www.eia.doe.gov
Energy Information Administration

Summer 2001 Motor Gasoline Outlook

Summary

April 2001

For the upcoming summer season (April to September), motor gasoline markets are projected to once again exhibit a very tight supply/demand balance.

- **Retail gasoline prices** (regular grade) are expected to average $1.49 per gallon, slightly lower than last summer's average of $1.53 per gallon, but still above the previous (current-dollar) record summer average of $1.35 recorded in 1981. Nominal prices are expected to reach a peak of $1.52 per gallon in June but then decline gradually to about $1.43 by December. These projections presume no disruptions in gasoline production or distribution.

- This summer's projected average gasoline price, when adjusted for inflation, is well below the record reached during the summer of 1980 ($2.56 per gallon in year 2000 dollars) but nevertheless would rank second-highest behind last summer's average for the period since 1990. The general tightness of domestic supply leaves the U.S. gasoline market vulnerable to sharp price runups if supply disruptions or bottlenecks occur. Thus, it is a conservative statement to say that the probability of a real gasoline price increase this summer over last year's average is high.

- Of the major gasoline markets in the United States, the Midwest region exhibited the greatest volatility in prices last summer. While the base case developed for this summer excludes a replay of the extraordinary price increases in that region, there are positive and negative signs apparent concerning potential price risks there. On the one hand, suppliers have the benefit of 1 year's perspective on the pitfalls associated with product delivery under the Phase II rules for reformulated gasoline. Also, the Explorer Pipeline, which was partially disrupted last spring, is operating at full capacity now. In addition, EPA allows some adjustment to vapor pressure requirements for reformulated gasoline (RFG) made from ethanol, which is used as a blending component for making reformulated gasoline in the Midwest. On the other hand: there is one less refinery operating in the region this summer (the Blue Island, Illinois, refinery shut down for economic reasons), which may degrade regional supply flexibility; ethanol (and methyl tertiary butyl ether (MTBE)) prices are high and stocks are low, and finished gasoline inventories are low in the Midwest as they are in other regions. While another Midwest price shock is not inevitable, it is certainly not a long shot either, as Midwestern gasoline stocks are lower than last year.

- **Demand** is projected to average 8.59 million barrels per day, up 54,000 barrels per day, or 0.6 percent, from last summer. The growth comes despite a developing

slowdown in the U.S. economy and high prices because of the absence of a strong upward price movement such as that seen in 2000. Another spring/summer price shock could easily negate expectations of any net growth in demand this summer.

- **Motor gasoline stocks** are currently about 9 million barrels below last year and are projected to remain low throughout the driving season. We do not expect inventories to be a net source of supply this summer and, in fact, we anticipate the need for gasoline stocks to be increased from currently low levels by the end of the summer season. In contrast, over the previous 3 years the average summer gasoline stock draw was 24,000 barrels per day.

- **Total domestic output** (refinery and field production) is projected to average 8.48 million barrels per day during the summer months, up about 190,000 barrels per day from last summer. Refineries will be expected to meet not only increased demand but also to accommodate the reduced availability from stocks. As a result, refinery utilization rates for the summer are projected to average 96 percent, up from 95 percent last summer.

- **Net imports** of finished motor gasoline are projected to average 230,000 barrels per day, similar to the 225,000 barrels per day seen 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

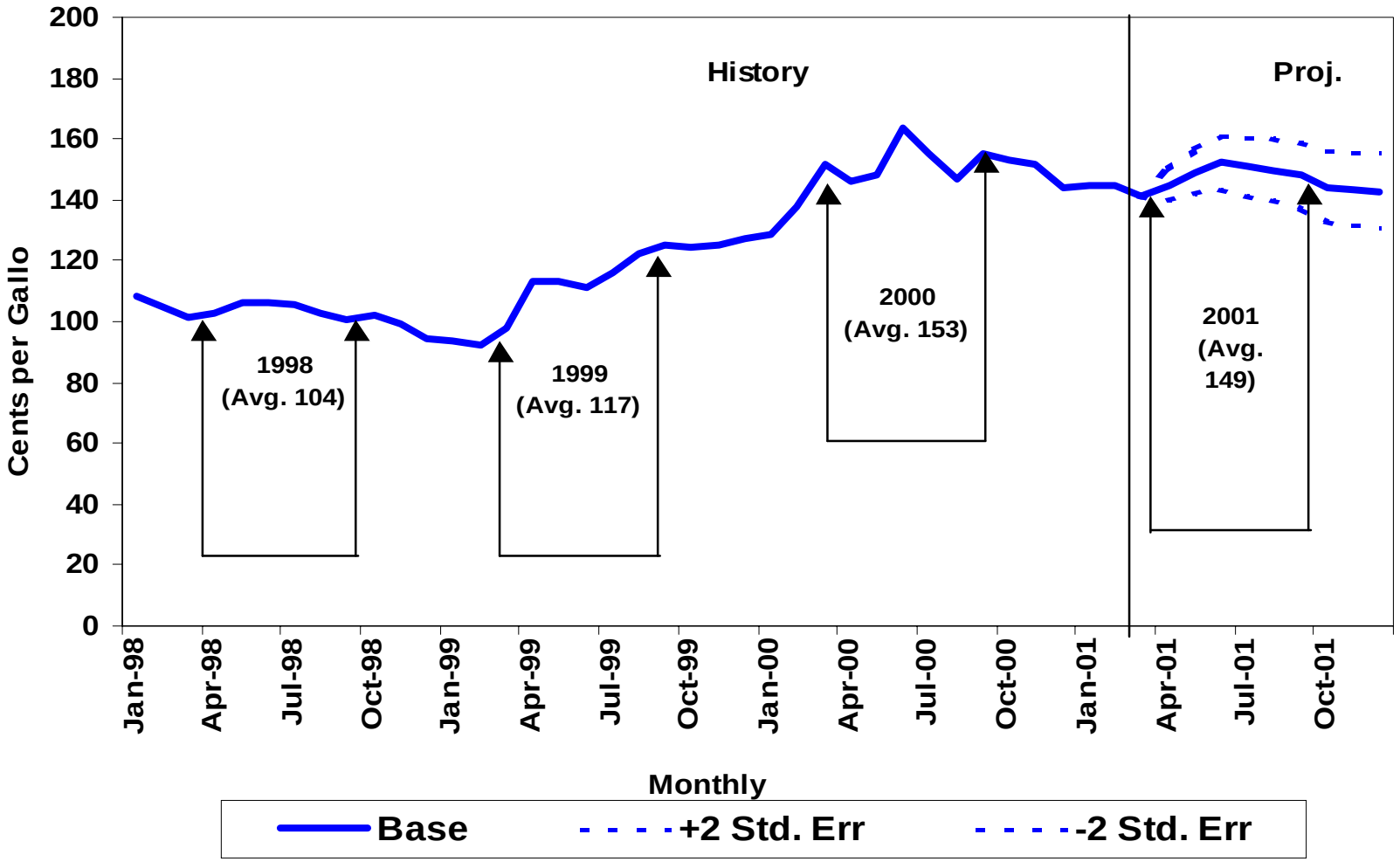
	2000			2001			Change (%)		
	Q2	Q3	Summer	Q2	Q3	Summer	Q2	Q3	Summer
Prices (cents per gallon)									
Imported Crude Oil Price [a]	**63.2**	**69.3**	**66.3**	*58.3*	*61.9*	*60.2*	*-7.7*	*-10.7*	*-9.3*
Wholesale Gasoline Price [b]	**98.5**	**100.1**	**99.3**	*96.2*	*95.9*	*96.0*	*-2.4*	*-4.2*	*-3.4*
Retail Gasoline Price [c]	**152.8**	**152.3**	**152.6**	*148.7*	*149.7*	*149.2*	*-2.7*	*-1.7*	*-2.2*
Stocks, Incl. Blending Components (million barrels)									
Beginning	**204**	**209**		*195*	*201*				
Ending	**209**	**197**		*201*	*198*				
Demand/Supply (million barrels per day)									
Total Demand	**8.493**	**8.585**	**8.539**	*8.507*	*8.679*	*8.593*	*0.2*	*1.1*	*0.6*
Total Output [d]	**8.321**	**8.274**	**8.297**	*8.364*	*8.468*	*8.416*	*0.5*	*2.4*	*1.4*
Net Finished Stock Withdrawal	**-0.076**	**0.110**	**0.017**	*-0.100*	*-0.007*	*-0.053*			
Net Imports	**0.249**	**0.201**	**0.225**	*0.243*	*0.217*	*0.230*	*-2.5*	*8.1*	*2.3*
Refinery Utilization (percent)	**94.5**	**95.7**	**95.1**	*94.8*	*96.0*	*95.4*			
Market Indicators									
Real GDP (billion 1996 dollars)	**9319**	**9374**	**9346**	*9461*	*9516*	*9488*	*1.5*	*1.5*	*1.5*
Real Income (bill. 1996 dollars)	**6502**	**6541**	**6521**	*6653*	*6701*	*6677*	*2.3*	*2.5*	*2.4*
Industrial Output (index, 1992=1.0)	**1.210**	**1.221**	**1.215**	*1.232*	*1.234*	*1.233*	*1.8*	*1.1*	*1.5*
Miles Traveled (mill. miles per day)	**7680**	**7689**	**7685**	*7674*	*7860*	*7767*	*-0.1*	*2.2*	*1.1*
Average MPG (miles per gallon)	**21.5**	**21.3**	**21.4**	*21.5*	*21.6*	*21.5*	*-0.2*	*1.1*	*0.4*

[a]Cost of imported crude oil to U.S.
[b]Price of gasoline sold by refiners to resellers.
[d]Average pump price for regular gasoline.
[d]Refinery output plus motor gasoline field production, including fuel ethanol blended into gasoline and new supply of oxygenates and other hydrocarbons for gasoline production.
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

The baseline assumptions for the economy and world oil markets lead to the expectation that U.S. gasoline prices will be about 4 cents per gallon cheaper this summer than they were during the summer of 2000. That puts the average regular gasoline price at $1.49 for the period April-September (Figure MG1). By historical standards, this implies a bullish price outlook since that average price ranks second all-time in nominal terms and the third highest average in real terms since 1981. Relatively tight world oil markets and a commitment by OPEC producers to restrain output leave little room for sharp reductions in oil costs in the near term. Currently, however, crude oil prices are below year-ago levels. This situation is expected to continue at least through the summer. Despite the generally lower crude oil costs on a year over year basis, we note that retail gasoline prices for the first quarter 2001 were slightly higher (4 cents) than Q1 2000,

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



* Regular gasoline, self-serve cash.

Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov

which reinforces the notion that the United States is not obviously headed for much lower gasoline prices this summer.

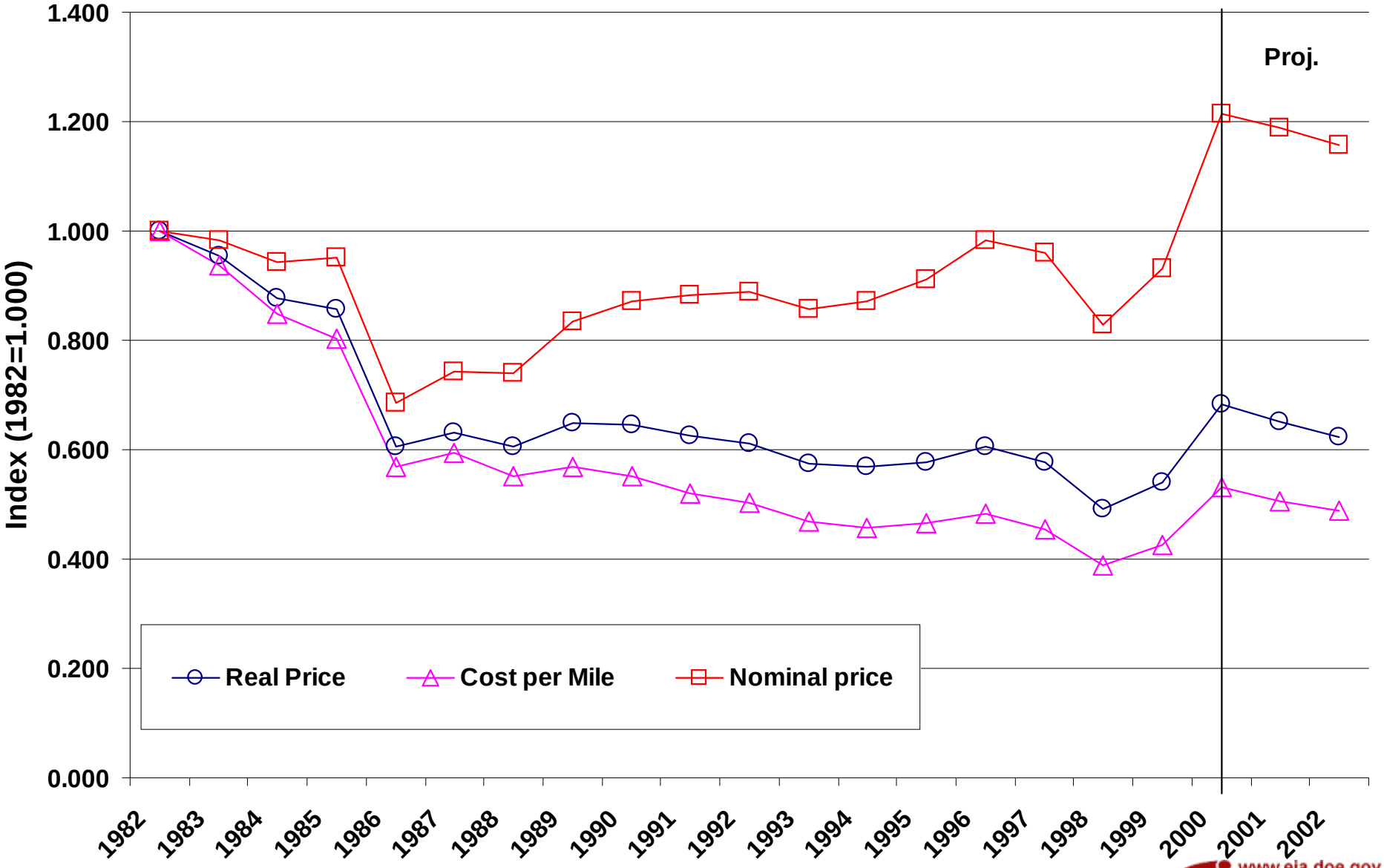
It is worth putting recent movements in gasoline prices into some historical perspective. Last summer's average nominal price was an all-time record and this summer's average is not far removed from that (Figure MG2). Real gasoline prices (deflated by the CPI) were at about mid-1980's levels last summer. On a cost-per-mile basis, real gasoline costs were at early 1990's levels last summer because of continuing (albeit rather slow) gains in average total fleet efficiency. Total fleet efficiency gains today stem mostly from scrapping of older, less efficient cars rather than from introduction of increasingly more efficient new cars.

The risk of sudden price runups is high again this summer due to the fact that gasoline inventories are low relative to normal. Total gasoline inventories as of March 31 were 8 percent below the midpoint of the normal range and 9 million barrels or 4 percent below the year-ago level. Low inventories last year contributed to conditions that led to extreme supply tightness and high prices for the Midwest as suppliers attempted to meet stringent new reformulated gasoline standards with little room for error in terms of ready supplies at major regional distribution points. Pipeline problems at a crucial point in the spring tipped the precarious balance into a disequilibrium that yielded record high prices throughout much of the Midwest. Similar problems this summer could have similar effects since inventories are lower than at this time last year for finished gasoline and blending components, including stocks of oxygenates needed for blending to make reformulated gasoline.

Even assuming that production and distribution of gasoline this summer proceeds without significant disruptions, uncertainty about world petroleum supply and demand patterns over the next few quarters remains. The impact of that uncertainty engenders a broad range of plausible paths for crude oil and petroleum product prices over time. A range of potential outcomes that constitutes approximately 2 standard errors on either side of the base case projection is illustrated 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. This calculation, however, reflects underlying uncertainties in crude oil markets but assumes that no significant refinery disruptions occur. In a scenario that results in a similar squeeze on wholesale gasoline prices as that seen in late spring/early summer 2000, a realistic range for peak monthly prices would extend above $1.63 per gallon for the national average regular price.

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 5 years of history, gasoline prices between Petroleum Administration for Defense Districts (PADDs) typically vary by 10 to 20 cents per gallon. State gasoline taxes (excise and sales taxes) alone yield interstate price differences of as much as 27 cents per gallon. California presents a particularly interesting comparison to the average U.S. gasoline price situation because of the strict environmental standards, the above-average tax rate and the relative isolation of West Coast markets. Last summer, the Midwest region (PADD II) demonstrated above-

Figure MG2. Summer Gasoline Cost Perspectives



Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov

average price variability in contrast to prior years, when Midwest price movements closely tracked U.S. averages.

The California gasoline market exhibits much greater variability than is evident in the U.S. average gasoline price series, as is evident in Figure MG3. 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. The Midwest region is strongly connected to Gulf Coast refining centers but the established method for producing reformulated gasoline there is distinct because ethanol is by far the main oxygenate used for reformulation. Under the new (Phase II) RFG requirements, this distinction may tend to increase the logistical difficulties associated with balancing regional supply and demand and thus increase price volatility there as well. Over the past 5 years (April 1996 - March 2001) the variability of retail prices in California relative to the U.S. average has been about 3 times as great as that exhibited in the Midwest (the standard deviation of the difference of regional and U.S. average prices was 9.0 cents per gallon for California, 3.1 cents per gallon for the Midwest). In recent weeks California retail prices have been on an upward trend, once again increasing the distance between California prices and averages elsewhere.

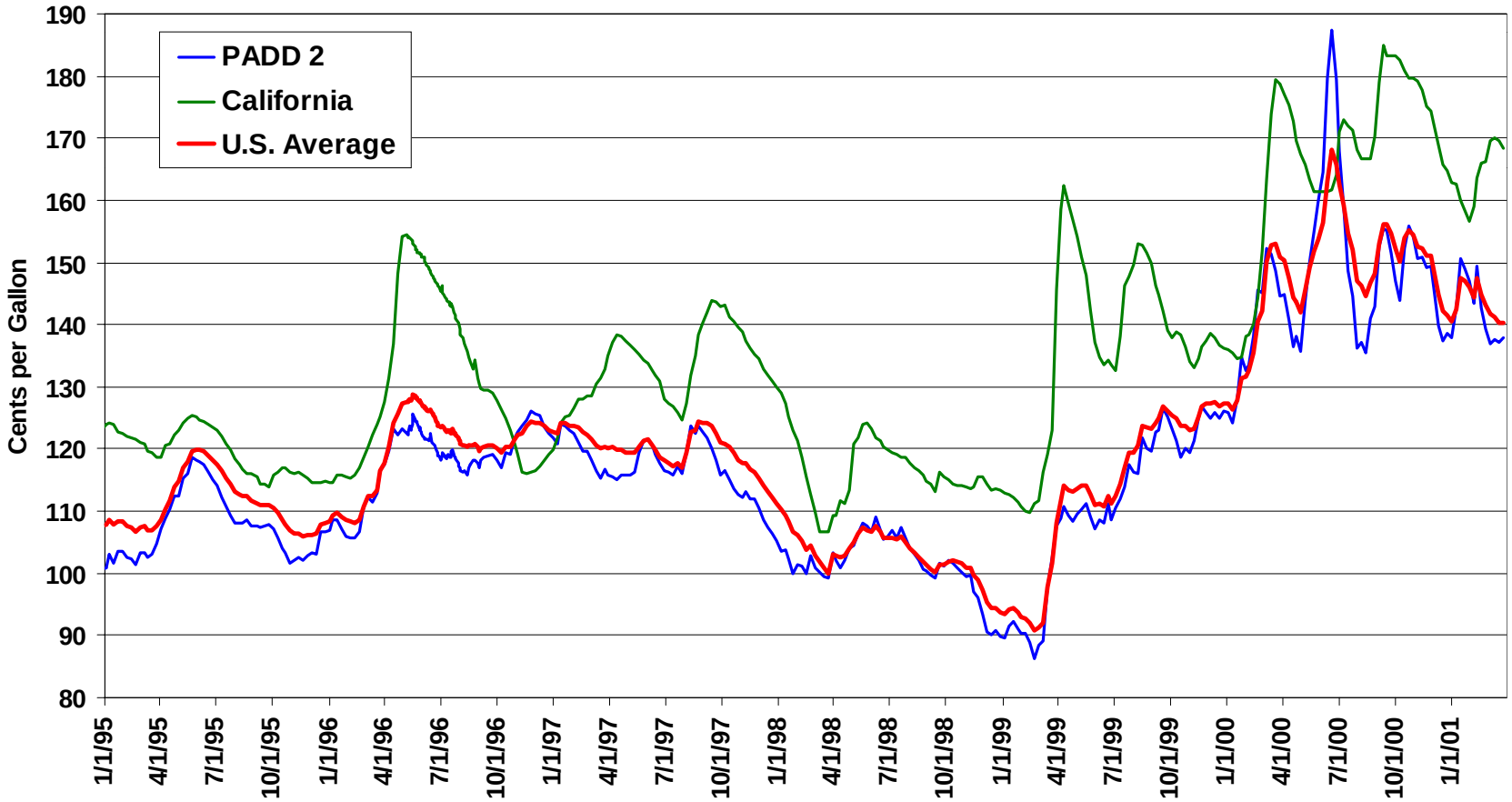
Some perspective on the components of average gasoline price changes is provided in Figure MG4. The dramatic increase in crude oil costs that occurred between spring 1999 and Fall 2000 was the main driver of average gasoline price increases. Taxes (Federal and State) generally have remained flat at about 38 cents per gallon in recent years. Gasoline taxes accounted for about 34 percent of average retail prices over the 1995-1999 period. In addition to higher crude oil costs, increased spreads between consumer prices and crude oil costs accompanied market conditions in 2000. In 2000, the total spread averaged 85 cents per gallon for the summer, compared to 75 cents per gallon during the 5 previous summers. The spreads reflected generally tight markets due to low stocks and distribution problems. This summer, again reflecting generally tight supply conditions, we expect spreads to average about the same as they did last year.

Inventories

The current low levels of total U.S. gasoline inventories contrast sharply with the ample levels seen in the spring of 1999, as shown in Figure MG5. In May 1999, total motor gasoline stocks stood at 225 million barrels. This situation deteriorated as the year went on, particularly during the late-fall and mid-winter periods, such that at the end of May 2000, total gasoline stocks had fallen to 208 million barrels. This year stocks are even lower, with total gasoline inventories expected to be about 200 million barrels at the end of May. Total gasoline stocks are projected to remain low throughout the driving season, not catching up to last year's level until the end of this driving season.

The current inventory shortfall in stocks appears concentrated east of the Rocky Mountains, in PADDS 1 (East Coast), PADD 2 (Midwest) and PADD 3 (Gulf Coast), as shown in Figure MG6.

Figure MG3. Retail Gasoline Price Variability by Region

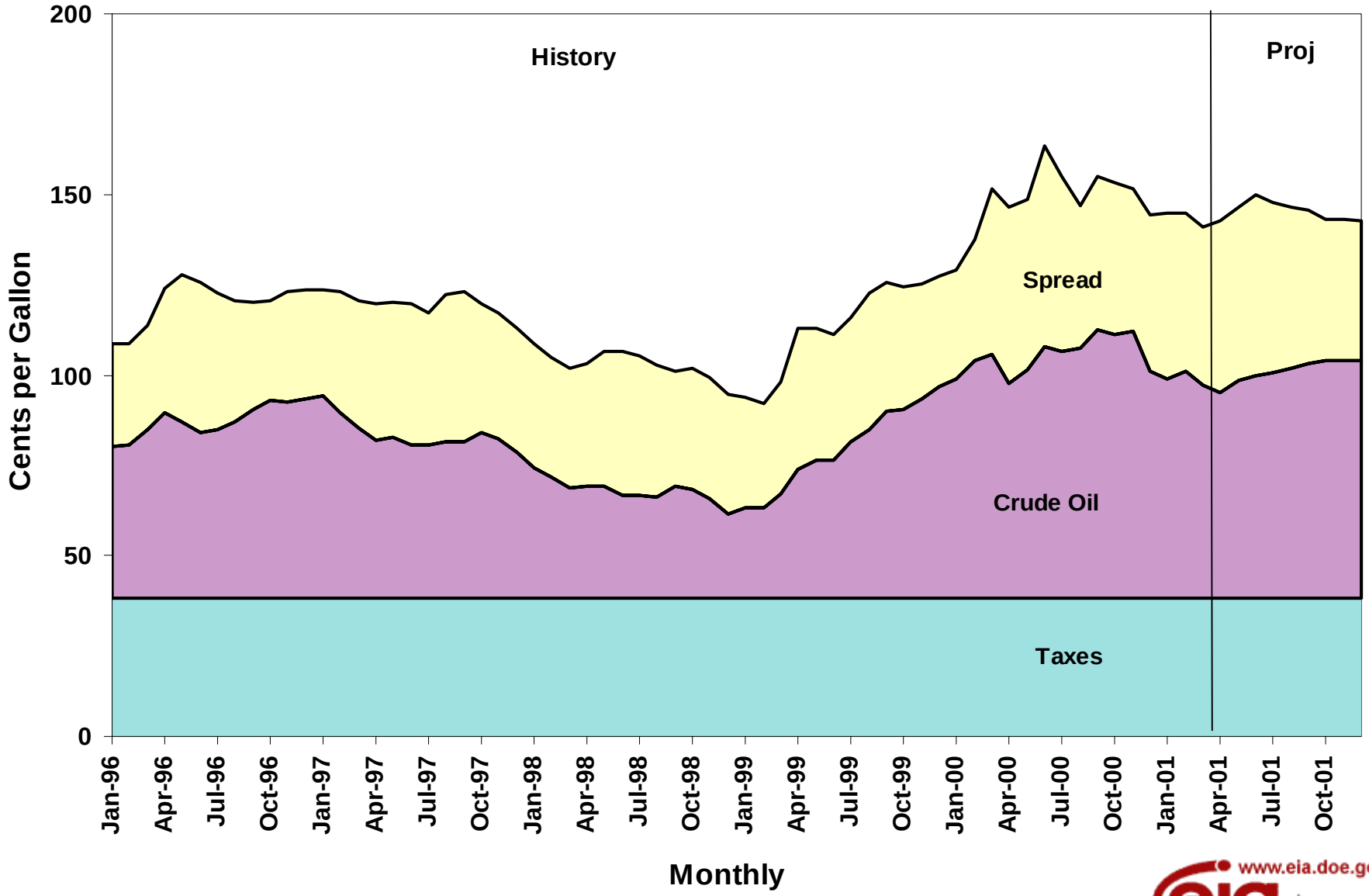


Weekly

Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov

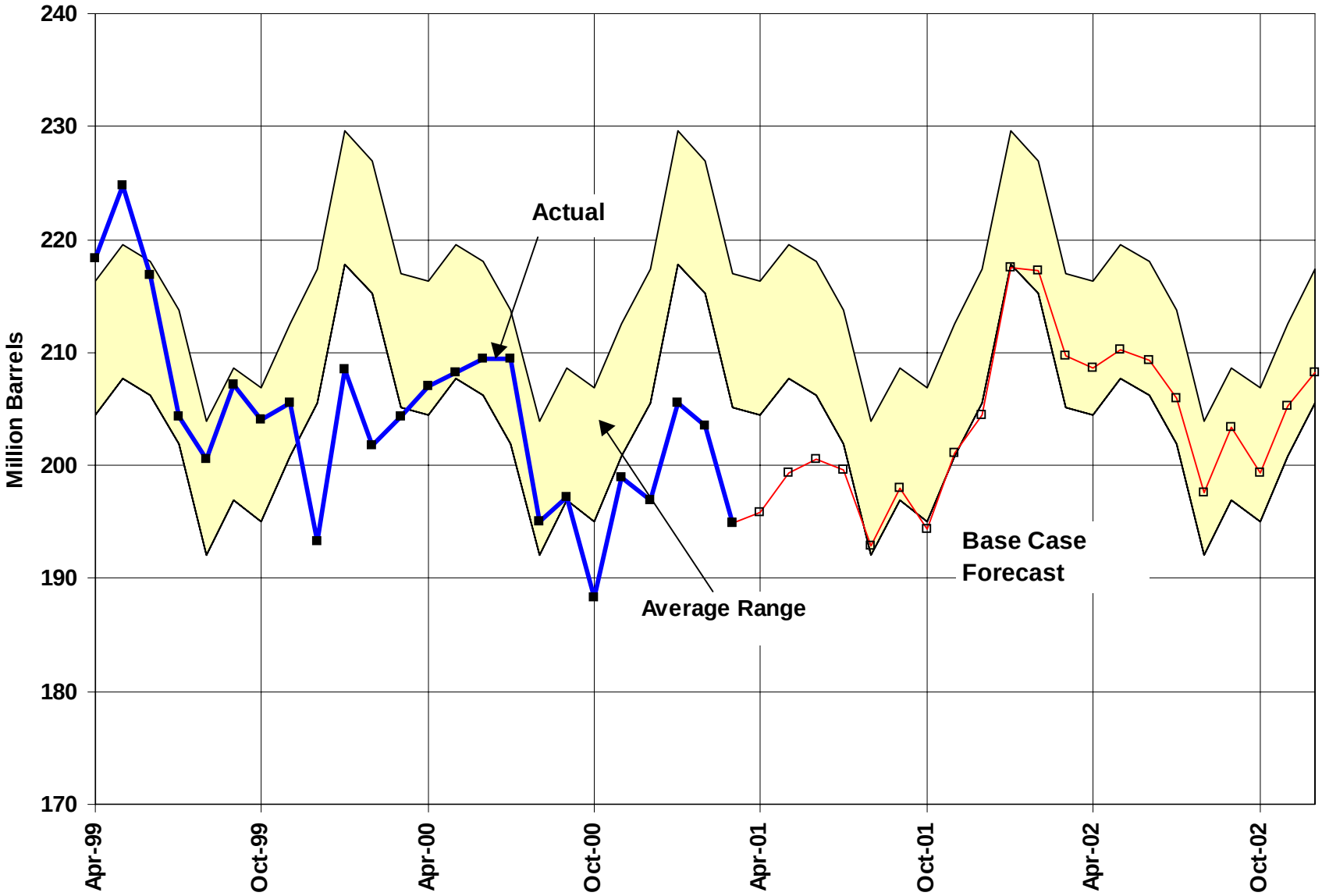
Figure MG4. Retail Gasoline Price Components



Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov

Figure MG5. U.S. Total Motor Gasoline Stocks

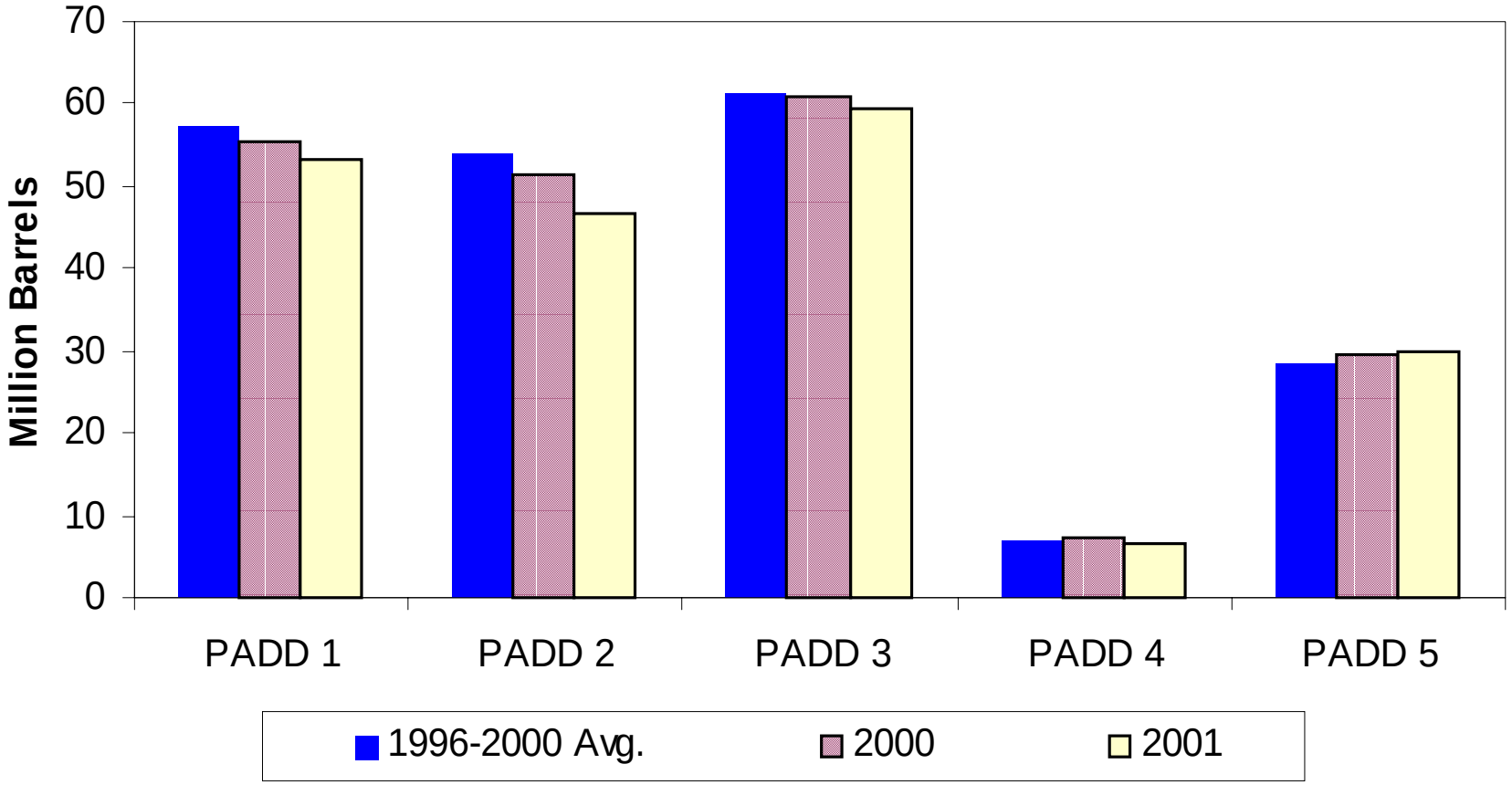


www.eia.doe.gov

Source: EIA; Summer 2001 Motor Gasoline Outlook,

Figure MG6. U.S. Regional Gasoline Stocks

(As of March 31)



Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov

A key component of uninterrupted gasoline supply is sufficient inventory to bridge the gaps between peak demand and supply from refinery production and imports. This year a much-narrowed safety margin in terms of available stocks is facing the domestic gasoline market, which increases the susceptibility of the market to price shocks. Typically, unplanned refinery outages in the United States exert little influence on prices unless the outages are particularly significant or prolonged. This summer, however, much as was the case in the spring of 2000, low stock levels might result in larger-than-normal gasoline price fluctuations if domestic production capability falters.

Demand

Although real prices remain high in relative terms, the contrast between the slight decline in real per-mile costs expected this summer and the sharp increase seen last year explains the change from a small decline in 2000 to at least moderate growth in 2001. Figure MG7 indicates that (once again) gasoline demand growth as well as highway travel growth this summer should be below the averages seen over the previous 5 years. Continued high prices and a slowing U. S. economy are expected to keep summer travel and gasoline demand growth at 1.1 percent and 0.9 percent, respectively, relative to last summer. The fact that even modest growth is expected this year following a down year in 2000 (the first in 9 years), when the annual economic growth in the United States is expected to be less than 40 percent as high as last year's rate, is testimony to the impact of the rapid increase in pump prices seen between early 1999 and mid 2000. In the absence of a similar runup over the past 12 months some growth, albeit along a lower track, may be expected.

Figure MG8 shows that the decline in summer highway travel seen in 2000 was the first absolute decline since the early 1980's (which was a time of very high oil prices and recession in the United States). Even the recession of the early 1990's did not precipitate a downturn in travel. The events of last year kicked travel and gasoline demand off of the trend that had been established during the 1990's. When (or if) these gasoline market activity levels return to that trend is unclear but we do believe that it will not be before 2003.

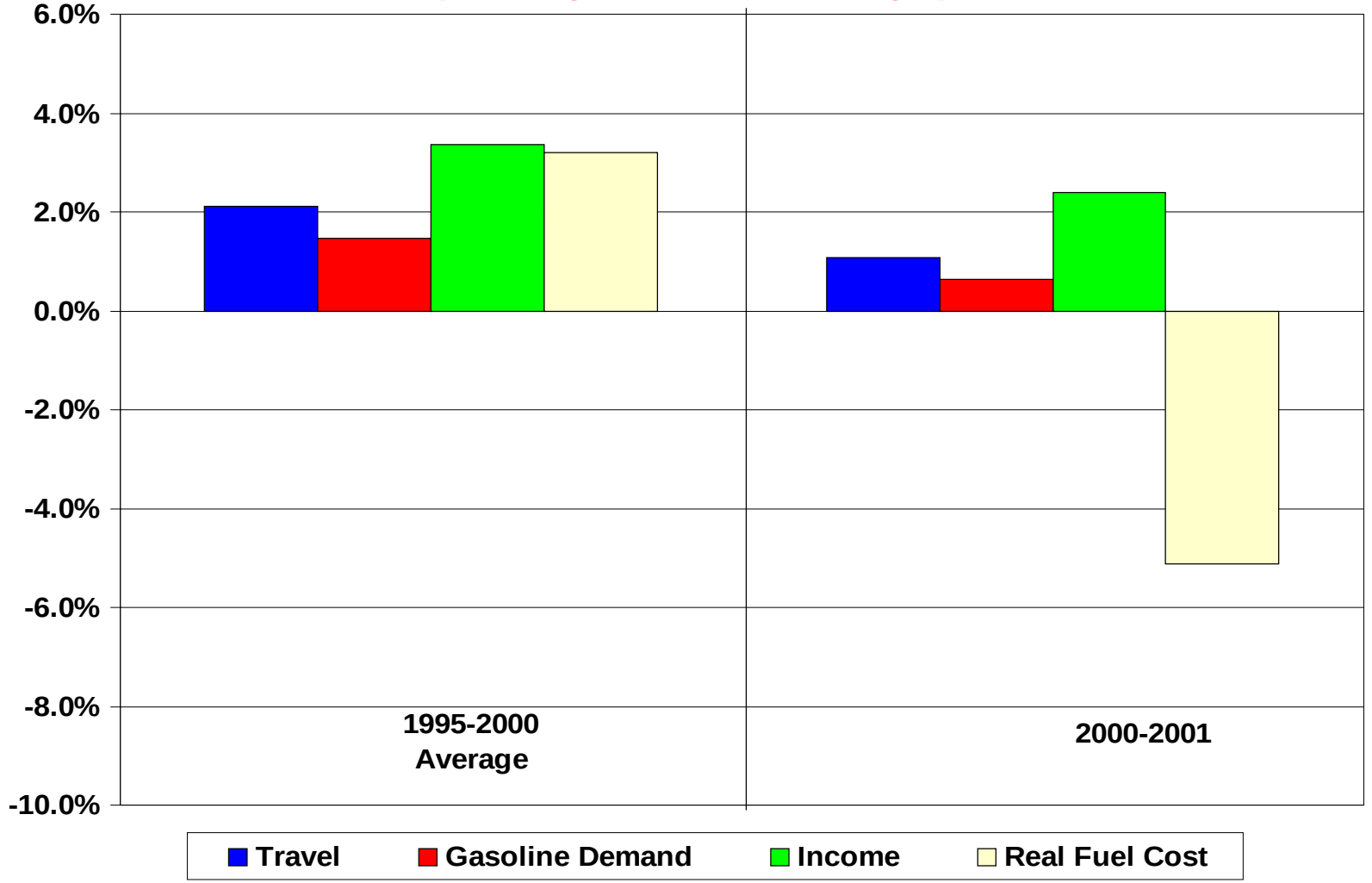
It is interesting to note that between 1980 and last year, summer highway travel increased by 78 percent, while gasoline demand increased by 28 percent, the difference essentially representing efficiency gains. Most of the efficiency gains, however, were achieved by 1991. Between 1991 and 2000, highway travel increased by 22 percent while gasoline demand increased by 15 percent.

Supply

Expected increases in gasoline demand this summer, modest as they may be, bring increased pressure on U.S. refiners to raise output significantly (by about 150,000 barrels per day, or 1.8 percent) over the average level recorded for summer 2000 (Figure MG9). Despite high prices during most of last summer, imports of finished gasoline played a diminished role in meeting demand for gasoline last year and most likely this will continue to be the case in 2001. Since gasoline stocks are starting the season at lower aggregate levels than seen at this time last year, storage is not expected to play a positive role in meeting peak demand this summer.

Figure MG7. Summer Motor Gasoline Market Indicators

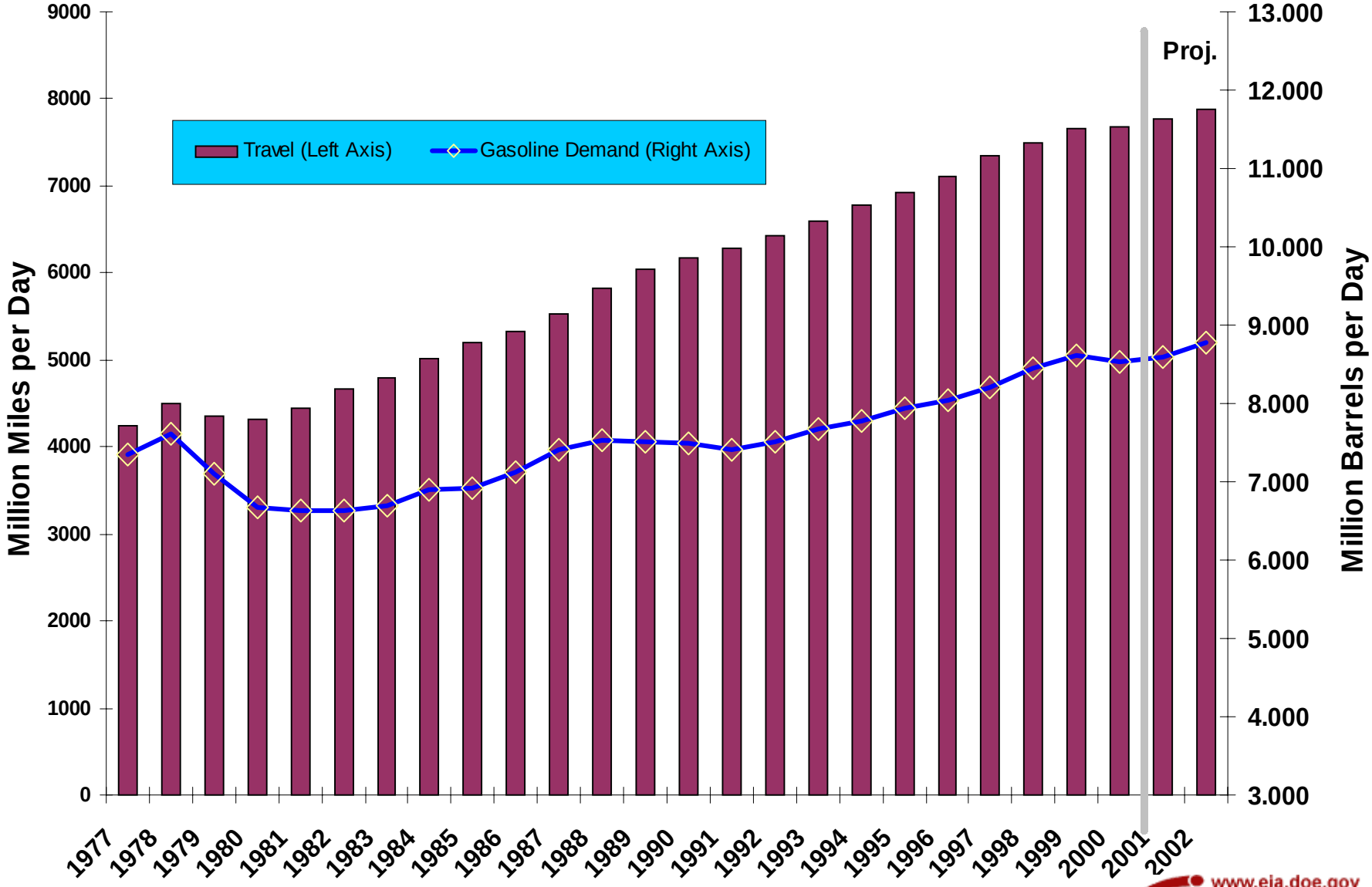
(Change from year Ago)



Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov

Figure MG8. Summer-Period Travel and Gasoline Use

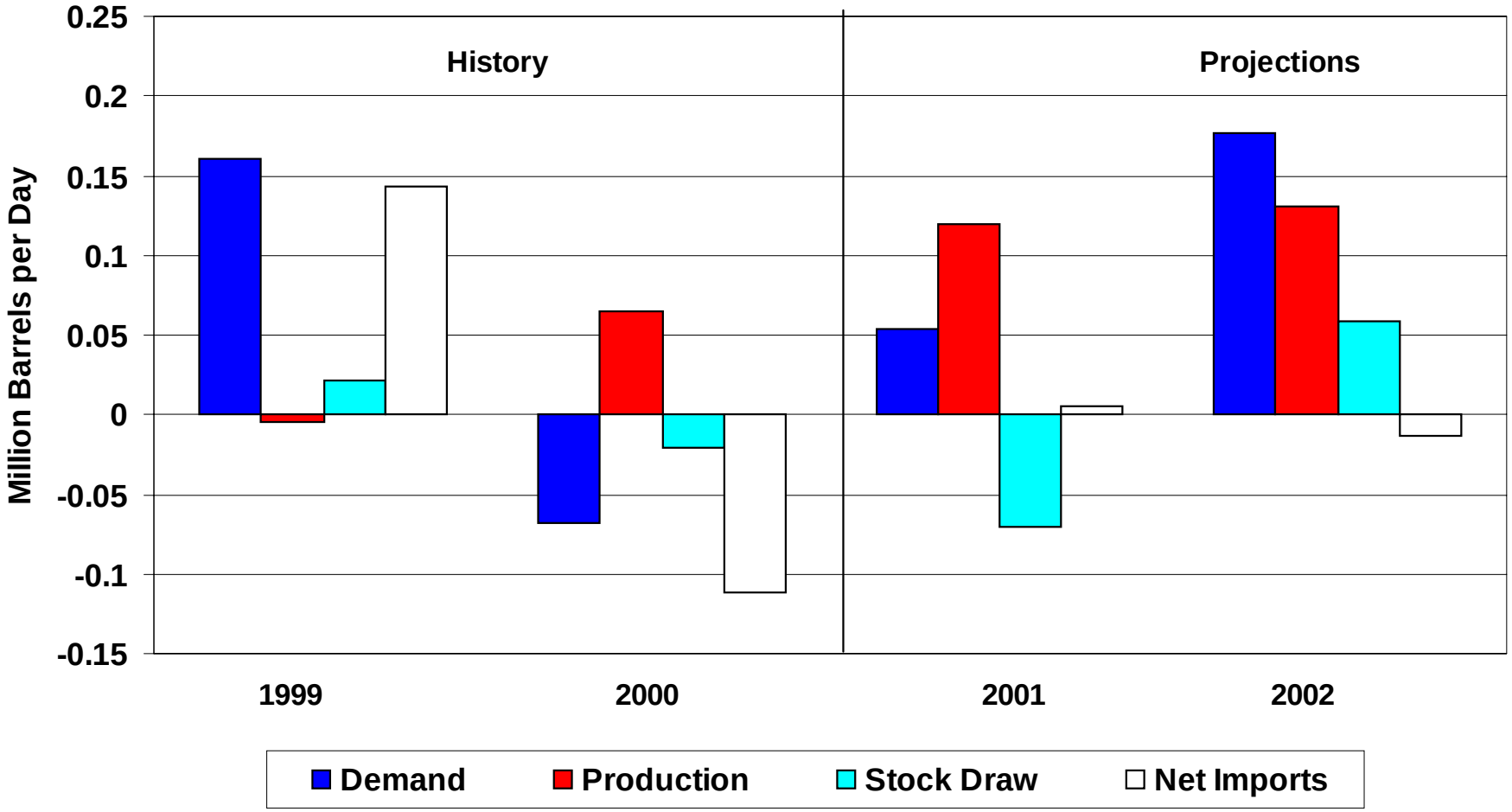


Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov

Figure MG9. Summer Gasoline Supply by Source

(Change from year Ago)



Source: EIA; Summer 2001 Motor Gasoline Outlook,

www.eia.doe.gov

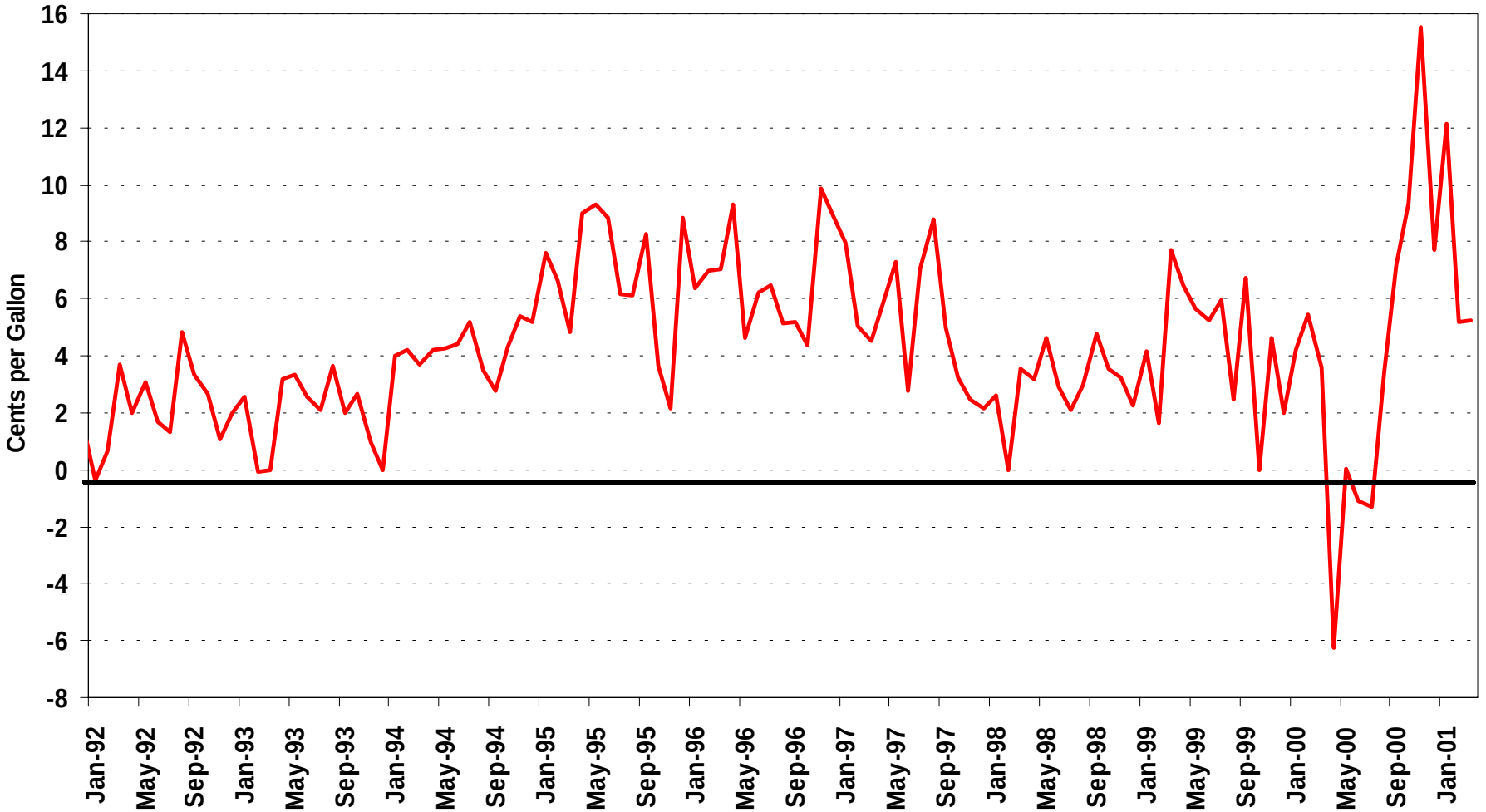
As proved to be the case last summer, this situation should result in sharply increased U.S. demand for additional crude oil for processing this summer, implying continued pressure on U.S. crude oil inventories and significantly expanded requirements for crude oil imports.

Gasoline imports are an important source of supply for the East Coast of the United States, accounting for about 15 to 20 percent of peak summer demand in that region, on average, over the last few years. Over the last 3 years, almost all imports of gasoline into the United States were destined for the East Coast, specifically the region identified by EIA as Petroleum Administration for Defense District (PADD) 1. Although the majority 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 MG10). 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. The price differential fell in 2000, even though U.S. prices were under extreme upward pressure. A falloff in imports accompanied the decline that lasted from April until July. The differential moved up again in late 2000 partly due to U.S. efforts to address a perceived heating oil shortage at the expense of gasoline output. We estimate that net imports this past winter were about 15,000 barrels per day higher than net imports in the winter of 1999-2000. Given the experience of last summer, it seems likely that foreign sources will play a small (if any) incremental role in domestic summer gasoline supply this year.

Imports of finished gasoline have declined in recent years because those blending components required to meet environmental specifications increased from 1995, when the RFG program was implemented. Imports of blending components have remained high. During that time, net imports of blendstocks occasionally exceeded that of finished motor gasoline, boosting total net imports to as much as 500,000 barrels per day. Some of the increase in finished motor gasoline production in the United States was related to the additional quantities of imported blending components, especially during the summer months (Figure MG11). It should be noted that, in contrast to 1999, imports of gasoline blending components, while still important, declined from previous year levels. Still, it is likely that some of the increase in "refinery output" this summer will actually stem from increased blendstock imports, blurring somewhat the distinction between refinery production increases and imports growth.

The increasing tightness in world oil markets that started to develop last year, and which continued through 2000, has loosened up somewhat, as evidenced by the fact that average crude oil costs to U.S. refiners are lower now than last year (down an estimated $3.50 per barrel in March 2001 compared to March 2000). Even in the environment of slow growth, the United States is still expected to generate significantly higher gasoline output this summer in order to meet increased demand without relying on inventory withdrawals. Continued high gasoline spreads (the difference between gasoline prices and oil input costs) would seem to provide sufficient incentive for increased output. But the spreads are unlikely to attract additional gasoline imports.

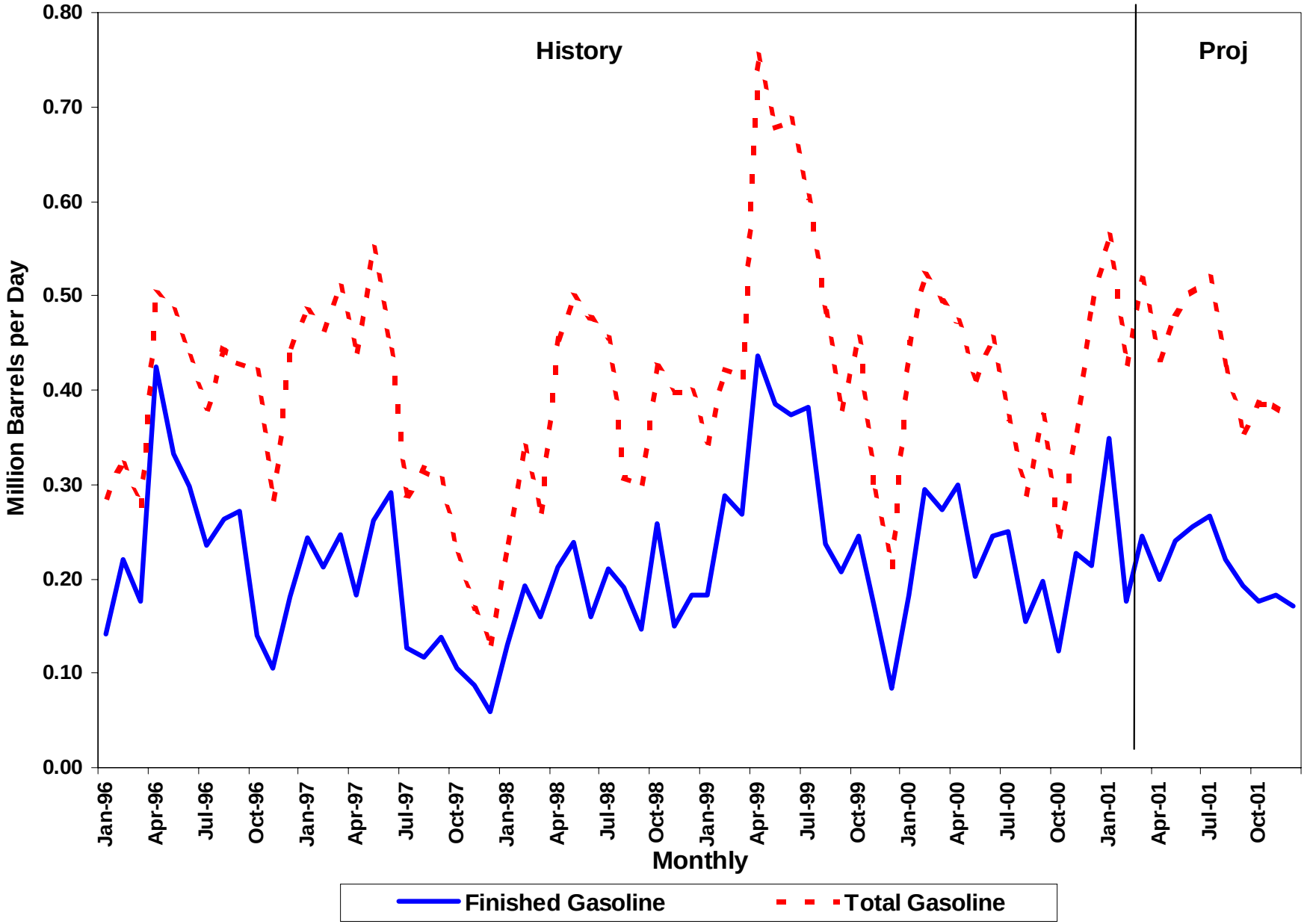
Figure MG10. Trans-Atlantic Gasoline Price Differentials



Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov

Figure MG11. Motor Gasoline Net Imports



Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov

Total domestic output (refinery and field production) is projected to average 8.44 million barrels per day during the summer months, up about 150,000 barrels per day from last summer. This reflects the expectation that refineries will be expected to meet not only the increase in demand but also compensate for reduced availability from stocks and displace net imports. As a result, refinery utilization rates for the summer are projected to average 95.9 percent, up from 95.1 percent last summer (Figure MG12).

Midwest

The beginning of last year's driving season in the Midwest began with a roar as gasoline prices surged to record levels. Although a similar rise in prices is not specifically expected this year, the motor gasoline supply situation remains tight enough for a disruption, such as a pipeline or refinery shutdown in this region, to lead to similar price spikes. Nevertheless, the industry should still remain capable of responding so that retail outlets do not run out of product. Listed below are the factors that could be sources of Midwest motor gasoline price volatility.

Midwest Market Scorecard: 2001 Versus 2000

Upside:

- Suppliers are further along learning curve for producing Phase II RFG
- EPA allows upward adjustment on vapor pressure for RFG with ethanol
- Explorer Pipeline back at full capacity

Downside:

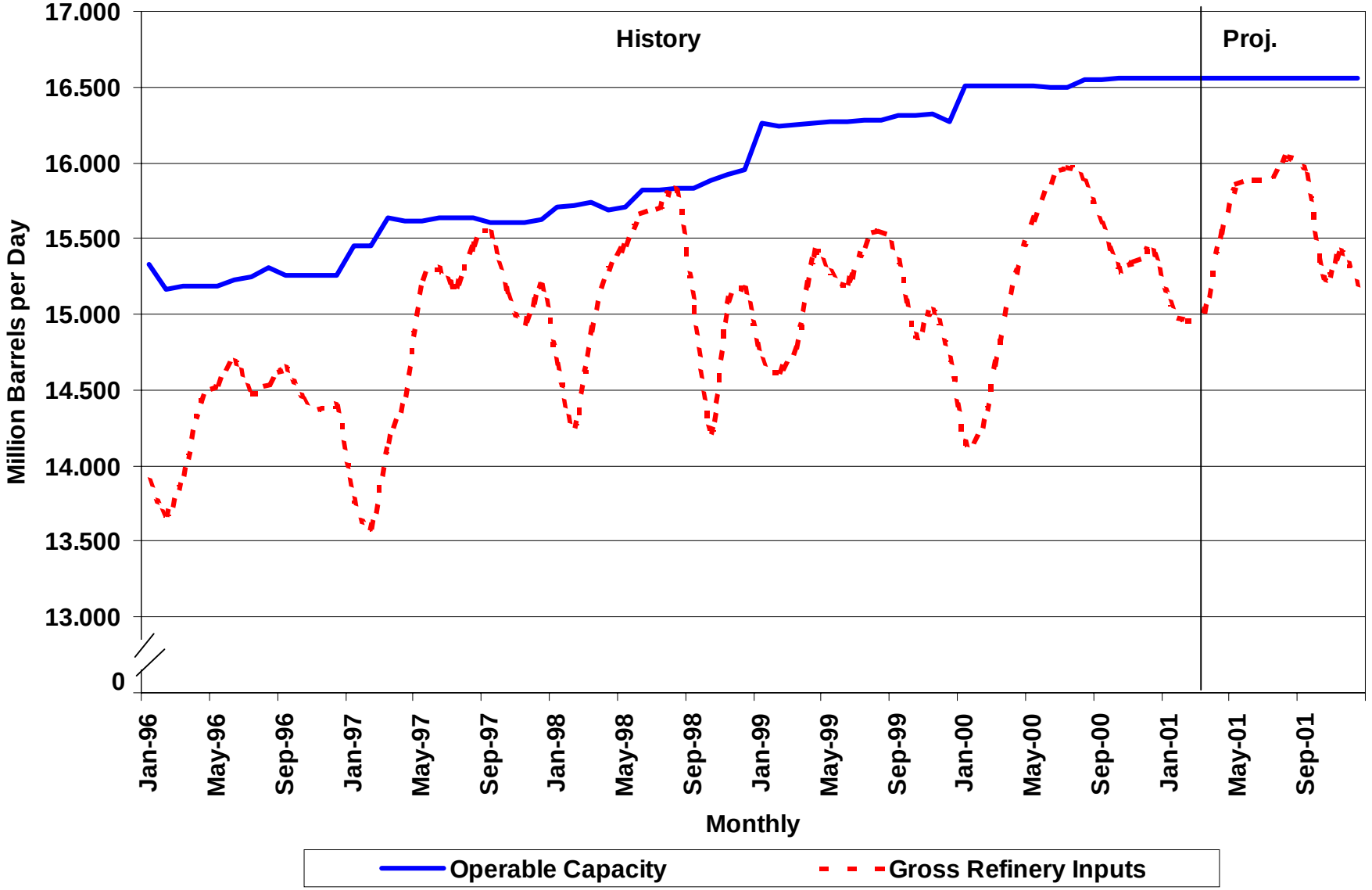
- Low gasoline inventories
- Blue Island, Illinois, refinery shutdown
- High ethanol and MTBE prices and low stocks

Several developments contributed to the Midwest price runup in May and June last year. Low inventories, refining outages and shipping constraints on the Explorer pipeline kept the supply system from smoothly responding to seasonal demand increases, which generated steep increases in reformulated gasoline prices. These increases were followed shortly by price increases in the conventional gasoline market. Another important contributing factor was the start of the Environmental Protection Agency (EPA) Phase 2 reformulated gasoline program. The Phase II RFG program presented stringent new requirements for gasoline vapor pressure reductions, which can be difficult for refiners to meet particularly when blending with ethanol.

As is usually the case with new product quality regulations we expect refiners and blenders to be better prepared the second time around. The EPA has also relaxed the vapor pressure requirements for reformulated gasoline containing ethanol. However, we start this driving season with lower inventories than last year and a tight market for oxygenates, which are required in reformulated gasoline. Also, Premcor Inc. shut down its 80,000 barrel-per-day refinery in Blue Island, Illinois last December, which further reduces the capacity and flexibility of the Midwest supply system to respond to market demands.

Reformulated Gasoline and Oxygenates

Figure MG12. U.S. Refinery Capacity and Throughput



Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov

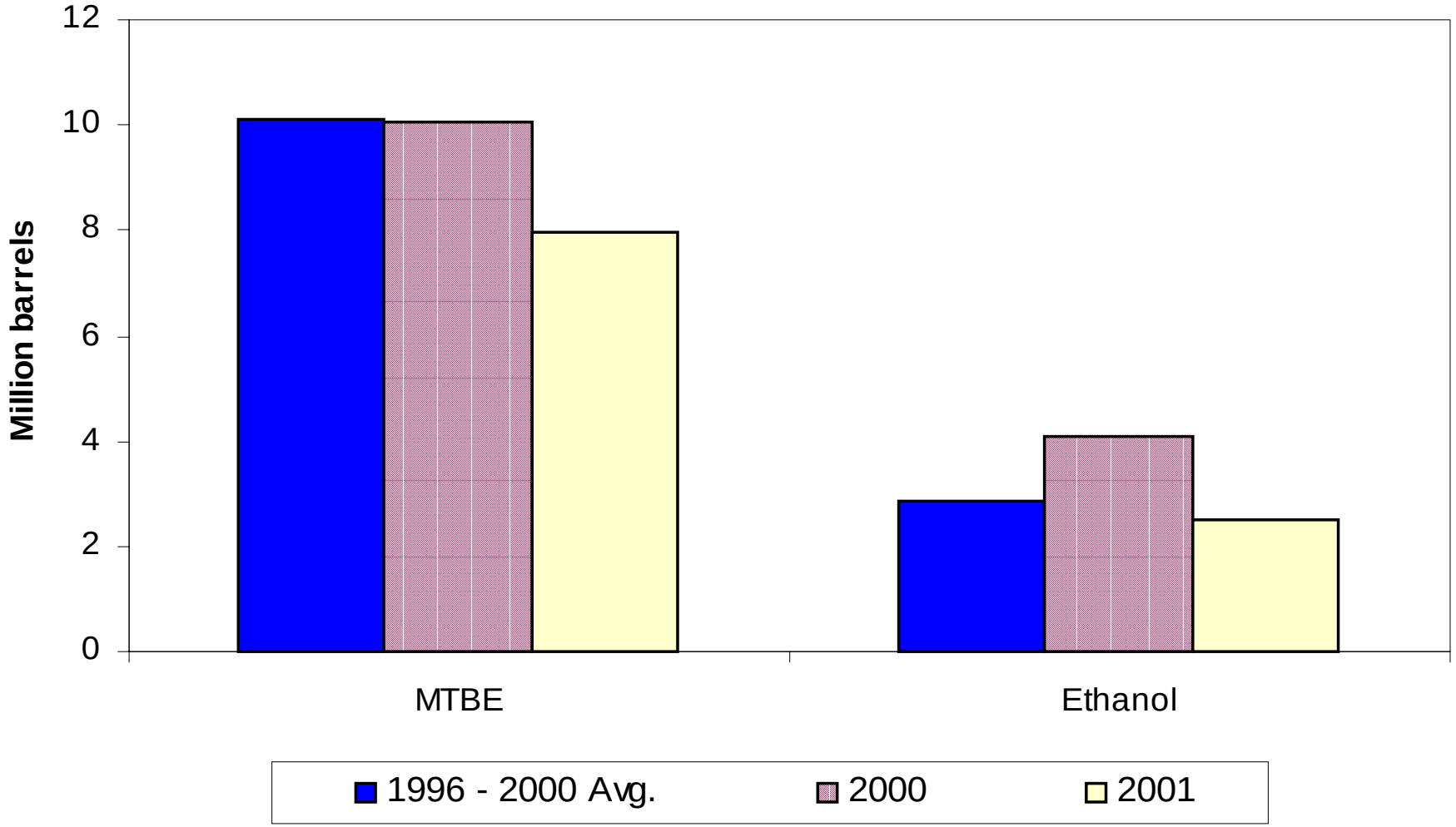
About a third of gasoline sold in the U.S. must meet Phase II reformulated specifications. This gasoline must be in place at distribution terminals by May 1 and at retail outlets by June 1. We can repeat what we said in last year's *Summer 2000 Motor Gasoline Outlook*: "While the supply of reformulated gasoline from domestic refiners, blenders, and imports should be sufficient, low gasoline inventories raise the risk of localized shortages. The new requirements for reformulated gasoline may slow the response time for delivery of emergency supplies and reduce the availability of imported gasoline."

What is new this year are high prices and low inventories for the oxygenates MTBE and ethanol (Figure MG13). High oxygenate prices will contribute to high prices for reformulated gasoline relative to conventional gasoline. Low inventories reduce the flexibility of the supply system to respond quickly to reformulated gasoline supply and demand imbalances.

For a detailed analysis of MTBE production economics and recent price trends refer to:
"MTBE Production Economics," April 2001
http://www.eia.doe.gov/emeu/steo/pub/special/mtbecost.html

Figure MG13. U.S. Oxygenates Stocks

(As of March 31)



Source: EIA; Summer 2001 Motor Gasoline Outlook.

www.eia.doe.gov