

1999 Summer Motor Gasoline Outlook

This year's base case outlook for summer (April-September) motor gasoline markets may be summarized as follows:

- **Pump Prices:** (average regular) projected to average about \$1.13 per gallon this summer, up 9-10 cents from last year. The increase, while substantial, still leaves average prices low compared to pre-1998 history, especially in inflation-adjusted terms.
- **Supplies:** expected to be adequate, overall. Beginning-of-season inventories were even with the 1998 level, which was at the high end of the normal range. However, some refinery problems on the West Coast have tightened things up, at least temporarily.
- **Demand:** up 2.0 percent from last summer due to solid economic growth and low (albeit rising) fuel prices; highway travel may reach 1.4 trillion miles for the season, up about 2.1 percent from last year.

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

	1998			1999			Percent Change		
	Q2	Q3	Summer	Q2	Q3	Summer	Q2	Q3	Summer
Prices (cents per gallon)									
Imported Crude Oil Price ^a	29.5	28.3	28.9	34.6	32.9	33.7	17.1%	16.5%	16.7%
Wholesale Gasoline Price ^b	56.1	52.0	54.0	65.8	59.3	62.5	17.2%	14.1%	15.7%
Retail Gasoline Price ^c	105.3	103.1	104.2	115.7	111.2	113.4	9.9%	7.9%	8.9%
Stocks, Incl. Blending Components (million barrels)									
Beginning	215.0	221.4		215.2	212.9				
Ending	221.4	207.4		212.9	208.1				
Demand/Supply (million barrels per day)									
Total Demand	8.324	8.509	8.417	8.524	8.654	8.589	2.4%	1.7%	2.0%
Total Output ^d	8.249	8.192	8.220	8.343	8.396	8.370	1.1%	2.5%	1.8%
Net Finished Stock Withdrawal	-0.124	0.141	0.009	-0.019	0.058	0.019			
Net Imports	0.199	0.177	0.188	0.200	0.200	0.200	0.6%	13.3%	6.6%
Refinery Utilization (percent)	97.5%	98.0%	97.8%	95.7%	97.8%	96.8%			
Market Indicators									
Real GDP (billion 1992 dollars)	7498.7	7566.4	7532.6	7808.7	7854.9	7831.8	4.1%	3.8%	4.0%
Real Income (bill. 1992 dollars)	5321.5	5364.1	5342.8	5516.5	5562.0	5539.3	3.7%	3.7%	3.7%
Industrial Output (index, 1987=1.0)	1.312	1.316	1.314	1.343	1.353	1.348	2.4%	2.8%	2.6%
Miles Traveled (mill. miles per day)	7424.5	7600.4	7512.9	7577.9	7758.6	7668.7	2.1%	2.1%	2.1%
Average MPG (miles per gallon)	21.24	21.27	21.25	21.17	21.35	21.26	-0.3%	0.4%	0.0%

^aCost of imported crude oil to U.S.

^bPrice of gasoline sold by refiners to resellers.

^dAverage pump price for regular gasoline.

^dRefinery 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.

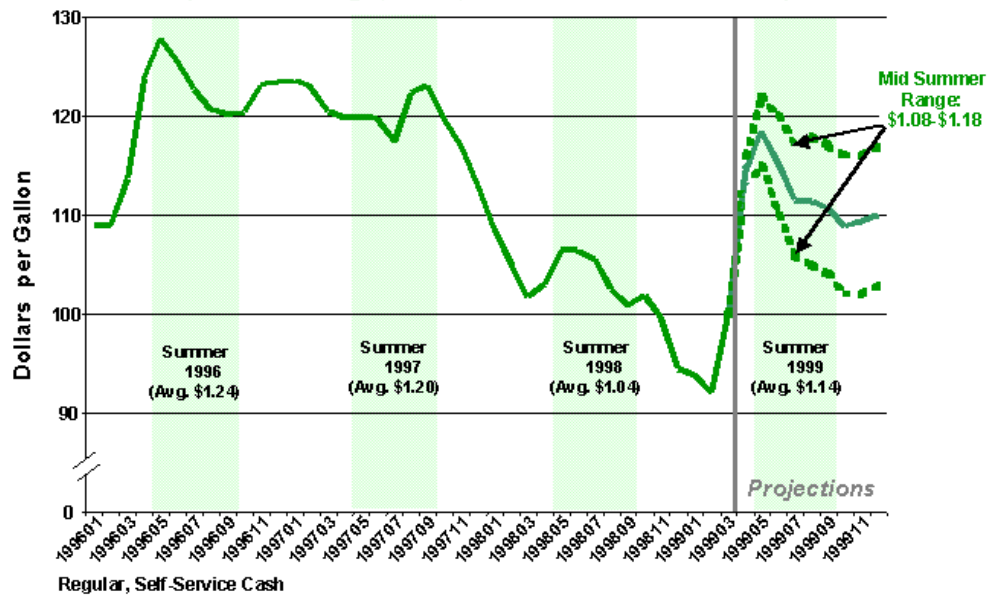
Due largely to the recent rise in crude costs and cost pressures associated with multiple refinery problems in California, the average U.S. regular unleaded self-service gasoline price is expected to post a very sharp increase in April over the February record-low (inflation-adjusted) price. We assume that the refinery problems will be largely resolved by mid-summer but that the impacts of these supply problems may keep prices higher than they otherwise would be for another month or two. The average price for the summer is expected to be about 9-10 cents above the year-ago level. Despite the increase, this average is still relatively low by historical standards.

To the extent that consumers are more concerned about how prices have changed recently rather than how they have changed since last year, it is of interest to note that our projected price for April would imply the largest month-to-month increase (14.2 cents per gallon) in the average regular gasoline price since April 1989. The projected April value would also imply the largest two-month increase in the U.S. average price (22.2 cents per gallon) since the two months immediately following Iraq's invasion of Kuwait in 1990.

The average regular self-service gasoline price is expected to peak this year in May at about \$1.18 per gallon in the base case ([Figure MG1](#)). Depending on crude oil market developments, prices at the pump may range between \$1.00 and \$1.22 per gallon during the driving season. Some additional uncertainty stems from the ever-present possibility that refinery problems could continue to be a factor late into the summer.

Figure MG1. Retail Gasoline Price Cases*

(Based on High, Base, and Low Oil Price Cases)

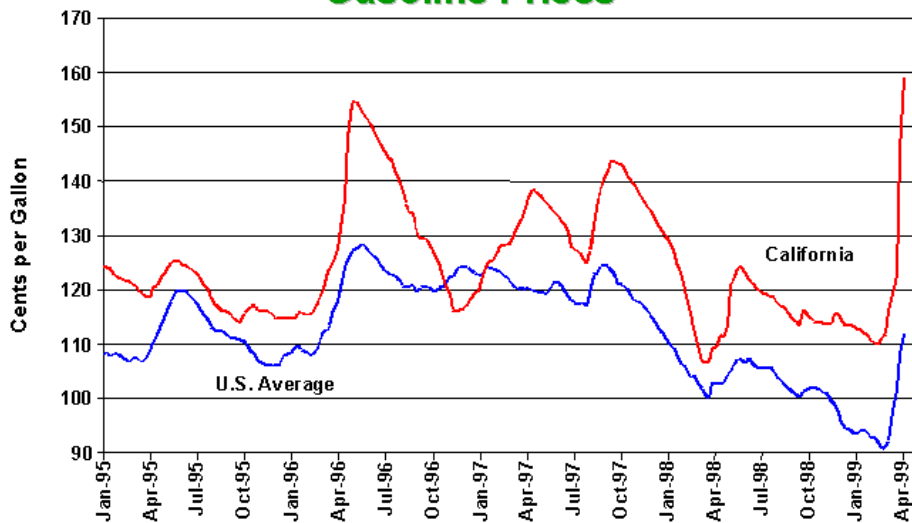


Sources: History: EIA; Projections: Short-Term Energy Outlook, April 1999
Energy Information Administration



A rugged start to the 1999 driving season has emerged from the fragile gasoline market environment of California. A sequence of refinery problems there resulted in a very rapid escalation of both spot and retail gasoline prices since mid-February. Between February 18 and March 31, spot prices for reformulated gasoline in California rose by 60 cents per gallon or more compared with 24 cents at the Gulf. Meanwhile, average retail gasoline prices in California rose by 36 cents per gallon (Figure MG2). The supply problems in California have had some spillover effects elsewhere as Gulf Coast, Caribbean and overseas suppliers have begun diverting some gasoline supply to the West Coast. Gulf Coast spot conventional regular gasoline prices rose 22 cents per gallon during the same period.

Figure MG2. U.S. and California Retail Regular Gasoline Prices



Source: EIA, Office of Oil and Gas
Energy Information Administration

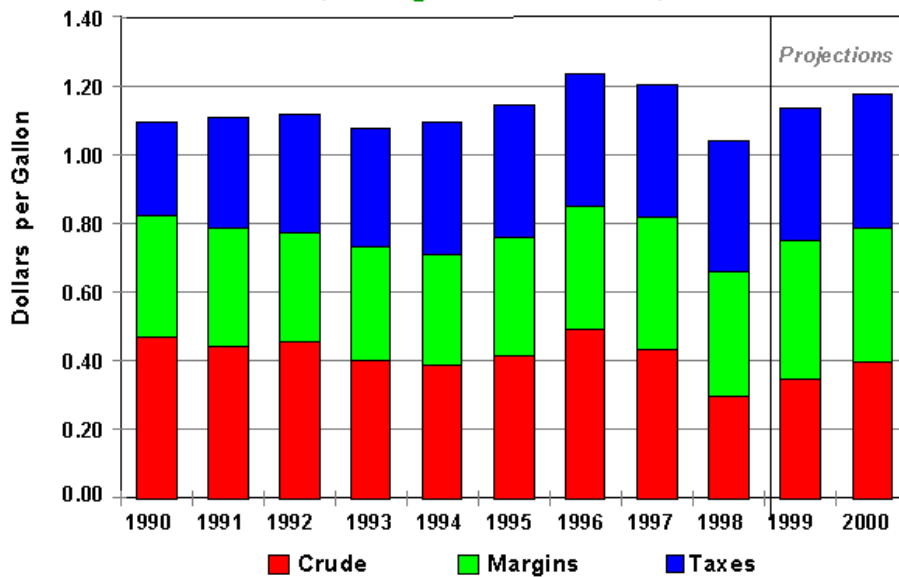


The California gasoline market problems stem from three separate refinery problems: 1) the February 23 fire at (and subsequent shutdown of) Tosco's Avon refinery; 2) the temporary shutdown in mid-March of a fluid catalytic cracking (FCC) unit at Exxon's Benicia refinery; and 3) the March 25 fire that shut down a hydrocracking unit at Chevron's Richmond refinery. We estimate that about 15 percent of California's gasoline-making capacity has been affected by the refinery shutdowns.

We assume that, one way or the other, the dislocations from refinery disruptions will be resolved by the end of April. It is unlikely that Tosco's refinery will be running by then, but, as other U.S. and foreign supplies come into California, the huge spike in spot prices should subside by May. However, some of the recent spot price runups will be working their way to the retail level for some weeks before subsiding. As a result, it is likely that June pump prices on the West Coast will move closer to a normal relationship with the rest of the country.

Some perspective on average summer gasoline prices is provided in [Figure MG3](#). Even in nominal terms, last summer's average regular gasoline pump price was the lowest of the 1990's at \$1.04 per gallon. Correcting for inflation it was the lowest ever. We expect average prices to be up noticeably (9-10 cents per gallon) this summer. This will put prices closer to the average levels seen prior to 1996.

Figure MG3. Retail Gasoline Price* Components
(Average Summer Price)



*Regular, Self Service

Sources: History: EIA; Projections: Short-Term Energy Outlook, April 1999
Energy Information Administration



It is apparent from [Figure MG3](#) how crude oil cost changes have generally driven shifts in gasoline prices. The weakness in world oil markets last year and the collapse in crude oil prices drove summer pump prices to very low levels. (Even more dramatic declines were seen this past winter.)

The component of prices stemming from taxes (federal and state) is now higher than in 1990 by about 12 cents per gallon, underscoring the significance of the low prices last year.

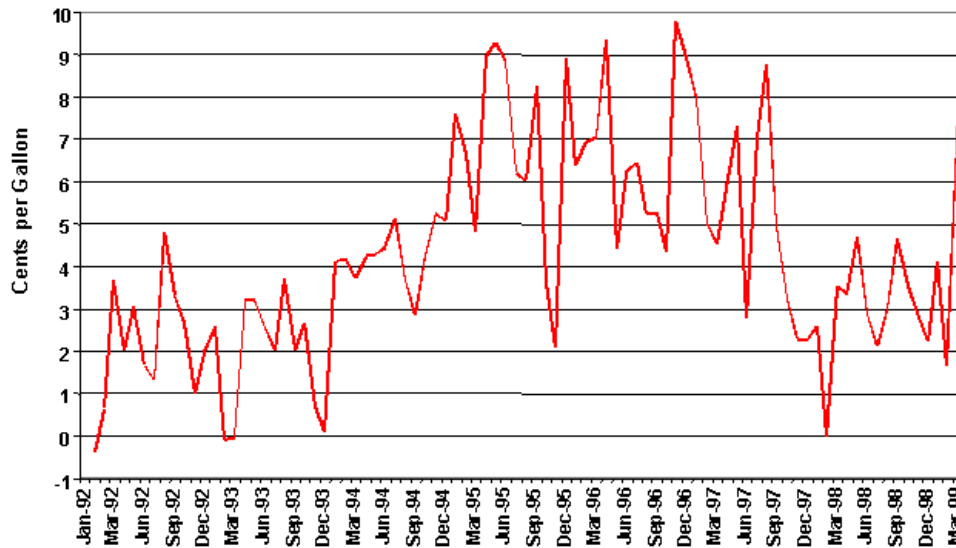
The margin component (non-crude manufacturing costs plus profits) is expected to be somewhat above average this summer (40 cents per gallon versus a 35 cents-per-gallon average for 1990 to 1998). This expectation is based on the assumption that refiners and marketers will post profits that are much improved over the dismal results seen in the past winter. The higher margins are skewed by the 70- to 80-cent margins appearing now in California due to the tight supply situation there.

Gasoline imports are an important source of supply for the East Coast, and Western Europe is an important source of incremental gasoline supply in the United States. Europe has an excess of gasoline production capability and has found the United States to be a good market for its product. Trans-Atlantic gasoline price differentials provide some indication of the attractiveness of the U.S. market to European refiners. When U.S. prices exceed European prices adequately to cover transportation cost, they favor

moving product across the Atlantic. While transportation costs vary, they can be in the vicinity of 4 cents per gallon. The price differential increased after 1993 to average about 7 cents per gallon from 1995 through 1997, and, with the exception of 1995 when the transition to RFG initially may have discouraged foreign suppliers, imports from Europe were strong during this period ([Figure MG4](#)).

Figure MG4. Trans-Atlantic Gasoline Price Differentials

(New York Harbor less Rotterdam)



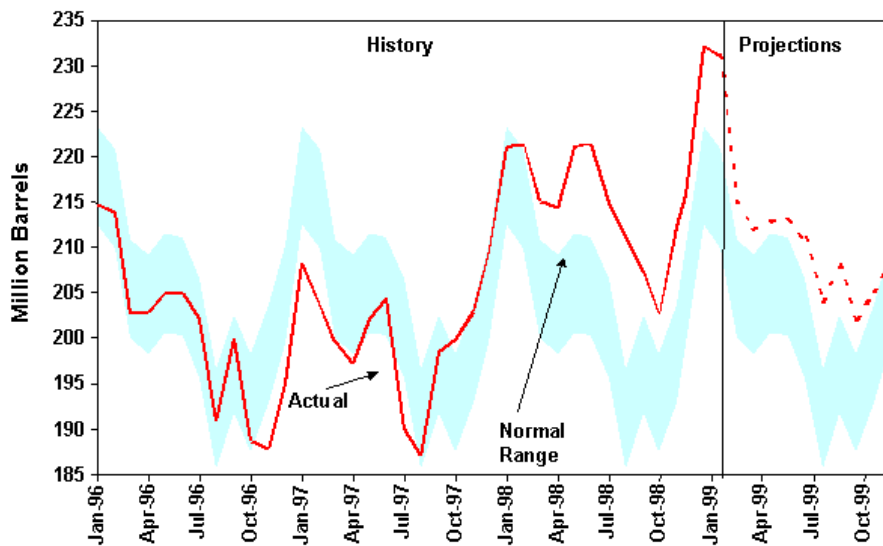
Sources: EIA, Office of Oil and Gas
Energy Information Administration



During 1998, the differential fell back to levels similar to those in 1992 and 1993, yet imports were about the same as in 1997. The U.S. market apparently remained attractive to other regions even at the reduced differential level. As U.S. gasoline prices increased in late February and March of 1999, the differential rose sharply to levels more typical of 1996 and 1997, which may boost imports in the near term as gasoline's high-demand season gets underway.

For 2 years through the spring of 1998, U.S. gasoline stocks increased from levels somewhat below those of recent historical averages to levels at the high end of or well above those averages. Stocks have remained high ever since. Total U.S. gasoline stocks at the beginning of the upcoming driving season (April 1) are estimated to be 215 million barrels, the same as last year ([Figure MG5](#)).

Figure MG5. U.S. Total Motor Gasoline Stocks



Sources: History: EIA; Projections: Short-Term Energy Outlook, April 1999
Energy Information Administration



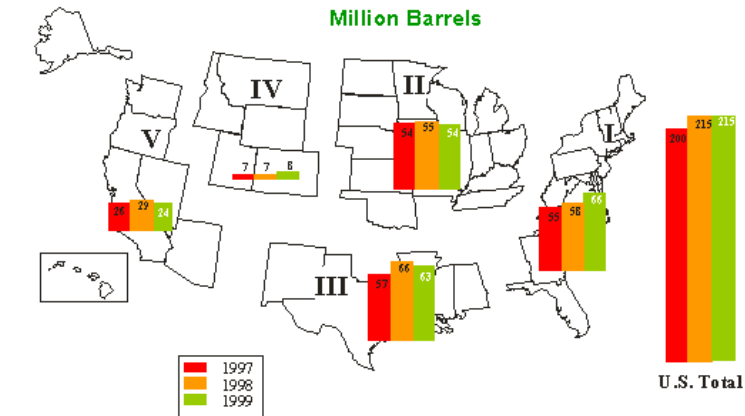
Although gasoline stocks are now skirting the high end of the normal range, this is something of a change from earlier this year when the excess in inventory holdings was much more obvious. In January and February stocks were above 230 million barrels, meaning that a sharp decline occurred in March. Unexpectedly high gasoline demand in March is partly responsible for the sharp draw last month.

Still, it is generally the case that inventories are comparatively plentiful this year and should not, in and of themselves, contribute to any supply problems. It is possible that high inventories this winter will prove to have been a help in keeping the supply problems that have been plaguing California from transmitting a greater shock to the rest of the country than has apparently been the case.

Total beginning-of-season stocks (including blending components) were estimated to be 215 million barrels, at the high end of the normal range for this time of year but almost exactly the amount in storage this time in 1998. Some regional differences are worth noting. The East Coast began the driving season with inventories well above last year's at this time, while other regions generally remained about flat or were down ([Figure MG6](#)). The West Coast, in particular, showed a deficit compared to last year (down about 17 percent). This situation is partially reflective of the loss of gasoline capacity to refinery outages in California. In turn, the somewhat depleted stock situation in the West is likely to keep strong pressure on California spot prices until replacement supplies can arrive and the refinery outages are cleared up.

Figure MG6. U.S. Regional Gasoline Stocks

(Beginning of Season - March 31, 1999)



¹ Includes motor gasoline blending components.

Source: Energy Information Administration, Petroleum Supply Monthly, Table 51.

Sources: EIA, Office of Oil and Gas
Energy Information Administration

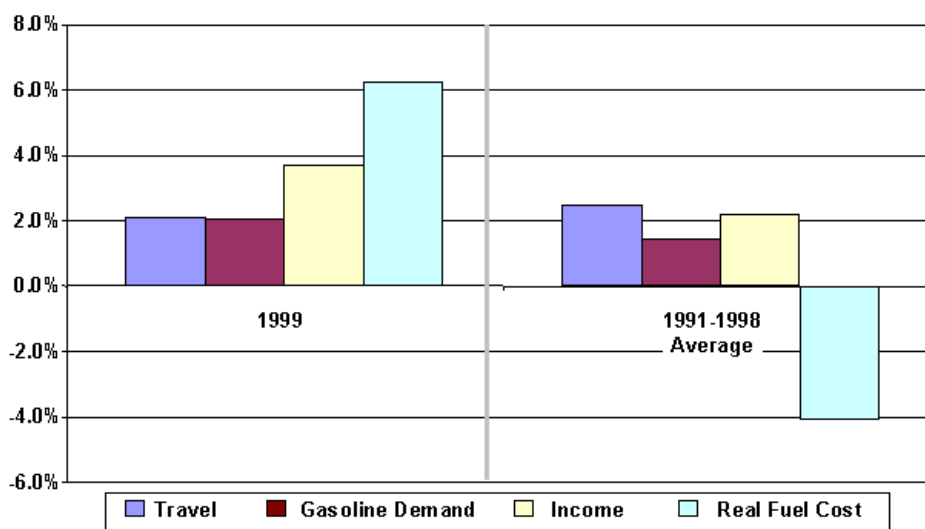


Nevertheless, the relatively high aggregate U.S. stock level, combined with a slow buildup of commercial stocks in Western Europe following several years of decline, should ensure ample availability of supplies during the summer season and help avoid any protracted market problems or shortage.

Despite the fact that the period of very low gasoline prices in the United States appears to be over, the prospects for another summer with solid growth in gasoline demand are very good.

The significant growth in real fuel costs evident in [Figure MG7](#) (more than 6 percent above last summer) only fractionally reverses eight years (1991-1998) of real declines averaging 4 percent per year.

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



Sources: History: EIA; Projections: Short-Term Energy Outlook, April 1999
Energy Information Administration

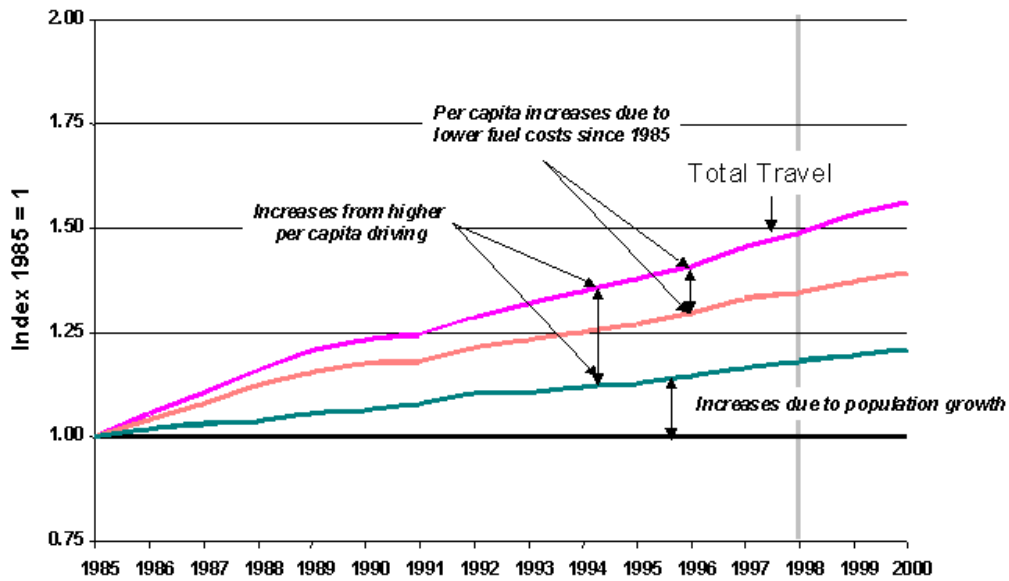


Furthermore, above-average growth in income expected this year contributes to continual momentum in highway travel.

Finally, we expect to see only marginal improvements (if any) to average vehicle efficiency this year. As a result of all this, summer gasoline demand is likely to expand at an above-average rate of 2 percent in 1999.

Travel has grown substantially since the early 1980's despite the Persian Gulf-related slowdown in 1990 and 1991 (Figure MG8). Almost half of the growth in per-capita travel since 1985 has resulted from the lagged effects of substantial price declines (see above). Growth in per-capita income has accounted for much of the other growth in per-capita travel since 1985. Recent trends suggest that, although real disposable income will continue to be a major factor in determining travel activity, continued increases in travel may not match that of income (see Table MG1).

Figure MG8. Components of U.S. Highway Travel Growth



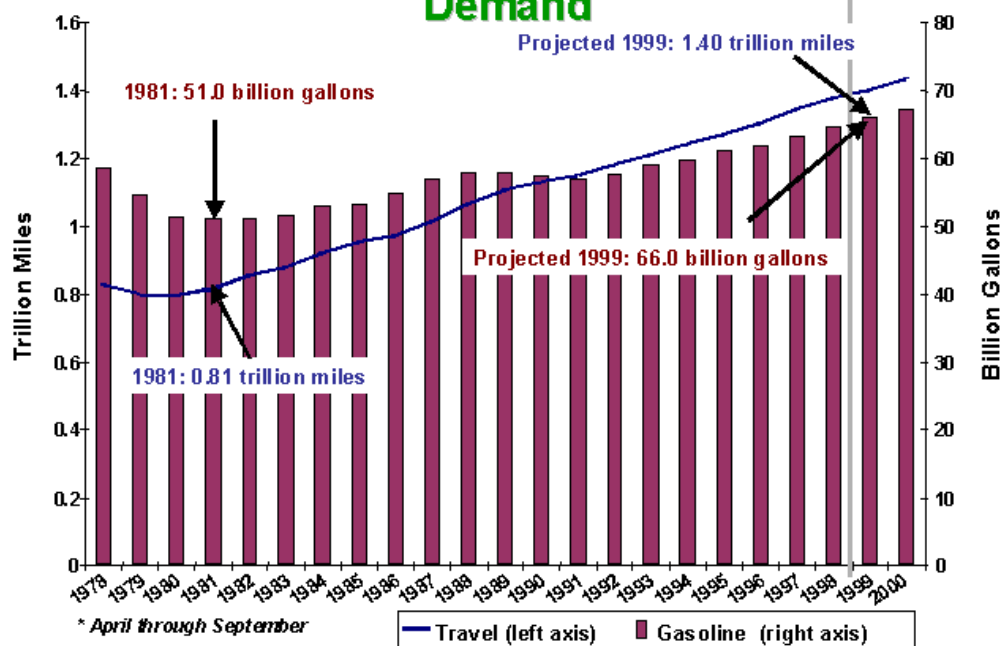
Sources: History: EIA; Projections: Short-Term Energy Outlook, April 1999
Energy Information Administration



Highway travel during the upcoming summer is projected to grow by 2.1 percent. Although that increase exceeds that of population (1.0 percent), it is substantially below that projected for real disposable income (3.7 percent). This is similar to the growth rate observed last summer (2.3 percent), during which disposable income growth averaged 3.2 percent. Nonetheless, per-capita travel can still be expected to increase during the forecast interval and in the long term.

Summer highway travel in the United States (all vehicles) is expected to reach 1.40 trillion miles this year, up 2.1 percent, in 1998 ([Figure MG9](#)).

Figure MG9. Summer* Travel and Fuel Demand



Sources: History: EIA; Projections: Short-Term Energy Outlook, April 1999
Energy Information Administration



Vehicle miles traveled has increased since 1980, the turning point in U.S. travel following the 1970's oil price shocks. Since then, travel has grown rapidly as strong efficiency gains reduced the cost per mile of gasoline. Since 1985, high travel growth was also spurred by the collapse of prices to a new, lower regime, during which fuel efficiency continued to grow.

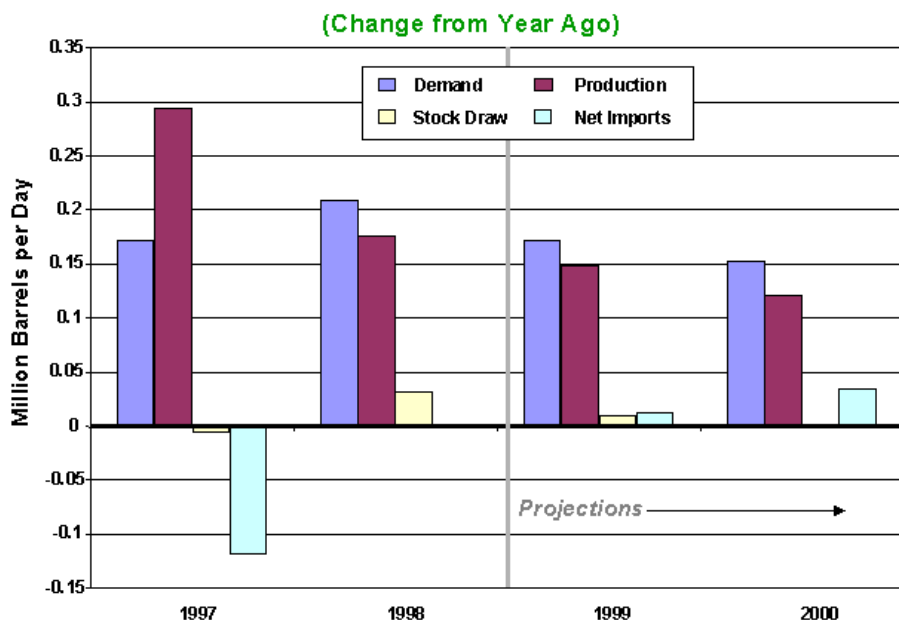
During the 1990's, travel has tended to grow at a slower rate than during the 1980's (note the inflection point in the travel line at 1989). The slowing is in part due to a decline (to well under 1 percent today) in the rate of growth of vehicle efficiency, which has reduced the decline in fuel costs on a cost per mile basis.

Summer gasoline demand, which has been increasing steadily since 1991, is expected to reach 66.0 billion gallons in 1999. That amount is almost 30 percent higher than it was in 1981, when the end of the downturn in domestic gasoline use, brought about by previous oil price shocks, occurred.

In recent years, the emphasis in domestic motor gasoline supply has been on domestic finished gasoline production, which has displaced some quantities of finished imports. This summer should not prove to be very different, as increased refining capacity should allow most of the expected growth in demand

to be supplied without need for substantial increases in inventory drawdown or imports (Figure MG10). But increases in projected refinery output are projected to be 20,000 barrels per day less than those of demand, implying a need to call upon imports and/or inventories. In any case, the ample supply of inventories and availability of imports is expected to preempt supply shortfalls.

Figure MG10. Summer Gasoline Supply by Source



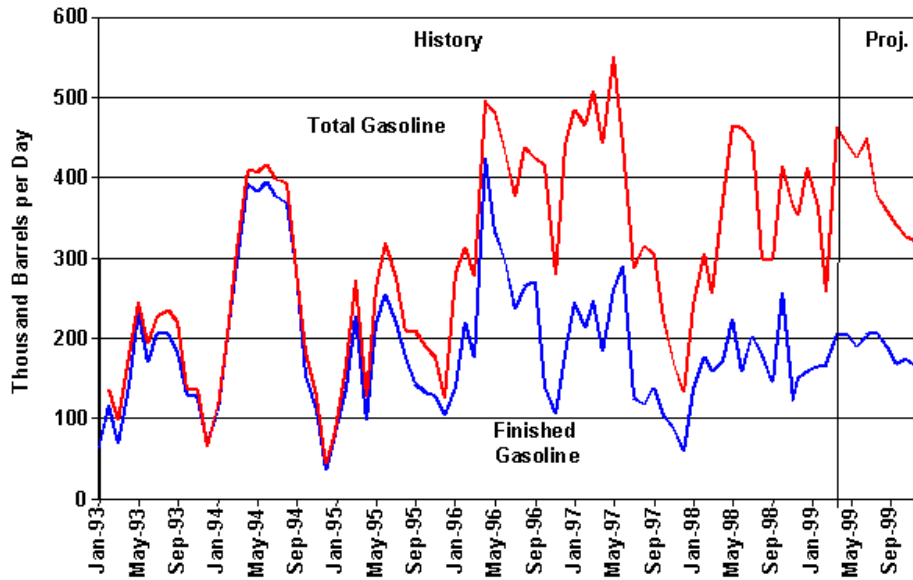
Sources: History: EIA; Projections: Short-Term Energy Outlook, April 1999
Energy Information Administration



As in recent years, changes in primary stocks are not expected to play a major role in supply/demand balances, even though *potential* stock drawdown brought by high inventory levels is substantial. Actual stock draw is projected to average 10,000 barrels per day. Net imports are expected to increase by 10,000 barrels per day this summer, reversing a pattern of declines observed in previous summers. These projections, however, assume no unanticipated disruptions in domestic refinery output or in foreign sources of supply.

Although imports of finished gasoline have declined in recent years, those of blending components required to meet environmental specifications increased from 1995, when the RFG program was implemented, to 1998. 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 (Figure MG11). 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. Motor Gasoline Net Imports

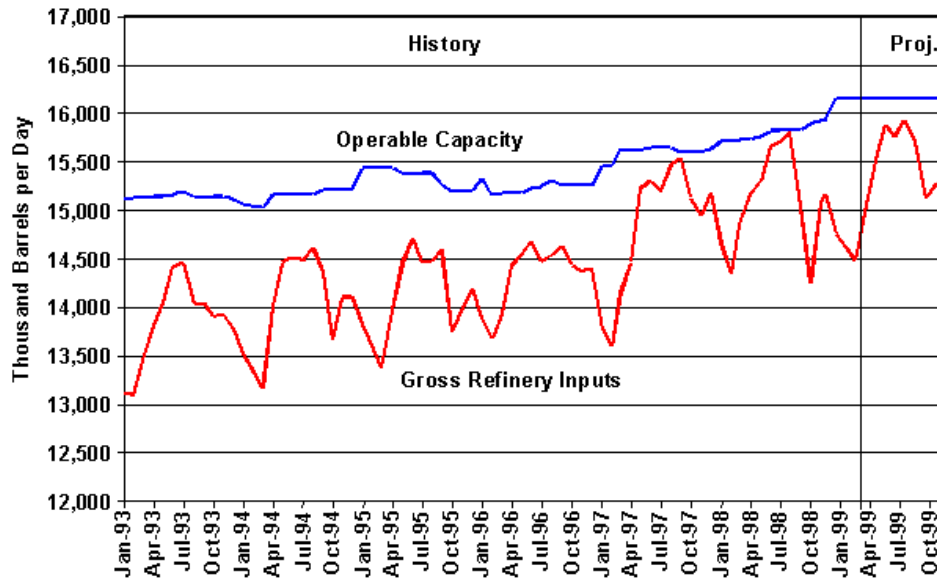


Sources: History: EIA; Projections: Short-Term Energy Outlook, April 1999
Energy Information Administration



This summer, however, net imports of finished gasoline are projected to be only 10,000 barrels per day higher than the average net imports of the previous summer. This projection implies somewhat larger increases in imported quantities of blending components. But the continued increase in imports of the finished product, combined with 150,000 barrels-per-day increases of finished motor gasoline production (see [Figure MG12](#)), is expected to constrain inventory drawdowns to only 10,000 barrels per day.

Figure MG12. U.S. Refinery Capacity and Throughput



Sources: History: EIA; Projections: Short-Term Energy Outlook, April 1999
 Energy Information Administration



Refinery input has grown an average 300,000 barrels per day during the last 5 years, but refinery capacity has increased by less than half that amount. As a result, inputs approached rated capacity during periods of peak gasoline production during the 1997 and 1998 summer driving seasons ([Figure MG12](#)).

The upcoming summer, however, is expected to witness a reversal of those trends. Inputs are projected to increase by 180,000 per day, but capacity is expected to increase by almost twice that, lowering the average utilization rate. Nonetheless, increases in summer gasoline production are projected to average 150,000 barrels per day.

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