www.eia.doe.gov
Energy Information Administration

Short-Term Energy Outlook April 2004

Summer 2004 Motor Gasoline Outlook

Summary

- **Gasoline markets are tight** as the 2004 driving season begins and conditions are likely to remain volatile through the summer. High crude oil costs, strong gasoline demand growth, low gasoline inventories, uncertainty about the availability of gasoline imports, high transportation costs, and changes in gasoline specifications have added to current and expected gasoline costs and pump prices.

- For the upcoming summer driving season (April to September 2004), **retail gasoline prices** (regular grade, all formulations) are projected to average $1.76 per gallon, about 20 cents above last summer. A 95-percent confidence range for the summer price average, excluding specific consideration of major supply disruptions, spans about 8 percent above or below the base case.

- **Motor gasoline demand** is projected to average 9.32 million barrels per day, a new high. Demand continues to rise annually as the number of drivers and vehicles rises along with the general population and the number of households. Average fleet-wide fuel efficiency is virtually unchanged from last year.

- Relatively tight inventory levels are expected to keep pressure on refinery output and import sources during peak demand periods.

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

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

	2003			2004			Change (%)		
	Q2	Q3	Summer	Q2	Q3	Summer	Q2	Q3	Summer
Prices (cents per gallon)									
WTI Crude Oil (Spot) [a]	**69.0**	**71.9**	**70.5**	*83.0*	*76.2*	*79.6*	*20.3*	*6.0*	*12.9*
Imported Crude Oil Price [b]	**60.9**	**65.2**	**63.1**	*75.6*	*69.0*	*72.3*	*24.1*	*5.9*	*14.6*
Wholesale Gasoline Price [c]	**96.3**	**103.7**	**100.1**	*122.1*	*112.3*	*117.2*	*26.8*	*8.3*	*17.1*
Retail Gasoline Price [d]	**152.5**	**160.3**	**156.4**	*180.5*	*171.7*	*176.1*	*18.3*	*7.1*	*12.5*
Stocks, Incl. Blending Components (million barrels)									
Beginning	**200**	**206**		*200*	*208*				
Ending	**206**	**197**		*208*	*201*				
Demand/Supply (million barrels per day)									
Total Demand	**9.045**	**9.194**	**9.120**	*9.268*	*9.364*	*9.316*	*2.5*	*1.9*	*2.2*
Total Output [e]	**8.194**	**8.317**	**8.256**	*8.449*	*8.463*	*8.456*	*3.1*	*1.8*	*2.4*
Total Stock Withdrawal (Incl. Blend. Components)	**-0.063**	**0.096**	**0.017**	*-0.092*	*0.083*	*-0.004*			
Net Imports (Incl. Blend. Components)	**0.913**	**0.780**	**0.847**	*0.910*	*0.818*	*0.864*	*-0.3*	*4.8*	*2.0*
Refinery Utilization (percent)	**94.8**	**94.0**	**94.4**	*95.3*	*95.7*	*95.5*			
Market Indicators									
Real GDP (billion 2000 dollars)	**10288**	**10493**	**10391**	*10839*	*10933*	*10886*	*5.4*	*4.2*	*4.8*
Real Income (bill. 2000 dollars)	**7754**	**7872**	**7813**	*8004*	*8029*	*8017*	*3.2*	*2.0*	*2.6*
Industrial Output (index, 1997=1.0)	**110.0**	**111.1**	**110.5**	*115.2*	*116.5*	*115.8*	*4.7*	*4.9*	*4.8*
Miles Traveled (mill. miles per day)	**8162**	**8228**	**8195**	*8305*	*8373*	*8339*	*1.8*	*1.8*	*1.8*
Average MPG (miles per gallon)	**21.5**	**21.3**	**21.4**	*21.3*	*21.3*	*21.3*	*-0.7*	*-0.1*	*-0.4*

[a]Cost of West Texas Intermediate (WTI) crude oil.
[b]Cost of imported crude oil to U.S. refiners.
[c]Price of gasoline sold by refiners to resellers.
[d]Average pump price for regular gasoline, all formulations, including taxes.
[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.
GDP = gross domestic product.
Notes: Minor discrepancies with other Energy Information Administration (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: EIA, *Petroleum Supply Monthly*, DOE/EIA-0109 (http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_supply_monthly/psm.html); *Monthly Energy Review,* DOE/EIA-0035 (http://www.eia.doe.gov/emeu/mer/contents.html); U.S. Department of Commerce, Bureau of Economic Analysis; Federal Reserve System; National Oceanic and Atmospheric Administration. Macroeconomic projections are based on Global Insight Forecast CONTROL0304.

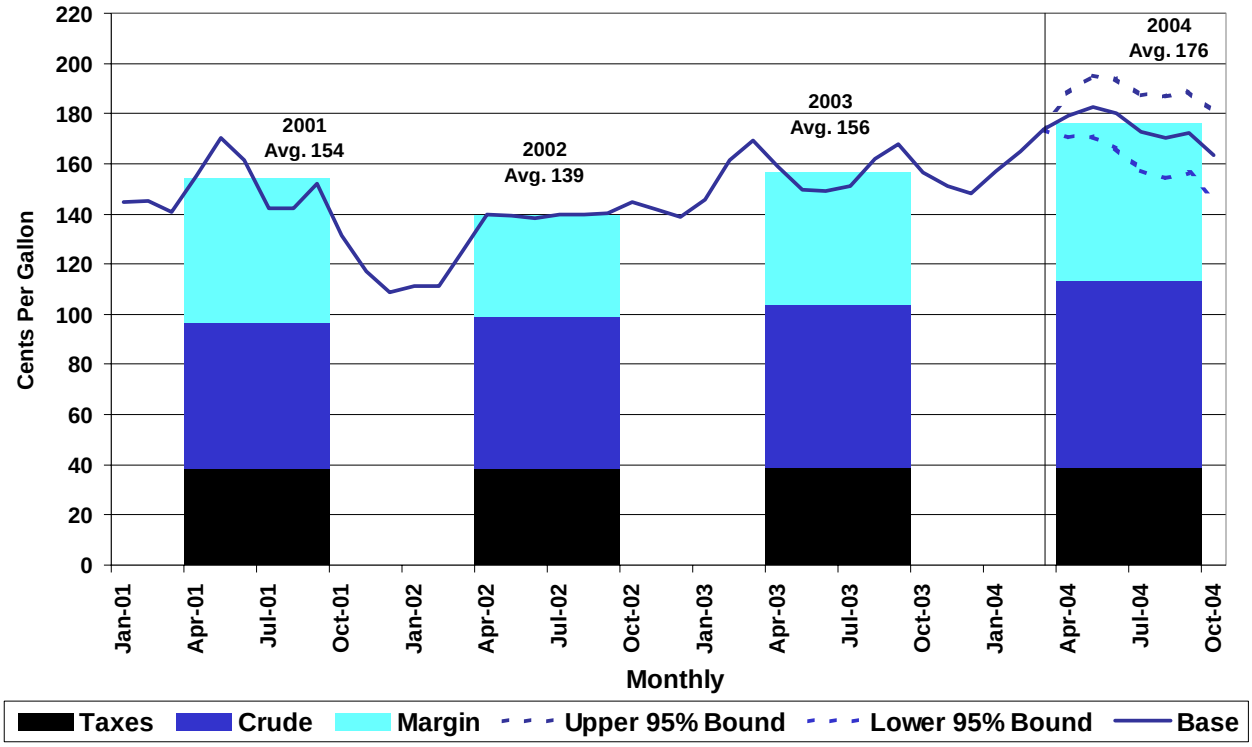
For updates to the monthly forecast, see http://www.eia.doe.gov/steo. For updates to this table, see http://www.eia.doe.gov/emeu/steo/pub/tabmg1.html. For the most recent petroleum data, see The Weekly Petroleum Status Report at http://www.eia.doe.gov/oil_gas/petroleum/data_publications/weekly_petroleum_status_report/wpsr.html.

Analysis

Crude Oil and Motor Gasoline Prices

Figure MG1 depicts recent and projected retail monthly motor gasoline price movements as well as average component costs for the summers of 2001 to 2004.

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



**Regular gasoline retail price (including taxes), all formulations.*

***The confidence range is based on the properties of the Short-term Model and excludes explicit consideration of major supply disruptions.*

The combined impact of high crude oil prices, continuing growth in demand, low inventories, and the ongoing transition from methyl tertiary butyl ether (MTBE) to ethanol in several regions are projected to contribute to high average motor gasoline prices for this driving season, as shown in the above chart. Retail regular gasoline prices are expected to average $1.76 per gallon, up 20 cents from last summer's average. Some months could see average prices at or above $1.80 per gallon. WTI crude oil prices, as represented by the West Texas Intermediate (WTI) benchmark, briefly surpassed $38 per barrel in late March, the highest

level since the first Gulf War in early 1991. Crude oil prices (WTI) are projected to average $33.40 per barrel (79.6 cents per gallon) for the summer.

Some factors contributing to recent and projected high crude oil prices are:

- High growth in world oil demand (including the United States, China and Other East Asia);
- Related increases in freight rates;
- Organization of Petroleum Exporting Countries' (OPEC) determination to limit oil output;
- Uncertainties surrounding the continued recovery of output and exports from Iraq as well as political unrest in Venezuela.

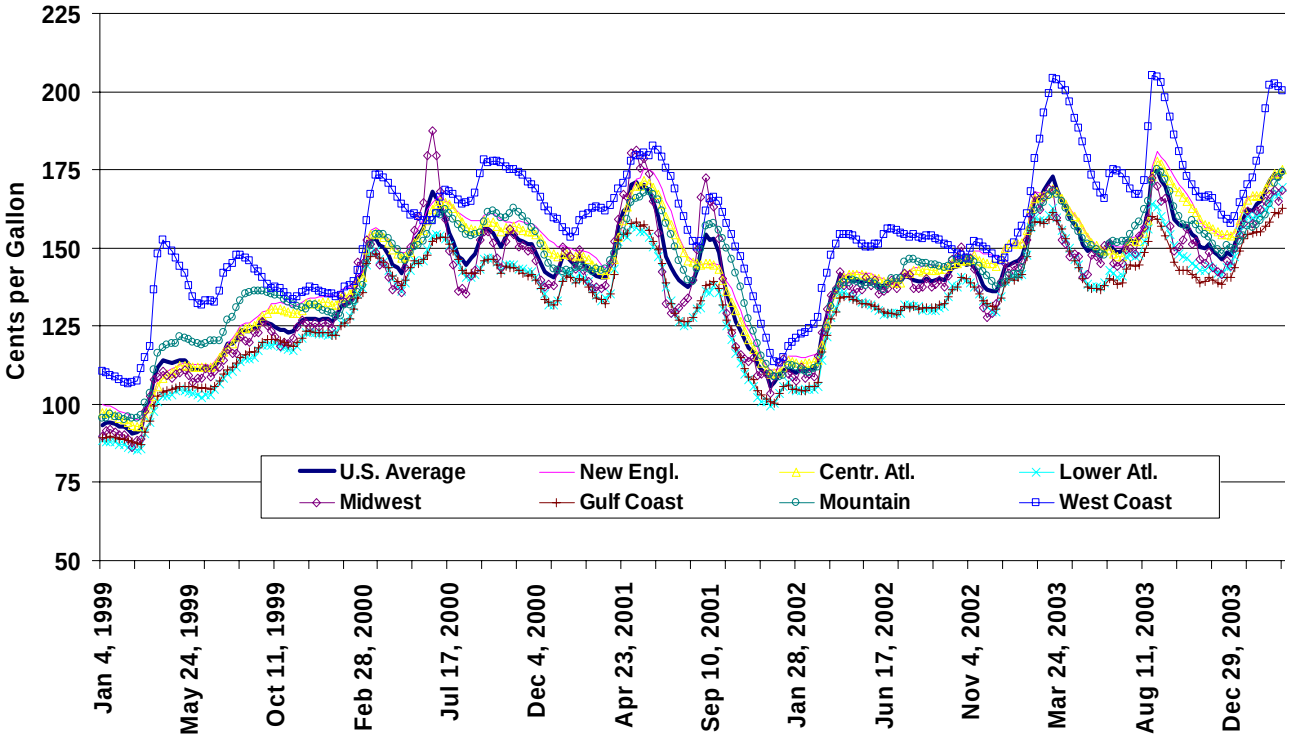
Factors affecting retail gasoline prices include:

- Expectations of high and volatile crude oil prices;
- Expectations of low motor gasoline stock levels for much of the summer, maintaining a need for high levels of domestic production and imports to meet demand;
- Additional transportation and blending costs related to the substitution of ethanol for MTBE in certain markets and the reduction in permissible sulfur content mandated by the Environmental Protection Agency.

The 95-percent confidence range in the graph reflects the estimated uncertainty based on the structure of the Energy Information Administration's (EIA) short-term model. The confidence interval does not include estimates of the impact of particular major crude oil or gasoline market supply disruptions.

In addition to the uncertainties mentioned above, there are regional variations in prices, as shown in Figure MG2. Based on the last five years of history, maximum interregional weekly price deviations among Petroleum Administration for Defense Districts (PADDs) have averaged 26 cents per gallon but have been as high as 50 cents. Differences in gasoline taxes (sales and excise) between States, which can be as much as 22 cents per gallon, contribute in part to the regional variations.

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



Gasoline markets in the United States have entered a period of uncertainty because of bans on the blending of MTBE into gasoline in California, Connecticut, and New York that took effect on January 1 of this year.[1] California was scheduled to ban the use of MTBE in January 2003, but the state delayed the ban for one year. However, many California refiners chose to follow the original schedule and MTBE blending fell by two-thirds in 2003, from an average 92,000 barrels per day in 2002 to 31,000 barrels per day in 2003. [2]

Fuel ethanol is used to replace MTBE in the production of reformulated gasoline. During the last year fuel ethanol production has increased from 177,000 barrels per day in January 2003, to 211,000 barrels per day in January 2004. MTBE

[1] Several other states have banned MTBE including Iowa (May 2000), South Dakota (July 2000), Nebraska (Jan. 2001), Colorado (May 2002), Michigan (June 2003), Nevada (Jan. 2004), and Washington (Jan 2004). These states do not have any reformulated gasoline program areas and the bans have not had an impact on gasoline markets. See Energy Information Administration, Motor Gasoline Outlook and State MTBE Bans, (Washington, DC, April 6, 2003).

[2] California Energy Commission. *Quarterly Report Concerning MTBE Use in California Gasoline.* Publication P300-02-002V4. (Sacramento, CA, February 2004, and earlier issues.) http://www.energy.ca.gov/mtbe/documents.

production has fallen over the same period from 170,000 to 107,000 barrels per day.[3]

The state MTBE bans are projected to increase the average price of reformulated gasoline in the affected areas. The price premium is higher during the summer than winter because of the required reduction in gasoline vapor pressure during the summer months.

The state MTBE bans also make those areas susceptible to price spikes over the very short term when there is an unexpected disruption to supply or increase in demand. The fracturing of the reformulated gasoline market into submarkets that contain either MTBE or fuel ethanol reduces the flexibility of the supply system to respond to supply-demand imbalances in a given area. The two reformulated gasoline products are not fungible, i.e., reformulated gasoline containing ethanol cannot be shipped to markets that sell reformulated gasoline with MTBE and vice versa.

Based on EIA's weekly gasoline price survey, regular gasoline averaged $1.74 per gallon in March. That was about 4 cents above the year-ago level and 26 cents above the 14-month low point of $1.48 per gallon seen last December. On a monthly average per-gallon basis, crude oil costs rose about 11 cents from December to March. Thus, margins (the difference between pump prices and crude oil costs) rose 15 cents per gallon over the 3-month period. Such an increase for December to March is similar to one seen in 1999-2000. However, the increase is actually much less than the 22 cents seen in 2002-2003. In those previous instances, margins continued to climb in April, and this is expected to be the case again this year, as marginal production and acquisition costs for gasoline continue to rise. For the summer, overall margins this year are expected to be comparable to those in 2001.

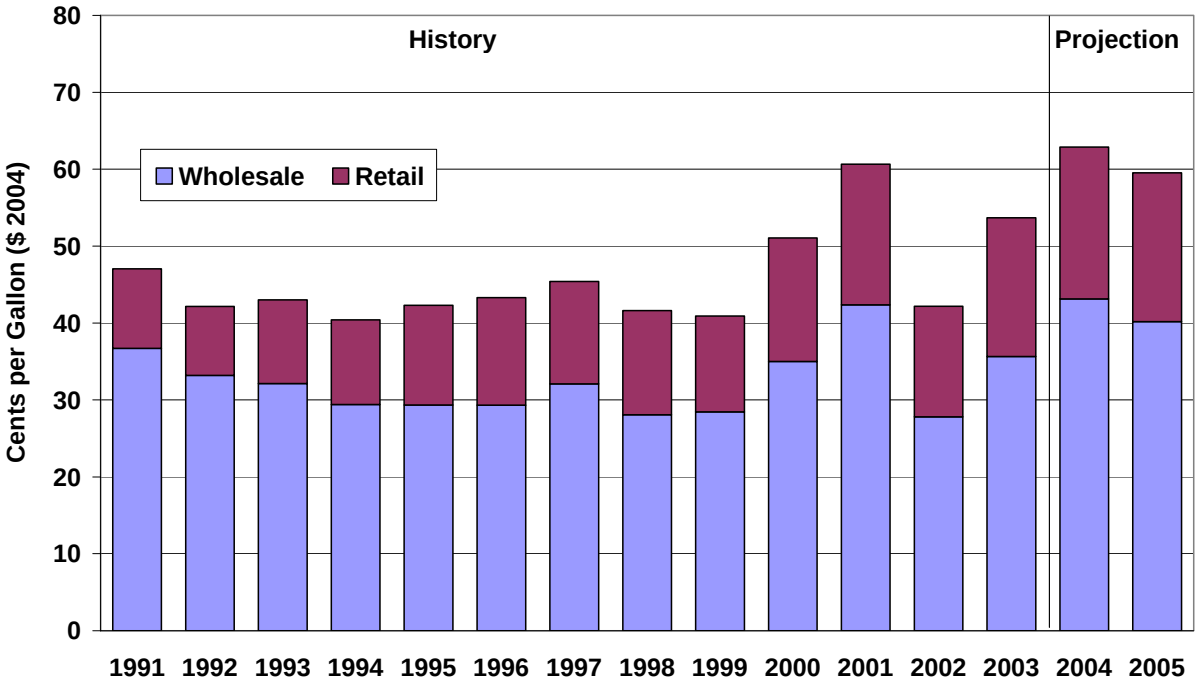
A longer perspective on the size of projected refiner margins for gasoline (wholesale price less crude-oil cost) and retailer margins (retail price, excluding sales and excise taxes, less wholesale price) is illustrated in Figure MG3, which summarizes average inflation-adjusted summer-season actual and projected spreads since 1991.

Figure MG3 shows that, before the summer of 2000, margins were low and generally declining. Those margins in 2000 and 2001 surged as implementation of Phase II of the reformulated gasoline regulations posed new unanticipated challenges for pipelines, refineries, and blenders. In the summer of 2002, looser

[3]Energy Information Administration, EIA-819M Monthly Oxygenate Report..
http://www.eia.doe.gov/oil_gas/petroleum/data_publications/monthly_oxygenate_telephone_report/motr.html

oil markets and improved inventory levels resulted in a reduction of margins to earlier levels. But the resumption of tighter oil markets during the summer of 2003 pushed margins closer to 2001 levels. This summer, with demand for gasoline up a projected 2.2 percent, inventories even lower than last year, possibly high gasoline import costs due to high transportation costs and tight gasoline supplies in Europe, and new costs associated with the ongoing transition to ethanol in several regions of the country, margins are expected to widen resulting in higher prices.

Figure MG3. Inflation-Adjusted Summer Motor Gasoline Margins

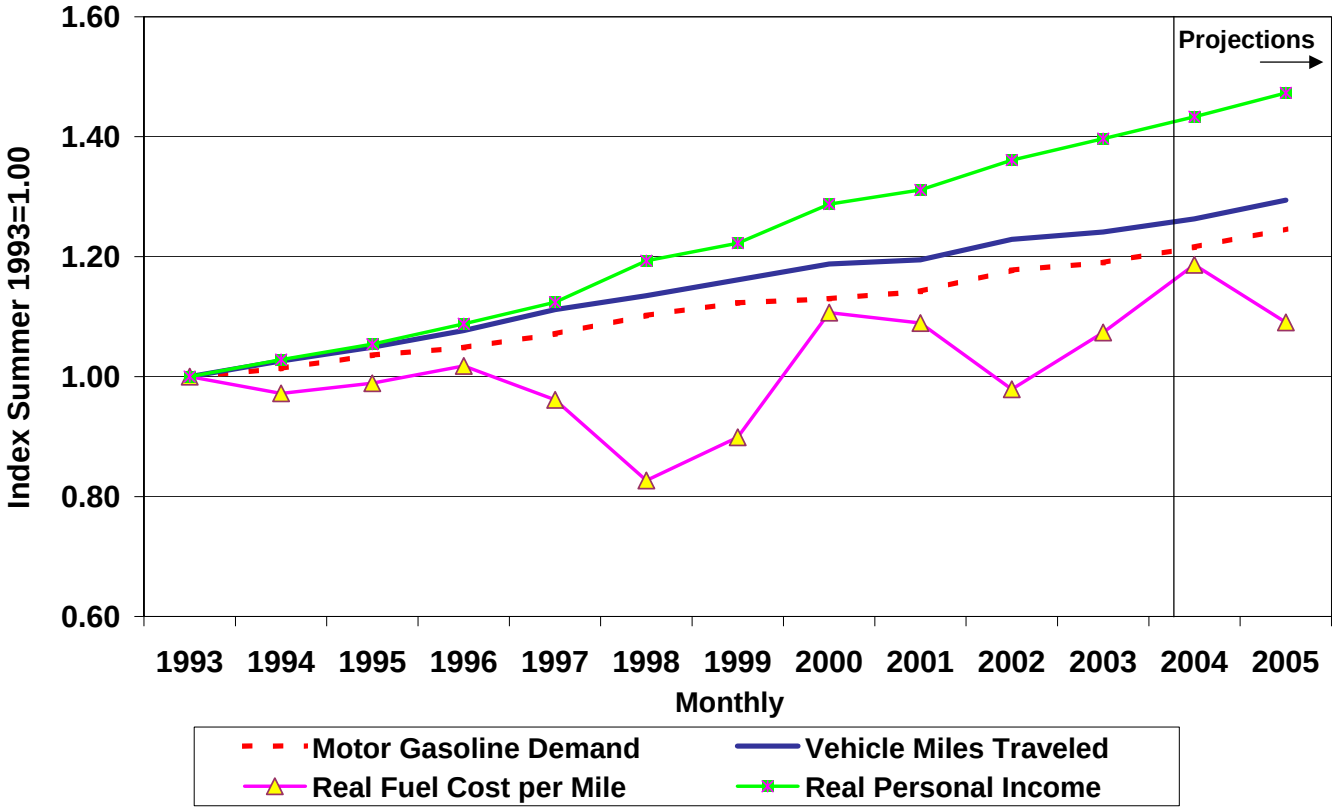


Margins Deflated by CPI--All Urban Series and indexed to 2004 projected average

Motor Gasoline Demand

This summer, total domestic gasoline demand is expected to average 9.32 million barrels per day, a new seasonal record and 2.2 percent above the 2003 summer average. That demand growth is above the average of the previous 5 years despite high prices. Substantial increases in personal disposable income (and the general acceleration in domestic economic growth) are expected to bring gasoline demand and highway travel growth above the lower rates of the past few years. The gasoline demand growth projections would be stronger if not for a 10.5-percent increase in the inflation-adjusted fuel cost-per-mile. Figure MG4 summarizes both historical and projected trends in motor gasoline demand and related gasoline-market indicators.

Figure MG4. Summer Motor Gasoline Market Indicators

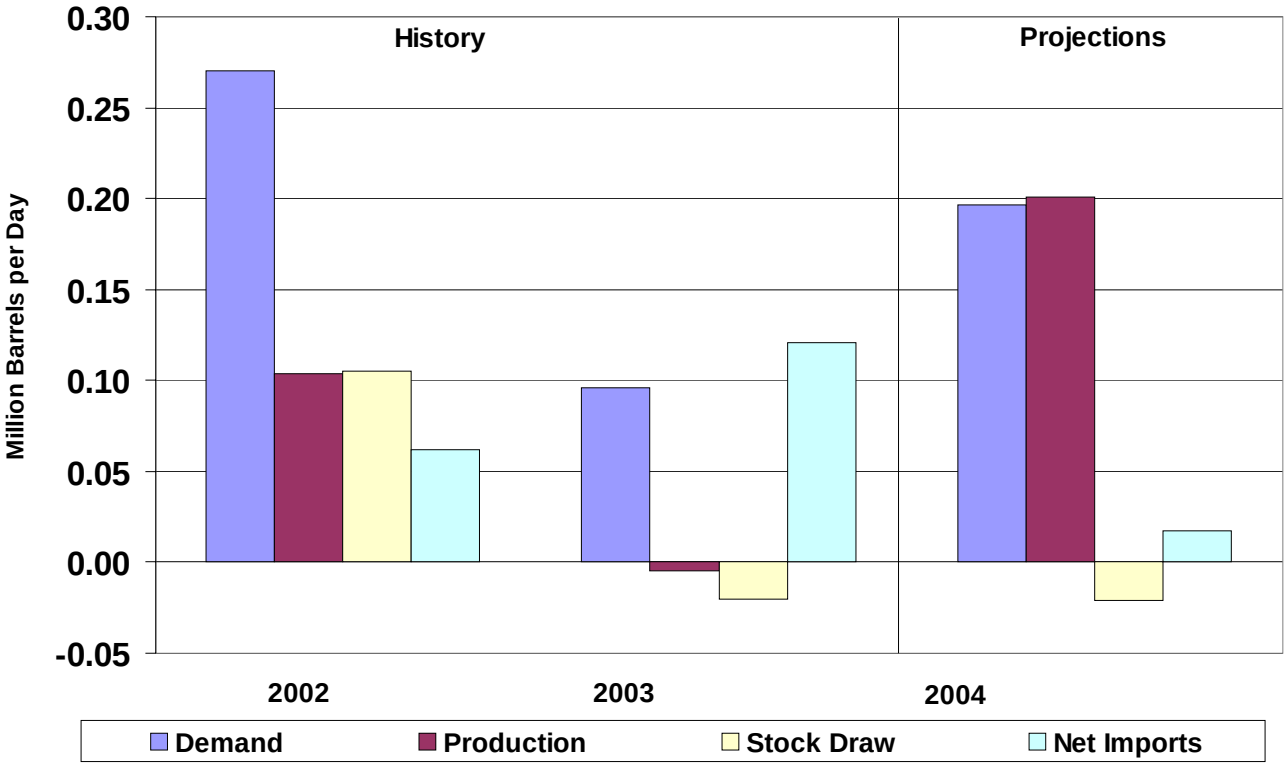


Motor Gasoline Supplies

Motor gasoline demand is supplied by three sources: primary inventories (including blending components), domestic refinery output, and net imports (including blending components). The experiences of recent summer driving seasons have raised concerns about the ability of these sources (and related distribution systems) to meet the demand. These concerns are based on the more stringent reformulation requirements resulting from the transition from MTBE to ethanol as an oxygenate, inventories close to their record lows, and potential refinery and pipeline outages. Figure MG5 illustrates projected demand and supply patterns compared to recent historical periods.

Compared to last summer, the 2004 driving season indicates twice as much gasoline demand growth, coupled with strong growth in refinery output (compared to no growth in the summer of 2003). The implied higher utilization rates and gasoline yields for U.S. refineries are expected to keep marginal production costs high.

Figure MG5. Summer Motor Gasoline Supply/Demand Growth Balance

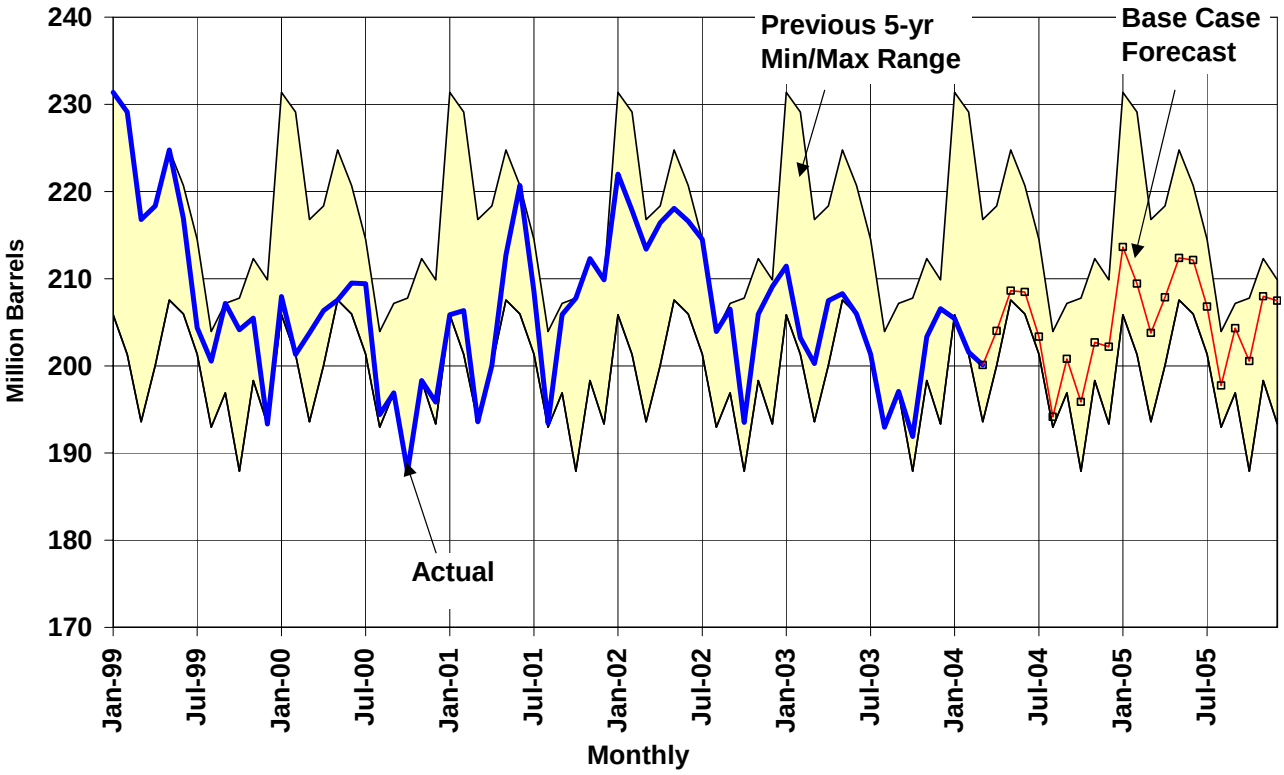


Note: Net imports and stock draw include blending components.

Motor Gasoline Inventories

Total primary motor gasoline stocks are currently at one of the lowest levels (for this time of year) seen in almost 30 years. Figure MG6 depicts recent and projected stock levels. Stocks were estimated to be 200 million barrels at the beginning of the summer driving season. This is about the same as at the beginning of the previous driving season and the second lowest in 30 years (tied with the March 1997 value, but higher than the 194 million barrels seen at the end of March 2001). End-of-season inventories are projected to be 201 million barrels, which is within the normal range.

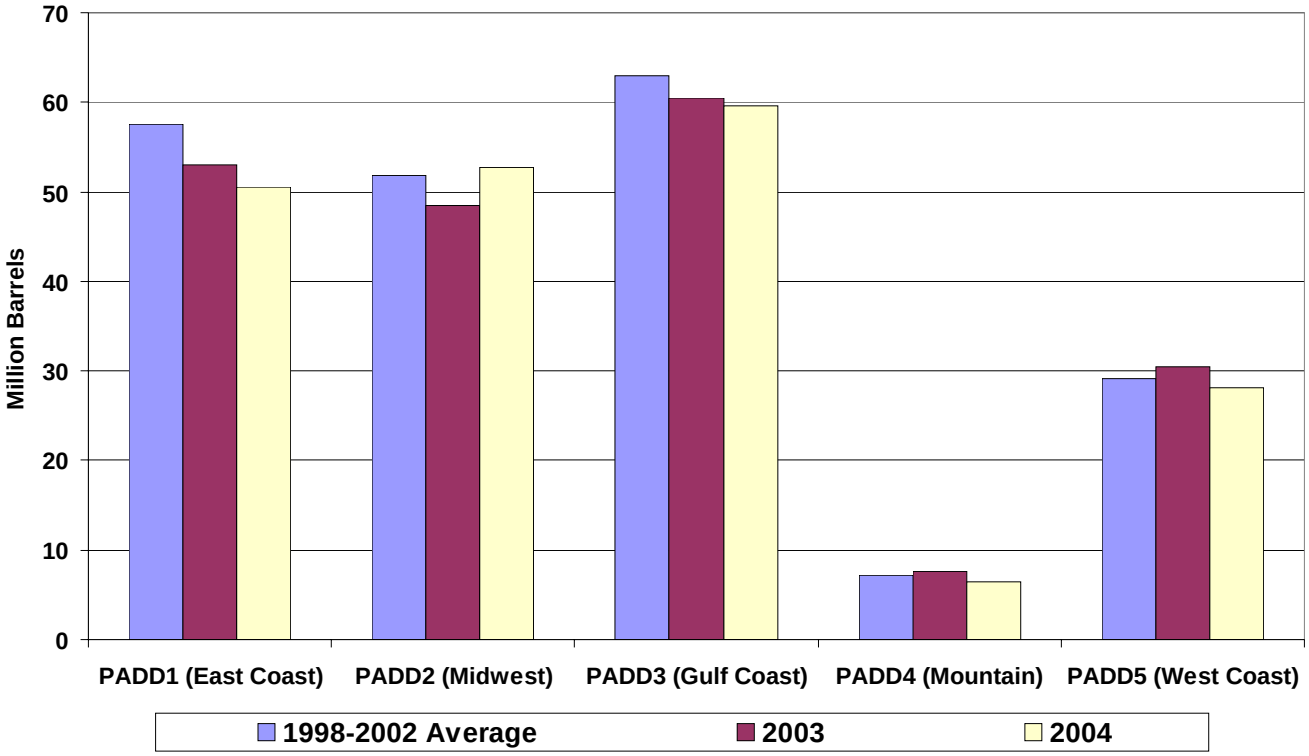
Figure MG6. Motor Gasoline Stocks



Low stock levels, especially during the first half of the driving season, are expected to contribute to continuing tight markets (even in the absence of unanticipated events that might otherwise affect gasoline supplies), leading to high margins and pump prices.

Figure MG7 summarizes historical stock levels by Petroleum Administration for Defense District (PADD). This chart shows that beginning-of-season PADD1 (East Coast) inventories are substantially below recent historical averages. That region derives 25 percent of its summer gasoline demand from imports (compared to less than 2 percent for the rest of the United States), and accounts for 88 percent of total U.S. imports. Although imports are expected to be up slightly from last summer's averages as a result of strong demand growth, the incremental foreign supplies may be hard to come by and are expected to be costly. PADD5 (West Coast) stocks appear to be more comparable to those in previous seasons. However, the geographical isolation and stringent oxygenate requirements are expected to constrain both pipeline and imported supplies in the West Coast, contributing to higher-than-average retail prices and greater price volatility than in the rest of the country.

Figure MG7. Motor Gasoline Stocks by PADD (as of March 31)



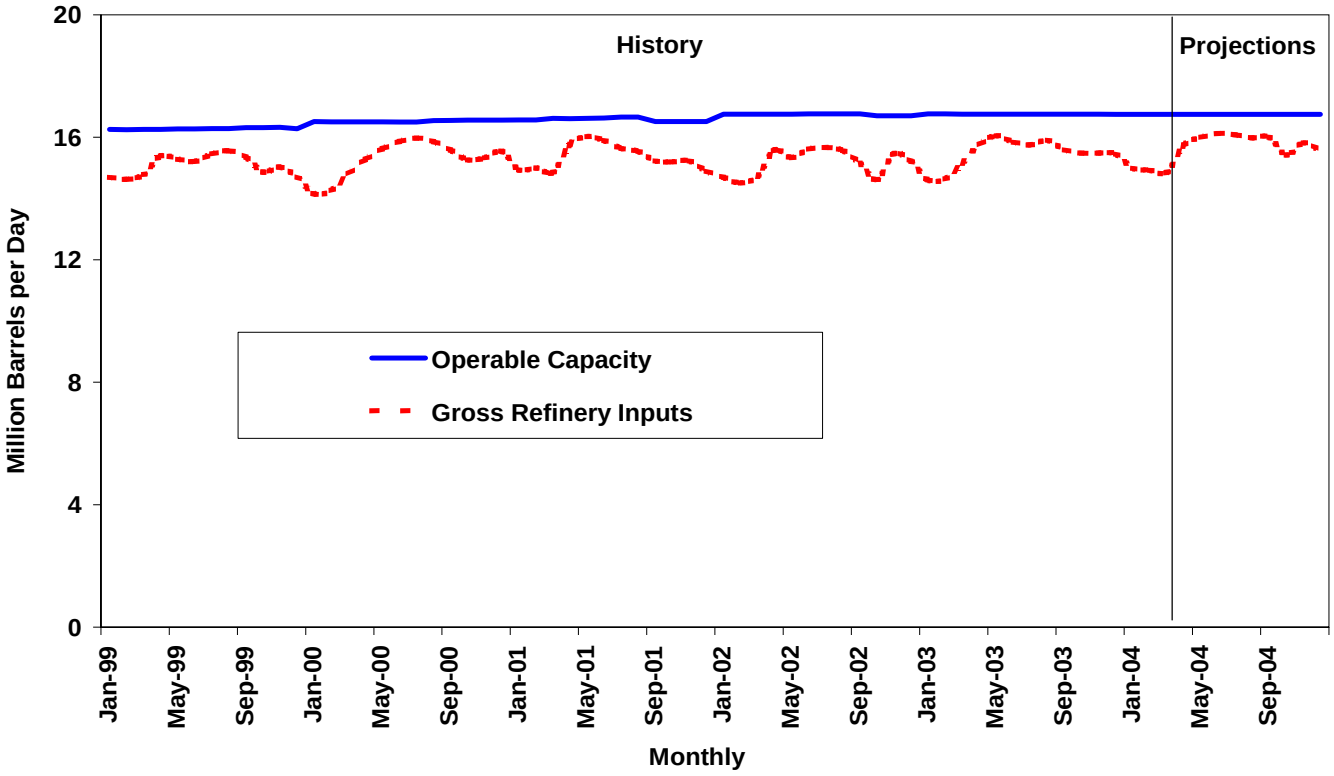
Domestic Motor Gasoline Output

For the summer, motor gasoline supplies are expected to be tight due to low stocks, more stringent reformulation requirements and lower sulfur content allowances. Moreover, refinery capacity has not expanded significantly since last summer. As a result, the need for increased refinery supplies of gasoline is expected to result in increased refinery marginal costs resulting from higher utilization rates and yields. Domestic output of motor gasoline is expected to average 8.46 million barrels per day, up about 200,000 barrels per day (2.4 percent) from last summer and a new record.

Refinery throughput and capacity data are shown in Figure MG8. Refinery utilization is expected to average 95.5 percent, higher than the 94.4 percent recorded last summer. Motor gasoline yields are projected to average 46.8 percent, up from 46.3 percent last summer. In the short term, utilization rates have been even higher, suggesting that refineries would be able to produce even more to meet unanticipated spikes in demand. However, marginal production

costs are expected to remain high as near-term input supplies remain tight and blending-related costs continue to climb.

Figure MG8. Refinery Capacity and Utilization



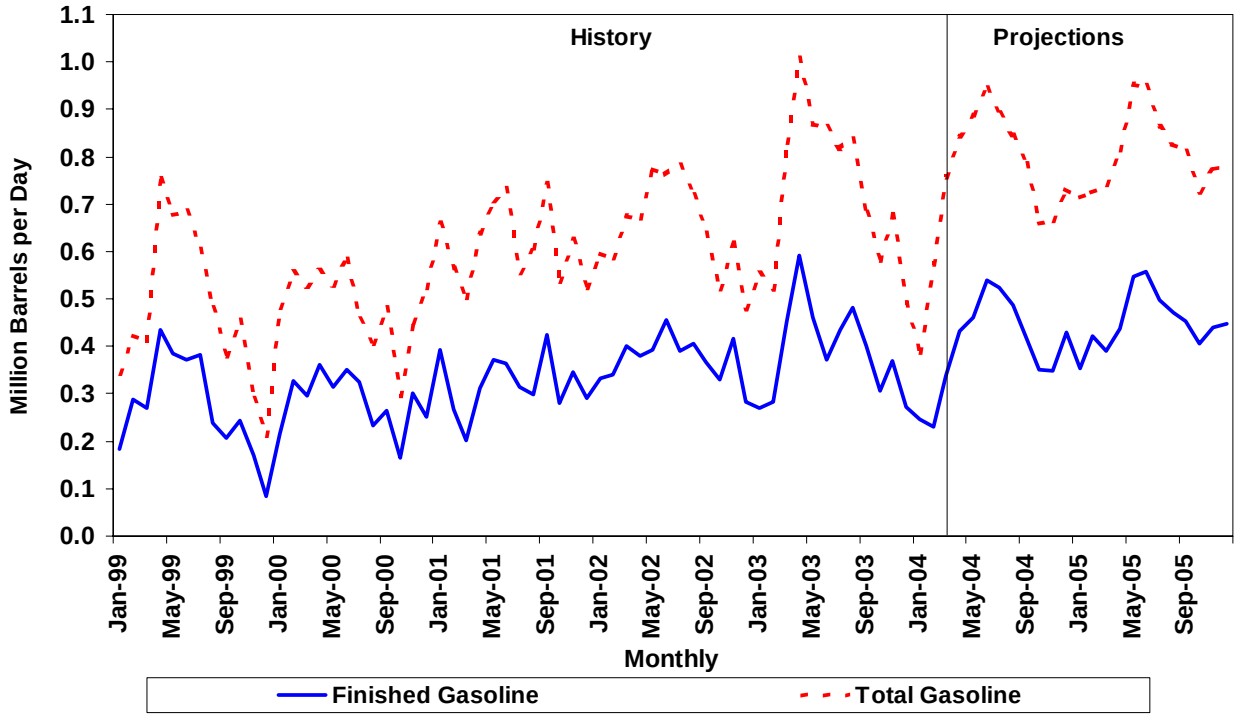
Net Imports of Motor Gasoline and Blending Components

Total net imports of finished motor gasoline and blending components are projected to average 864,000 barrels per day, up slightly from 847,000 barrels per day last summer. Imports are a significant source of motor gasoline on the East Coast (about 25 percent of total needs). Tighter specifications this summer and higher transportation costs are expected to keep net imports of gasoline from rising as fast this summer as they did in the 2003 driving season. Figure MG9 summarizes historical imports of motor gasoline and blending components since 1999.

Although the bulk of the imports come from Canada, Venezuela, and the Caribbean, Western Europe continues to be an important source of incremental supply into the United States. Imports of blending components have grown substantially since 1995, when the reformulated gasoline program was

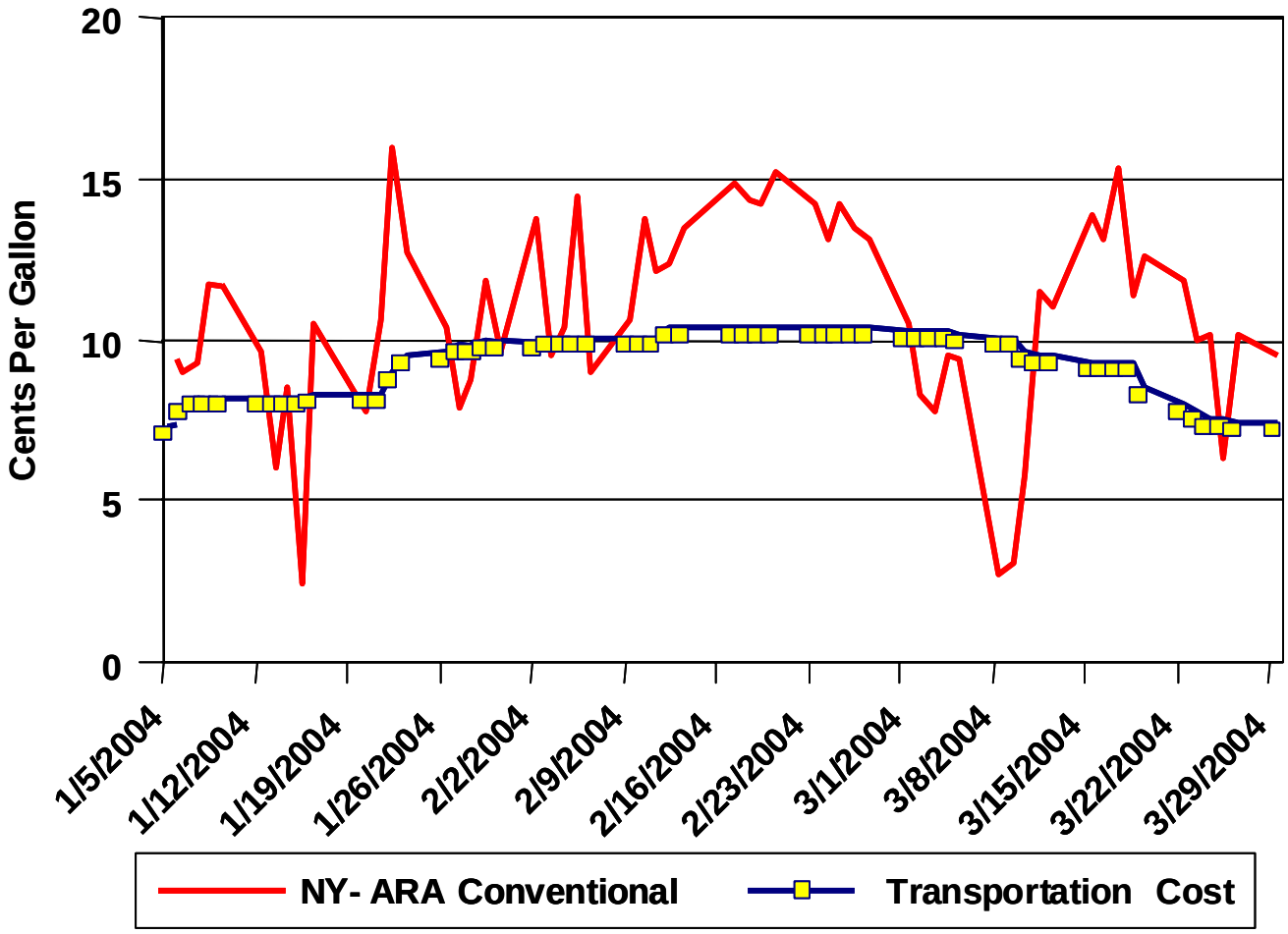
implemented, and have occasionally exceeded imports of finished motor gasoline, as shown in Figure MG9.

Figure MG9. Imports of Motor Gasoline and Blending Components



The difference between U.S. and Western European prices often exceeds transportation costs, resulting in a westward flow of motor gasoline. High transportation rates in recent periods have raised the bar on the size of transatlantic price differentials that would be necessary to induce spot cargos to flow towards the U.S. East Coast (Figure MG10). Transportation costs have abated in recent weeks, which may be taken as a sign that additional imports from Europe in the near term may not require significant new increases in East Coast spot prices.

Figure MG10. Conventional Gasoline Price Differentials Between New York and Europe and Transportation Costs



ARA = Amsterdam, Rotterdam, Antwerp