ASPHALT SUPPLY IN A VOLATILE OIL WORLD

Bill Haverland

ConocoPhillips Company

Issues to be Discussed

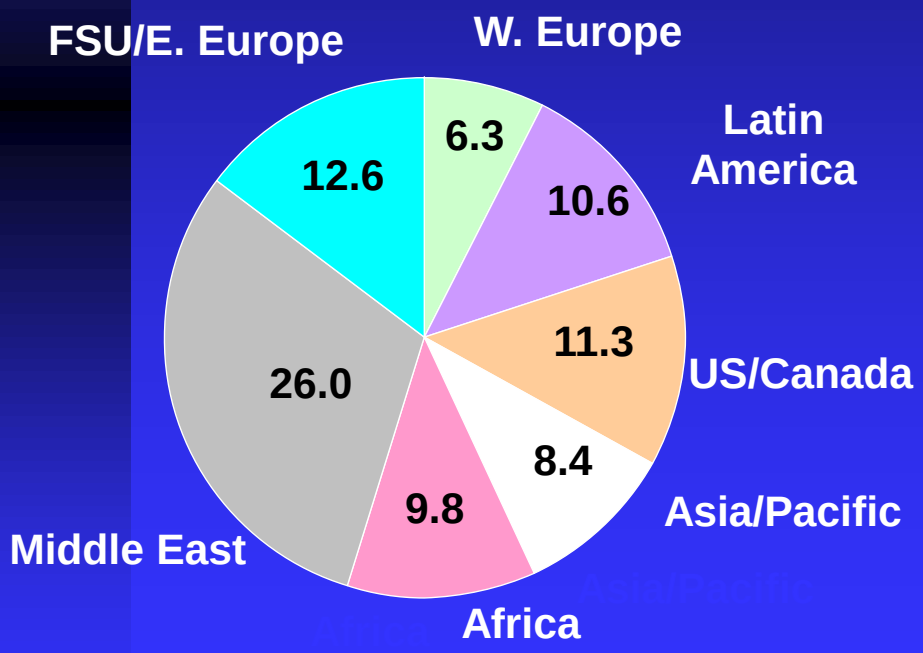
- Crude Oil Supply
- Crude Oil Pricing
- Refining Capacity
- Products Supply
- Products Pricing
- Future of the Industry

CRUDE OIL SUPPLY

A WORLD LOOK

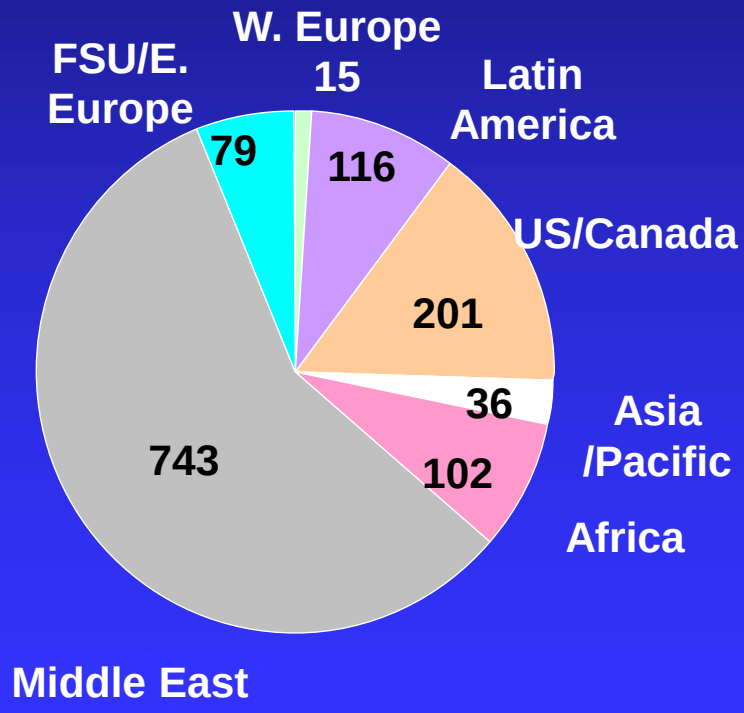
Crude Oil Supply (2006)

World Crude Oil Production
Millions of Barrels Per Day



Total: 85MMB/D

World Proven Crude Oil Reserves
Billions of Barrels



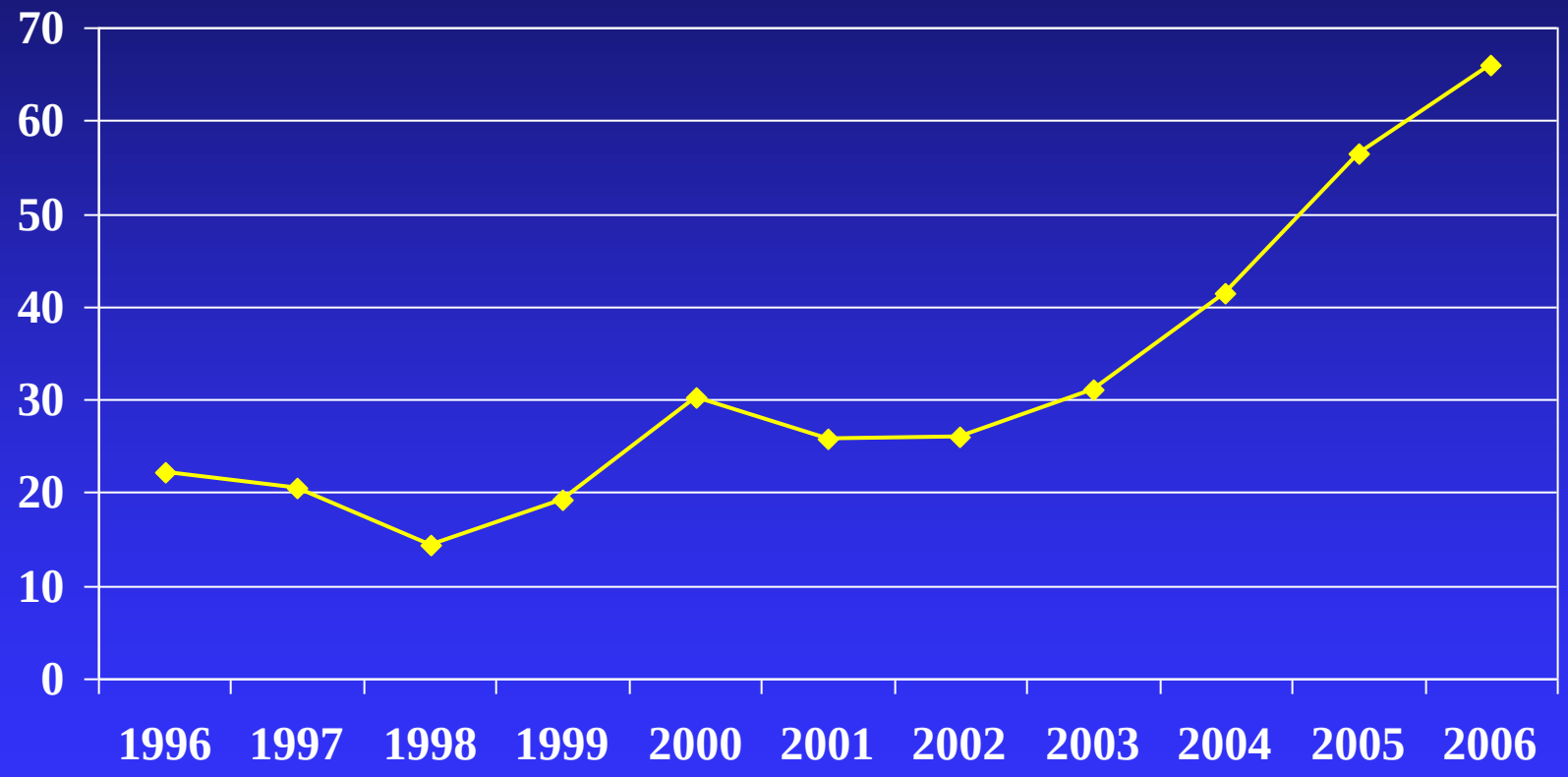
Total: 1,292 BB

Crude Oil Demand

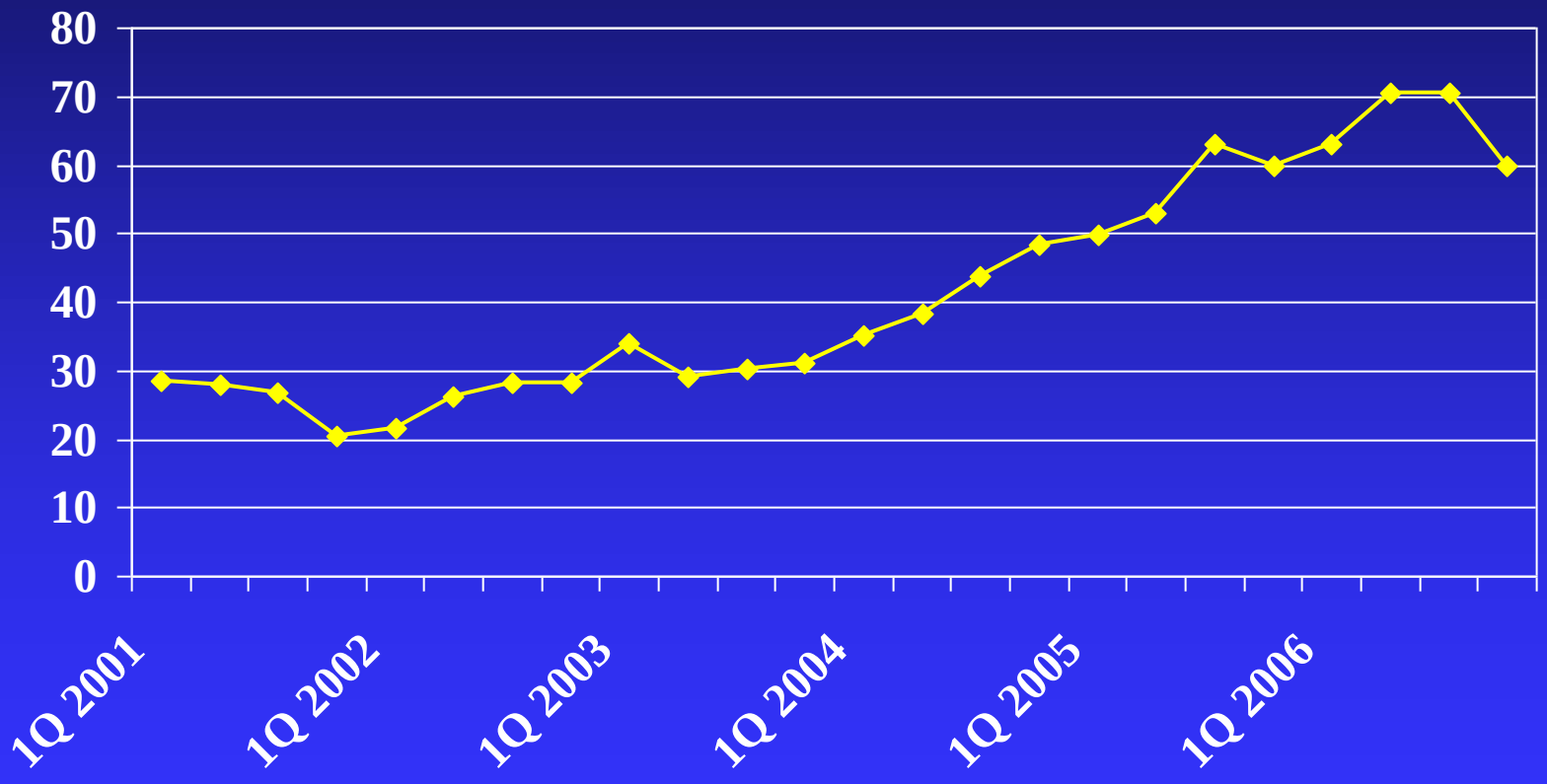
- Demand has risen by 7 MMBD (9%) since 2002.
- Demand at 85 MMBD or 98% of world daily delivery capacity.
- Vulnerable to supply disruptions caused by storms, accidents, breakdowns, political unrest.
- 65% of proven reserves within national oil companies and 16% held by Russia.
- Traditional companies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

CRUDE OIL PRICING

WTI Price by Year

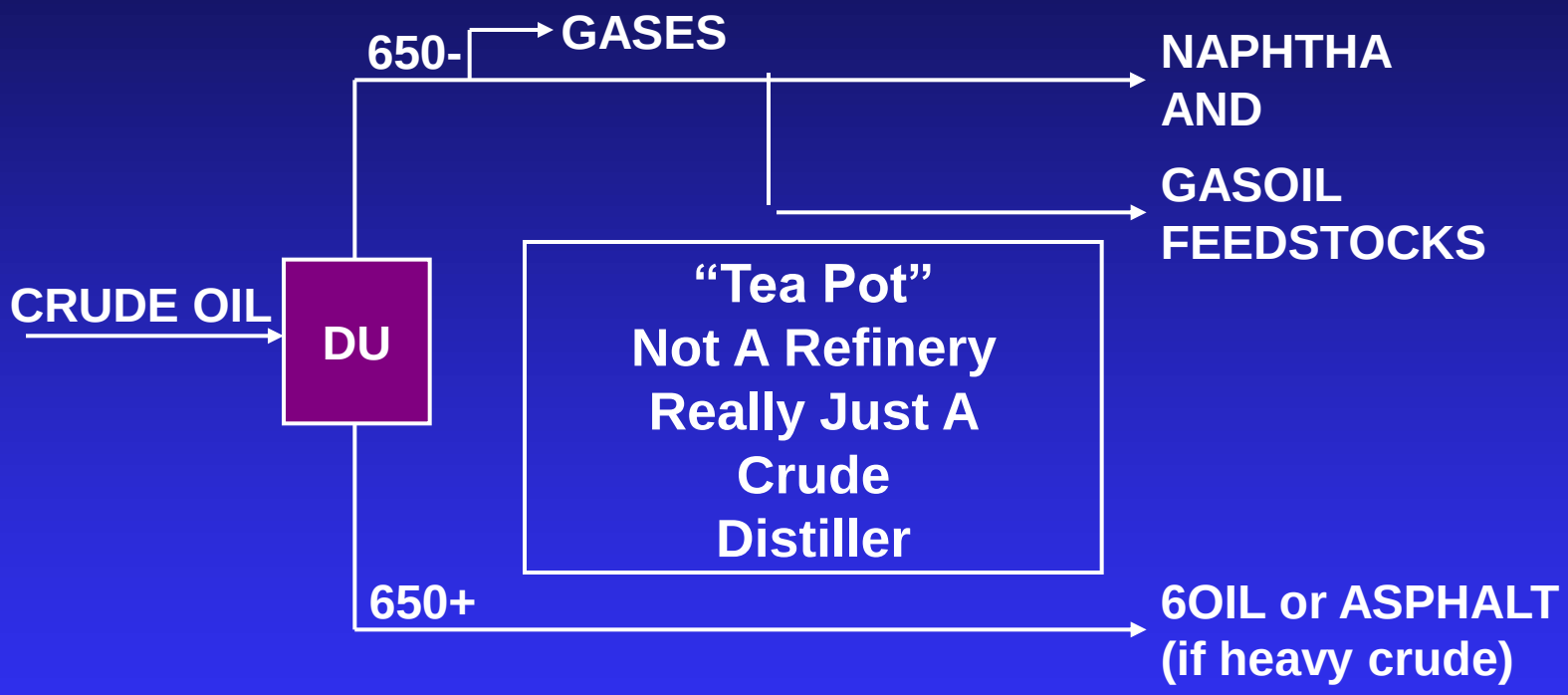


WTI Price by Quarter

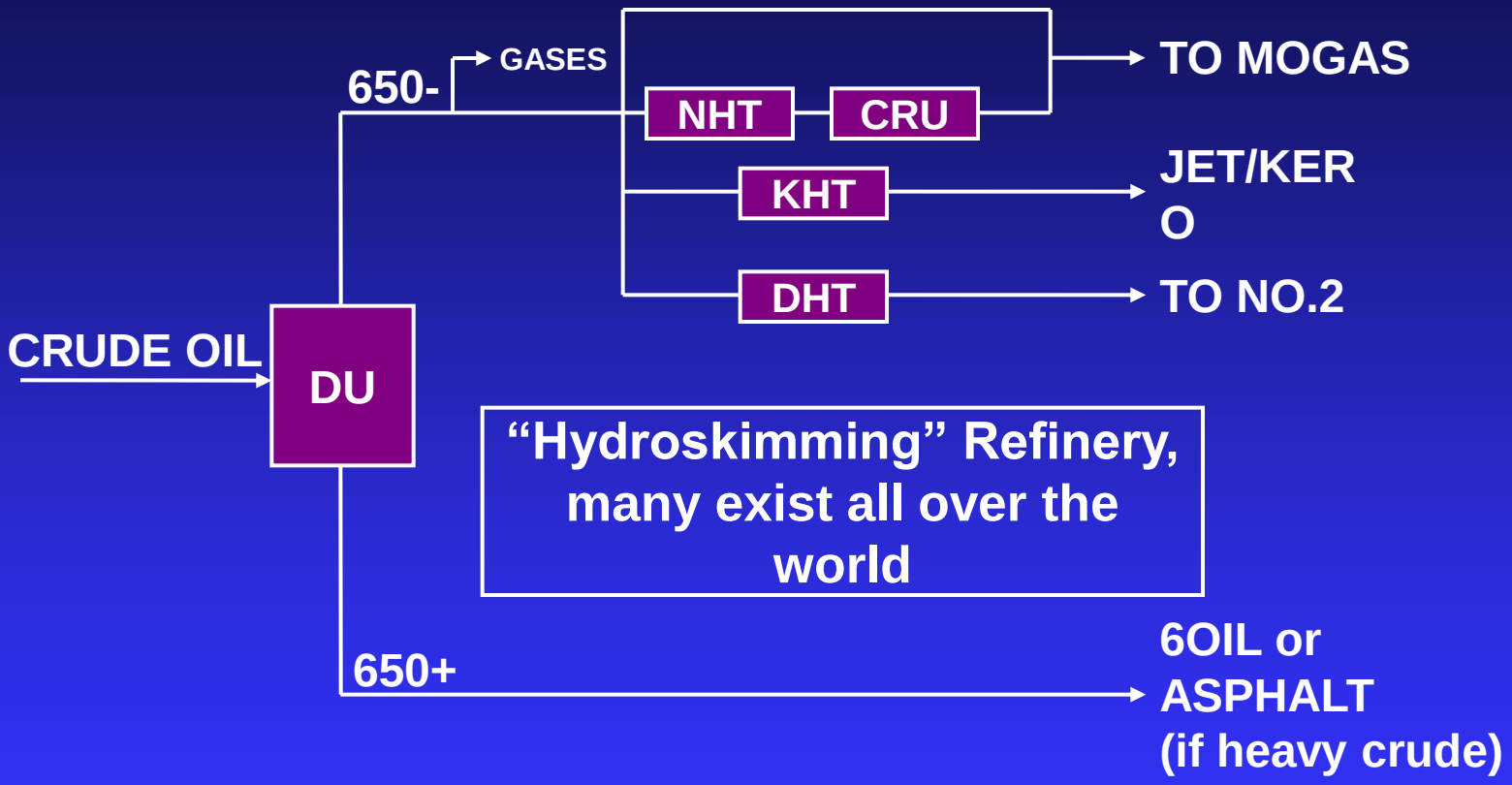


REFINING CAPACITY

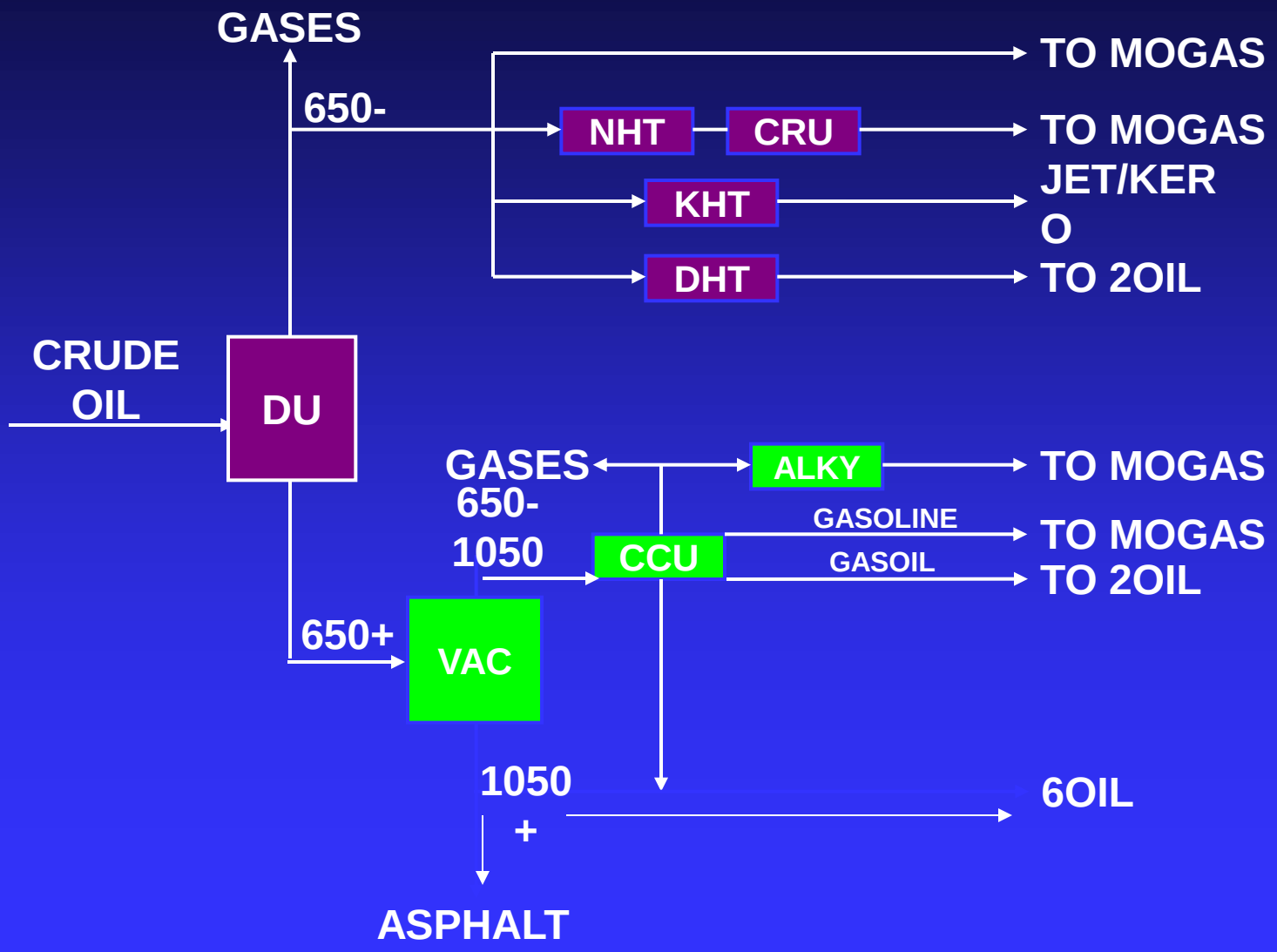
Topping Refinery



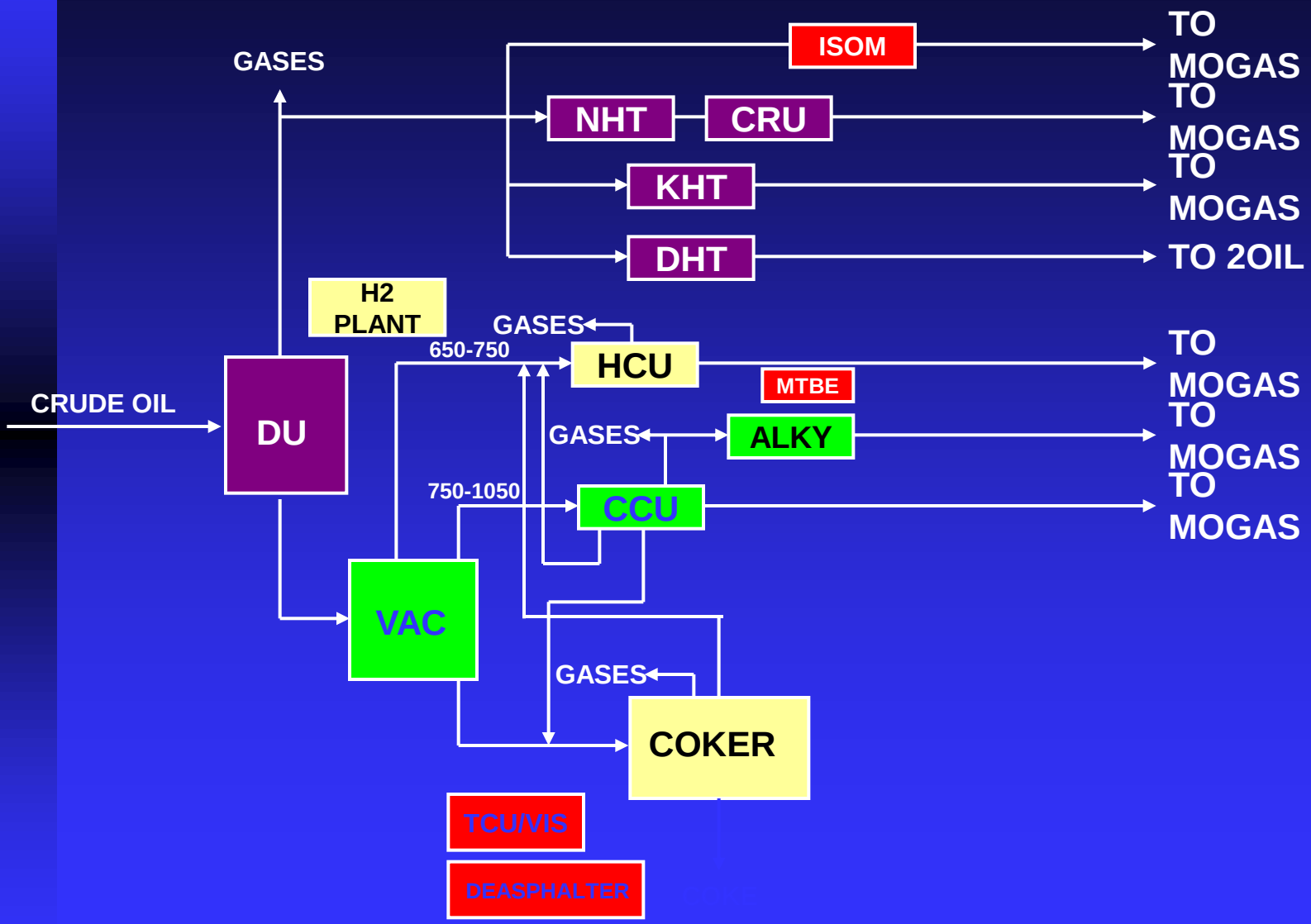
Simple Refinery



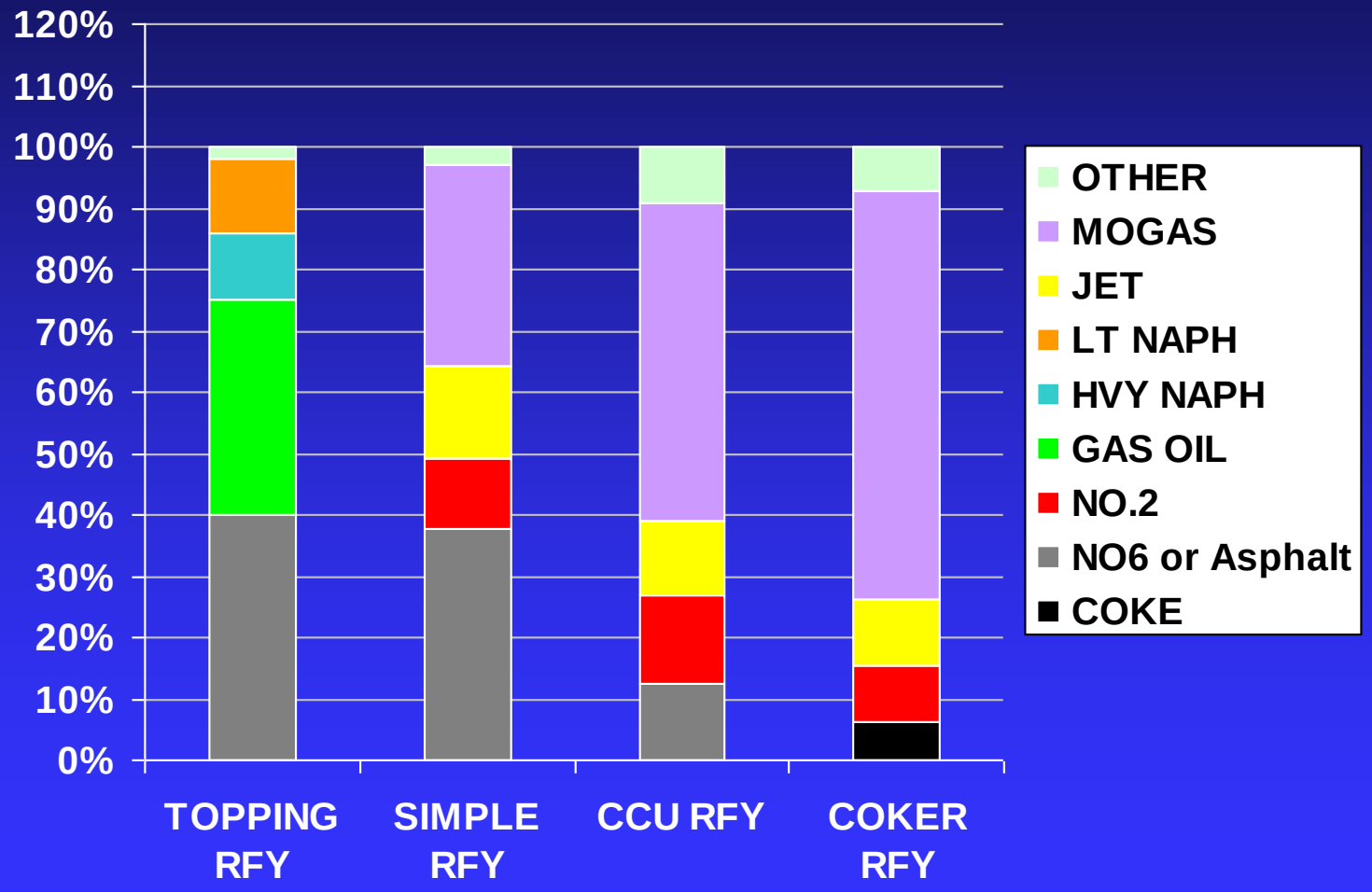
CCU - “Complex” Refinery



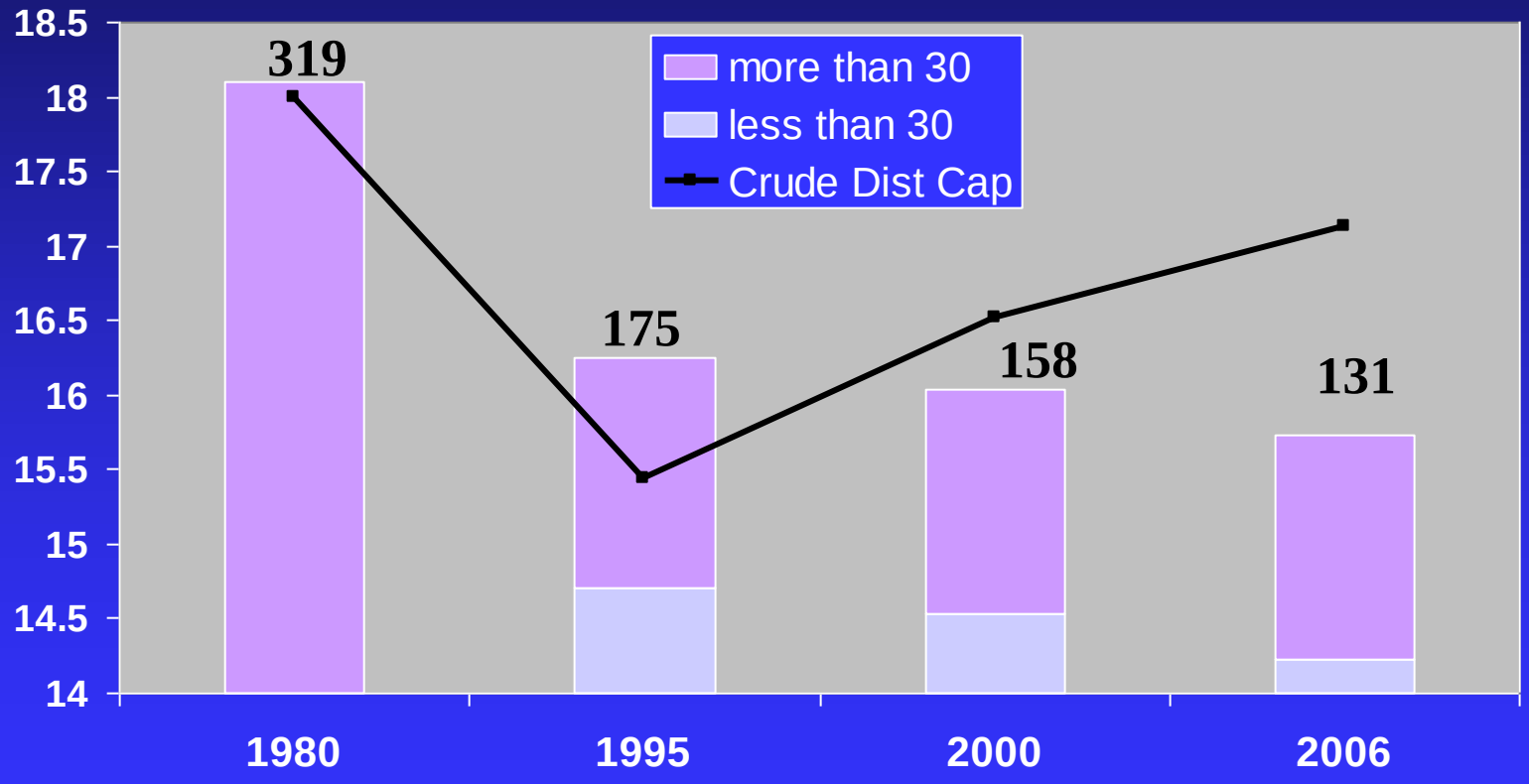
CCU/HCU/Coker - "Very Complex" Refinery



Refinery Yield (% of Crude Intake)



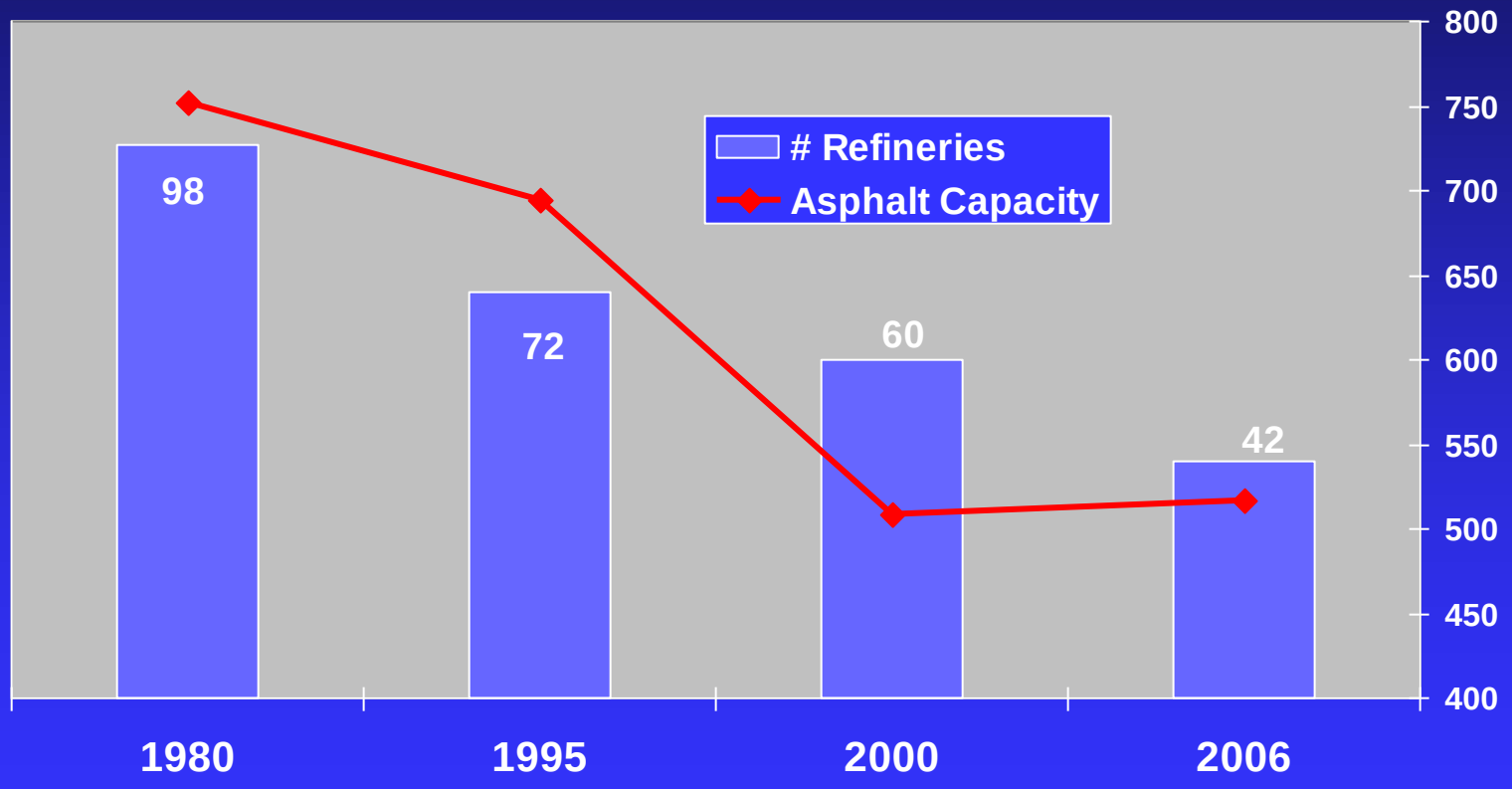
U. S. Refining Capacity



Last New U. S. Refinery Built in 1976

Source: Oil & Gas Journal

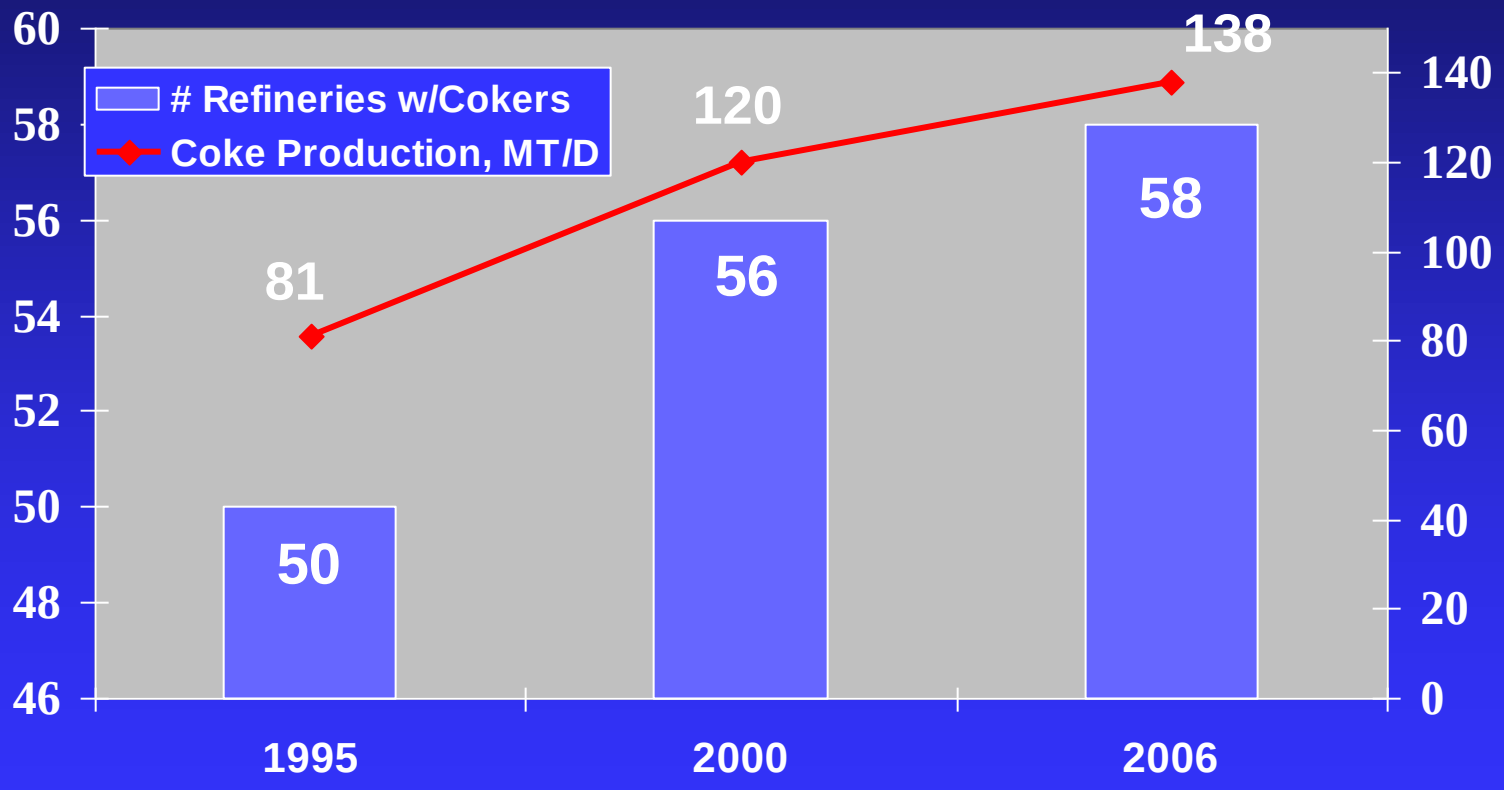
U. S. Asphalt Refining Capacity



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

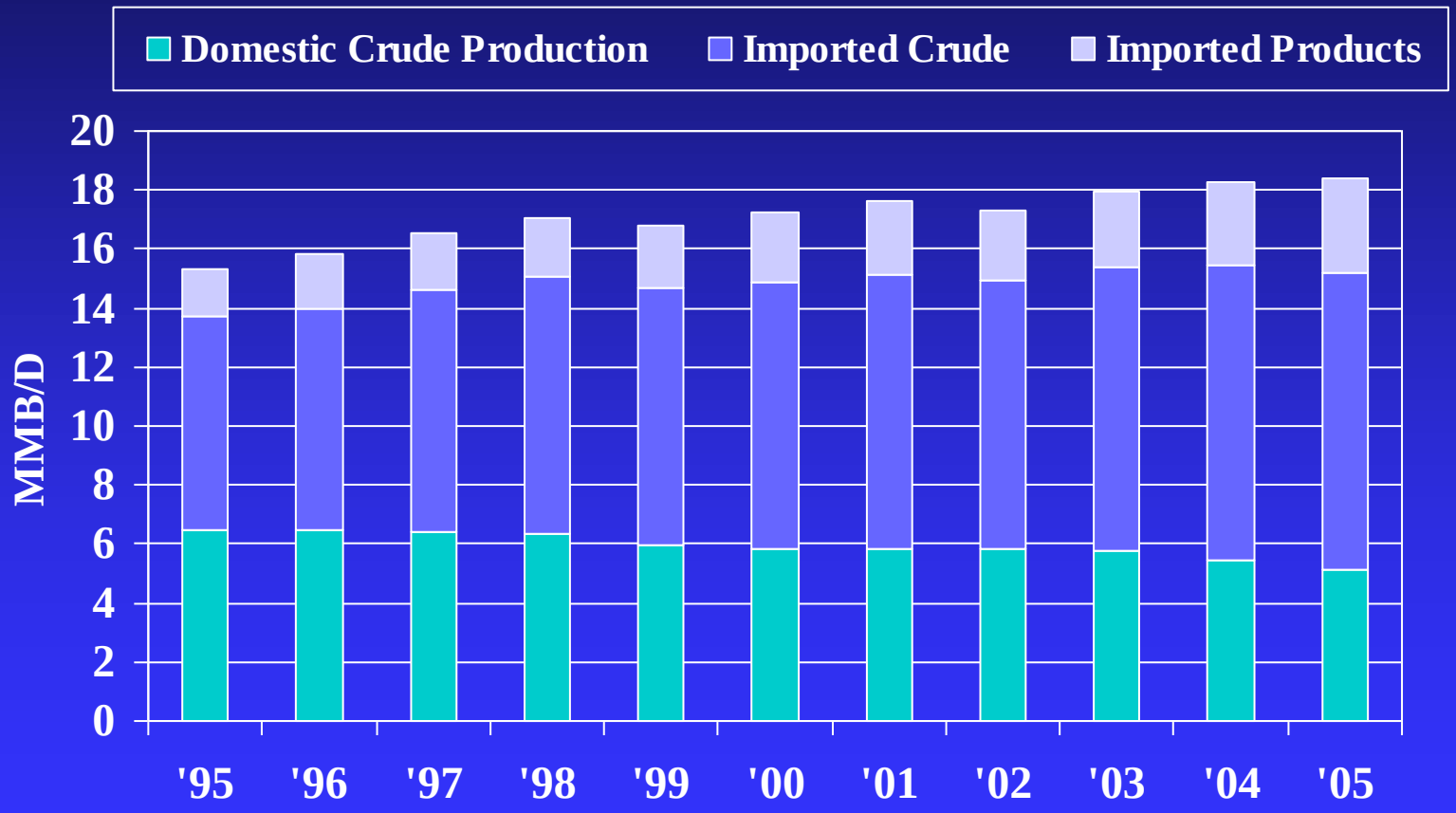
- Engineering, Procurement & Const. Phase
- Total Refineries: 245 MB per day
- Asphalt Refineries: 135 MB per day

- Planning or Early Engineering Phase
- Total Refineries: 176 MB per day
- Asphalt Refineries: 121 MB per day

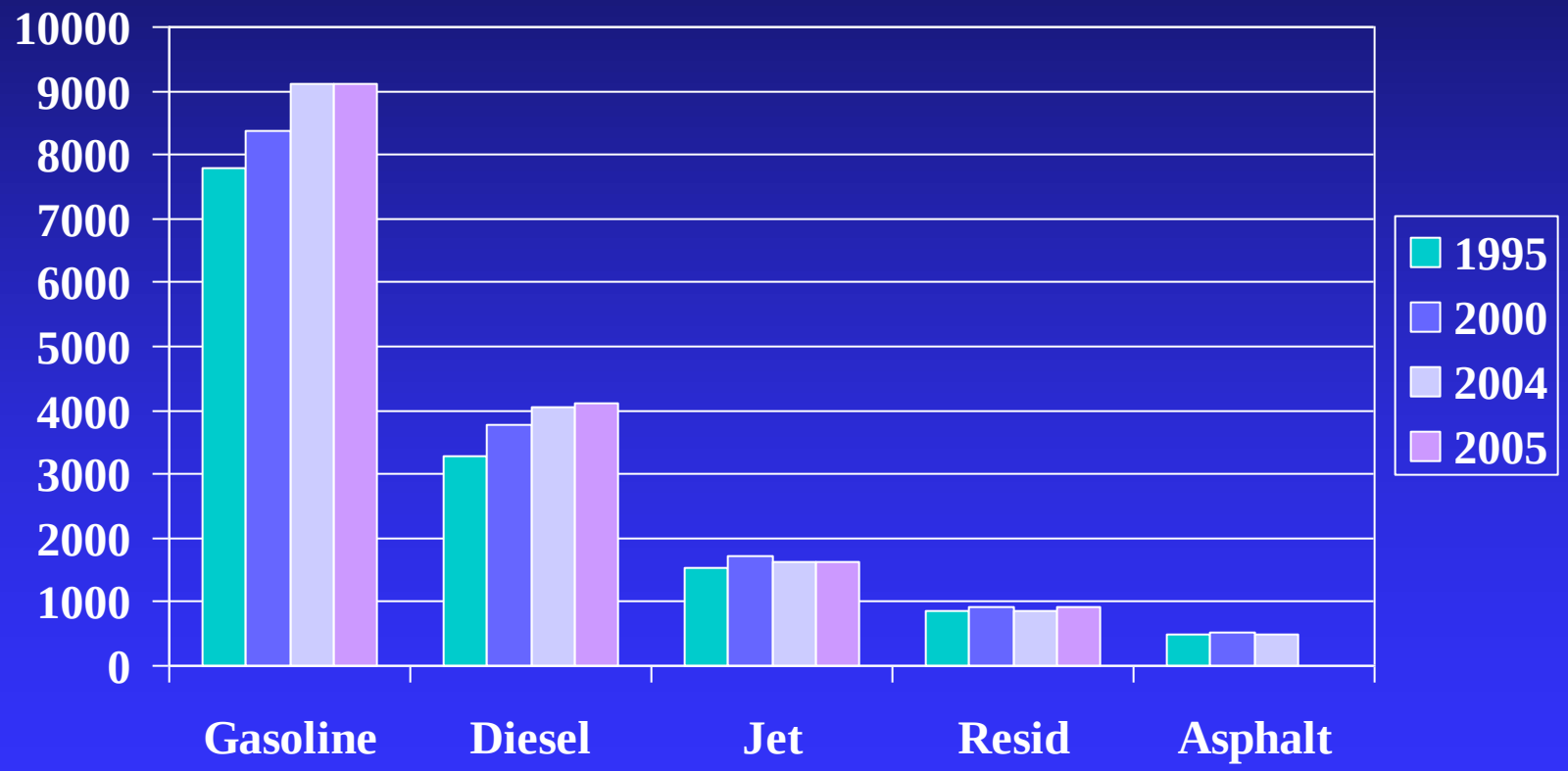
* Source: Argus Asphalt Report

PRODUCTS
SUPPLY/DEMAND

Supply Source for U. S. Demand

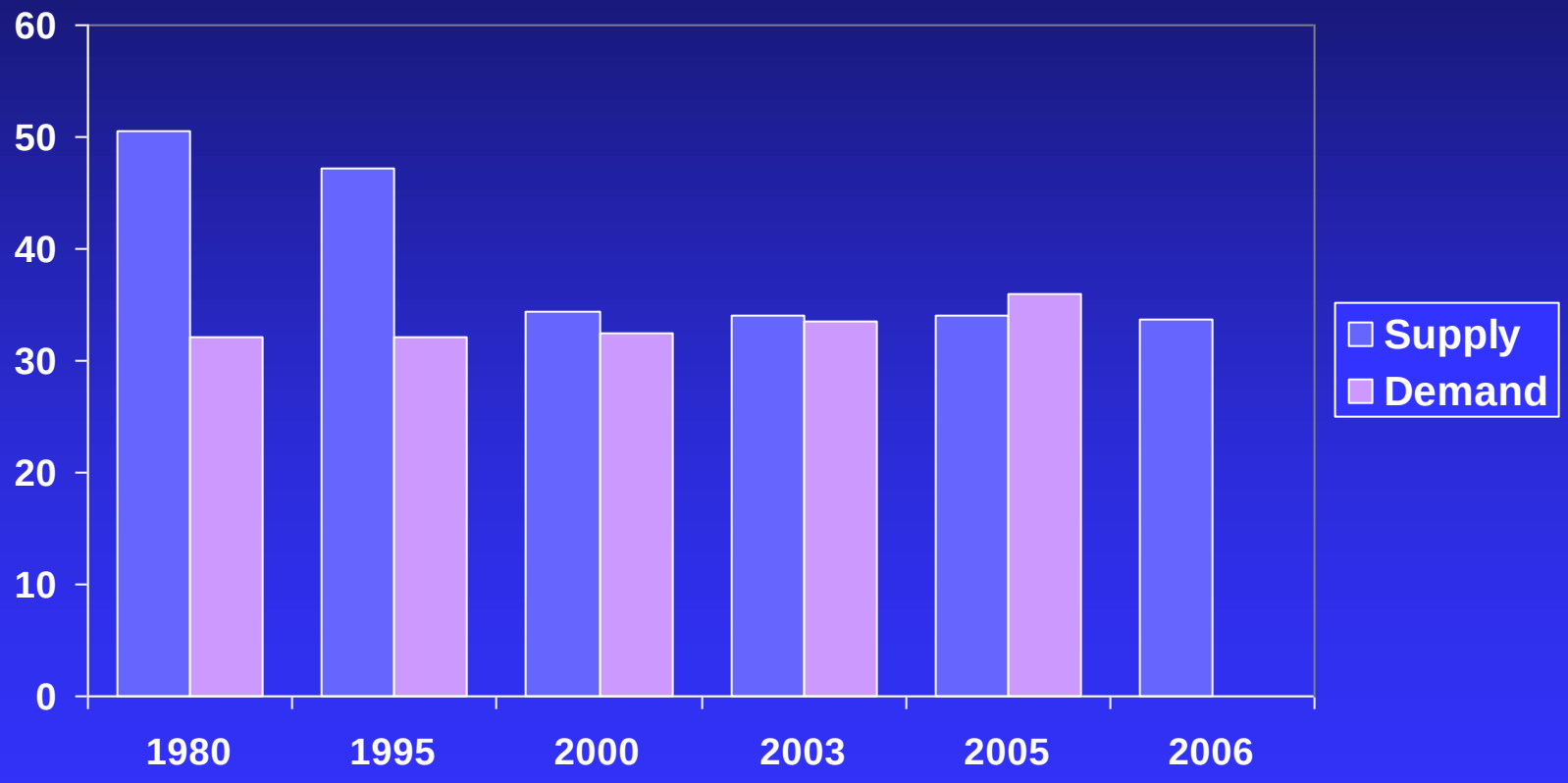


U. S. Product Demand, MB/D



Historical Asphalt Supply/Demand

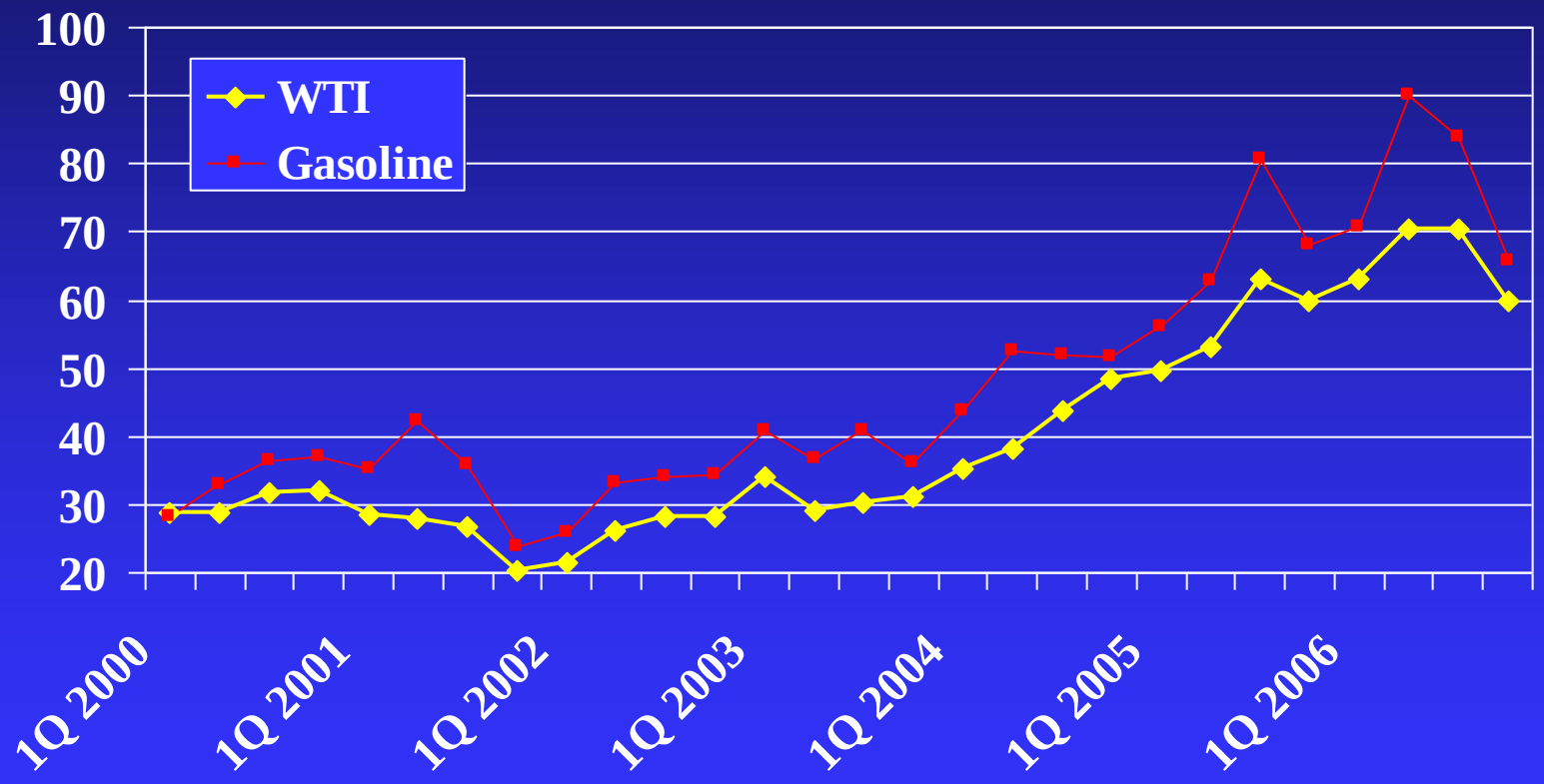
Millions Tons - Liquid



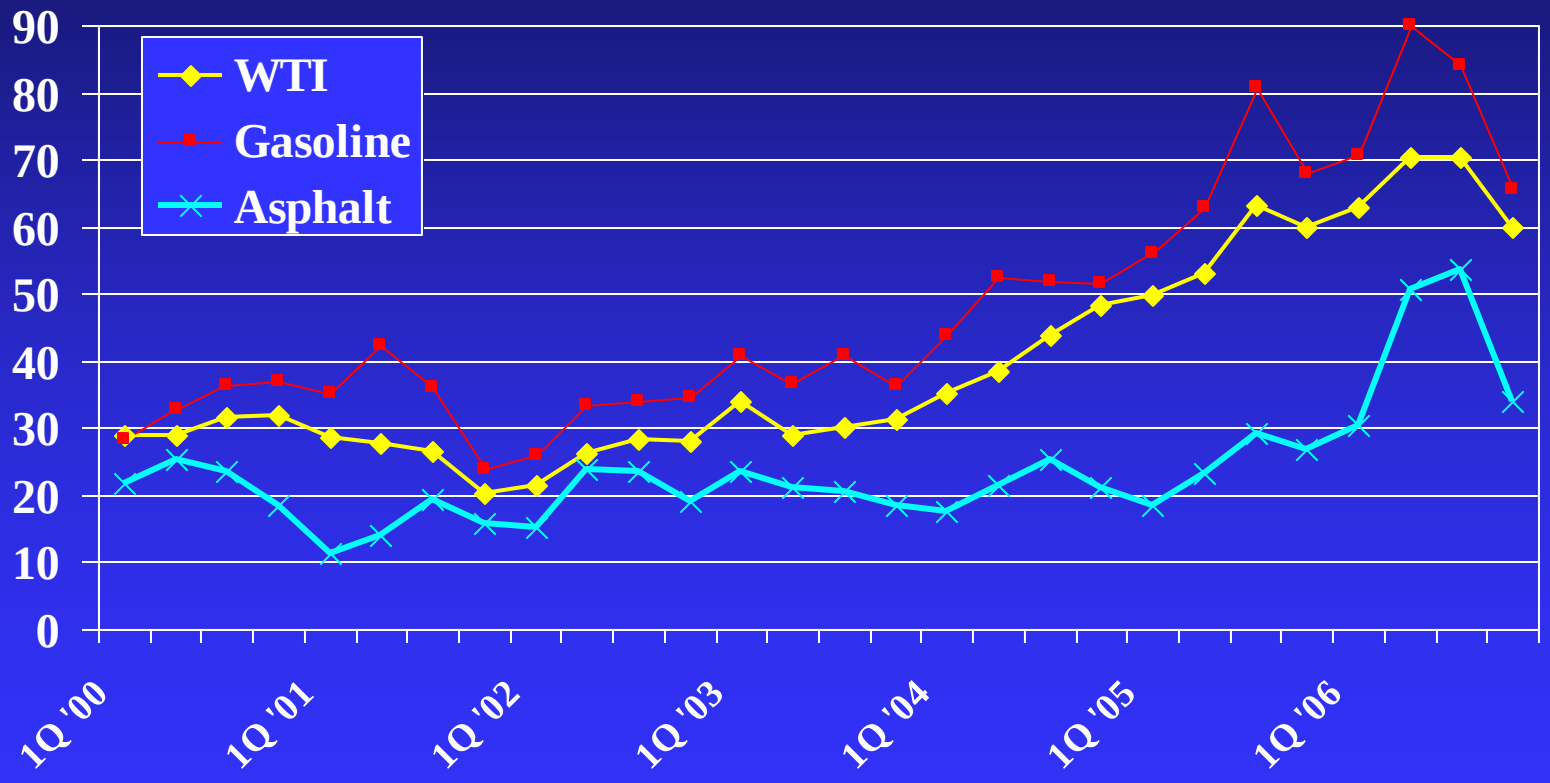
Source: Oil & Gas Journal

PRODUCTS PRICING

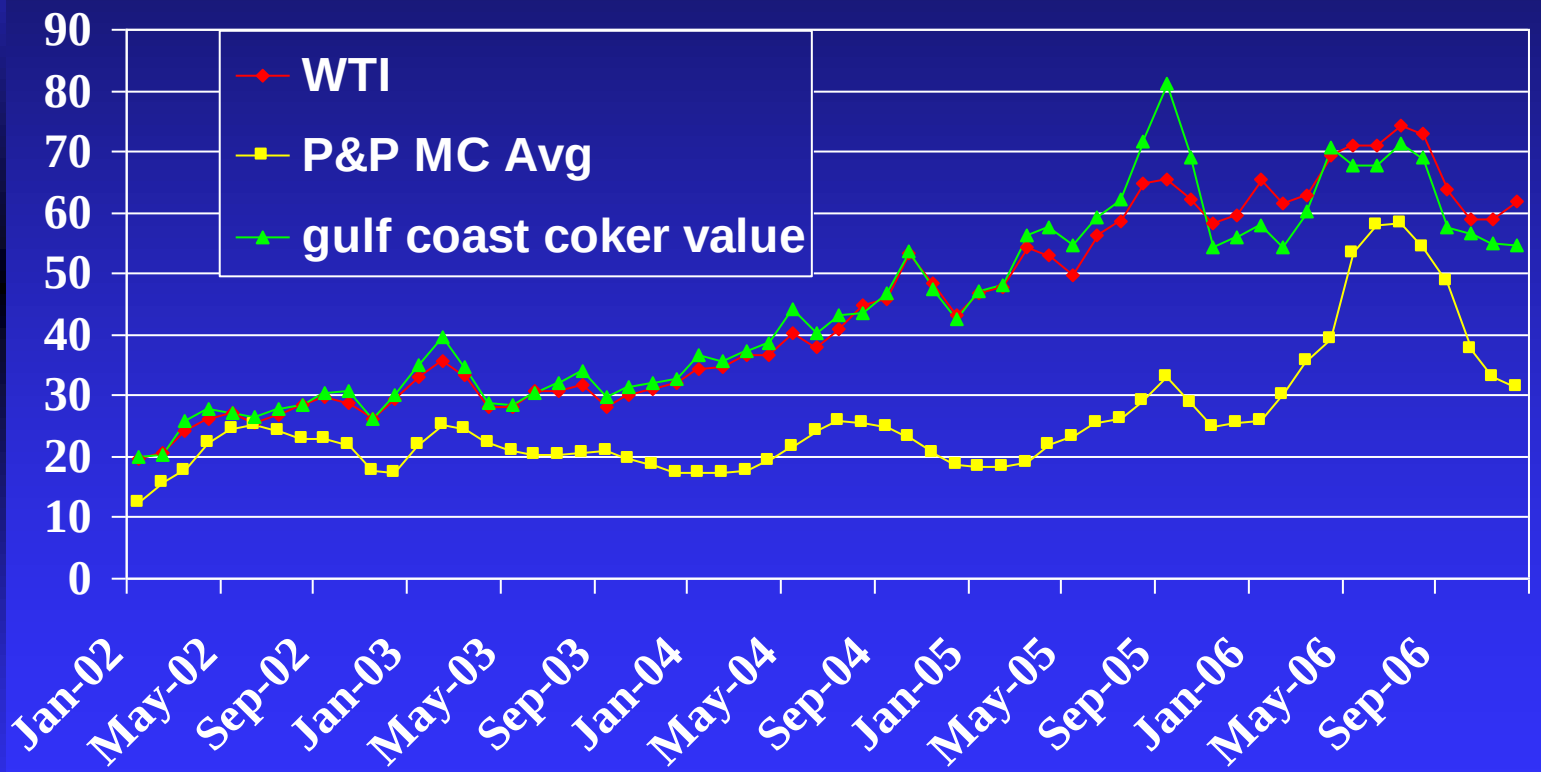
Prices by Quarter



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 exiting 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

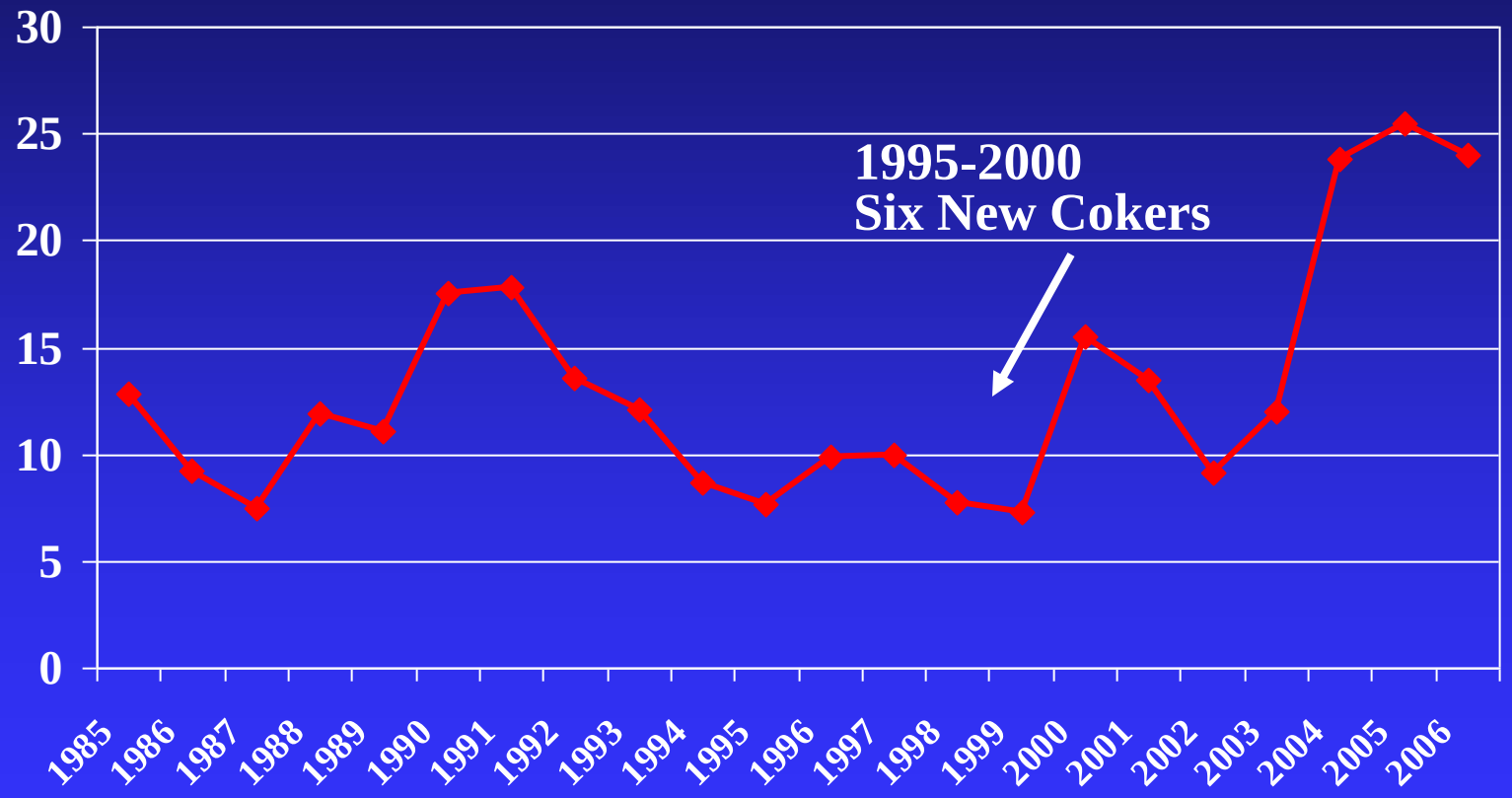
Worldwide Coker Additions

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

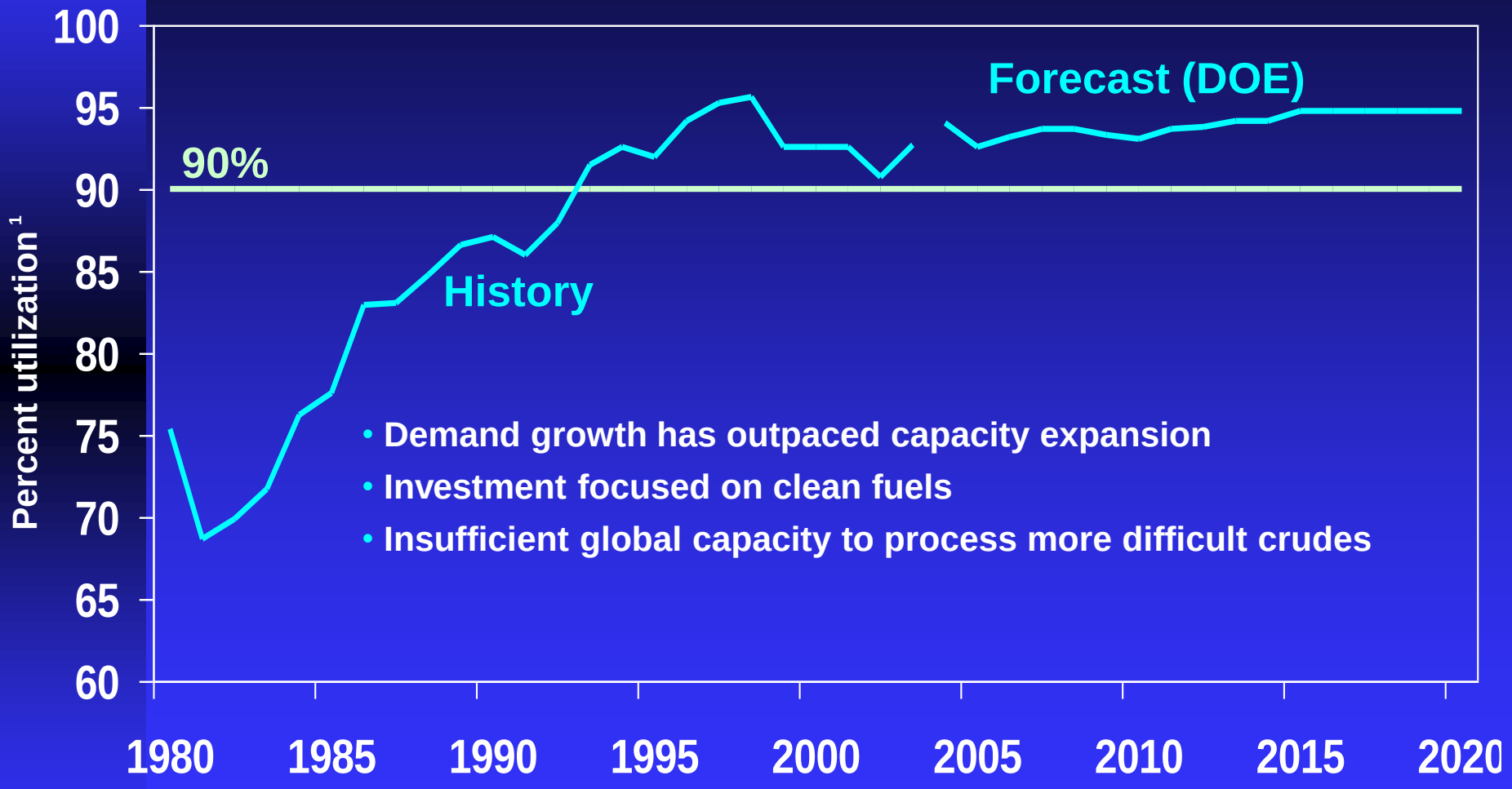
*Reduces world asphalt and #6 oil supply

Source – Argus Asphalt Report

Light-Heavy Product Price Spread Drives Refinery Investment Cycle



Total U.S. Capacity Utilization



Source: U.S. Department of Energy

[1] Percent utilization defined as: gross input to refineries /operable capacity.