



Construct, Creep, or Caribbean: How Will The US Meet The Need For New Refinery Capacity?

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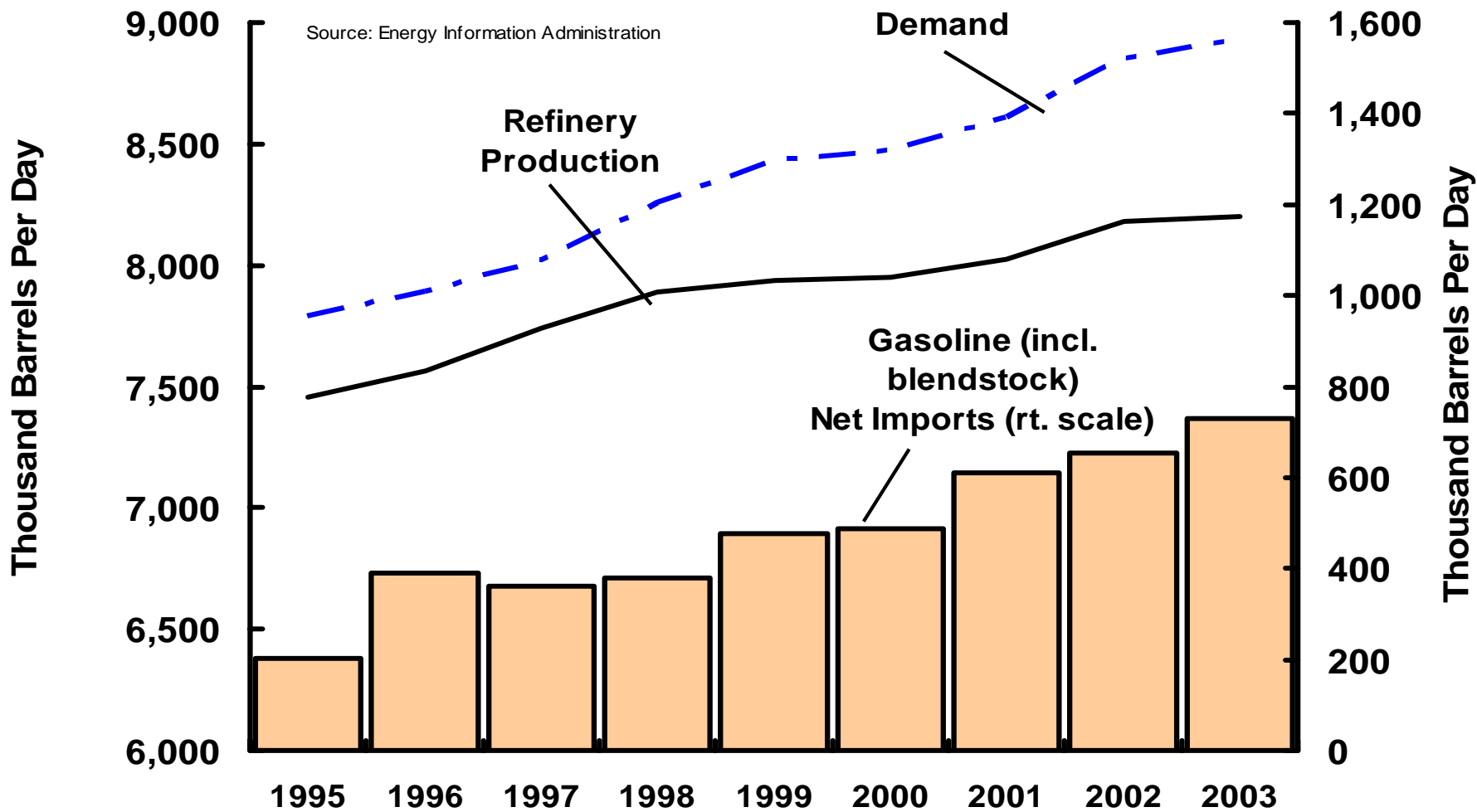
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Recent Headlines

- **US Product Imports Growing at Alarming Rates**
- **US Product Imports Fall Below Expectations**
- **The US Refining Industry Will Never Build A New Grassroots Refinery**
- **EPA Approves Permits For New Arizona Refinery**
- **US Refining Industry Records Record Profits But Is Unwilling to Expand Capacity**
- **US Refining Industry Invests Record Sums To Meet Clean Fuels Regulation**

Gasoline Trends

U.S. Gasoline Production, Demand and Net Imports

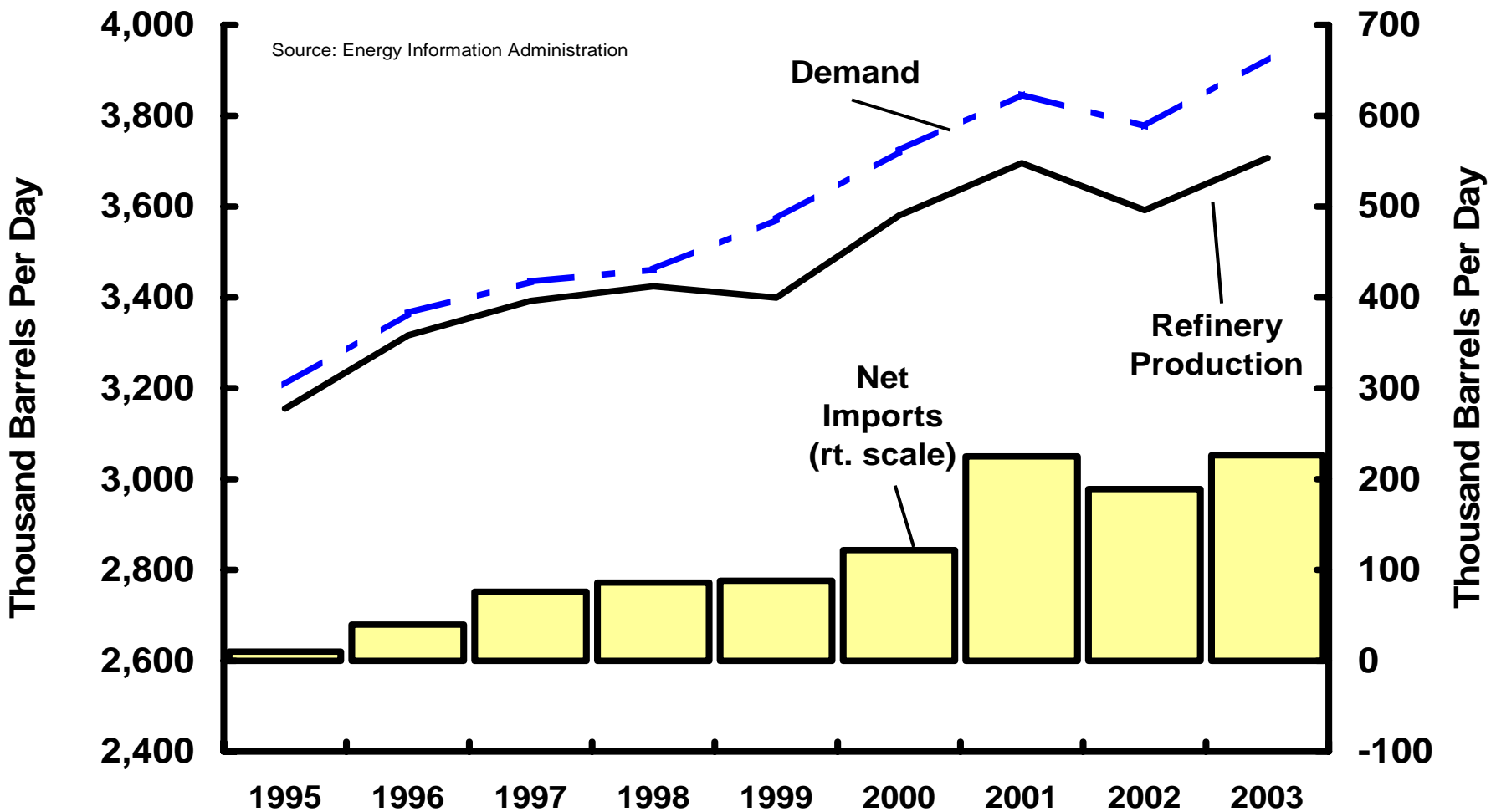


Gasoline Trends

- US demand increasing ~1.5-2% per year
- Net imports increasing faster than demand
- Imports from Europe are increasing
- Product quality requirements are becoming more restrictive
- Ethanol production is increasing
- MTBE bans are increasing

Distillate Trends

U.S. Distillate Production, Demand and Net Imports



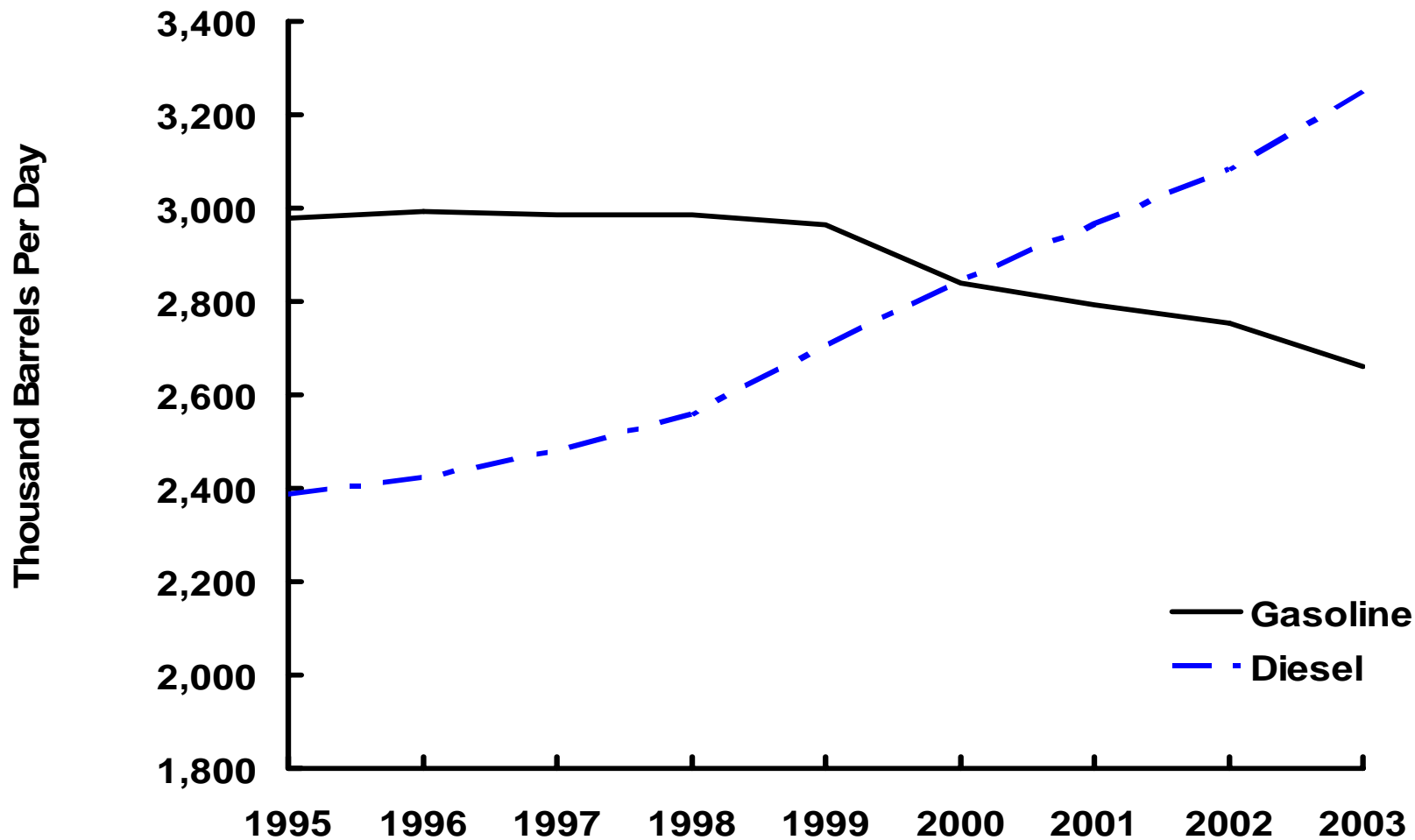
Distillate Trends

- Demand increasing ~2% per year
- Increased distillate imports are tied to Canadian refinery expansion
- Distillate imports into Europe are increasing
- Product quality requirements are becoming more restrictive

Import Trends

- **US has historically imported gasoline from Caribbean, plus recently Europe**
- **US has historically imported only small volumes of highway diesel fuel**
- **Caribbean and European refineries will be capable of producing US Tier 2 gasoline**
- **Europe will import, not export, USLD**
- **It is uncertain if Caribbean refineries will make ULSD investments**

Western European Gasoline and Diesel: The Impact of Diesalization on Highway Fuels Demand



Source: International Energy Agency

**Decisions on
Building New Refineries,
Expanding Existing Refineries
and Importing Products
Are Based On
Economic Expectations**

Import Characteristics

- **Import/Export decisions are driven by profit motives**
- **Flexible transportation allows shipments to be redirected in transit**
- **US Imports Come Into East Coast, Gulf Coast and West Coast**
- **The US distribution system allows PADD's 1, 2, & 3 to adapt to import impacts of supply and economics.**

Import Impacts

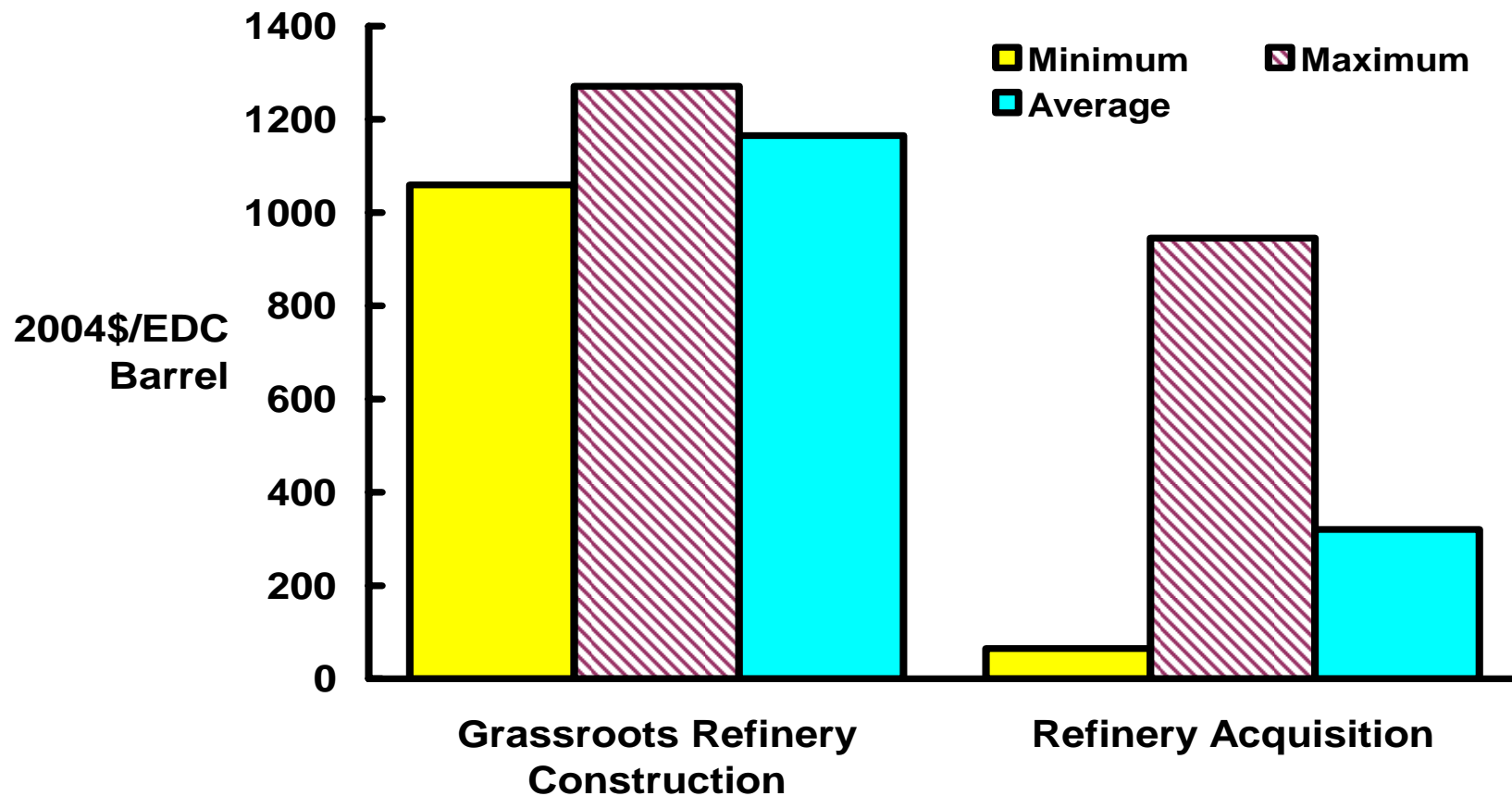
- **Import availability/price impact the incremental cost of supply to US markets East of the Rockies and West Coast**
- **Long term import availability/price provides an alternative to US refinery expansion projects and US grassroots refinery projects, except in areas with limited distribution capabilities**
- **Even if US production capacity is increased, import economics will determine if this capacity is used or not.**

Refinery Expansions Cost Less Than Grassroots Refinery Construction

**Grassroots Refinery Construction is 3-4 Times
more Expensive than Capacity Expansion**

- Existing site vs new
- Existing utilities and support units
- Shorter implementation and permitting times
- Limited fixed operating costs vs full
- Investment can be targeted to specific products

Figure 1 - Comparison of Grassroots Refinery Construction Costs with Refinery Acquisition Price



Source: NPC Report, "Observations on Petroleum Product Supply", 2004

CONCLUSIONS

- **Import increases have reflected short-term economic opportunity as well as longer term supply choices, which is partially reflected in US refinery utilization variations**
- **Import economics will be reflected in US refinery capacity expansion project decisions.**
- **Recent limited US capacity expansion has been driven by imported product availability and cost**
- **For most of the US, new refineries will only be built when import costs and expansion costs are high enough to justify the higher incremental costs**