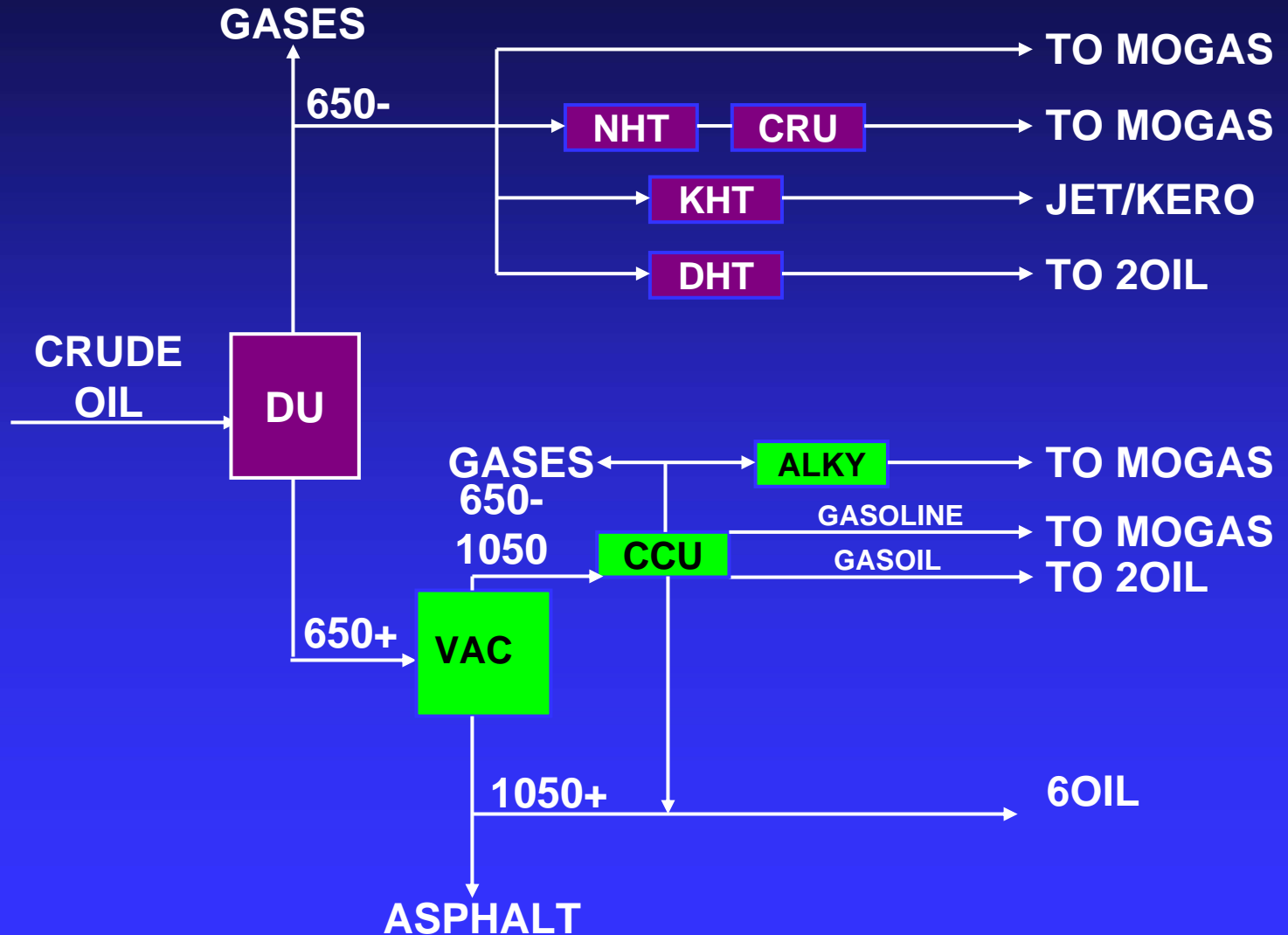
# Topping Refinery



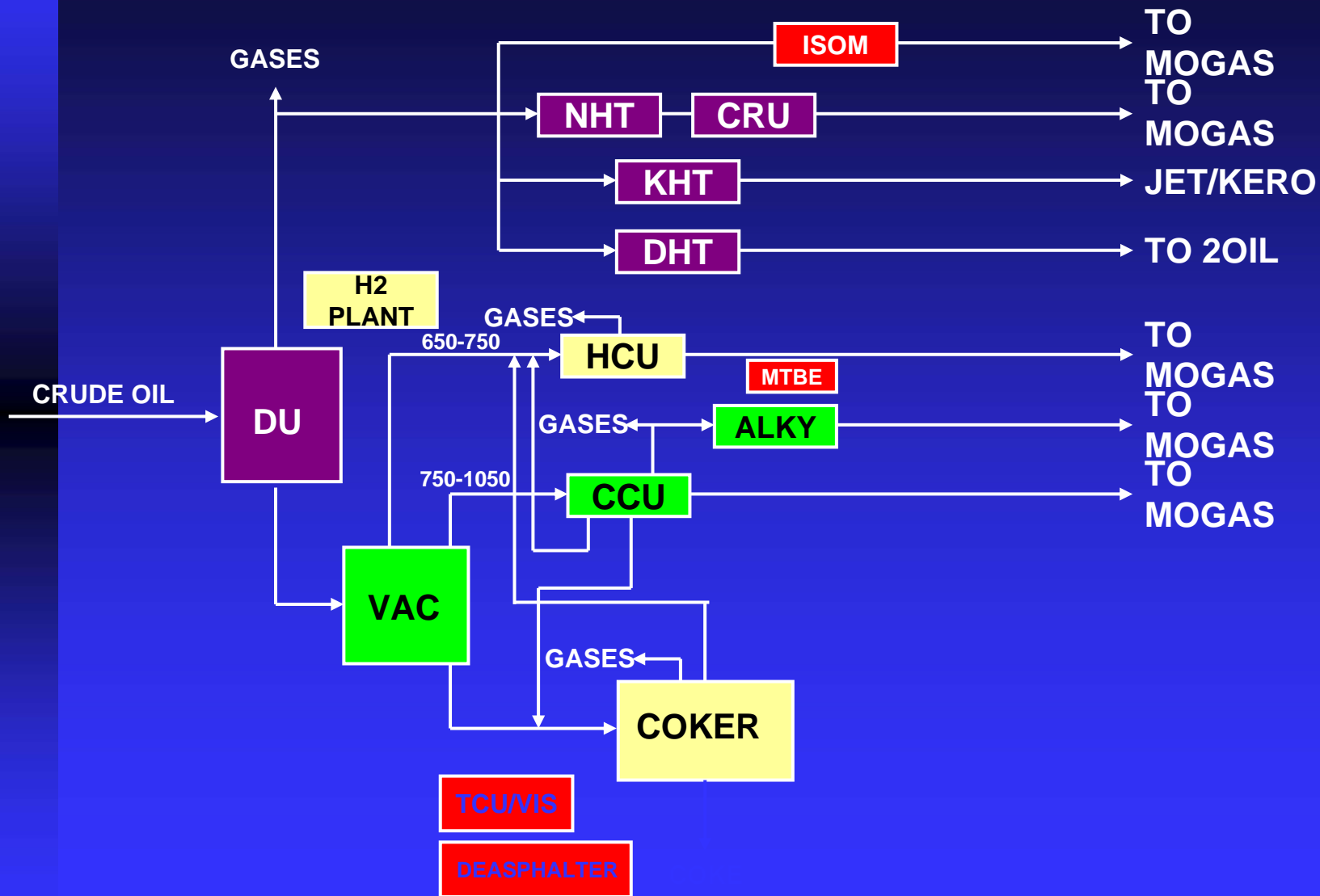
# Simple Refinery



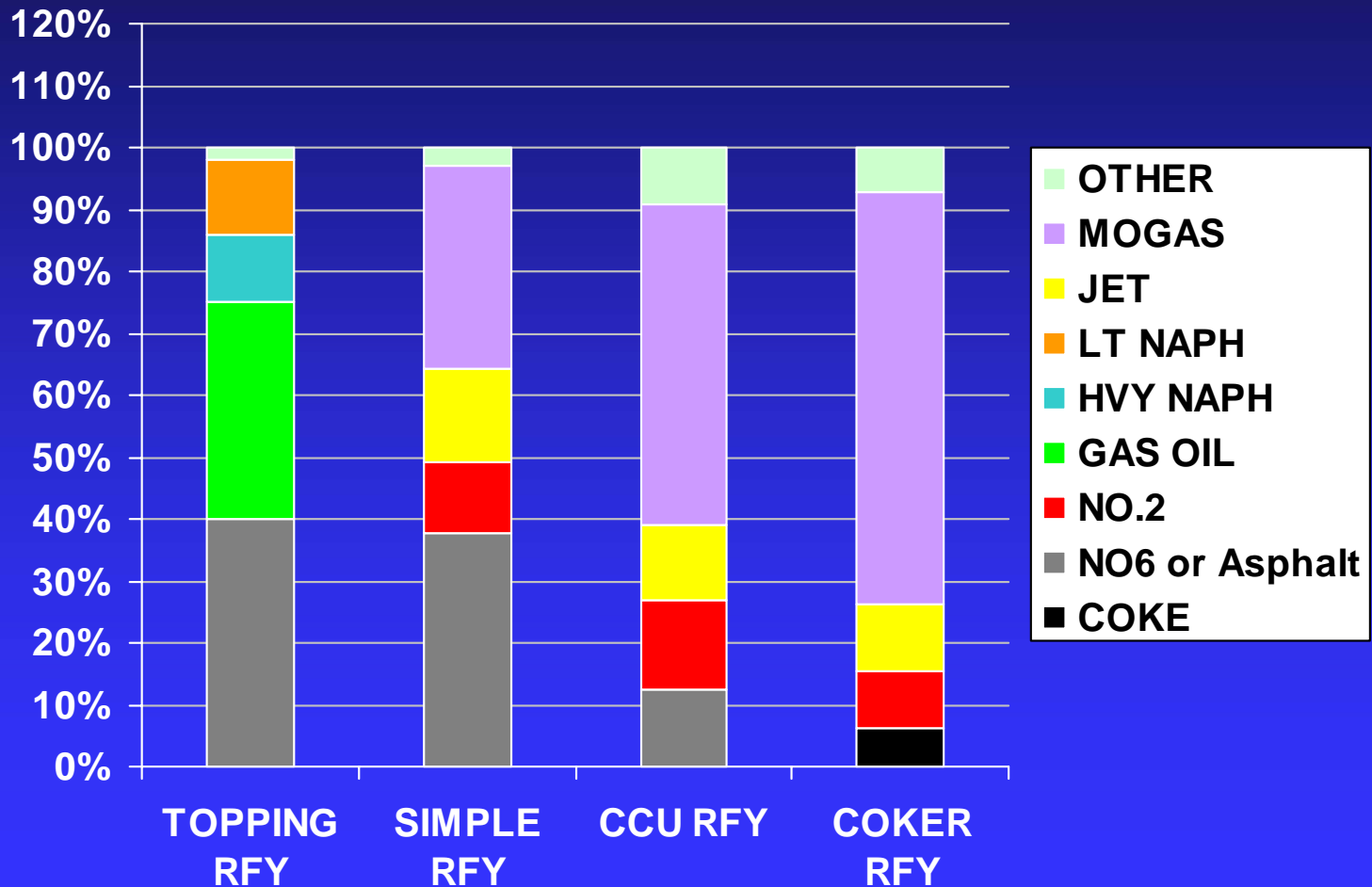
# CCU - "Complex" Refinery



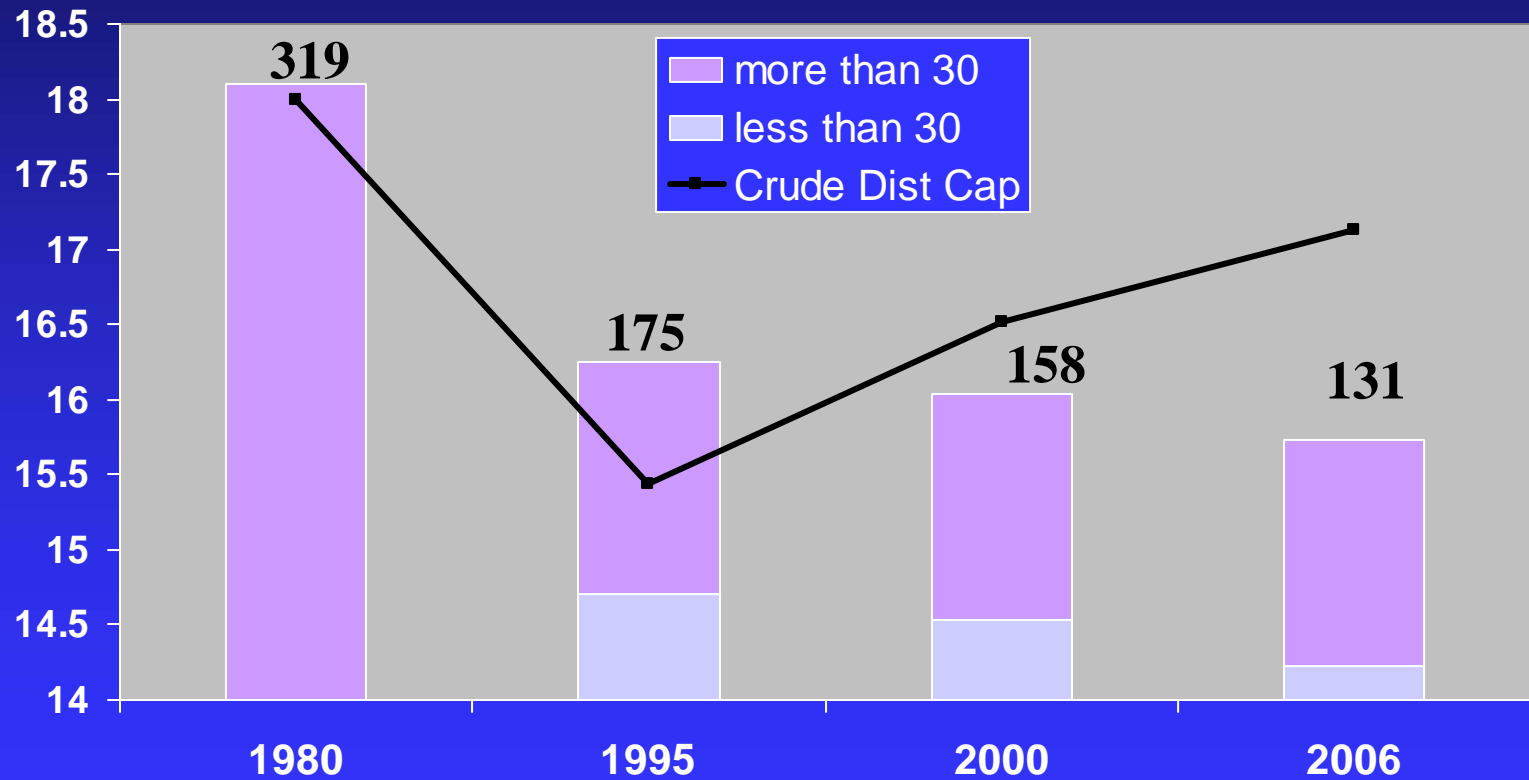
# CCU/HCU/Coker - “Very Complex” Refinery



# Refinery Yield (% of Crude Intake)



# U. S. Refining Capacity

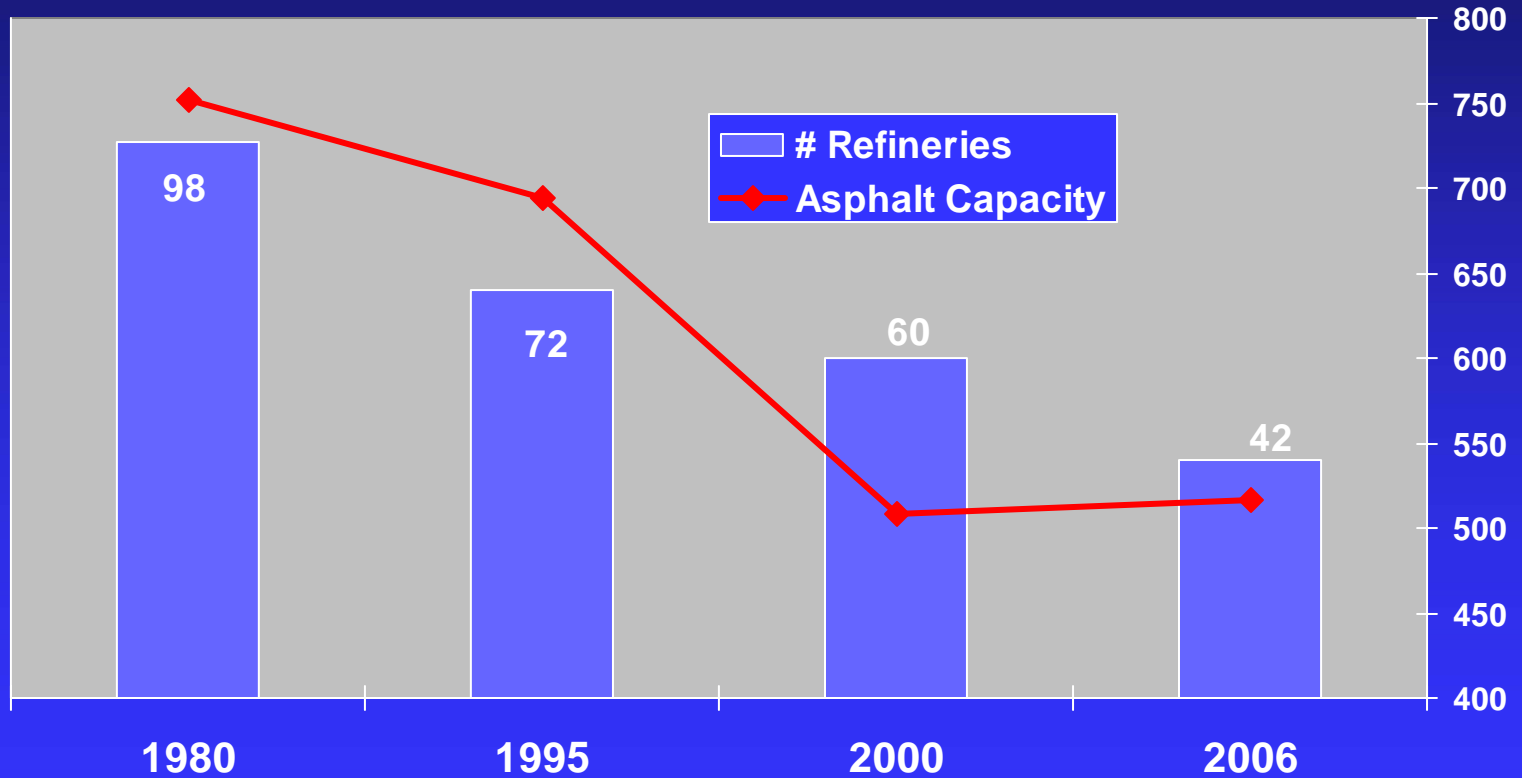


Last New U. S. Refinery Built in 1976

Source: Oil & Gas Journal



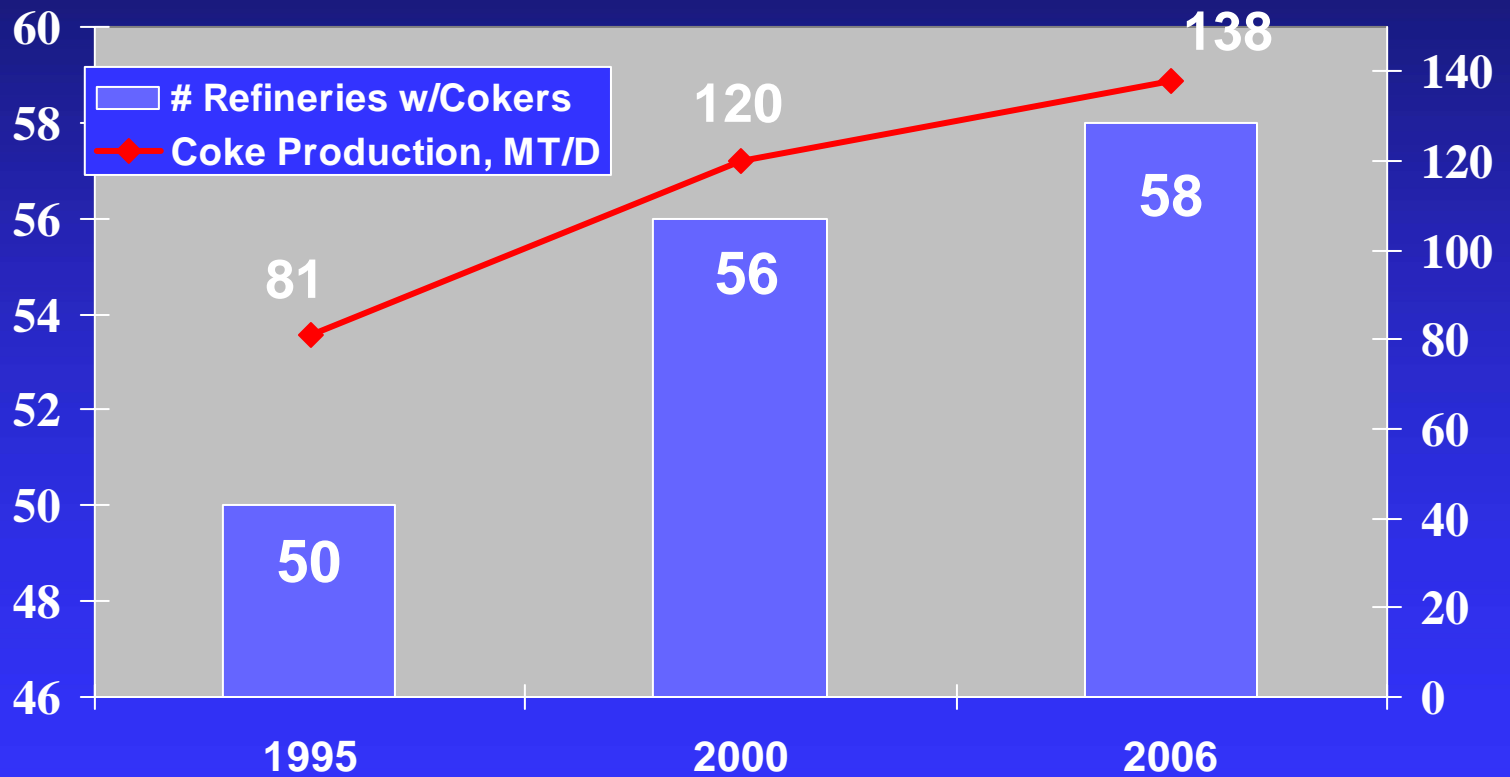
# U. S. Asphalt Refining Capacity



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

Source: Oil & Gas Journal

# U. S. Refining Coking Capacity



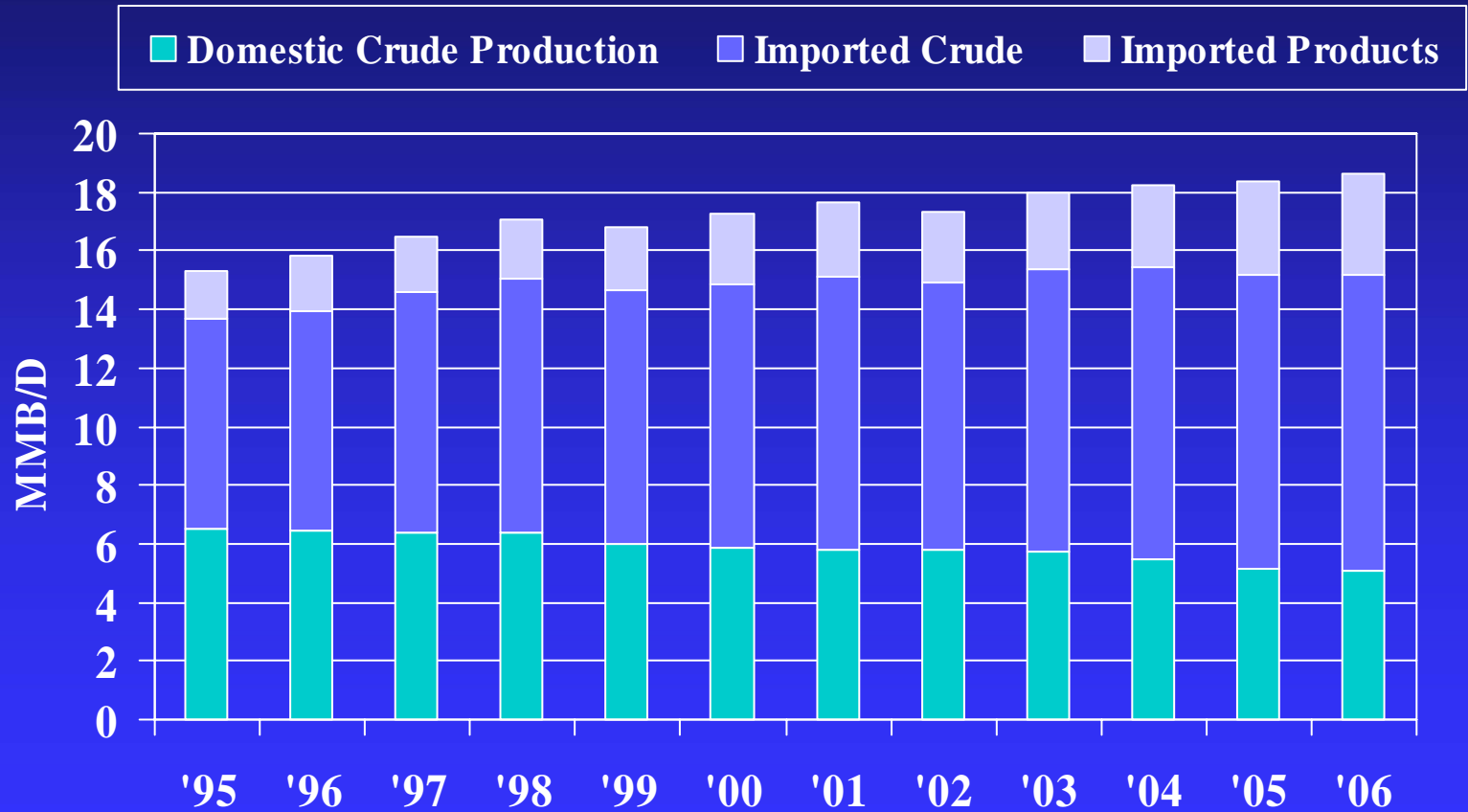
# U.S. Coker Construction Projects 2005 - 2011

- Planning, Engineering, or Construction Phase
  - Total Refineries: 360 MB per day
  - Asphalt Refineries: 197 MB per day

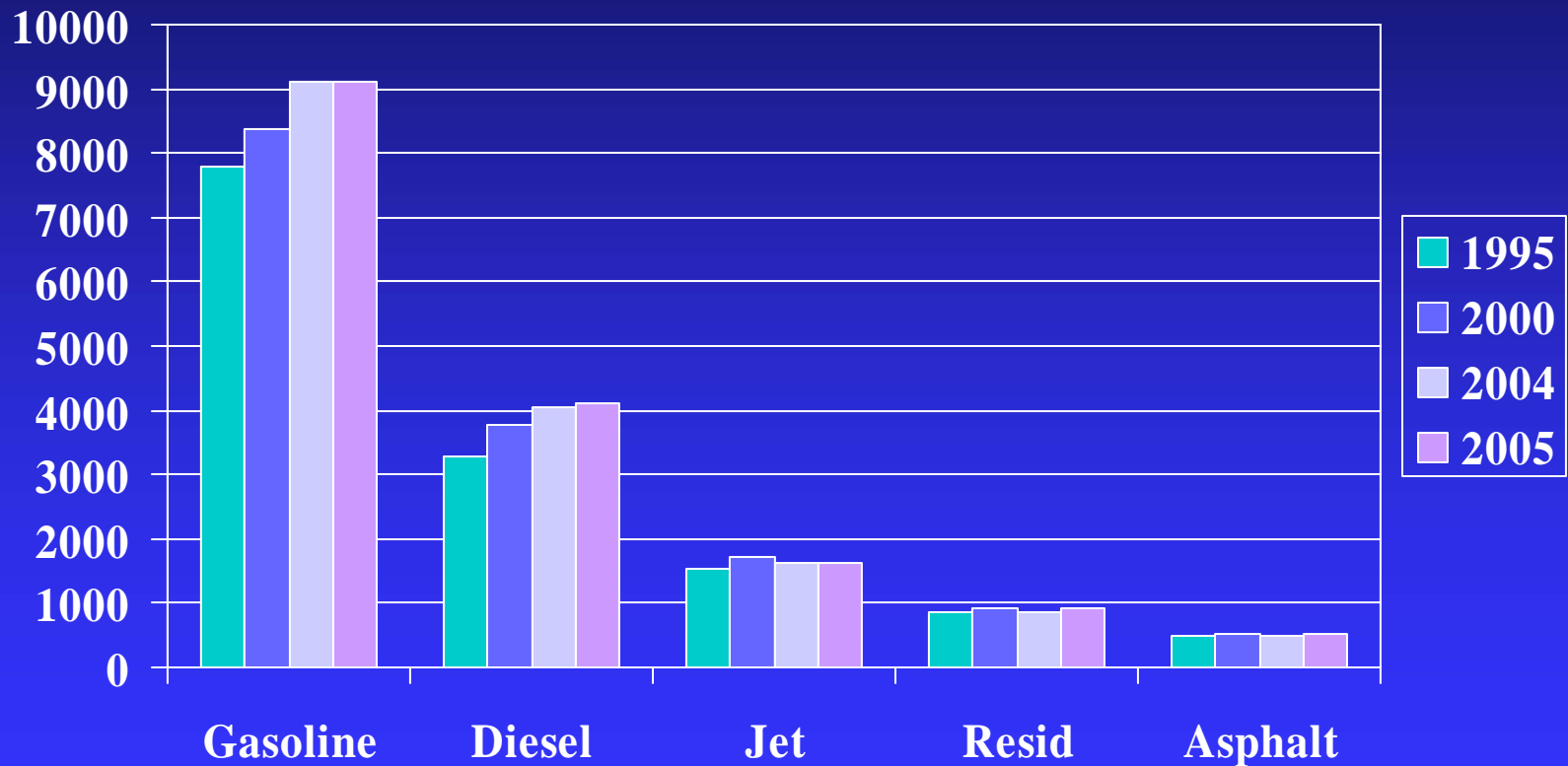
\* Source: Argus Asphalt Report

# PRODUCTS SUPPLY/DEMAND

# Supply Source for U. S. Demand

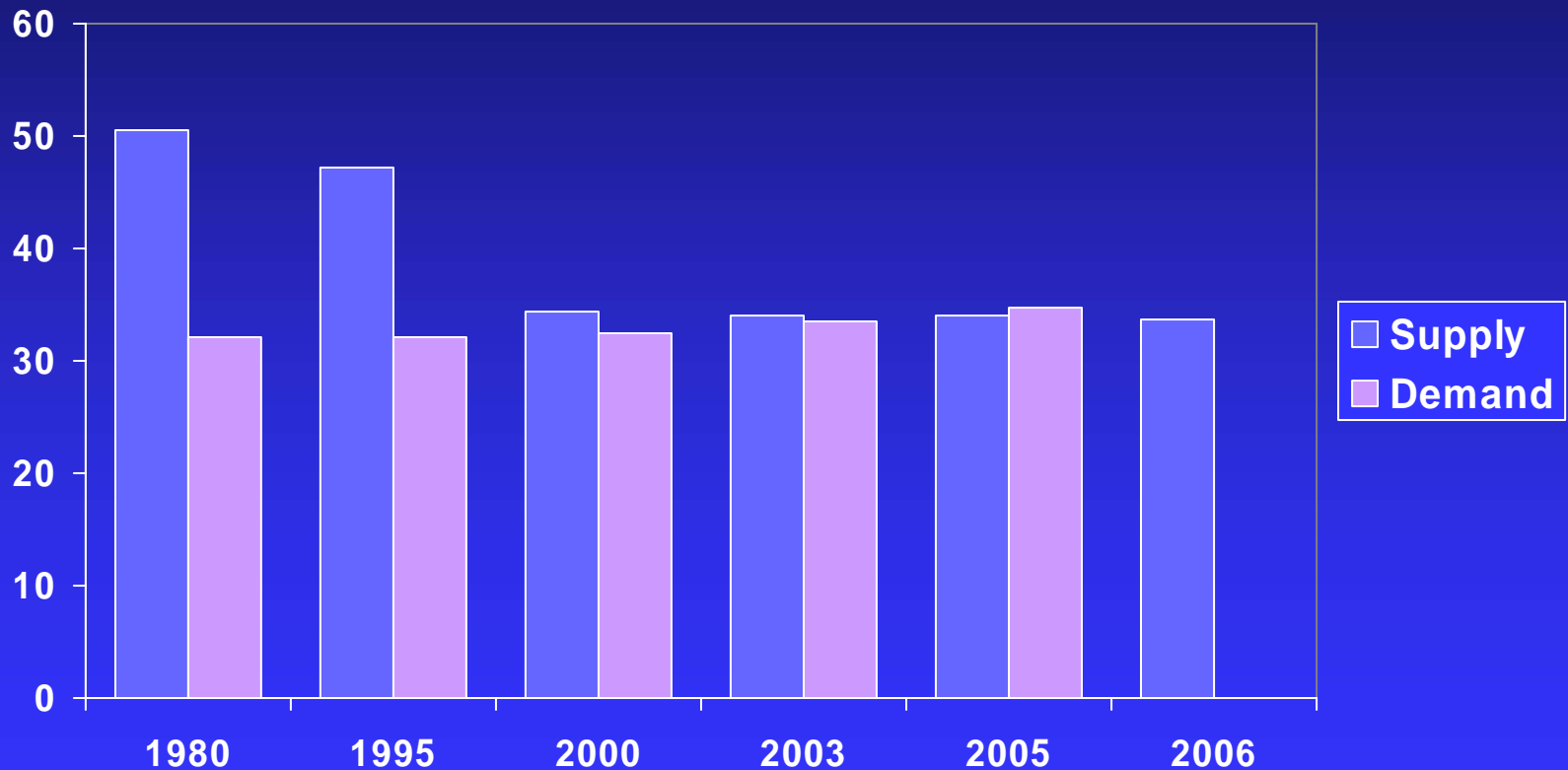


# U. S. Product Demand, MB/D



# Historical Asphalt Supply/Demand

Millions Tons - Liquid

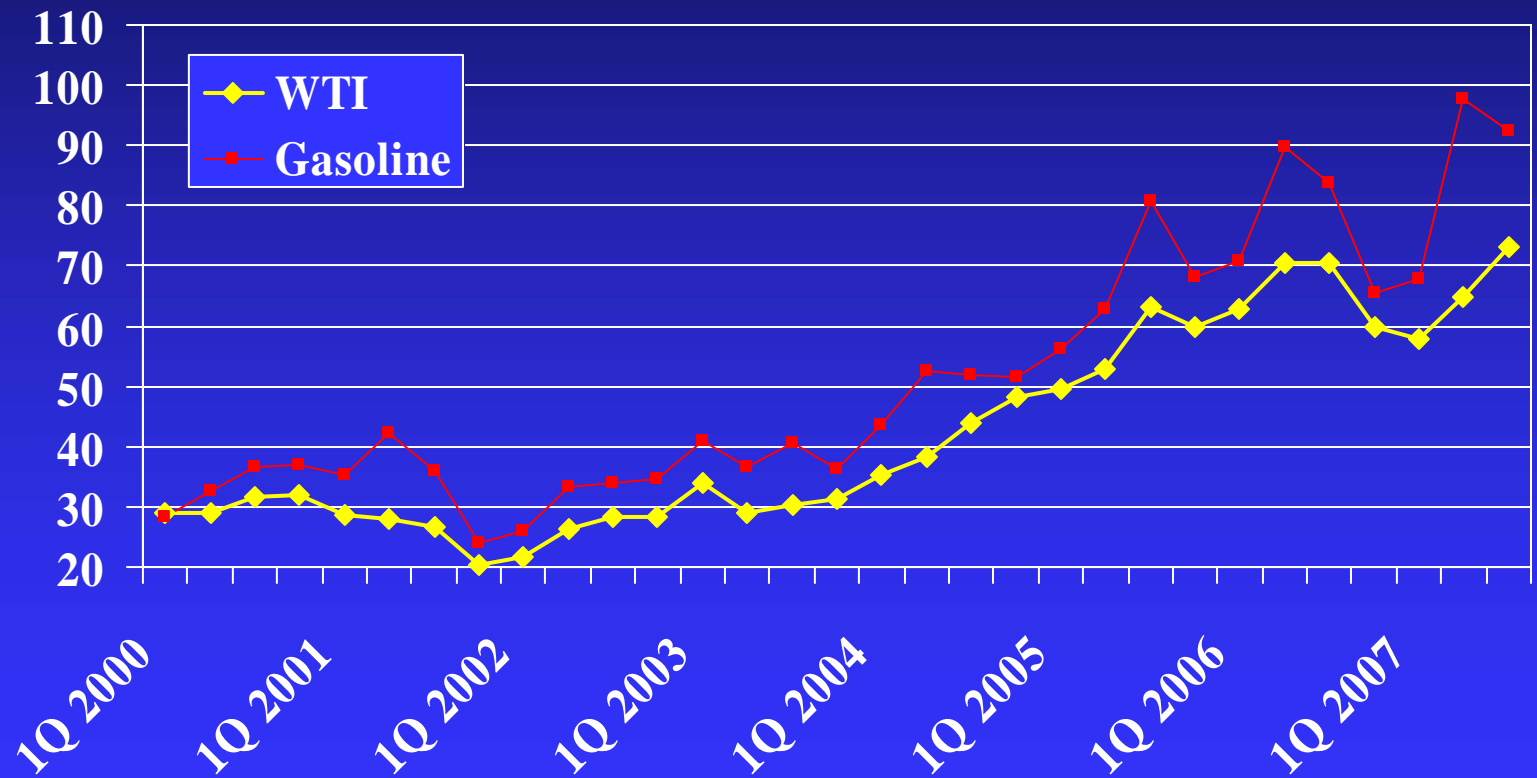


Source: Oil & Gas Journal

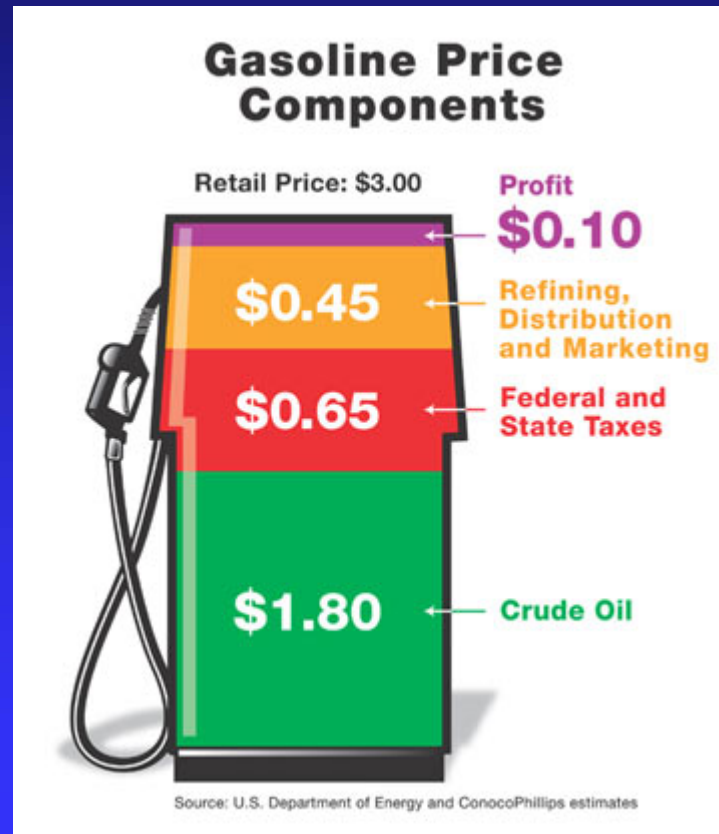
# PRODUCTS PRICING



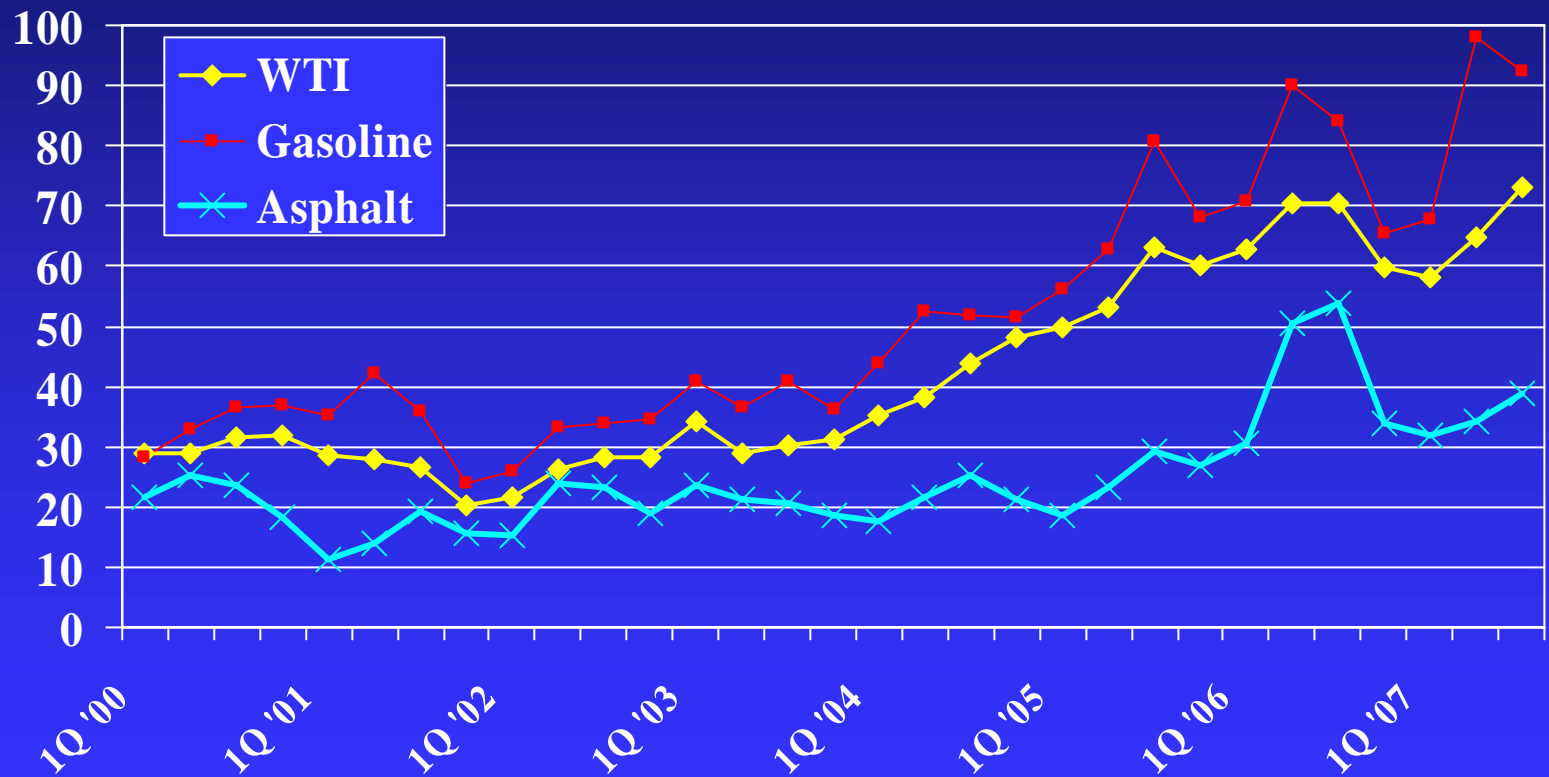
# Prices by Quarter



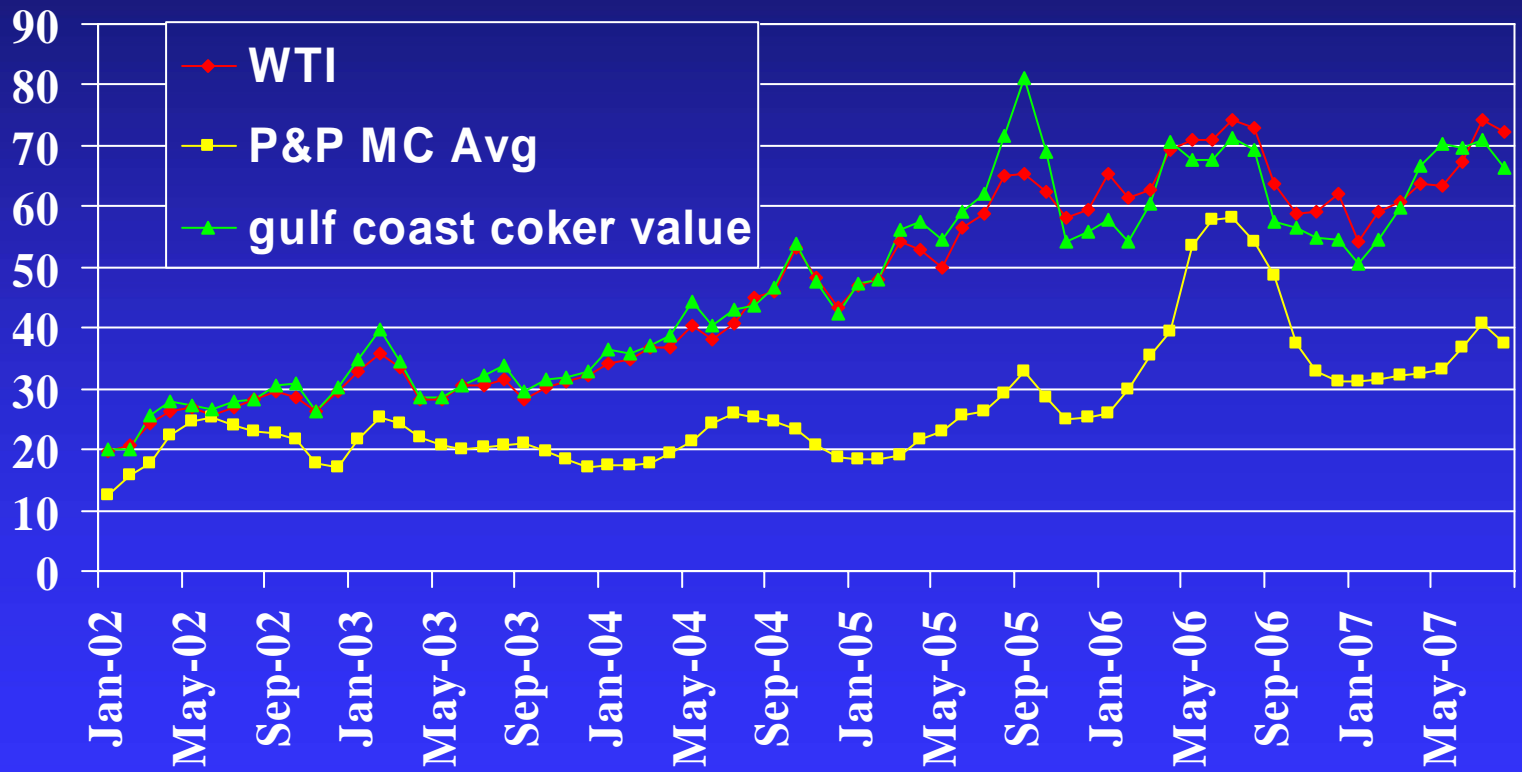
# Gasoline Price Components



# Prices by Quarter



# Asphalt vs Coker Feed Value



# Current Coking Economics

## Gasoline/Diesel Pricing

- Aug., 07 Price: \$95.00/BBL
- Less Distribution: 6.00/BBL
- Net to Refinery: \$89.00/BBL

## Kansas City Asphalt Pricing

- Aug 07: \$54.50/BBL\*
- (\$40/Ton): \$7.15/BBL
- \$47.35/BBL
- Lost Value: \$41.65/BBL

\* Source – Poten & Partners

# Current Coking Economics

- 30,000 BBLs/Day Asphalt Production
- X 70% Gasoil Production
- 21,000 BBLs Gasoil for Gasoline/Diesel
- X \$41.65/BBL Gasoline/Diesel diff. To Asphalt
- \$874,650 per day added margin
- \$1 Billion / \$874,650 = 1,143 days (3.1 years payoff)

# FUTURE OF THE INDUSTRY

# Current Realities

- Crude production at maximum rates based on existing infrastructure
- U.S. refining running at maximum capacity (less turnaround activity)
- 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



# 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/Canadian)
- 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 \$70.00 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
- State asphalt price indexes reduce supplier/contractor risk

# QUESTIONS