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Energy Information Administration

Short-Term Energy Outlook April 2003

Summer 2003 Motor Gasoline Outlook

Summary

For the upcoming summer season (April to September 2003), high crude oil costs and other factors are expected to yield average retail motor gasoline prices higher than those of last year. Current crude oil prices reflect a substantial uncertainty premium due to concerns about the current conflict in the Persian Gulf, lingering questions about whether Venezuelan oil production will recover to near pre-strike levels in time for the peak driving season, and the impact of recent disruptions in Nigerian oil output. Moreover, unusually low crude oil and gasoline inventory levels at the outset of the driving season are expected to keep prices high throughout much of the summer and declines from current high levels are likely to be constrained.

- **Retail gasoline prices** (regular grade) are expected to average $1.56 per gallon, 17 cents per gallon higher than last summer's average and slightly above the average in the summers of 2000 and 2001. Because of the uncertainty surrounding the crude oil market and the domestic refining/distribution system, even if no new disruptions to crude oil and gasoline supply occur, a 95 percent confidence range extends as much as 16 cents per gallon to either side of the baseline forecast during the upcoming driving season. New disruptions could result in prices above the baseline forecast while definitive resolutions of current problems could result in prices lower than the baseline forecast. Although we expect prices to retreat slowly after nearing the previous nominal monthly average record of $1.69 per gallon in March, there remains a significant probability that gasoline prices could be above those of the baseline projection. It should be noted that the projected (baseline) average summer gasoline price, when adjusted for inflation, is still well below the record reached during the summer of 1980 (about $2.77 per gallon in year 2003 dollars).

- **Gasoline Demand** is projected to average 9.18 million barrels per day, a new record, up 150,000 barrels per day, or 1.6 percent, from last summer. The growth comes amid the gradual acceleration of the U.S. economy out of the 2001-02 recession despite the higher retail prices.

- Total beginning of season **motor gasoline stocks** are estimated at 200 million barrels, 13 million barrels below those at the same time last year. They are projected to rise to 201 million barrels at the end of the season. Inventory changes are therefore not expected to make a net contribution to this summer's gasoline supply, resulting in an even higher reliance on imported sources than in previous summers.

- **Total domestic output of motor gasoline** (refinery and field production less volumes associated with net imports of and stock changes in gasoline blending components) is projected to average 8.44 million barrels per day during the summer months, about 180,000 barrels per day (2.1 percent) above last summer. Net imports (including blending components) are projected to be 746,000 barrels per day, up 14,000 barrels per day from those of last summer.

Table MG1 summarizes the base-case summer motor gasoline market-related projections and compares those projections with last summer.

Table MG1. U.S. Motor Gasoline Summer Outlook: Mid World Oil Price Case

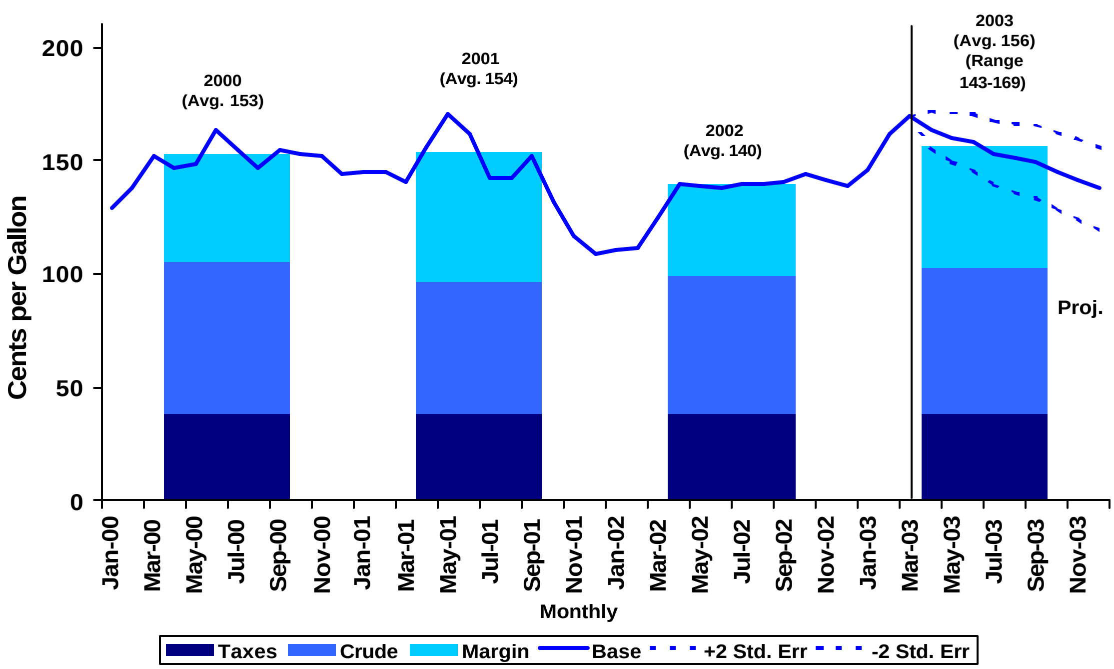
	2002			2003			Change (%)		
	Q2	Q3	Summer	Q2	Q3	Summer	Q2	Q3	Summer
Prices (cents per gallon)									
WTI Crude Oil (Spot) [a]	**62.5**	**67.5**	**65.0**	*70.5*	*67.9*	*69.2*	*12.9*	*0.6*	*6.5*
Imported Crude Oil Price [b]	**56.8**	**61.6**	**59.2**	*64.1*	*61.6*	*62.8*	*12.9*	*0.0*	*6.2*
Wholesale Gasoline Price [c]	**86.2**	**88.1**	**87.1**	*104.1*	*96.4*	*100.2*	*20.8*	*9.4*	*15.0*
Retail Gasoline Price [d]	**139.0**	**139.9**	**139.4**	*160.6*	*151.4*	*156.0*	*15.5*	*8.3*	*11.8*
Stocks, Incl. Blending Components (million barrels)									
Beginning	**213**	**217**		*200*	*207*				
Ending	**217**	**206**		*207*	*201*				
Demand/Supply (million barrels per day)									
Total Demand	**8.992**	**9.067**	**9.030**	*9.069*	*9.279*	*9.175*	*0.8*	*2.3*	*1.6*
Total Output [e]	**8.291**	**8.230**	**8.260**	*8.387*	*8.486*	*8.437*	*1.2*	*3.1*	*2.1*
Total Stock Withdrawal (Incl. Blend. Components)	**-0.035**	**0.110**	**0.038**	*-0.081*	*0.064*	*-0.008*			
Net Imports (Incl. Blend. Components)	**0.737**	**0.727**	**0.732**	*0.762*	*0.729*	*0.746*	*3.4*	*0.3*	*1.9*
Refinery Utilization (percent)	**92.4**	**91.8**	**92.1**	*94.1*	*95.3*	*94.7*			
Market Indicators									
Real GDP (billion 1996 dollars)	**10242**	**10344**	**10293**	*10513*	*10606*	*10560*	*2.6*	*2.5*	*2.6*
Real Income (bill. 1996 dollars)	**7686**	**7745**	**7715**	*7876*	*8004*	*7940*	*2.5*	*3.3*	*2.9*
Industrial Output (index, 1992=1.0)	**110.5**	**111.4**	**110.9**	*111.5*	*112.8*	*112.1*	*1.0*	*1.2*	*1.1*
Miles Traveled (mill. miles per day)	**8027**	**8052**	**8039**	*8009*	*8279*	*8145*	*-0.2*	*2.8*	*1.3*
Average MPG (miles per gallon)	**21.3**	**21.1**	**21.2**	*21.0*	*21.2*	*21.1*	*-1.1*	*0.5*	*-0.3*

[a]Cost of West Texas Intermediate crude oil.
[b]Cost of imported crude oil to U.S.
[c]Price of gasoline sold by refiners to resellers.
[d]Average pump price for regular gasoline.
[e]Refinery output plus motor gasoline field production, *including* fuel ethanol blended into gasoline and new supply of oxygenates and other hydrocarbons for gasoline production but *excluding* volumes related to net imports of or inventory changes in motor gasoline blending components.
Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold. Forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.
Sources: Historical data: latest data available from: Energy Information Administration, Petroleum Supply Monthly, DOE/EIA-0109; Monthly Energy Review, DOE/EIA-0035; U.S. Department of Commerce, Bureau of Economic Analysis; Federal Reserve System; National Oceanic and Atmospheric Administration. Macroeconomic projections are based on DRI/McGraw-Hill Forecast CONTROL0301.

Prices

Due to the run-up in crude and product prices over the last 4 months, summer 2003 retail gasoline prices are projected to be about 17 cents per gallon more than the summer 2002 average of $1.39 per gallon and similar to the summer average prices of $1.53 and $1.56 in the summers of 2000 and 2001 (Figure MG1), respectively. In year 2003 dollars, the record summer average for retail regular gasoline was reached in the summer of 1980, at $2.77 per gallon. Some reasons for the higher gasoline prices this year that relate to crude oil costs are: rising world oil demand; the current conflict in Iraq; the disruption of Venezuelan output since December (full recovery has not been achieved yet); sharper-than-expected primary stock withdrawals (the U.S. portion of which was due in part to cold weather in the Northeast and very tight natural gas supplies); and shutdowns of some Nigerian operations brought about by ethnic strife. Other factors include: abnormally low gasoline stocks following a winter season focusing more heavily than usual on heating oil and diesel fuel; increasing demand for gasoline and rising domestic refinery utilization; transition to ethanol-based reformulated gasoline in California.

Figure MG1. Retail Gasoline Price Cases*
(Base Case and 95 Percent Confidence Range**)



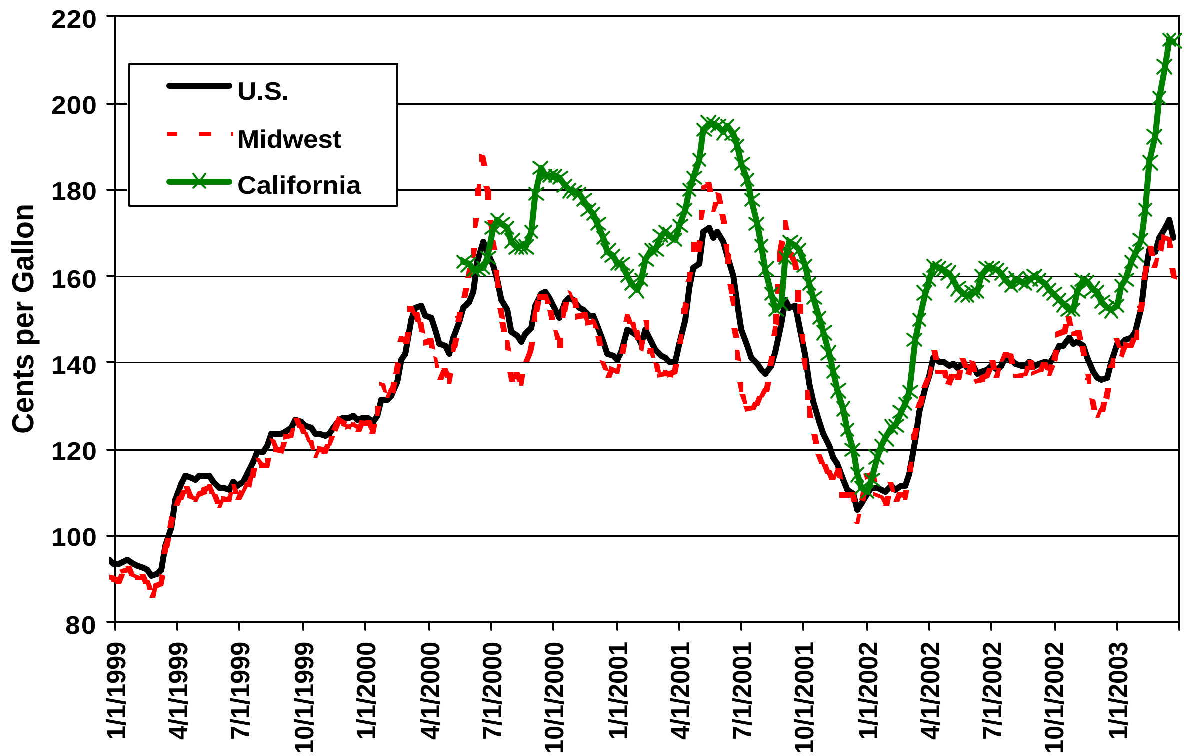
**** Regular gasoline, average all formulations.***

***** The confidence intervals show +/- 2 standard errors based on the properties of the model. The ranges do not include the effects of major supply disruptions.***

Even if domestic production and distribution of gasoline this summer proceeded without significant disruptions and there were no unusual supply problems in world oil markets, uncertainties about world petroleum supply and demand patterns of both crude oil and product prices over the next few quarters remain. A range of potential outcomes that constitutes approximately 2 standard errors on either side of the base case projection is depicted for the average pump price for regular gasoline in Figure MG1.

(The range is based on the normal error distributions associated with the Short-Term Integrated Forecasting System model.) The probability of the national average price for a month ranging above or below these curves is approximately 5 percent. The range is $1.48 to $1.64 per gallon for the average retail gasoline price during the peak driving season. This calculation, however, reflects mainly the underlying uncertainties in crude oil markets and refining and distribution margins – under conditions in which extensive refinery disruptions or other unusual domestic product or world oil supply problems do not occur.

Figure MG2. U.S. Regular Gasoline Prices; Selected Regions



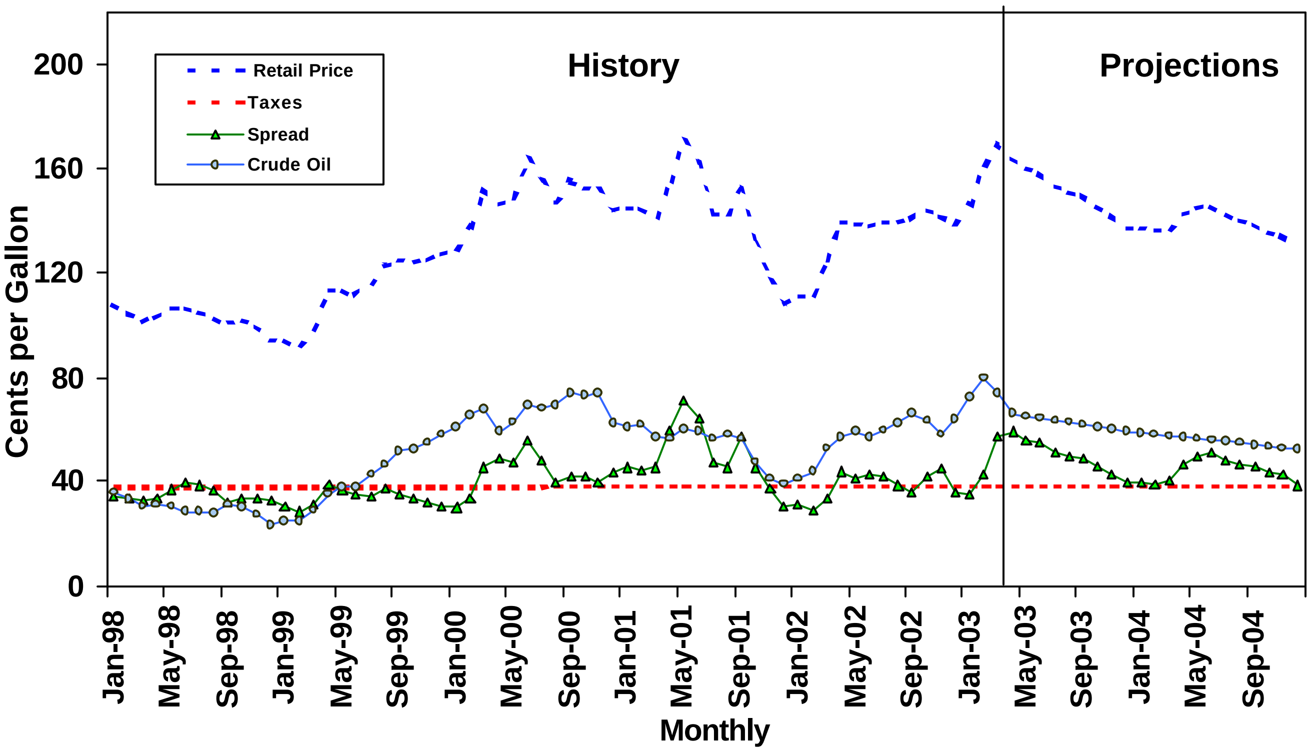
In addition to the general uncertainty concerning the gasoline market projections for this summer, other qualifications to the U.S. forecast that are of interest include regional variations in price due to such factors as tax differences, environmental requirements and unique market circumstances (Figure MG2). Based on the last 4 years of history, maximum monthly gasoline price variations between Petroleum Administration for Defense Districts (PADDs) have averaged 23 cents per gallon but have been as high as 46 cents per gallon. State gasoline taxes (excise and sales taxes) alone yield interstate price differences that have exceeded 25 cents per gallon. In addition, impending state bans on the blending of methyl tertiary butyl ether (MTBE) into gasoline are scheduled to begin later this year in Connecticut. The California ban is scheduled to take effect at the start of 2004 but California refiners are moving early. This will be the first summer in which a substantial volume of California reformulated gasoline is produced with ethanol rather than MTBE. For a more comprehensive analysis of the scheduled State MTBE bans and their potential market effects refer to the companion report, ***Motor Gasoline Outlook and State MTBE Bans***.

As of Monday, March 31, EIA's weekly survey of retail gasoline prices showed the average California price for regular grade gasoline at $2.02 per gallon, up nearly 51 cents per gallon since the end of January. By comparison, the U.S. average price for regular was $1.65 per gallon, an increase of about 28 cents during the same period. Rising crude oil prices have been a significant factor in the national price increase, but represent a smaller portion of the much-larger California gasoline price run-up. Prices for Alaskan North Slope (ANS) crude, a major input to West Coast refineries, rose about $6 per barrel, or 15 cents per gallon, during the January to mid-March period, while average California spot gasoline prices rose about 52 cents per gallon in the same time-frame. Thus most of the increase in retail prices has been driven by increased refining margins rather than by higher wellhead prices or marketing margins. California presents a particularly interesting comparison to the average U.S. gasoline price situation because of its strict environmental standards, the above-average tax rate and the relative isolation of West Coast markets. The difference in California gasoline price behavior this spring is the result of a number of factors, including: 1) the phase-out of MTBE in favor of ethanol, 2) the extent of spring refinery process unit maintenance shutdowns, and 3) the habitually tight California gasoline supply / demand balance.

California prices to date are typical of supply problems that have occurred in California previously. However, the transition from MTBE- to ethanol-based reformulated product is likely contributing to the price increase. Certainly the loss of gasoline production capability, the reduction in the number of suppliers outside of California that can make the low-RVP summer product, and the learning curves refiners and marketers must climb to deal with the complexity of the transition, all contribute to the run-up. Information is inadequate to be able to quantify how much of the run-up has been due to the generally tight market versus the transition away from MTBE.

Some perspective on the causes of average summer gasoline price movements at the national level is provided in Figure MG3. The dramatic fluctuations in crude oil costs that occurred between spring 1999 and fall 2001, as important as they were, constituted only one part of the array of factors which affected average gasoline price movements. Additional factors include occasional gasoline supply bottlenecks (such as those seen in the Midwest in 2000) and concerns about low stocks and unplanned refinery outages in 2001. In general, relatively low gasoline stocks at the beginning of the driving season contributed to or exacerbated market tightness across regions. These factors generated above-average wholesale spreads (the difference between refiner prices for gasoline and crude oil costs) and thus additional upward pressure on retail prices.

Figure MG3. Retail Gasoline Price* Components

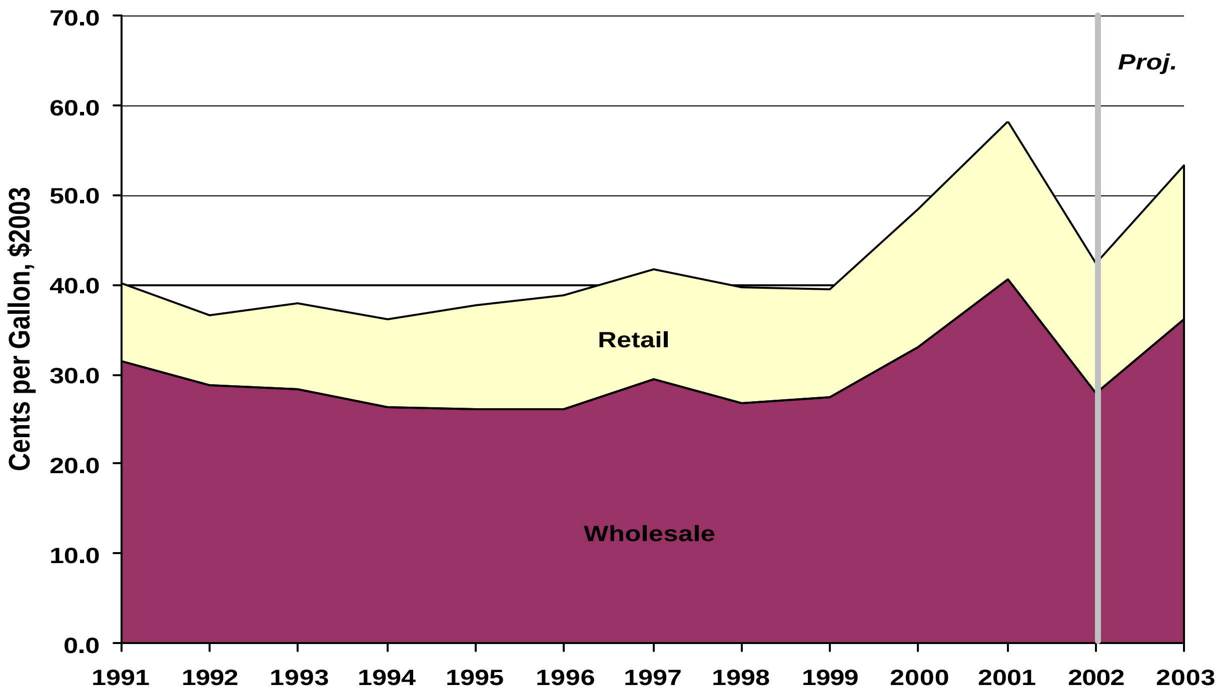


* Retail Price: regular gasoline, self-serve cash. Crude: average imported cost to U.S. refiners.

This summer, motor gasoline markets are expected to be tighter than last summer. Total spreads (retail price, excluding taxes, minus crude oil price) are expected to average 55 cents per gallon compared to 41 cents per gallon in 2002. This results primarily from higher refinery utilization brought about by the increase in demand combined with low beginning-of-season inventory levels. But the projected spread is less than the 58 cents observed in the summer of 2001, when stocks were at record lows and the Midwest suffered from ethanol-related blending problems.

A longer perspective on spread, particularly when expressed in inflation-adjusted terms, puts this year's expected market conditions in context. Figure MG4 shows real total motor gasoline margins (retail price, less taxes, less average crude oil input cost, deflated by the producer price index) from summers 1991 through 2002 plus the projected 2003 value. Before 2000, total gasoline spreads for the summer averaged between 36 and 40 cents per gallon, with about 70 percent of the gross spread going to the refining or upstream gasoline sector. Summer margins surged in 2000 and 2001 as transition to Phase II of the RFG provoked pipeline and refinery problems, and tight oil markets increased marginal cost of gasoline supply. Looser oil markets in 2002 and a generally good domestic gasoline inventory situation helped drop margins back to pre-2000 levels. Tight oil markets again this year, along with low gasoline inventories and transition to ethanol from MTBE on the West Coast point to elevated margins again this summer.

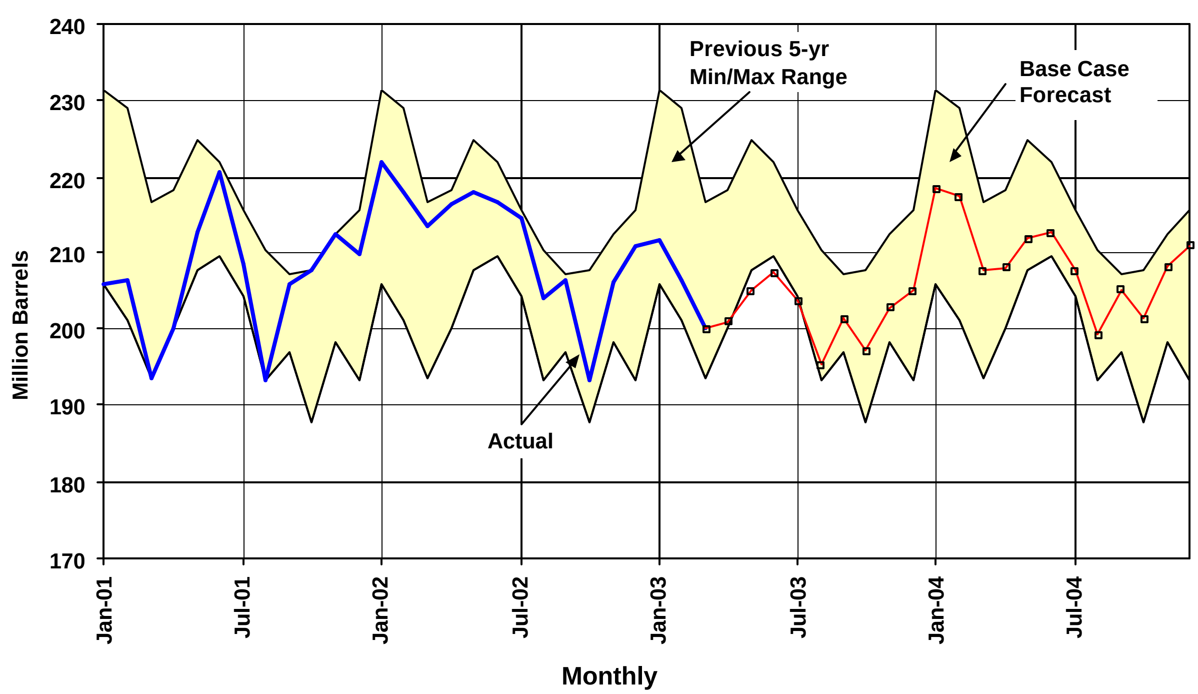
Figure MG4. Real* Summer Motor Gasoline Spreads



Inventories

Total gasoline stocks, as shown in Figure MG5, were estimated to be 200 million barrels at the beginning of this season, down 17 million barrels from last year and only 6 million

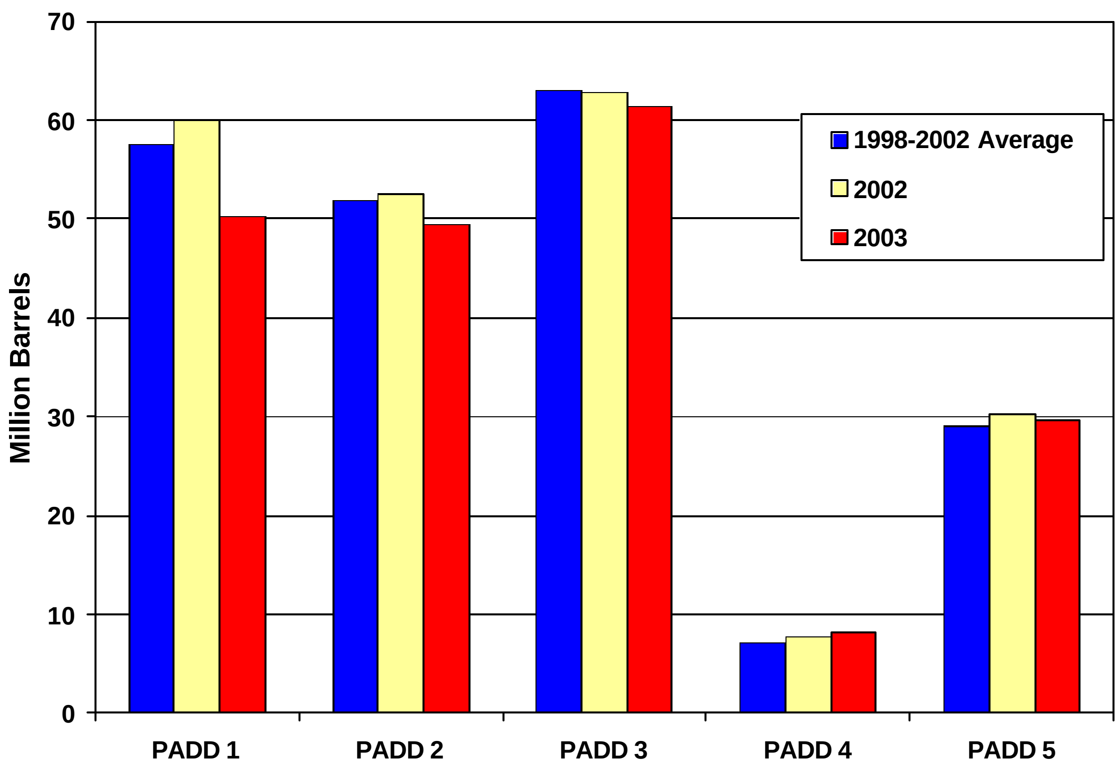
Figure MG5. U.S. Total Motor Gasoline Stocks



barrels above the recent low seen in 2001. End-of-season inventories are expected to be 201 million barrels, or 5 million barrels below that of a year ago. This implies an average summer build of about 10,000 barrels per day, compared to a draw of almost 40,000 barrels per day last year. The low level of stocks throughout the summer is expected to contribute to tight markets, constraining the downward trend in prices from the early-season highs.

U.S. gasoline stocks begin the current driving season below the previous 5-year average in most areas and at least marginally below last year's levels in all but the Mountain Region (PADD4) (Figure MG6). The deficit is particularly noticeable on the East Coast (PADD1). Since the East Coast is the focus of most of the imports of gasoline into the United States, stability of prices there this summer will, more than most years, depend on the availability of gasoline from foreign sources to make up for the deficit on the storage side during the driving season. On the whole, the West Coast (PADD5) appears to be stocked at a level typical of recent experience, but, as we have seen, this has not prevented instability in California prices already this year.

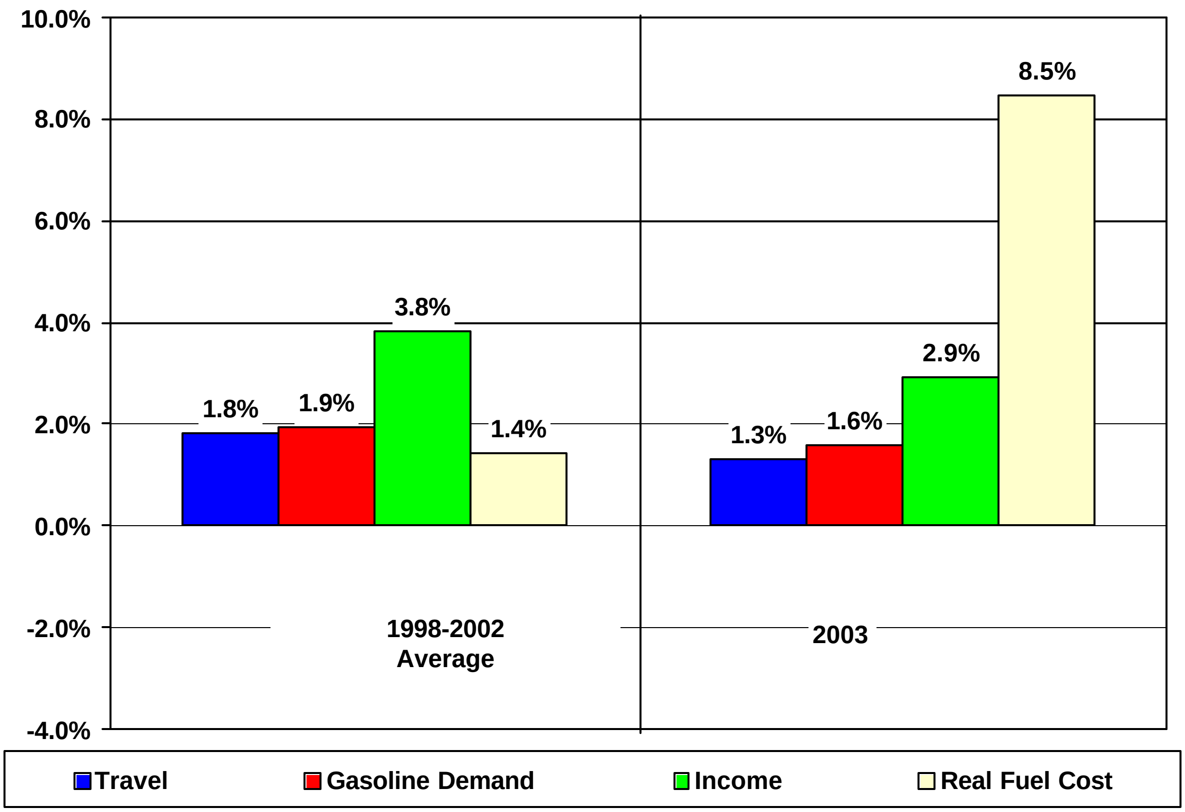
MG 6. U.S. Regional Gasoline Stocks (Beginning of Season - March 31)



Demand

For this summer, total gasoline demand is expected to be 1.6 percent above that of 2002. Despite the ongoing recovery following more than a year of recession, that growth is still expected to be slightly below average in comparison to the average rates exhibited over the previous 5 years (Figure MG7). Real fuel costs per mile (gasoline costs per mile driven, adjusted for inflation) are expected to be about 10.5 percent higher than the 2002 summer average. That increase is expected to constrain highway travel growth below average levels.

Figure MG7. Summer Motor Gasoline Market Indicators
(Percent Change from Year Ago)



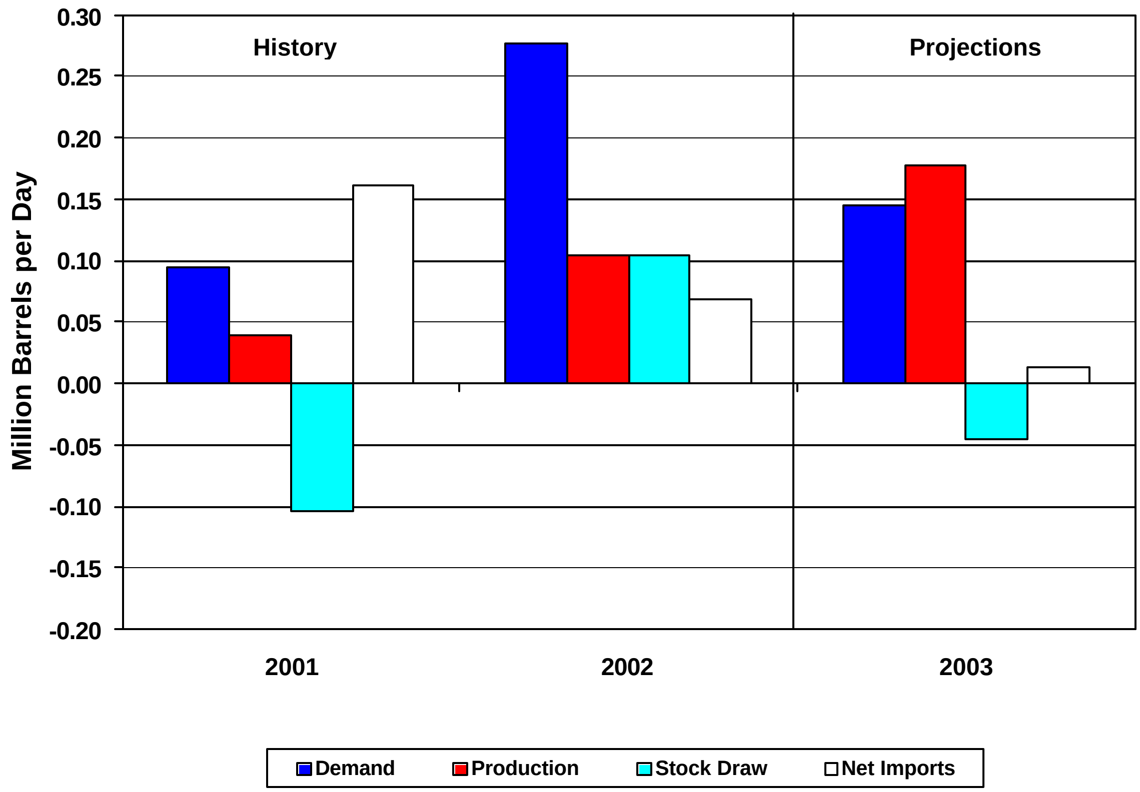
Supply

Motor gasoline requirements are supplied by three sources: domestic refinery output, primary inventories, and net imports. Recent summer driving seasons raised major concerns about the ability of these sources (and related distribution systems) to accommodate demand in view of the more stringent reformulation requirements in the Midwest, low inventories, and possible refinery outages (Figure MG8).

In both the 2000 and 2001 driving seasons, both wholesale and retail prices rose sharply at the outset of the driving season before gradually subsiding before the end of each season. In 2000, the tightness of supply was primarily a regional phenomenon: the more stringent pollution requirements implemented that year resulted in larger-than-expected challenges in the transportation and blending of ethanol in the PADD II region. In 2001, record-low beginning-of-season stocks of 194 million barrels resulted in overall supply tightness. But concerns were magnified in PADD II--whose previous experience with ethanol transportation and blending helped send retail prices to record levels in May--

and in PADD V, where prices are usually higher and more volatile due to that region's geographic isolation. During that summer, however, trans-Atlantic differentials

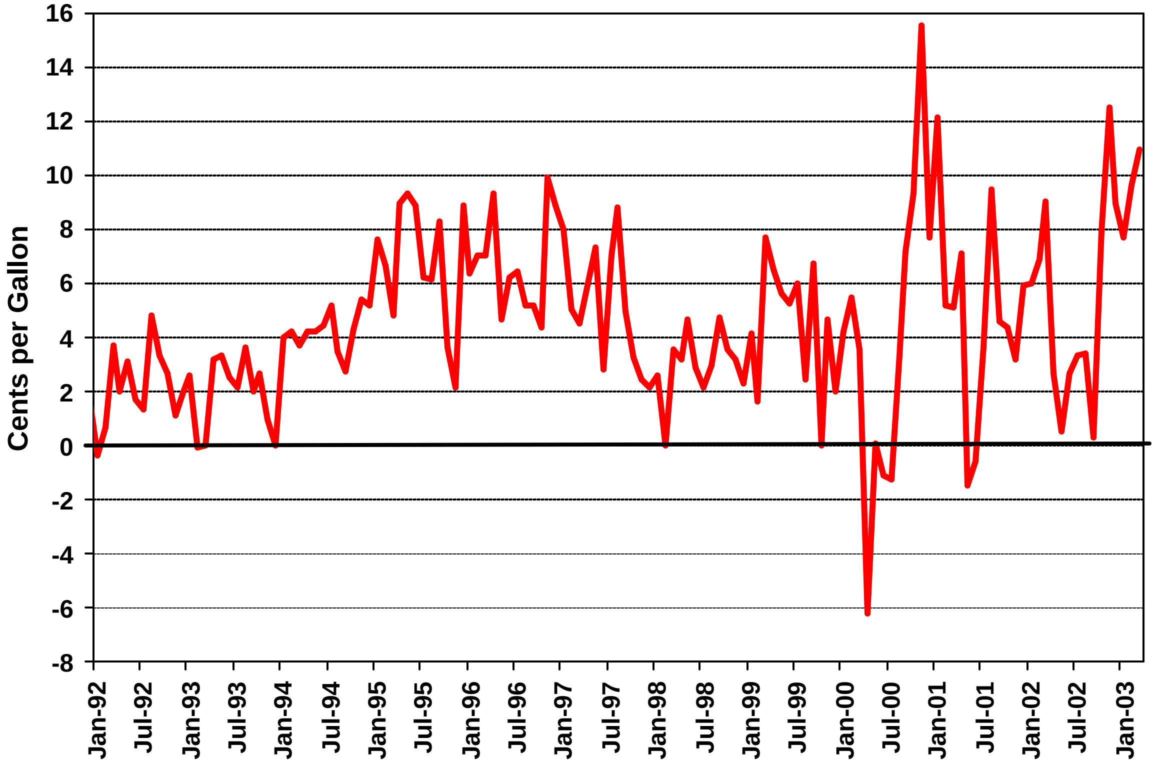
Figure MG8. Summer Gasoline Supply by Source
(Change from Year Ago)



(Figure MG9) stimulated a large increase in net imports of both finished motor gasoline and blending stocks (Figure MG10). Once the summer season was fully underway, U.S. gasoline supply increased sharply, enabling stocks to rise during the driving season from the low point of the normal range to slightly above average.

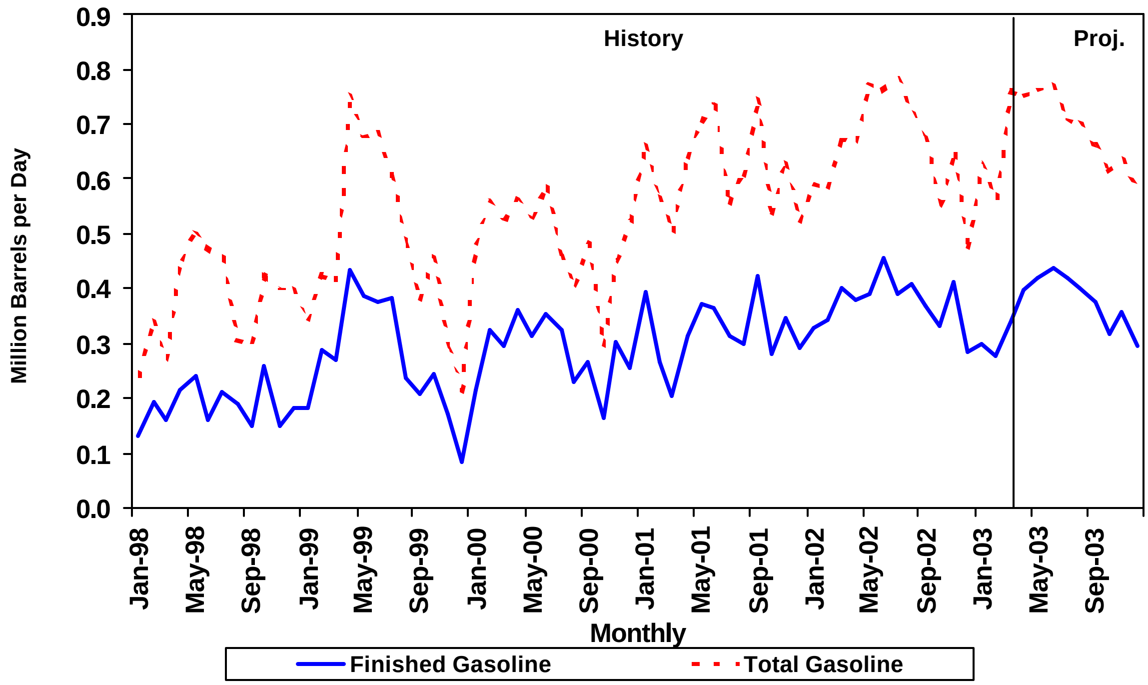
For the upcoming summer, motor gasoline supplies are expected to be tight due to low levels of gasoline and crude oil stocks. Acquisition of increased volumes of gasoline is expected to come at elevated marginal cost and net imports will be expected to increase again this year. Refinery output of motor gasoline is expected to average 8.44 million barrels per day, an increase of about 180,000 barrels per day from that of the previous summer and a new record. Refinery utilization is expected to average 94.7 percent, higher than the 92.1-percent average utilization rate of the previous summer (Figure MG11). Motor gasoline yields are projected to average 47.0 percent, the same as that of the previous summer's record. Short-term utilization rates have been higher than in the past, suggesting that refineries would be able to produce even more to meet unanticipated demand increases that might result from changes in consumer behavior. However, marginal production costs are expected to remain high as long as near-term input supplies (crude oil, natural gas liquids and natural gas) remain tight.

Figure MG9. Trans-Atlantic Gasoline Price Differentials
(NYH less Rotterdam, Conventional Regular Gasoline)



The tightness of stocks is expected to contribute to a record level of motor gasoline net imports during the summer driving season. Total net imports of motor gasoline (including blending components) are projected to average almost 750,000 barrels per day, up from 732,000 barrels per day last summer. Gasoline imports are an important source of supply for the East Coast, accounting for about 15 to 20 percent of peak summer demand in that region. Although most of these imports come from Canada, Venezuela, and the Caribbean, Western Europe is an important source of incremental or swing gasoline supply in the United States. Trans-Atlantic gasoline price differentials provide some indication of the attractiveness of the U.S. market to European refiners (Figure MG9). When U.S. prices exceed European prices adequately to cover transportation cost, they indicate an increased likelihood that moving product across the Atlantic (or diverting supplies otherwise destined for Western Europe) is advantageous. While transportation costs vary, they average about 4 cents per gallon. A surge in European imports often accompanies these price differentials. Before the beginning of last summer, the differential widened again as a result of concerns about the adequacy of U.S. inventories. In March of last year, the differentials were above 8 cents per gallon and indicative of strong U.S. price conditions relative to Europe. At the end of March this year, differentials stood at 3.5 cents per gallon. Expected high demand levels and strong U.S. price signals should keep the level of imports high by historical standards.

Figure MG10. Motor Gasoline Net Imports



Imports of blending components required to meet environmental specifications have increased since 1995, when the RFG program was implemented (Figure MG10). Net imports of blend stocks have occasionally been as high as those of finished motor gasoline, boosting total net imports to almost 800,000 barrels per day. Moreover, the shift from MTBE to ethanol in California is likely to result in additional imports of blending components from the Pacific Rim to that region.

Figure MG11. U.S. Refinery Capacity and Throughput