

**Testimony of Peter K. Ashton
President, Innovation & Information Consultants, Inc.
Concord, MA**

**Before the
Permanent Subcommittee on Investigations
Governmental Affairs Committee
U.S. Senate**

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Good morning, Mr. Chairman. It is my pleasure to appear before you to discuss gasoline pricing including recent volatility in gasoline prices in certain areas of the country. My name is Peter Ashton and I am the president of Innovation & Information Consultants, Inc., an economic and financial consulting firm specializing in the economics of the petroleum industry. I have worked on issues related to gasoline pricing for over 20 years as a consultant to various states, the federal government, and to various firms in the industry. Specifically, I have worked on investigations of gasoline pricing in over ten states including, among others, California, Oregon, Washington, Nevada, West Virginia, Massachusetts, Pennsylvania, Maine and Connecticut.

My testimony will focus on four issues. First, I will discuss recent trends in market concentration due to mergers in refining and marketing, and the implications of such on gasoline pricing. In particular, my testimony will focus on the Midwest, although I have examined trends in both the East and West Coast market areas as well. Second, I will address recent episodes of gasoline price volatility at the wholesale and retail levels in the Midwest and on the West Coast. I will evaluate possible explanations for such increased volatility including increases in market concentration, control of product supply, demand shifts, crude price increases, reduction in inventory levels, and refinery production issues. Third, I will comment on the Staff report, and fourth, offer my thoughts on measures that could be taken to reduce price volatility in the future.

Recent Merger Activity and Trends in Market Concentration

During the last five years, the domestic refining and marketing industry has witnessed a wave of mergers not unlike what was observed during the early to mid 1980s. As many of you may recall, during that time frame a number of large mergers (Chevron-Gulf, Texaco-Getty, Occidental-Cities Service, Mobil-Superior) took place and

were approved by regulatory authorities including the Federal Trade Commission (FTC). The FTC issued two reports on the “merger-wave” in the petroleum industry. In its 1989 report, the FTC concluded that these mergers had led to “modest” increases only in concentration in refining and marketing, and maintained that such increases stemmed as much from closure of inefficient refineries as from the various mergers.¹

Despite attempts by the FTC to require divestitures, the current merger wave has had a much more significant impact on market concentration at the refining and marketing level. Since 1990, refining and marketing concentration has risen precipitously in many areas of the country. The Justice Department and the FTC utilize a measure of market concentration in evaluating mergers known as the Herfindahl-Hirschman Index or HHI,² which is the measure I have used in my analysis. On the East Coast, the HHI for refining capacity has doubled since 1990, and risen from 1,800 in 1996 to over 2,100 by the year 2000. Gasoline manufacturing capacity has experienced a similar increase in concentration and the HHI also exceeds 2,000.³ Similar trends exist in the Midwest, and in particular the upper Midwest (Illinois, Indiana, Kentucky, Ohio and Michigan).⁴ In the upper Midwest, the HHI for refining capacity is now near 1,800 and exceeds 1,800 for gasoline capacity, an increase of over 600 points since 1995, and a movement from a relatively unconcentrated market to a “highly concentrated” market as defined by the Justice Department and the FTC. Finally, in California, which, due to its unique gasoline product specifications, is a relatively isolated market, concentration has also increased – the HHI for gasoline production has risen from about 1,280 in 1995 to over 1,800 in 2000, again another highly significant increase.

¹ Jay Creswell, Scott Harvey, and Louis Silva, *Mergers in the U.S. Petroleum Industry 1971-1984: An Updated Comparative Analysis*, Bureau of Economics, Federal Trade Commission, Washington, D.C., May 1989.

² The HHI is computed by summing the squares of the individual market shares of all the market participants, and as such reflects both the distribution of the market shares of the largest firms in the market as well as the composition of the entire market. Justice and the FTC view markets with HHI's below 1,000 as unconcentrated, markets with HHIs between 1,000 and 1,800 as moderately concentrated, and markets with an HHI in excess of 1,800 as highly concentrated. Markets that display greater concentration are more susceptible to collusion and interdependent behavior.

³ A mitigating factor on the East Coast is the existence of gasoline imports; however, imports play a small role in the Midwest.

⁴ This is a separate relevant geographic market as defined by the FTC.

There can be little doubt that these increases in concentration have resulted from the recent wave of mergers. Few, small independent refineries still exist as most exited the business during the 1980s and early 1990s. Notwithstanding attempts by the FTC,⁵ the increase in concentration has resulted from the recent wave of mergers. As the table below indicates, the recent merger wave has produced a tier of mega-giants in the refining and marketing industry, closely followed by a second tier of majors, and the disappearance of an independent refining and marketing sector. Indeed in 1998, as a result of the creation of this second tier of majors, the U.S. Department of Energy added *eleven* new companies to its list of “major” refining and marketing companies for financial reporting purposes.⁶

Recent Merger Activity in Refining & Marketing			
<u>Companies</u>	<u>Year</u>	<u>Value of Merger</u>	<u>Total U.S. Refining Capacity</u>
Ultramar-Diamond Shamrock	1996	\$ 2.3 billion	0.5 million b/d
Tosco-Unocal	1997	\$ 1.4 billion	1.0 million b/d
Marathon-Ashland	1998	\$ 2.7 billion	0.9 million b/d
BP-Amoco	1998	\$ 53 billion	1.4 million b/d
BP/Amoco – Arco	1999	\$ 27 billion	2.1 million b/d
Exxon-Mobil	1999	\$ 81 billion	2.0 million b/d
Chevron-Texaco	2000	\$ 35 billion	1.6 million b/d
Valero-Ultramar/DS	2001	\$ 4 billion	1.3 million b/d
Valero-Huntway	2001	\$ 0.1 billion	0.6 million b/d
Tosco-Phillips	2001	\$ 7.5 billion	1.8 million b/d
Shell-Pennzoil/Quaker	2001	\$ 3 billion	1.1 million b/d

Source: Oil & Gas Journal; Energy Information Administration

One observes this trend of increasing concentration throughout the chain of distribution. At the wholesale level, control of distribution facilities such as terminals and pipelines has also become increasingly concentrated. The wholesale level is critical to understanding pricing and supply as it is the bridge between refining (production) and

⁵ Several of the divestitures mandated by the FTC have given rise ultimately to greater concentration with the advent of several large, second tier majors such as Tosco and Valero, and the consequent disappearance of true “independent” refiners.

the consumer (retail marketing). In my experience, this is often the point at which the greatest control over supply may be exerted, where significant interdependence exists, and also often where regulatory authorities fail to adequately examine competitive impacts. Part of this problem results from the fact that data on ownership of terminals and other distribution outlets are not as readily available as information on other aspects of the industry. Also, it is not a segment of the industry that is well understood, and requires closer study and scrutiny to determine effects on competition, particularly in terms of availability of supply to independents.

At the retail level, concentration has been increasing, and more importantly, the most significant competitive influence, independent marketers, has dwindled in size and importance. According to U.S. Department of Energy data,⁷ over 65 percent of all retail sales now occur through branded stations, whereas only five years ago that number was less than 45 percent. In some areas of the country such as California, the independent marketer has all but disappeared. This increase in vertical integration and consequent impacts on retail pricing cannot be overlooked. Considerable economic research over the years has demonstrated the competitive importance of maintaining a viable, strong independent, unbranded segment of the market, yet it is rapidly disappearing and may be one reason for increased price volatility and lack of price discipline in retail markets.

In addition, the total number of retail outlets in the United States has diminished over the last ten years even though population and the demand for gasoline have been increasing. Between 1990 and 2000, there was a 16 percent reduction in the number of retail outlets – a 23 percent reduction on a per capita basis. Although some might point to this as an “efficient” outcome, much of the reduction has come at the expense of the unbranded retailers who provide price competition and discipline at the retail level.⁸

Reasons for Increased Gasoline Price Volatility

In the late spring/early summer of 2000 and then again in spring 2001 and late summer 2001, gasoline prices rose precipitously, especially in the Midwest and on the

⁶ U.S. Department of Energy, Energy Information Administration, *Performance Profiles of Major Energy Producers, 1998*, Washington, D.C. January 2000.

⁷U.S. Department of Energy, Energy Information Administration, “Restructuring: The Changing Face of Motor Gasoline Marketing,” 2001.

West Coast. The Subcommittee requested that I comment on possible explanations for these so-called “price spikes.”

The cost of crude oil represents about 75 percent of the cost of making gasoline, so that when gasoline prices increase significantly, typically one expects the cause to be crude oil price hikes. Crude oil price increases, however, were *not* the cause of the price spikes in the late spring of 2000 or during spring and summer of 2001.⁹ As Figures 1 and 2 show, crude oil prices and both wholesale and retail gasoline prices moved together during the latter half of 1999, but the gasoline price spikes observed in 2000 and 2001 were unrelated to any increases in crude oil prices.¹⁰

Other possible causes of the increase in gasoline prices could include supply curtailments caused either by a significant reduction in inventories or output (production) or by unforeseen demand increases. Data on consumption reveal no unexpected surges in demand other than what would have been expected on a seasonal basis during the first two price spikes. The first two of the three price spikes in the Midwest occurred as we were entering the summer driving season (in May-June), but increases in demand were less than observed for this time period in other years. Demand in July-August 2001, the period leading up to the third price spike, did increase 2.5 percent compared to the same period in 2000, and may have been partially responsible for the price increase.

Production did not decline in any meaningful way in the periods leading up to and including the first two price spikes. Looking at production on a seasonally-adjusted basis, gasoline production in PAD II was up over 3 percent in 2000 for the period directly preceding the price spike; production was up another 2 percent in the spring of 2001, and about level later in the summer of 2001 compared with 2000 and 1999. Thus supply disruptions due to refinery outages do not appear to be a plausible explanation for these two price spikes. During the third price spike there appears to have been a nationwide

⁸Several examples include Ultramar-Diamond Shamrock’s acquisition of Stop-N-Go, Tosco’s acquisition of Circle K, and Arco’s acquisition of Thrifty, all independent marketers.

⁹ Even accounting for possible lag effects, there is little relationship between changes in crude costs and changes in gasoline prices during these time frames.

¹⁰ Representatives from the Department of Energy have argued that over broad time periods, crude price changes explain gasoline price changes, however, they acknowledge that this reasoning fails for the price spikes in 2000 and 2001.

decline in production (not in PAD II) which also appears to have had some impact on the price increase.¹¹

Inventories, however, present an even more interesting picture, and appear to have had the strongest causal influence on the price spikes. First, one must recognize that the absolute level of gasoline inventories relative to consumption of gasoline has fallen significantly in recent years. Refining and marketing companies made a conscious decision in the mid-1990s to carry lower inventory levels of refined products including gasoline. Such “just-in-time” approaches to inventories were rationalized by the oil companies as a cost cutting measure, but it appears to have also benefited them by leading to greater price volatility. Figure 3 shows that the average level of inventories carried was reduced by over 20 percent between 1992 and the present from about 30 days of supply to about 24 days. As a result, the difference between the “average” level of inventories and the minimum operating inventory level has shrunk so that now even brief supply disruptions can cause major supply problems. This reduction in inventory levels means that small changes in gasoline supply can result in very large changes in prices, and is the most likely reason for the increase in price volatility that we observe in 2000 and 2001.

Examination of inventory levels immediately preceding the three price spikes in the Midwest indicates lower than normal levels, although not of the magnitude to cause such a huge run-up in prices, and in each case, inventories returned to normal seasonal levels within two weeks after the start of the price spike. Figure 4 shows the relationship between gasoline inventories and wholesale and retail gasoline prices in the Midwest. For example, during the June 2000 price spike, the surge in wholesale and retail gasoline prices began the last week in May when inventories were at abnormally low levels. However, within two weeks inventory levels were back to normal, yet gasoline prices (retail and wholesale) continued to rise for the next two weeks, increasing by another \$0.15 per gallon. In face of not only adequate, but building inventories, ample refinery production, and stable crude oil prices, there appears to have been no justification for these continued gasoline price increases.

¹¹ It is interesting to note that although the majority of the production decline occurred in East Coast refineries, wholesale and retail gasoline prices increased between \$0.15 and \$0.40 per

With each of the two succeeding price spikes in the Midwest in May 2001 and August-September 2001, much the same story played out, although the period of time before price restoration (reduction) occurred, especially at the retail level, lengthened. In spring 2001, inventory levels were restored to normal by early May, yet wholesale prices continued to increase another week, and retail prices increased and then leveled off during the next five weeks, through mid-June, before beginning to drop. The August 2001 price increase is more puzzling as inventory levels showed no precipitous decline, and in fact were increasing in mid-August as gasoline prices began to increase. Here it appears that a surge in demand coupled with a reduction in U.S. gasoline production provided the impetus for the price hikes. Strangely, however, Midwest prices appeared to rise considerably more than in other parts of the country. Retail prices during late August and September increased significantly more than wholesale prices and remained above normal retail-wholesale levels into December.

In the first two episodes, it appears that the price increase was triggered by inventories reaching a critical minimum level (about 23 days' supply). Given the reduction in normal inventory levels the companies now carry (on average about 24-25 days as Figure 3 shows), one can see that it does not require much of a destabilizing influence on supply to trigger a significant price response. If average inventory levels were kept at higher levels, relatively small supply reductions might not trigger such price responses. Furthermore, with the increases in market concentration and the loss of a vibrant competitive influence, these price spikes appear to have been prolonged beyond any reasonable time period to the detriment of consumers.

To further explore the reasons for the increased price volatility, I have employed statistical analysis of these price spikes in the Midwest and California, as well as the general level of gasoline price changes over the last eight years. My analysis has examined several possible causal factors for observed changes in both wholesale and retail gasoline prices. These factors include changes in crude oil prices, gasoline production, gasoline inventories, and demand.

From these analyses, I have concluded that in normal, relatively stable times, crude oil price changes do explain a significant proportion of the change in gasoline

gallon more in the Midwest than on the East Coast between July and September 2001.

prices, but changes in crude prices do not explain the gasoline price spikes observed in the Midwest and on the West Coast in 2000 and 2001.¹² During the period 1994-2000, changes in inventory levels and changes in the level of gasoline production also explain a portion of the change in gasoline prices. However, it is important to note that none of these causal factors explain in any statistically significant way the extraordinary gasoline price increases observed in 2000 and 2001. As the discussion above suggests and my statistical analysis confirms, none of these possible factors provides a statistically significant explanation for the extraordinary increase in wholesale and retail gasoline prices during these time periods, and certainly none provides a rationale for the duration of the price increases.

Finally, I also tested whether changes in market structure as captured by market concentration measures had any significant effect on gasoline prices. Beginning in 1998, market concentration becomes a statistically significant explanatory factor for changes in gasoline prices in the Midwest and West Coast markets. This is particularly interesting as it suggests that market power in the form of increased concentration now plays a more important role in how gasoline prices are set than was true in years prior to the latest merger wave.

Comments on Majority Staff's Report

I have had an opportunity to review the Majority Staff's report on gasoline prices, and I share many of the same conclusions as contained in the report. The report is a highly professional piece of analysis and points, quite correctly I believe, to increasing market concentration and the companies' ability to control supply and pricing decisions as the reasons for the recent increase in gasoline price volatility.

Perhaps more importantly, Staff's conclusions are based on a ten-month investigation that has included interviews with industry officials, trade associations, and others as well as review of internal company documents. It is rare when one is able to catch a glimpse into the workings of an industry through that industry's own eyes, ears and voices, but Staff has been able to accomplish this with its investigation, and its analysis is even more compelling as a result.

¹²This conclusion holds true no matter how one applies a lag structure to the relationship between crude and gasoline price changes.

I agree with Staff that the supply/demand balance for gasoline has tightened considerably in recent years, and that the increase in concentration has facilitated the ability to control supply and, given inelastic product demand, to allow prices to rise significantly. In particular, Staff's findings that highly concentrated markets provide refiners with greater ability to control supply and price, together with the fact that highly concentrated retail markets have higher retail prices should cause concern among policymakers. Further it should lead to more intensive scrutiny of pricing and supply practices in the industry by various regulatory authorities as well as close review of any further attempts to consolidate in the industry.

Measures to Deter Price Volatility

If driven purely by market forces such as crude oil price changes, demand shifts or supply disruptions, price volatility might not necessarily cause alarm. However, my research and experience as well as the conclusions of Staff suggest that the price volatility has been caused by the disappearance of a vigorous independent segment of the marketplace that offers price discipline, combined with industry's decision to reduce average inventory levels and the rise in market concentration. Action can and should be taken to ameliorate these effects so consumers are not constantly faced with harmful price spikes that appear to benefit a few. I would recommend the following steps be taken to try to reduce such volatility:

1. Increased concentration resulting from recent merger activity appears to have had an effect on gasoline pricing and the observed price spikes. As a result, the FTC must be more vigilant in its merger review, focusing more closely on competitive impacts at the wholesale distribution level (such as terminals), and encouraging and enhancing, where possible, the competitiveness of independent marketers and refiners, especially unbranded marketers that provide price discipline.
2. Due to the fact that many markets are already highly or moderately concentrated, the FTC (and other regulatory authorities such as FERC) should take a tougher stand on various practices and behavior that might be conducive to price fixing or price signaling. For example, statements attributed to one company's CEO last December regarding supply and profit margins as found in the Staff report, demonstrate the type of "signaling" that may be considered anticompetitive in this type of marketplace.

3. In addition, the FTC should evaluate each future merger or acquisition in the petroleum industry in relation to other pending mergers and other possible changes in markets rather than in isolation.
4. I would also recommend investigation of measures to encourage greater supply flexibility. This would include among other things increasing the role of unbranded competition, greater consistency in regulatory policies, especially as it relates to gasoline (and other fuels) specifications, and ways to increase the general absolute levels of product inventories.

Figure 1
Comparison of WTI Spot Price with Midwest Retail and Spot Gasoline Prices
July 1999-December 2001

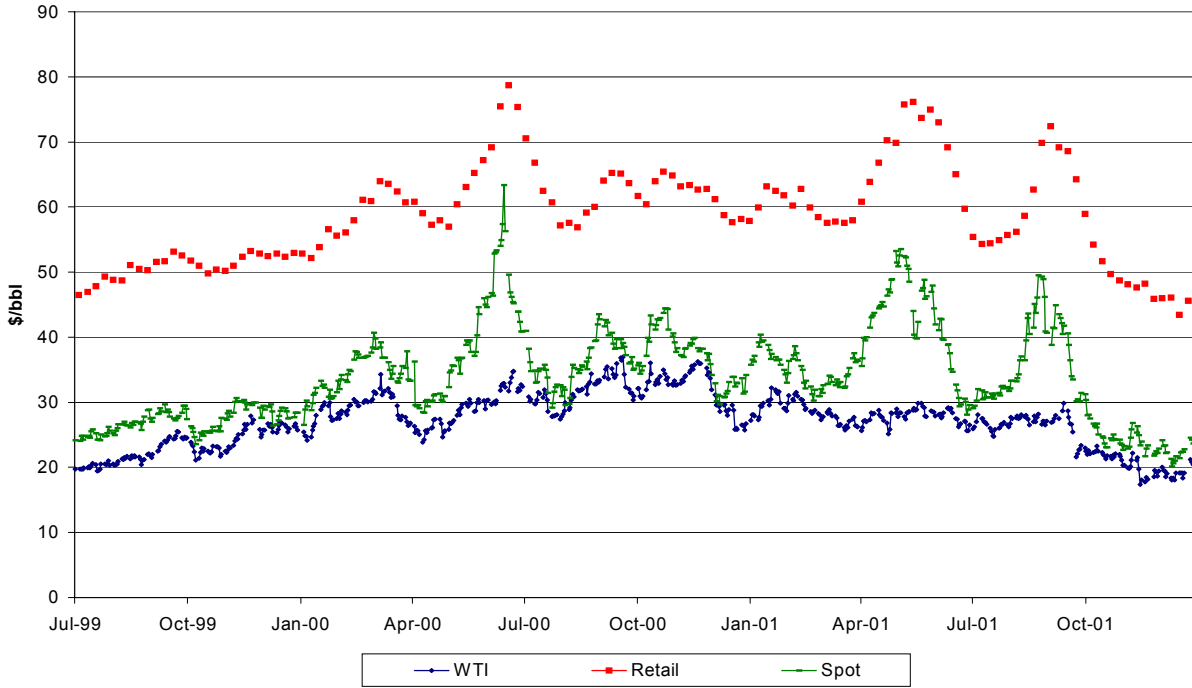


Figure 2
Comparison of WTI Spot Price with West Coast Retail and Spot Gasoline Prices
July 1999 - December 2001

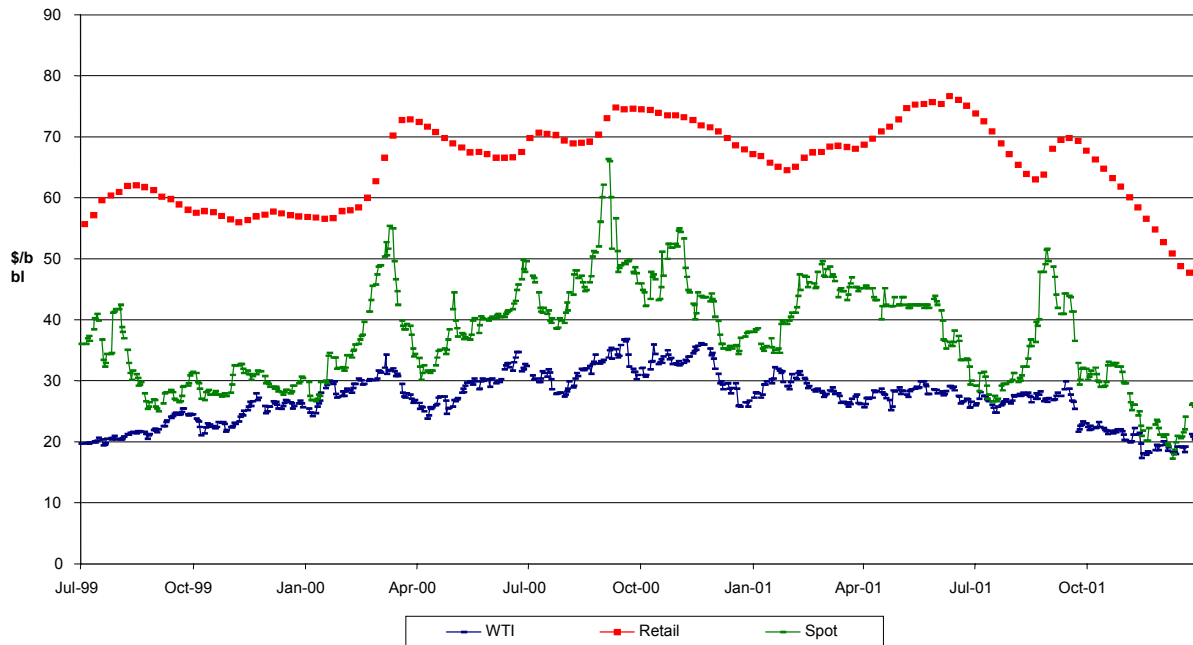


Figure 3
Gasoline Inventory Levels
1992-2001

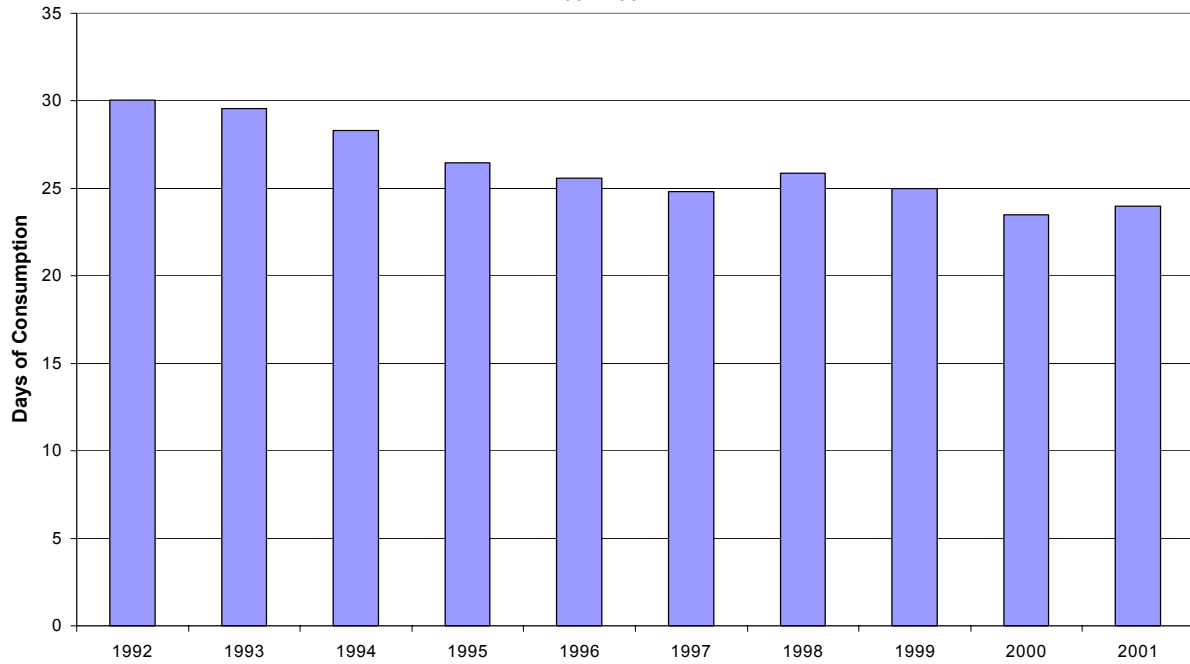


Figure 4
Comparison of Midwest Spot and Retail Gasoline Prices and Weekly Gasoline Inventories
2000-2001

