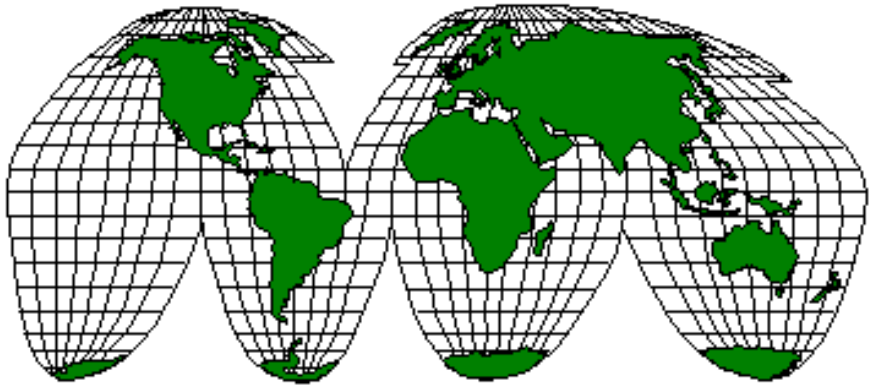
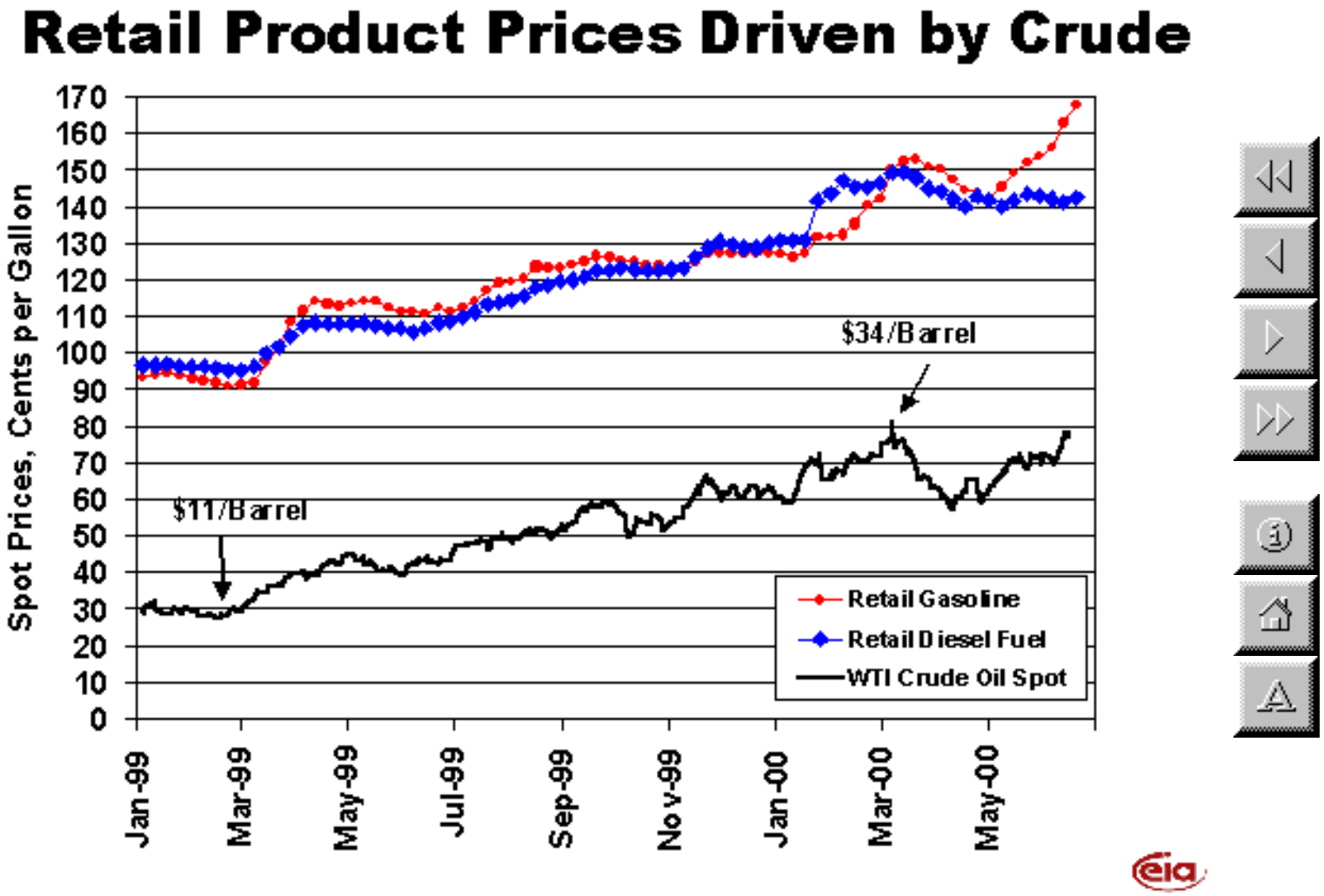
Update: A Year of Volatility
Oil Markets and Gasoline



June 20, 2000
Energy Information Administration



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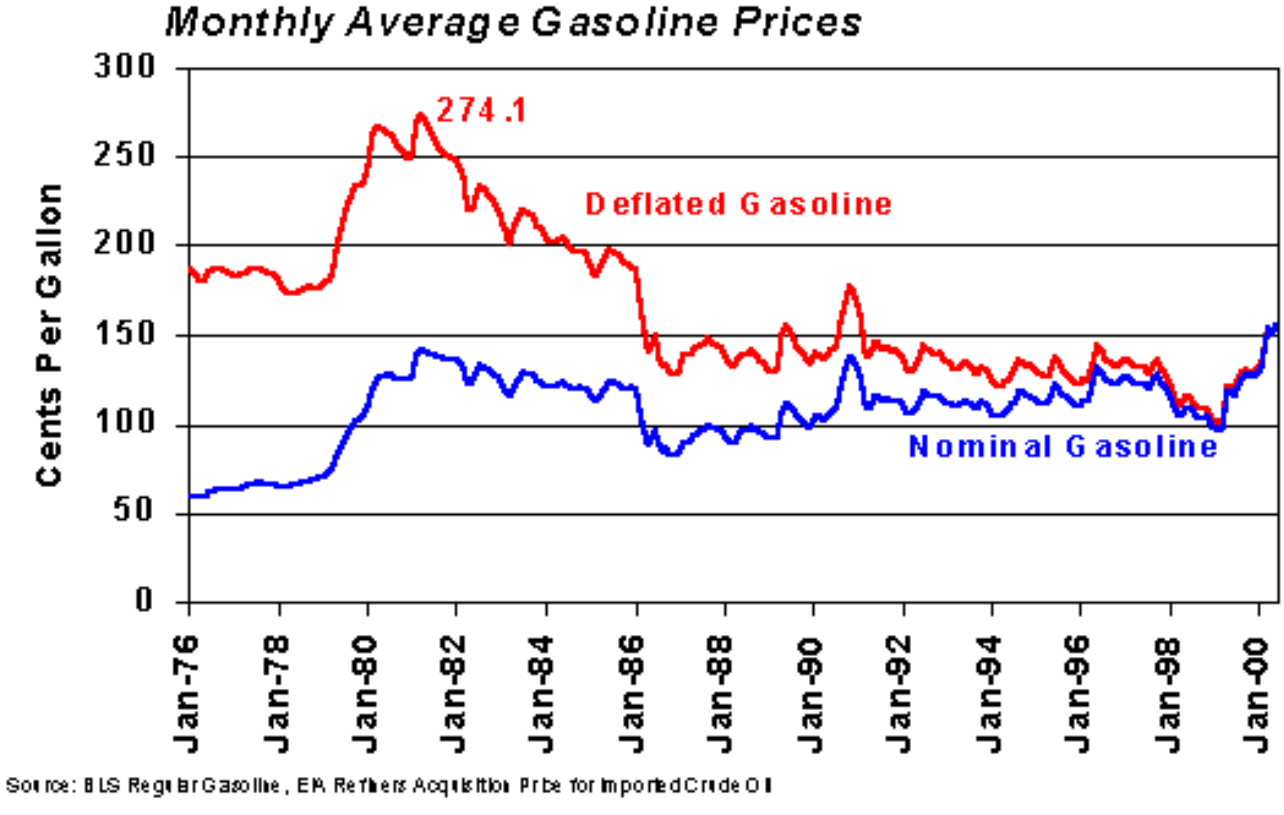
Notes:

- Retail prices for both gasoline and diesel fuel are much higher this year than last, driven mostly by the rise in world crude oil prices to their highest levels since the Persian Gulf War.
  - The U.S. average retail regular gasoline price reached nearly $1.70 per gallon Monday, June 19.
  - Retail on-highway diesel fuel prices peaked at almost $1.50 per gallon on March 13, but have declined to hover just over $1.40. On June 19, U.S. prices averaged $1.42.
- While movement in underlying crude oil prices has been the major driver for prices of products, low product inventories have caused increased price spreads between product prices and crude oil, further adding to consumer prices.
  - Gasoline prices have recently been pushed upward by concerns over the adequacy of summer supplies, including refinery problems producing summer RFG during the winter-to-summer transition and the uncertainties surrounding the ability of foreign refineries to make Phase II summer RFG and the Unocal RFG patent issue.
  - Diesel fuel prices, by comparison, rose sharply starting in late January due to low inventories and high demand for heating fuels. While diesel fuel prices have recently softened as the heating season ended, prices may turn upward again if crude oil prices remain high. Strong demand this summer in

combination with low stocks would also put upward pressure on diesel fuel prices this summer.

Gasoline Prices in Inflation-Adjusted Terms



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Notes:

- While EIA has noted that from an economic viewpoint, prices today are not that high in real terms, consumers seem to react more to rapid changes than overall levels.
  - Today's gasoline prices, now at almost $1.70 for regular unleaded gasoline, are much less than prices experienced in the first half of the 1980's when adjusted for inflation. Crude oil peaked at almost $39 nominally in 1981, which is equivalent to $76 per barrel in today's dollars.
  - Yet consumers remember the low prices they paid last year, and organizations budgeted their usual percentage increase for fuel purchases, only to find that those percentages were way too low.
- Price volatility often can be of more concern to consumers in the short run than price level itself. Volatility makes planning and budgeting more difficult, and when prices increase rapidly, they can catch consumers unprepared.

Conclusion: Volatile Prices Likely in the Year Ahead

- Gasoline markets: Low stocks, high prices, volatility
- Winter heating fuel: May have low inventories going into winter, resulting in price volatility
- Natural gas: High prices and supply concerns may impact distillate stock build for winter and can mean high natural gas prices this winter
- But maybe OPEC will add more supply, stocks will build, and prices will fall

Notes:

- In conclusion, EIA believes we may see more price volatility in the oil markets before the inventory situation improves, and inventories will not improve quickly as petroleum demand remains fairly strong and worldwide production does not keep pace.

Update: A Year of Volatility Oil Markets and Gasoline

06/21/2000

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Retail Product Prices Driven by Crude

$11/Barrel

$34/Barrel

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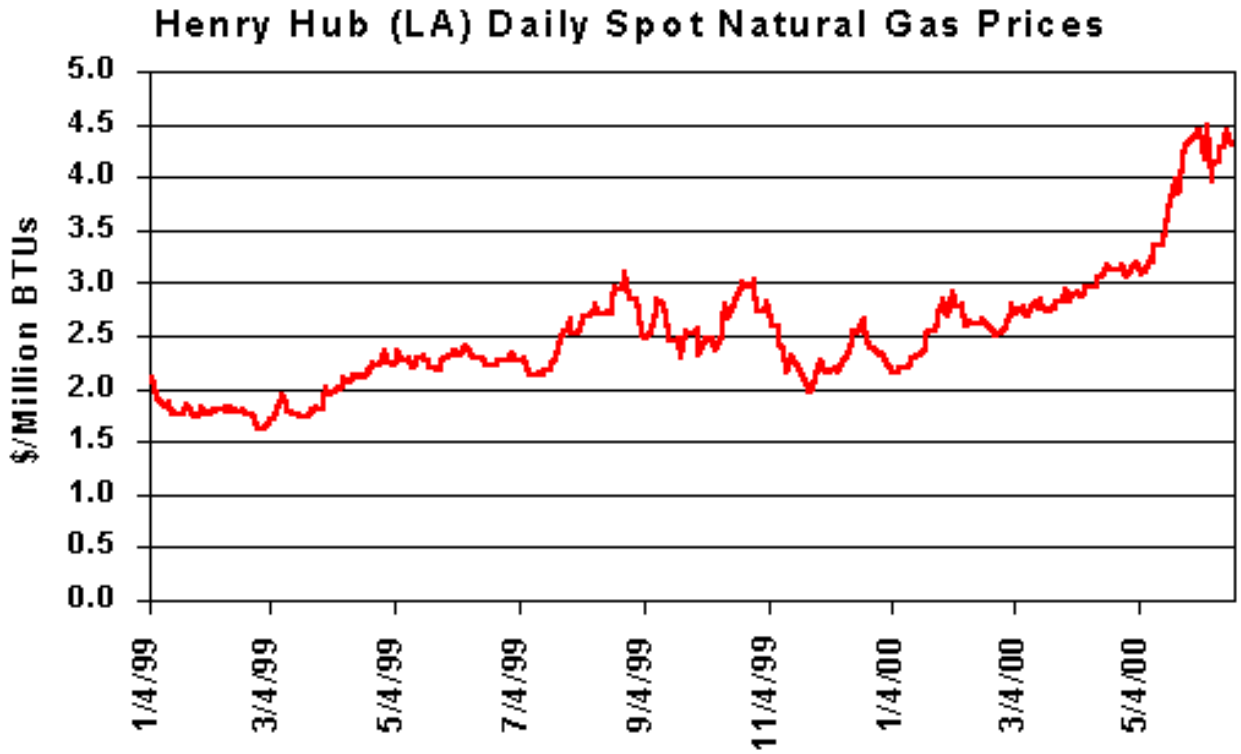
Natural Gas Supply Concerns Driving Up Prices



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Notes:

- Natural gas prices are surging as summer gets underway. Utility demand for natural gas usually peaks during the summer, but supplies this year are in question.
- While increasing crude oil prices have probably helped to move natural gas prices higher through March and April, the latest May surge seems to be stemming from a confluence of factors raising concerns over the ability of supply to meet the peak summer demand days this year. The concerns center on:
  - A hot summer being expected this year;
  - A larger share of power generation using natural gas -- especially with the addition of some new merchant power plants expected to be in service this June;
  - The hurricane season beginning, which affects natural gas production;
  - Overall demand growth eating into excess deliverability;
  - Natural gas inventories lower than last year, and, while not at record absolute lows, providing less coverage as measured in days of supply.
- Ironically, an important alternative fuel for the electric generating companies is distillate fuel oil. If natural gas prices remain high, utilities may use more distillate this summer, hindering a buildup of heating oil stocks for the winter.

Conclusion: Volatile Prices Likely in the Year Ahead

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- **Winter heating fuel: May have low inventories going into winter, resulting in price volatility**
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Notes:

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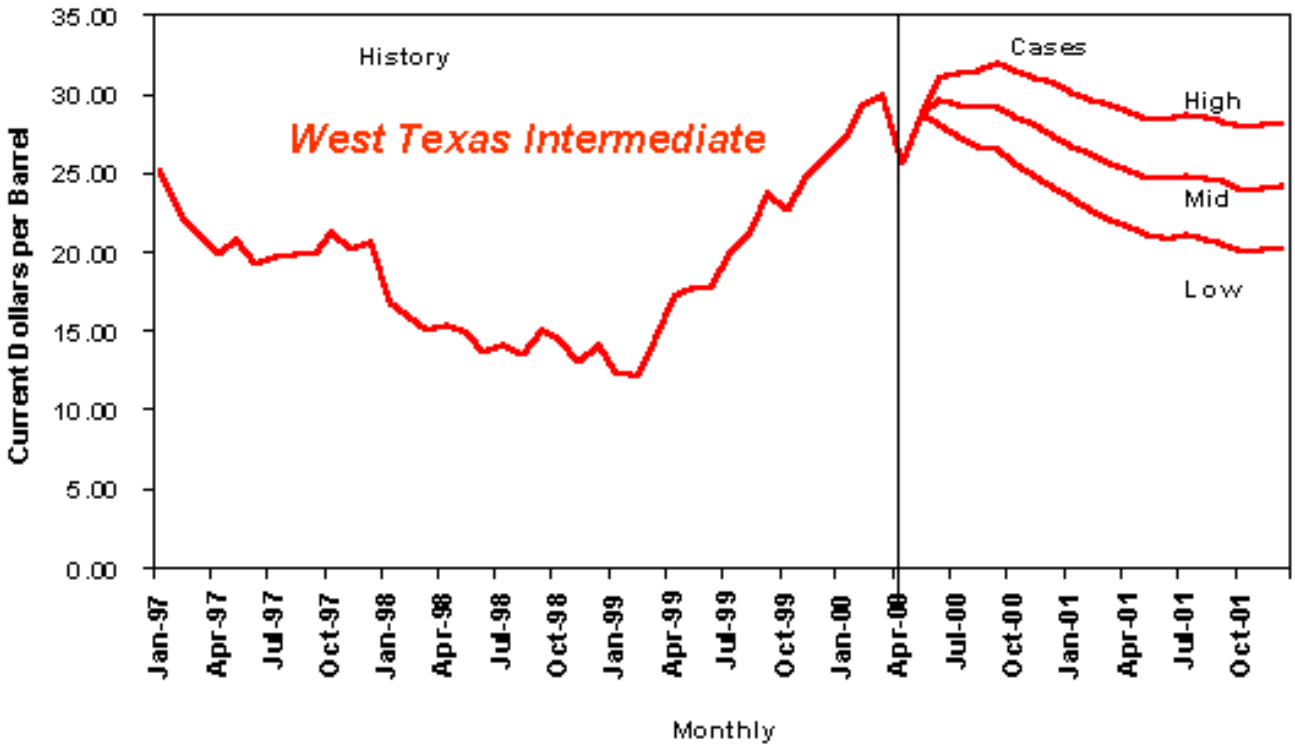
Crude Oil Prices High But May Relax Some By Year's End



Sources: History: EIA; Projections: Short-Term Energy Outlook, June 2000.

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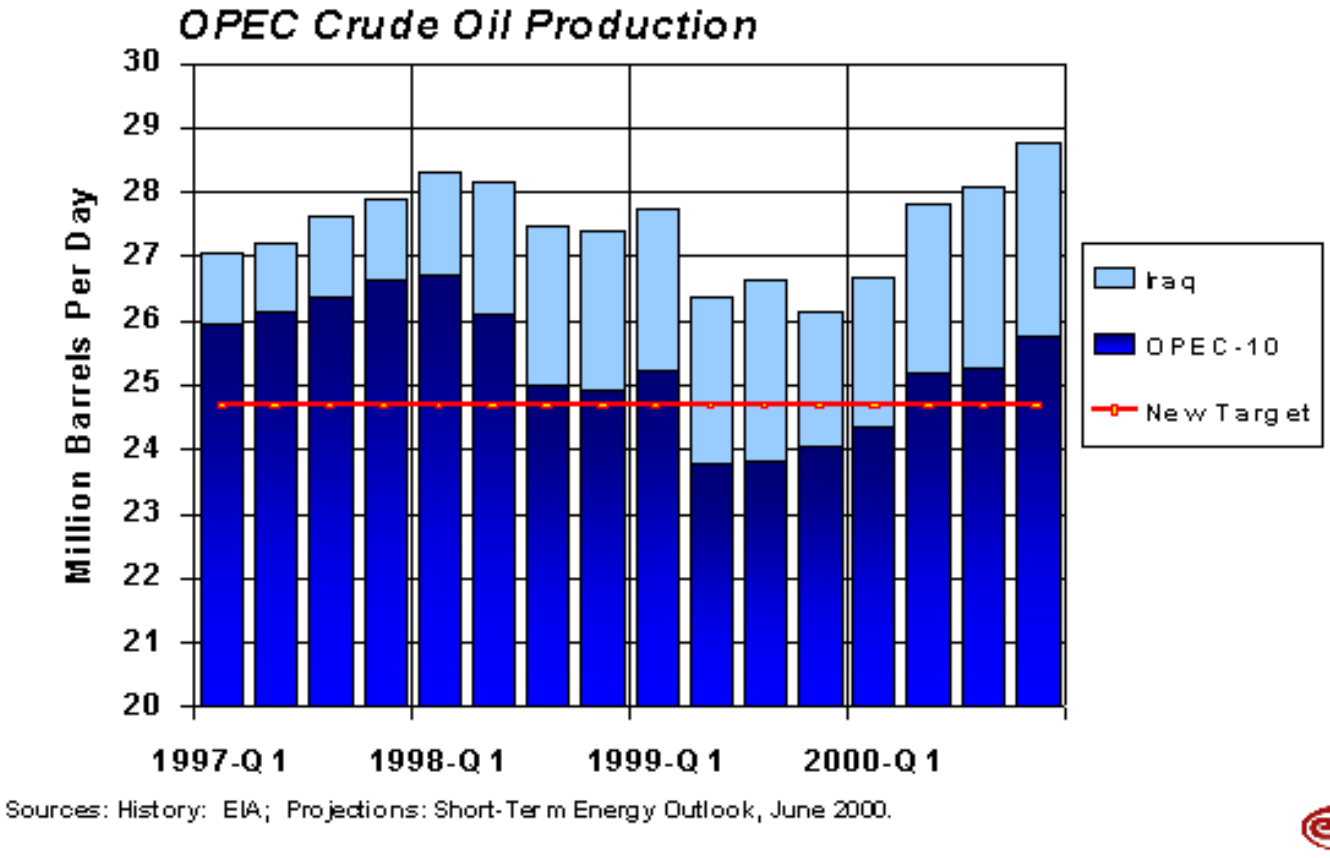
Notes:

- Current WTI prices over $30 per barrel reflect uncertainties in supply, on top of inventories that are still low, despite some recent improvements.
- World oil prices are expected to show a gradual decline as increased oil production from OPEC and others enters the world oil market, although the actual path may not be as smooth as that shown on the graph. The average price of WTI was almost $30 per barrel in March, but dropped to $26 in April as the market responded to the additional OPEC production. However, prices strengthened again and recently have been staying over $32, as growing gasoline production needs pull on the crude market in the face of low crude oil and gasoline stocks. EIA expects adequate OPEC supplies to be introduced into the market throughout the rest of the year to bring WTI crude oil price down somewhat by year end.
- These crude oil price projections reflect:
  - Fairly low world demand growth during 2000 of 1.7 percent, or 1.3 million barrels per day.
  - Non OPEC production growth during 2000 of over 1.2 million barrels per day.
  - Growth in Iraqi production of 700 thousand barrels per day from Q1 to Q4 2000. Iraqi production is estimated at 3.0 million barrels per day in the fourth quarter 2000.
  - Growing OPEC leakage over the current OPEC target.

EIA OPEC Production Assumption Projects Increasing Leakage



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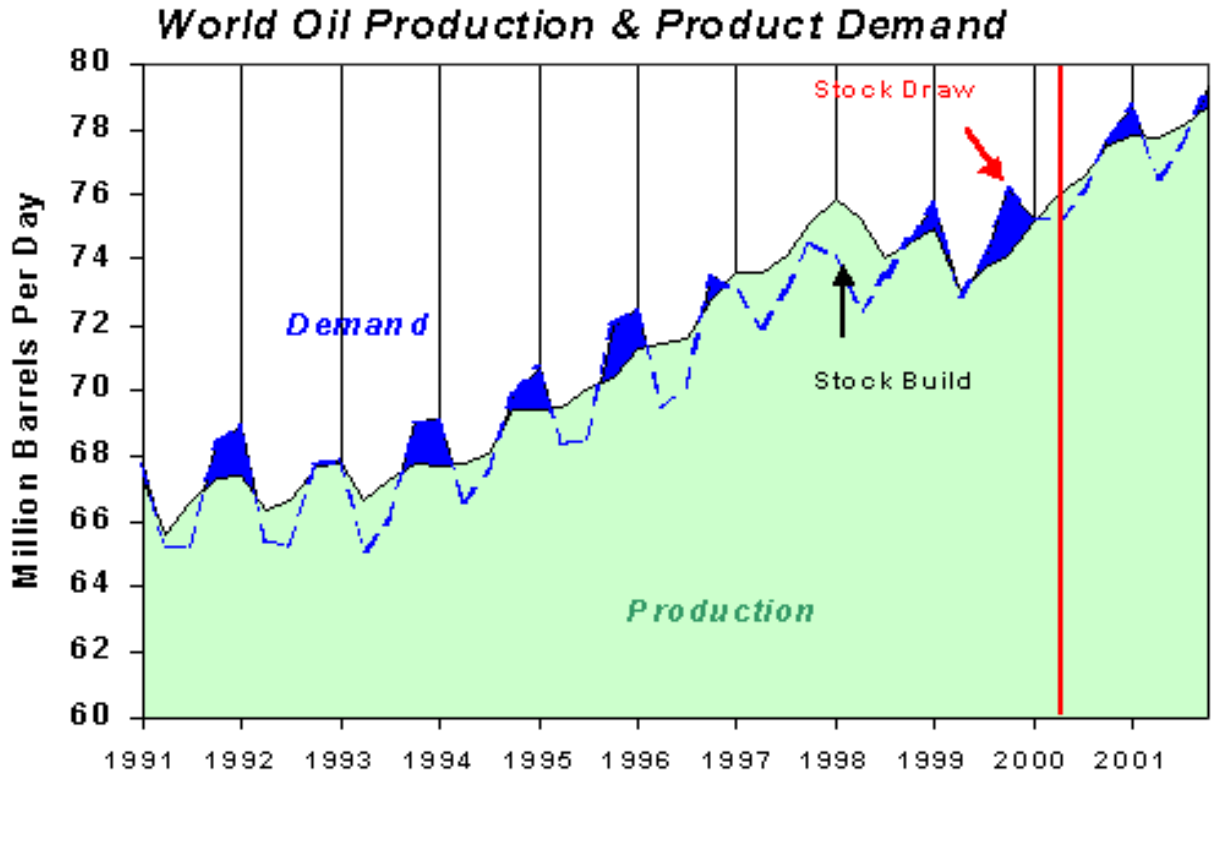
Notes:

- Production levels for all of OPEC (including Iraq) are assumed to rise about 2.1 million barrels per day from the first quarter to the fourth quarter this year.
- The EIA base case assumes OPEC-10 production (excluding Iraq) will increase about 1.4 million barrels per day from first to fourth quarter, putting them almost 1.1 million barrels per day over their new quota by the end of 2000.
  - In the second quarter, OPEC-10 production is assumed to exceed the new quota by 0.5 million barrels per day, returning to the levels of production in early 1999.
  - OPEC-10 production in the third quarter is assumed to be close to second quarter production, and production in the fourth quarter is assumed to rise about 0.5 million barrels per day over second quarter.
- Iraqi production is assumed to increase almost 0.7 million barrels per day from first to fourth quarter, which could be optimistic depending on their ability to keep their oil supply infrastructure intact.

Supply/Demand Forecasts Leave Little Room for Winter Drawdown



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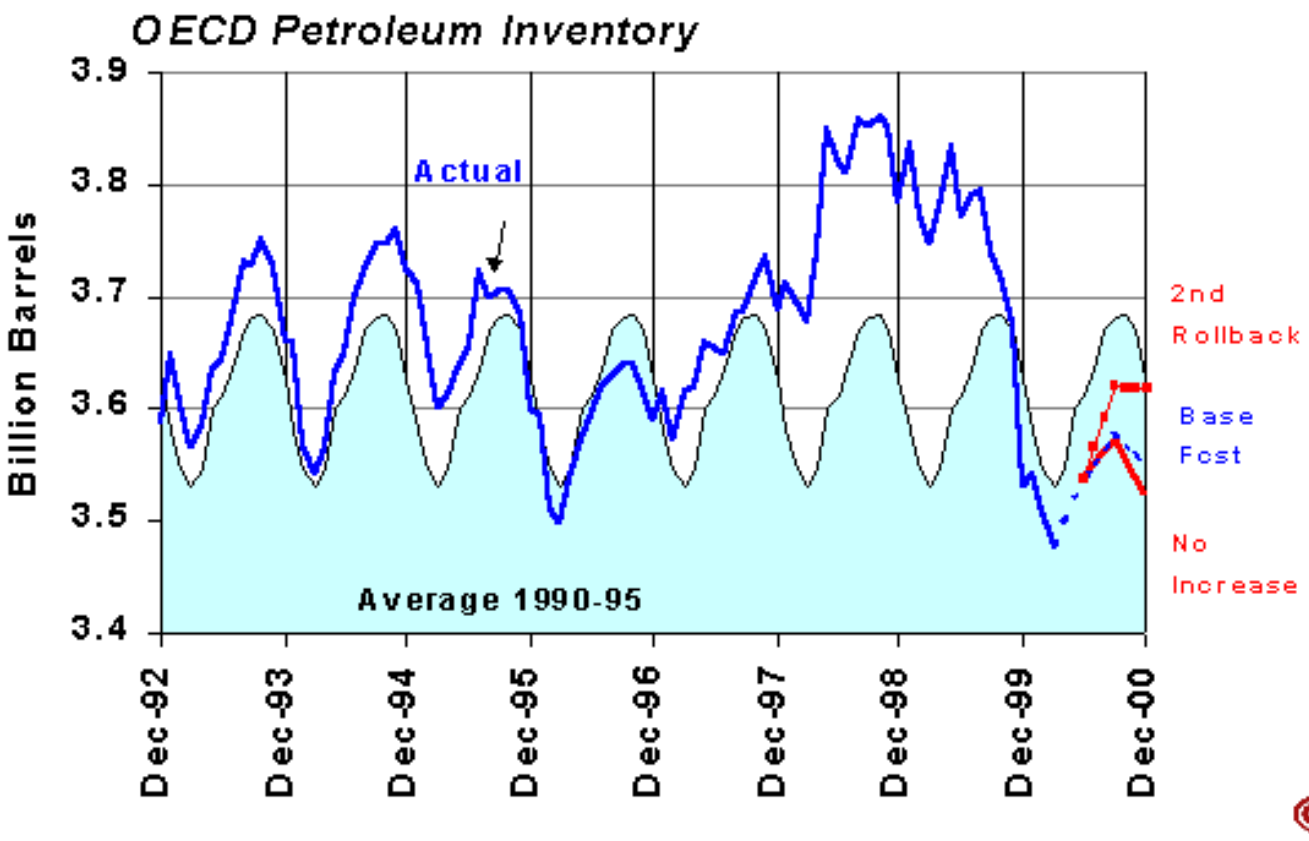
Notes:

- During 1999, we saw stock draws during the summer months, when we normally see stock builds, and early estimates indicate we had very large stock draws this past winter.
  - Normally, crude oil production exceeds product demand in the spring and summer, and stocks build.
  - These stocks are subsequently drawn down during the fourth and first quarters (dark blue areas). When the market is in balance, the stock builds equal the draws.
- As we look ahead using EIA's base case assumptions for OPEC production, non-OPEC production, and demand, we expect near normal stock building during summer 2000 -- about 800 thousand barrels per day second quarter and 500 thousand barrels per day in the third quarter 2000. But since we are beginning the summer with very low stock levels, even a normal build will have us entering the winter with seasonally low stocks.
- While the base case begins the winter 2000/2001 with low stocks, EIA's assumptions have OPEC increasing production enough to minimize stock draws over the winter months, and support prices in the $25-$30 range.

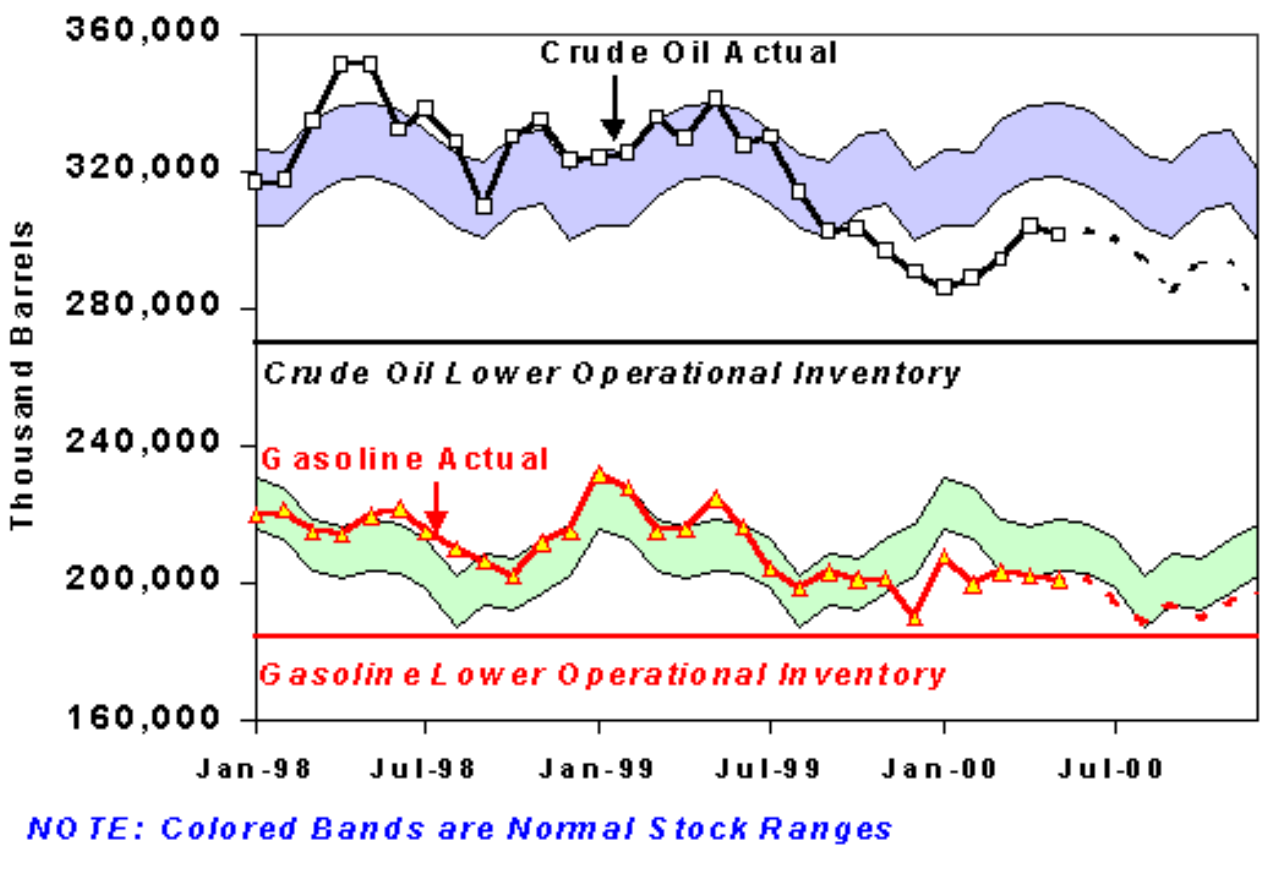
Price Volatility Will Remain Until Inventories Rebuild



Notes:

- In EIA's forecasts, the base case assumptions have OECD inventories remaining low for the rest of the year. Even with EIA's assumed OPEC leakage increases and rising Iraqi production, supply is not quite sufficient in the base case for a normal stock build in either the second or the third quarter.
- This year, prices fell with April's increase in OPEC production, but recently rebounded to earlier high levels as strong demand and concerns over third quarter supply have added pressure to the market.
- There still is much uncertainty ahead. Prices could fall back if OPEC announces sizeable production increases at their June meeting. But prices could turn back up in the third quarter, depending on the weakness of the third quarter stock build in preparation for the high-demand winter quarters.

Low Stocks Mean Tight Markets



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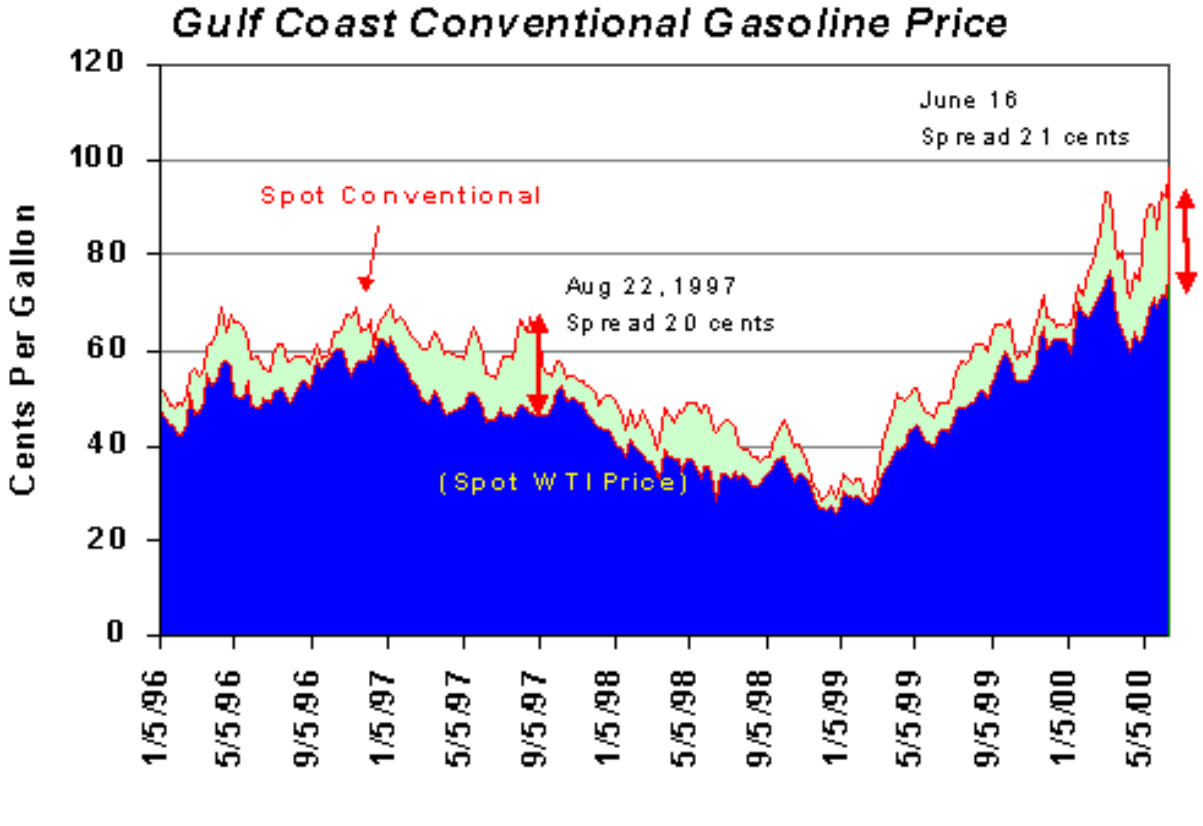
Notes:

- Similar to the EIA base case projections for OECD petroleum stocks, U.S. stock projections are expected to remain low through the rest of this year.
- This chart shows two important components of U.S. stocks, crude oil and gasoline. While stocks are currently low, they did improve somewhat in March and April.
  - Crude oil inventories are still below normal levels.
  - Gasoline stocks at the end of February had dropped about 5 percent below the low end of the normal range. Gasoline inventories are now at the low end of the normal band.
- The U.S. inventory data, which are accurate and timely, will be an important price barometer to watch. Low inventories leave little cushion to absorb unexpected events such as refinery or logistical disruptions.

Tight Markets Lead to High Gasoline Spreads



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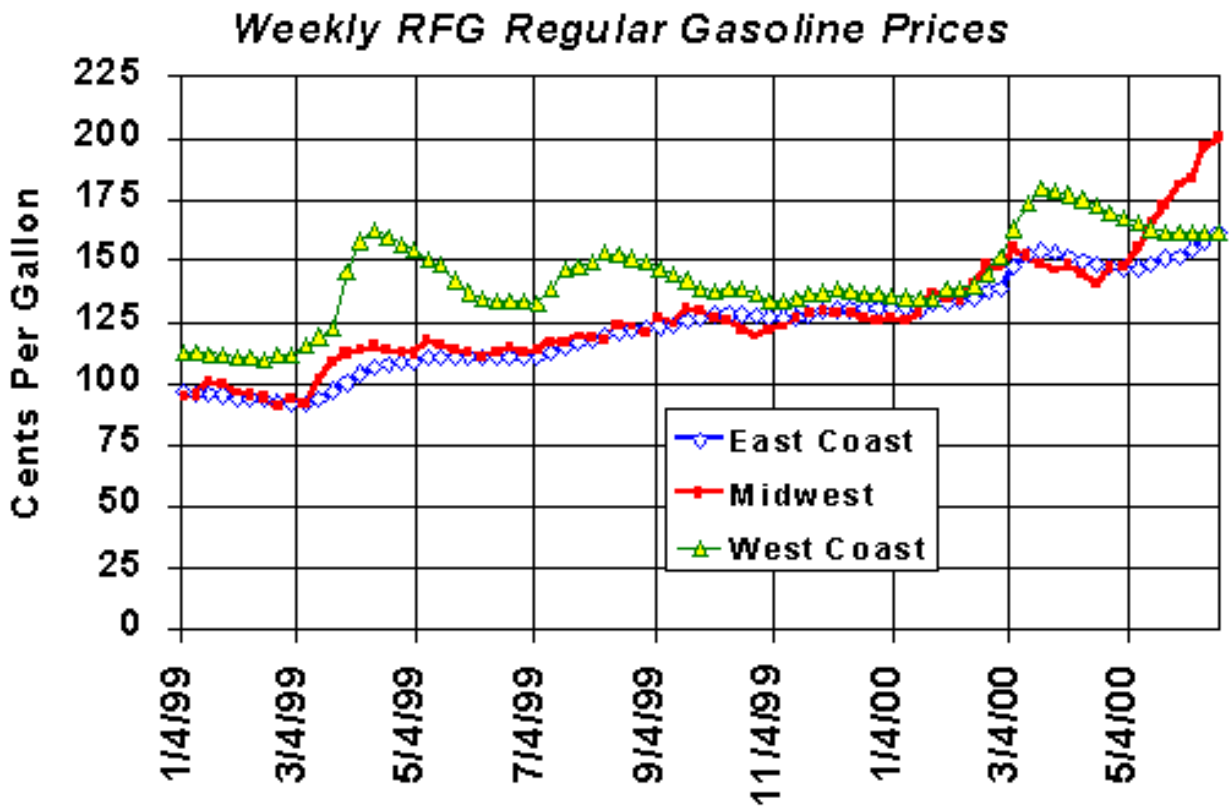
Notes:

- Low crude oil and product stocks tend to mean high crude oil and product prices
- Low gasoline stocks in the spring and summer increase the price of gasoline relative to crude oil. The difference between gasoline spot prices and crude oil spot prices are shown as the green band in the graph.
  - During May, this gasoline price spread is typically about 12 cents per gallon
  - In May 1999, the gasoline price spread averaged 6 cents per gallon.
  - In May and June 2000, it averaged about 20 cents per gallon, similar to the spreads seen during late summer 1997, when we had a gasoline price runup as demand outstripped capacity for a time.
- Accompanying low stocks and high gasoline spreads is the increased potential for price volatility.

MidWest RFG Price Rose Quickly



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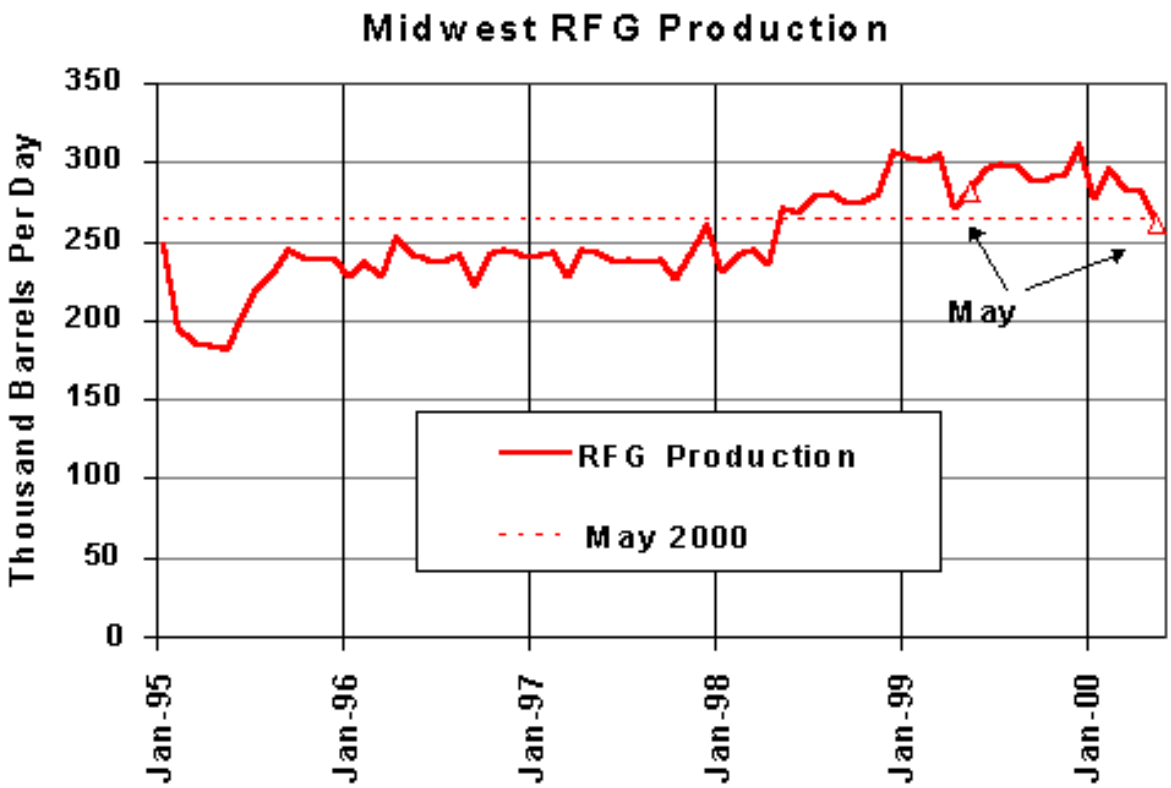
Notes:

- The gasoline market is tight throughout the United States, but the impact can be more pronounced on RFG than on conventional gasoline.
- Midwest RFG is showing the first signs of gasoline price volatility this summer.
  - This is stemming mainly from St. Louis, Chicago and Milwaukee.
  - The loss of supplies to St. Louis coming from the Explorer Pipeline created high RFG prices in that area.
  - Chicago and Milwaukee will be discussed in more detail later in the presentation.

Midwest RFG Production Somewhat Low



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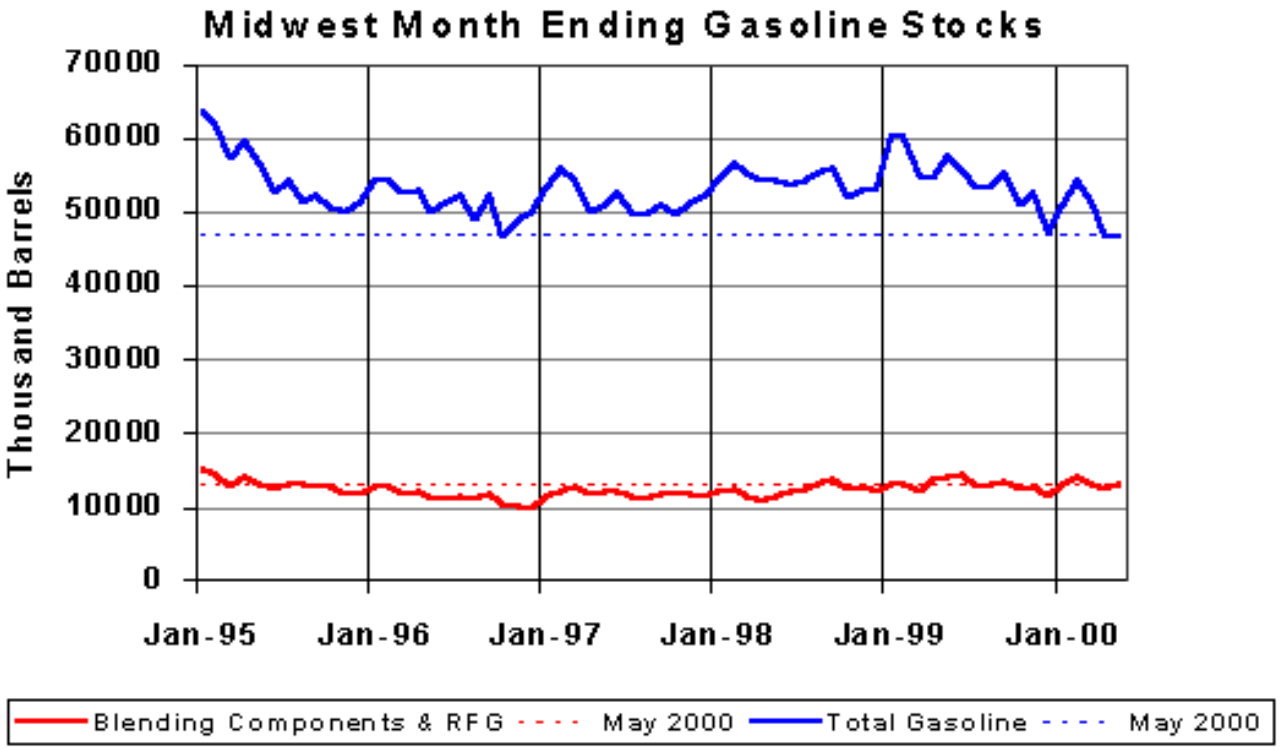
Notes:

- RFG production in total for Midwest has been somewhat low the past couple of months, but these production levels do not indicate a critical supply situation is likely in the near term.
- However, gasoline demand in Midwest seems to be growing more strongly in 2000 than it has for the past couple of years in this region. Weak production combined with strong demand can cause inventories to be drawn down faster than usual.
- Furthermore, in the Chicago and Milwaukee RFG areas, which account for over 2/3 of Midwest RFG consumption, the RFG is almost exclusively made by blending ethanol with blending components called “reformulated gasoline blendstock for oxygenate blending” or RBOB at local terminals. Most of the RBOB comes from about 7 refineries that serve that area. (Some additional RBOB comes from a few additional refineries on the Gulf Coast.)
- The summer-grade RBOB that gets blended with ethanol is fairly difficult to make, and not many refineries outside of the Chicago/Milwaukee area produce the product. With the Phase II RFG program, some refiners were unable to produce as much RBOB as last year, and others were able to produce more. This created a change in supply patterns to which the markets are adjusting.

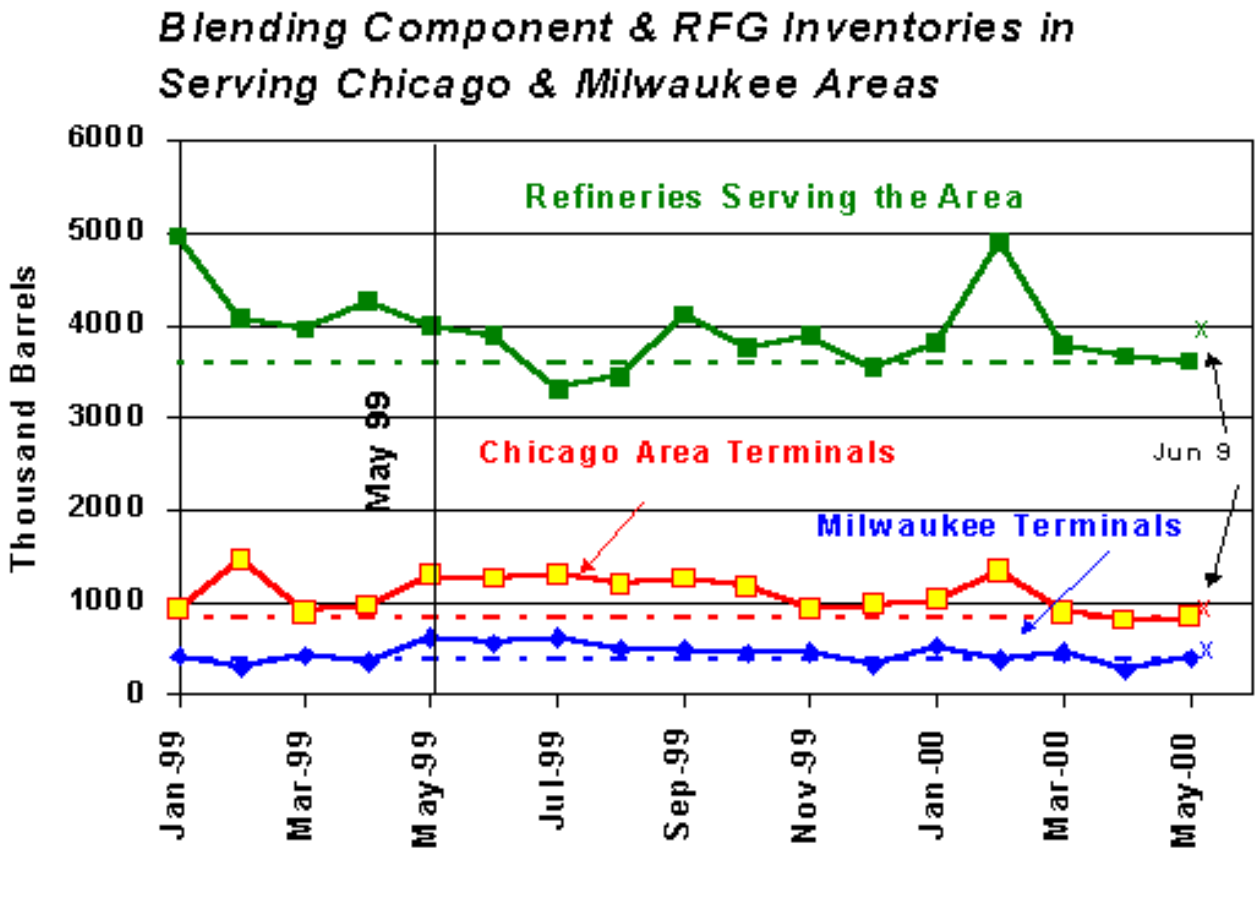
Midwest Conventional Stocks Very Low; RFG Not As Extreme



Notes:

- Midwest gasoline stocks (including blending components which are used to make RFG) are very low. Total gasoline stocks at the end of May are about 13% lower than the five year average for this time of year, and the lowest ever since 1981 when EIA began collecting this data.
- With the addition of a new RFG region, St. Louis, into Midwest, one would expect RFG and blending component stocks to increase in total. But they did not. They are at about the same levels as we saw in 1998 and 1999 at this time of year. St. Louis added about 18% demand to the RFG market in Midwest, but without a corresponding increase in overall inventory levels.

Regional Inventories Low



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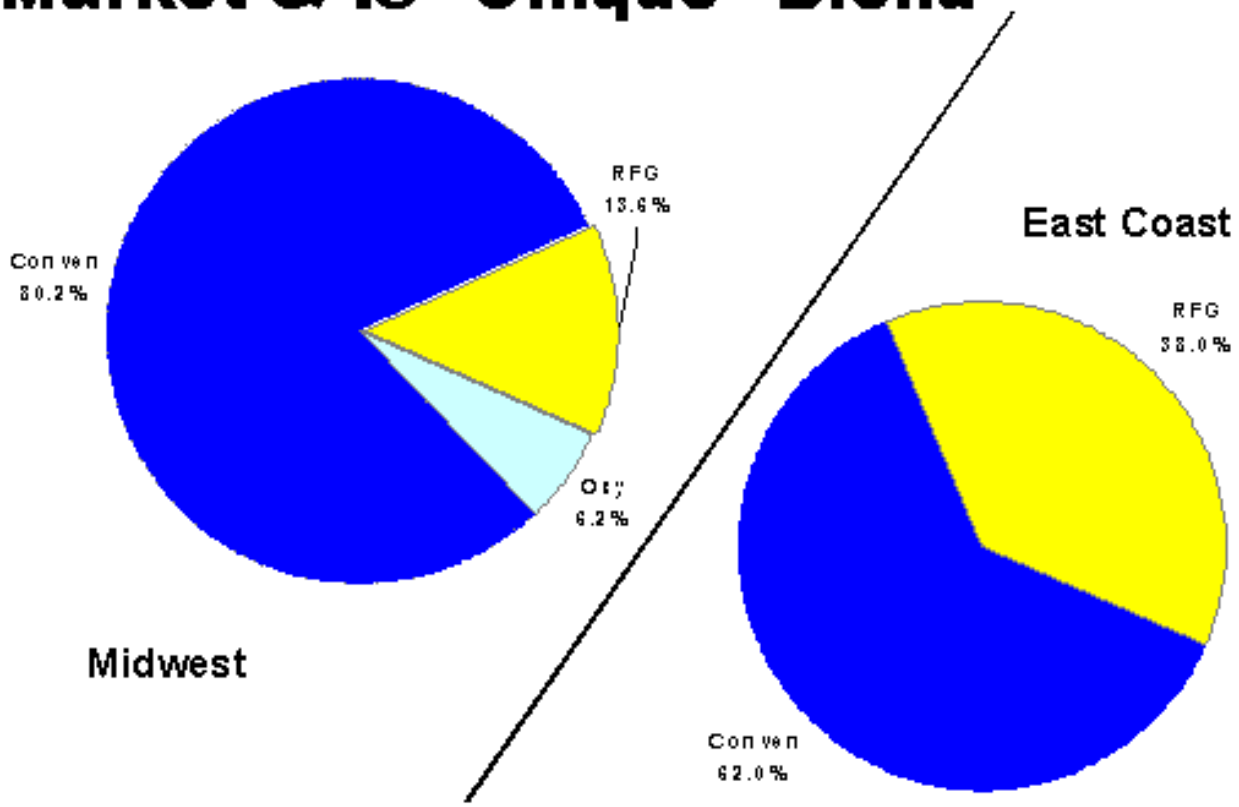
Notes:

- In the Chicago and Milwaukee areas, inventories of blending components used to make RFG and RFG are low, particularly at the Chicago terminals and at the 7 refineries supplying the area.
  - About 3/4 of the blending component and RFG gasoline inventories are stored at the main Midwest refineries that produce RFG for the Chicago and Milwaukee areas, and 1/4 at the terminals.
- The latest weekly data for June 9 indicate there may be some increases in supply occurring, as evidenced by the increases in refinery stocks and slight increases in terminal stocks. Furthermore, spot prices in the Chicago area began to fall at the end of last week, which also provides an indication that the supply situation may be improving. Still the area is functioning with no room for error, so this improvement can quickly disappear if any further problems develop.
- Once the region begins to recover, there will be some delay before wholesale price improvements are seen at the retail level.

Midwest RFG Is Small Fraction Of Market & Is “Unique” Blend



EIA Prime Supplier Data 1999 For Period After MO Entered the Program

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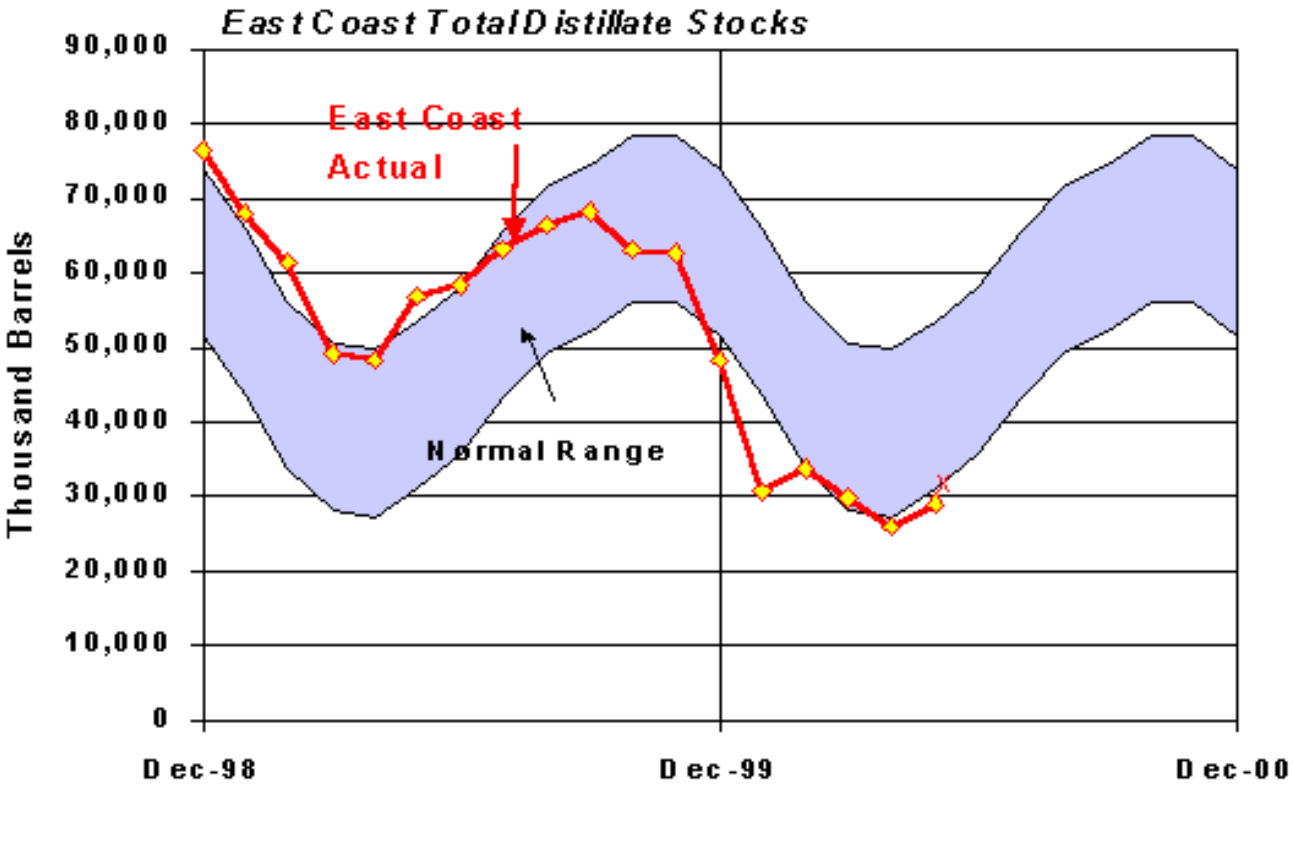
Notes:

- Why has there been such a large RFG price increase in the Chicago/Milwaukee areas?
- There is no one answer. A large part of the price reaction to the region’s low stocks stems from the small size of this market, the unique nature of the area’s summer-grade ethanol-blended Phase II RFG, and a difficult transition from the winter to the summer grade gasoline.
  - The RFG market in the Midwest is about 13% of the Midwest total gasoline market, compared to the East Coast, where RFG represents about 38%. A small market has fewer nearby options for product when any problems occur. Furthermore, because RFG is relatively expensive to produce, the industry has a disincentive to store extra product.
  - The special gasoline blend used in this area during the summer is produced at refineries and sent to terminals near the local market to be combined with ethanol in order to produce the finished RFG. While that special blend can be produced on the Gulf Coast by a few refineries and shipped to Chicago and Milwaukee terminals, it is both a difficult and relatively expensive material to produce and a long trip to the final destination. Thus, an initial price runup does not immediately bring in new supplies from outside the region.
  - The complexity of the transition from winter to summer grade gasoline also contributed to the problem. Many storage tanks had to be drained completely before the new summer-grade product

could be added in order to preserve the clean fuel qualities. This exposed the area to very low stocks during the transition. Also some refineries produced less RFG blending component volumes this year than last and others produced more, which required market distribution adjustments.

- Contributing to the problem are the uncertainties surrounding supply that result from the temporary West Shore pipeline shutdown and the UNOCAL patent, which is lending uncertainty to all RFG producers.

While Gasoline Has the Limelight, Distillate Is Being Watched



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Notes:

- While the public is currently focusing on gasoline, EIA is watching the distillate market closely.
- As the normal stock band shows, we typically build distillate stocks during the summer for use during the winter.
- Given the low gasoline stocks, it is unlikely refinery yields will be tilted to diesel versus the normal pattern, so at best, the distillate fuel oil build will be normal. In this case we would begin the winter with below average stock levels.
- Below average stock levels translate to increased potential for price volatility.

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June 20, 2000

Energy Information Administration

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