

Summer 2002 Motor Gasoline Outlook

Summary

For the upcoming summer season (April to September 2002), rising average crude oil costs are expected to yield above-average seasonal gasoline price increases at the pump. However, year-over-year comparisons for pump prices are still likely to be lower this summer. Inventories are at higher levels than last year in April, so some cushion against early-season price spikes is in place and price levels are expected to range below last year's averages, assuming no unanticipated disruptions. Still, OPEC production restraint and tightening world oil markets now probably mark the end of the brief respite (since last fall) from two years of relatively high gasoline prices.

- **Retail gasoline prices** (regular grade) are expected to average \$1.46 per gallon, 5 percent lower than last summer's average of \$1.54 per gallon. Despite the decline, this expected average summer gasoline price would be the third highest nominal average on record. Because of the uncertainty surrounding the crude oil market and the domestic refining/distribution system, a 95 percent confidence range extends as much as 13 cents per gallon to either side of the baseline forecast during the upcoming driving season.
- Once again, the projected (baseline) average summer gasoline price, when adjusted for inflation, is well below the record reached during the summer of 1980 (about \$2.65 per gallon in year 2001 dollars). Although we expect oil markets to tighten up generally over the course of the next year, there remains a high probability that real gasoline prices will be lower than levels seen last summer.
- **Gasoline Demand** is projected to average 8.88 million barrels per day, a new record, up 140,000 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 mini-recession. This summer's expected growth rate is almost double last year's rate of 0.9 percent.
- **Motor gasoline stocks** are currently about 17 million barrels above last year. Inventory changes will substitute for much of the new domestic supply requirements this summer, with some of the substitution appearing in the form of reduced imports.
- **Total domestic output** (refinery and field production less volumes associated with net imports of and stock changes in gasoline blending components) is projected to average 8.29 million barrels per day during the summer months, about 115,000 barrels per day (1.3 percent) above last summer. Higher U.S. output and the greater availability of product in storage at the outset of the season are expected to displace net imports of gasoline. These net imports are projected to be 560,000 barrels per day (including blending components), down 100,000 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

	2001			2002			Change (%)		
	Q2	Q3	Summer	Q2	Q3	Summer	Q2	Q3	Summer
Prices (cents per gallon)									
WTI Crude Oil (Spot) ^a	66.5	63.5	65.0	<i>61.3</i>	<i>61.5</i>	<i>61.4</i>	-7.7	-3.1	-5.5
Imported Crude Oil Price ^b	56.8	54.9	55.8	<i>54.2</i>	<i>54.3</i>	<i>54.3</i>	-4.6	-0.9	-2.8
Wholesale Gasoline Price ^c	107.0	89.6	98.1	<i>94.4</i>	<i>86.7</i>	<i>90.5</i>	-11.8	-3.2	-7.8
Retail Gasoline Price ^d	162.5	145.3	154.0	<i>150.1</i>	<i>142.5</i>	<i>146.3</i>	-7.6	-1.9	-5.0
Stocks, Incl. Blending Components (million barrels)									
Beginning.....	194	220		<i>211</i>	<i>208</i>				
Ending.....	220	206		<i>208</i>	<i>201</i>				
Demand/Supply (million barrels per day)									
Total Demand	8.659	8.821	8.740	<i>8.856</i>	<i>8.899</i>	<i>8.877</i>	2.3	0.9	1.6
Total Output ^e	8.276	8.030	8.153	<i>8.316</i>	<i>8.221</i>	<i>8.268</i>	0.5	2.4	1.4
Total Stock Withdrawal (Incl. Blend. Components)	-0.296	0.161	-0.066	<i>0.032</i>	<i>0.075</i>	<i>0.053</i>			
Net Imports (Incl. Blend. Components)	0.678	0.630	0.654	<i>0.508</i>	<i>0.603</i>	<i>0.556</i>	-25.0	-4.4	-15.0
Refinery Utilization (percent).....	95.6	93.1	94.3	<i>93.0</i>	<i>93.7</i>	<i>93.4</i>			
Market Indicators									
Real GDP (billion 1996 dollars).....	9342	9310	9326	<i>9443</i>	<i>9497</i>	<i>9470</i>	1.1	2.0	1.5
Real Income (bill. 1996 dollars).....	6719	6918	6818	<i>6938</i>	<i>6990</i>	<i>6964</i>	3.3	1.0	2.1
Industrial Output (index, 1992=1.0).....	1.181	1.167	1.174	<i>1.149</i>	<i>1.161</i>	<i>1.155</i>	-2.7	-0.5	-1.6
Miles Traveled (mill. miles per day).....	7883	7877	7880	<i>7978</i>	<i>8068</i>	<i>8023</i>	1.2	2.4	1.8
Average MPG (miles per gallon).....	21.7	21.3	21.5	<i>21.4</i>	<i>21.6</i>	<i>21.5</i>	-1.0	1.5	0.2

^aWest Texas Intermediate.

^bCost of imported crude oil to U.S.

^cPrice of gasoline sold by refiners to resellers.

^dAverage pump price for regular gasoline.

^eGasoline output 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/WEFA Forecast CONTROL0302.

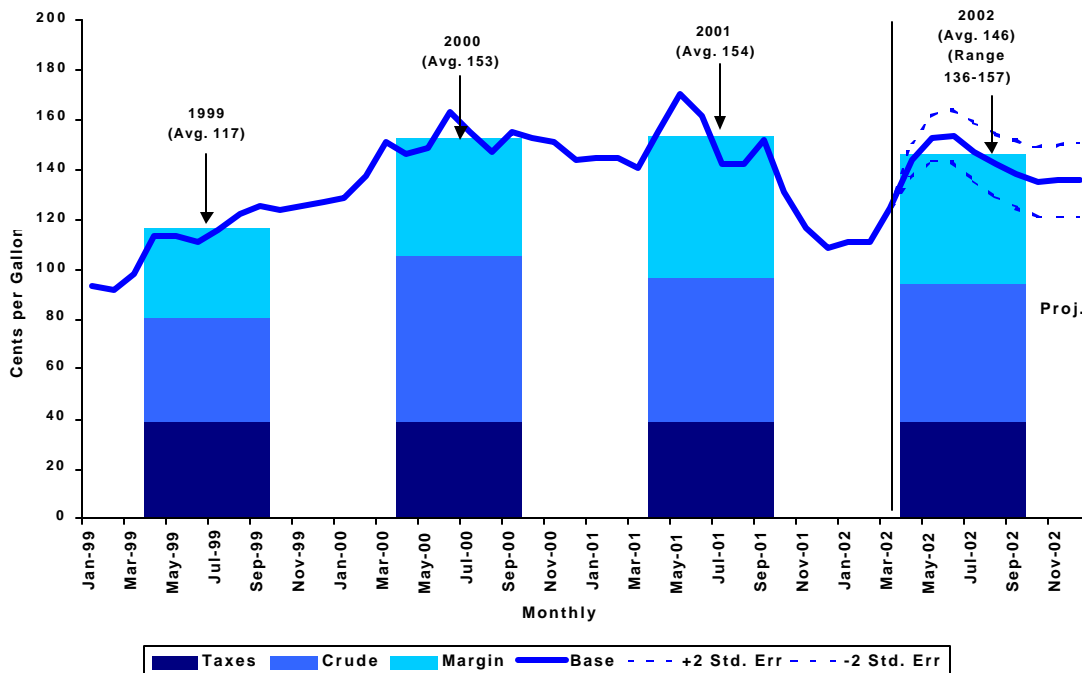
Prices

Despite the recent run-up in crude and product prices, summer 2002 retail gasoline prices are projected to be about 8 cents less than the summer 2001 average, an average of \$1.46 per gallon (Figure MG1). That average, however, would imply a substantial recovery since the winter's low prices. Some reasons for this are: tightening world oil markets spurred by commitments by OPEC and some key non-OPEC producers to restrain output; increased tensions in the Middle East; and recent industry reports of sharper-than-expected primary stock drawdowns. Despite the recent acceleration in prices, crude oil prices are still below year-ago levels and are expected to remain slightly

lower than last year through most of the summer. Over the last two quarters, gasoline prices were well below year-ago levels, principally because of the much-reduced world oil prices that attended the recession-assisted overall petroleum demand weakening.

In contrast to the low inventory situation that characterized the two previous summer driving seasons, inventories at the beginning of the driving are in comparatively good shape this year. The risk of prices averaging (or exceeding) those of the two previous summers is relatively low. Total gasoline inventories as of March 31 were 211 million barrels, 17 million barrels above that of the previous year and 12 million barrels above the low end of the average range (defined as the 5-year seasonalized average, plus or minus one standard deviation).

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



* Regular gasoline, self-serve cash.

Even if production and distribution of gasoline this summer proceeded without significant disruptions, the impact of uncertainty about world petroleum supply and demand patterns on 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 prices ranging above (or below) these curves is, for any month, approximately 5 percent. Even if tight market conditions boosted retail gasoline prices this summer, the approximate probability of the average pump price for regular gasoline exceeding the May 2001 nominal record of \$1.70 per gallon in any month this summer appears to be less than 1 percent. This calculation, however, reflects mostly the underlying uncertainties in crude oil markets and assumes that extensive refinery disruptions do not occur. This may be a conservative estimate given that some of the conditions that

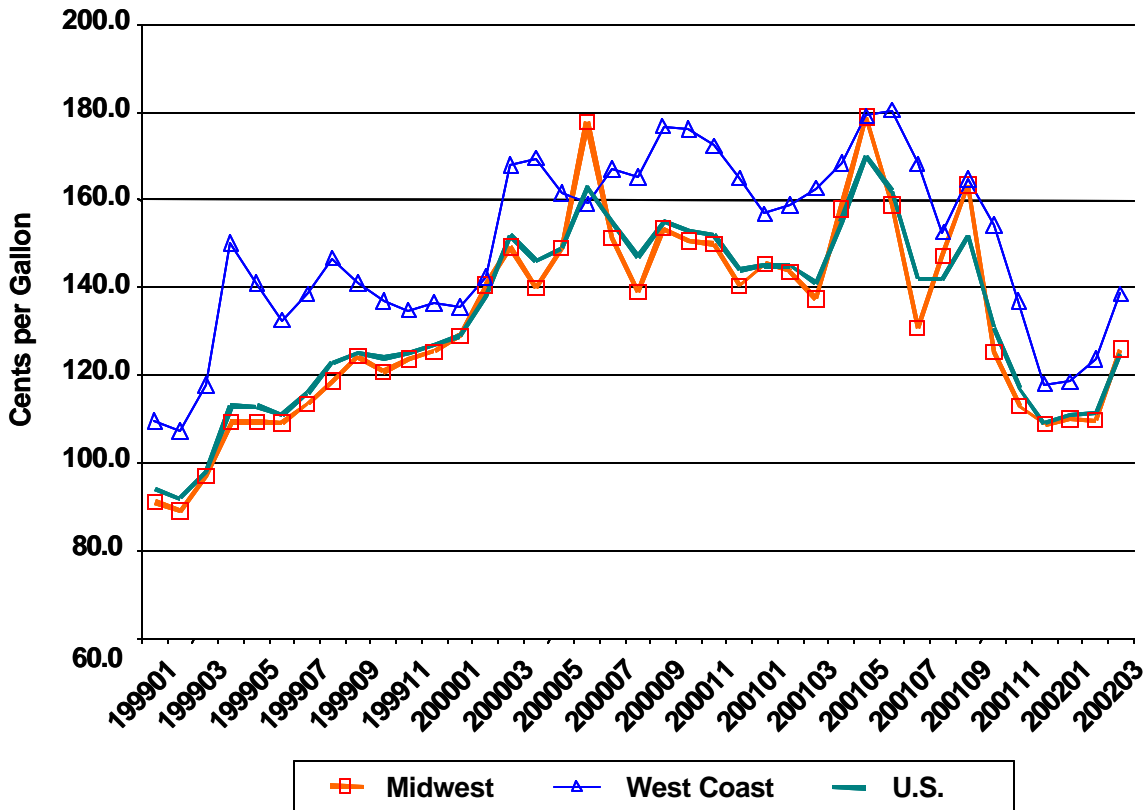
led to high prices early last summer may materialize once again. In a scenario that results in a squeeze on wholesale gasoline prices similar to that seen early in the summers of 2000 and 2001, a realistic range for peak monthly retail prices would extend above \$1.60 per gallon for much of the driving season.

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. Based on 7 years of history, gasoline price variations between Petroleum Administration for Defense Districts (PADDs) have averaged 15 cents per gallon but have been as high as 36 cents per gallon. State gasoline taxes (excise and sales taxes) alone yield interstate price differences that have exceeded 25 cents per gallon. 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.

In both the summers of 2000 and 2001, the Midwest region (PADD II) demonstrated above average price variability in contrast to prior years, when Midwest price movements closely tracked U.S. averages. In 2000, the Midwest region experienced great difficulty in complying with the more stringent reformulated gasoline requirements. Although strongly connected to Gulf Coast refining centers, that region uses ethanol for producing reformulated gasoline in contrast to the MTBE used in the rest of the U.S. Under the new (Phase II) Reformulated Gasoline (RFG) requirements, the continued use of ethanol might still tend to increase the logistical difficulties associated with balancing regional supply and demand despite refiners' apparent ability to adapt to the new requirement. As a result, prices could still be higher than the national average. In 2001, record low finished and total stocks during a time of transition from winter to summer motor gasoline requirements, the shutdown of Premcor's Blue Island refinery and a fire and outage at Tosco's Wood River refinery at the outset of the driving season briefly boosted retail prices to record highs in May. As in the previous, crisis-ridden, summer driving season, however, those prices retreated to pre-season levels within a few weeks.

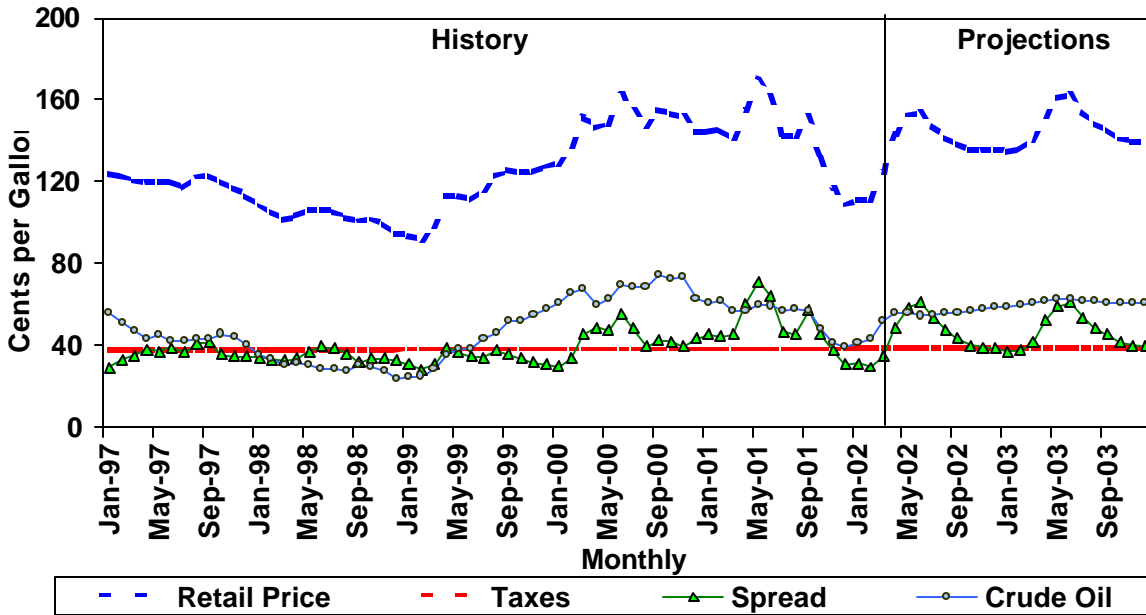
The West Coast gasoline market (particularly California) has always exhibited much greater variability than the United States as a whole, as shown in Figure MG2. Uniquely stringent air quality standards imposed on gasoline sales in California and the relative isolation of California from the major refining and distribution system in the Gulf Coast generates a situation in which the California market is finely balanced and subject to wide swings in price when supply conditions are perturbed, for example, by refining outages. Replenishment of lost supply from such events is costly and time consuming because of the high quality of the product and the distances involved in transporting product to the West Coast from other regions or countries. During the past 7 years, Midwest and California monthly retail price variations have averaged 9 and 7.6 cents per gallon, respectively, compared to 5.2 cents on the East Coast and 5.5 cents on the Gulf Coast.

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



Some perspective on the causes of average summer gasoline price movements 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 spreads (the difference between refiner prices for gasoline and crude oil costs) and thus additional upward pressure on pump prices. This summer, motor gasoline markets are not expected to be quite as tight as last summer. Spreads are expected to average 35 cents per gallon compared to 40 cents per gallon in 2001.

Figure MG3. Retail Gasoline Price* Components

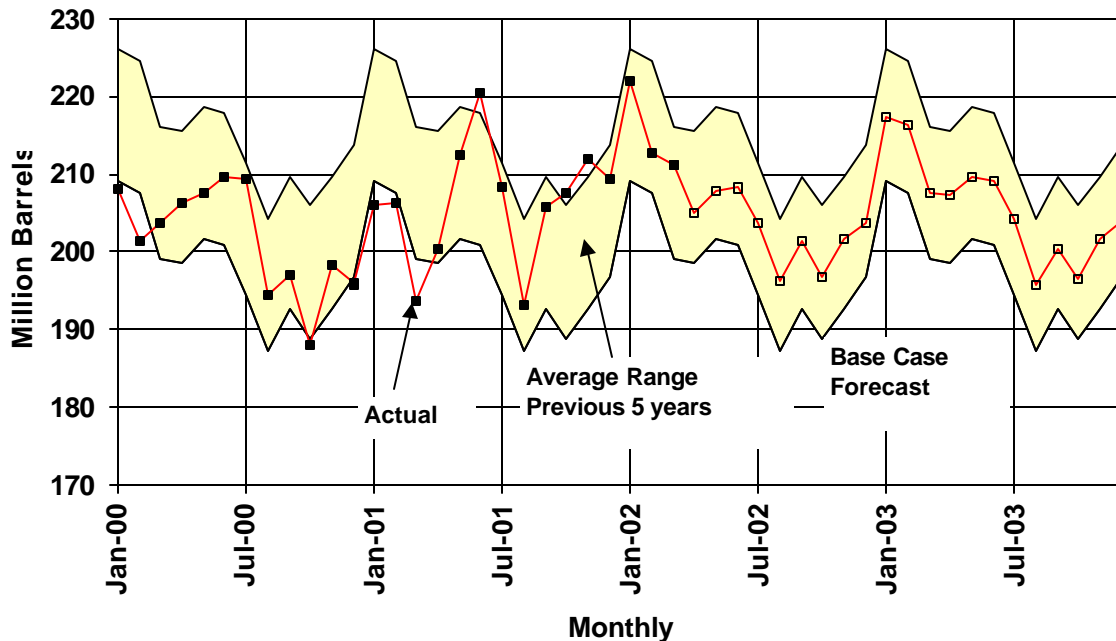


* Retail Price: regular gasoline, self-serve cash. Crude: average imported cost to U.S. refiners.

Inventories

Compared to this time last year, total gasoline stocks are in reasonably good shape, as shown in Figure MG4. Beginning-of-season 2002 stocks stood at an estimated 211 million barrels, up 17 million barrels from last year and within the average stock range. End-of-season inventories are expected to be just over 200 million barrels, implying an average summer draw of about 55,000 barrels per day. This situation contrasts with the previous summer's contra-seasonal build of nearly 70,000 barrels-per-day.

Figure MG4. U.S. Total Motor Gasoline Stocks



On a regional basis (Figure MG5) we observe at least some increase in beginning season stocks over the 2001 level in all supply regions. In PADD V (West Coast) stocks were about even with year-ago levels. Nevertheless, while stocks in most regions appear to be at least slightly above average, PADD II (Midwest) stocks are slightly below recent averages. The cushion is better than in 2001 but above-average price strength this summer in some key consuming regions should not be surprising.

Since West Coast gasoline stocks have not particularly improved over recent years, the high price volatility that has marked the gasoline market in that region in recent years may occur again this summer. On the other hand, the improvement in the Midwest inventory position (up 11 percent from 2001) suggests a slightly less exciting spring gasoline season in that region than has been seen over the last 2 years, particularly if overall refining performance and interregional flows of gasoline and gasoline components remain steady.

Figure MG5. U.S. Regional Gasoline Stocks

(Beginning of Season - March 31, 2001)

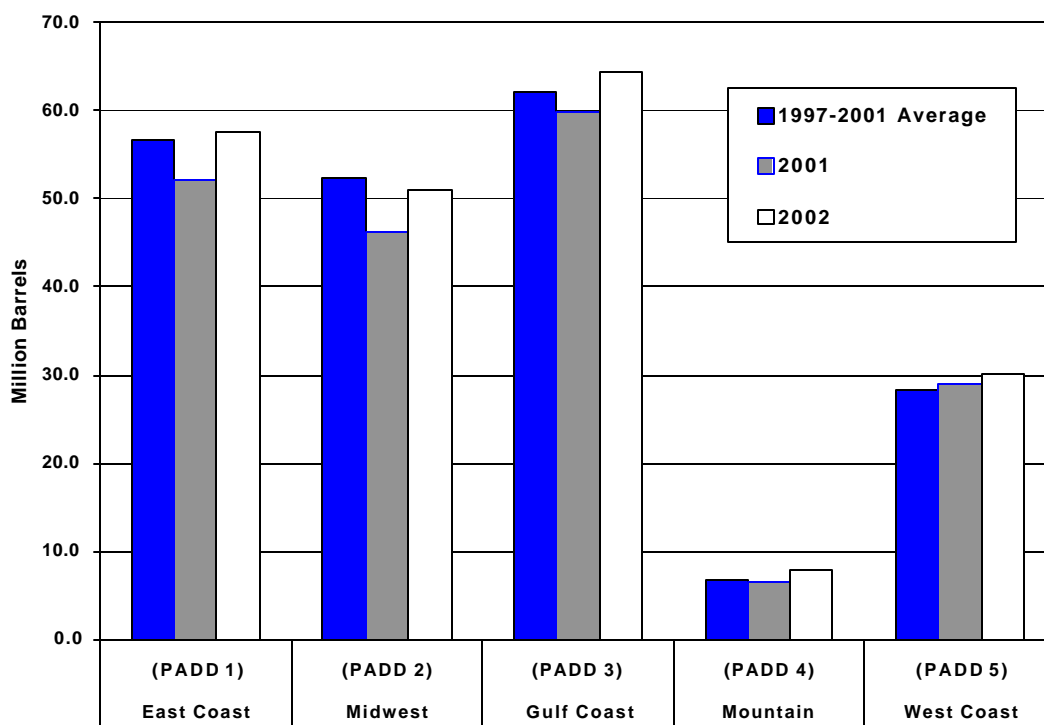
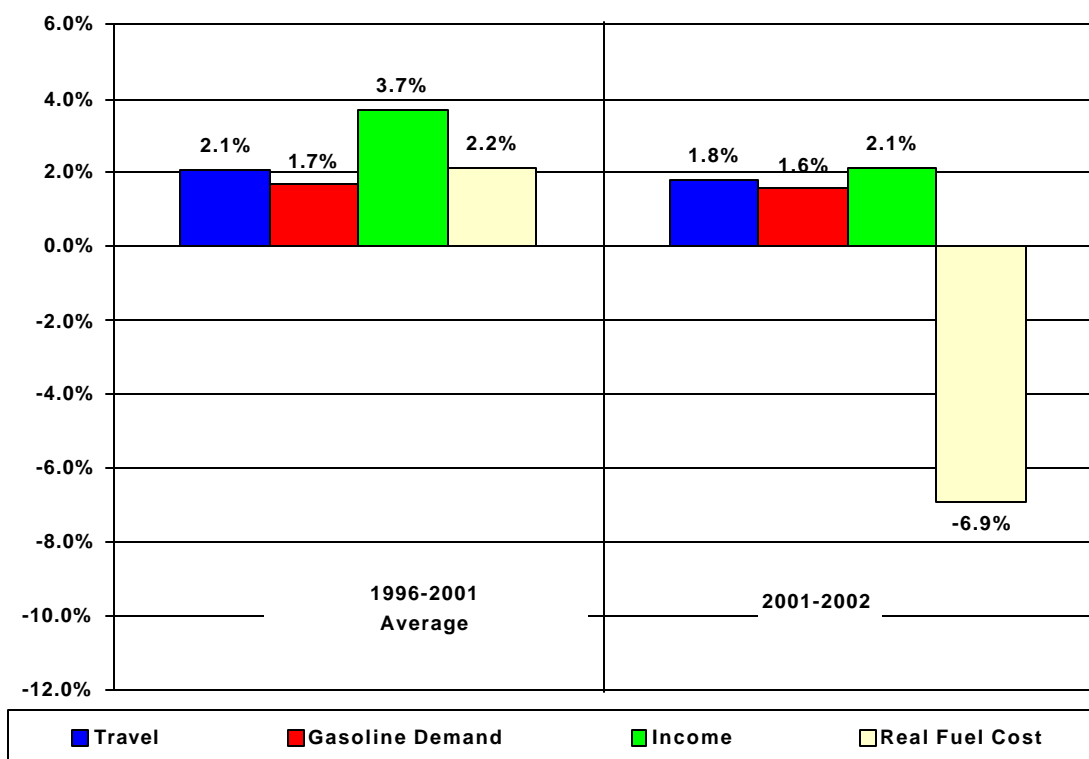


Figure MG6. Summer Motor Gasoline Market Indicators
(Percent Change from Year Ago)

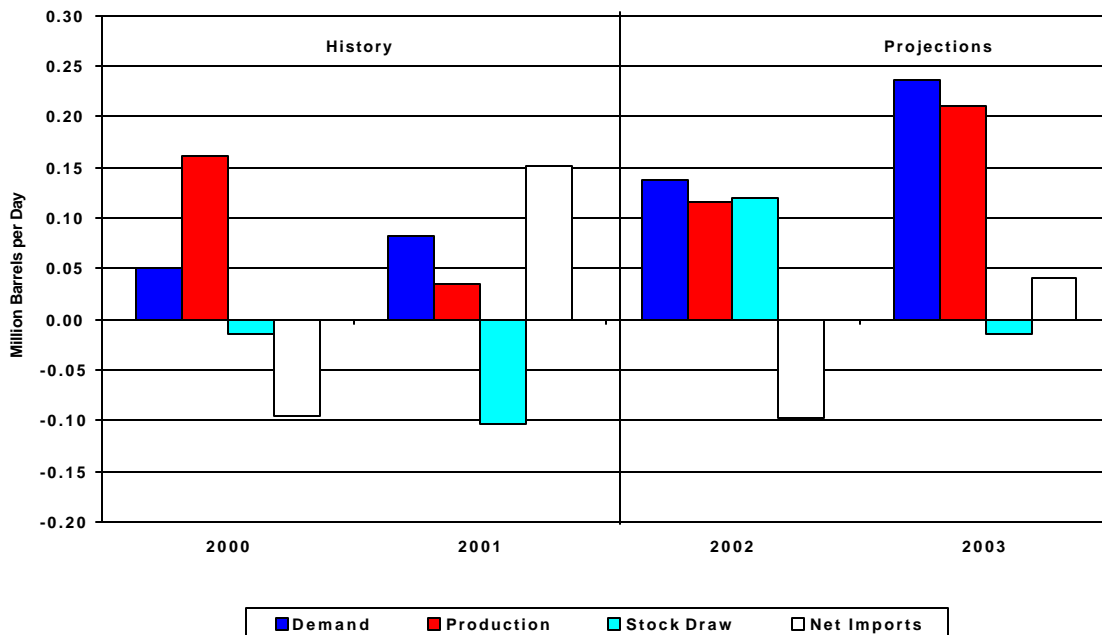


Demand

Despite the relatively weak economic environment, motor gasoline demand growth for the summer of 2002 is expected to be about average in comparison to the rates exhibited over the previous 5 years (Figure MG6). That period included a two-year span (1999-2001) that had the lowest cumulative 2-year growth rate (1.5 percent) in summer gasoline demand in nearly a decade. Thus, potential for even stronger growth exists under more robust general economic conditions, such as those expected to be present in the summer of 2003. For this summer, total gasoline demand is expected to be 1.6 percent above the 2001 summer level. That growth, while still below longer-term averages, would slightly exceed the growth observed over the previous two summers combined.

Although gasoline prices have moved up sharply since last fall, incorporating higher crude oil costs and improving refiner margins (wholesale price less crude cost) in addition to normal seasonal increases, as noted earlier, lower average gasoline prices are expected for this summer compared to one year ago. Real fuel costs per mile (gasoline costs per mile driven, adjusted for inflation) are expected to be about 9 percent lower this summer from the 2001 summer average. This drop would provide a small boost to highway travel this summer, which, while improving to about 1.9 percent from a depressed rate last year (0.5 percent), is still short of the longer-term average of about 2.5 percent and the most recent 5-year average of 2.1 percent.

Figure MG7. Summer Gasoline Supply by Source
(Change from Year Ago)



Supply

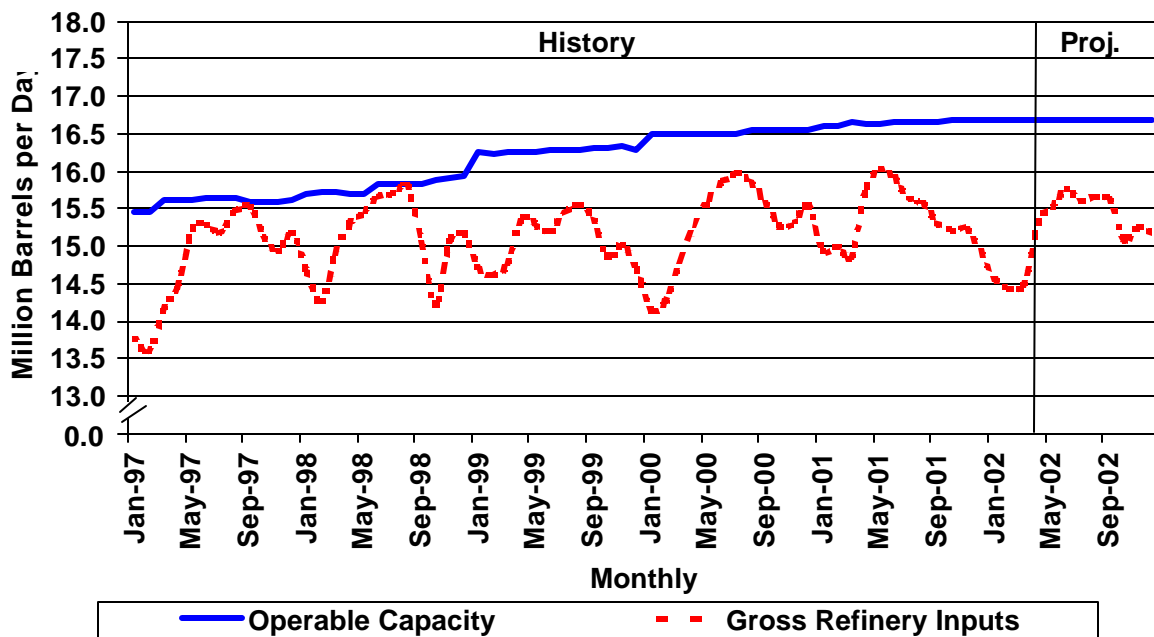
Motor gasoline requirements are supplied by three sources: domestic refinery output, primary inventories, and net imports (Figure MG7). The two previous summer driving seasons raised major concerns about the ability of these sources (and related distribution systems) to accommodate the demand in view of the more stringent reformulation requirements in the Midwest, low inventories, and refinery outages.

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 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 (see Table MG1) resulted in a perception of 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, transatlantic differentials (see Figure MG8) stimulated a large increase in net imports of both finished motor gasoline and blending stocks (see Figure MG9). Also, a slowing economy limited the motor gasoline demand increase to only 80,000 barrels per day, or less than 1 percent. 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, initial motor gasoline supplies are expected to be more ample in meeting demand than was the case in 2000 and 2001. (It should be noted that increases in crude oil costs rather than concerns about product availability have driven

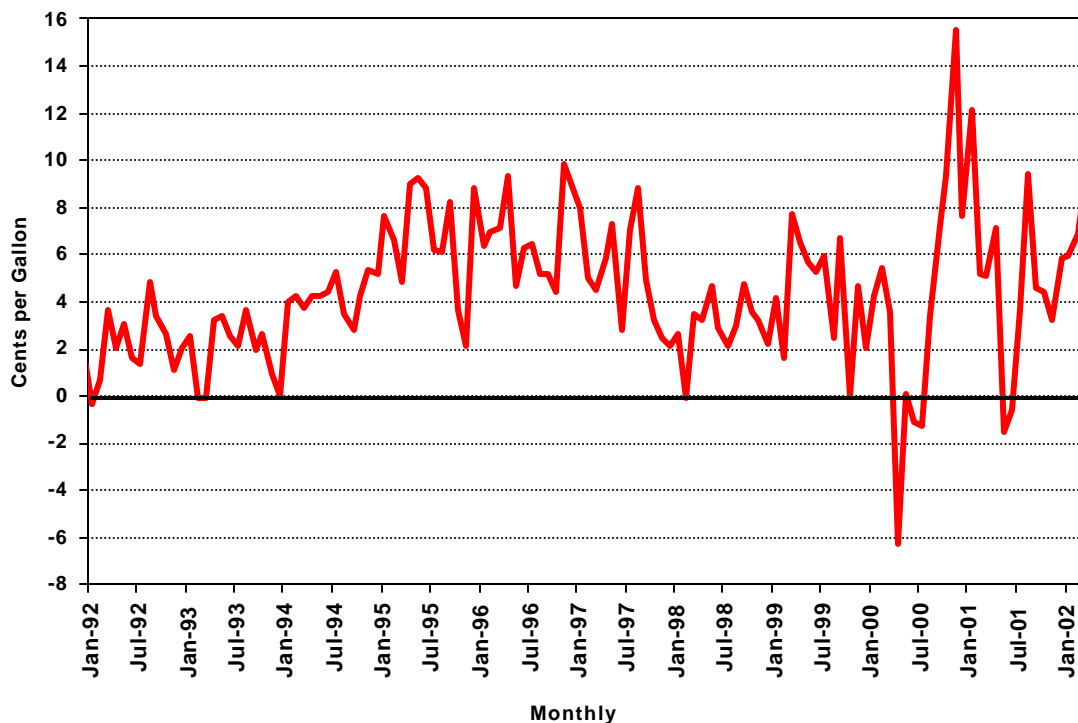
wholesale and retail motor gasoline prices up during the past few weeks). Due to warm weather, the general weakness in industrial production and the precipitous decline in jet-fuel requirements since September 11, refinery utilization rates have been weak, allowing for larger motor gasoline yields. Although refinery utilization is expected to be somewhat higher than in the period since September 11, the projected 93.3-percent average utilization rate is still expected to be the lowest summer average in 9 years (Figure MG8). Motor gasoline yields, however, are projected to average 47.0 percent, almost a full percentage point above that of the previous summer, and a record high. As a result, refinery output of motor gasoline is expected to average 8.28 million barrels per day, an increase of about 111,000 barrels per day from that of the previous summer and a new record. The low utilization rate also suggests that refineries would be able to produce even more to meet unanticipated demand increases that might result from changes in consumer behavior.

Figure MG8. U.S. Refinery Capacity and Throughput



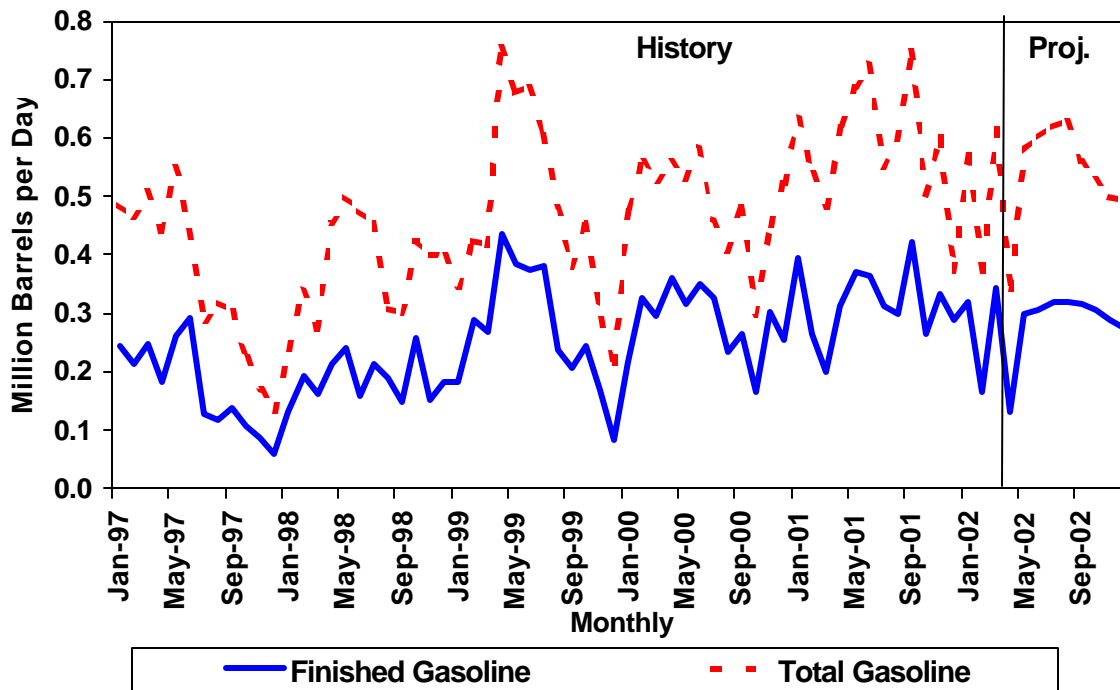
The adequacy of refinery output and stocks should result in a reduction in motor gasoline net imports during the summer driving season. Total net imports of motor gasoline (including blending components) are projected to average 560,000 barrels per day, down from 650,000 barrels per day last summer.

Figure MG9. Trans-Atlantic Gasoline Price Differentials
(New York Harbor less Rotterdam)



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 4 cents per gallon. A surge in imports often accompanies these price differentials. The bulk of the surge often comes from Europe. 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 this year, the differentials were above 8 cents per gallon and indicative of strong U.S. price conditions relative to Europe. Although it is expected that overall imports will be down somewhat this summer, 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



Although imports of finished gasoline have declined in recent years (Figure MG10), imports of blending components required to meet environmental specifications increased from 1995, when the RFG program was implemented, to 1998. Imports of blending components have remained high since then. Net imports of blendstocks occasionally exceeded that of finished motor gasoline, boosting total net imports to between 600,000 and 700,000 barrels per day.

For the summer of 2002, the dominant response to current market conditions will be for U.S. refiners to maximize gasoline output to meet demand. In general, U.S. suppliers try to avoid producing any more product than will be needed to meet extra demand on a current (month-by-month or even week-by-week) basis this year. Producing to build stocks now would be done at high cost and will exacerbate the potential negative effects (on product margins and profits) of declining prices if world markets change.