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United States Senate
PERMANENT SUBCOMMITTEE ON INVESTIGATIONS
Committee on Governmental Affairs

Carl Levin, Chairman
Susan M. Collins, Ranking Republican

GAS PRICES: HOW ARE THEY REALLY SET?

REPORT

PREPARED BY THE

MAJORITY STAFF
OF THE
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I. EXECUTIVE SUMMARY

A. Background

In June 2001, following the spike in the price of gasoline in the Midwest, the Chairman of the Permanent Subcommittee on Investigations, Senator Carl Levin, directed the Majority Staff of the Subcommittee to investigate the reasons for these price increases, and, in particular, whether the increased concentration within the refining industry has contributed to recent price spikes and price increases.

The Majority Staff's investigation encompassed issues concerning the structure of the domestic refining and marketing industry and the conduct of the participants in these markets. The staff interviewed representatives from a variety of segments of the downstream petroleum industry (refinery to gas station), including major refining and marketing companies, distributors of refined gasoline, service station owners and dealers, trade association representatives, lawyers and economists. The staff analyzed data obtained from the Energy Information Administration and wholesale and retail price data purchased from the Oil Price Information Service. The Subcommittee issued subpoenas to a number of major oil companies and one pipeline company for relevant refining and marketing documents from 1998 through 2001. In response, the Majority Staff received and reviewed 103 boxes of documents containing approximately 265,000 pages. Due to staff and time constraints, the Majority Staff focused on three regions of the country: the West Coast – California in particular; the Midwest – Michigan, Ohio, and Illinois in particular; and the East Coast – Maine and the Washington, D.C. area in particular.

This report presents the Majority Staff's findings regarding recent increases in gasoline prices and volatility, especially with respect to the effect of increasing concentration in the refining industry on gasoline prices.

B. Findings

1. **In the past three years there have been extraordinary spikes in the price of gasoline and the price of gasoline has increased significantly.**

Over the past three years, the price of gasoline has increased significantly. The 35-cent increase in the average annual price of regular unleaded gasoline from 1999 to 2000 (from $1.16 to $1.51 per gallon) had been matched only once in history – by the 34-cent average annual increase in 1980 that followed the Iranian revolution and the outbreak of war between Iran and Iraq.

The price of gasoline has also become more volatile than ever. Gasoline prices now regularly vary more in one month than they previously did in entire years. In late spring of 2000, prices in Chicago spiked to $2.13. In 2001, Midwestern prices spiked again, reaching over $1.90 per gallon in central Michigan. Just this spring, retail prices have increased faster than at any time in the past 50 years since gasoline prices have been tracked regularly.

2. **Spikes in the price of gasoline are harmful to consumers and the economy..**

Gasoline price increases can disrupt the entire U.S. economy. By increasing the cost of transportation, increases in the price of gasoline affect the costs of all goods and services. Last year's increases in the price of gasoline, along with rises in the prices of other petroleum products, helped push the American economy into a recession, and this year's increases are threatening the current recovery. These price increases result in large transfers of wealth from consumers to a few companies that refine and market gasoline. Over the course of a year, each ten cent increase in the price of gasoline results in approximately an additional $10 billion in revenues to the oil companies. Price increases are particular burdens on people with fixed-incomes who depend on cars for their basic needs. Although through much of the 1990s the refining industry's profits were not above most other industries, the recent price spikes brought exceptional returns. For the year 2000, net income for major energy companies from refining and marketing was up 57 percent from income in 1999.

3. The mergers in the oil industry over the last few years and the closing of many refineries over the past twenty years have increased concentration in the refining industry. In some states, the refining and marketing industry for gasoline is highly concentrated; in many states it is at least moderately concentrated.

A large number of mergers and acquisitions in the oil industry in recent years has led to a significant consolidation of refining assets.

- In 1998, Marathon and Ashland Oil merged their downstream assets.
- In 1998, British Petroleum (BP) merged with Amoco
- In 1999, Exxon Corporation merged with Mobil Corporation.
- In 2000, BP/Amoco acquired ARCO.

Within the past year –

- Shell acquired Texaco's domestic downstream assets;
- Chevron, which had acquired Gulf Oil in 1994, acquired Texaco (other than downstream assets);
- Phillips acquired Tosco;
- Phillips announced a merger with Conoco;

- Valero acquired Ultramar Diamond Shamrock (UDS).

This wave of mergers has followed a general consolidation of assets within the refining industry over the past two decades. In 1981, 189 firms owned a total of 324 refineries; by 2001 65 firms owned a total of 155 refineries, a decrease of about 65 percent in the number of firms and a decrease of about 52 percent in the number of refineries. During this period the market share of the ten largest refiners increased from 55 percent to 62 percent.

As a result of this consolidation, in a number of regions, states, and cities across the country the wholesale and retail markets for gasoline in the United States are moderately to highly concentrated. In 2000, as measured by the Department of Justice/Federal Trade Commission guidelines for evaluating mergers, the gasoline wholesale market was "moderately concentrated" in twenty-eight states and "highly concentrated" in nine. According to the four-firm concentration ratio, which is another standard measure of market concentration, the wholesale market is a "tight oligopoly" in twenty-eight states (including the District of Columbia).

4. Over this same time period, the balance between supply and demand has become "tight."

Because of the decline in the number of domestic refineries, total domestic refining capacity is slightly lower now than it was twenty years ago. At the same time, demand has increased. As a result of these trends, at present supply and demand are very closely balanced. This is sometimes referred to as a "tight" market.

In 1981, when the number of refineries was at its highest, capacity utilization was at its lowest. Just over 68 percent of refining capacity was being used, meaning that nearly one-third of all domestic capacity was idle. During most of the 1980s and into the early 1990s, total capacity remained high and excess capacity remained. This excess capacity led to low refining margins and a number of refinery closures. At the same time, many refiners invested capital to "de-bottleneck" their refineries to increase their efficiency, capacity and ability to process less expensive streams of crude oil.

Following the passage of the Clean Air Act Amendments of 1990, many refiners not only upgraded their facilities to produce cleaner fuels, but took the opportunity to add more capacity as well. Again, less efficient refineries were closed rather than upgraded.

In the United States today, 63 companies operate about 150 refineries with a combination distillation capacity of just over 16 million barrels per day. With the closure of many small refineries and the addition of new capacity to existing refineries, the average capacity of a refinery in the United States has increased by nearly 50 percent since 1970.

As demand has slowly but steadily grown, and refineries have closed, there is no longer an excess of refining capacity; the West Coast is even short. The annual average refinery utilization rate is now regularly greater than 90 percent, which is near maximum capacity.

5. **High concentration exacerbates the factors that allow price spikes and increases, a key one of which is the tightness of supply.**

6. **In concentrated markets refiners can affect the price of gasoline by their decisions on the amount of supply. In a number of instances, refiners have sought to increase prices by reducing supply.**

Economic principles dictate that markets in which a few firms have market power to affect overall supply will exhibit higher prices than more competitive markets. As long as sellers in a market can indirectly affect prices through their supply decisions, it can be expected that sellers will act in their self-interest to manage supply so as to maximize their profits; this means that producers in a concentrated market will attempt to achieve and maintain a tight balance between supply and demand. This is increasingly the situation in the gasoline industry today.

A tight market optimizes profits for a refiner. When a market is in a tight balance or a little bit short, as it is in California and the West Coast today, imports will be necessary to satisfy peak demand and prices will be lifted by an amount at least equal to the cost to import marginal barrels from elsewhere. Moreover, as recent history in California and the Midwest demonstrates, when supply and demand are closely balanced and inventories are low, refinery or pipeline disruptions will cause immediate supply shortages. Because of the inelasticity of the price of gasoline, even relatively small supply shortages will lead to large increases in the price of gasoline and refining margins.

In California, which is the second largest market for gasoline in the world, the market is an oligopoly. Six refiners own or operate about 85 percent of the retail outlets in the state, which account for than 90 percent of the retail gasoline sold in the state. As a result, the few large refiners within the state have the ability to affect the price of gasoline through their individual supply decisions.

In California, retail gas prices are higher and more volatile than the rest of the nation; refining margins – the difference between refining costs and wholesale (rack) prices – are also higher. The high level of concentration and vertical integration within California's gasoline markets, the tight balance between supply and demand, low inventories, the state's unique gasoline specifications, and its geographic isolation from other refining centers contribute to these higher prices and margins.

Evidence from a recent lawsuit in California indicates that during the early- to mid-1990s, when supply exceeded demand, a number of refiners sought to limit the amount of supply available in order to tighten the supply/demand balance. To reduce supplies these refiners sought to increase exports, limit imports, eliminate the oxygenate mandate in gasoline, and prevent additional refinery capacity from operating.

Today, demand for gasoline in California slightly exceeds the available supply from within the state; imports are necessary to satisfy demand during peak driving seasons. Prices have risen to levels necessary to attract these imports. Because of the high degree of concentration and vertical integration between refiners and marketers within the state, as well as the other high barriers to entry into the California market, it is unlikely that any significant increase in imports or production will occur to alleviate this tightness.

The Midwest overall is less concentrated than California but has several pockets of high concentration in the wholesale market. The Midwest relies on imports from other regions, such as the Gulf Coast, for approximately 20 percent of its gasoline. It may take at least two to three weeks for additional supplies to arrive after a supply disruption within the region.

Low inventories have created the conditions for price spikes in the Midwest, which have occurred when demand has increased (near driving holidays) and/or the supply of gasoline was disrupted. Because demand for gasoline is inelastic, even a small reduction in supply or an increase in demand will lead to a large increase in price. Generally the extent of the price spike has depended on how quickly alternative supplies have been brought to the market and how much it cost to bring in those additional supplies.

Not unlike oil companies nationwide, oil companies in the Midwest have adopted just-in-time inventory practices, resulting in crude oil and product stocks that frequently are just above minimum operating levels. And, in the spring of 2000 and 2001, the conversion from the production and supply of winter-grade gasoline to summer-grade gasoline further contributed to low inventories just prior to a seasonal increase in demand. With the stage set by those two factors, the oil companies took actions over these past two years in accordance with their profit maximizing strategies that significantly contributed to the price spikes when disruptions in supply occurred:

– During the spring of 2000, three major refiners determined it wasn't in their economic self interest to produce more RFG (reformulated gasoline) than that required to meet the demands of their own customers. That contributed to the shortness in the spot market for RFG, contributing to the price spike of spring 2000. While Marathon did have surplus RFG, it withheld some of it from the market so as to not depress prices.

– During the spring of 2001, the Energy Information Agency projected that gas inventories were the same or even less than in the spring of 2000. These low inventories and the tight balance between supply and demand again set the stage for the spring price spike that occurred when supply was disrupted.

– In the summer of 2001, major refiners affirmatively reduced gasoline production, even in the face of unusually high demand at the end of the summer driving season because of low refining margins, contributing significantly to the price spike of summer 2001.

Nationwide, in the winter of 2001 - 2002, demand fell and inventories rose following the tragic events of September 11, 2001. With reduced demand and higher inventories, prices fell. As a result, refining margins fell and refiners cut back on production in order to obtain higher margins. Along with the increase in the price of crude oil and market speculation, these reductions in production were a significant factor contributing to the run-up in price in the late winter and continuing into the early spring of this year.

An internal BP memo from 1999 confirms the interest at least one oil company has had in limiting the supply of gasoline in the Midwest. The memo identifies a number of options for consideration in order to reduce supply in the Midwest. Among the options are: shutting down capacity, exporting to Canada, lobbying for environmental regulations that would slow down movement of gasoline in pipelines, shipping product other than gasoline in pipelines, and providing incentives to others not to provide gasoline to Chicago.

As the domestic refining market is currently structured, it is likely that supply and demand in certain markets will continue to remain in tight balance and vulnerable to disruptions.

7. Highly concentrated retail markets have higher retail prices.

Retail gasoline prices may vary considerably in different cities within the same geographic region. Some of these differences are attributable to the differences in the costs to transport gasoline from a refinery to the market and others are attributable to the characteristics of each market.

Industry documents obtained by the Subcommittee during the investigation provide evidence of what many have suspected but what has been controversial and elusive to demonstrate – that retail prices are higher in areas where there is greater market concentration, especially among the major brands. According to these documents, retail margins (the difference between the wholesale price and the retail price for gasoline) depend upon the characteristics of the local market: the degree of concentration, the market share of the major oil companies, the per capita income in the market area, the average volume of gasoline sold at each gasoline station, and the presence of independents or "new era" marketers, such as convenience stores or hypermarkets with gasoline islands.

In a number of markets, many traditional-style independents have disappeared. These independents served to push prices down in their local markets. In some markets they have been replaced by "new era" competitors, which continue to have this effect.

In other markets, however, prices have risen when independents have left the marketplace. In California, for example, after ARCO purchased the Thrifty chain of independent gasoline stations prices increased in the areas formerly served by the Thrifty stations.

The presence of competitors other than a few major brands is critical to price competition in local markets.

8. Markets in which there is a high degree of vertical integration between refiners and marketers have higher wholesale and retail prices.

A high degree of vertical integration between gasoline refiners and marketers leads to a number of anti-competitive results, including higher wholesale and higher retail prices. In markets in which there are few independent *retailers*, not much gasoline will be bought at a wholesale price lower than the wholesale prices set by the integrated refiners. Similarly, in markets in which there are few independent *refiners*, there will not be much wholesale gasoline sold at a price lower than the wholesale price set by the integrated refiner. Integrated refiner/retailers have little incentive to sell to other retailers at low prices, since they will not want to undercut their own retailers.

As the markets in California and Arizona demonstrate, a high degree of vertical integration will contribute to the demise of the "spot" market for unbranded gasoline, which is typically sold at lower prices than branded gasoline. In a highly integrated market, the non-integrated retailers will have difficulty finding reliable sources of supply and may be forced to exit the marketplace entirely.

A high degree of vertical integration makes it more difficult for refiners in other markets to export gasoline into the integrated market, as integrated firms will not want to have other refiners sell gasoline into their market and lower prices through additional supply. In a highly integrated market, the number of non-integrated retailers remaining in the market may not be large enough to economically bring in imports from elsewhere. Thus, as a practical matter, in a highly integrated market the integrated refiners will be the only ones who determine whether to import gasoline into the state during price spikes, or whether to increase overall supply into the state. These barriers to imports will lead to higher prices. Indeed, the evidence shows that in both California and Arizona the high degree of vertical integration has led to higher retail prices.

9. **Oil companies do not set wholesale (rack) or retail prices based solely upon the cost to manufacture and sell gasoline; rather wholesale (rack) and retail prices are set on the basis of market conditions, including the prices of competitors. Most oil companies and gasoline stations try to keep their prices at a constant price difference with respect to one or more competitors. As a result of these interdependent practices, gasoline prices of oil companies tend to go up and down together.**

Neither wholesale nor retail prices for gasoline are established on a cost-plus-profit basis. The wholesale price a refiner can obtain for refined gasoline is determined largely by the factors influencing the then-current supply and demand situation in the wholesale market, including the market's outlook for the future. Competitors' prices also are considered. Similarly, the price a retailer will charge for gasoline on any given day will not be equal to the cost to manufacture, transport, and sell the gasoline at the station with a reasonable profit; rather the retail price will be set based upon the prevailing market conditions, including the retail prices of nearby competitors.

Most gasoline stations focus their retail pricing policies on the retail pricing of their competitor's outlets. Oil companies and station operators typically will survey the retail prices at nearby gasoline stations at least once a day.

Each company's formula for determining an appropriate retail or "street" price is different, but companies rely on a system of identifying which competitors are market drivers for a particular area. One type of pricing system prices directly against a specific market driver, usually a low priced competitor, such as Company X's price + 3 cents per gallon. Another method for pricing is to price at the average of the prices of all major market drivers. Sometimes the price is determined using a combination of both methods.

Companies state that if they attempt to increase the price of their product above the other retail prices in the area, they will lose volume to the retail outlets with lower prices. Companies state that if they lower their prices either they will run out of gasoline due to a run on their supplies, or their competitors will lower their price, too, and the net result for all of the stations in the area will be reduced margins. As a result of these interdependent pricing practices, retail gasoline prices move up and down together.

10. In Michigan and Ohio, these interdependent and parallel retail pricing practices have led to sharp daily increases in retail prices across the states.

The Majority Staff analyzed wholesale (rack) and retail data obtained from the Oil Price Information Service for the leading retail brands of gasoline in five states: Michigan, Ohio, Illinois, California, and Maine. In 2001, in Michigan and Ohio, and to a lesser extent Illinois, prices often increased by as much as 7 to 10 cents in one or two days, and then slowly fell over the next several days, but not by as much as they had risen. These one- and two-day increases were often led by one brand, and sometimes two, in order to increase retail margins, and were almost always followed by other brands.

11. Oil companies use zone pricing to charge different prices for gasoline to different station operators, some of which are in nearby geographic areas, in order to confine price competition to the smallest area possible and to maximize their prices and revenues at each retail outlet.

Most oil companies follow the practice of grouping their retail outlets into geographic or market zones and charging their branded dealers (either lessee-operated or dealer-owned outlets) in different zones different prices for the same brand and grade of gasoline that is delivered from the company. This practice is called "zone pricing." Each oil company has its own zone system. The number of outlets in a zone, the shape of a zone and the number of zones in a particular area vary from zone to zone and company to company. In recent years zone size has been shrinking; some zones now contain only one retail outlet.

Oil companies argue that zones are created to account for differences in such factors as demand for their product and competition. Station dealers argue that the zone pricing policy is unfair, because it allows an oil company to charge gas stations in nearby geographical areas – sometimes on the same corner – different prices for the same gasoline. Almost all of the companies interviewed by the Majority Staff indicated they employed some form of zone pricing in order to respond to local competitive conditions.

Another rationale for creating zones is to enable particular stations to be able to charge higher prices without losing too much volume to nearby competitors. By determining the various "elasticity curves" in the area surrounding a gasoline outlet, marketing consultants believe they can determine how much prices can be raised at a particular station before consumers will drive to other nearby stations. These consultants claim that zones enable retailers not only to be competitive with nearby stations, but also to maximize prices and revenues at each station.

12. For the many stations owned or leased by the major oil companies, it is the major oil company rather than the local dealer that determines the competitive price position of the local station and that benefits from higher prices and profit margins.

Refiners generally set the wholesale price of the gasoline they directly deliver to their dealers (called the "dealer tank wagon" price, or "DTW") by calculating an appropriate competitive retail price for the dealer – which is done by surveying the competitive prices in the retailer's local market – and then subtracting a fixed margin, usually between 7 and 10 cents per gallon. Although retail prices fluctuate, the dealer's margin stays fixed. In a number of cases dealers have reported that when they attempted to obtain a greater margin by increasing their retail prices, the refiner increased the DTW by a commensurate amount. As the retail price rises and falls, it is the refiner, rather than the dealer, that receives either the profit or the loss.

13. The "hypermarket" is rapidly expanding as a highly competitive format for selling gasoline.

The hypermarket, which is "a supermarket, other traditional retail store, or discounter (such as Wal-Mart or Costco) with a motor gasoline outlet in the parking lot," has rapidly become an extraordinarily competitive presence in the retail gasoline marketplace. Hypermarkets have captured almost half of the gasoline market in France and approximately one-quarter of the market in the United Kingdom. Although hypermarkets currently account for only about 3 percent of gasoline sales in the United States, it is highly likely that hypermarkets will rapidly increase their gasoline business at the expense of major brand retail and convenience stores across the country, just as they have done in Europe.

If the anticipated growth in hypermarket occurs, it will result in additional significant changes in the composition of the retail marketplace. A number of distributors (jobbers) and small independent operations may be the most seriously threatened by the hypermarkets, as they tend to own or service smaller, older stations with fewer offerings which cannot compete either on price or on convenience with the hypermarkets. Even the most efficient stations with a traditional format may not be able to compete with the hypermarkets, as the traditional format requires a higher margin than a hypermarket just to break even. The extent to which major brands will themselves invest – either through discounts to their jobbers on wholesale purchases, or through site upgrades – to enable such sites to become competitive with new hypermarkets and convenience stores remains to be seen.

Although convenience stores and hypermarkets are major competitive forces in the gasoline retail market, it is unclear what the nature of the competition will be in the long run if these new formats force a significant number of smaller independents or smaller jobbers out of business. Traditionally, the smaller independents and jobbers have helped to keep prices low.

14. The Wolverine Pipeline case illustrates how control over storage facilities and pipelines can be used to limit gasoline supplies and competition in a market.

The Wolverine Pipeline transports gasoline and other products from Chicago to Michigan, Illinois, Indiana, and Ohio. Wolverine is owned by affiliates or subsidiaries of major oil companies, namely ExxonMobil, Equilon, Unocal, Citgo, and Marathon.

The Wolverine Pipeline is a major source of supply for the gasoline market in and around Grand Rapids, Michigan. Wolverine and its affiliates utilized their control of critical transportation and storage facilities to limit access to and competition in markets, particularly disadvantaging independent shippers of unbranded gasoline. In a recent challenge to a Wolverine rate request, the Federal Energy Regulatory Commission staff found that practices of Wolverine and its affiliates violated the Interstate Commerce Act, some for over twenty years. Had not the rate request been challenged, it is likely these discriminatory practices would have continued, and it would have been more difficult for independents to compete.

15. If concentration in the oil industry continues to increase, higher prices can be expected.

II. INTRODUCTION

A. Subcommittee Investigation

In June 2001, following the second consecutive spring price spike in the Midwest, Senator Carl Levin, Chairman of the Senate Permanent Subcommittee on Investigations, directed the Majority Staff of the Subcommittee to investigate the reasons for these increases in the price of gasoline, and, in particular, whether the increased concentration within the refining industry has contributed to these price spikes and increases.[1]

The staff's investigation encompassed issues concerning the structure of the domestic refining and marketing industry and the conduct of the participants in these markets.[2] The staff interviewed representatives from a variety of segments of the industry, including major refining and marketing companies, distributors of refined gasoline, service station owners and dealers, trade association representatives, lawyers and economists.[3]

The staff reviewed several recent investigations and studies of gasoline pricing, including the Federal Trade Commission's (FTC) Report on the Midwestern gasoline price spike in the

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[1] Under Senate Resolution 54, 107th Congress, the Senate Permanent Subcommittee on Investigations (PSI) is authorized to study or investigate "the efficiency, economy, and effectiveness of all agencies and departments of the Government involved in the control and management of energy shortages including, but not limited to their performance with respect to . . . (iii) the pricing of energy in all forms . . . (vii) maintenance of the independent sector of the petroleum industry as a strong competitive force . . . (viii) the allocation of fuels in short supply by public and private entities . . . [and] (xi) the monitoring of compliance by governments, corporations or individuals with the laws and regulations governing the allocation, conservation, or pricing of energy supplies . . . ."

[2] This is commonly referred to as the "downstream" market. The staff did not examine issues associated with the exploration and production of crude oil, or the operation of the OPEC cartel.

[3] The Majority Staff interviewed 34 service station retailers/distributors in Michigan and 7 retailers/distributors in the Washington, D.C., area.

spring of 2000, and were briefed by the FTC staff on the results of their three-year investigation into West Coast prices. The staff met with officials from the Department of Energy's Energy Information Administration (EIA), reviewed their findings and conclusions regarding recent price spikes and trends in gasoline prices, and analyzed pricing and supply data provided by the EIA.

The staff also examined industry documents produced in several antitrust and gasoline pricing lawsuits and in several FTC proceedings. Because a number of these documents were originally produced in legal proceedings and not publicly available, the Subcommittee issued subpoenas for many of these documents.

The staff purchased wholesale (rack) price and retail price data from the Oil Price Information Service (OPIS). The information contained daily gasoline price data, by brand, for all of 2000 as well as the first eight months of 2001 from five states: California, Illinois, Maine, Michigan, and Ohio. The staff analyzed, by brand, state-wide average rack prices, state-wide average retail prices, daily price changes, and the rack-to-retail margins.

As part of this investigation the Subcommittee issued subpoenas to a number of major oil companies for relevant refining and marketing documents from 1998 through 2001. In response, the Subcommittee received approximately 103 boxes of documents containing approximately 265,000 pages. The staff reviewed these documents from January 2002 until March of 2002.[4]

[4] Almost all of the information obtained by the Subcommittee through the issuance of subpoenas was claimed by the originating parties to be "Business Sensitive," "Confidential," or "Proprietary" information, the disclosure of which allegedly could adversely affect the originating party's competitive position. Although the Subcommittee is not obligated to withhold any documents upon such a claim of confidentiality, the Subcommittee has determined not to release the majority of these documents so as not to potentially further impair competition within the industry. In a few instances in which subpoenaed documents or portions thereof are being released, the Subcommittee has determined that the public interest in the disclosure of the

This report presents the Majority Staff's findings regarding recent increases in gasoline prices and volatility, especially with respect to the effect of increasing concentration on the refining industry. First, the report discusses the Majority Staff's findings regarding the causes of recent price spikes and the effect of concentration in the gasoline refining and marketing industry on gasoline prices. The report then describes the operation of the wholesale and retail markets for gasoline and how retail prices are set. Then, the report provides a factual background on how gasoline is produced and marketed.

B. <u>The Importance of Gasoline in the United States</u>

Gasoline is the lifeblood of the American economy. As the largest consumer of oil and gasoline in the world, the United States uses about one quarter of the world's production of oil and over 40 percent of the world's production of gasoline.[5]

In the United States today, there are more than 208 million registered light duty vehicles, including over 130 million cars.[6] With over 187 million licensed drivers in the country, this equates to more than one vehicle for each driver.[7] About 80 percent of urban households and over 90 percent of suburban and rural households own cars.[8] Demand for gasoline for these vehicles accounts for more than 40 percent of the total demand for petroleum products, and

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information released outweighs the confidentiality concerns communicated to the Subcommittee.

[5] Energy Information Administration, International Energy Annual 1999, at http://www.eia.doe.gov/emeu/iea/table12.html; http://www.eia.doe.gov/emeu/iea/table35.html.

[6] Federal Highway Administration, *Highway Statistics*, 1998; Cambridge Energy Research Associates, *Gasoline and the American People*, July 2001 Update, at 4.

[7] *Gasoline and the American People*, at 4.

[8] Consumer Federation of America, *Ending the Gasoline Price Spiral*, July 2001.

accounts for about 17 percent of the total energy consumed in the nation.[9] This gasoline is dispensed to the public at nearly 176,000 service stations located throughout the country.[10]

"Over the last half century, Americans' driving has increased more than 600 percent, and their use of gasoline has almost quadrupled – from 35 billion gallons to over 130 billion gallons."[11] In 2000, the average driver drove nearly 13,200 miles, used about 700 gallons, and paid about $1,060 for gasoline.[12] At this rate of consumption, each dime increase in the price of gasoline costs a consumer approximately an additional $1.50 per full-tank fill-up, or $70 per year. According to an industry rule-of-thumb, each dime increase in the price of gasoline adds approximately $10 billion in revenues to the oil industry.

C. Recent Increases In the Price of Gasoline

In the past three years gasoline prices in the United States have been extraordinarily volatile. (See Figures II.1 and II.2 on pages 29 and 30.) The current price roller-coaster began its ride in February 1999, when the national average price for regular unleaded gasoline fell to just over 95 cents per gallon, a record low in constant dollars.[13] By June 2000, the price had risen approximately 80 percent, to $1.70 per gallon. Overall, from 1999 to 2000, the average

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[9] Energy Information Administration, *Restructuring the Changing Face of Motor Gasoline*, March 2002, at 1; *A Primer on Gasoline Prices*, July 2001.

[10] *Restructuring the Changing Face of Motor Gasoline*, March 2002, at 1.

[11] *Gasoline and the American People*, at 5. This is approximately 8.4 million barrels per day. One barrel equals 42 gallons.

[12] *Gasoline and the American People*, at 2.

[13] American Petroleum Institute, *How Much We Pay for Gasoline*, April 2001 Review, at 4.

annual price of regular unleaded gasoline jumped from $1.16 to $1.51 per gallon.[14] This one-year increase of 35 cents has been matched only once in history -- by the 34-cent increase in 1980 that followed the Iranian revolution and the outbreak of war between Iran and Iraq.[15]

Certain markets, especially in the Midwest, have seen particularly sharp increases. (See Figures II.3 and II.4 and pages 31 and 32.) For example, during a three-week period in the spring of 2000, the retail price for reformulated gasoline (RFG)[16] in Chicago rose almost 30 cents, from $1.85 per gallon on May 30 to $2.13 on June 20. Over the next month prices in Chicago fell 56 cents, to $1.57 on July 24. At the peak of the Midwestern spike, the wholesale price of RFG in Chicago had risen from being equal to the wholesale price in Dallas to more than 45 cents above the wholesale price in Dallas.[17] Similar increases were seen in other Midwestern cities.

In the spring of 2001, the price of gasoline in the Midwest spiked again. For example, in the first seven days of May the average price for regular grade gasoline in the Saginaw-Bay City-Midland region of Michigan rose approximately 26 cents – from $1.65 to $1.91 per gallon. Within the next two weeks the average price slipped to $1.73 per gallon, a drop of 18 cents. In the next two days, however, prices climbed 20 cents, so that by May 25 the average price had risen back up to $1.93 per gallon. Similar increases occurred elsewhere in Michigan. The EIA

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[14] American Petroleum Institute, *How Much We Pay for Gasoline*, April 2001 Review, at 4. The average prices for mid-grade and premium exhibited similar behavior. *Id.*

[15] API; P.K. Verleger Jr., *Third Oil Shock: Real or Imaginary?*, Oil and Gas Journal, June 12, 2000.

[16] See Section III.E for a description of RFG.

[17] Final Report of the Federal Trade Commission, *Midwest Gasoline Price Investigation*, March 29, 2001.

noted that although not "outside the realm of market behaviors of market behaviors seen previously," this level of volatility was "somewhat extreme."[18] Moreover, the EIA observed that these rapid increases were not due to any significant supply problems, such as refinery or pipeline outages, that would have disproportionately affected prices in Michigan.[19]

Just before the Labor Day holiday in 2001 the average retail price for regular grade conventional gasoline in the Midwest again rose abruptly. By mid-summer, as a result of a seasonal increase in production as well as the price run-up in the spring, gasoline supplies in the Midwest had increased by a sufficient amount to drive prices down to about $1.30 per gallon by the Fourth of July. Prices then rose by 3 cents from mid-July through the first week in August. In the second week of August, however, prices in the Midwest rose quickly, reaching $1.70 per gallon by Labor Day – nearly a 40-cent increase in less than one month. By contrast, from 1992 through 1998 average prices in the Midwest had not varied by more than 24 cents in any one year.[20]

On September 10, 2001, the average national price stood at $1.52 per gallon.[21] The average price for conventional gasoline in the Midwest was about $1.63 per gallon.[22] In a

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[18] EIA, *A Brief Analysis of Michigan Gasoline Price Behavior During May 2001*, June 14, 2001.

[19] EIA, *A Brief Analysis of Michigan Gasoline Price Behavior During May 2001*, June 14, 2001.

[20] EIA Data at http://tonto.eia.doe.gov/oog/ftparea/wogirs/xls/pswrgvwrmw.xls (Midwest prices).

[21] EIA, U.S. Retail Gasoline Prices, at http://tonto.eia.doe.gov/oog/ftparea/wogirs/xls/pswrgvwreg.xls (national average prices).

[22] EIA Data, at http://tonto.eia.doe.gov/oog/ftparea/wogirs/xls/pswrgvwrmw.xls (Midwest prices).

number of local markets, prices were higher. In Chicago the price for regular unleaded reformulated gasoline was about $1.84 per gallon, as was the price in San Francisco for regular unleaded California-standard ("CARB" gas) gasoline.[23] In Los Angeles, California, the average price for regular CARB gasoline was $1.60 per gallon.[24]

The terrorist attacks of September 11, 2001, disrupted a jittery domestic economy that already was on the verge of recession. The transportation and energy industries were affected immediately. Air travel virtually ground to a halt in the days after the attack. In the week after the attacks Americans stayed off the highways as well – weekly gasoline consumption dropped by almost 9 million gallons, the equivalent of a whole day's worth of gasoline consumption across the entire country.

With the economy in a recession, a slump in airline and automobile travel, and a warmer-than-normal winter, jet fuel, gasoline, and heating oil consumption declined and stocks rose. With decreased demand for product, crude oil stocks rose as well. As inventories grew, prices fell. By the end of October, the national average price for regular unleaded gasoline had fallen about 30 cents from its level in early September. In the Midwest, prices dropped 46 cents in the 6 weeks following the attacks. At this time the EIA reported, "In total, the national average

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[23] EIA Data, at http://tonto.eia.doe.gov/oog/ftparea/wogirs/xls/pswrgvwych.xls (Chicago prices); http://tonto.eia.doe.gov/oog/ftparea/wogirs/xls/pswrgvwysf.xls (San Francisco prices). "CARB" is the gasoline formulation required under the California Air Resources Board Phase II regulations. CARB gasoline was first introduced in California in 1996. CARB gasoline must meet more stringent standards for nitrogen oxides (NOx) and aromatic emissions; it is expected to reduce smog-forming emissions from motor vehicles by 15 percent and reduce cancer risk from exposure to motor fuel toxins by approximately 40 percent. See, e.g., Attorney General of California, *Report on Gasoline Pricing in California* (1999).

[24] EIA Data, at http://tonto.eia.doe.gov/oog/ftparea/wogirs/xls/pswrgvwyla.xls (Los Angeles prices).

retail gasoline price has fallen nearly 48 cents from its peak on May 14. This is already the widest one-year range in retail prices since EIA began its weekly survey in 1990, and it's all occurred in the past 5 months."[25] By mid-December, after the national average price had fallen another 15 cents, the national average retail price bottomed-out at $1.04 per gallon.[26]

What initially began as a slow creep upwards in price turned into a rocket by early March, 2002. "As another March unfolds, retail gasoline prices have begun their now familiar rise," the EIA reported on March 13, 2002.[27] The previous week the average U.S. retail price jumped 7.9 cents per gallon, to $1.22 per gallon, "the second largest 1-week increase since EIA began this survey in 1990."[28]

Prices have continued to rise. From early February to early April, prices increased an average of just over 30 cents, with the national average price for unleaded regular gasoline jumping from about $1.10 per gallon to over $1.41 per gallon. In California, prices have risen 37 cents in 8 weeks and about 50 cents since the first of the year. In the Midwest, prices have risen nearly 34 cents in 8 weeks; in Chicago they have risen almost 49 cents during this period. According to the EIA, these 8-week increases are the second highest in history.

D. Economic Effects of Increases in the Price of Gasoline

Sudden increases in gasoline prices are costly to the consumer and disrupt our economy. Following last spring's increase in gasoline prices, Federal Reserve Chairman Alan Greenspan

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[25] EIA, *Why are gasoline prices falling so rapidly?*, October 29, 2001.

[26] EIA, http://tonto.eia.doe.gov/oog/ftparea/wogirs/xls/pswrgvwnus.xls (national prices).

[27] EIA, *This Week In Petroleum*, March 13, 2002.

[28] Id.

explained the harmful effects of rising energy prices, including the price of gasoline. Chairman Greenspan considered the "run-up" in gasoline prices in the spring of 2001 to be "of particular concern because in the past steep increases in the price of gasoline have arguably undermined both the real purchasing power and the confidence of consumers. This effect has likely been an avenue through which previous spikes in the price of crude oil have slowed economic activity. The jump in gasoline prices from March through May was wholly the result of a twenty-cent per gallon surge in gross refining margins. By contrast, refinery acquisition costs of crude oil changed little over that period.[29]

Indeed, there is evidence Chairman Greenspan's pessimistic projections proved accurate. In March 2002, the Wall Street Journal reported "OPEC production cuts – and subsequent spikes in oil prices – are widely seen as one factor that pushed the U.S. into recession last year."[30] Increasing energy prices continue to hurt the economy. The Washington Post reported that March 2002 saw the largest increase in producer prices for finished goods in more than a year and attributed this increase to a 5.5 percent jump in energy prices.[31]

Although detrimental to the consumer, the recent increases in the price of gasoline brought higher profits to the refiners and certain retail marketers of gasoline. "After explosions at Conoco Inc. and Tosco Corp. oil refineries in April, consumers felt the effects almost immediately." Bloomberg News reported last June. "Gasoline prices in the U.S. jumped 9

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[29] Remarks by Chairman Alan Greenspan, *Impact of energy on the economy*, Before the Economic Club of Chicago, Chicago, Illinois, June 28, 2001.

[30] Thaddeus Herrick and Bhushan Bahree, *As OPEC Maintains Curbs on Oil Output, Rising Prices Could Jeopardize Recovery*, Wall Street Journal, March 18, 2002.

[31] John M. Berry, *Energy Costs Spur Increase in Producer Prices*, Washington Post, April 13, 2002.

percent to a record at the pump." At the same time, refiners reaped benefits. "'The second quarter will be great,' one market analyst predicted."[32]

The low inventories in the spring of 2001 that led to the May price spikes in the Midwest also led to higher profits for refiners. In fact, according to the EIA, "Earnings from the majors' domestic refining/marketing operations increased 78 percent [in the second quarter of 2001 as compared to the second quarter of 2000], primarily due to a merger, higher refining margins, higher throughput, and higher product sales."

> Refining margins (the per barrel composite wholesale product price less the composite refiner acquisition cost of crude oil) increased by more than $6 per barrel because of higher product prices, particularly on the West Coast and in the Midwest. Almost all companies reported higher product margins. One reason for higher margins was the reduced inventory costs achieved by the U.S. majors as evidenced by the relatively low level of U.S. motor gasoline stocks, which were 8 percent lower during Q201[1st quarter 2001] than the Q2 [1st quarter 2002] average over the 1995 to 1999 period.[33]

For the year 2000, net income for major energy companies from refining and marketing was up 57 percent from income in 1999.[34] "Tight supply conditions together with sporadic price spikes for gasoline and distillate led to a widened spread between refined product prices and crude oil input costs."[35]

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[32] Alex Lawler, *Oil Companies to Profit on Refining Gains: Outlook (Update 1)*, Bloomberg Energy News, Bloomberg.com, June 27, 2001.

[33] EIA, *Financial News for Major Energy Companies*, April-June 2001, at http://www.eia.doe.gov/emeu/perfpro/news_m/index.

[34] EIA, *Performance Profiles of Major Energy Producers 2000*, January 2002.

[35] Id.

Conversely, high inventories and low product prices depress refining and marketing profits. The recession and price collapse in energy markets in the second half of 2001 led to dramatically lower profits for oil companies as compared to their performance in 2000.

E. <u>Increasing Concentration in the Refining Industry</u>

A large number of mergers and acquisitions in the oil industry in recent years has led to a significant consolidation of refining assets. In 1998, Marathon and Ashland Oil merged their downstream assets. Also in 1998, British Petroleum (BP) merged with Amoco, and then in 2000 acquired ARCO in an all-stock deal valued at $27 billion. In 1999, Exxon Corporation merged with Mobil Corporation, through an exchange of assets valued at $79 billion, to create the world's largest publicly-traded energy company. In 2001, Chevron (which had acquired Gulf Oil in 1994) completed its $46 billion acquisition of Texaco's upstream capabilities, to create the second-largest U.S. oil company. Also within the past year, Shell Oil completed its acquisition of all of Texaco's domestic downstream assets; Phillips acquired Tosco, a major independent refiner; and then announced its merger with Conoco, which will create the largest refiner in the United States and third-largest U.S.-based oil and gas company. Additionally, Valero paid $3.7 billion to acquire Ultramar Diamond Shamrock (UDS), which created the third-largest refiner in the nation.

According to the EIA, "In recent years, the growth in the major energy companies' U.S. reserve base has come increasingly from mergers and acquisitions."[36] The frenzy of mergers and acquisitions accounted for nearly all of the growth in capital expenditures by U.S. energy companies between 1999 and 2000. (See Figure II.5 on page 33.)

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[36] EIA, *Performance Profiles of Major Energy Producers 2000.* By 2000, over 60 percent of the companies' total additions to reserves were gained in this way, up from an average of slightly over 10 percent in the 1990 to 1996 period.

This wave of mergers has followed a general consolidation of assets within the refining industry over the past two decades. In 1981, 189 firms owned a total of 324 refineries; by 2001 65 firms owned a total of 155 refineries, a decrease of about 65 percent in the number of firms and a decrease of about 52 percent in the number of refineries.[37] Although the number of refineries has decreased, as a result of capacity expansions and improvements in efficiency, the average refining capacity in the United States has increased, so that the total refining capacity is just below the level it was twenty years ago. (See Figures II.6 and II.7 on pages 34 and 35.) During this period the market share of the ten largest refiners increased from 55 to 62 percent.[38]

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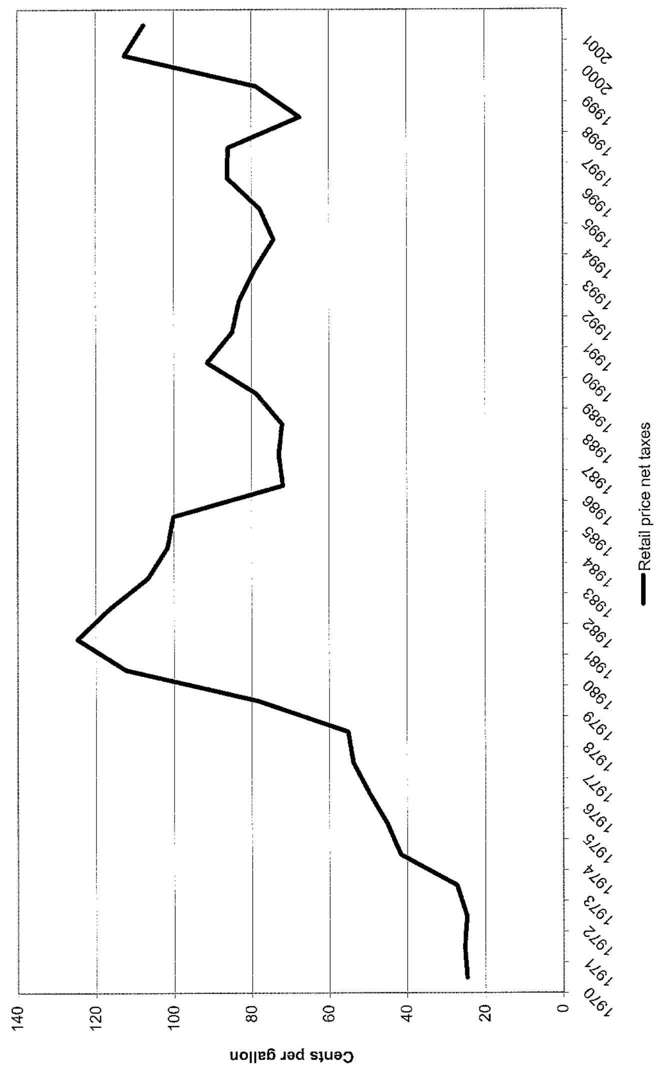
[37] Information provided to the Subcommittee by the Energy Information Administration, August 7, 2001.

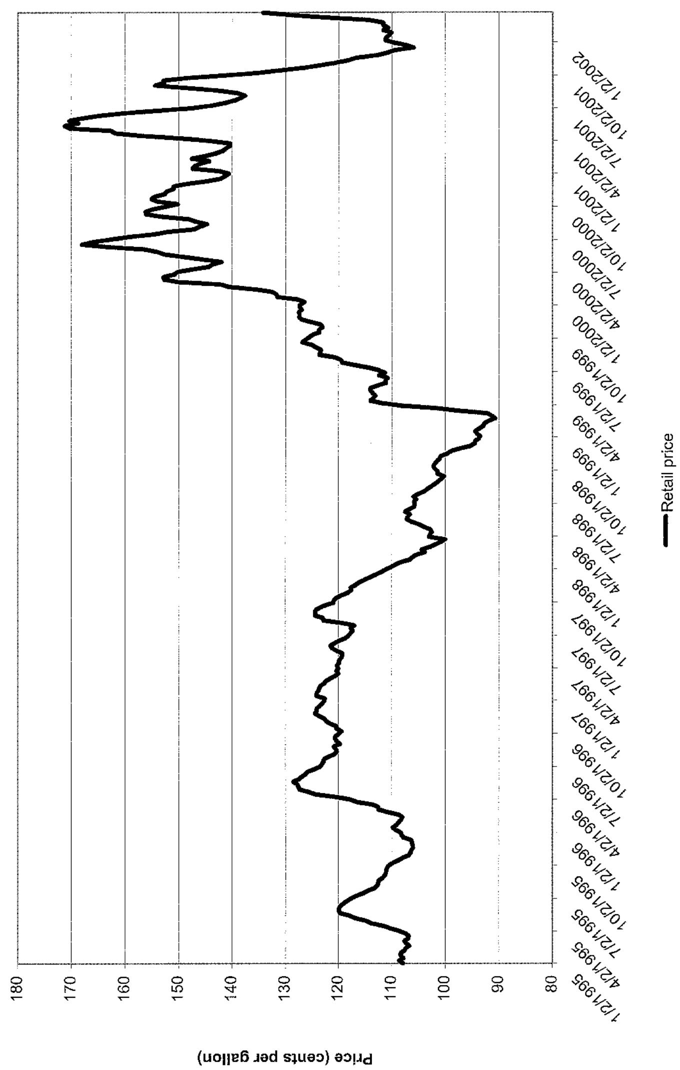
[38] There has been a change in the composition of these top ten companies from exclusively major integrated companies in 1981, to the majority being non-integrated refiners. These independent refiner/marketers, who have no significant crude oil production, have through acquisitions amassed approximately 23 percent of all the refining capacity in the U.S.. In 1981 all ten of the companies were fully integrated oil companies, but by 2001 only four of the companies were integrated. However, although 7 of the top 10 refiners were not fully integrated companies, all of those 7 own one or more chains of retail outlets.

Figure II.1: Average United States Retail Prices for Regular Gasoline
Net Federal and Average State Taxes, 1970-2001



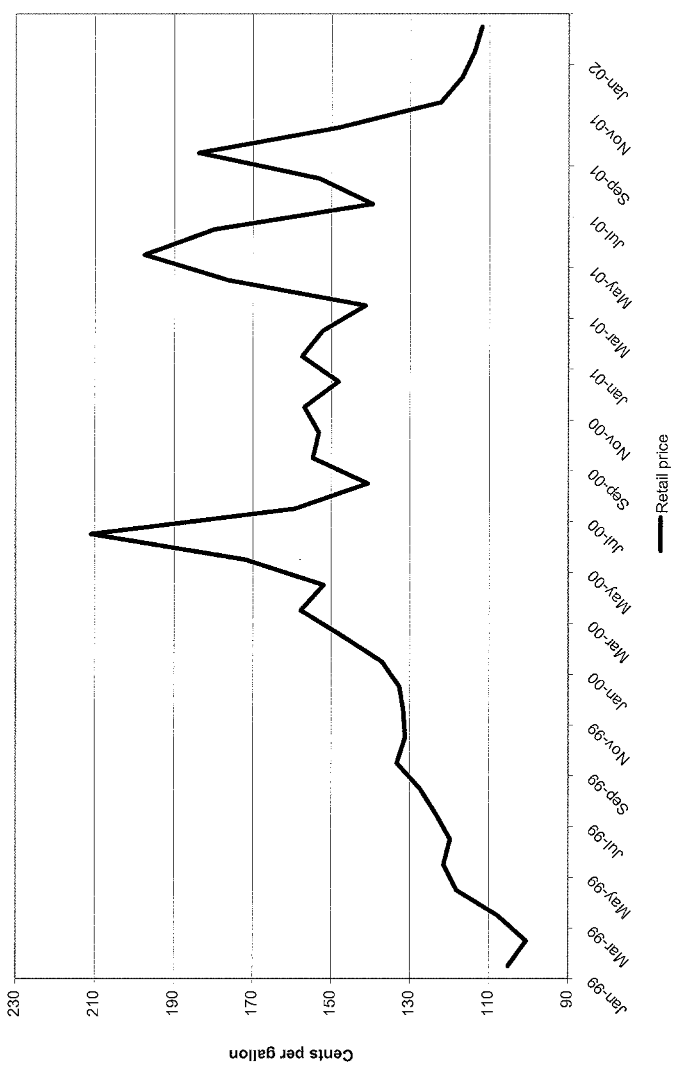
Source: DOE/EIA.

Figure II.2: Average United States Retail Gasoline Prices, January 1995 - March 2002



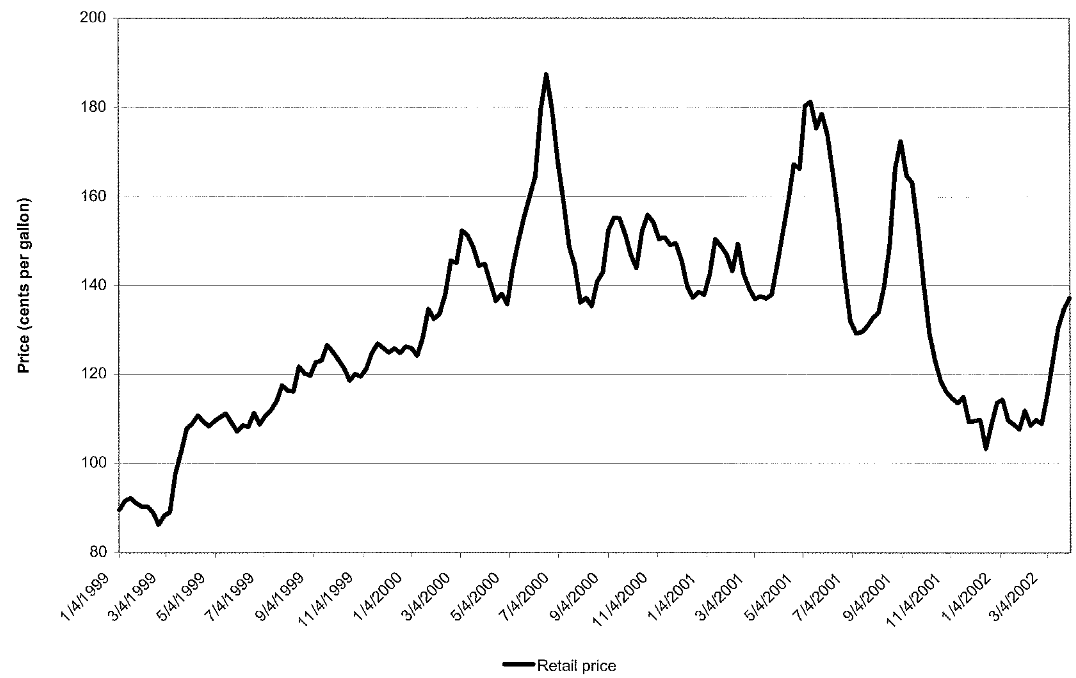
Source: DOE/EIA.

Figure II.3: Chicago Regular Gasoline Retail Prices, January 1999 - February 2002



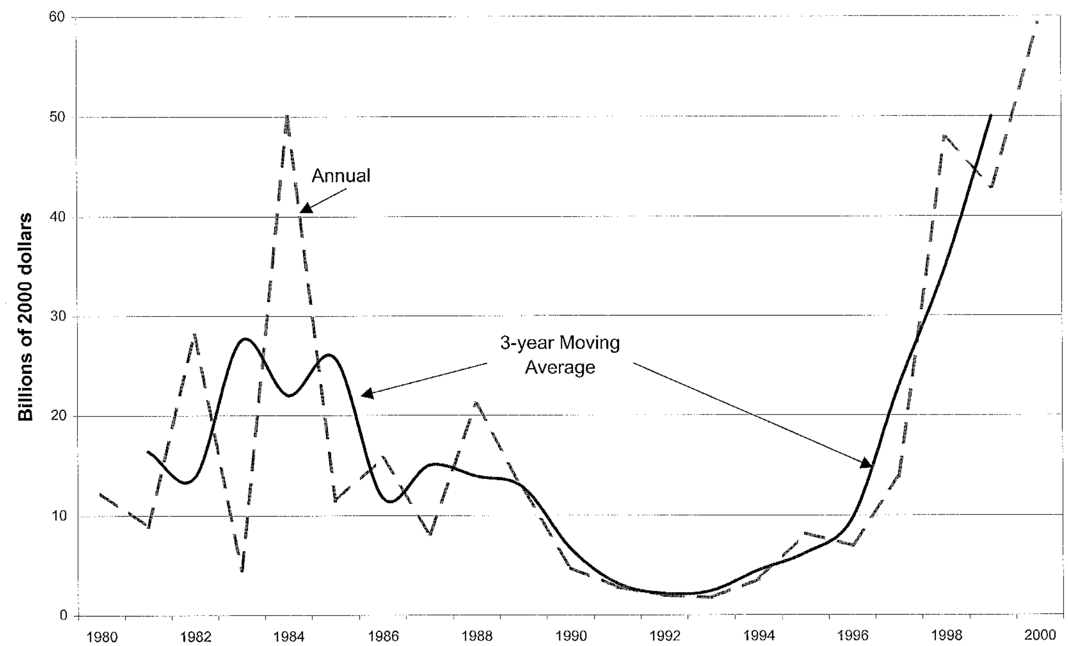
Source: DOL/BLS.

Figure II.4: Average Midwestern Retail Gasoline Price, January 1999 - March 2002



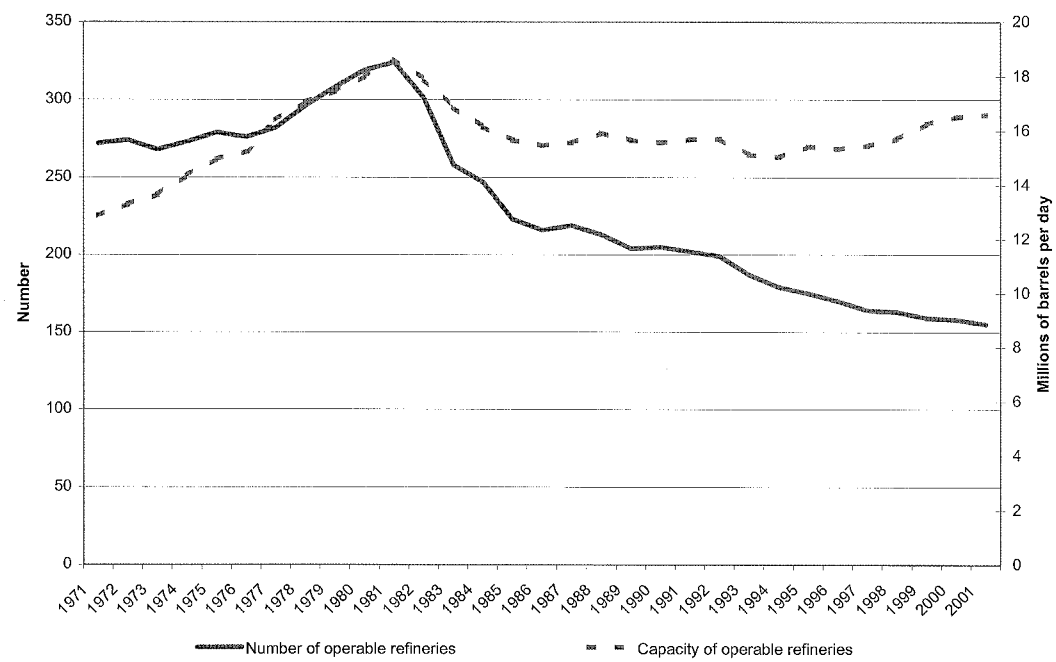
Source: DOE/EIA.

Figure II.5: Capital Expenditures for Mergers and Acquisitions for Major U.S. Energy Producing Companies, 1980-2000 (In constant 2000 dollars)



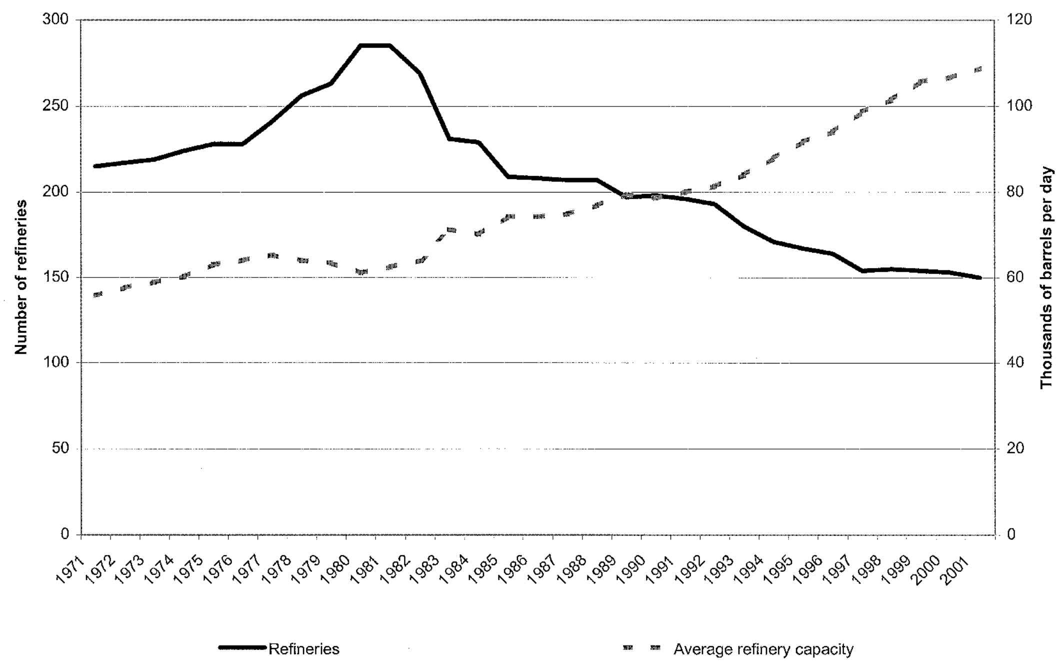
Source: DOE/EIA.

Figure II.6: Number and Total Capacity of Operable Refineries in the United States, 1971-2001



Source: DOE/EIA.

Figure II.7: Number and Average Capacity of Operable Refineries in the United States, 1971-2001



Source: Cambridge Energy Research Associates.

III. THE PRODUCTION AND MARKETING OF GASOLINE

A. Overview of Gasoline Production

Through the application of heat energy and a variety of chemical processes, crude oil can be transformed into many useful products, including motor fuels, heating oil, asphalt, lubricating oils, solvents, paraffin, petroleum jelly, petroleum coke, and feedstocks for the manufacture of chemicals, synthetic rubber, fibers, plastics, drugs, and detergents. (See Figure III.1 on page 80.) Fuel products, which include motor gasoline, jet fuel, diesel fuel, kerosene, and liquified petroleum gases, account for nearly 90 percent of the petroleum used in the United States.[39]

Locating crude oil, extracting it from the earth or seabeds, transporting it to refineries, transforming it into useful products, and transporting the refined products to the end-users is a complex, technologically sophisticated industrial operation that spans nearly the entire globe. By one measure, the oil industry is the most capital-intensive industry in the United States.[40] The oil industry is generally divided into two segments: "upstream," which includes exploration, production and transportation of crude oil to refineries; and "downstream," which includes the refining process and the distribution and marketing of the refined products.

1. Exploration and Production

Over the past 25 years, the proven reserves of crude oil in the United States have declined by one-third, from approximately 33 billion barrels of crude oil equivalent in 1978 to

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[39] Energy Information Administration, *Petroleum: An Energy Profile, 1999*, at 5-8. This document provides a more detailed description of the oil industry.

[40] The measure used here is assets per worker. By this measure the oil industry is significantly more capital-intensive than any other U.S. industry. Other measures of capital intensity, such as the capital-sales ratio, the capital-labor ratio, or the capital-value added ratio, do not yield significantly different results for analytic purposes such as this. William G. Shepherd, *The Economics of Industrial Organization*, 3rd ed., 1990, at 78-79.

23 billion barrels in 1999.[41] Today, the United States holds only about 2 percent of the world's proven crude oil reserves; almost two-thirds of the proven reserves are located in the Middle East. Nearly 50 percent of the crude oil consumed in the United States is imported; the EIA projects that by 2020 the percentage of imports will rise to nearly 70 percent.[42] It is considered unlikely that any major new reserves will be found in the United States.[43]

As proven reserves are consumed, exploration for additional reserves becomes more costly and requires increasingly sophisticated technologies to locate petroleum deposits. Just within the United States, the average cost of drilling a crude oil well has risen from about $250,000 in 1960 to over $850,000 in 1999.[44] Exploration is also financially risky: currently only about one-third of all exploratory wells are successful in finding deposits.[45] Because of the

[41] Proven reserves are those quantities that geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reserves under existing economic and operating conditions (British Petroleum Statistical Review of World Energy, Oil: Proved Reserves). The crude oil equivalent is composed of crude oil, dry natural gas, and natural gas liquids. The level of reserves in 1999 represented a significant increase over proven reserves as of 1998: a 3.5 percent increase in actual crude oil reserves, a 2.1 percent gain in dry natural gas reserves, and a 5.1 percent gain in natural gas liquids. Energy Information Administration, *Annual Energy Review 2000*, Table 4.2.

[42] *Petroleum: An Energy Profile, 1999*, at 45.

[43] *Petroleum: An Energy Profile, 1999*, at 14.

[44] In the U.S. in 1960, 45,620 wells were drilled in the search for oil and natural gas. Approximately 60 percent of those wells were successful. They were drilled to an average depth of 4,213 feet, and cost an average of $58.63 per foot ($247,008 per well). Over 95% of those wells were drilled on shore in the lower 48 states, and the average productivity per well was 11.9 barrels. In 1999 in the U.S., 25,140 wells, with an average success ratio of over 80% (a 20% increase in success over 1960), were drilled. They were drilled to an average depth of 5,944 feet at an average cost of $145.10 per foot ($862,474 per well). In 1999 87% of the wells were being drilled on shore and 20% of the wells drilled were drilled in Alaska. *Annual Energy Review 2000*, Table 4.4 & Table 5.2.

[45] *Petroleum: An Energy Profile, 1999*, at 21.

tremendous expense and risk involved, many downstream companies that refine and distribute gasoline do not engage in upstream exploration. Today, although successful exploration may be very profitable, out of the 63 companies that refine crude oil in the United States just 11 companies explore for crude oil.[46]

As domestic reserves have been depleted, average well productivity has declined too – from over 18 barrels per day in 1972 to just under 11 barrels per day in 2000.[47] Nonetheless, technological advances have increased the ability to access crude oil deposits and improved the efficiency of recovery of oil from identified deposits. Today, petroleum is being recovered from basins that would have been abandoned as unproductive in the past or that were beyond any technology to reach. For example, oil platforms in the Gulf of Mexico now can drill over 5 miles into the earth to capture crude oil deposits that just a few years ago were too deep to recover.

Throughout the history of the oil industry, the upstream sector has been subject to cycles of "boom" and "bust." When supplies are scarce and the price of crude oil rises, companies will invest in exploration and development. When supplies are plentiful, companies will reduce their upstream expenditures.

Crude oil is transported to the United States in tankers from Europe, Asia, the Middle-East and Alaska, in barges from Mexico and Canada, and through pipelines from Canada and Mexico. The major ports with capability to receive shipments of crude oil are located in New

[46] Information provided by Energy Information Administration, March 4, 2002.

[47] Energy Information Administration, Annual Energy Review 2000, table 5.2; (http://www.eia.doe.gov/emeu/aer/txt/tab0502.htm)

York Harbor, the Gulf Coast, and on the West Coast.[48] Once in the U.S., crude oil is transported by barge or pipelines to refineries. A network of pipelines carries crude oil delivered to the Gulf Coast into the Midwest, and a lesser network carries crude oil produced in the continental United States across the various regions. (See Figure III. 2 on page 81.) There are 114,000 miles of crude oil pipelines in the United States.[49]

2. Refining

The first step in the refining process is atmospheric distillation, which consists of heating the crude oil to separate the different hydrocarbon components with differing boiling points. (See Figure III.3 on page 82.) Lighter products, such as gasoline, are recovered at the lowest temperatures; middle distillates, such as home heating oil and diesel fuel, come next; the heaviest products, such as residual fuel oil, are only recovered at the highest temperatures, sometimes over 1000 degrees Fahrenheit. Most refineries in the United States use additional refining technologies, such as vacuum distillation, coking, catalytic cracking, and hydrocracking, to improve efficiency, recover additional components, and improve product quality.

Every refinery has unique characteristics and capabilities for processing crude oil and for making refined products. Most refineries were initially built to process a specific slate of crude

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[48] The Port of Long Beach is the only U.S. port that is capable of handling "very large crude carriers," (capacity of up to 2 million barrels), and no U.S. port is capable of handling "ultra large crude carriers" (capacity greater than 2 million barrels). Crude oil must be transferred from these tankers into smaller vessels before it can be delivered to U.S. ports. The Louisiana Offshore Oil Port (LOOP) is a storage facility 18 miles offshore in the Gulf of Mexico where ultra large tankers can dock and load their cargo into pipelines that carry the crude oil into storage in salt caverns ashore in Louisiana. *Petroleum: An Energy Profile, 1999*, at 38.

[49] According to the Association of Oil Pipelines, there are also 86,500 miles of product pipelines. Together, the 200,500 miles of pipeline (crude and product) run through each of the 50 states. See http://www.aopl.org/pubs/facts.html.

oils, usually the crudes from the company's upstream division or from a nearby oil field. In the past two decades, many refiners have upgraded their refineries to be able to take advantage of the price differentials between the different grades of crude oil sold on the world market. In some cases, these capital improvements have cost hundreds of millions of dollars.

The economics of refinery operation is largely dependent on three variables: the cost of crude oil, the cost of operating the refinery, and the market price the seller can obtain for the product. In addition to the refinery's capabilities for processing crude oil, the "crack spread" – the difference between the price a refiner can obtain for a refined product and the cost of crude oil – will determine the types of crude oil a refiner will purchase and the products that the refiner will produce.

The United States has the largest refining capacity of any nation in the world – approximately 20 percent of the total global refining capacity.[50] Almost all of the gasoline consumed in the United States – approximately 96 percent – is produced in domestic refineries; the remainder is imported from locations such as the Caribbean and Europe.[51]

3. Storage and Distribution

Once crude oil is refined, the products are stored in tanks at the refinery or shipped to other distribution facilities, called wholesale terminals. It is estimated there are more than 1,300 wholesale terminals in service. A terminal may have as much as 2 million gallons of storage capacity.[52] Although major oil companies own a number of these terminals, about 75 percent

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[50] *Petroleum: An Energy Profile, 1999*, at 25.

[51] Energy Information Administration, *Petroleum Supply Annual 2000*, Volume 1, Table S4.

[52] Bureau of the Census, American Fact Finder, Economic Data Sets, Sector 42.

are owned by independent petroleum companies, distributors (jobbers), and terminal/supply service companies.[53]

Most of the volume of petroleum products is transported from refineries to wholesale terminals through pipelines.[54] (See Figure III.2 on page 81.) Most oil pipelines are operated as "common carriers," which means that the pipeline owner does not take title to the oil being shipped but simply provides the transportation service. As common carriers, pipelines must be accessible to all oil that meets the pipeline's shipping specifications, regardless of the ownership. Further, they are subject to government regulation concerning rates and operating practices. Some 184 companies operate pipelines that are regulated by the Federal Energy Regulatory Commission (FERC) for the purpose of rates.

A small percentage of pipelines are operated as proprietary pipelines. Proprietary pipelines transport crude oil or products for their owners or their affiliates. The owners of these pipelines can set their own rates; however, if they begin shipping substantial quantities of product for the use of third parties, the FERC can require that they become common carriers and be subject to the FERC's rate making authority.[55]

Petroleum products also are transported from refineries to wholesale terminals by barge. Barges generally have a capacity of 30,000 barrels or less, and are commonly used on the Mississippi and Ohio river systems. Most of the barges are owned by commercial transportation

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[53] Documents in Subcommittee Files.

[54] Some 60 percent of the products move via approximately 87,000 miles of product pipelines. Generally, crude oil pipelines and product pipelines operate separately and do not carry the same commodities. Crude oil pipelines generally run from ports and production facilities to refineries and product pipelines generally run from refineries to distribution terminals.

[55] Information provided by the Association of Oil Pipelines on December 3, 2001.

companies, with some owned by the petroleum companies themselves. Less than six percent of petroleum products is moved from refineries by truck, and only half that amount, just over three percent, is moved by rail.[56]

Although different refineries have different operating characteristics, with limited exception the basic gasoline produced at any particular refinery will be chemically identical to the gasoline produced at any other refinery. A brand of gasoline is created when the refined gasoline is mixed with a company's proprietary blend of chemical additives at the terminal, which usually occurs as the tanker trucks are being filled for their deliveries to service stations. Because all gasoline must meet the applicable minimum federal standards, most gasoline is identical even after the proprietary chemical additives are mixed.[57] "Branded gasoline" is sold by the refiner with the understanding that it may be resold under the trademark or trade name owned by the refiner. "Unbranded gasoline" cannot be resold under the trade name.

Branded gasoline is distributed from refineries and terminals to retail outlets, either directly to the service station or through bulk plants. Bulk plants are like terminals, but they are used by jobbers to store product for distribution to retailers.[58] Jobbers purchase and transport gasoline from refiners and sell or distribute it to gasoline retailers or, in some cases, directly to

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[56] Association of Oil Pipe Lines, *Shifts in Petroleum Transportation*, August 4, 2000, Table 3.

[57] Some refiners contend that their gasoline contains unique constituents and/or additives. Documents in Subcommittee Files.

[58] United States Census Bureau, Economics and Statistics Administration, *Summary 1997 Economic Census, Wholesale Trade, Subject Series*, March 2001, EC97W42S-SM, Table 1, Summary Statistics for the United States, p. 12.

the public through their own retail stations.[59] A jobber may distribute several brands of gasoline, and may own or lease several retail outlets selling different brands, including unbranded gasoline. Jobbers who contract with a company to distribute a particular brand of gasoline are often required to obtain that gasoline from a particular terminal. Refiners and jobbers distribute the gasoline to retail outlets by trucks that generally carry about 7,700 gallons of fuel each. Figure III.4 (page 83) shows the flow of gasoline from the refiner either directly to the dealer or indirectly through a jobber distribution system.

4. Retail Marketing

Service stations, which first appeared around 1910, remain the predominant retail establishments for marketing gasoline.[60] Currently there are over 175,000 retail gasoline outlets in the United States.[61] Today, there is an increasing variety of service station formats and ownership.

*A **company-owned, company-operated station*** is owned by a refining company and operated by salaried or commissioned personnel of the refining company. Although there are some company-operated stations that are supplied by a jobber on contract with a refining company, they are few-in-number and almost all of these stations are supplied by the refining companies directly.

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[59] The Petroleum Marketers Association of America (PMAA) estimates that the current number of petroleum distributors is 7,500, and that the number has declined by approximately 30 percent from 1989. PMAA states that the earlier estimates were "skewed" because they counted a number of small dealers with one or two trucks as distributors. There are very few of those small dealers still in business. (Interview with Bob Bassman, PMAA, 9/5/2001)

[60] *Petroleum: An Energy Profile 1999*, at 56.

[61] National Petroleum News, *Annual Market Facts*; data provided to the Subcommittee by EIA, 8/7/01.

*A **lessee-dealer*** is a person who leases the station and land, including tanks, pumps, signs, and other equipment, from a refiner and is supplied directly by the refiner or an affiliate or subsidiary company of the refiner. The lessee-dealer is required by contract to buy gasoline from the refiner at the price set by the refiner, the "dealer tank wagon" (DTW) price. This price will generally be higher than the rack price charged to jobbers (see below), as it will include a charge for promotional support provided by the refiner. The refiner also sets the lease rate and other operating standards and may also offer certain discounts, all of which affect operating costs and ultimately the retail price charged by the lessee dealer.

*An **open dealer*** is a person who owns (or leases from a third party who is not a refiner) the station or land of a retail outlet and has use of tanks, pumps, signs, and other equipment. An open dealer sells gasoline under the brand of a refiner. An open dealer may have a supply agreement with a refiner or may be supplied by a jobber under contract with a refiner. The open dealer may, upon expiration of a contract, switch to another source of supply, including a different brand.[62]

*A **jobber*** purchases branded or unbranded gasoline at a terminal owned or supplied by a refinery, commonly called the "rack," and distributes it to either his or her own service stations or to service stations owned by others or both. Many jobbers have term contracts with refiners for purchases of specific amounts of branded gasoline.

*An **independent dealer*** purchases unbranded gasoline, either on the spot market or at a refiner's rack. Independent dealers generally do not have long-term contracts with any particular

[62] EIA, *Performance Profiles of Major Energy Producers 1999*, Glossary; http://www.eia.doe.gov/emeu/perfpro/glossary.html, at 2.

brand; they generally shop around for the lowest unbranded rack price.[63] They may also use a jobber to execute delivery of the gasoline purchased at the rack. Unbranded gasoline may be sold under a local retail chain name such as Sheetz, Wawa, or Freestate, or a local individual owner, such as "Joe's Gas."

As of 1999 there were approximately 117,250 branded stations and 57,750 unbranded stations in the U.S.[64] About half of the branded stations are open dealers, while the remaining stations are divided almost evenly between company-owned and lessee-dealer outlets.

In recent years, the retail marketing of gasoline has become increasingly linked with convenience shopping. For many years, the most common service station format consisted of several islands of gasoline pumps and two or three service bays. Today, gasoline is becoming just another offering at convenience outlets, such as Seven-Eleven and WaWa, supermarkets such as Safeway and Kroger, or hypermarkets such as Wal-Mart and Costco. This trend in retail marketing is discussed in Chapter D of this section.

B. Trends in Refining

The number of refineries in the United States reached a high of 324 in 1981 and then gradually declined to 155 by 2001. Several factors have contributed to this decline. First, the Crude Oil Entitlements Program[65] ended, and price controls on domestically produced crude oil

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[63] Jobbers may purchase branded gasoline and sell it to independent, unbranded stations. In those instances, the unbranded stations cannot identify the name of the brand they are selling. Such an arrangement only makes economic sense when the branded rack price is cheaper than the unbranded rack price.

[64] National Petroleum News, *Annual Market Facts*; Data supplied by EIA on 8/7/01.

[65] Until 1973 U.S. oil prices were generally above international prices. After the 1973 Arab oil embargo, however, most domestic oil was priced below imported oil due to U.S. price controls and the increase in OPEC oil prices. One result of this price disparity was to give refiners with greater access to less expensive domestic crude oil a substantial competitive edge

ended in 1981. Once the protections and price controls ended, it was no longer profitable to operate many of the small, simple refineries and a number of less efficient older refineries.

Crude oil and gasoline prices peaked in 1981, following the start of the war between Iran and Iraq and the decontrol of domestic crude prices[66]. Demand slackened as retail gasoline prices rose to unprecedented levels throughout the country. In addition to high prices, a number of conservation measures adopted during the 1970s took effect, further reducing demand. With declining demand and increasing OPEC production, crude oil and gasoline prices plummeted, putting further pressure on marginal refiners.[67] Figure III.5 (page 84) shows the trend in refining margins during and after this period.

The total amount of refining capacity during this period has been described as an "overcapacity bubble." In 1981, when the number of refineries was at its highest, capacity utilization was at its lowest. Just over 68 percent of refining capacity was being used, meaning that nearly one-third of all domestic capacity was idle. During most of the 1980s and into the early 1990s, total capacity remained high and utilization remained low, leading to low refining

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over refiners that relied on more expensive imported crude oil. To redress this inequity, the Crude Oil Entitlements Program was established in 1974. This program subsidized and protected the operation of small refineries. Refiners were able to buy and sell entitlements (permits) designed to minimize the disparity in their crude oil acquisition costs. U.S. General Accounting Office, *The United States Exerts Limited Influence on the International Crude Oil Spot Market*, August 21, 1980.

[66] The U.S. imposed price controls on domestically produced oil in 1973. Full decontrol of prices and supplies in the industry occurred in 1981. U.S. Department of Energy Office of Industrial Technologies, *Energy and Environmental Profile of the U.S. Petroleum Refining Industry*, December 1998.

[67] *Petroleum: An Energy Profile, 1999*, at 53-54.

margins.[68] In total, about 120 refineries closed during the 1980s, representing a loss of capacity of about 3 million barrels per day.[69]

Demand for petroleum products slowly began to increase after 1983.[70] Since that time, the annual gross input to domestic refineries has continued to increase as well.[71] Utilization rates have increased too. Many refiners made capital investments to "de-bottleneck" their refineries and add downstream processing equipment, such as catalytic cracking and reforming units, to increase their efficiency and capacity. Many of these investments also allowed refiners to process less expensive, heavier, crudes of lower quality.[72]

The Clean Air Act Amendments of 1990 also altered the refining landscape. To improve the air in a number of urban areas where the air quality did not meet federal standards, the Clean Air Act Amendments required the use of cleaner burning fuels, such as oxygenated gasolines by late 1992, lower sulfur diesel fuels by late 1993, and reformulated gasoline by January 1, 1995. According to the EIA, expenditures for pollution abatement rose from approximately 10 percent

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[68] Documents in Subcommittee Files.

[69] *Petroleum: An Energy Profile, 1999*, at 30

[70] EIA, *Annual Energy Review 2000*, at Table 5.11.

[71] *Petroleum: An Energy Profile, 1999*, at 30.

[72] EIA, *The U.S. Petroleum Refining and Gasoline Marketing Industry*, updated September 25, 2001.

of refining capital expenditures in 1988 to approximately 40 percent in the mid-1990s.[73] Figure III.6 (page 85) shows the increase in environmental expenditures during this period.

As refiners were faced with the requirement to upgrade their facilities to produce cleaner gasoline, many refiners took the opportunity to de-bottleneck and upgrade their refineries. According to one trade publication, "As much as the environmental mandates were an economic burden to the oil industry, they did in an unintended way lead to a refinery capacity expansion. When certain capital investments were mandated, refiners took the opportunity to de-bottleneck and effectively add to capacity. The incremental cost of capacity addition was simply much less when combined with mandated investment than it would have been as a stand-alone project."[74] As a consequence, from 1989 to 1992 major energy companies doubled their capital expenditures for refining.[75]

Other refiners, however, chose not to make the necessary upgrades to produce the new, cleaner fuels. In the early 1990s, at the same time that refiners were faced with the new fuel requirements, refining margins continued to be depressed due to excess refining capacity. Figures III.5 and III.7 (pages 84 and 86) show the decline in refining margins and returns on investment, respectively, for the years 1990-1995. The combination of these and other factors in

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[73] The EIA study also concluded that although "the additional capital expenditures stemming from heightened pollution abatement requirements for the U.S. refining operations . . . have added to the capital intensity of U.S. refining in the late 1990s,...pollution abatement costs have been and continue to be a small part of overall operating costs." EIA also found "Although pollution abatement requirements clearly reduced the rate of return to refining/marketing assets, these requirements appear to account for only a small part of the steep decline in the rate of return to U.S. refining/marketing operations in the 1990s. . ." *The Impact of Environmental Compliance Costs on U.S. Refining Profitability*, October 1997, at 2, 5.

[74] Joe Petrowski, *Refining Concerns*, National Petroleum News, June, 2001.

[75] EIA, *The Impact of Environmental Compliance Costs on U.S. Refining Profitability*, October 1997, at 2.

the early 1990s led to another round of refinery closures beginning in the early part of the decade. Thirty-five refineries closed between 1991 and 1995, and another 15 closed between 1997 and 1999.[76] (See Figure II.6 on page 34.) In 2000, the National Petroleum Council projected that "the refinery shutdown trend is likely to continue into the future, regardless of the new fuels regulations, as the competitive landscape continues to evolve."[77]

With the closure of many small refineries and the addition of new capacity to existing refineries, the average capacity of a refinery in the United States has increased by nearly 50 percent since 1970. Thus, even though no new refinery has been built in the United States since the early 1980s, total capacity has increased by nearly 1 million barrels per day since 1986 – the equivalent of several new large refineries.[78]

In the United States today, 63 companies operate about 150 refineries with a combination distillation capacity of just over 16 million barrels per day.[79] These refineries range in size from small refineries with a capacity to process about 3,000 barrels of crude oil per day to the largest refinery, with a capacity to process just over than 500,000 barrels per day.[80] As demand has slowly grown, however, much of the industry is at its operable limit; the West Coast is even

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[76] National Petroleum Council, *U.S. Petroleum Refining, Assuring the Adequacy and Affordability of Cleaner Fuels*, June 2000, at 24-25. Only about half the closed refineries were able to produce finished gasoline. According to the NPC, the closures "have varied in size, complexity, and geography, with no apparent single physical factor responsible for the owner's decision to cease operation."

[77] *U.S. Petroleum Refining, Assuring the Adequacy and Affordability of Cleaner Fuels*, at 25.

[78] Cambridge Energy Research Associates, *Gasoline and the American People, July 2001 Update*, at 24-25.

[79] *Petroleum Supply Annual 2000*, Tables 36 & 40.

[80] EIA, Information provided to the Subcommittee, August 7, 2001.

short.[81] The annual average refinery utilization rate is now regularly greater than 90 percent.[82] (See Figure III.8 on page 87.)

The ownership of these refineries has changed in recent years. Within the last decade, as refining margins from downstream operations failed to provide as high a return as upstream operations for many of the major oil companies, a number of the oil companies divested several of their less profitable refineries. In 1990, fully integrated major oil companies (i.e. those with both upstream and downstream assets) owned 72 percent of domestic refining capacity, whereas the "independent" or non-integrated refiners (i.e. those without both upstream and downstream assets) owned only 8 percent. Included in this latter category were the "merchant" refiners such as Tosco Corporation, Valero Energy, and Tesoro Petroleum, which owned either no or relatively few retail outlets for the distribution of their refined products. By October 1998 the majors' share had fallen to 54 percent, and the independents owned 23 percent.[83]

These "independents," however, have themselves become increasingly vertically integrated refiners and marketers. During the mid-1990s Tosco, which at one point was mostly a merchant refiner, acquired all of Unocal's West Coast refining and marketing assets, all of BP's retail outlets on the West Coast, the Circle K convenience store chain, and all of the retail outlets on the East Coast the FTC required Exxon and Mobil to divest as a condition of approval for the Exxon-Mobil merger. Within the past year Phillips acquired Tosco, and Conoco is now seeking to merge with Phillips/Tosco. Valero merged with Ultramar Diamond Shamrock, which had

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[81] See Section IV.

[82] *Petroleum: An Energy Profile, 1999*, at 30; Petroleum Economist Limited, September 20, 2001.

[83] EIA, *The U.S. Petroleum Refining and Gasoline Marketing Industry*, September 25, 2001.

merged with Total. In 1990, independent refiners operated just over 13,000 retail outlets in 10 states; by 1999 these refiners were operating almost 22,000 outlets in 22 states.[84]

As a result of all of the mergers and acquisitions, even with the refinery divestitures by the majors that occurred in the 1990s, the refining business is now more concentrated than before and remains highly vertically integrated. The market share of the top 10 refiners has increased from about 55 to 62 percent over the past two decades. Seven of these ten refiners own one or more chains of retail outlets.[85]

C. Trends in Storage and Inventories

As the number of refineries has decreased, gasoline storage capacity and gasoline stockpiles at refineries also have decreased. In 1981, the aggregate storage capacity at the 324 refineries in the country was approximately 167 million barrels. By 2001, as the number of refineries was reduced by half, storage capacity for gasoline at refineries declined by 14 percent, to 143 million barrels.

As previously discussed, however, most of the terminal storage capacity is not located at refineries. Independents, jobbers, and terminal/supply service companies operate almost three times as many facilities as do the refiners. Of current stocks, approximately 40 percent is stored in bulk terminals, about one-third is stored at refineries, and the remainder, just over one-quarter (28 percent) is found in pipelines.[86] The Bureau of the Census reports that total storage capacity

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[84] EIA, *Restructuring: The Changing Face of Motor Gasoline Marketing*, October 30, 2001.

[85] See footnote 34, supra.

[86] *Petroleum: An Energy Profile, 1999*, at 41.

for refined petroleum products, including gasoline, declined almost 27 percent between 1987 and 1997,[87] while demand during the period increased almost 12 percent.[88]

In the Gulf Coast region (PADD 3)[89], which has the most refining capacity, gasoline storage is concentrated at the refineries. This is true as well for the Rocky Mountain (PADD 4) and West Coast (PADD 5) regions, neither of which are significant importers of gasoline. In the East Coast (PADD 1) and Midwest (PADD 2) regions, gasoline is stored primarily in bulk terminals closer to the market areas. In these regions, gasoline imports from other regions or nations are necessary to meet demand.

The costs of storing gasoline in inventory will vary, depending on market conditions, such as the type of storage required, the type of product being stored, and overall supply and demand considerations. Generally, long-term storage costs can become significant. On an average basis, it costs approximately $2 per barrel to hold gasoline in inventory at a refinery storage facility for a year and approximately $6 per barrel for a company to rent a storage facility for the same length of time. Thus, storing gasoline in rented tank space costs roughly 1 cent per gallon per month.[90]

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[87] Information provided to the Subcommittee by the Bureau of the Census, September 26, 2001.

[88] Energy Information Administration, *Annual Energy Review 2000,* Table 5.11.

[89] In 1950, the Petroleum Administration for Defense divided the country into five districts or Petroleum Administration for Defense Districts (PADDs). These districts were originally defined during World War II for purposes of administering oil allocation. See Figure III.9 (page 88) for a chart of the U.S. divided into PADDs.

[90] Energy Information Administration, *Oil Market Basics*, http://www.eia.doe.gov/pub/oil_gas.../oil_market_basics/Stocks_text.htm

In the past several years most refiners have aggressively reduced amounts of gasoline held in inventory. During the 1990s, a number of industries adopted "just-in-time" inventory practices to reduce operational costs and become more efficient. As the Wall Street Journal recently reported, "New software in use at most major energy companies allows employees to keep closer watch over how much oil or gas is sitting in tank farms, vast pipelines and neighborhood gas stations. By squeezing inventories to the minimum, the companies reduce storage costs and improve cash flow."[91] ExxonMobil, the largest oil company, has established a goal of reducing its crude oil and refined products in inventory by 15 percent. BP claims it has reduced its inventories by 7 percent since 1997. Prior to its merger with Texaco, Chevron had reduced its inventories of mid- and premium-grade gasoline by nearly two-thirds over the previous decade.[92]

Total gasoline stocks – meaning the total amount of gasoline and blending components in storage at refineries and terminals and in pipelines – have similarly fallen over the past two decades by about 20 percent, from approximately 250 million barrels in 1981 to around 200 million barrels at present. (See Figure III.10 on page 89.) In 1981 the amount of gasoline in storage equated to approximately 40 days of consumption; by 2001 the amount in storage had declined to around 25 days of consumption. Nationally, current stock levels represent only about 3 days worth of supply at the nation's current consumption rate of 8.5 million barrels of gasoline per day over the minimum amount of stocks considered necessary to effectively and efficiently distribute gasoline, which the EIA terms the "Lower Operational Inventory Level"

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[91] Alexei Barrionuevo, *Get Ready for Spikes In Gasoline Prices, As Supplies Tighten*, Wall Street Journal, January 24, 2002.

[92] *Id.*

("LOI").[93] According to the EIA, the LOI is the level of gasoline stocks at which "inventory related supply flexibility could be constrained or non-existent."[94]

The declines in inventory levels have been particularly severe in the Midwest and in California. In the Midwest, inventory levels have fallen about 22 percent over the past decade. In California, inventories have been reduced by about 20 percent over the same time period.[95]

Low inventories are widely regarded as a key factor contributing to the increased volatility of gasoline prices in recent years. The Federal Trade Commission, the Energy Information Administration, economists, and industry documents all attribute, in part, increasing volatility to reduced inventory levels.[96] In an analysis presented to the FTC, Philip Verleger relates the recent wave of mergers, the reduction in inventories, and increased price volatility:

> While proponents of the supermajors (including the author) have asserted that larger firms were necessary to maintain the diversified exploration programs required to stay in the business, the basic reason to merge has clearly been shareholder value. Every merged firm has sought to improve margins.

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[93] Energy Information Administration, *Petroleum 1996: Issues and Trends*, Figure 67.

[94] Energy Information Administration, *Weekly Petroleum Status Report*, July 6, 2001, p. 59.

[95] *Get Ready for Spikes In Gasoline Prices, As Supplies Tighten*, Wall Street Journal.

[96] See, e.g. EIA, *Petroleum 1996, Issues and Trends*; Final Report of the Federal Trade Commission, *Midwest Gasoline Price Investigation*, March 29, 2001 ; EIA, Testimony Before the Committee on Energy and Commerce, May 15, 2001 ("As EIA has pointed out on numerous occasions, very low gasoline stocks, combined with a market short on crude oil, generates an environment ripe for price volatility, both during the spring and peak summer periods."); Cooper, Consumer Federation of America, *Ending the Gasoline Price Spiral* at 10-11 ("Stocks are the key factor in policy responses to market power where supply is inelastic. Every investigation of every product spike in the past several years points to unusually low stock as a primary driver of price shocks."); P.K. Verleger, Jr., *World Oil Markets: Changing Structure and Greater Price Volatility Causing the Third Petro-Recession*, April 2001 Draft ("The recession will occur because the price of oil, like the price of any commodity, can achieve equilibrium over a wide range of identical level of supply and demand. The key determinant of the observed price is the amount of inventories held by processors and consumers.")

Improving margins is synonymous with cutting costs. In most cases, the merged firms have sought to achieve these synergies by reducing inventories. In fact, one of the merged companies sought to lower its worldwide stocks by between 30 and 50 million barrels.

The pursuit of minimum stocks by the merged companies must have increased the inelasticity of the supply-of-storage function. As companies chose to operate with lower stocks, they implicitly accepted the fact that they would be forced to pay a greater premium for incremental supplies. In the process, they abrogated a traditional role. In the past, integrated companies provided a pseudo price insurance program for consumers by holding stocks. Today, financial markets and responsibility to shareholders make it impossible for these firms to perform such a role.

The effect of lower inventories on price volatility is discussed further in Section IV.

D. <u>Trends in Marketing</u>

The "hypermarket" is rapidly expanding as a highly competitive format for selling gasoline. (F-13)

The gasoline marketing techniques prevalent in America from the 1940s through the 1960s and early 1970s reflect not only a competitive landscape entirely different from today's, but also a culture in which the public placed much more trust and confidence in major institutions. "The Shell Answer Man" was an authoritative source for anything anyone wanted to know about gasoline and car performance. Every American during the 1960s knew the Texaco jingle that you could "trust your car to the man who wears the star." Oil companies often gave away handy household items for free following frequent fill-ups. Within the gasoline marketing industry the 1960s are characterized as "The Era of the Major Brands."

Prior to the oil embargo of 1973 gasoline was cheap and plentiful; not until 1974 did the retail price reach 40 cents per gallon. Cars, however, were less reliable than they are today. The local service station, which almost always sold a major brand, provided the full range of services a car owner needed - full-service gasoline islands; attendants to pump the gas, clean the windshield, and check the oil; and two or three service bays for maintenance of tires, batteries, brakes, wipers, mufflers, and for oil changes. Gasoline had been sold this way since the 1920s, and most customers were loyal to the major brands.[97]

Independents in operation during this period offered a lower price for gasoline, but the price was offset by a lack of services and amenities. These stations offered minimal fueling facilities, no repair bays, did not accept credit cards, were frequently poorly maintained, were in less desirable locations, and the gasoline sold generally was of lower quality. These independents initially occupied a "low price niche."[98]

At first, the independents did not affect the majors' retail strategies. For many of the fully integrated major oil companies, service stations were not a major profit center but rather an outlet for those companies' refined products. The major profits were obtained from the upstream operations, especially the production and sale of crude oil, and retail strategies were often designed to maximize these upstream profits. With superior quality, customer brand loyalty, and different economic goals, many majors did not deem it necessary to compete with these independents on price.[99]

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[97] Presentation by ExxonMobil to the Subcommittee staff, July 23, 2001.

[98] Presentation by ExxonMobil to the Subcommittee staff, July 23, 2001.

[99] See F. M. Scherer, *Industry Structure, Strategy, and Public Policy*, 1996, at 134-5. Prof. Scherer states that a number of major oil companies deliberately pursued a strategy of developing many low-volume small outlets with high retail prices, some of which operated at a loss, as a result of "anomalies fostered by the percentage depletion tax break given domestic oil producers." The majors chose this strategy to maximize throughput of crude oil rather than sell additional products to independent marketers or gain additional volumes through lower retail prices because the multi-site low-volume strategy was "less likely to trigger price wars." *Id.*

At this point in time, the marketing of convenience items and the marketing of gasoline had not been linked. Convenience stores did not offer gasoline, and gasoline stations offered few, if any, convenience items.

The upheaval in the oil markets caused by the Arab oil embargo in 1973 and the formation of the OPEC cartel forever altered the marketing of gasoline. As gasoline prices skyrocketed in the mid-1970s, consumers became much more cost-conscious. Self-service stations proliferated, soaring from just 6 percent of all retail outlets in 1974 to 68 percent in 1978.[100] Major brands cut costs further by de-emphasizing advertising in an effort to move additional product through the system.[101]

By the mid-1970s the reliability of the automobile had improved significantly, so that car owners had less need for the routine repair and maintenance service that traditionally had been offered at the service station. With a high volume of focused service, specialty service shops, such as Midas Muffler, Jiffy Lube, and Aamco transmission services, could provide these specialized services at less cost than the full-service mechanic at a retail gasoline station, and therefore captured a major segment of the repair and maintenance market. The service station repair and maintenance business was eroded further by a new network of dealers and specialty repair shops that had arisen as a result of the influx of more fuel-efficient cars imported from Europe and Japan. As customers took their cars elsewhere for repair, they also realized that any gasoline would work in their cars. Brand loyalty and brand value began to decline.[102]

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[100] By 1985, 87 percent of all stations had self-service pumps, and 46 percent were exclusively self-service. Scherer, *Industry Structure, Strategy, and Public Policy*, at 136.

[101] Presentation by ExxonMobil to the Subcommittee staff, July 23, 2001.

[102] Presentation by ExxonMobil to the Subcommittee staff, July 23, 2001. According to one industry analysis, in 1986, the typical difference between the rack price of a major brand and

The loss of revenues from repair and maintenance work, combined with the more intensive competition in price, prompted many dealers and companies to look for replacement sources of revenues and attractions for customers. In the 1980s and 1990s, sometimes called "The Age of Marketing Diversity," the focus of gasoline marketing shifted from automotive needs to driver needs, from an emphasis on selling a product to providing a "retail experience" for the customer.[103] Many gasoline stations added convenience items, such as soft drinks, cigarettes, coffee, nuts, donuts, and candy to their offerings. Further, the de-emphasis on brands encouraged other types of retailers to begin selling gasoline. Existing convenience chains, such as 7-Eleven, Sheetz, and QuickTrip, enlarged their stores and formats and began selling gasoline. Independents added convenience stores to their lots as well.

Convenience stores have continued to grow in size and range of offerings. Correspondingly, the percentage of revenues obtained from gasoline sales at these outlets has decreased. One industry document notes that typical petroleum marketers depend on gasoline to provide 50 percent of total site margin, but "best of class retailers rely on gasoline margins for only 25 percent of the total site margin."[104]

Because companies are looking to increase their merchandise sales, companies are investing significant amounts of money to construct newer and bigger stores. The average

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the lowest rack price for a non-major brand (termed the brand "uplift") for unleaded gasoline was slightly over 6 cents per gallon. By the mid-1990s, that difference had declined to between 1 and 2 cents per gallon. The uplift for premium similarly declined from about 13 to 7 cents per gallon during this period. Demand for premium fuel has been steadily declining as well, further eroding a source of profits for the major brands. Documents in Subcommittee Files.

[103] Presentation by ExxonMobil to the Subcommittee staff, July 23, 2001. One study reports a decline of 25,000 service bays since 1990. Tracy Cox, *Down, But Not Out*, National Petroleum News, November 2001.

[104] Document in Subcommittee files.

investment per new convenience store is now over $1.8 million in an urban area, and nearly $1.2 million in rural areas.[105] Figure III.11 (page 90) shows the growth in the number of convenience stores and corresponding decline in the number of conventional stores since the late 1970s.

Cigarettes and tobacco generate nearly one-third of all non-gasoline sales at convenience stores, accounting for nearly $9.4 billion in sales in 2000.[106] Soft drinks were the next most popular item, accounting for about one-sixth of all sales and providing nearly $4.8 billion in sales revenues in 2000. Beer and alcohol sales were almost 9 percent of sales and accounted for $2.6 billion in revenue. Although fast food accounted for only about 10 percent of sales, it provided the most sales revenue, approximately $10.2 billion.

A variety of marketing strategies has evolved to satisfy these and other consumer preferences in purchasing gasoline and convenience items. As different consumers attach different weights to factors such as store appearance, location, price, speed, type of food offering, safety, crowdedness, the availability of a car wash, or the ability to pay by cash or credit card, either at the pump or in the store, companies have sought to carve out distinct offerings and identities. Some have focused on sales of cigarettes, tobacco, beer and alcohol in order to satisfy the "time-sensitive," "urgent wants" of young adult males. Others have focused on "smart shopping," offering freshly made food and produce, or on "safety firsters," whose "primary concern is to avoid crime while buying gas," or on "simplicity seekers," who are "overburdened by increasing complexities of day-to-day life, dislike too many choices/hassles," and are "interested in a simple, streamlined gasoline purchasing experience."[107]

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[105] National Petroleum News, *Facts, Figures, Trends*, Mid-July 2001, at 126.

[106] *Id.*, at 120.

[107] Documents in Subcommittee Files.

The hypermarket, which the EIA defines as "a supermarket, other traditional retail store, or discounter (such as Wal-Mart or Costco in the United States) with a motor gasoline outlet in the parking lot," has rapidly become an extraordinarily competitive presence in the retail gasoline marketplace. [108] Hypermarkets have captured almost half of the gasoline market in France and approximately one-quarter of the market in the United Kingdom.[109] Although hypermarkets currently account for only about 3 percent of gasoline sales in the United States and are mostly located in the Gulf Coast, Midwest, and Southeast, many of the people interviewed by the Majority Staff believe that hypermarkets will continue to increase their gasoline business at the expense of major brand retail and convenience stores across the country, just as they have done in Europe. In Texas, hypermarkets have captured just over 11 percent of the gasoline market since first entering the marketplace in 1997; over this same period the branded marketers' share dropped from 94 to 82 percent.[110] Some believe that the hypermarket will most likely become the dominant format of the future.[111]

[108] Energy Information Administration, Department of Energy, *Restructuring: The Changing Face of Motor Gasoline Marketing*, Footnote 18, http://www.eia.doe.gov/emeu/finance/sptopics/downstrm00/index.html

[109] Documents in Subcommittee files.

[110] OPIS, *Hypermarts Wrestle 11% of Market Share From Majors in Texas*, December 18, 2001.

[111] Documents in Subcommittee files.

Figure III.12 (page 91) presents a widely-quoted industry projection of the growth of hypermarket gasoline sales in the next several years.[112] Industry projections show that hypermarkets have the potential to capture over one-quarter of the gasoline market. [113]

Unlike the cost of building new convenience stores with gasoline islands, the cost of entry into the gasoline market for large retail or grocery chains can be relatively low. Many hypermarkets are simply adding gasoline islands onto their existing parking lots where there are sufficient excess parking spaces. Due to the potentially large volume of sales, these companies have been able to secure favorable long-term contracts with independent or merchant refiners seeking long term customers.

Hypermarkets are even less dependent on gasoline sales than convenience stores for their overall profit margins.[114] For many of the hypermarkets, gasoline is simply one more product in an array of offerings for the customer at a low price. The cost of operating several gasoline islands at a hypermarket is just another element in the overall overhead costs of the entire facility. Hypermarkets are thus much less dependent on gasoline margins for overall profitability than traditional gasoline stations or convenience stores. Unlike a traditional gasoline retailer, the primary goal of a hypermarket that decides to offer gasoline often is not

[112] As of the end of 2000, about 1250 hypermarkets sold in total over 4 billion gallons, which was about 3.3 percent of the U.S. retail gasoline sales. Hypermarket gas sales were predicted to reach 11 billion gallons in 2002 and 22.7 billion gallons by 2005.

[113] Documents in Subcommittee files.

[114] One industry executive interviewed by the Majority Staff stated that some hypermarkets do not make any profits from retail sales – that retail products are priced just to cover the cost of operations, without any profit margin. According to this executive, these hypermarkets make their profits solely from the fees charged to the customers who purchase shopping memberships.

necessarily to make a large margin from the sale of gasoline, but rather to increase traffic to the store by offering gasoline at a very low price.

Hypermarkets have priced themselves below much of the competition. In Houston, Texas, for example, Wal-Mart sold gasoline at an average of under 5 cents per gallon more than the rack price. By contrast, majors such as Shell, Chevron, Texaco, and Mobil were selling gasoline at 12 to 13 cents more than the rack price.[115] Another industry analysis notes that hypermarkets generally price gasoline anywhere from 5 to 15 cents below major branded competitors in their area.[116] One hypermarket told Majority Staff that its policy is to price 2 cents below the lowest nearby competitor.[117]

As a result of these lower prices, the volume of gas sold at hypermarkets can be very high. For example, the average convenience store sells between 95,000 and 100,000 gallons per month. The supermarket-hypermarkets sell between 150,000 and 300,000 gallons per month. "Super-store" hypermarkets may sell between 200,000 to 700,000 gallons per month.[118]

If the anticipated growth in hypermarkets occurs, it will result in additional significant changes in the composition of the retail marketplace. Because demand for gasoline is projected to grow at only 1-2 percent per year, a significant growth in hypermarket sales volume would have to be at the expense of a number of retailers in the market today. In fact, a number of

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[115] OPIS, *Hypermarts Wrestle 11% Of Market Share From Majors in Texas.*

[116] Document in Subcommittee files.

[117] Document in Subcommittee files.

[118] Document in Subcommittee files.

retailers already have seen significant declines in margins and volumes as a result of nearby hypermarket competition.[119]

At this point, it is unclear, however, how current market participants will respond to the new competition from hypermarkets. A number of jobbers and small independent operations may be the most seriously threatened by the hypermarkets, as they tend to own or service smaller, older stations with fewer offerings which cannot compete either on price or on convenience with the hypermarkets. Already in San Diego, just seven hypermarket gasoline sites have captured 20 percent of the market share from jobbers and independents.[120] Even the most efficient stations with a traditional format may not be able to compete with the hypermarkets, as the traditional format requires a higher margin than a hypermarket just to break even. Moreover, these smaller operations may not have the resources – which can amount to more than $1 million per new convenience store – to move to a more competitive format. The extent to which major brands will themselves invest – either through discounts to their jobbers on wholesale purchases, or through site upgrades – to enable such sites to become competitive with new hypermarkets and convenience stores remains to be seen. [121]

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[119] Documents in Subcommittee files. Several industry case studies conclude that a hypermarket that sells gasoline can take over about 20 percent of the sales volume in a market and wipe out up to 40 percent of the margin that the other retailers previously enjoyed. Keith Reid, *The Wal-Mart Approach*, National Petroleum News, May 2001.

[120] James Naughton, *Stand By Your Brand?*, National Petroleum News, August 2001.

[121] One response has been for the large fuel marketers to seek to partner with hypermarketers for joint ventures. In seeking to link with hypermarketers, some oil companies have sought commitments from existing hypermarkets that they will not build gasoline facilities within a certain number of miles of the company's existing locations. Document in Subcommittee files.

One response of independents and jobbers has been to seek legislative protection against below-cost pricing tactics allegedly used by the hypermarkets. One Wal-Mart official recently told *The Washington Post* that, with certain discount plans, Wal-Mart's retail gasoline prices are below its cost.[122]

Even prior to the entry of hypermarkets, the number of retail outlets had been steadily declining. (See Figure III.13 on page 92.) Beginning in the mid- to late-1970s, as the majors grew more cost-conscious, retail outlets began to be judged as stand-alone businesses. The majors increased franchisee rents, imposed fees for credit card services, and sometimes left entire regions of the country that no longer were considered profitable.[123] In many instances, major oil companies also began to price their own company-operated stores and jobber-supplied stations lower than their lessee dealers selling the same brand, driving many of these dealers out of business.[124]

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[122] Wal-Mart shoppers who buy a shopping card get a 3-cent discount on gasoline, and Sam's Club members get a 5-cent discount. Dina ElBoghdady, *The High Price of Cheap Gas*, Washington Post, February 1, 2002.

[123] For example, Texaco, which had previously boasted that it was the only petroleum company in all 50 states, withdrew from six Midwestern states in 1978; Exxon left Kentucky, Ohio, Vermont and parts of other northeastern states in 1982; and Chevron abandoned Arkansas and adjacent territories in Tennessee and Kentucky in 1993 and sold all of its jobber outlets in 7 other states. *Industry Structure, Strategy, and Public Policy,* at 137.

[124] "New company outlets were typically located on heavily traveled urban traffic arteries, where they could satisfy two objectives: meeting the competition of independents head-to-head, and maintaining pressure on the refining company's smaller franchised dealers, who might otherwise be inclined to set relatively high prices and sacrifice volume. . . .

"There are at least two reasons why [conflicts with jobbers] arose. For one, when the gasoline industry was subject to thoroughgoing federal controls between 1974 and 1981, the regulations probably froze jobbers' wholesale margins at levels sufficiently generous to put retailers too small to buy directly from refiners at a significant disadvantage. . . . But second, even after federal regulation ended, dealer-jobber conflicts persisted. It seems probable that the refiners recognized the superior market retention potential of low-price jobber-owned stations. Therefore, they did little to discourage their jobbers from maintaining rack-to-tank wagon price

In the midst of this turmoil in the retail market, Congress enacted the Petroleum Marketing Practices Act in 1978, which specified the conditions under which a refiner could unilaterally terminate a lessee dealer and provided the dealer with the right of first refusal for a franchise the refiner intended to sell. A number of states, including Maryland and Connecticut, outlawed company-owned gasoline stations, and some, including New Jersey and Oregon, have prohibited self-service.

As Figure III.13 (page 92) indicates, the total number of retail outlets in the United States continues to decline. At the same time, as Figure III.14 (page 93) indicates, the volume per retail outlet continues to increase. If the past and current trends are a reasonably accurate guide to the future – and there is nothing apparent to suggest the contrary – the number of stations will continue to decline as the economies of scale of the convenience stores and hypermarkets continue to put pressure on the traditional formats remaining.

While convenience stores and hypermarkets are major competitive forces in the gasoline retail market, it is unclear what their impact will be in the long run if their growing presence drives out a significant number of smaller independents or smaller jobbers.

E. Impact of Environmental Requirements on Motor Gasoline

In addition to the three familiar grades of gasoline available at most gasoline pumps – regular, mid-grade, and premium – there are a number of federal, state and local specifications for gasoline, which has resulted in a variety of what are termed "boutique fuels."[125] This variety

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spreads that squeezed small franchised outlets – perhaps into oblivion." *Industry Structure, Strategy, and Public Policy,* at 138.

[125] There is some confusion about the definition of the term boutique fuels. President Bush's Energy Report of 2001 used the term to describe only the state and local fuel control programs. In the press, the term boutique fuels has been used more broadly, to mean any state or

of fuel specifications has arisen from federal, state and local efforts to improve air quality and public health in areas with air quality problems. The Environmental Protection Agency (EPA) lists 15 different fuel types in use today.[126]

In the Clean Air Act Amendments of 1990, Congress established a clean fuel program to reduce harmful emissions from motor vehicles. The reformulated gasoline (RFG) program was designed to primarily reduce ozone pollution, and the oxygenated gas program was intended to addresses carbon monoxide pollution. According to the EPA, "seventy five million Americans breathe cleaner air today due to this program.[127]

1. RFG Program

Under the Clean Air Act, the EPA is responsible for establishing minimum national standards for air quality. According to the 1990 Amendments, "severe" or "extreme" non-attainment areas – i.e. areas that did not meet EPA's national ambient air quality standards for ozone, carbon monoxide, particulate matter, sulfur dioxide, nitrogen dioxide and lead – were

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federal fuel program. Environmental Protection Agency, Staff White Paper, *Study of Unique Gasoline Fuel Blends ("Boutique Fuels"), Effects on Fuel Supply and Distribution and Potential Improvements*, October 2001, at 9. In this report, the term "boutique fuels" will be used in the same manner as in the EPA Staff White Paper, which includes any fuel that is developed pursuant to a state, local, or federal fuel program. See Figure III.15 (page 94) for a map of boutique fuels in the U.S.

[126] *Study of Unique Gasoline Fuel Blends ("Boutique Fuels"), Effects on Fuel Supply and Distribution and Potential Improvements*, Appendix D, at 100. Some estimates include different grades of these fuel types as a distinct type of gasoline, and thus conclude there are more than 40 different types of gasoline. See, e.g., Association of Oil Pipe Lines, *Answers to Common Questions*, http://www.aopl.org/about/questions.html.

[127] *Study of Unique Gasoline Fuel Blends ("Boutique Fuels"), Effects on Fuel Supply and Distribution and Potential Improvements*, at 1.

required to use RFG as of January 1, 1995.[128] Areas with less severe pollution were given the option of using RFG.[129]

Today, RFG is used in portions of 17 states and in the District of Columbia. It accounts for nearly 30 percent of the gasoline sold in the United States. The EPA estimates that since the RFG program began, it has resulted in annual reductions of smog-forming pollutants of at least 105,000 tons, and toxic air pollutants by at least 24,000 tons. EPA also estimates that compared to conventional gasoline, Phase II RFG, which has been in use since 2000, has cut air toxics by 22 percent and smog precursors by 27 percent, the latter of which is equivalent to taking 16 million vehicles off the road.[130]

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[128] RFG is gasoline that is blended in a manner such that, on average, it significantly reduces Volatile Organic Compounds (VOC) and air toxic emissions relative to conventional gasolines. Apart from the oxygenate requirement in the 1990 Amendments, RFG differs from conventional gasoline in that it has lower levels of certain compounds, such as benzene, sulfur, and aromatics, and will not evaporate as easily as conventional gasoline (lower Reid Vapor Pressure), particularly in the summer. RFG provides the same vehicle performance characteristics as conventional gasoline. EPA, Reformulated Gasoline and Vehicle Performance, at http://www.epa.gov/otaq/rfgvehpf. EPA estimates that it costs 4 to 8 cents per gallon more to produce RFG than conventional gas. EPA Briefing to Subcommittee Staff, September 2001.

[129] The areas where RFG is required are: Los Angeles, San Diego, and Sacramento in California; Milwaukee, Wisconsin, Hartford, Connecticut, New York City (including portions in the states of New York, New Jersey, and Connecticut), Greater Philadelphia (including portions in the states of Pennsylvania, New Jersey, Delaware, and Maryland), Chicago (including portions in the states of Illinois, Wisconsin, and Indiana), Baltimore, Maryland, and Houston, Texas.

The opt-in areas are: Connecticut, Delaware, Massachusetts, Rhode Island, New Jersey, District of Columbia, the Kentucky portion of the Cincinnati metro area, Louisville, Kentucky, portions of Maryland near the District of Columbia, the New Hampshire portion of Greater Boston, St. Louis, Missouri, New York counties near New York city, Dallas-Fort Worth, Texas, and portions of Virginia (DC suburbs, Richmond, Norfolk-Virginia Beach-Newport News). EPA Briefing to Subcommittee Staff, September 2001

[130] EPA Briefing to Subcommittee Staff, September 2001.

The 1990 Amendments require that RFG contain at least 2 percent oxygen by weight, but neither the Amendments nor the EPA requires the use of any specific oxygenate in RFG.[131] It is within the discretion of the refiner as to how the 2 percent requirement is met. The 2 percent requirement can be met by adding a number of ethers or alcohols to gasoline, any of which contains oxygen and other elements. The most common additives to RFG are ethanol and methyl tertiary butyl ether (MTBE). Presently, about 87 percent of the RFG contains MTBE as an oxygenate. In Chicago and Milwaukee, which are close to major ethanol production centers, ethanol is used in 100 percent of the RFG.[132] It takes approximately 6 percent of the nation's corn crop to produce the amount of ethanol currently used in gasoline.[133]

The use of MTBE has become controversial. Low levels of MTBE have been detected in numerous ground and surface waters, and these sites of contamination have been linked to MTBE's use as a fuel.[134] In July 1999, a Blue Ribbon Panel appointed by EPA Administrator Carol Browner to study the use of oxygenates in gasoline released its findings and recommendations regarding the use of MTBE, including the following findings:

- RFG provides considerable air quality improvements and benefits for millions of US citizens.

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[131] Office of Transportation and Air Quality, U.S. Environmental Protection Agency, *Study of Boutique Fuels and Issues Relating to Transition from Winter to Summer Gasoline,* October 24, 2001.

[132] Office of Transportation and Air Quality, U.S. Environmental Protection Agency, *Study of Boutique Fuels and Issues Relating to Transition from Winter to Summer Gasoline,* October 24, 2001.

[133] Congressional Research Service, James E. McCarthy, March 7, 2002, *Clean Air Act Issues in the 107th Congress.*

[134] Statement of Linda Fisher, Deputy Administrator, U.S. EPA, Before the Senate Committee on Energy and Natural Resources, June 21, 2001.

- . . . MTBE, due to its persistence and mobility in water, is more likely to contaminate ground and surface water than the other components of gasoline.
- MTBE has been found in a number of water supplies nationwide, primarily causing consumer odor and taste concerns that have led water suppliers to reduce use of those supplies. Incidents of MTBE in drinking water supplies at levels well above EPA and state guidelines and standards have occurred, but are rare. The Panel believes that the occurrence of MTBE in drinking water supplies can and should be substantially reduced.
- MTBE is currently an integral part of the U.S. gasoline supply both in terms of volume and octane. As such, changes in its use, with the attendant capital construction and infrastructure modifications, must be implemented with sufficient time, flexibility, certainty, and flexibility to maintain the stability of both the complex U.S. fuel supply system and gasoline prices.

The Panel recommended that the use of MTBE should be reduced substantially, Congress should remove the current 2 percent oxygen requirement "to ensure that adequate fuel supplies can be blended in a cost-effective manner while quickly reducing usage of MTBE," and EPA should take actions "to ensure that there is no loss of current air quality benefits."

In 2000 the EPA announced that it would begin to phase out MTBE under Section 6 of the Toxic Substances Control Act, a process that will take several years. However, it is unclear whether or not EPA has the authority to take steps to ban MTBE use in the absence of specific Congressional authorization.[135] Thirteen states have passed legislation to limit or phase out MTBE, the largest among these being California.[136]

There are a number of issues regarding the availability of ethanol in the event that large quantities are needed as a gasoline additive as a result of the elimination of MTBE. If MTBE

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[135] Congressional Research Service, James E. McCarthy and Mary Tiemann, *MTBE in Gasoline: Clean Air and Drinking Water Issues*, Update February 7, 2002.

[136] These states are: Arizona, California, Colorado, Connecticut, Illinois, Iowa, Kansas, Michigan, Minnesota, Nebraska, New York, South Dakota, and Washington. Congressional Research Service, James E. McCarthy, March 7, 2002, *Clean Air Act Issues in the 107th Congress.*

use is reduced or phased out, but the 2 percent oxygenate requirement remains in effect for RFG, the demand for ethanol would soar.[137] Ethanol is more difficult to distribute than MTBE; it absorbs water and would separate from gasoline if transported long distances by pipeline, so it must be mixed with non-oxygenated gasoline blendstock close to the market in which it is to be sold.[138] At present, the infrastructure to transport and store significantly more quantities of ethanol for blending into gasoline has not yet been developed. In the short term, ethanol is unlikely to be available in sufficient quantity at a reasonable cost to replace MTBE nationwide.[139] In addition, replacing MTBE with ethanol as an oxygenate would result in a decline in the volume of gasoline produced by at least 5 percent.[140]

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[137] Current ethanol production is approximately 1.7 billion gallons per year. Nominal production capacity is projected to be approximately 2.7 billion gallons per year. Renewable Fuels Association, Ethanol Industry Outlook 2002. Approximately 2.7 billion gallons of gasoline or approximately 4.1 billion gallons of ethanol per year would be required to replace the consumption of approximately 3.3 billion gallons of MTBE per year. Congressional Research Service, Brent Yacobucci, *Energy Content of Ethanol vs. MTBE*, April 1, 2002.

[138] Because ethanol increases the evaporation rate of RFG, refiners must produce a unique blendstock with a very low evaporation rate (RVP) to which the ethanol will be added. This blendstock is slightly more expensive to produce and must be segregated from other RFG blends. At the same time, ethanol reduces tailpipe emissions of carbon monoxide and dilutes the more toxic components in gasoline. EPA Briefing to Subcommittee Staff, September 2001.

[139] Congressional Research Service, James E. McCarthy and Mary Tiemann, *MTBE in Gasoline: Clean Air and Drinking Water Issues*, Updated February 7, 2002.

[140] This is because in a given gallon of RFG, to meet the 2 percent (by weight) oxygen requirement for RFG, 11 percent MTBE must be used by volume. To meet the same requirement, only 5.7 percent (by volume) ethanol must be used, because of its higher oxygen content. Therefore, to replace MTBE with ethanol for purposes of meeting the oxygen requirement, another 5.3 percent volume must also be replaced. This could come in the form of additional ethanol, gasoline, or other additives. Memo to the Permanent Subcommittee on Investigations, *Energy Content of Ethanol vs. MTBE*, Brent Yacobucci, Congressional Research Service, April 1, 2002.

The American Petroleum Institute, the Renewable Fuels Association, the National Farmers Union, the National Corn Growers Association, and the American Farm Bureau Federation, support the provision in the energy bill currently before the Senate that provides for a nation-wide phase-out of MTBE over 4 years, the elimination of the 2 percent oxygenate requirement, and a "renewable fuels standard" (RFS), in which part of the nation's fuel supply, growing to 5 billion gallons by 2012, would be provided by renewable domestic fuels, such as ethanol.[141]

California Governor Gray Davis recently issued a state executive order providing an additional 12 months for California refiners to transition from MTBE to ethanol. Initially, under California law, MTBE was to be phased out by December 31, 2002. The California Energy Commission estimates that because the EPA has denied California's application for a waiver from the 2 percent oxygenate requirement, California will need to import between 750 and 900 million gallons of ethanol each year once the MTBE ban becomes effective.[142] A study sponsored by the California Energy Commission concluded that the MTBE phase-out could lead to a 5 to 10 percent reduction in gasoline supplies, which could result in a doubling of gasoline prices in California – meaning consumers would be paying up to $3 per gallon of gasoline.[143]

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[141] S. 517, Introduced in the 107th Congress.

[142] Statement of Governor Gray Davis, *Governor Davis Allows More Time for Ethanol Solution*, May 15, 2002.

[143] Consultant Report, California Energy Commission, *MTBE Phase-Out in California*, March 2002, at 1-2.

2. Oxygenated Gasoline Program

During the winter months, increased carbon monoxide emissions from cold vehicles have elevated carbon monoxide levels in a number of urban areas.[144] These carbon monoxide concentrations can be reduced by adding oxygen to gasoline.[145] The oxygenated gasoline program requires that gasoline in certain non-attainment areas of the country that have a large amount of carbon monoxide contain at least 2.7 percent oxygen by weight during the winter months.[146] The EPA originally designated 39 areas of the country as having levels of carbon monoxide that were too high.[147] Today 16 areas of the country are using oxygenated fuel.[148] The oxygenated gasoline program is administered and enforced by the individual states (in contrast to the RFG program, which is administered by the EPA).[149]

3. State Fuel Programs

States with areas that are in "non-attainment" of the standards of the Clean Air Act must submit plans to EPA – referred to as State Implementation Plans (SIP) – that outline the state's

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[144] Tancred Lidderdale, U. S. Department of Energy, *Areas Participating in the Oxygenated Gasoline Program*, at http://www.eia.doe.gov/emeu/steo/pub/special/oxy2.html.

[145] While serving different purposes, the same additives (i.e. ethanol, MTBE) can be used in both the RFG program and the oxygenated program.

[146] The RFG program is year-round.

[147] Energy Information Administration, *Demand, Supply, and Price Outlook for Oxygenated Gasoline, Winter 1992-1993,* Monthly Energy Review, August 1992, by Tancred Lidderdale.

[148] Thirteen of these areas are in non-attainment, and three are using the oxygenated gas program pursuant to a State Implementation Program. Oral Interview of Brent Yacobucci, Congressional Research Service Analyst, March 26, 2002.

[149] Tancred Lidderdale, U.S. Department of Energy, *Areas Participating in the Oxygenated Gasoline Program*, at http://www.eia.doe.gov/emeu/steo/pub/special/oxy2.html.

strategy for attaining and/or maintaining air quality standards in those areas. The EPA is authorized to approve a state fuel control program in a SIP if the EPA finds the state fuel control is necessary to achieve the air quality standards which the SIP implements.[150]

Generally, state fuel controls have not been as stringent as the federal RFG standards but have imposed lower volatility requirements, caps on sulfur content, limits on the use of MTBE, or requirements for minimum oxygen or ethanol content. The most notable exception is California, which requires a unique clean-burning gasoline ("CARB") across the entire state, and requires RFG that is cleaner than federal RFG in ozone non-attainment areas. There are also SIP fuel requirements for parts of Alabama, Arizona, Florida, Georgia, Illinois, Kansas, Louisiana, Maine, Minnesota, Missouri, Nevada, North Carolina, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Utah, and Virginia.[151] The SIP fuel controls usually apply only in the more urban parts of the state, which tend to be the most polluted areas.

The EPA has identified a variety of reasons why states and localities have either adopted a fuel controls program in a SIP or opted into the RFG program. First, noted the EPA, fuel controls "can provide significant, cost effective emission reduction of VOCs and NOx."[152] Another reason, according to the EPA, some refiners have sought to encourage states to develop

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[150] Generally, the Clean Air Act preempts states from regulating motor vehicle fuels for emission control purposes if the EPA already has established controls for those fuels. In addition to the exception for EPA-approved SIPs, California is statutorily exempted from this preemption.

[151] Information provided by Congressional Research Service.

[152] *Study of Unique Gasoline Fuel Blends ("Boutique Fuels"), Effects on Fuel Supply and Distribution and Potential Improvements*, at 14.

unique fuel requirements in order to create distinct fuel markets with limited competition while simultaneously telling federal officials to reduce the number of fuels:[153]

> Discussions with refiners and marketers suggested that another possible reason refiners promoted state fuel programs over RFG related to the effect on competition. A state-specific program generally leads to the secondary effect of limiting competition for the gasoline supplied to the affected market since the market for a state fuel is often small compared to the market for federal RFG. As a result, the number of refiners likely to devote production to this small state fuel market is often limited. This has been perceived as a benefit to the refiners that produce the gasoline for a state fuel market.[154]

4. Impacts of Boutique Fuels on Fuel Supply

The variety of fuels in use today in different areas of the country is often cited, particularly by gasoline marketers and refiners, as one of the prime causes of the recent price volatility. The mix of state and federal standards in effect today has resulted in a situation where adjacent areas may be using gasoline with significantly different properties.[155] In the event of a supply disruption or shortage, it may be more difficult to bring in additional supply to an area that requires a boutique fuel rather than a conventional fuel, because fewer refiners may be readily capable of producing the required gasoline.[156]

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[153] Document in Subcommittee files.

[154] *Study of Unique Gasoline Fuel Blends ("Boutique Fuels"), Effects on Fuel Supply and Distribution and Potential Improvements*, at 14.

[155] The petroleum industry, however, opposes providing states with authority to require RFG in areas that are not currently non-attainment areas, which could help reduce such geographic disparities. See, e.g., *American Petroleum Institute v. EPA*, F.2d (D.C. Cir. 2000).

[156] EPA emergency provisions provide for a refiner to apply to EPA for a waiver of the RFG requirement until alternative RFG supplies can be obtained. U.S. Department of Energy, Tancred Lidderdale and Aileen Bohn, *Demand and Price Outlook for Phase 2 Reformulated Gasoline, 2000*, at http://www.eia.doe.gov/emeu/steo/pub/special/rfg4.html.

The EPA has found that the current gasoline production and distribution system is able to provide adequate quantities of boutique fuels, as long as there are no supply disruptions. If there is a disruption, however, the EPA determined that it becomes more difficult to provide gasoline supplies to affected areas because of boutique fuel requirements.[157] One common proposal to improve fuel availability is to reduce the number of boutique fuels in use. Proponents of fewer fuels contend it would be easier to mitigate price spikes and easier and more economical for foreign refiners to ship gasoline to the United States if there were not so many micro-markets within the United States.[158]

In developing its Staff White Paper on boutique fuels, the EPA considered a variety of comments from persons interested in this issue. The EPA reported that a majority of the stakeholders it consulted "although not all in agreement on the magnitude of the problems caused by boutique fuels today or the need to make significant changes, saw merit in having fewer fuel specifications across the country as long as it did not negatively impact supply, air quality benefits, or cost, and as long as sufficient time was provided to allow for an orderly transition." According to the EPA, refiners were concerned about a continued proliferation of state-mandated boutique fuel. "[The refiners] wanted a strong federal program that would not cause states to adopt their own fuel programs but not so strong as to significantly impact refinery operations and cost of production." The states "argued for a strong national program," one that

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[157] EPA, *Study of Boutique Fuels and Issues Relating to Transition from Winter to Summer Gasoline,* October 24, 2001.

[158] Brent Yacobucci, Congressional Research Service, *Harmonization of Gasoline Standards.*

would minimize the need for state programs, yet still provide the flexibility for states to set their own unique fuel specifications to address their concerns, such as the use of MTBE.[159]

The EPA paper proposed for consideration four basic fuel program options: a three-fuel option, a two fuel option, a 49-state Federal fuel, and California fuel available nationwide. The EPA is currently seeking public comments on the extent to which these options improve the fungibility and movement of gasoline across the country, maintain or improve air quality, maintain or improve production capacity, and minimize cost.[160]

Although fewer fuels fosters fungibility, a reduction in the number of fuels required would not necessarily lead to greater availability of gasoline. Since each refinery has been configured to meet the specific standards and requirements of the current marketplace, changing these standards could substantially affect refinery economics.[161] These economic effects would not necessarily be equitably distributed across the refining industry. Accordingly, there is no consensus within the industry on many boutique fuels issues. An official at one company has noted that the company had made a considerable investment in its refineries to be able to provide boutique fuels in certain markets and would object to any reduction to less than four gasoline types because "it could lead to reduced supplies and higher prices with no corresponding benefits to the environment." [162] Another company document states, "a national or even regional

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[159] *Study of Unique Gasoline Fuel Blends (Boutique Fuels), Effects on Fuel Supply and Distribution and Potential Improvements*, at 16.

[160] *Id.* at 16 ff.

[161] See, e.g., Brent Yacobucci, Congressional Research Service, *Harmonization of Gasoline Standards.*

[162] Document in Subcommittee files.

gasoline plan would mean huge investments in refineries...while stranding much of the industry's current investment in small refineries, pipeline tankage and terminals...it is not coincidental that the parties currently tending to support this approach have very deep pockets with little current investment in product infrastructure, and have or are in the process of shedding any 'small' refineries."[163]

If the past is any guide, new fuel standards that impose additional capital requirements on the refining industry will likely result in the loss of some marginal refining capacity. The extent to which the benefits of such standards in terms of air quality, fuel flexibility, cost, and fungibility outweigh the costs and the decrease in refining capacity must be carefully considered.

Last summer the Department of Energy testified to Congress about boutique fuels:

> [It] is important to understand that the current situation of using different fuels to meet the differing air quality needs of various urban areas has economic benefits, at least at this time. Under this approach, areas that do not need the more expensive clean fuel do not have to bear the cost of that fuel. Problems arise with this localized fuel approach when there is an upset in the supply system and fuel supplies need to be brought in from alternative sources that may not normally store or make the particular fuel needed. In the past, such as last summer in St. Louis, EPA and the Department have dealt with these supply disruption situations by considering fuel supplier or state government requests to allow the sale of non conforming gasoline on an as needed basis. This system has worked well and continuing it is certainly one option...some have suggested a move to a federal reformulated gasoline, or regional fuels instead of the current mix of clean and conventional gas. While this might help make for a simpler distribution system, it would reduce the total volume of gasoline that today's refineries could produce and place significant additional investment requirements on refineries. If a sufficient number of states were to restrict use of MTBE, refiners and distributors might choose to remove MTBE from all gasoline to protect the fungibility of the gasoline distribution system and avoid even more boutique fuels. MTBE's contribution to gasoline suppliers nationally is equivalent to about 400,00

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[163] Document in Subcommittee files.

barrels a day of gasoline production capacity or the gasoline output or the gasoline output of four to five large refineries.[164]

5. Seasonal Transition Issues Involving RFG

Because summer-grade gasoline must have lower evaporation rates than winter-grade gasoline, each spring winter-grade gasoline in storage tanks must be completely drained to make room for the summer-grade gasoline.[165] This can lead to supply disruptions since the changeover occurs at the same time as gasoline demand is approaching its yearly peak.[166] In both 2000 and 2001, gasoline prices rose sharply during the transition period, particularly in the Midwest.[167] Many fuel marketers have stated they need greater flexibility in the transition from winter to summer grade RFG so that sufficient inventories are available during this period.

The EPA has described the effects of low spring inventories on price:

> Although gasoline prices generally rise around Memorial Day, the start of the summer driving season, for the past two years spikes have occurred in various parts of the United States. These price spikes occur when gasoline inventories have become unusually low. Low gasoline inventories have occurred for a

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[164] Statement of Robert Card, Under Secretary of Energy before the Senate Committee on Energy and Natural Resources, June 21, 2001.

[165] EPA regulations require that gasoline retailers must be selling summer-grade conventional gasoline and RFG by June 1 of each year. To ensure that sufficient retail supplies are available by this date, EPA also requires that by May 1 terminals and all other facilities upstream from the retailer must have only summer-grade gasoline. Typically, refiners will begin producing summer-grade gasoline in March or April in order for terminals to meet the May 1 deadline. *Study of Boutique Fuels and Issues Relating to Transition From Winter to Summer Gasoline*, at 3.

[166] Gasoline production typically peaks in May and June in order to meet peak demand in July and August. EIA, *Petroleum Supply Monthly*, March 2002.

[167] For a more detailed discussion of Midwest gas prices, see Section IV.

variety of reasons, including a recent trend in the petroleum industry towards reducing inventories to near the minimum operating levels. This has been particularly the case recently during the winter to summer transition. Additionally, because it costs refiners more to make summer grade fuel than winter grade fuel, competitive economic pressures lead refiners to delay this expense as long as possible.

Following the two recent spring price spikes and the concerns refiners have raised regarding the winter-to-summer transition, EPA has taken the following actions to provide refiners and marketers with more flexibility during this transition: [168]

- Eliminated the existing blend stock accounting;[169]
- Allowed gasoline terminal operators a broader testing tolerance than currently permitted for the initial tank turnover from winter to summer fuel; and [170]
- Adjustment of VOC standard for Chicago and Milwaukee RFG. [171]

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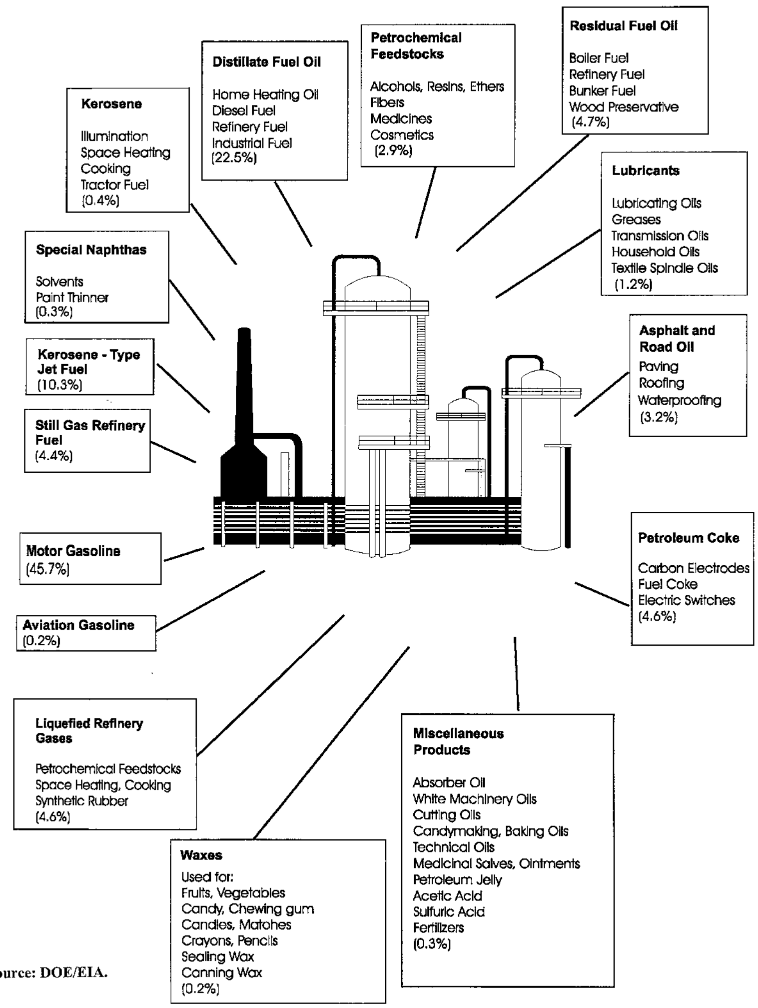
[168] *Study of Boutique Fuels and Issues Relating to Transition From Winter to Summer Gasoline.*

[169] *Regulation of Fuel and Fuel Additives RFG-Transition,* 67 C.F.R., 8729, February 26, 2001.

[170] This guidance outlined the EPA's policy on allowing a 2 percent testing tolerance for the volatile organic compound (VOC) standard. The 2 percent enforcement tolerance will apply at terminal locations at the time the terminal first classifies the tank as complying with summer standards for federal RFG. This means that the EPA is removing the so called "no tolerance for the first turn" condition from use of the 2 percent VOC tolerance at terminals. *Reformulated Gasoline Transition Fact Sheet.*

[171] *Adjustment to RFG VOC Standard*, 66 C.F.R. 37156, July 17, 2001.

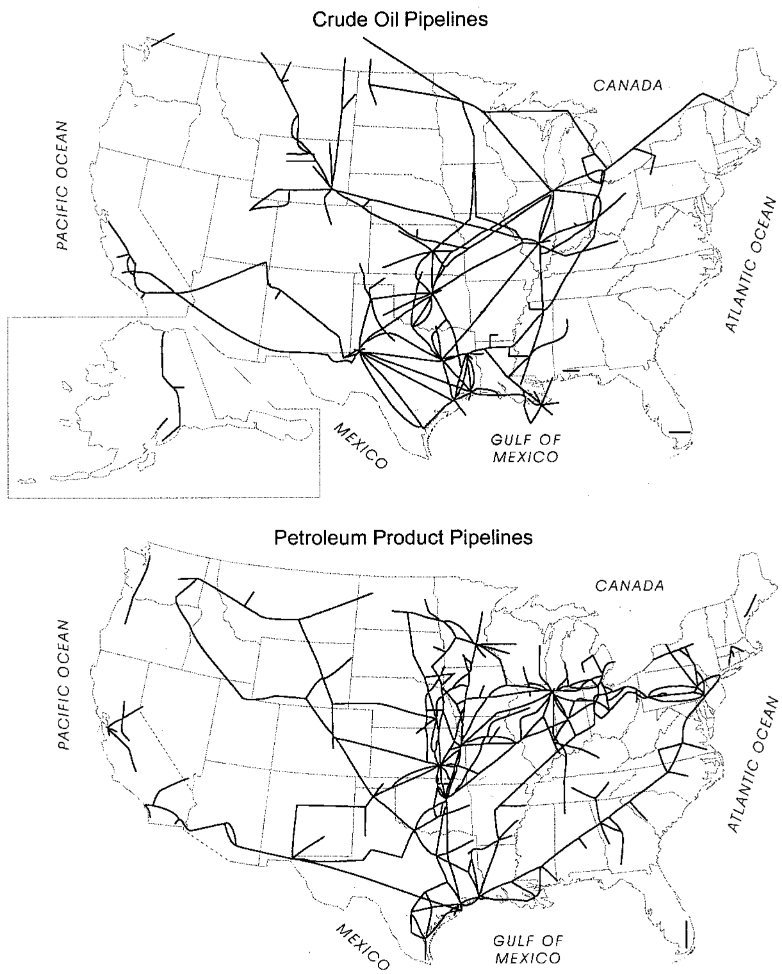
Figure III.1: Petroleum Products and Uses (1997 Percent Refinery Yield)



Source: DOE/EIA.

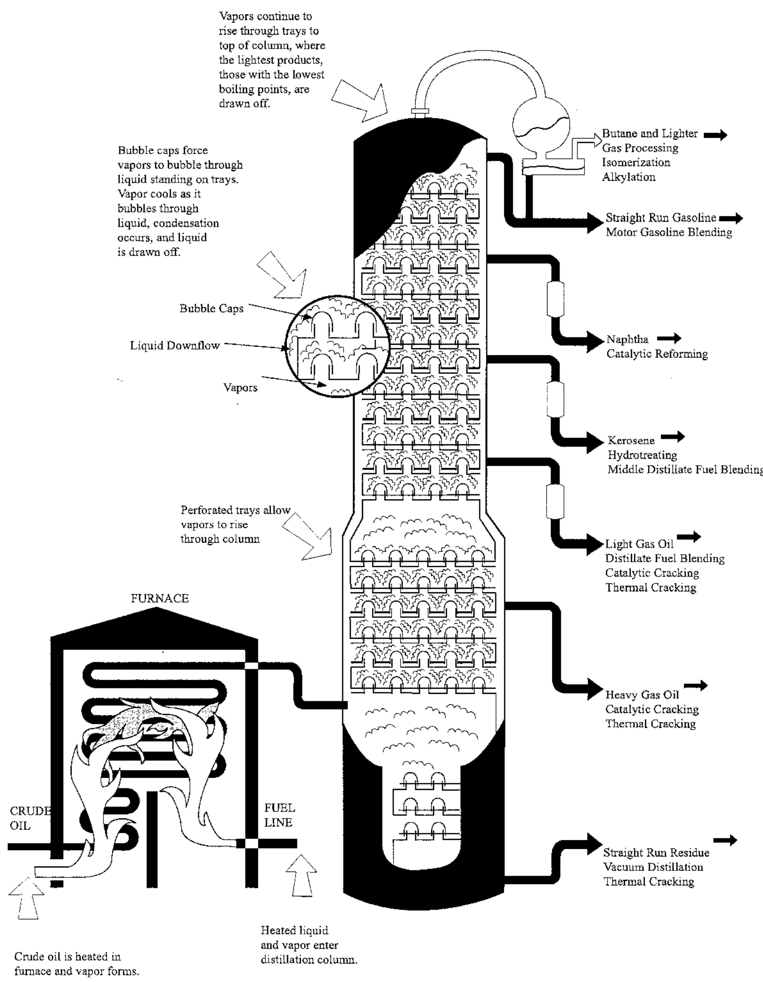
Note: Refinery yield represents the percent of finished product produced at U.S. refineries from input of crude oil and net input of unfinished oils. Components do not add to 100 percent because of processing gain (an increase in volume that occurs during refining).

Figure III.2: Petroleum Pipelines in the United States as of December 31, 1997



Source: DOE/EIA.

Figure III.3: Crude Oil Distillation



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

Figure III.4 Marketing Structure for Gasoline

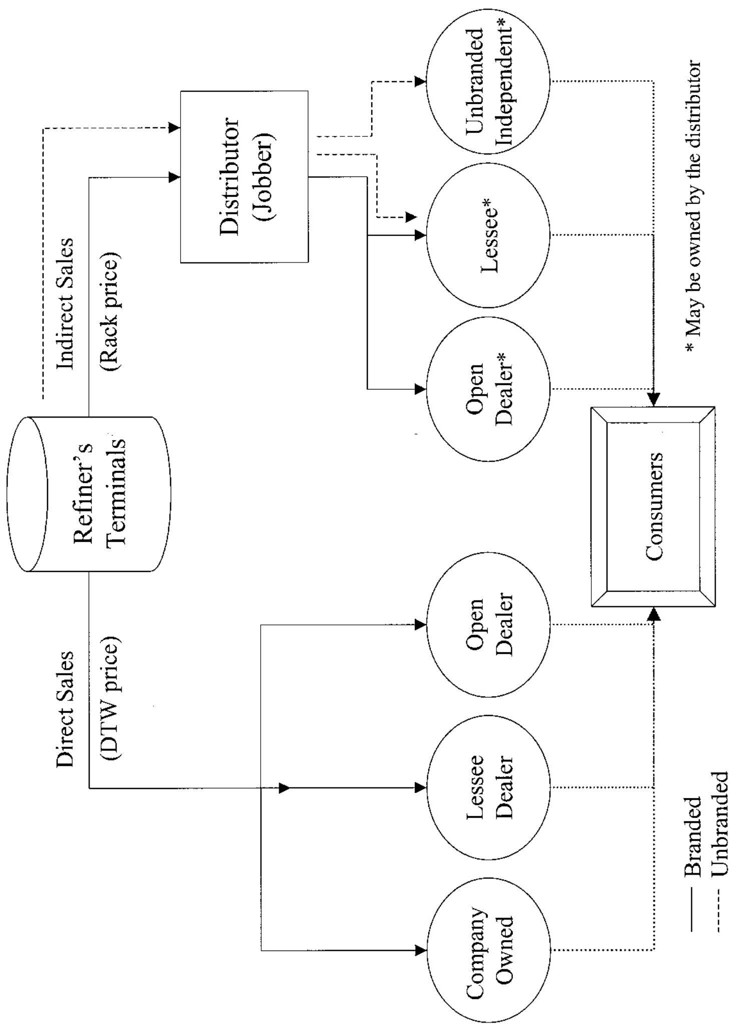
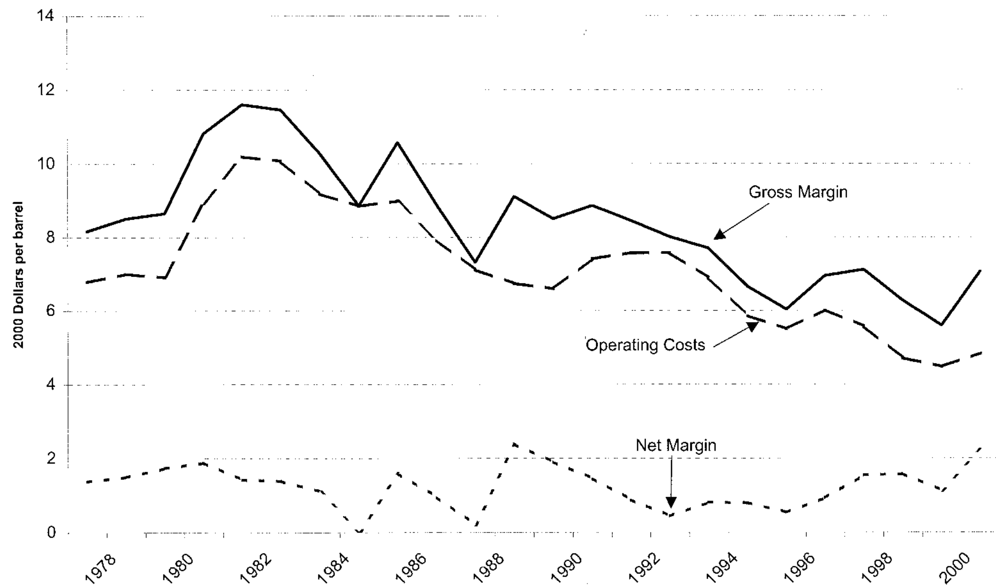
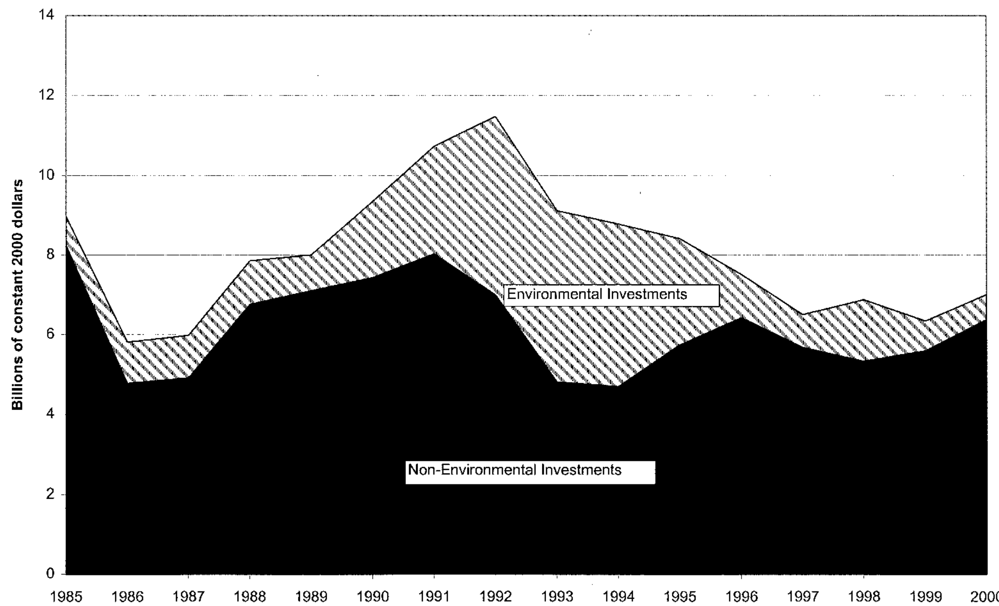


Figure III.5: U.S. Refined Product Margins and Costs per Barrel of Petroleum Product Sold by Major U.S. Energy-Producing Companies, 1977-2000 (In constant 2000 dollars)



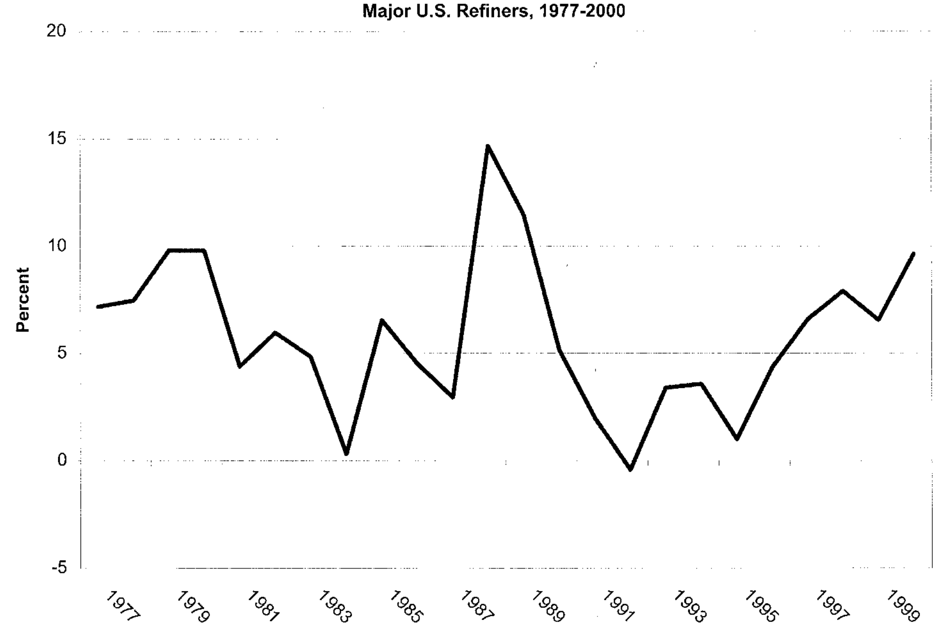
Source: DOE/EIA.

Figure III.6: United States Refining and Marketing Capital Investments, 1985-2000
(In constant 2000 dollars)



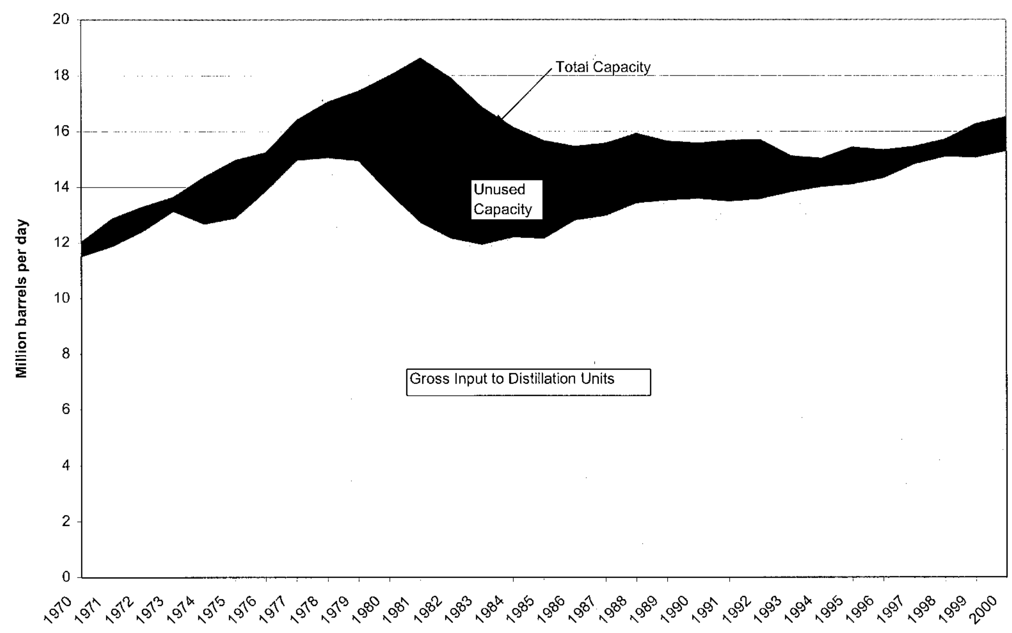
Source: Cambridge Energy Research Associates.

Figure III.7: Return on Investment in Refining/Marketing for Major U.S. Refiners, 1977-2000



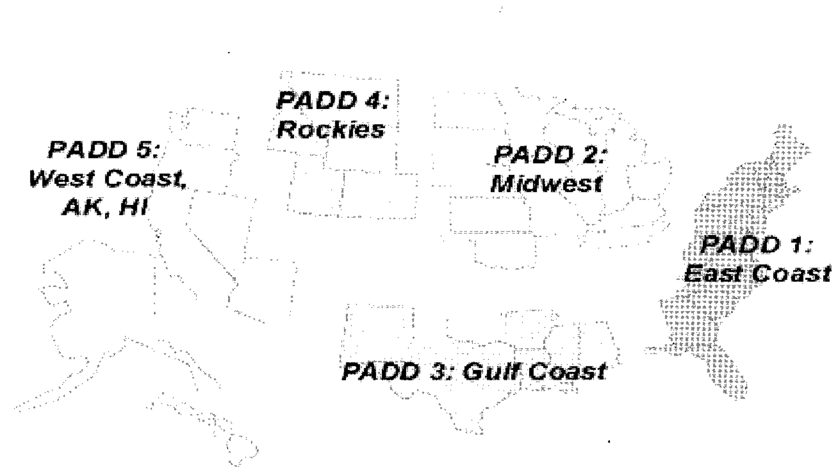
Source: DOE/EIA.

Figure III.8: United States Refinery Capacity and Utilization, 1970-2000



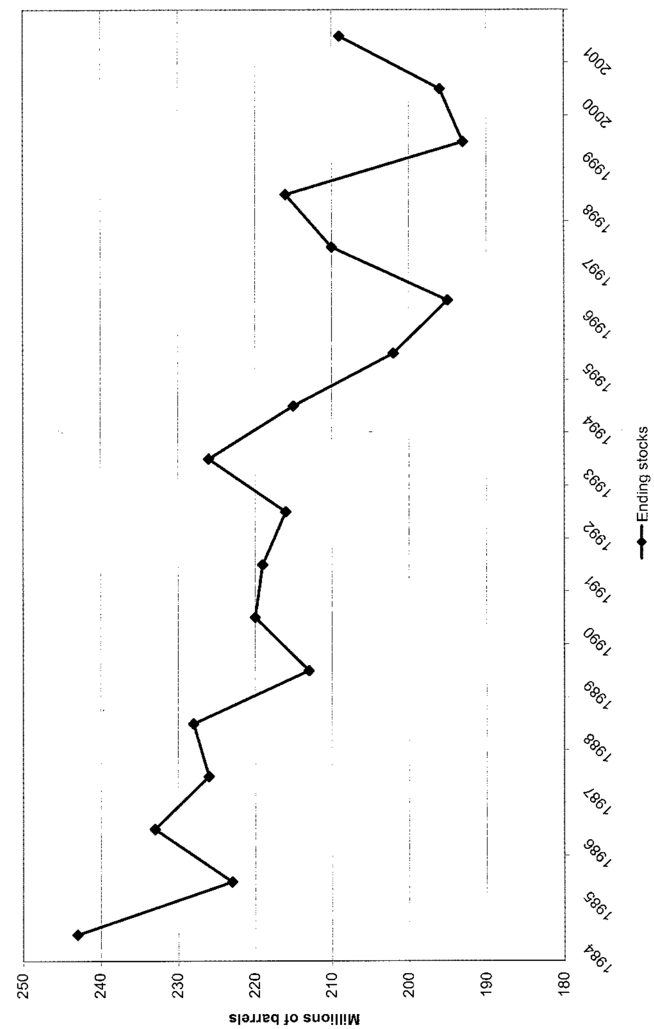
Source: DOE/EIA.

Figure III.9: Petroleum Administration for Defense Districts (PADD)



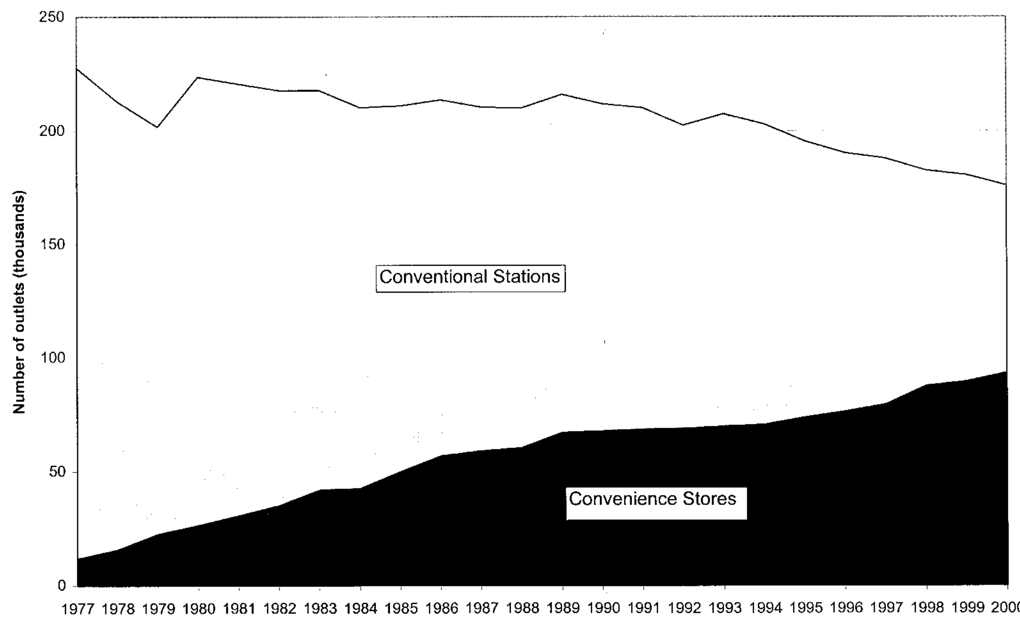
Source: DOE/EIA.

Figure III.10 Total Motor Gasoline Ending Stocks, 1984 - 2001



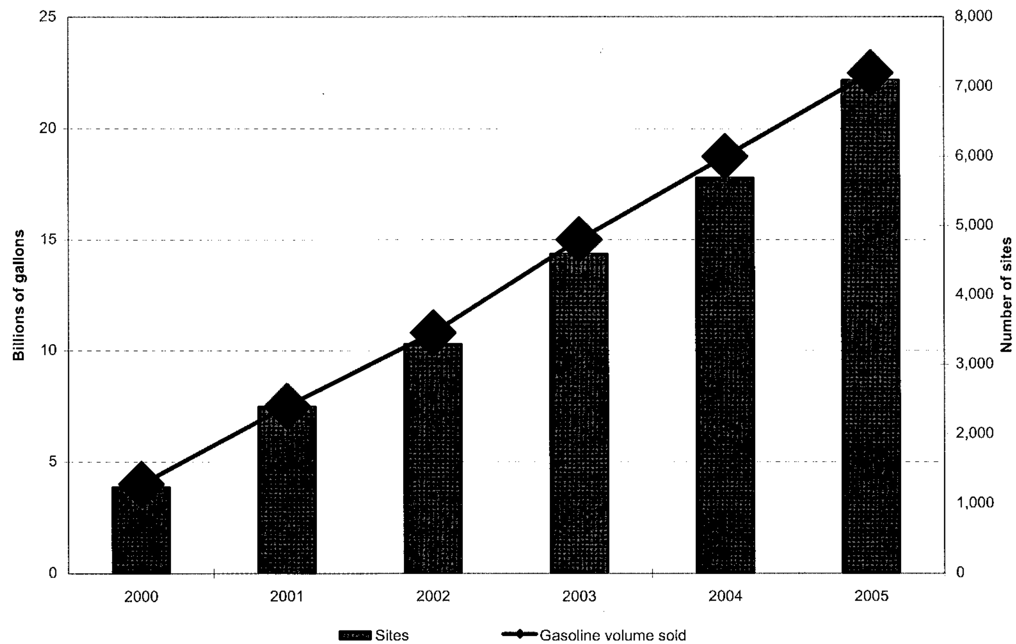
Source: DOE/EIA.

Figure III.11: Retail Gasoline Stations in the United States by Type, 1977-2000



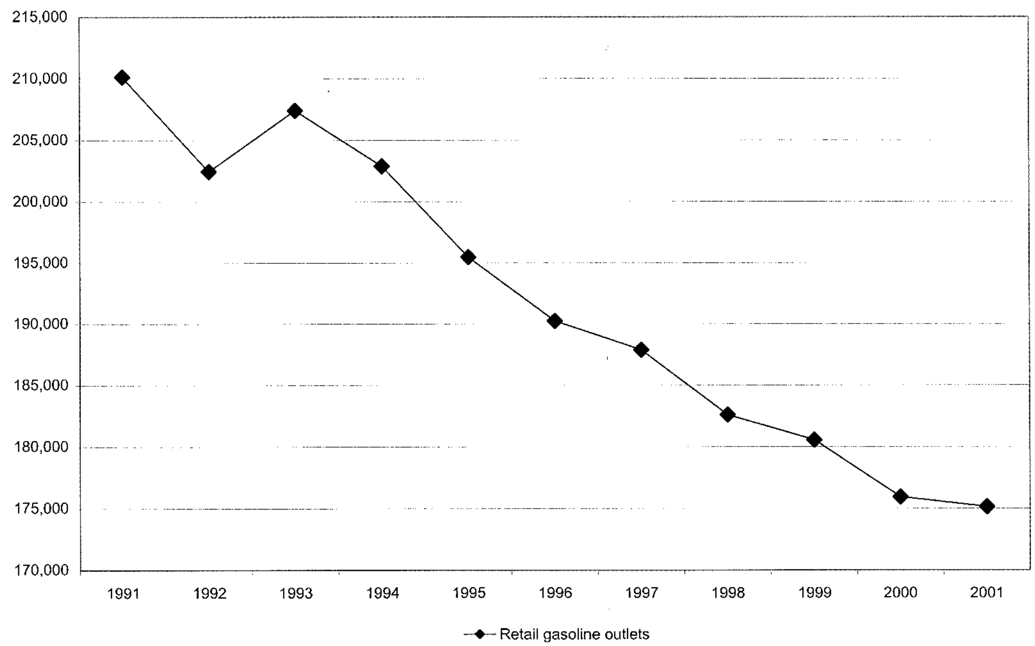
Source: Cambridge Energy Research Associates.

Figure III.12: United States Hypermarket Growth Projections, 2000-2005



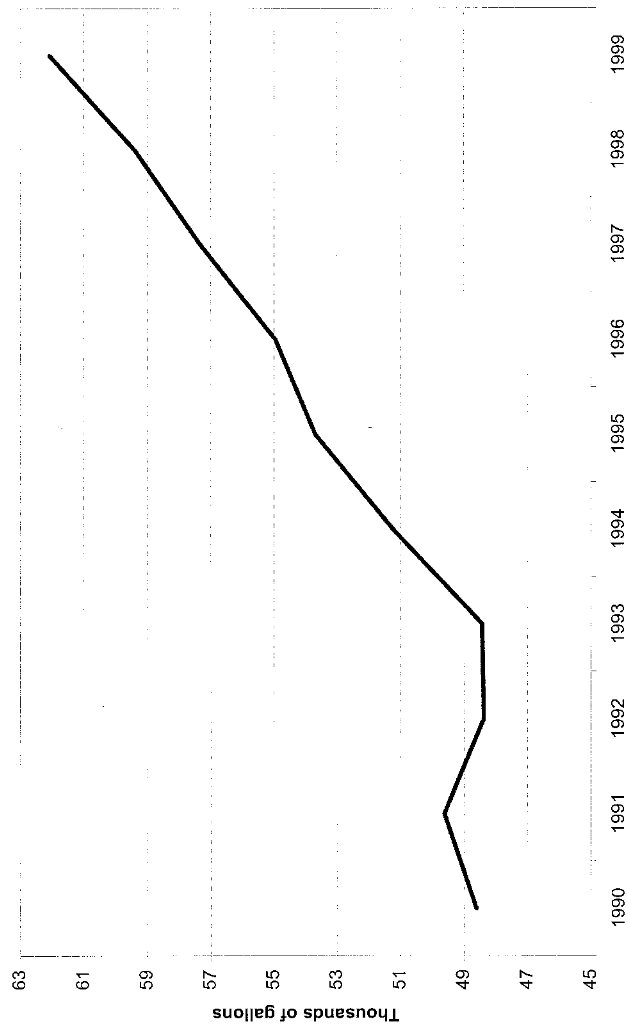
Source: Oil and Gas Journal.

Figure III.13: Total number of Retail Gasoline Outlets in the United States, 1991-2001



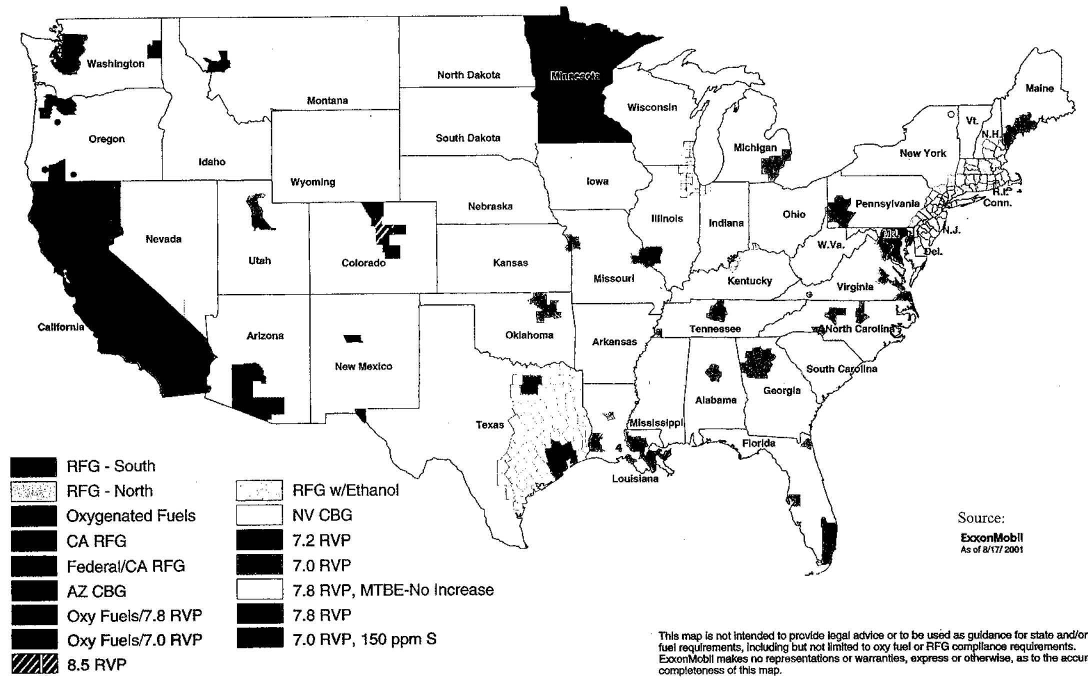
Source: DOE/EIA.

Figure III.14: Average Monthly Motor Gasoline Sales Volume per Retail Outlet, 1990-1999



Source: DOE/EIA.

Figure III.15: U.S. Gasoline Requirements



Source:
ExxonMobil
As of 8/17/2001

This map is not intended to provide legal advice or to be used as guidance for state and/or federal fuel requirements, including but not limited to oxy fuel or RFG compliance requirements. ExxonMobil makes no representations or warranties, express or otherwise, as to the accuracy or completeness of this map.

IV. THE EFFECTS OF MARKET STRUCTURE AND CONCENTRATION ON GASOLINE PRICES

- **The mergers in the oil industry over the last few years and the closing of many refineries over the past twenty years have increased concentration in the refining industry. In some states, the refining and marketing industry for gasoline is highly concentrated; in many states it is at least moderately concentrated. (F-3)**

- **High concentration exacerbates the factors that allow price spikes and increases, a key one of which is the tightness of supply. (F-5)**

- **In concentrated markets refiners can affect the price of gasoline by their decisions on the amount of supply. In a number of instances, refiners have sought to increase prices by reducing supply. (F-6)**

- **Highly concentrated retail markets have higher retail prices. (F-7)**

- **Markets in which there is a high degree of vertical integration between refiners and marketers have higher wholesale and retail prices. (F-8)**

A. General Characteristics of Concentrated Markets

In a perfectly competitive market many firms sell an identical product, and the amount of each seller's output is too small to affect the market price.[172] If one firm reduces output, other firms can step in and increase their output, thereby increasing their own market share and revenues through innovation, efficiency, and competition in price.[173]

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[172] Firms will increase their output until the marginal cost of producing that product equals the demand for the product at that price. In a perfectly competitive market, therefore, the price of the product will equal the marginal cost of the product. Firms in the market are considered "price-takers" rather than "price-makers." For a general explanation of competitive and non-competitive markets, see Samuelson and Nordhaus, Economics, 17th ed., 2001.

[173] Adam Smith wrote that although every individual "intends only his own security, only his own gain, . . . he is led by an invisible hand to promote an end which was no part his

In markets in which either one firm (monopoly) or a few firms (oligopoly) produce the entire output for an industry, such a firm or firms will have sufficient "market power" to affect the price of their output through their decisions on how much to produce. The market power of firms in a highly concentrated market will vary, depending on the particular circumstances of the industry.

"Imperfect competition" is a cause for concern, because it can yield results "that are inimical to the public interest," namely high prices and poor quality.[174] By sustaining higher-than-competitive prices, imperfect competition represents a type of market failure that hurts consumers.

Although the general trend in the United States over the past 70 years has been towards increasingly competitive markets, in recent years a number of markets have consolidated into oligopolies.[175] In part this is because of the wave of mergers in the past few years which the President's Council of Economic Advisors reports has been "well above average."[176] Economies

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intention. By pursuing his own interest he frequently promotes that of society more effectually than when he really intends to promote it." Samuelson and Nordhaus, at 30.

[174] Samuelson and Nordhaus, at 185.

[175] In 1939, approximately half of the markets were considered "effectively competitive"; 36 percent were considered to be a "tight oligopoly" (i.e. the top 4 firms have over 60 percent of the market); 5 percent were dominated by one firm; and about 6 percent were pure monopolies. In 1980, just over three-fourths of the markets were effectively competitive; 18 percent were considered to be tight oligopoly; just under 3 percent were dominated by one firm; and about 2 ½ percent were pure monopolies. William G. Shepherd, *The Economics of Industrial Organizatio*n, 3rd ed., 1990.

[176] Wireless phones, cable television, DRAM semiconductor chip manufacturing, college textbooks, and defense contracting all have become highly oligopolistic industries. *Why the Sudden Rise in the Urge to Merge and Form Oligopolies?,* Wall Street Journal, February 25, 2002, at A1.

of scale, increasing costs of producing and marketing products, a desire to reduce market risks, and more lax antitrust enforcement are cited as factors underlying this trend.[177]

A central theme of the Department of Justice and the Federal Trade Commission's "Horizontal Merger Guidelines" is that mergers should not be permitted to create or enhance market power or facilitate its exercise. The Guidelines explain market power and its harmful consequences:

> Market power to a seller is the ability profitably to maintain prices above competitive levels for a significant period of time. In some circumstances, a sole seller (a "monopolist") of a product with no good substitutes can maintain a selling price that is above the level that would prevail if the market were competitive. Similarly, in some circumstances, where only a few firms account for most of the sales of a product, those firms can exercise market power, perhaps even approximating the performance of a monopolist, by either explicitly or implicitly coordinating their actions. Circumstances also may permit a single firm, not a monopolist, to exercise market power through unilateral or non-coordinated conduct – conduct the success of which does not rely on the concurrence of other firms in the market or on coordinated responses by those firms. In any case, the result of the exercise of market power is a transfer of wealth from buyers to sellers or a misallocation of resources.[178]

As Samuelson and Nordhaus explain, monopolists and oligopolists obtain non-competitive prices by limiting production rather than by directly setting high prices:

> Now Monopoly Inc. enters the picture. A monopolist is not a wicked firm—it doesn't rob people or force its goods down consumers' throats. Rather, Monopoly Inc. exploits the fact that it is the sole seller of a good or service. ***By keeping its output a little scarce, Monopoly Inc. raises its price*** above marginal cost. Since [setting the price at marginal cost] is necessary for economic efficiency, the monopolist's output will be less than the efficient output; the marginal value of the good to consumers is therefore above its

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[177] Wall Street Journal, February 25, 2002, at A1.

[178] US Department of Justice, Federal Trade Commission, Horizontal Merger Guidelines, April 1997 Revision, Sec. 0.1.

> marginal cost. ***The same is true for oligopoly*** and monopolistic competition, ***as long as companies can hold prices above marginal costs.***[179] [emphasis added].

The Department of Justice and the Federal Trade Commission measure market concentration in two ways. One is the Herfindahl-Hirshman Index (HHI), which is obtained by summing up the squares of the market shares (expressed in percentages of total market) of each firm in the market. Thus, for example, if 4 firms have 10%, 20%, 30%, and 40% of the market, respectively, then the HHI for this market would be 10x10 + 20x20 +30x30+40x40 = 100+400+900+1600 = 3000. The DOJ/FTC Guidelines consider markets with a HHI below 1000 to be "unconcentrated," with a HHI between 1000 and 1800 to be "moderately concentrated,"and with a HHI above 1800 to be "highly concentrated." According to the Guidelines, "Where the post-merger HHI exceeds 1800, it will be presumed that mergers producing an increase in the HHI of more than 100 points are likely to create or enhance market power or facilitate its exercise."

Another measure of market concentration is the 4-firm concentration ratio. This is obtained by calculating the total market share of the 4 leading firms in the market. Economists characterize a market with a 4-firm concentration ratio of more than 60 percent as a "tight oligopoly."[180] As the DOJ/FTC Guidelines note, in an oligopolistic market it is not necessary for the firms to explicitly collude to raise prices above competitive levels. Rather, individual firms

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[179] Samuelson and Nordhaus, at 196. This too is not a recent observation. Adam Smith noted it is "the manifest interest of every particular class of [traders] to prevent the market from being overstocked, as they commonly express it, with their own particular species of industry; which is in reality to keep it always understocked." Adam Smith, *The Wealth of Nations* (Modern Library ed., 1937), at 124.

[180] William G. Shepherd, *The Economics of Industrial Organization* (3rd ed. Prentice Hall, 1990).

with a degree of market power in a sufficiently concentrated market can act in "conscious parallelism" with the other similarly situated firms to raise prices. "Oligopolists are 'interdependent' in their pricing: they base their pricing decisions in part on anticipated reactions to them. The result is a tendency to avoid vigorous price competition."[181] "In countries where . . . explicit schemes are illegal (as in the United States), 'tacit' collusion may evolve instead. Though it is rarely as forceful as full-blown price agreements, it can make a significant difference."[182]

Although "conscious parallelism" does not violate the antitrust laws, it may lead to the same economic effect as outright collusion. In upholding the FTC's preliminary injunction against the proposed merger of Heinz and Beech-Nut, the second and third largest sellers of baby food in the nation (17.4% and 15.4% of the market, respectively), the U.S. Court of Appeals wrote, "The combination of a concentrated market and barriers to entry is a recipe for price coordination. *See University Health*, 938 F.2d at 1218 n.24 ('Significant market concentration makes it 'easier for firms in the market to collude, expressly or tacitly, and thereby force price above or far above the competitive level.''(citation omitted)). '[W]here rivals are few, firms will be able to coordinate their behavior, either by overt collusion or implicit understanding, in order to restrict output and achieve profits above competitive levels.'"[183]

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[181] Richard A. Posner, Antitrust Law, *An Economic Perspective* (Univ. of Chicago Press, 1976), at 43.

[182] Weber at 337. "[E]very oligopolist is like a general on the battlefields of commerce, trying to outwit, bluff, and bludgeon its rivals. Yet, since oligopoly rewards team play, the generals are constantly tempted to form alliances with their 'adversaries.' Then the warfare gives way to collusion among some or all of the combatants. *Id.* at 316.

[183] *FTC v. H.J. Heinz Co.* (D.C. Cir. April 27, 2001), http://laws.findlaw.com/dc/005362a.html at 11.

Some legal scholars contend that because the harmful economic effects of "tacit" collusion may be no different from the effects of express collusion, tacit collusion should be no less objectionable.[184] Others maintain it is futile to try to prohibit interdependent behavior in a highly concentrated market, because it is difficult to prevent firms from taking the actions of their competitors into consideration.[185] Under these circumstances, the remedy would be to try to change the structure of the market underlying the industry – such as the degree of concentration – rather than the behavior of the market participants.[186]

Even in highly concentrated markets, including monopolies, market power will not be absolute. A monopolist who restricts output and raises prices too much will eventually attract new entrants into the market who will attempt to capture some of those profits. In the refining industry, for example, firms must produce enough gasoline to meet their agreements to keep their contractual customers and branded outlets supplied. According to refiners, running out of product for contractual customers and branded outlets would be "disastrous" for a refiner, as

[184] "If the economic evidence introduced in a case warrants an inference of collusive pricing, there is neither legal nor practical justification for requiring evidence that will support the further inference that the collusion was explicit rather than tacit. Certainly from an economic standpoint it is a detail whether the collusive pricing scheme was organized and implemented in such a way as to generate evidence of actual communications." Posner, *Antitrust Law*, at 71.

[185] "'The rational oligopolist is behaving in exactly the same way as is the rational seller in a competitively structured industry; he is simply taking another factor into account [the reactions of his rivals to any price cut] . . . which he has to take into account because the situation in which he finds himself put him there.' Since the oligopolist is behaving just like the seller in an atomized market, oligopoly pricing can be described as 'rational individual decision in the light of relevant economic facts' as well as it can be described as collusion. . . An injunction that merely 'prohibited each defendant from taking into account the probable price decisions of his competitors in determining his own price or output' would 'demand such irrational behavior that full compliance would be virtually impossible.'" Posner, *Antitrust Law*, at 43, quoting Donald F. Turner, *The Definition of Agreement Under the Sherman Act: Conscious Parallelism and Refusals to Deal*, 75 Harv. L. Rev. 655 (1962) at 665-66.

[186] *Id.* at 44.

retailers and customers would seek to shift their purchases to more reliable suppliers. In the short- to medium-term, higher prices resulting from shortages may attract lower-cost supplies from other markets to be imported depending upon the costs of transportation. This situation – called "import parity" – exists when prices in one market rise high enough to cover the transportation costs from another market where prices or the cost of production are lower. Higher refining margins sustained or projected to exist over longer periods of time may eventually attract others to invest in additional production or transportation capacity. In economic terms, the price of marginal supply acts as a ceiling on the price in any given market.

Firms in highly concentrated markets will not necessarily reap greater profits than firms in more competitive markets. Although the few firms in a market may reach a tacit agreement not to compete on price, they may nonetheless compete quite strenuously on non-price items, such as brand identification, product appearance, and service. In fact, vigorous non-price competition in a highly concentrated market can wipe out much of a firm's profits.[187] Hence, the profitability of the firms in a market cannot be used to gauge the level of concentration in the market.[188]

In addition, although the HHI and the 4-firm concentration ratio are useful tools for categorizing the degree of concentration in a particular market, the numerical cut-offs used to

[187] "The only effect of eliminating price competition may be to channel competitive energies into other, and costly, forms of competition. Indeed, as we have already discussed, firms may increase their expenditures on the other forms of competition until they have competed away all of the higher profits that they hoped to obtain by increasing prices above the competitive level." Posner, *Antitrust Law*, (1976 ed.), at 60.

[188] "The relationship of concentration to profitability is likely to be loose or nonexistent." Shepherd, *The Economics of Industrial Organization*, at 64. Profitability is more easily correlated with a firm's market share in an industry rather than the overall concentration level within the industry.

categorize competition are not considered precise demarcations between these various categories. According to the DOJ/FTC merger guidelines, "Although the resulting regions provide a useful framework for merger analysis, the numerical divisions suggest greater precision than is possible with the available economic tools and information. Other things being equal, cases falling just above and just below a threshold present comparable competitive issues." Thus, whether a particular market falls under the category of "moderately" or "highly" concentrated is not necessarily dispositive of how the firms in that market will behave.

B. <u>Concentration in the Oil Refining and Gasoline Marketing Industry</u>

In recent years there have been a significant number of major mergers within the petroleum industry:

- In 1998, Marathon and Ashland Oil merged their downstream assets.
- In 1998, British Petroleum (BP) merged with Amoco
- In 1999, Exxon Corporation merged with Mobil Corporation.
- In 2000, BP/Amoco acquired ARCO.

Within the past year –

- Shell acquired Texaco's domestic downstream assets;
- Chevron, which had acquired Gulf Oil in 1994, acquired Texaco (other than downstream assets);
- Phillips acquired Tosco;
- Phillips announced a merger with Conoco;
- Valero acquired Ultramar Diamond Shamrock;

This wave of mergers has followed a general consolidation of assets within the refining industry over the past two decades. In 1981, 189 firms owned a total of 324 refineries; by 2001 65 firms owned a total of 155 refineries, a decrease of about 65 percent in the number of firms and a decrease of about 52 percent in the number of refineries.[189] During this period the market share of the ten largest refiners increased from 54.9 percent to 61.6 percent.[190]

Both the Hirfendahl-Hirschman Index ("HHI") and the 4-firm concentration ratios indicate that the domestic gasoline refining and supply system has become markedly more concentrated. In 1994, as measured by the HHI, the gasoline wholesale market was "moderately concentrated" in 22 states (an HHI in excess of 1000) and "highly concentrated" in 5 states (an HHI in excess of 1800).[191] In 2000, 28 states were "moderately concentrated" and 9 states were "highly concentrated."[192]

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[189] Information provided to the Subcommittee by the Energy Information Administration, August 7, 2001.

[190] There has been a change in the composition of these top ten companies from exclusively major integrated companies in 1981, to the majority being non-integrated refiners. These independent refiner/marketers, who have no significant crude oil production, have through acquisitions amassed approximately 23 percent of all the refining capacity in the U.S. In 1981 all ten of the companies were fully integrated oil companies, but by 2001 only four of the companies were integrated. However, although 7 of the top 10 refiners were not fully integrated companies, all of those 7 own one or more chains of retail outlets.

[191] Information on state market concentration figures supplied to the Subcommittee staff by EIA. The EIA calculated the HHI and concentration ratio for a state on the basis of the amount of gasoline produced by the refineries, if any, located in that state and the amounts of gasoline transported into the state by refiners, multi-state distributors, and traders.

[192] Under the HHI, the moderately concentrated states are: Connecticut, Massachusetts, Maine, Rhode Island, Vermont, Delaware, Maryland, New Jersey, New York, Pennsylvania, Maryland, Illinois, Indiana, Michigan, Minnesota, Oklahoma, Tennessee, Wisconsin, Louisiana, New Mexico, Colorado, Idaho, Wyoming, Alaska, Arizona, California, Nevada, Oregon, and Washington. The highly concentrated states are: District of Columbia, West Virginia, Indiana, Kentucky, North Dakota, Ohio, Montana, Alaska, and Hawaii.

In 1994, the 4-firm concentration ratio was greater than 60 percent – meaning a tight oligopoly – in 14 states and exceeded 70 percent in 7 of those states. In 2000, the 4-firm ratio was greater than 60 percent in 28 states and exceeded 70 percent in 11 of those states.[193]

The U.S. consists of many regional, local, and micro-markets for gasoline that, to a varying degree, are linked by pipelines, shipping routes, and highways. Because of the practical and economic constraints on this manufacturing, transportation and pipeline system, the effects of increased concentration in the refining and marketing industry are seen most acutely in a number of these discrete regional and local markets.

This section examines the effects of increased concentration in the West Coast and Midwest markets.

1. The West Coast

West Coast markets clearly exhibit the effects of high concentration. These effects can be seen on the regional, state, and local level. The refining and marketing industry in California provides a particularly good example of the effects of increased concentration and consolidation of market power in a few firms.

a) California

California drivers consume nearly 1 million barrels of gasoline per day, putting the state on a par with Japan as the second largest gasoline markets in the world, behind only the United

[193] Information on state market concentration figures supplied to the Subcommittee staff by EIA. Under the 4-firm concentration ratio, the highly concentrated markets (i.e. "tight oligopoly) are: Connecticut, Massachusetts, Maine, Rhode Island, Maryland, Virginia, Illinois, Indiana, Michigan, Minnesota, Wisconsin, New Mexico, Colorado, Idaho, Wyoming, Arizona and Nevada. The 11 states with 4-firm concentration ratios in excess of 70% are: the District of Columbia, West Virginia, Kentucky, North Dakota, Ohio, Montana, Alaska, California, Hawaii (4-firm concentration ratio of 100%), Oregon and Washington.

States as a whole.[194] California is geographically isolated from the other major domestic markets; few pipelines can carry gasoline into the state and tanker shipments must travel from Europe, Asia, the Gulf Coast or Carribean to either Los Angeles or San Francisco. Such journeys are time-consuming and expensive. A trip by tanker from Europe takes from just over three to four weeks and costs from 10 to 12 cents per gallon. A tanker from the Carribean or Gulf Coast will take two weeks and cost 5 to 10 cents per gallon.[195]

California has a unique requirement for CARB gasoline.[196] Only CARB gasoline can be sold in California, and California is the only state where CARB gasoline is required. The more stringent specifications required to make CARB gasoline further isolate the California market and, because of the capital investments necessary to manufacture CARB gasoline, make alternative sources of CARB gasoline outside the state more scarce. Refiners outside the state normally do not manufacture CARB gasoline; therefore an additional week to ten days is required to produce a shipload of CARB for export into California.

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[194] Daily consumption in the United States is approximately 8 million barrels per day. By way of perspective, China, the most populous nation, consumes approximately one-tenth this total amount – nearly 800,000 barrels per day – as does West Germany. Russia uses approximately 570,000 barrels per day of gasoline. Across the entire African continent, approximately 535,000 barrels are consumed daily. EIA, International Energy Annual 1999, Table 3.5; National Petroleum News, Market Facts, July 2001, p. 88. Although California is the largest single market within the U.S., per capita usage in California is the 9th *lowest*, at approximately 240 gallons per person per year. The national average is about 258 gallons per person per year. California Energy Commission website, at http://www.energy.ca.gov/fuels/gasoline/gasoline_per_capita.html.

[195] Philip K. Verleger, *The California Conundrum, 2000*, citing California Energy Commission figures from 1997.

[196] "CARB" is the gasoline formulation required under the California Air Resources Board Phase II regulations. It was first introduced in California in 1996. CARB gasoline must meet more stringent standards for nitrogen oxides (NOx) and aromatic emissions.

As in other markets, demand for gasoline in California is inelastic. A small decrease in supply will produce a large increase in price. In 1999, an explosion at Tosco's Avon refinery reduced CARB gasoline refining capacity in California by approximately 24,000 barrels per day, which is roughly two percent of the total CARB capacity in the state. The wholesale price of CARB rose by about 13 cents per gallon – about 20 percent – in just under two weeks.[197] Several weeks later, outages at the ARCO and Chevron refineries resulted in a total capacity loss of 5 to 10 percent, which doubled spot prices and led to retail price increases of nearly 50 percent.[198]

Because of the large volume of gasoline bought in California, these price increases result in significant additional expenses for California drivers. Each one-cent increase in the price of gasoline costs California consumers a total of approximately $420,000 per day, or about $153 million per year.

i. The refining industry in California is an oligopoly.

The California refining industry is an oligopoly. As of January 2000, the top two refiners, Chevron and Tosco (now Phillips), accounted for nearly half of the state's capacity; the top 4 refiners owned nearly 80 percent of California capacity. Moreover, six refiners own or operate about 85 percent of the retail outlets in the state.[199] These outlets sell more than 90 percent of the CARB gasoline sold at retail locations in the state.[200] By the 4-firm concentration

[197] Documents in Subcommittee Files.

[198] Consultant Report, MTBE Phase-Out in California, at 11-12.

[199] Attorney General's Report, at 42.

[200] Attorney General's Report, at 23.

ratio, this market is considered to be a "tight oligopoly." Under the DOJ/FTC Guidelines, the market is considered "moderately concentrated."[201]

The level of concentration of the refining and marketing industry in California and the type of behavior that follows such levels of concentration were discussed in a recent lawsuit in California. In *Aguilar v. ARCO*, the plaintiffs alleged that the oil companies in California had, in violation of the state's antitrust laws, "seized the opportunity provided by California's requirement that a cleaner-burning gasoline (CARB gas) be used in California, and agreed with each other to restrict CARB gas refining capacity and production."[202] Specifically, the plaintiffs alleged the California refiners had manipulated the spot prices for wholesale sales of gasoline; conspired to fix the amount of CARB gasoline produced to ensure adequate prices and profits; entered into supply and exchange agreements with each other to discourage the importation of gasoline into the state from sources not controlled by the California refiners; and used common consultants to transmit confidential business information to each other. After discovery and reviewing the plaintiffs' evidence, the California Court of Appeals found the plaintiff did not meet her burden of proof for establishing an unlawful conspiracy and granted the defendants'

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[201] In 1994, the top 4 refiners accounted for about 59 percent of the state's capacity, and the top 8 refiners accounted for about 86 percent of the total capacity. By the time CARB gasoline was introduced in 1996, these figures had not changed much. By 2000, however, the top 4 refiners' share had grown by 20 percent, and the top 8 refiners were responsible for about 96 percent of all production in the state. From 1994 to 2000 the HHI index for the California refining industry increased by about 30%–from 1121 to 1476. EIA, Financial Reporting System (FRS) information provided to the Subcommittee.

[202] _Aguilar v. ARCO_, 78 Cal.App. 4th 79, 92 Cal. Rptr. 2d 351 (2000) Cal.App. LEXIS 65 (January 31, 2000). The defendants in the case all operated refineries in California: ARCO, Chevron, Exxon, Mobil, Shell, Texaco, Tosco, and Union Oil. Several of these defendants have subsequently merged with each other.

motion for summary judgment. In July 2001, the California Supreme Court upheld the dismissal.[203]

In its ruling in *Aguilar*, the California Court of Appeals found that the gasoline market in California is an oligopoly. The court stated, "Plaintiffs allege, and defendants do not dispute that the California CARB gas market is oligopolistic."[204]

Indeed, the evidence before the Court of Appeals reflects the recognition by a number of the refiners and petroleum industry consultants that the small number of large refiners in California possess a significant degree of market power.

One such document (see Exhibit IV.1 on page 191), a briefing book that was generated for senior executives by the ARCO Products Company in 1996, notes that the market power of a few firms significantly affects prices in several West Coast markets:

> [A] significant increase in exports of light products out of the West Coast (combined with the shut down of some non-economic capacity in various West Coast refineries) has allowed supply and demand to remain in close balance. However, the West Coast light product balance remains a precarious one. The overall balance shifts seasonally, with the summer months in close balance and the excess product long in winter months. These supply/demand balance swings make the West Coast prices far more volatile than in other world markets.

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[203] Aguilar v. ARCO, 25 Cal. 4th 826 (2001).

[204] 92 Cal. Rptr. 2d 351 (2000). LEXIS at 134. Mobil's expert witness, MIT Professor Franklin Fisher, testified that as an oligopoly the firms are "big enough so that they don't take prices as given but have to think about the way their actions influence the price." Fisher Deposition, at 87. Fisher characterized the nature of the oligopoly as "loose."

Chevron's expert witness, Dr. Richard Gilbert, Professor of Economics at the University of California at Berkeley, testified, "the California market at the refining level is characterized by what we would call at the low end of moderate concentration, which means, yes, it's an oligopoly. It's not a highly concentrated oligopoly by the typical competitive standards." Gilbert Deposition at 169.

Professors Gilbert and Fisher provided their testimony regarding the degree of oligopoly in California in 1997, before the recent round of mergers and acquisitions.

*   *   *

> Exports from the West Coast to maintain the balance between supply and demand have historically been made by refiners who have some remaining, less economic refining capacity which could be used to cut crude runs and by refiners who have excess product and the ability to export that product economically.
>
> *   *   *
>
> Further complicating light product supply on the West Coast is the existence of several distinct "micro-markets." Regionally, the West Coast is short on light product in Southern California, long on light product in northern California and balanced to long in the Pacific Northwest. Additionally, CARB gasoline and diesel specifications reduce the fungibility of products within PADD V. As a result we experience significant volatility of product pricing within PADD V as well as pricing versus the Gulf Coast. ***The existence of a handful of players with large supply positions in specific West Coast regions and/or products, such as APC's CARB diesel position in southern California or APC's high sulfur diesel position in the Pacific Northwest, add further to this volatility.*** Close monitoring of supply and demand within these micro-markets is needed to ensure that refiners react to imbalances and prevent wide volatility in the premiums realized for specific products. (emphasis added).

Another document produced during discovery in *Aguilar* (see Exhibit IV.2 on page 199), generated by Chevron in 1993 as part of a strategic study, also states that a few large refiners dominate the West Coast and have a significant effect on the market. The Chevron document contrasts the high returns of the refiners in the West Coast market with the lower returns of refiners in the Gulf Coast and attributes the difference, in part, to the concentrated nature of the West Coast market:

> USWC market appears to allow better average returns than USGC [Gulf Coast]. The better performers generate [returns on capital employed] greater than 12%. . . ***Market is dominated by a limited number of large, committed refiner/marketers whose individual actions can have significant market impact.*** (emphasis added).

Another such document (see Exhibit IV.3 on page 203) is an "Energy Briefing Note" which was generated in 1996 by the PIRA Energy Group, a petroleum industry consulting organization, and presented to all of its "retainer clients," including Mobil, regarding the impact of the introduction of CARB gasoline on refining margins. This document noted that the supply/demand balance in California was likely to be "tight," and would remain so, partially as a result of the market structure in which a few refiners in the state had sufficient market power and motivation to maintain prices above marginal costs:

> The CARB 2 balance appears to be tight in California. Add in the remoteness of the California market, the unique characteristics of CARB 2, the requirement for domestic shippers to use higher cost Jones Act shipping, ***and the small number of companies involved, all of whom share a motivation to recoup costs and not undermine the market. The implication is that prices on average will do quite a bit more than cover marginal costs***, which will mainly comprise the incremental oxygenate cost, although not during the extended phase-in period. (emphasis added).

This PIRA memo presents a classic description of a market failure. In a purely competitive market, prices do not rise above marginal costs, which are the costs of producing an additional unit of the product. Samuelson and Nordhaus describe the importance of using marginal cost as a measure of economic efficiency:

> The essential role of marginal cost in a market economy is this: Only when prices are equal to marginal costs is the economy squeezing the maximum output and satisfaction from its scarce resources of land, labor and capital.[205]

They then describe the adverse effects to consumers when prices rise above marginal costs:

> When a firm has market power in a particular market (say it has a monopoly because of a patented drug or a local electricity franchise), the firm can raise the price of its product above its marginal cost. Consumers buy less of such goods than they would under competition, and consumer satisfaction is reduced. This kind of reduction of consumer satisfaction is typical of the inefficiencies created by imperfect competition.[206]

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[205] Samuelson and Nordhaus, supra, at 160.

[206] *Id.* at 161.

The PIRA report projected CARB gas would cost between 10 and 15 cents more than conventional gas:

> Even if conventional gasoline prices soften, this implies a sharp increase in California pump prices in an election year. The industry's P.R. machine needs to be ahead of the curve on this issue so that there is an appreciation of the benefits and not just the cost of CARB 2 gasoline.

ii. In the early to mid-1990s, the California market for gasoline was generally "long,"meaning there was an excess of supply over demand. Refiners also were concerned about the potential for an oversupply of CARB gasoline in 1996 and beyond. During this period, refiners in California sought to limit supply by discouraging imports, exporting gasoline, eliminating the oxygenate mandate, and preventing a refinery from operating.

In the early- to mid-1990s, the California market had an excess of supply over demand, and refiners sought to limit supplies in order to obtain higher refining margins. The high level of concentration in the California market enabled these refiners to affect prices through their decisions on supply. Following the introduction of CARB gasoline in 1996, the market grew short, meaning a shortfall of supply relative to demand. Today, the high degree of vertical integration between the refining and marketing sectors raises prices within the state and raises the barriers for others to enter into the market or import gasoline, thus helping to keep the supply/demand balance tight and to sustain higher prices.

The 1996 ARCO briefing book (see Exhibit IV.1 on page 191) describes the supply/demand balance in California as it existed at the time: "in 1991 the supply/demand balance shifted from short supply to excess, and has stayed slightly long ever since."

Refiners in California and elsewhere were concerned about this excess capacity. In a document produced during discovery in *Aguilar*, a Chevron report notes that a senior energy analyst had "warned that if the U.S. petroleum industry doesn't reduce its refining capacity, it will never see any substantial increase in refining margins, pointing out the recent volatility in refining margins over the past 12 months." (See Exhibit IV.4 on page 211.) The author of the Chevron report wonders whether refineries can operate at reduced capacity as a result of the existing oversupply:

> In the last nine months, gasoline demand has been healthy and inventories have remained close to record lows, factors that should normally lead to higher prices. However, refining utilization has been rising, sustaining high levels of operations, thereby keeping prices low. ***Implication: in what alternate modes can the refinery operate given low-margin economics?*** (emphasis in original).

When the California Air Resources Board promulgated regulations requiring that by June 1, 1996, only CARB gas could be sold at retail in California, California refiners were faced with the decision of whether or not to upgrade their refineries to produce CARB gasoline and, if they chose to do so, how much CARB capacity to create.

In *Aguilar*, the California Supreme Court explained the situation as follows:

> In 1991, the California Air Resources Board adopted regulations requiring the sale in this state of a new, cleaner burning, but more expensive formulation of gasoline – CARB gasoline – beginning in 1996. In 1991, the state's market for gasoline was oligopolistic, that is, it was served by a few large firms . . . . Each of the petroleum companies faced decisions of substantial magnitude and difficulty with respect to CARB gasoline capacity, production and pricing. In arriving at its own decisions and then following through, each had to make great capital expenditures, from a low of about $100 million to a high of more than $1 billion. In 1996 the state's market for gasoline was even more oligopolistic, being served by even fewer large firms, including as dominant participants the petroleum companies that figure here.[207]

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[207] *Aguilar*, California Supreme Court, at 3.

At this time, with the market slightly long, and the possibility of significant shifts in capacity as a result of the CARB requirement, refiners in California were very concerned about avoiding an excess of supply in the market. In *Aguilar*, the California Court of Appeals found "Internal documents from several defendants also acknowledged excess CARB gas supply could reduce prices and hurt profitability."[208] Furthermore, the Court of Appeals stated, "The evidence showed, and defendants concede, that defendants shared the common belief that an oversupply of CARB gas was undesirable and therefore had a common motive to restrict capacity."[209]

Although the Court of Appeals held that the plaintiff had not presented sufficient evidence of an illegal conspiracy to restrict capacity, the Court did conclude that the evidence showed "nine defendants using all available information sources to determine capacity, supply, and pricing decisions which would maximize their own individual profits. . . ."[210]

A number of documents from *Aguilar* and elsewhere illustrate how these refiners sought to "maximize their own individual profits" through capacity and supply decisions.

- ***Preventing imports***

Several documents from *Aguilar* reflect a desire by California refiners to limit imports into California. An Exxon official, in an internal 1995 memo reviewing projections for the CARB gas market, supports a general strategy of limiting imports of gasoline into the West Coast market: "Should not do deals that supports other's importing barrels to West Coast." (See Exhibit IV.5 on page 212.) The author also questions whether Exxon should develop a reserve

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[208] *Aguilar*, 78 Cal. App. 4th at 99.

[209] *Id.* at 131.

[210] *Id.* at 152.

capability for the production of alkylate (a component of gasoline) if this added capacity will cause an oversupply of alkylate and therefore depress the price of gasoline: "Desire to build ALK8 for contingency should be weighed against market revenue factor impact from ALK8 sales if end up with ALK8 length (ALK8 sales = + CARB mogas)."

In an internal e-mail discussion of marketing strategies, one Mobil official predicted that because of the unique requirements for CARB gasoline it would not take much to upset the California market and create fuel shortages. (See Exhibit IV.6 on page 215.) Rather than import CARB to bolster supply to prevent any such shortages, which would run the risk of depressing prices, this official advocated a strategy of using existing inventories to take advantage of the supply shortages that were likely to arise:

> To my mind the discussion is really this: Depending upon the [Supply/Demand] balance, it probably will NOT make sense to import finished CARB into what has historically been an isolated, near balanced/long market. As you probably know, US West Coast margins are on average more attractive than most other US regions. ***Flooding the market and depressing margins on the base volume we market would likely be a big hit and not in Mobil's interest.***
>
> However, since there is uncertainty about CARB supply/demand in the market, and we will soon have unique fuels formulations, I anticipate a high probability of market upsets when there is a [West Coast] Refinery problem, etc. Coincident with market perturbations, I think it would make sense for Mobil to have plans in place to react ASAP and capture forward sales (while drawing from finished inventory) if there is sufficient reward, and I think there will be. (emphasis added).

Another document presents a strikingly direct example of action to limit imports. According to this internal Texaco memo, Shell told Texaco that Shell would seek from the California legislature a fee or tax on imports if Texaco imported gasoline at less cost than it took Shell to refine the gasoline within the state. (See Exhibit IV.7 on page 217.) According to the

Texaco memo, ARCO also complained to Texaco about Texaco's possible plans to undercut the market with inexpensive imports.

The internal Texaco memo recounts a conversation in late 1992 between a Texaco official and Shell's California Government Relations Manager regarding their companies' respective plans for producing CARB gasoline. According to the Texaco official, Shell and the other refiners in California were "extremely concerned" because Texaco had not shared its plans regarding CARB 2 production and might import gasoline from outside the state. The Texaco official wrote,

> ***[The Shell Manager] went on to say that Shell and the other oil companies are extremely concerned about Texaco's silence and lack of activity concerning our plans toward CARB Phase 2 compliance. He said Texaco is positioning itself to be the 'wild card' on this issue and 'we are nervous about it.'*** He said Texaco or any other company could easily import compliant fuel from outside of California for considerably less cost than those companies that intend to retool their refineries. He went on to talk about the various scenarios that would occur if a company was able to import RFG for 5-10 cents less per gallon than what it would cost other companies that retooled. He said it would be virtually impossible for a company to recover their investment.
>
> He went on to say that if such a scenario was to evolve, Shell would be at the California legislature and CARB immediately asking for relief. He specifically referred to a fee, tax or penalty assessed for importing RFG. He suggested that such an approach would be necessary to 'level the playing field' thus protecting Shell's investment. (emphasis added).

"As you remember," the author wrote, "similar concerns were echoed by the ARCO plant manager from Carson at a refinery managers meeting in April."

The exchange agreements between the West Coast refiners sharing their capacity also deter new capacity and imports. There are several basic types of exchange agreements on the West Coast: an exchange of similar products between competitors in different geographic areas;

the exchange of different products between one refiner who is long on one product but short on another with another refiner who holds an opposite position; and exchanges of product currently needed in return for a commitment to deliver product needed in the future. Most exchange agreements also allow one company to draw supplies from another refiner by "mutually agreed" amounts.

Although exchange agreements can make the overall market and individual refiners more efficient by avoiding the need for additional shipments of product by pipeline, truck, tanker, or barge, and by allowing refiners to compete in markets far away from their refineries, these agreements also reduce the incentives for each refiner to import gasoline or build reserve capacity for use during supply disruptions. This was explained by Roger Noll, Morris M. Doyle Professor of Public Policy in the Department of Economics at Stanford University, the plaintiff's expert in the *Aguilar* case:

> 36. . . [W]hen one company experiences an unplanned outage, the amounts of supply it needs to make up for its long-term storage is well within the bounds of its exchange agreements. Moreover, the multiple arrangements involving many companies enable them to share the production short-fall with the company that experienced the outage. ***The effect of these sharing arrangements, which amount to a method for allocating production among horizontal competitors, is to reduce the incentive to offset the production shortfall by importing gasoline from outside the state.***
>
> 37. Because the demand for gasoline is highly inelastic (that is, not very responsive to changes in price), a relatively small shortfall in production can cause a very large increase in price. ***Hence if companies can mutually guarantee that an unplanned outage will not lead to an offsetting increase in imports that would cap the price spike at refining cost elsewhere plus transportation cost, for the duration of the outage they can expect to enjoy a very large benefit in price increases.*** For example, if one firm experiences an outage that cuts its production below its own retail sales, and it has no exchange agreements or other supply arrangements with competitors, it has a strong incentive to turn to imports to make up the shortfall. . .

* * *

38. This example is far from hypothetical, for it is exactly what happened in late February, 1996. An unplanned outage at a refinery in El Paso, Texas, curtailed gasoline supplies to Arizona and New Mexico. Because Los Angeles refineries are the other sources of gasoline for Arizona, the El Paso event increased the demand for Los Angeles gasoline, causing an increase in prices. Immediately, companies explored shipping in gasoline from northern California, the Pacific Northwest, and even the Far East. By reducing the incentive of the firm experiencing a shortage to import gasoline, the exchange agreements remove this price cap for the entire duration of the unplanned outage. ***Hence, during unplanned outages, exchange agreements cause a reduction in supply and an increase in price that harms consumers.***[211] (emphasis added).

- ***Exporting gasoline***

A 1996 presentation for senior ARCO managers, produced during discovery in *Aguilar*, outlines a strategy for exporting gasoline to ensure that a surplus of gasoline does not develop. (See Exhibit IV.8 on page 219.) The presentation states that ARCO (referred to in the presentation as APC, which is short for Arco Products Company) should export "when export parity threatens," which essentially means that ARCO should export in order to prevent a surplus of supply from building up in the state. Significantly, the presentation indicates that ARCO should export in order to intentionally alter the supply/demand balance within the state, and not just as a passive response to the prevailing economic conditions. The presentation states:

- APC's manufacturing profitability depends critically on maintaining export parity. . .

- Since APC is short in the Bay and short overall, APC should not export first – others should be forced to behave rationally. . .

- Most of the time, APC believes others will act rationally and ensure market balance. . .

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[211] Declaration of Roger Noll, *Aguilar v. ARCO*, at 19-20.

- APC must monitor conditions to anticipate potential collapse to export parity. . .

- Should the market move to export parity, APC should be prepared to export to help balance the market – if others are already behaving rationally . . . and if APC's contribution may make a difference.

At other points in the presentation, mentioned strategies include "Export to keep the market tight," and "Exchange and trade selectively to preserve market discipline."

Other documents obtained by the Subcommittee provide additional evidence of this practice. One industry document states "we have observed historically that some West Coast companies will export to Gulf at significant loss to improve base business revenue and believe a bit of that could be going on."[212] Another document indicates that one company would export gasoline to the Gulf Coast, even at a loss, with the rationale that such losses "would be more than offset by an incremental improvement in the market price of the much larger volumes of mogas [motor gasoline] left behind."[213] One company's plan indicates that exporting gasoline can "improve market conditions," and that the company was willing to "take [a] hit on price to firm up market."[214]

- ***Preventing a refinery from operating***

One document produced during discovery in *Aguilar* containes a series of e-mails in February 1996 between officials in Mobil discussing how to block the proposed startup of the

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[212] A document in Subcommittee files.

[213] A document in Subcommittee files.

[214] A document in Subcommittee files.

Powerine refinery or at least prevent its output from reaching the market, as they had done previously. (See Exhibit IV.9 on page 225.) One official projected that the restart of the Powerine refinery "could effectively set the CARB premium a couple CPG [cents per gallon] lower." The memo continues:

> ***Needless to say, we would all like to see Powerine stay down. Full court press is warranted in this case and I know Brian and Chuck are working this hard.*** One other thought, if they do start up, depending on circumstances, might be worth buying out their production and marketing ourselves. Especially if they start to market below our incremental cost of production. Last year when they were dumping RFG at below cost of MTBE, we purchased all their avails and marketed ourselves which I believe was a major reason that the RFG premium last year went from 1 CPG in Jan to 3-5 CPG thru to their shutdown. We'll have to see how this plays out, however, if they do start up, I'd seriously consider this tactic.[215] (emphasis added).

- ***Seeking to eliminate the oxygen mandate***

Other documents from *Aguilar* reflect a discussion within Texaco on whether and how to use possible changes in fuel specifications as a means for reducing supplies. (See Exhibit IV.10 on page 232.) One Texaco memo advocates that the company should support certain proposed changes in fuel specifications, because this "would serve to benefit our most critical problem on the West Coast," which the memo identifies as "surplus refining capacity." The memo notes that two of the proposed new standards "would only incrementally serve to reduce supplies, whereas large adjustments are necessary. But they may be directionally beneficial." The memo states:

> [T]he most critical factor facing the refining industry on the West Coast is the surplus refining capacity, and the surplus gasoline production capacity. (The same situation exists for the entire U.S. refining industry.) Supply significantly exceeds demand year-round. This results in very poor refinery margins, and very

[215] Another Mobil official responded that it was highly unlikely Powerine would ever start up again: "Bottom line: I'd bet Barry Switzer gets 'coach of the year' before Powerine restarts."

> poor refinery financial results. ***Significant events need to occur to assist in reducing supplies and/or increasing the demand for gasoline. One example of a significant event would be the elimination of mandates for oxygenate addition to gasoline. Given a choice, oxygenate usage would go down, and gasoline supplies would go down accordingly. (Much effort is being exerted to see that this happens in the Pacific Northwest.)*** (emphasis added).

The author of a background paper accompanying the above memo suggests a variety of approaches to reduce the supply of gasoline, including supporting fuel specification changes:

> Both the Texaco position and the API position currently is to fight the proposed specification changes because it will increase fuel cost and not deliver commensurate benefits to the consumers nor the environment. Thus it is not cost-effective.
>
> ***Incremental improvements to refinery margins from reducing supplies or increasing demand can be achieved in a number of ways. One way would be to promote the more restrictive mandated specification changes to reduce supply of product***; another would be to continue the poor financial performance of the industry until some weak performer dropped out: ***another would be for refiners to voluntarily reduce refinery production without incurring added costs or suffering attrition (admittedly unreasonably idealistic, but the best option).***
>
> Advocacy of a Texaco position on issues with industry groups or any regulatory agency should be consistent with those actions that will benefit TRMI vis-a-vis competition, or hurt TRMI less than competition. (emphasis added).

iii. In recent years, the California market has become "short," meaning imports are needed to satisfy demand. This market tightness is optimal from a refiner's perspective for maximizing profits.

There no longer is an excess of gasoline in California. Since the early 1990's, a number of refineries shut down, and a number of others were not upgraded to meet the new CARB requirements. Capacity upgrades have not kept pace with the closures and increased demand. In 1995, the Pacific Refining and Powerine refineries shut down, removing in the aggregate a capacity to produce almost 100,000 barrels of gasoline per day. Other refineries, such as Paramount Refining in the Los Angeles Basin, continued operation but were not upgraded to manufacture CARB.[216] At the same time, demand in California has increased by about 1.4 percent annually, so that by the year 2000 demand was about 100,000 barrels per day greater than in 1992.[217]

As a result of fewer refineries and increasing demand, California has shifted from an overall long market to an overall short market. In 1998, California refiners produced approximately 98% of the gasoline consumed within the state, with the balance made up from imports.[218] Industry documents indicate that today, the West Coast as a whole is short gasoline by about 110,000 barrels per day, with the balance made up through pipelines and imports from outside the region.[219] Industry planning documents project the West Coast market will continue

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[216] Keith Leffler and Barry Pulliam, Preliminary Report to the Attorney General Regarding California Gasoline Prices, 1999, at 8.

[217] U.S. General Accounting Office, California Gasoline Price Behavior, 2000, at 5. GAO Taxable gasoline sales in California have steadily risen from 13.1 billion gallons in 1993 to 14.8 billion gallons in 2000. This is an overall increase of about 110,000 barrels per day. California Energy Commission, at http://www.energy.ca.gov/fuels/gasoline/taxable_gasoline.html.

Small, incremental expansions at California refineries have added approximately 100,000 barrels per day of capacity since 1992 (a growth rate of approximately 1 percent per year). One California Energy Commission study states that future growth is not likely to exceed this rate of 1 percent. Consultant Report, MTBE Phase Out in California, at 25-27.

[218] GAO, supra. See also Verleger, *The California Conundrum*, 2000. Precise statistics on imports and exports from states and regions are difficult to obtain. Moreover, the average daily figures are imprecise because demand is higher in the summer and lower in the winter, and the market economics change from season to season.

[219] Documents in Subcommittee files.

to be short over the next several years, based on demand growth, announced refinery expansions, and the loss of gasoline volume that would occur with a MTBE phase-out.[220]

From a refiner's perspective, the current tightness in the overall supply/demand balance in California and the West Coast is optimal for profit-maximization. When a market is in tight balance or a little bit short and imports are necessary to satisfy peak demand, prices will be lifted by an amount at least equal to the cost to import marginal barrels from elsewhere.[221]

Moreover, as recent history in California (and the Midwest) demonstrates, when supply and demand are closely balanced and inventories are low, refinery or pipeline disruptions will cause immediate supply shortages. Because of the price inelasticity of gasoline, these supply shortages will lead to large increases in price and corresponding increases in refining margins. Due to the time lag for additional production to reach West Coast markets, prices may increase well above import parity. Eventually, once prices reach a sufficient level for a sufficient length of time, refiners will increase production and may selectively import gasoline to take advantage

[220] Documents in Subcommittee files.

[221] If a market is very long – an excess of supply over demand – spot gasoline prices will decline and refining margins will decrease. If a market is very short – a supply shortfall relative to demand – the higher prices that result may eventually attract investment in pipelines and other infrastructure to bring in additional supply to realize these higher prices, which would then decrease as a result of the additional supply. For example, the Longhorn Pipeline, is being developed to transport gasoline, diesel, and aviation fuel produced at Gulf Coast refineries to terminals at Odessa, Texas and El Paso, Texas. Gasoline prices in these markets have historically been 10 to 20 cents per gallon higher than in the cities nearer the Gulf Coast refineries. In El Paso, gasoline also may be transferred to pipelines serving Albuquerque, Tucson, and Phoenix, where prices also have been well above the national average. Some contend that the Longhorn pipeline may improve the supply/demand balance in California, as additional supplies to Arizona from Texas could "back out" the need for Arizona to import from California. Because of the barriers to entry into the California market, as discussed below, it will take a significantly greater imbalance in California than elsewhere to attract sufficient investment for any new infrastructure in California.

of these high prices and margins, which will eventually increase supplies and cause prices to fall back.[222] But, as the California situation demonstrates, if there are high barriers to imports, the price increases may be significant and may last for extended periods of time.

An examination of price data from California illustrates how refining margins have increased as a result of the increasing tightness of the California market. As the overall supply/demand balance in the West Coast became tighter, the market moved from "export parity" to "import parity." "Export parity" describes the situation in which there is an excess of supply over demand and the price of gasoline falls until it is equally profitable to export an additional amount of gasoline produced as it is to sell it within the state. "Import parity" describes the situation in which there is a shortfall of supply and gasoline must be imported to satisfy demand – in this situation the price within the state will rise until it is sufficiently high to attract imports from elsewhere. Hence, as the supply/demand balance has tightened, refiners in California stopped exporting and began regularly importing gasoline.

The transition to import parity is shown in Figure IV.1 (page240) (the difference between the West Coast and Gulf Coast spot prices for unleaded regular gasoline) and in Figure IV.2 (page 241) (the difference between the West Coast and Gulf Coast spot prices for unleaded regular prior to 1996 and CARB gasoline during and after 1996). As supply has become tighter and imports have become necessary to satisfy the demand for gasoline, the price of gasoline has risen to levels sufficient to attract those imports.

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[222] In a market that is slightly short, individual refiners will seek to be balanced or slightly long in order to be able to sell enough gasoline to take advantage of high margins as they may arise. Thus, although a refiner may be able to maximize profits when the overall market is a bit short, it is not in any refiner's interest to be very much short in such a market. In aggregate, these interests may help keep the market in a tight balance as demand increases.

In the past several years, the price of gasoline sold within the state has been at least equal to the cost of producing and transporting marginal barrels of gasoline into the state. Figure IV.1 (page 241) indicates that the spot price of unleaded regular gasoline in Los Angeles has increasingly moved above this amount after 1996. Figure IV.2 (page 242) also indicates that the import parity price for CARB gasoline has increased in recent years. This is due to increases in the costs of the components for producing CARB gasoline as well as an increase in shipping costs.[223] As the costs of imports have increased, the price of gasoline in California has increased as well.

The cost of gasoline in California may even be higher than the actual cost to import gasoline. In light of the volatility in California gasoline prices and the time it takes for imports to reach the California market, a premium above the cost-to-import may be necessary to compensate for the risk of rapid price changes. The Consultant Report to the California Energy Commission on the MTBE Phase-Out concludes that when comparing the Gulf Coast and West Coast spot prices over the past ten years, "it is clear there is a rising trend with increasing volatility in the premium that California is paying over the Gulf Coast for its gasoline supplies. But while a price spike in 1996 was able to attract the equivalent of [50,000 barrels per day] in

[223] The Consultant Report to the California Energy Commission on the MTBE Phase-Out in California states that product from the Gulf Coast has become more scarce as the Gulf Coast refineries no longer have spare refining capacity and must compete with demand from East Coast states. The Report also states that Gulf Coast refiners will produce alkylate, a blending component that is particularly desirable for California refiners producing CARB, only when the value of propylene, a key component of alkylate, becomes less valuable to the chemical industry, where it also is used. According to the Report, "This means that a California importer will have to offer a premium of 20 cpg over Gulf Coast gasoline, with peaks of 30 to 35 cpg if the alternate value is determined by chemical grade demand. Including transportation from the Gulf Coast, delivered cost to California would have to be sustained in the range of 30 to 55 cpg over the price of USGC gasoline to consistent attract sufficient volumes." *MTBE Phase Out in California*, at 31.

supplies from the US Gulf Coast, subsequent sustained and higher price differentials in 2000 have not resulted in more than the equivalent of [12,000 barrels per day] to be shipped from the Gulf Coast."[224]

One industry analysis concludes that an integrated refiner's strategy for maximizing profits should be as follows:

- "In an import parity market refining has a higher contribution to integrated profits.
- "Balanced players should move towards a short position in an export parity. market. . .
- "Short players should move towards a balanced position in an import parity market."[225]

The few refiners in California thus share a common motive to maintain the current "tight" balance in the California market.

iv. In recent years, retail gasoline prices, gasoline price volatility, and gasoline refining margins in California have increased. The high degree of concentration has led to higher retail prices. Today California is one of the most profitable markets for refiners.

With respect to retail prices, "before the mid-1990s, California prices were typically within a few cents per gallon of the national average and, in many years, were actually lower."[226]

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[224] *MTBE Phase Out in California*, at 9. See also Verleger, *The California Conundrum*. In 1999, Verleger concluded that a premium of 30 cents was necessary to attract imports. Verleger attributed the volatility in California's retail prices "directly to changes in inventory levels." *Id.* at 28.

[225] Documents in Subcommittee files.

[226] Attorney General of California Report, at 41-42.

(See Figure IV.3. on page 243) From the mid-1990s to 2001, the average annual retail price of gasoline in California increased by about 40 percent.[227] (See Figure IV.4 on page 244.)

For the most part, prices in California also have become more volatile than in the rest of the nation. According to the GAO, gasoline retail prices "spiked" seven times in California between January 1, 1995, and December 31, 1999. (GAO defines a "spike" as an increase of at least 6 cents per gallon in a 4- to 21-week period).[228] And although the GAO concluded that price spikes during this period were no more frequent in California than in the rest of the nation and that these spikes coincided with increases in crude oil prices and increases in demand during the spring and summer driving seasons, it also found that the spikes were from 3 to 31 cents higher in California than in the rest of the United States.

As a result, today California is the most attractive region in the nation for refining. Margins in California are significantly higher than in other regions of the country. One document obtained by the Subcommittee reflects a view within one oil company that the "isolated nature of the West Coast market, along with the tightest fuel specifications in the country and numerous other regulatory barriers, help keep West Coast profitability . . . above the Gulf Coast."[229] Another industry document stated that with respect to refining margins the previous week, "as is typically the case, California integrated margins were comparably

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[227] From 1993 through 1995, the annual average retail price in California hovered around \$1.22 per gallon, plus or minus one cent. In 1996, the price rose to \$1.31, and then in 1997 to \$1.33. In 1998, the annual average price dropped to \$1.16 gallon, but returned to \$1.38 the next year, in 1999. In 2000, the average price jumped to \$1.79, and the average for 2001 up to September 11, 2001 was \$1.73. The price rise in California over this period has been greater than the changes in the overall national average retail price.

[228] GAO, supra, at 9.

[229] Document in Subcommittee files.

stronger" than margins elsewhere.[230] Another company document states, "High West Coast margins reflect supply uncertainty associated with unique California product specifications, isolated and expensive logistics from major refining centers, and more stringent regulatory oversight. These factors have also led to higher volatility versus other U.S. regions. Longer term, we expect the West Coast to remain attractive as the factors that historically led to high margins continue."[231]

In April 2001, Valero Chief Executive Officer William Greehey painted an optimistic portrait of the refining industry's financial outlook, especially in California, where refining margins were particularly high. "I've never seen fundamentals look this strong for our industry," Greehey said.[232] The favorable fundamentals cited by Greehey were low inventories, fewer imports, and reduced production.

Several industry documents provide evidence that higher concentration in the retail market allows oil companies to charge higher pump prices for gasoline. One document from the *Aguilar* case (see Exhibit IV.11 on page 244) indicates that the "key variables" in determining retail margins (i.e. the difference between the retail price and the wholesale price) are the presence of major oil companies in the market, the presence of independents, the extent to which the major oil companies sell through their own stores or through lessee-dealers, and the average

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[230] Document in Subcommittee files.

[231] Document in Subcommittee files.

[232] *Industry Fundamentals Point to Profits Now and in the Future*, Octane Week, April 23, 2001. Greehey presented the following numbers: "The CARB gasoline margins were outstanding this quarter, reaching $19.47/bbl [barrel]. CARB gasoline margins are averaging almost $29/bbl in April. Currently, they're about $24.50/bbl." These CARB margins were significantly higher than contemporaneous Gulf Coast margins. Gulf Goast margins were $5.76 per barrel for the first quarter and averaged around $12 per barrel in April. *Id.*

income of the local population. Thus, for example, a city like Washington, DC, in which there is a high concentration of majors and few independents, has higher retail prices than a city like Indianapolis, in which there is a lower concentration of major brands and more independents.

Another, more recent document obtained by the Subcommittee presents a similar analysis. (See Exhibit IV.12 on page 248.) Although this analysis is labeled "preliminary," it, too, indicates that "five main factors have significant influence on real margins in a market": the market share of the "new era" competitors (such as hypermarkets or convenience stores), the market share of the top four "players," the per capita income of the market, the average size of a station in the market (gallons per fueling position), and the market share of the company-owned or leased gasoline stations. Under this analysis, retail prices are higher in concentrated markets than in markets where there is more competition, such as from hypermarkets or convenience stores.

v. The high degree of vertical integration in California between refiners and marketers leads to higher wholesale prices.

The near-total integration between the refining and marketing sectors in California stifles price competition in both sectors. In markets where there are few independent *retailers*, there are few customers for the gasoline produced by an independent refiner; hence not much gasoline will be bought at a wholesale price lower than the wholesale prices set by the integrated refiners. Similarly, in markets where there are few independent *refiners*, there will not be much wholesale gasoline sold at a price lower than the wholesale price set by the integrated refiner.

A study of the effects of Tosco's purchase of Unocal's refining and marketing assets in 1997 indicates how vertical integration raises prices. Prior to the merger, Tosco operated two

West Coast refineries. In California, it operated the Avon refinery near the San Francisco Bay, which it had bought in 1976 when Phillips was required to divest its West Coast refineries. It also operated the Ferndale Refinery, near Puget Sound in Washington state, which was purchased from BP in 1993. At the time it acquired the Ferndale refinery, Tosco was a major source of gasoline for independent stations within California.

Soon afterwards, however, Tosco embarked on a program to acquire retail assets. In 1994, it acquired BP's retail outlets on the West Coast, which were mostly in the Pacific Northwest. It also acquired the Circle K convenience stores and gasoline stations, which were mostly located in Arizona, with a few stations in Nevada and Southern California .

Its market share in these cities ranged from zero up to 40 percent.[233]

In 1994, at the Pacific Oil Conference, Tom O'Malley, President of Tosco, explained Tosco's business strategy in acquiring retail assets and the implications for the independents seeking gasoline from Tosco (see Exhibit IV.13 on page 249). O'Malley explained that although he forecast a potential loss of margin for some period of time following the introduction of CARB gasoline because of higher prices for CARB, "CARB gasoline will, on the other hand, increase everyone's volumes by 3% or 4% due to its low mileage characteristics." O'Malley then explained why Tosco intended to stop selling gasoline on the spot market in California:

> There also is a real potential for short term interruption of large volumes of CARB Phase II gasoline supply. If one of the big cat crackers or other key units in California goes down unexpectedly, we could see spot market price spikes of large dimension and serious short term supply difficulty. This should give anyone who relies on the spot market an incentive to tie up supply with a large refiner.

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[233] Richard Gilbert and Justine Hastings, *Vertical Integration in Gasoline Supply: An Empirical Test of Raising Rivals' Costs*, June 2001, at 21.

> Tosco estimates . . . that it is the 3rd largest gasoline producer in PADD V and the 5th largest in California. Tosco intends to devote its PADD V supply to our retail system and customers who want a long term arrangement. We want to avoid as much as possible spot supply arrangements. ***If I were a California retailer and didn't have a widely recognized brand with a strong PADD V refining system behind it I'd be worried.*** We are here to eliminate worries!! (emphasis added).

Prior to the merger Unocal had refineries in Northern and Southern California and owned a number the Union 76 brand stations in a number of West Coast cities. Generally, Unocal's and Tosco's retail markets did not overlap.

Professors Gilbert and Hastings studied the effect of the Tosco-Unocal merger on wholesale and retail prices.[234] Their studies found "evidence in a broad panel that vertical integration matters for upstream retail prices and that wholesale prices tend to be higher in markets with large vertically integrated firms. This finding is consistent with the strategic incentive and ability of vertically integrated firms to raise input costs to downstream rivals."[235] The study also found "a positive relationship between downstream market share and the unbranded wholesale price. The coefficient implies that for every 1 percent increase in downstream market share, Tosco's price rises by 0.198 cents per gallon. For San Jose, this implies a 2.94 cent a gallon increase in the price of unbranded gasoline resulting from the acquisition of Unocal's retail outlets."[236]

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[234] Richard Gilbert and Justine Hastings, *Vertical Integration in Gasoline Supply: An Empirical Test of Raising Rivals' Costs*, June 2001.

[235] *Id.* at 27-28.

[236] *Id.* at 27.

vi. The high degree of vertical integration in California between refiners and marketers leads to higher retail prices.

The demise of the Thrifty chain of independent retail stores in California illustrates the problem arising from the high degree of integration in the California market with respect to higher retail prices. The Thrifty case shows the impact of the loss of competition from a reduction in the number of independents and presents a good example of the high barriers to entry into the California market that help maintain the oligopoly within the state.

Up until 1997, Thrifty was the largest independent chain remaining in California, with about 260 outlets, mostly in Southern California. Thrifty owned and operated its own fuel terminal in Los Angeles County. It regularly imported gasoline from refiners outside the state, and other independents within the state bought from those supplies at Thrifty's terminal.[237]

Thrifty's main competition for low-priced gasoline in Southern California was ARCO. "Since ARCO dumped its credit card and began price-cutting like an independent in 1982, Thrifty, among all private-brand independents, did its best to undersell ARCO, or at least maintain price parity, while practically all other competitors declined to compete toe-to-toe with the aggressive major."[238] In late 1996, ARCO started a "fierce price war in Los Angeles, led by what competitors say is a sudden disposition of Arco to slash prices."[239] At the same time that

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[237] Anne C. Mulkern, *Little Fill'er ups failing, Consumers: They're being squeezed out by market changes that have raised their fuel costs*, Orange County Register, November 28, 2000.

[238] Mark Edmond, *ARCO Takes Over Thrifty Oil, One of the Last Independents*, National Petroleum News, April, 1997.

[239] Mark Edmond, *ARCO Initiates A Retail War in Southern Calif. Market*, Platt's Oilgram News, November 4, 1996.

unbranded rack prices (wholesale prices for independents such as Thrifty) were reported to be around 65 cents per gallon, which would translate to at least a $1.09 retail price at the pump, various ARCO retail stations were offering gasoline at 99.9 cents per gallon. "ARCO moderated their prices for a while," one marketer said, "but lost a lot of market share, and they decided to get tough. With rack prices what they are, Thrifty hasn't been able to keep up."[240]

Over the next several weeks, Platt's reported, ARCO continued to pummel its competitors. "Nudged by the recent refinery fire at Texaco's Wilmington, California refinery, major oil companies are in general trying to recover from a gasoline price war in Los Angeles that saw the market leader posting pump prices as low as 97.9 cts/gal."[241] According to several marketers, most refiners had raised the dealer tankwagon prices charged to their retail outlets by up to 8 cents per gallon, but ARCO had raised the prices to its dealers by only about 2 cents per gallon. Although the dealer tankwagon prices generally stood around 66 cents per gallon, excluding federal and state taxes, ARCO's price remained at 50 cents per gallon. Unbranded rack prices stood at about 62-61 cents per gallon. Thus, ARCO was undercutting its major competitors as well as the independents by at least 10 cents per gallon, "without any sign that the company intends to relent, marketers said."[242]

According to one jobber interviewed by Platt's, ARCO's price war "stems not so much from the loss of market share, which isn't supported by available statistics, but rather from the

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[240] Platt's Oilgram News, November 4, 1996.

[241] Mark Edmond, *ARCO Unyielding in California Price War*, Platt's Oilgram News, November 26, 1996.

[242] Platt's Oilgram News, November 26, 1996.

fact that many of its branded open dealers were switching to other major brands. Competition among majors for open dealers is fierce."[243]

It did not take very long for the Thrifty chain to fold. In early March 1997, ARCO announced it would begin to operate all of the Thrifty stations under lease from Thrifty.[244] "By leasing all Thrifty's stations, ARCO essentially retires the independent as a competitor," the press reported.[245] Following the takeover, Thrifty stations began selling gasoline made at ARCO refineries, and ARCO closed the terminal.

The loss of independent Thrifty stations led to increases in retail prices in those areas formerly served by Thrifty stations. In another economic analysis, Professor Hastings compared the changes in retail prices in local markets affected by the Thrifty to ARCO conversion with the prices in local markets unaffected by the conversion. Hastings concluded that prices increased in the areas formerly served by the Thrifty stations after ARCO assumed the leases. "Results indicate that independent competitors have a significant negative impact on retail prices. . . . When independents are replaced by branded integrated stations, competitors respond by

[243] Platt's Oilgram News, November 26, 1996.

[244] In its press releases announcing the takeover, ARCO stated that ARCO's purchase resulted from an opportunity that arose when Ted Orden, the owner of the Thrifty chain, decided to retire at age 75 and sell his privately-owned company. See, e.g., Justine S. Hastings, Vertical Relationships and Competition in Retail Gasoline Markets, Empirical Evidence from Contract Changes in Southern California. William C. Rusnack, President of ARCO Products Company, said that the Thrifty stations would fit well with ARCO, because the Thrifty customers "essentially match the profile of our customers." National Petroleum News, April 1997. "I predict ARCO will do very, very well with our locations," Orden said. *Id.*

[245] National Petroleum News, April 1997.

increasing prices. This suggests that the loss of independent retailers resulted in a loss to consumer welfare."[246]

One oil company's analysis considered ARCO's actions more targeted:

> In September, 1996, it became clear that ARCO had decided to target Thrifty. Our analysis indicates that ARCO decided to move the street price down dramatically in order to force Thrifty, their main competitor at the low price point, to either give up or change its street pricing policy. They drove DTW down to as much as 15 cpg below spot. Street prices were under $1.00 per gallon. As a consequence, Industry's marketing margins were extremely negative until Thrifty agreed to lease their stations to ARCO in late February/early March 1997. Then ARCO raised DTW back to profitable levels.[247]

This company's analysis projected that because the price war was now over, "Marketing margins ought to be reasonable" for the next year, especially since "ARCO now owns the low end of the market with Thrifty's demise. ARCO is now short gasoline supply, so that the profitability of any incremental sales they target will get measured against spot. This ought to provide a deterrent against aggressive pricing by ARCO."[248]

As the Thrifty example demonstrates, price volatility is particularly punishing for independents. In times of scarcity, refiners will increase their unbranded rack prices faster than their branded rack and dealer tank wagon prices in order to conserve gasoline for their contract customers. Moreover, typically there is a lag between wholesale price increases and retail increases. Thus, independents – who buy at the unbranded rack price – are particularly disadvantaged during price spikes. Although these independents can recover some of their

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[246] Justine S. Hastings, Vertical Relationships and Competition in Retail Gasoline Markets, Empirical Evidence from Contract Changes in Southern California, http://www.nber.org/~confer/2002/iow02/hastings.pdf

[247] Documents in Subcommittee files.

[248] Documents in Subcommittee files.

margins as a result of the retail - wholesale lag that occurs when prices eventually decrease, extended price spikes may result in extended losses that are not recoverable during these decreases.[249] Hence, as one marketer said during ARCO's price war, "Unless price relationships get straightened out, it's impossible for unbranded marketers to survive. That's why so many are switching to major brands. To be unbranded in this market is suicide."[250]

vii. The high degree of vertical integration in California makes it more difficult to import gasoline into the state.

A high degree of vertical integration makes it more difficult for refiners in other markets to export gasoline into the integrated market, as integrated firms will not want to have other refiners sell gasoline into their market and lower prices through additional supply. In a highly integrated market, the number of non-integrated retailers remaining in the market may not be large enough to economically bring in imports from elsewhere. Thus, as a practical matter, in a highly integrated market the integrated refiners will be the only ones who determine whether to import gasoline into the state during price spikes, or whether to increase overall supply into the state. These barriers to imports will lead to higher prices. Indeed, the evidence shows that in both California and Arizona the high degree of vertical integration has led to higher retail prices.

The California Attorney General's Report on Gasoline Prices in California concluded that following the loss of Thrifty as an independent chain, "The independent marketers that

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[249] It is unclear whether the retail - wholesale price lag that occurs when prices rise is symmetrical with the lag that occurs as prices decrease. See e.g., Energy Information Administration, Price *Changes in the Gasoline Market, Are Midwestern Gasoline Prices Downward Sticky?*, February 1999; EIA website at http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/price_changes_gas_market/pdf/price_change.pdf.

[250] Platt's Oilgram News, November 26, 1996.

remain in California are not large enough to import gasoline. Accordingly, they cannot provide the competitive influence that Thrifty once did, or that independents do in other parts of the U.S."[251] Because of the highly integrated nature of the California market, it is solely these integrated refiners who determine whether to import gasoline into the state during price spikes, or whether to increase overall supply into the state.

The barriers to entry into this integrated market are high. The economies of scale necessary to support the storage, marketing, and distribution of a cargo shipment (one tanker holds approximately 10 million gallons, or 50,000 barrels) is prohibitive for anyone other than an owner of a large number of retail outlets. One document obtained by the Subcommittee reports that "the arbitrage opportunity in California, even in these periods [of 40 to 70 cent per gallon price increases], is limited to those who have a large enough California marketing presence to economically take cargo-loads of gasoline."[252] An analysis obtained by the Subcommittee indicates that a retailer would have to have at least 250 standard-sized locations to

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[251] Attorney General's Report on Pricing in California, at 46. In September 1996, World Oil, another major California independent marketer with about 250 retail outlets as well as niche wholesale distribution, signed an agreement with Exxon to carry the Exxon brand, "substantially eliminating the company from the private brand scene." National Petroleum News, April 1997. The agreement enabled Exxon to re-enter the Southern California market, which it had left four years earlier. The owner of World Oil, Bernie Roth, along with Dan Lundberg, were self-service pioneers in California. Roth built his first self-service gasoline station in 1948 and traveled with Lundberg throughout the state to convince the authorities, usually in the face of opposition from the major oil companies, that self-service was safe. Lundberg established the Serve Yourself and Multiple Pump Association, which no longer exists, as well as the Lundberg Survey, a price-reporting service, which his daughter still operates. Mark Edmond, *With World Oil, Exxon Returns to Southern California*, National Petroleum News, November 1996.

[252] Documents in Subcommittee files.

be able to import CARB gasoline economically.[253] An independent retailer with considerably fewer stations explained the scale of operations necessary to economically import gasoline:

> We believe our ability to import CARB is limited by the volume of our retail gasoline sales. To contract for delivery of imported CARB, we believe we would be required to buy entire water-borne cargoes. Cargoes delivered to California ports contain about 10 million gallons of gasoline, and we believe that terminal owners generally required that short period users turn over their terminal storage tanks within a week after delivery. To sell 10 million gallons in one week, even assuming [high] average weekly volumes, we would need a chain of stations significantly greater than our current number of stations . . . . (Storing cargo loads of gasoline for longer periods would be possible, but the costs obviously would be much higher.) In addition, the stations would need to be reasonably close to the delivery port. It would be too costly for us to truck gasoline from, for example, Los Angeles, to stations in Northern California. At the moment, we do not have sufficient sales volume to import cargoes.[254]

The volatility of CARB gasoline prices within California and the long time required to refine and transport CARB gasoline from out-of-state refineries are significant risks to anyone considering importing gasoline into the state to take advantage of then-prevailing market conditions. The absence of an established futures market for CARB gasoline also inhibits imports, as risks of price changes during production and transit cannot be hedged. By the time the imports arrive, the market conditions may have changed – such as a drop in prices – so as to defeat any expected market gains. One document obtained by the Subcommittee indicates that a refiner in California lost approximately $2 million as a result of a drop in wholesale prices during the transit of a shipment to California from the Gulf Coast.[255]

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[253] Documents in Subcommittee files.

[254] Documents in Subcommittee files.

[255] Documents in Subcommittee files.

Moreover, if refiners in California learn of cargoes of CARB about to enter the state, they may increase local supplies or lower prices to make such imports uneconomical.[256] The knowledge that additional cargoes are about to enter the market may itself be sufficient for market prices to drop. For example, one newsletter reported, "'Everyone is expecting the market to fall off in December,' said a trader. 'There is talk of cargoes coming in, and that had everyone spooked.'"[257]

Even for California refiners, it takes a high and sustained price differential to attract imports. The volatility of the California market, together with its distance from other possible sources of CARB gasoline, create significant market risks for persons attempting to import gasoline into California. Because of the relative scarcity of imports, as well as the difficulty in obtaining relevant records, it is difficult to ascertain the exact price levels necessary for in-state refiners to begin to import gasoline. One document obtained by the Subcommittee indicates that it may take a differential of 20 cents per gallon before one of the major in-state refiners will import CARB gasoline.[258] Verleger's analysis concludes that "the largest volumes of shipments have taken place when the spread exceeded 10 cents per gallon."[259] A comparison of retail prices in PADD 5 with retail prices in the Gulf Coast (as shown in Figure IV.5 on page 267)

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[256] During the investigation the Subcommittee staff received several allegations that this in fact has occurred. The staff was unable to either substantiate or disprove these allegations.

[257] *US West Coast: Gasoline Fizzles Out*, Platt's Oilgram Price Report, October 23, 1995.

[258] Documents in Subcommittee files.

[259] The California Conundrum, at 19.

show no appreciable increase in imports into the West Coast until the difference in retail price reached 20 cents per gallon.[260]

The net result of these market dynamics is that few imports reach California. In 1997 EIA reported, "imports are not a major supply source for PADD 5. For example, in 1996 PADD 5 gasoline imports only averaged 15 thousand barrels per day."[261] A recent report prepared for the California Energy Commission concludes, "To the foreign refiners, exports to California are only an incidental occurrence with uncertain margins given the shipping delays, the volatility of the California market, and the lack of a forward or futures market."[262] Although in 1999 and 2000 imports increased somewhat, Figure IV.6 (page 268) shows imports have still provided a relatively minimal contribution to the gasoline supply in PADD 5 from 1990-2000.

b) Other West Coast Markets

Other West Coast Region (PADD V) states are similarly concentrated and have comparably high retail gasoline prices. Figure IV.7 (page 269) shows that since 1992 the prices in PADD 5 have been the highest in the nation; Figure IV.8 (page 270) breaks out the PADD 5 prices by state; and Figure IV.9 (page 271) shows the widening of retail price differences between the PADD 5 states and Texas. In 2000, average gasoline prices in California (4-firm

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[260] A more accurate comparison would compare West Coast and Gulf Coast spot prices, but this data is not freely available. Figure IV.5 was derived from publicly available EIA data on retail prices. Nonetheless, the difference in retail prices between the two regions can reasonably be used to approximate the differences in margins an integrated refiner can obtain by selling in one region rather than the other.

[261] Department of Energy, Energy Information Administration, *Assessment of Summer 1997 Motor Gasoline Price Increase*, May 1998, at 19.

[262] *MTBE Phase Out in California*, at 9.

ratio of 74; HHI of 1477), excluding taxes, were the fifth highest in the nation, at $1.155 per gallon. Nevada (4-firm ratio of 64; HHI of 1360) had the third highest gasoline prices in the nation, at $1.217; Oregon (4-firm ratio of 74; HHI of 1640) the fourth highest prices at $118.3; and Washington State (4-firm ratio of 75; HHI of 1528) the sixth highest at $1.155.[263]

The one other state in PADD V state – Arizona – is only slightly less concentrated (4-firm ratio of 63; HHI of 1257), but has significantly lower prices ($1.114 per gallon in 2000; twenty-first in the nation). The Arizona market, however, has pipeline access to gasoline refined in Los Angeles and gasoline from Texas, which facilitates imports.

In January, 1998, the Attorney General of the State of Arizona issued a report on competition in gasoline prices in Arizona. "[F]aced with the need to explain the fact that prices rise at all levels at once, that prices stay high even when crude prices fall and that fewer and fewer firms control bigger and bigger pieces of the retail pie," the study was intended to answer the following "fundamental question": "Are natural market forces of supply and demand at work, or is there collusion, monopoly or some other market-distorting and consumer-harming process driving prices."[264]

In the Executive Summary, the Attorney General's report stated:

> Following an exhaustive investigation, the Attorney General has concluded that "they" are not "fixing prices." However, in key markets, mergers, oligopoly market-harming supply and distribution structures have lessened competition and injured consumers. In some markets in Arizona, specifically in Cochise County

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[263] Prices and concentration figures are from EIA. Concentration figures reflect market shares in the year 2000.

[264] Arizona Attorney General's Report, at 1.

> and Pima County, the Attorney General has concluded monopoly-type conditions warrant further action. In other markets, the free enterprise is alive and well.[265]

The Arizona Attorney General's report cited several factors for the lack of competition in a number of Arizona cities: exclusive supply contracts between branded retail stations and their suppliers, the disappearance of independent suppliers, the relative parity in pricing between major oil companies, and the increased integration between refiners and retailers.

In Hawaii, the gasoline market is highly concentrated at several levels. In Hawaii there are only two refineries, owned by Chevron and Tesoro. Four firms–Chevron, Tesoro, Equilon and Tosco–account for all of the gasoline sold wholesale within the state; the HHI for the wholesale market is 2889. Equilon, which markets gasoline under the Shell and Texaco brands, and Tosco, which markets under the Unocal brand, purchase gasoline wholesale from Chevron and Tesoro. All of the gasoline sold at the retail level in Hawaii is sold at retail gas stations either directly owned by these firms or through their franchisees.

Hawaii has the second highest gasoline prices in the nation; in 2000 averaging \$1.289 per gallon, excluding taxes, for regular grade unleaded.[266] From 1995 through the first half of 1998 gasoline prices in Hawaii averaged more than 30 cents per gallon higher than mainland prices.[267]

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[265] Arizona Attorney General's Report, at 1.

[266] EIA Data provided to Subcommittee. Hawaii has the highest taxes in the nation, totaling 54.9 cents per gallon as of February 2001. API, *How Much We Pay for Gasoline*, April 2001. The highest gasoline prices in the nation, excluding taxes, are in Alaska, at \$131.4 cents per gallon in 2000. Alaska is also highly concentrated–the HHI is about 2600 and the 4-firm concentration ratio is about 96. Because of its geographic isolation, Alaska can be considered a distinct market. EIA, *supra*. Taxes in Alaska, however, are the lowest in the nation, at 26.4 cents per gallon. API, *supra*.

[267] *Bronster v. Chevron, et al.*, Civil-No. 98-00792-SPK (D. Hawaii 1999) (second amended complaint for injunctive and other relief under the Sherman Act).

According to the Attorney General of Hawaii, the higher price in Hawaii can not be attributed to higher refining costs within the state or higher transportation costs to the state. The Attorney General states that over this period the price in Hawaii "exceeded the cost of buying gasoline in California and transporting it to Hawaii . . . by more than $0.20 per gallon."[268] Moreover, according to the Attorney General, the cost of transporting crude oil to Hawaii or refining gasoline in Hawaii is not higher than such costs on the mainland. The State of Hawaii attributes the higher retail prices within the state to the lack of competition within the state and the market power of the defendants.[269]

2. The Midwest

Fifteen Midwestern states comprise one of the five regional markets for petroleum products in the United States. PADD 2 consists of the following states: Indiana, Illinois, Kentucky, Tennessee, Michigan, Ohio, Minnesota, Wisconsin, North Dakota, South Dakota, Oklahoma, Kansas, Missouri, Nebraska, and Iowa.

As a region, the Midwest consumes approximately 4 million barrels of gasoline per day. Refiners in the Midwest supply about three-fourths of the region's demand. Although a small amount of the balance is imported from refineries in neighboring states, most of the additional supply is imported from the refineries along the Gulf Coast. Two major pipelines, the Explorer

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[268] *Id.* Without any retail or wholesale outlets in Hawaii no other refiners could take advantage of these price differentials and ship gasoline to Hawaii.

[269] *Id.* The State has alleged that the refiners in the state willfully misled the state regarding the nature of the Hawaiian market and entered into a conspiracy amongst themselves to maintain high, non-competitive retail prices in the state. The lawsuit is pending.

Pipeline and the Centennial Pipeline, run from the Gulf Coast into the Midwest. A significant amount of gasoline also travels from the Gulf Coast to the Midwest by barge along the Mississippi River. It takes approximately three weeks for a shipment from the Gulf Coast to arrive in the Midwest.

A number of the markets within the Midwest are highly concentrated, although the region as a whole is not. In Michigan, 4 firms – Marathon Ashland Petroleum (Marathon), BP, Mobil, and Equilon– provide more than two-thirds of the gasoline sold within the state. Citgo, Sunoco, and Clark account for about an additional 20 percent. In Ohio, Marathon, BP, Equilon, and Sun provide about 82 percent of the gasoline sold in the state; the HHI for the Ohio wholesale market is 2099, well into the "highly concentrated" range.[270]

Many of these same firms with large market shares for the gasoline sold in the state also possess large shares of the ownership of the pipelines that transport gasoline into these regions. Marathon, Citgo, and Sunoco have major shares in the Explorer Pipeline Company, which provides, from refineries along the Gulf Coast, about 10 percent of the gasoline consumed in the Midwest.

In addition, the major marketers in Michigan own substantial pipeline and terminal assets in the state. Mobil, Equilon, Citgo, and Marathon own about two-thirds of the Wolverine Pipeline, which provides approximately 30 percent of the gasoline sold in the state.[271]

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[270] Market share data compiled from EIA data, and documents in Subcommittee files.

[271] See FERC, Wolverine Pipeline Company, Order on Application for Market Power Determination and Establishing a Hearing, Docket No. OR99-15-000 (Sept. 29, 2000).

Marathon also owns most of the terminal capacity in the lower peninsula of Michigan. As a result of Marathon's acquisition of the Ultramar Diamond Shamrock assets in Michigan, Marathon now owns just over 60 percent of the terminal capacity in the northern lower peninsula (HHI almost 3,900), and just over 50 percent of the terminal capacity in the lower peninsula, excluding Detroit (HHI almost 3,000). For unbranded product in the lower peninsula, excluding Detroit, Marathon's share of terminal capacity is over 71 percent (HHI almost 5,500).[272] This high degree of concentration in the ownership of terminal capacity has raised concerns regarding the continued availability of supply of unbranded gasoline at competitive prices.

There are several examples of situations in which the decisions of a few of the major refiners in the Midwest with significant market shares have affected the overall supply and demand balance. These decisions served to restrict or reduce the overall amount of supply available, which has contributed to the dramatic fluctuation of prices in the Midwestern markets.

The Subcommittee's analyses of the three price spikes in the past two years reveals several common factors. Prior to these price spikes supply and demand were closely balanced; inventories were low; and in each of the price spikes supply was disrupted in some manner. Because demand for gasoline is inelastic, even a small reduction in supply in a closely balanced market will lead to large price increases.

As these price spikes demonstrate, because the domestic market is held in such a tight balance between supply and demand, it is highly vulnerable to such disruptions. Refineries are large, complex, capital-intensive industrial facilities that process large quantities of flammable

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[272] The terminal concentration figures are based upon the Declaration of the Michigan Petroleum Association, Michigan Association of Convenience Stores, to the Federal Trade Commission.

and hazardous materials; they are expected to operate near peak capacity for much of the year. Only a few major pipelines supply large amounts of refined products to entire regions of the country. The rest of the transportation system—tankers, barges, and trucks—are vulnerable to weather, natural disasters, and man-made bottlenecks. Projections of future supply and demand are made on the basis of incomplete information about current and future conditions and trends.

As in California, but to a lesser extent, concentration and integration among the refiners in the region has exacerbated these factors. In a tight market where each refiner has a significant market share, each refiner's decisions regarding inventories and production rates can affect the overall supply/demand balance.

a) Spring Price Spike, 2000

During a three-week period in the spring of 2000, the retail price for reformulated gasoline in Chicago rose almost 30 cents (from $1.85 per gallon on May 30 to $2.13 on June 20) while the national average price for RFG rose only about 6 cents. Over the next month prices in Chicago fell 56 cents, to $1.57 on July 24, whereas over a similar period national prices slipped about 6 cents, to $1.61 per gallon. At the peak of the Midwestern spike, the wholesale price of RFG in Chicago had risen from parity with the wholesale price in Dallas to 45 cents more than the price in Dallas.[273] Similar increases were seen in other Midwestern cities.

The Federal Trade Commission's review of the spring 2000 price spike found no collusion and reported that gas prices rose "both because of factors beyond the industry's immediate control [including production problems and pipeline disruptions] and because of

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[273] Final Report of the Federal Trade Commission, *Midwest Gasoline Price Investigation*, March 29, 2001.

conscious (but independent) choices by industry participants." The FTC found that "each industry participant acted unilaterally and followed individual profit-maximization strategies." The FTC also noted that the problems that occurred were "exacerbated because gasoline inventories in the Midwest were at or near minimum operating levels in May and June 2000." Inventories were low, the FTC said, because of the high price of crude oil at the time and the expectation that the prices would fall, the decision by the oil industry to follow just-in-time inventory practices, and pipeline problems.

The FTC also found that "the industry as a whole made errors in supply forecasts and underestimated the potential for supply shortages in the Midwest in the spring and early summer 2000." The FTC report goes on to say, "A significant part of the reduction in the supply of RFG was caused by the investment decisions of three firms. When determining how they would comply with the stricter EPA regulations for summer-grade RFG that took effect in the spring 2000, three Midwest refiners each independently concluded it was most profitable to limit capital expenditures to upgrade their refineries to the extent necessary to supply their branded gas stations and contractual obligations. As a result of these decisions, these three firms produced, in the aggregate, 23 percent less summer-grade RFG during the second quarter of 2000 than in 1999. Consequently, these three firms were able to satisfy the needs of only their branded gas stations and their contractual obligations and could not produce summer-grade RFG to sell on the spot market as they had done in prior years."[274] The FTC also found that while Marathon actually did increase its production of RFG and had excess supplies of RFG, it

[274] These three companies did, the FTC notes, produce more conventional gasoline in April/May/June than they had in 1999 and as a result, in the aggregate, they produced roughly the same amount of gasoline in that timeframe in 2000 as in 1999.

"limited the magnitude of its response [to the supply shortage] because it recognized that increasing supply to the market would push down prices and thereby reduce the profitability of its overall RFG sales."

EPA regulations required that a new, more complex RFG be used in the summer of 2000. Difficulties in producing the new blendstock for summer-grade RFG and economic and physical trade-offs between the production of this summer-grade RFG and conventional gasoline led several refiners to limit the amount of RFG they produced in the spring of 2000. Three refiners–Exxon-Mobil, Equiva, and Premcor–produced enough RFG to meet their branded needs only, thereby resulting in 23% less RFG than they had produced in 1999. Consequently they did not produce enough summer-grade RFG to sell it on the spot market as they had done the previous year, which helped tighten the market for RFG. Another refiner increased the production of RFG blendstock over 1999, but at the expense of a 5 percent reduction in overall gasoline production. The FTC found a number of officials in refining companies were aware of possible shortfalls in supply in the Midwest in the first quarter of 2000. For example, BP provided to the FTC documents that showed that a number of BP officials knew in January that it was likely that overall the Midwest would be short on supply of RFG in the April/May/June 2000 time frame. BP told the FTC that it wasn't until May 2000, after it actually experienced terminal outages, that it took action to increase supplies.

In January 2000, Exxon-Mobil stated in an internal company document obtained by the FTC, "Some uncertainty regarding competition's ability to meet summer gasoline requirements (sic). It is possible other refiners. . . will be in a similar situation. Consequently, can expect any refinery or supply problem this summer to have a significant market impact."

The FTC found that CITGO also had warnings of a possible shortage in the upcoming spring or summer. As it approached other oil companies early in 2000 about available supplies of RFG that CITGO could purchase for the spring/summer of 2000, CITGO learned that both BP and Exxon-Mobil would not be able to provide CITGO with any RFG, since they anticipated having only enough to supply their own dealers. Yet, according to the FTC, CITGO did not convert from winter grade to summer grade sufficiently in advance to address the upcoming shortage. The FTC reports that, in retrospect, it would have been "reasonable" for CITGO to make and store its summer gasoline earlier than April 1st, the time it began summer production. In the end, CITGO waited 4 to 6 weeks, until late May, before it ordered its Gulf Coast refineries to make RFG for shipment to the Midwest because it was uncertain as to how long the price spike would continue. CITGO told the FTC that it should have made that decision earlier, and the FTC quotes a CITGO official as saying "the industry got caught napping on this one."

The FTC found that "some firms delayed taking action to see whether the price spike was short lived or longer lasting." The FTC found that CITGO delayed producing more gasoline in its Gulf Coast refinery because it said it didn't know how long the price spike would last and didn't know whether rushing in new product would be profitable by the time it got there.

Although Koch Industries increased its production capacity for RFG in the summer of 2000 to 20,000 barrels per day (BPD), twice its projected need for serving the Milwaukee area, it produced RFG at the rate of 10,000 BPD until the price spikes of late May and June 2000. It then increased its production to 20,000 BPD, but the FTC reports that the increased level of production lasted only a few days, however, since Koch said it found the demand was insufficient for that level of production.

The FTC also found that Marathon had additional gasoline available but limited its response because "selling extra supply would have pushed down prices and thereby reduced the profitability of its existing gasoline sales." The FTC noted that, unlike a number of other refiners in the Midwest, Marathon had increased production of summer-grade gasoline blendstock by 33 percent over the previous year and had a 10-15 day reserve inventory of summer-grade RBOB[275] for its customers in Chicago and Milwaukee in the spring of 2000. At one point during the spike, BP sought to purchase some additional supply from Marathon. The price offered by BP was 13 cents lower than the then-current rack price. Marathon was unwilling to sell to BP at a price 13 cents less than it was selling to its own branded customers. According to one Marathon executive, "So the question we had was if we sell to them, essentially you are undercutting your own price. If we agreed to that price, we are undercutting 39,000 barrels a day that we sell to our customers for 13 cents."[276] Marathon also explains that it wanted to maintain its 15-day reserve throughout this period. According to Marathon, it was unsure how long the price spike would last and wanted to ensure that it had sufficient supplies for its own customers throughout any extended shortage. Thus, Marathon states it was reluctant to sell from its inventory to provide supplies to its competitors. No sale to BP ever occurred.

Marathon officials recognized that their decision on whether to put additional supplies into the market would affect the price of the entire market. In memos discussing the sale of the RFG, Marathon officials expressed concern about the "need to remember the leverage impact of any sale." In one intra-office e-mail one of the discussants of the BP offer said, "We bring the

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[275] RBOB is the "blendstock" that is mixed with ethanol or MTBE to produce oxygenated gasoline.

[276] Document in Subcommittee files.

whole market up or down based on these spot sales." "If we cannot sell as of the RBOB we project to make it isn't my biggest concern," the Vice President of Operations Planning and Supply wrote in one e-mail. "I would rather have $.40/gallon margins of 40,000 bpd than $.10/gallon margins on 50,000 bpd." Another employee remarked that Marathon not "get to the place of being a seller to the point that we have to unload any product and trash the market."[277] Thus, concluded the FTC, Marathon had additional supplies of RFG during the Midwest price spike in the spring of 2000 but "limited its response because selling extra supply would have pushed down prices and thereby reduced the profitability of its existing RFG sales."[278]

The FTC report illustrates how the supply decisions of a small number of companies–even as few as one or two–can have a significant effect on supply and prices in a market. Most of the companies involved knew that supplies would be tight in the spring/summer of 2000, and the system was extremely vulnerable to any disruptions. Despite this impending overall vulnerability, the oil companies allowed the supply situation to remain precarious, with each company having limited incentive to bring in additional supplies prior to the price spike.

The FTC concludes based on its investigation that "similar price spikes are capable of replication." "Notwithstanding the industry's ability to respond to the short-term problem, the long-term refining imbalance in the United States must be addressed, or similar price spikes in the Midwest and other regions of the country are likely."

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[277] Document in Subcommittee files.

[278] FTC Report, at 45.

b) Spring Price Spike, 2001

Many of the factors that led to the price spike in the spring of 2000 also contributed to the price spike in the spring of 2001. First, crude oil prices in early 2001 hovered near $30 per barrel, the same level as the same time the previous year. When crude oil prices are high, refiners will minimize their purchases of crude and draw down existing crude inventories in anticipation of lower crude prices in the future. Similarly, these refiners will sell off existing inventories of refined products when near-term product prices are high in relation to anticipated future prices. Thus, as a result of the relatively high prices for crude oil, in early 2001 stocks of both crude oil and refined gasoline again fell to very low levels.[279]

Other seasonal environmental and economic factors contributed to the low inventories of gasoline for the upcoming summer driving season. The early spring is the season in which refiners switch substantial production from home heating oil, for which demand peaks during the winter, to gasoline, for which demand peaks during the summer. In a number of urban areas, refiners also must switch from winter-grade gasoline to summer grade gasoline. Refiners will attempt to maximize the sales of winter-grade gasoline prior to fully stocking up on summer-grade gasoline, further dampening amounts of gasoline in stock throughout the spring.[280] With this background of low inventories, the stage was again set for price volatility.

[279] In early March 2001, stocks were more than 12% less than "normal" (i.e. the 5-year rolling average) for that time of year. In mid-April, PADD II stocks had fallen to approximately 45 million barrels, which was about 2 million barrels, or 4% lower than the lowest inventory levels in PADD II in the spring of 2000. EIA Data provide to Subcommittee.

[280] Statement of John Cook, Before the Subcommittee on Energy Policy, Natural Resources and Regulatory Affairs, House Committee on Government Reform, June 14, 2001.

Indeed, the volatility in 2001 was entirely foreseeable in light of the experience in 2000. On March 30, 2001, the EIA reported:

> [G]asoline inventories going into the driving season are projected to be about the same or even less than last year, which could set the stage for regional supply problems that once again could bring about significant price volatility, especially in the Midwest and on both coasts. With little stock cushion to absorb unexpected changes in supply or demand, regional problems can arise from temporary or permanent losses of refining capacity, or pipeline disruptions, particularly since there is no excess U.S. refining capacity available in the summer.[281]

In early April, an explosion at a Conoco refinery in England disrupted the production of about 20,000 barrels a day of gasoline for U.S. markets for about three weeks. "The market impact of Monday's fire at Conoco's Humberside refinery in England has been felt far and wide," reported the Financial Times, "and nowhere more so than the US where the spread between a barrel of gasoline and a barrel of crude oil rose yesterday to more than Dollars 15. [A senior energy analyst at Merrill Lynch] put this in historical perspective. 'In the previous 15 years before 2000, which was an exceptional year, this spread (between gasoline and crude) has only ever risen above Dollars 10 three times, and then only for a matter of weeks.'"[282] According to the Financial Times, the extraordinary margins for refined gasoline were even

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[281] Summary Statement of John Cook, Director, Petroleum Division, Energy Information Administration, U.S. Department of Energy, before the Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, U.S. House of Representatives, *The Drivers Behind Current U.S. Crude Oil and Petroleum Market Prices*, March 30, 2001.

[282] David Buchan, *Heat From Conoco Fire Felt Across World Oil Market*, Financial Times (London ed.), April 18, 2001.

leading to increased crude prices. "US gasoline prices have recently been dragging crude oil prices up more effectively than production cuts by the OPEC cartel," the paper reported.[283]

In late April, a fire at Tosco's 385,000 barrel/day refinery at Wood River, Illinois, cut the facility's ability to produce reformulated gas by approximately 50 percent for 2 to 3 weeks. "Observers say that, for a variety of reasons, including a general fear of tightening supply by wholesale buyers and distributors, prices are very unstable," the St. Louis Post-Dispatch reported. "The Tosco fire only helped to drive them higher."[284]

In response to the tight supply and demand situation, and fueled by these refinery outages, spot prices for gasoline began to rise in early April and continued to rise throughout April and May. Wholesale (rack) prices–the prices refiners charge to gasoline distributors–and retail pump prices rose shortly after the increases in the spot prices, so that the increases in the spot prices were soon passed on to the public at the gasoline pump.[285]

In mid-May, in the midst of the spring price spike, the EIA projected prices peaking between $1.65 and $1.75 per gallon and further volatility. "We are projecting continued low

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[283] Buchan, Financial Times; On the same date the London Daily Telegraph reported "London's benchmark Brent contract for June delivery jumped by as much as 88 cents to $28.25 a barrel in early trading, although prices later dropped back to close at $27.62, up 25 cents. The move followed a similar jump in American crude oil prices on Monday after the explosion at Conoco's plant, which produces up to 90,000 barrels of gasoline a day and is one of the only European refineries to export to the US. The explosion came just days after a similar incident at a Venezuelan refinery owned by American oil company Coastal."

[284] Repps Hudson, *Refinery Fire Adds to Fears About Gas Supply; Average Price Here Could Hit $1.80 This Week,* St. Louis Post-Dispatch.

[285] EIA, *Midwest/Chicago Crude Oil and Gasoline Prices*, in Subcommittee files.

inventories, which, along with the other factors mentioned, keeps us exposed to further volatility, particularly during summer when demand peaks."[286]

On May 28, 2001, the average price in the Midwest for regular, conventional unleaded gasoline reached $1.77 per gallon while prices peaked nationally at about $1.66 per gallon.

With prices high, production and imports increased. As the supply increased, prices began to fall.[287] Within a couple of weeks prices in the Midwest had fallen by almost 15 cents a gallon and within 3 weeks by almost a quarter, to $1.53 per gallon.[288]

In a brief analysis of gas prices in Michigan during May 2001, the EIA noted that the retail prices in Michigan fluctuated more often than retail prices in other Midwestern markets. The EIA said such fluctuations "can possibly be attributed to local competitive market conditions" rather than any supply issues peculiar to Michigan or that disproportionately affected Michigan. "There is no indication of other influences, such as supply problems, affecting gasoline markets in Michigan during this period, beyond those driving overall price levels throughout the Midwest," the EIA stated.[289] The EIA did not analyze what the "local market conditions" might be. (But see Section V C 2 and V C 6, discussing the Majority Staff's analysis of pricing data in the Midwest.)

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[286] EIA, Statement of John Cook, Director, Petroleum Division, Energy Information Administration, U.S. Department of Energy, before the Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, U.S. House of Representatives, May 15, 2001.

[287] EIA, *Motor Gasoline Watch*; May 23, May 31, June 6, 2001.

[288] EIA, *Retail Gasoline Historical Prices, Midwest*, http://tonto.eia.doe.gov/oog/ftparea/wogirs/xls/pswrgvwrmw.xls .

[289] EIA, *A Brief Analysis of Michigan Gasoline Price Behavior During May 2001*, June 14, 2001.

Since throughout the spring of 2001 the price for crude oil remained relatively constant, the spring 2001 price spike cannot be attributed to changes in the price of crude oil. Rather, the spike can be attributed to the continuing tight balance between supply and demand and low inventories (which had been projected by the Energy Information Agency in March) coupled with actual supply disruptions and constraints on the availability of alternative supplies.

c) The Labor Day Price Spike, 2001

As supply increased and prices fell following the Memorial Day price spike, demand also increased.[290] Throughout the month of June production and imports remained at high levels and inventories continued to build.[291] In early July, the EIA reported optimistically, "As of July 4th, gasoline supplies throughout the United States appear adequate, and retail prices have been declining for the past 3 to 5 weeks in all regions. While the outlook for the remainder of the summer cannot be certain, declines to date in wholesale prices suggest further decreases at retail in the coming weeks."[292]

Indeed, by mid-July, prices in the Midwest dropped to about $1.29 per gallon.[293] Nationally, by late July prices dipped to about $1.32 per gallon.[294]

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[290] EIA, *Motor Gasoline Watch*, June 6, 2001.

[291] EIA, *Motor Gasoline Watch*, June 13, June 20, June 27, July 5, 2001.

[292] EIA, *Midwest Gasoline Update*, July 6, 2001.

[293] EIA, *Gasoline Historical Prices, Midwest*, at http://tonto.eia.doe.gov/oog/ftparea/wogirs/xls/pswrgvwrmw.xls .

[294] EIA, *Retail Gasoline Historical Prices, Regular*, at http://tonto.eia.doe.gov/oog/ftparea/wogirs/xls/pswrgvwreg.xls .

These favorable conditions did not last. As a result of falling prices (and hence falling profit margins for refiners), in early July a number of refiners cut back on production.[295] Although demand remained strong—setting a one-week record high at the end of July—refinery cut-backs continued throughout the month. [296]

In late July, the Oil Price Information Service (OPIS) published an article entitled "Flagging Margins Spark Unseasonal Maintenance, Run Cuts," that described a number of upcoming reductions in refinery production. The article began, "With some refiners recently contending with 3-2-1 crack spreads as miserable as $1.50 bbl, several processors are taking the unusual step of scheduling mid-summer maintenance or simply reducing crude runs." According to OPIS, their "comprehensive survey" revealed "that, at some point during late July or early August, upwards of 770,000-850,000 barrels/day of refining capacity could be off line as the result of unplanned unit problems or conscious decisions to reduce crude runs or perform maintenance. That figure represents about 5.0 percent of the roughly 16 million barrels/day of total U.S. refining capacity, excluding Puerto Rico and the Virgin Islands. With many of the operations changes still pending, the 96.6 percent of capacity utilization reported in the most recent API statistics could be whittled down in the coming weeks."

"Refiners don't always announce maintenance schedules or run cuts," OPIS noted, "and there's a particular reticence to comment on cutbacks this year because of ugly publicity attached to the Spring price hike. But in discussions with refinery supply personnel, OPIS editors have arrived at a consensus estimate of 770,000-850,000 barrels/day."

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[295] EIA, *Motor Gasoline Watch*, July 11, 2001.

[296] EIA, *Motor Gasoline Watch*, July 18 and July 25, 2001.

Refinery outages and maintenance are normally scheduled for the first and fourth quarters of the year—when demand for gasoline is low and margins typically are low as well. Normally, refiners operate their refineries at full capacity during the summer in order to keep up with demand. "Because gasoline tends to be the highest-margin product a refinery makes, particularly during the summer months, refiners generally operate to make as much gasoline as possible."[297] Thus the actions by the oil companies in the latter part of summer 2001 were a very unusual departure from their normal business practice of producing as much gasoline as possible during the peak driving season.

The OPIS report also was unusual because many refiners attempt to keep specific information about their turnarounds confidential, as they may have to purchase gasoline on the open market to compensate for their reduced production. Their competitors may be able to obtain higher prices if they know the prospective purchaser needs bulk purchases on the spot market to substitute for lost production.

During the FTC's investigation into the Midwestern price spike in the spring of 2000, one senior executive of a major oil company explained the importance of keeping information about refinery outages confidential:

> A. . . . Every company has a different policy. We do not announce turnarounds. We don't publicize turnarounds. We find that sometimes Reuters has in the past gotten to people in the refineries and got information on turnarounds, which we make great efforts to try and stop that.
>
> I won't tell you that we have been as successful as we would like to be. We don't want people to know when we are in turnaround because we feel that when we have to go out and buy all of that product, it puts us at a competitive disadvantage.

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[297] FTC, *Midwest Gas Price Investigation.*

> Other people will announce them. Citgo announced their turnaround in the Gulf Coast. And people will pick up rumors of turnaround from buying activity.
> But primarily the source would be a Reuters story or a Knight-Ridder story, one of those reporters for one of those organizations pick it up and report it. Sometimes it is true. Sometimes it is not. And I know that because of the reports on our turnarounds that sometimes they are off and sometimes they are correct. We have a policy of not commenting, period.
>
> Q. So I take it short of using our subpoena power, there is no published source that would give specifics that would be reliable in terms of industry turnarounds?
>
> A. That's correct. That's correct. You can go to PIRA [a petroleum industry consulting organization]. We give them our turnaround information on the condition that it is kept confidential and not revealed to anybody in the sense of any kind of specifics about us. If we ever found out that they were passing that information on to anybody, I guarantee you that it would be stopped.[298]

In an interview with Majoriy staff, another senior industry executive stated "Any refinery personnel who would tell information about outages is doing a disservice to the company."

OPIS nonetheless obtained specific information about maintenance outages at a number of refineries. OPIS reported the following specific shutdowns during the late summer of 2001:

- **Koch** (38,000 barrels/day cut for 7-10 days during maintenance at Pine Bend, Minnesota refinery);[299]
- **Tosco** (maintenance at Alliance refinery in Louisiana; 40 days of maintenance at Trainor, Pennsylvania refinery, beginning in August);
- **Premcor** (10 days of maintenance at refinery at Port Arthur, Texas; "The refinery is one of the largest at the Gulf Coast, running 250,000 b/d of crude. Based on recent 3-2-1

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[298] Documents in Subcommittee files.

[299] Koch informed the Subcommittee staff that the Pine Bend refinery was shut during the summer due to an unplanned event and the Corpus Christi refinery was shut for several days in June due to planned maintenance on the alkylation unit. Koch states that low margins did not affect the scheduling of these maintenance activities.

refinery cracks of less than $3 bbl, there is no urgency to bring units back on line, sources say.");[300]

- **Citgo** (5% cut at all six of its U.S. refineries);[301]

- **Ultramar Diamond Shamrock** (85,000 b/d off-line as a result of a fire and explosion that damaged an alkylation unit at the Three Rivers, Texas refinery; shutdown is expected to last for "some time.");[302]

- **TotalFinaElf** (5% cut at Big Spring and Port Arthur refineries in Texas);

- **Crown** (25% cut at Pasadena, Texas refinery; reduction of 25,000 b/d);[303]

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[300] Premcor informed the Subcommittee the shutdown of its Port Arthur, Texas, refinery from July 7 to 17 was "the direct result of a lightning strike that occurred on May 12, 2001." Premcor also states that due to the high refining margins in the spring of 2001 several planned, early spring maintenance activities at the Port Arthur refinery were postponed "in order to continue a reliable supply of gasoline to the market place." Letter to Senator Levin, Chairman, Permanent Subcommittee on Investigations, from Jeffry N. Quinn, Executive Vice President-Legal, Human Resources and Public Affairs, Premcor, September 21, 2001.

[301] CITGO informed the Subcommittee the Lake Charles, Louisiana, refinery was shut from July 29-for unscheduled maintenance to repair a leak in the Unicracker unit; the Lyondell-CITGO refinery in Houston, Texas, was shut twice during the summer due to unscheduled events–the first time from June 8-27 due to the heavy rainfall flooding from tropical storm Allison, and again from August 10-28 to regenerate the plantinum catalyst. The Lemont, Illinois, refinery was shut from July 8 - 18 to replace the catalyst in the diesel distallate Unionfiner. CITGO states that low margins did not affect the scheduling of these maintenance activities. *Answers from CITGO Petroleum Corp. to Permanent Subcommittee on Investigations.*

[302] UDS informed the Subcommittee the Three Rivers, Texas, refinery was shut from July 9 until mid-August as a result of a fire in the alkylation unit on July 9. The Wilmington, California, refinery was shut from August 18 for about nine days as a result of a loss of electricity from the Los Angeles Department of Water and Power. UDS states that low margins did not affect the scheduling of these maintenance activities. Letter to Senator Levin, Chairman, Permanent Subcommittee on Investigations, from Jean Gaulin, Chairman, President, and Chief Executive Officer, Ultramar Diamond Shamrock Corporation, September 25, 2001.

[303] Crown informed the Subcommittee that tropical storm Allison forced the shutdown of the Pasadena, Texas, refinery from June 7 through 19. Gasoline production was again reduced by 30% from July 4 through 17 "for economic reasons." Several unanticipated

- **El Paso** (15% cut at Eagle Point, New Jersey refinery);[304]

- **Valero** (50,000 b/d cut in gasoline production and 31,000 b/d cut in distillate production at Texas City, Houston, and Krotz Springs, Louisiana refineries);[305]

- **Sun** (73,000 b/d cut at Girard Point refinery beginning on August 4, to last 3 weeks; 30-35 days of work at Pt. Breeze refinery, beginning July 20; according to OPIS this maintenance has been "accelerated" due to "poor profit margins.");[306]

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mechanical and operational problems led to a reduction in the output of the Tyler, Texas, refinery at several times during the summer. Letter to Senator Levin, Chairman, Permanent Subcommittee on Investigations, from Andrew Lapayowker, Deputy General Counsel, Crown Oil, September 26, 2001.

[304] El Paso informed the Subcommittee it reduced production at its Eagle Point, New Jersey, refinery on two occasions during the summer when as a result of "a decline in product pricing . . . refinery operations were losing money." Letter to Senator Levin, Chairman, Permanent Subcommittee on Investigations, from Thomas M. Wade, President, El Paso Petroleum Markets, September 21, 2001.

[305] Valero informed the Subcommittee that needed maintenance was perfomed at the Houston refinery from August 10 through 18 and at the Texas City refinery from July 25 through 31. Valero stated that the maintenance was scheduled for this particular time because they were experiencing "negative variable margins."

[306] Sun reported to the Subcommittee that in July 2001 it "made a decision to accelerate certain of the turnarounds it had contemplated taking in the fall at its Philadelphia and Marcus Hook refineries. A press release was issued, as is our custom with major turnarounds, to inform our investors as well as our customers of our plans. . . There were many factors that led to this decision, including the fact that Northeast gasoline inventories were higher than we had originally anticipated, indicating that the region was well supplied." Letter to Senator Levin, Chairman, Permanent Subcommittee on Investigations, from Michael Kuritzkes, Vice President and General Counsel, Sunoco, September 28, 2001.

OPIS remarked that "major refineries operated by BP Amoco,[307] ExxonMobil,[308]Chevron, and the units operated by Shell/Texaco" were "conspicuously absent," but "traders believe that these firms are also eyeing run cuts, but will keep plans close to the vest." Thus, on July 25, EIA reported "several refiners continued to cut runs and go down for maintenance due to weak margins despite the announcement of a stock draw last week."[309] On August 1, EIA again reported, "Stocks declined a fourth consecutive week as demand continues on a record setting pace."[310] By August 3, following a continued decline in stocks, high demand, and intentional refinery shutdowns, stocks declined to levels lower than the same date of the previous year.[311]

As production and inventories fell and demand continued at near-record high levels, prices began to rise again. In the Midwest, starting in mid-July prices began to climb gradually, from \$1.29.1 per gallon on July 16th, to \$1.29.7 on July 23rd, to \$1.32.3 on the 30th, and to \$1.33 on August 6th.

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[307] BP informed the Subcommittee that there were no shutdowns or reductions in refining operations in the U.S. that resulted in any decrease in gasoline production. Letter to Senator Levin, Chairman, Permanent Subcommittee on Investigations, from Larry D. Burton, Vice President U.S. Government and International Affairs, BP, September 21, 2001.

[308] ExxonMobil reported "There were no scheduled shutdowns of units that impacted gasoline production or reductions in crude runs at ExxonMobil refineries during this time period." Letter to Senator Levin, Chairman, Permanent Subcommittee on Investigations, from James S. Carter, Regional Director U.S., ExxonMobil, September 21, 2001.

[309] EIA, *Motor Gasoline Watch*, July 25, 2001.

[310] EIA, *Motor Gasoline Watch*, August 1, 2001.

[311] EIA, *Motor Gasoline Watch*, August 8, 2001. As of June 22, 2001, PADD II stocks were approximately 770,000 barrels, or about 1.5%, less than "normal" (i.e. 5-year rolling average). By July 13, stocks had dropped to about 10% less than normal. As of August 24, stocks were still about 10% less than normal. EIA Data provided to Subcommittee.

By August 10th—in the peak of one of the heaviest summer driving seasons in years—gasoline production had fallen almost 500,000 barrels per day from its level on July 20th. This level of production was "the lowest daily average gasoline production since the week ended March 30." This level of refinery production was about 250,000 barrels per day (about 3 percent) less than during the first week of August, 2000, even though demand was about 4 percent greater.[312]

With high summer demand, declining inventories, and loss of refining capacity nationwide due to "unusual" mid-summer maintenance and run cuts, the domestic market was once again ripe for a price spike.

In the second week in August, average prices in the Midwest jumped five cents, to $1.38.2 on August 13th. National prices also began to rise more rapidly in the second week of August, from $1.31.9 per gallon on August 6th to $1.34.7 on August 13th, almost a 3-cent increase.

On August 14, a fire broke out at the Citgo refinery in Lemont, Illinois. The fire and associated structural damage abruptly halted all production at the 163,000 barrel-per-day refinery. Prices rose even more rapidly following the Citgo fire, reaching $1.47 cents per gallon in the Midwest on August 20th, $1.65 on August 27th, and $1.71 on Labor Day, September 3rd. Nationally, the rise was not as steep, with prices peaking at $1.54 per gallon on Labor Day.[313]

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[312] EIA, *Motor Gasoline Watch*, August 15, 2001. Gulf Coast production was higher than last year's levels by about 200,000 b/d; Midwest production was lower by about 50,000 b/d; East Coast production was about 270,000 b/d lower; and West Coast production was lower by about 100,000 b/d.

[313] See notes 9, 10.

A number of industry analysts observed that the Citgo fire was just one of the factors contributing to the August price increases. "The Citgo refinery is having an impact, but you can't just blame one refinery outage in Illinois," one industry analyst said. "It's the demand picture, which has been incredible. This is a pattern we've seen for the last four weeks."[314] On August 27th, Fox News reported, "The price increase was attributed to the shutdown of several refineries for repairs and maintenance, as well as a dwindling inventory of U.S. motor gasoline stocks, said analyst Trilby Lundberg. 'It's not very surprising considering the phenomenal price crash of three months duration during the time of our greatest consumption,' Lundberg said. 'It had to end sometime.'"[315]

The Majority Staff examined the "unusual" summer maintenance and run-cuts first reported by OPIS to determine whether these cutbacks in refinery operations during the peak driving season were undertaken for the purpose of reducing supplies of gasoline in order to raise prices. The companies mentioned in the OPIS article told the Subcommittee that the summer reductions were undertaken at a time when supplies were plentiful enough so that refining margins were low; they argue that such conditions are the best time to perform maintenance, since it makes more sense to cut production when supplies are plentiful rather than when they are tight.

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[314] Mark Shank, *U.S. Gasoline Inventories Fall on Strong Demand (Update 1)*, Boomberg.com, 08/28 18:12, quoting Phil Flynn, Vice President and senior market analyst at Alaron Trading Corp.

[315] Associated Press, *Gas Prices Up 6 Cents a Gallon*, www.foxnews.com/story/0,2933,32942,00, August 27, 2001.

Although each of the refineries mentioned in the OPIS article would appear to have insufficient market power, alone, to affect prices, the cumulative effect of all the cutbacks was, according to OPIS, to cut production by about 5 percent. As a consequence of reduced production, inventories again fell well below average inventory levels for the summer, and the stage was set for another price spike.

The dissemination and publication of information about a significant number of upcoming refinery outages in the summer of 2001 appears to conflict with the competitive interests that other refiners have stated for keeping such information confidential. Although it would appear not to be in the competitive interests of any single refiner to disclose outage information, if that refiner also knew that many other refiners would be cutting back at the same time then the competitive disadvantage would be much less. Thus, it would appear that although there may be a competitive disadvantage to unilateral disclosures of upcoming shutdowns, there may well be a common anti-competitive advantage to sharing such information among many refiners.[316]

Last year's Labor Day price spike demonstrates that supply can be tight simply because refineries are not operating at full capacity. In fact, last summer's experience indicates that refiners will decrease utilization rates — leaving unused capacity even in the face of peak demand — when margins are not, according to them, sufficiently high. Thus, the problem

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[316] The responses by the refiners to the Subcommittee's questions all stated that the decisions to reduce capacity or perform maintenance during this past summer were based solely on refinery economics–whether marginal production was justified in light of the current refining margins. This fact does not negate the benefits obtained from knowing what competitors are doing.

appears not simply of refinery capacity, but also refiners' ability and willingness to use existing capacity in light of existing market conditions.

The Labor Day price spike (40 cents between the end of July and Labor Day) demonstrates that price spikes can happen at any time of the year due to profit-maximizing operational decisions of a limited number of competitors. The cutbacks in production in the summer of 2001 were due both to unforeseen refinery problems and intentional decisions to take refineries off-line to reduce the amount of lower-margin gasoline sold to the public. There were no issues regarding how best to plan for a switchover in seasonal fuels, either in production or in tank storage; crude prices were relatively stable throughout this period.

d) Spring Price Increases to Date, 2002

An example of one oil company signaling its intent to others occurred in December 2001, as gasoline prices were falling due to the decline in oil demand resulting from the economic recession, the decline in gasoline and jet fuel use following the terrorist attacks on September 11, and the warmer-than-normal winter weather. At the "Andersen Energy Symposium" in Houston at the beginning of the month, Valero Chief Executive Officer Bill Greehey told reporters that the reduction in margins due to falling retail prices would lead to a decline in earnings for Valero, as well as cutbacks in its refinery operations. "We've cut back at a couple of the refineries," Greehey stated. "We're probably producing 48,000 or 50,000 barrels a day less gasoline than we were a couple of weeks ago."[317]

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[317] Andrew Kelly, *Valero Cuts Gasoline Output Due to Poor Profit Margins*, Reuters, December 4, 2001.

Greehey went on, however, to state that industry margins would improve if other refiners cut back on production as well. According to one news account, "Greehey said margins could increase quickly if, as he expects, other refiners also cut back on the amount of crude oil they process and inventories of refined products held in storage start to fall." The article quotes Greehey: "You're going to see a lot of crude run cuts between now and the end of the year. As we get inventories more in balance, you'll start seeing margins improve."[318]

If this quote is accurate, it is difficult to ascertain any pro-competitive rationale for openly telling all of one's competitors how they can obtain higher prices and margins. At the very least, the Valero CEO's statements reflect one refiner's deliberate intent to raise prices through supply and inventory reductions.

Total refinery utilization already had been decreasing at the time of Greehey's statements, and it continued to decrease afterwards. Refinery utilization dropped from around 90 percent in late November 2001 to about 86 percent in March 2002. (See Figure IV.10 on page 272.) Inventories fell, too.[319]

As Greehey predicted, the reduction in capacity and inventories has helped push prices up, along with increasing crude prices and market speculation. From early February to early April, prices increased an average of just over 30 cents, with the national average price for unleaded regular gasoline jumping form about $1.10 per gallon to over $1.41 per gallon. In California, prices have risen 37 cents in 8 weeks and about 50 cents since the first of the year. In the Midwest prices have risen nearly 34 cents in 8 weeks; in Chicago they have risen almost 49

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[318] *Id.*

[319] EIA, *This Week in Petroleum*, April 10, 2002.

cents during this period. According to the EIA, these 8-week increases are the second highest in history.

In early April, the EIA explained the reasons for this price spike:

> In our view, therefore, prices are high today, and may rise further, principally because petroleum markets are tightening, and that it is likely that within the next several weeks, total commercial petroleum inventories may actually drop below year-ago levels! In short, the market has bid up prices (especially for physical barrels) to acquire incremental supply in anticipation of potentially much tighter conditions.

Rather than build inventories, however, refiners are continuing to trim inventories so that margins will increase. It therefore appears likely that prices will continue to rise throughout the spring.

e) Company Documents

As the California situation indicates, refiners in a highly concentrated market will seek to maintain a close balance between supply and demand, including taking measures to reduce what they deem to be excess supplies. Several documents obtained during the Majority Staff's investigation indicate that refiners in the Midwest may also desire to ensure supplies are "tight" so that margins will be high. These documents do not provide any evidence whether or not these companies actually undertook any action to limit the amount of supply available, but they do provide evidence of a desire to see that supplies are limited.

An internal Marathon document from 1998 obtained by the Subcommittee illustrates a motive and desire within the company to keep supplies limited so that prices would remain high, even if that meant benefitting from a natural disaster. Titled "Summary: Short-Term Price Outlook," dated October 1, 1998, the memo begins, "As OPEC and other exporters' efforts to rein in output began bearing fruit, Nature stepped in to lend the oil producers a helping hand in the form of Hurricane Georges, which caused some major refinery closures, threatened off-shore oil production and imports, and generally lent some bullishness to the oil futures market." (See Exhibit IV.14 on page 273.)

A 1999 presentation to BP senior executives presents a variety of strategies for increasing refining margins within the Midwest. (See Exhibit IV.15 on page 274.) The document notes that "Prices (and therefore asset value) in the Midwest/MidCon are set by the supply/demand in relation to logistics capability," and that "(s)upply/demand balances are driven by macro-economic issues such as crude prices, crude field decline rates, economic growth." It further states that "(t)here are significant opportunities to influence the crude supply/demand balance." It also notes, however, that these "opportunities" can increase Midwestern prices by 1 to 3 cents per gallon, but need to affect approximately 50,000 barrels per day to be sustainable over a 3-year period.

Two basic strategies are discussed–to reduce product supply ("product short") and to lower the cost of crude supplies ("crude long"). A variety of options are put forth to reduce the supply of gasoline in the Midwest, including shutting down capacity, "offer supply agreements in exchange for capacity shutdown," convince cities to require reformulated gas that is not readily available, export product to Canada, lobby for environmental regulations that would slow down the movement of gasoline in pipelines, ship products other than gasoline on pipelines that can carry gasoline, and provide incentives to others not to provide gasoline to Chicago. BP officials stated to the Subcommittee staff that these ideas were only part of a "brainstorming" session, and none of the options for reducing supply were adopted.

f) The Wolverine Pipeline Case.

The Wolverine Pipeline case illustrates how control over storage facilities and pipelines can be used to limit gasoline supplies and competition in a market. (F-14)

As previously noted, the major refiners also own much of the storage and transportation infrastructure in the Midwest. The Quality Oil/Wolverine Pipeline case provides a case study of the effects of concentration and integration in the ownership of pipelines and terminals on gasoline prices and supplies.

i. Background

Wolverine Pipeline is a pipeline that transports refined petroleum products, primarily gasoline and diesel fuel, from Chicago to destinations in Illinois, Indiana, Michigan, and Ohio. The pipeline is owned by Wolverine Pipeline Company. The affiliates or subsidiaries of the following companies comprise the ownership of Wolverine Pipeline Company: Exxon-Mobil (36.17%), Unocal (31.4%), Equilon (17.2%), CITGO (9.5%), and Marathon Ashland Petroleum Company (5.63%).[320]

[320]The subsidiaries or affiliates that are the owners of Wolverine are: Mobile Pipeline Company (Exxon Mobil), Midwest Pipelines Company (Unocal), Equilon (Texaco Trading & Transportation, Inc. and SPL Holdings Inc., an affiliate of Shell Pipe Line Corporation), CITGO Pipeline Investment Company (CITGO), and Marathon Ashland Petroleum Company (MAP).

Wolverine began operations as an interstate, common carrier pipeline in 1953.[321] Its main line extends from Chicago to Detroit, a distance of approximately 300 miles.[322] It also has spur lines which extend from points on the main line to Lockport, IL; Hammond, IN; Toledo, OH; Grand Haven, MI; and Woodhaven, MI. These spur lines total an additional 216 miles of pipeline. In addition, in December 1999 Wolverine acquired some 400 miles of crude and refined products pipelines in Michigan that were previously owned by Total/Ultramar Diamond Shamrock (UDS).[323]

In June 1999, Wolverine filed an application with the Federal Energy Regulatory Commission (FERC) for permission to file market-based rates for delivery services in certain market areas served by its pipeline.[324] Normally, rate changes must be approved by FERC before they can be implemented. Granting a company permission to file market-based rates allows a company to implement rates immediately upon filing.[325]

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[321] Most pipelines operate as common carriers, which means that the pipeline owner does not take title to the oil being shipped but simply provided the transportation service. As common carriers, pipelines must be accessible to all oil that meets the pipeline's shipping specifications, regardless of ownership. Further, they are subject to government regulation concerning rates and operating practices.

[322]Wolverine's pipeline mainline system from the Chicago area to Detroit consists of one segment of 18" pipe and three segments of 16" pipe, which, in total, are almost 300 miles long.

[323]On December 13, 1999, Total/Ultramar Diamond Shamrock and Marathon completed an agreement in which Total/UDS sold its assets in Michigan including its retail stations, terminals and pipelines to Marathon. Marathon then assigned its right to purchase Total/UDS' Michigan pipeline assets to Wolverine. Wolverine acquired approximately 400 miles of crude and refined products pipelines previously serving the Total/Ultramar Diamond Shamrock refinery at Alma, MI.

[324]The markets were its origin market in the Chicago, IL, and the destination markets in Chicago, IL; Elkhart, IN ; Grand Rapids, MI; Detroit, MI; and Toledo, OH.

[325]Under 218 C.F.R. 348, if FERC determines that a pipeline does not have significant market power, that is, the area in which it operates has sufficiently competitive alternate sources

Quality Oil Company, a privately owned oil company in West Michigan, and the Michigan Attorney General and the Michigan Public Service Commission filed protests to the application, claiming that some of the markets in which Wolverine sought to file market based rates were too concentrated and lacked the degree of competition needed to serve as an effective check on rates. Quality Oil also protested the application because some of the owners of Wolverine controlled all of the terminals at one destination point (Niles, Michigan) and had used that control to limit competition in the area served by the Wolverine spur line that originates at Niles and serves the Grand Rapids area of West Michigan. The filings and findings related to this aspect of Wolverine's application reveal how oil companies can use their ownership and control of critical transportation and storage facilities to limit competition and keep prices artificially high.

ii. The Niles Terminal

The Wolverine Pipeline has two 16-inch lines running from Hammond, Indiana, to Niles, Michigan. At Niles, one of the lines terminates and the other continues on to Detroit. At Niles, Wolverine has an 8-inch, 96-mile northern spur line that transports product north to terminals in Holland and Grand Haven, Michigan (also called the Ferrysburg terminal), near Grand Rapids. Any product shipped to Holland or Grand Haven/Ferrysburg over Wolverine's lines must be

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of supply, then the pipeline company may set its rates according to the market. "A standing Commission premise on oil pipeline rate proceedings has been that if there are sufficient alternative sources of supply, these will act to constrain a pipeline's ability to exercise significant market power in a destination market because shippers will shift their business away from the pipeline to other sources of supply. The alternative sources of supply that must be evaluated are other pipelines that enter the market, refineries located in the market, waterborne deliveries into the market, as well as supplies external to the market that can be trucked into the market." *Wolverine Pipeline Company*, Order on Application for Market Power Determination and Establishing A Hearing, 92 FERC ¶ 61,277, Docket No. OR99-15-00, Issuance 20001002-0465, at 12.

moved into tankage (called "breakout tankage") at Niles, Michigan, in order to be transferred from the 16" main lines into the 8" northern spur line. However, Wolverine does not own any tankage at Niles. The tanks located at the Nile facility have an aggregate storage capacity of approximately 750,000 barrels. All of the tanks are privately owned, and every tank owner is a partner in the Wolverine Pipeline Company: Equilon (41,900 barrels) CITGO (271,131 barrels), Exxon-Mobil (110,000 barrels), and Marathon (332,000).[326] Thus all of the breakout tankage necessary to access the northern spur was controlled by owners of Wolverine.

iii. The Grand Rapids Market

The Wolverine pipeline is a major source of supply for the Grand Rapids market. Figures provided to the FERC by Wolverine showed that the pipeline had a capacity-based HHI of 2781 with a market share of 41%, and a delivery-based HHI of 3831, which suggests that Wolverine does possess significant market power in the area.[327] (Wolverine's delivery based market share is not public because it is proprietary information.) As the Commission noted:

> Wolverine's effective delivery-based results as well as its effective capacity-based results (including external supply within as 75-mile radius of the Grand

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[326]This data was provided to FERC by Wolverine. Wolverine obtained the data from the Oil Price Information (OPIS) Petroleum Terminal Encyclopedia, 2001. The Encyclopedia provides the capacity, but not the number of tanks, controlled by each party.

[327] "HHI . . . measures the likelihood of a pipeline exerting market power in concert with other sources of supply. . . A high HHI indicates significant concentration. This means that a pipeline is more likely to be able to exercise market power either unilaterally or through collusion with rival firms in the market. A shipment-based HHI is derived using estimated shipments based upon actual shipments that pipelines made from an origin market. A capacity-based HHI is based upon the estimated effective capacity pipelines have to move products from an origin market, thus it addresses whether there is additional capacity to move products from a market in the event of a price increase by the applicant." *Wolverine Pipeline Company*, Order on Application for Market Power Determination and Establishing A Hearing, 92 FERC ¶ 61,277, footnote 16, at pp. 5-6.

> Rapids BEA) exceed Commission precedent [for a finding that a petitioner lacks significant market power] ....The figures for the delivery-based and capacity based calculations (assuming a 75 mile trucking radius) exceed the market power levels the Commission found unacceptable in *Williams*."[328]

The state of Michigan and the Michigan Public Service Commission noted:

> The evidence does not support Wolverine's claim that its market share is modest in the destination market it serves and that such markets have low levels of concentration and excess supply. To the contrary, a review of Wolverine's HHI analyses, indicates that both the Grand Rapids and Detroit, Michigan, destinations markets are highly concentrated. Moreover, Wolverine's market share is substantial and there is no evidence of excess capacity in these markets.

> Wolverine's HHI analyses indicates that the delivery-based HHI for Grand Rapids is 3,666. This is not a 'low level' of concentration. In fact, the 3,666 HHI is twice the 1800 level that the Department of Justice ("DOJ"), in its merger guidelines defines as "highly concentrated.

Michigan also notes that Wolverine's "capacity-based calculation" (2602) is an indication of a highly concentrated market."[329]

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[328] *Wolverine Pipeline Company*, Order on Application for Market Power Determination and Establishing A Hearing, 92 FERC ¶ 61,277 at p. 14. Wolverine also presented the Commission with HHI capacity-based data that included external suppliers within a 100 mile radius of Grand Rapids and HHI capacity-based data based on laid-in cost analyses. Both were within the market power levels that the Commission had accepted in previous requests to charge market based rates. However, the results supplied by Wolverine were based on trucking costs that the Commission was concerned were too low, so it did not accept the figures. Therefore, the Commission ordered that a hearing be held to develop a complete record before a conclusive market power ruling could be made. *Id.* at 16.

[329] Motion to Intervene and Protest by The State of Michigan and of the Michigan Public Service Commission re Wolverine Pipeline Company under OR99–15, Submittal number 20000808-0089. The HHI figures cited by Michigan, which were lower than those reported above, were based on Wolverine's initial submittal. Wolverine subsequently revised its figures upward, to those cited earlier.

Given the dominance of Wolverine in this area, access to Wolverine's northern spur line, and therefore access to tankage at Niles, is critical to shippers wishing to compete in the Grand Rapids market.

The Grand Rapids market is served by a number of terminals - the Holland terminal, the Grand Haven/Ferrysburg terminals, the Muskegon terminal and the Marshall terminal.[330] The Holland and Grand Haven/Ferrysburg terminals are served by the Wolverine northern spur line. The Holland terminal, located in Holland, Michigan, is owned by Quality Oil, a family owned business. Approximately 25 miles north of Holland are two additional terminals in the Grand Haven/Ferrysburg area: one is owned by CITGO and Mobil; the other is owned by Equilon. The Muskegon terminal is owned by Marathon and served by a pipeline owned by Marathon. The Marshall terminal is owned by Equilon and is served by the Wolverine main line. Except for the Holland terminal, every terminal served by a pipeline in the Grand Rapids area is owned by affiliates of the owners of Wolverine, and all the owners of those terminals - except for Quality Oil, the owner of the Holland terminal - own tankage at Niles.

The northern area of Michigan has a large number of independent dealers that sell unbranded gasoline. The Holland terminal is a significant regional supplier of unbranded product.

[330] Of all of the deliveries made to the Grand Rapids market by the Wolverine pipeline in 1999 and 2000, the largest amount of product went to Grand Haven/Ferrysburg; the second largest amount went to Marshall, and the least went to Holland. The Marathon terminal at Muskegan is connected to the Marathon pipeline. Chart: "Deliveries Through Wolverine Terminals in Grand Rapids destination Market," "Wolverine Pipeline Company's Response to First Data Request of Quality Oil Company, Inc.," January 22, 2001, p.38

Before they merged with or were acquired by Marathon, both Ashland and Total/UDS had been significant suppliers of unbranded product to independents in West Michigan. Both had been able to access tankage at Niles. In fact Ashland owned tankage at Niles. Total/UDS gained access at Niles through exchange agreements with oil companies that owned tankage at Niles and received access to Total/UDS's terminals in other parts of the state.

Marathon has emerged as a major supplier of unbranded product to West Michigan. As noted above, it owns the pipeline that delivers product to its terminal at Muskegon, owns and controls the second largest amount of tankage at Niles, and is one of the owners of Wolverine. Marathon merged with Ashland in January 1998 and in 1999 Marathon acquired Total/UDS's assets in Michigan. This eliminated two competitive suppliers of unbranded product which could readily access Niles tankage and placed much greater control of both Niles tankage and the supply of unbranded product to West Michigan in Marathon. Marathon also owns a chain of low cost stations - Super Speedway America - which is operated as a low cost retailer and competes with independent retailers of unbranded gasoline for market share. Thus, Marathon has an interest in controlling unbranded sales and prices and in the ability to influence the amount delivered into the area.

Other owners of tankage at Niles are primarily sellers of branded gasoline that is sold through name brand stations and competes with unbranded sales. However, some do enter into contracts or supply agreements that allow other sellers of unbranded gasoline to access their tankage at Niles.

iv. Anti-Competitive Practices

The protest filed with FERC by Quality Oil in the Wolverine Market Based Rate Request identified practices employed by Wolverine and its affiliates that had the effect of 1) limiting access to tankage at Niles and 2) increasing the product and transportation costs of unaffiliated shippers (shippers of product over the pipeline who are not affiliated with the owners of the pipeline), thereby limiting the amount of competition in the Grand Rapids market.

aa. Lack of Access to Breakout Tankage

Foremost among the practices was the failure of Wolverine to provide shippers breakout tankage necessary to access its northern spur line. As noted above, all of the tankage at the Niles station is privately owned. Wolverine took the position that it did not have control over the tankage facilities at Niles and that its affiliates that owned tankage at Niles had no obligation to allow a shipper to use their tanks. Wolverine's tariff required shippers to make their own arrangements for tankage before it would accommodate any request for transportation. Thus, shippers had to make their own arrangements with the affiliates of Wolverine who owned tankage at Niles. Owners could impose any conditions they wished. The situation reduced the certainty and amount of access the unaffiliated shippers had and increased their cost of obtaining product.

Quality Oil claimed that prior to the Marathon-Ashland merger in 1998, it primarily used its terminal to store products for other companies – such as Ashland Oil and UDS/Total – that shipped unbranded product and had access to Niles tankage. After the Marathon-Ashland merger in 1998, Quality Oil began to attempt to ship its own product and it claimed then it was able to get access to Niles tankage only through Marathon, and then only under short term access agreements. As a result, Quality Oil was unable to enter into longer term purchase commitments for unbranded product because, with only short term access contracts, it was not sure that it could accept prolonged delivery at Niles on a regular basis. As a result, Quality Oil had to engage in spot purchases for unbranded product, which are generally more costly and less firm than longer term purchase commitments.

After Marathon's acquisition of UDS/Total's assets in December 1999, "Quality found that it was unable to obtain any type of access to Niles tankage for its own product from any Niles tankage owner, despite repeated efforts."[331] In addition, Quality Oil's General Manager testified:

> I was told by a MAP [Marathon] official in May of 2000 that MAP had 'no need, want or desire' to allow Quality to use its tankage. By that time, supplies of unbranded product in Western Michigan were becoming scarce; and, at times, the price of unbranded supplies rose, even to the level where unbranded gasoline became more expensive than branded (an inverted relationship, since branded gasoline normally sells at a price premium above unbranded). Had access to Niles tankage been available, independents such as Quality would have been able to move unbranded supplies into the market place and create more competition that might have mitigated that situation.[332]

Finally, in June 2000, Marathon indicated to Quality Oil that it would be willing to enter into a one year throughput agreement. This contact from Marathon took place after the Attorney General of Michigan made inquiries of Marathon and other oil companies as part of its investigation into the causes of the spring 2000 price gasoline price spike.

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[331]Narrative Summary and Prepared Direct Testimony of Michael D. Swan on Behalf of Quality Oil Company re Wolverine Pipeline Company under OR99-15. Submittal 20010305-0377, at p. 15.

[332]Ibid.

To alleviate some of the access problems they faced, Quality Oil and some other independent suppliers of unbranded product in West Michigan constructed a breakout tank at Niles that would enable the shippers to transport supplies of unbranded, no lead gas into the northern spur without having to use the tankage of the Wolverine affiliates. After Quality Oil and its partners threatened to file a formal complaint with FERC, Wolverine agreed to connect the tankage into its pipeline system, but at Quality Oil's expense. While this tank affords Quality Oil and other shippers access for one product (unleaded gasoline), they continue to face access constraints for other products.

In September 2000, FERC issued an order requiring a hearing to determine, among other things, Wolverine's ability to exercise market power in the Grand Rapids-Muskegon-Holland market and whether Wolverine (and/or its constituent owners) violated Sections 1(309a), 1(4) and/or 2 of the Interstate Commerce Act ("ICA") regarding the question of tankage at Niles Michigan, access to Wolverine's pipeline running from Hammond, Indiana, to Holland, Michigan, and access to the through rate applicable to that line. In its order, the Commission clearly stated that a common carrier has the responsibility to provide all essential facilities necessary for transport, including tankage, and Wolverine could not require shippers to obtain their own access to breakout facilities:

> . . .Under Section 1(4) of the ICA, Wolverine, as a common carrier, (as well as its constituent owners) must transport products 'upon reasonable request therefor' and 'it shall be the duty of every such common carrier establishing through routes to provide reasonable facilities for operating such routes and to make reasonable rules and regulations with respect to their operation ....' Transportation is broadly defined under Section (3)(a) of the ICA to include 'all instrumentalities and facilities of shipment or carriage . . . and all services in connection with the receipt, delivery . . . transfer in transit . . . storage, and handling of property transported.'

> . . .The Commission recently affirmed the duty of common carrier pipelines to transport products and 'furnish services in connection therewith, on its system upon reasonable request.' (*Lakehead Pipeline Company, L.P.*, Opinion No. 397, 71 FERC ¶ 61,338, at p.62,324 (1995), *reh'g denied*, Opinion No. 397-A, 75 FERC ¶ 61,181 (1996)).
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> . . .Wolverine appears to be very similar to *Lakehead.* Like *Lakehead*, Wolverine requires that its shippers must provide their own tankage. Additionally, it appears that the tankage facilities are essential for petroleum products to be transported from Hammond, IN to the destinations of Holland and Grand Haven, MI. Wolverine has effective rates on file with the Commission to provide transportation from Hammond, IN to Holland and Grand Haven, MI, and it appears that this through transportation service is impossible to provide without tankage at Niles. As was the case with *Lakehead*, it seems that tankage is an integral part of Wolverine's transportation system and it is necessary for the performance of Wolverine's common carrier responsibility .[333]

After the Commission order was issued, a FERC staff member re-emphasized what the FERC order stated:

> The breakout tankage storage and interconnection facilities at Niles are integral to the transmission function on that portion of Wolverine's pipeline. These facilities are part and parcel of the through transportation service at issue. Wolverine cannot render that specific through rate common carrier service today in the absence of the existing tanks.
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> . . .These are essential facilities, in lieu of pipe, connecting Wolverine's system upstream of Niles and downstream of Niles on the northern spur line. A significant purpose of the tankage storage can be reasonably interpreted as a service in connection with the subject transportation. . . the tankage storage falls under the broad definition of transportation stated in the ICA. It is no different than if Wolverine sold a section of its interstate pipeline to an affiliate, then

[333] *Wolverine Pipeline Company*, Order on Application for Market Power Determination and Establishing A Hearing, 92 FERC ¶ 61,277at pp. 20-22. In *Lakehead*, FERC also rejected the company's claim that it could require shippers to provide their own breakout tank facilities:

> [t]he common carrier can make reasonable and appropriate rules respecting the acceptance and transportation of traffic. However, those rules cannot be such that they vitiate the common carrier's obligation to hold out service upon reasonable request.... [That] would be unreasonable because It would render its common carrier obligation a nullity and convert Lakehead into a private carrier. . . This would violate its common carrier obligation under the ICA to provide transportation upon reasonable request.

> indicated in the tariff that shippers must provide their own "private" service between the ends of that section in order to obtain common carrier service to the end of the line.[334]

The staff member noted that this situation could have an anti-competitive effect on Quality Oil and similarly situated shippers:

> . . .Quality Oil's inability to acquire assurances to access the existing privately owned storage tanks or common carrier tankage storage, the northern spur line, and the through rate service may raise Quality Oil's costs by forcing it to seek out spot purchases for shipment on Wolverine's pipeline system which tend to be more costly and less firm than longer term purchase commitments. Other shippers that are not affiliated with Wolverine or its owners may be similarly affected.[335]

He concluded that Wolverine was not fulfilling its requirements under the ICA:

> Q. Is Wolverine doing what is required under the ICA?
>
> A. No. Shippers have been effectively precluded from taking service under the through rates because they have been unable to obtain the required common carrier tankage at Niles. . . The owners of the storage tanks are themselves shippers owning percentage shares in the joint interest Wolverine pipeline. Other shippers have to make individual arrangements with the storage tank owners, and those owners can dictate the terms and types of access arrangements for tank storage they are willing to engage in, if any. I conclude that Wolverine has not complied with the requirements of Sections 1(3)(a) and 1(4) of the ICA.[336]

Despite the language of the ICA and the more recent affirmation of the law in the *Lakehead* case, FERC staff testified that the requirement that shippers obtain their own tankage has existed in Wolverine tariffs since at least 1973.

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[334] Prepared Testimony and Exhibits of Commission Staff Witness Robert T. Machuga in Wolverine Pipeline Company, Docket No. OR99-15, Submittal 20010315-0230, pp. 18-20.

[335] Ibid., p. 15.

[336] Ibid., p. 20.

Wolverine, in response to requests made by Quality Oil as part of the market rate hearing, stated that as of May 2000:

> . . . no party other than Quality had ever made any inquiries of Wolverine involving the issue of tankage at Niles. Since no requests for common carriage tankage services at Niles had been made to Wolverine, Wolverine finds it difficult to understand how it could be deemed to be in violation of any law regarding the matter . . . After the issuance of the Commission's initial Order in this proceeding, Wolverine decided that if the law required Wolverine to provide tankage on a common carrier basis in the Niles, Michigan area, then it would be necessary to determine the identity of a party or parties who might seek such services and the nature of the service or services desired. The purpose of letter [sic] referenced in this request was to determine if anyone wanted tankage service, and if so, what service or services were desired. Again, the only party who had ever raised the issue of tankage at Niles with Wolverine was Quality, and Quality's needs were addressed incident to the Connection Agreement referenced above.[337]

FERC staff stated that the letter cited by Wolverine "can be viewed as nothing more than a shipper survey, at best. Wolverine has not provided information in response to data requests . . . that common carrier storage will actually be available."[338]

There is also indication that Wolverine had some understanding that shippers were interested in obtaining a way to transfer to the northern spur that was independent of the private owners of the breakout tankage at Niles. An internal Wolverine memo addresses a bypass or splitter facility that would allow continual movement of product from the mainline into the

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[337] Wolverine Pipeline Company's Response to First Data Request of Quality Oil Company, Inc., January 22, 2001, p.8. However, as noted in footnote 13, FERC ruled in 1995 that common carriers could not require shippers to provide their own breakout tank facilities, which is what Wolverine did in its tariff. Moreover, in the same response, Wolverine identified 13 companies that had inquired about or requested transportation to destinations within the Grand Rapids market in 1999 and 2000. Three were Wolverine affiliates. The others were non-affiliates who did not own tankage at Niles. Clearly, they required tankage to utilize the northern spur.

[338] Prepared Testimony and Exhibits of Commission Staff Witness Robert T. Machuga in Wolverine Pipeline Company, Docket No. OR99-15, Submittal 20010315-0230, p. 21.

northern spur without having to go through breakout tankage. Quality Oil's General Manager testified that Quality Oil had been seeking the installation of such a facility "since at least 1994" and had even offered to pay for the facility.[339] The internal Wolverine memo indicates that "several shippers remain interested in this project, especially Quality Oil." It concludes that the facility "would greatly expand Wolverine's ability to move incremental volume through Niles to Ferrysburg and Holland" and that even if Wolverine paid $150,000 (with Quality Oil and other parties paying $500,000), "the project would reach payout within one year of operation."[340] Even so, Wolverine decided not to go forward with the project, noting "[t]here is no significant increased revenue for Wolverine Pipeline. . . the bypass helps a couple of our shippers at Niles (shippers with no or limited tankage), but harms the remaining shippers."[341]

Testimony presented on behalf of Quality Oil by Dr. Robert C. Means, former Director of the Office of Regulatory Analysis at FERC, illustrated the fact that the constraint on access to breakout tankage at Niles caused the price of product transported over the northern spur to rise above what it would be in a competitive market. Dr. Means noted that where there is unrestricted access to transportation, the difference in the price of a commodity at two points will generally equal the cost of transporting the commodity between two points.[342] To apply this

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[339] Narrative Summary and Prepared Direct Testimony of Michael D. Swan on Behalf of Quality Oil Company re Wolverine Pipeline Company under OR99-15. Submittal 20010305-0377, pp. 23-24.

[340] Document titled, *Niles Connection and Bypass*, Document No.WPL 000146, Ibid., Exh. No. (QOC-12).

[341] Memo from Mark D. Cline to D.H. (Dave) Welsh, *Re: Gate 1 Review for Niles Bypass*, April 18, 2000, Document No. WPL 000158, Ibid., Exh. No (QOC-13).

[342] According to Dr. Means, if the price disparity is greater than the cost of transportation there is an incentive for sellers to send more product into the higher priced area to take

to the case at Niles, Dr. Means compared the monthly rack price of unleaded gasoline in Grand Haven/Ferrysburg with the monthly rack price of unleaded gasoline at the Hammond, Indiana, terminal served by Wolverine's main line, between January 1998 and October 2000. A similar comparison was made between prices at Hammond and Jackson, Michigan – another terminal on Wolverine's main line.

According to Dr. Means, with unrestricted access to transportation, the difference between rack prices at Hammond and Grand Haven/Ferrysburg would be expected to be roughly equal to the cost of transporting product between those two points. However, the comparison of prices at Hammond with the prices at Grand Haven/Ferrysburg showed that the rack price at Grand Haven/Ferrysburg exceeded the price at Hammond, and that the difference between the two prices exceeded the transportation (and tankage) cost in almost every month, and sometimes exceeded it by a wide margin. By contrast, the comparison of the prices at Hammond and Jackson showed that the difference in prices was equal to or slightly less than the transportation cost for nearly every month studied.

Dr. Means concluded that the unexplained price difference (the portion of the price difference not explained by transportation cost) between Hammond and Grand Haven/Ferrysburg:

> indicates that there is a significant constraint on the availability of transportation to Ferrysburg...the fact that the price difference is significantly greater than the cost of transportation creates an incentive for both buyers and sellers of gasoline. It creates an incentive for sellers to shift volumes from Hammond to Ferrysburg, and for buyers to shift purchases from Ferrysburg to Hammond. The price

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advantage of the higher price, and for buyers to purchase from the lower price area. Those actions tend to erase the disparity that exceeds transportation costs.

difference evidently persists because the transportation constraint makes it impossible for sellers and buyers to respond to the incentive.[343]

bb. Higher Transportation Rates

Wolverine's failure to provide access to breakout tankage also resulted in higher tariff rates for shippers. Under the interstate tariff filed with FERC by Wolverine, the through rate (the cost of shipping to one destination through another) from the Wolverine station at Hammond to the Holland terminal was 40.12 cents per barrel. However, the rate Wolverine charged to shippers was higher than the interstate through rate it filed with FERC. Wolverine charged shippers its posted interstate tariff rate of 21.78 cents per barrel to transport product from Hammond to Niles, and then charged shippers an <u>intra</u>state rate of 22.10 cents per barrel to transport product from Niles to Holland. Thus shippers who sent product from Hammond to Holland through Niles were charged a rate of 43.88 cents per barrel, which was 3.76 cents per barrel higher than the interstate through rate that Wolverine had filed with FERC.

Wolverine's justification for charging a combined interstate and intrastate rate rather than the through interstate rate was that the transactions involved in moving product from its main line through the breakout tankage at Niles and into the northern spur line created separate transportation transactions which enabled it to charge separate rates for each segment, rather than a through rate. Wolverine affiliates, who owned and controlled the tankage at Niles used their position to impose conditions on shippers that facilitated Wolverine's ability to circumvent the interstate rate. For example, when Quality Oil was able to access Marathon's tankage at Niles, it was required to sell its product to Marathon at its Niles terminal and then buy back the

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[343]Prepared direct Testimony and Exhibits of Robert C. Means on Behalf of Quality Oil Company re Wolverine Pipeline Company under OR99-15. Submittal 20010305-0376, p.8.

same barrels as they left Niles for the Holland terminal. As a result of these buy/sell transactions, Wolverine viewed the transportation of the product into and out of Niles as two separate shipments, rather than the same shipment. Therefore, it charged the higher interstate/intrastate rate rather than the interstate through rate posted in the tariff that it filed with FERC. In its Order requiring a hearing to resolve a number of issues related to the Wolverine request, FERC suggested that Wolverine may be violating the requirement of the ICA to charge the same rate for the same service:

> Section 2 of the ICA prohibits a common carrier from charging a different rate for a like service. In this instance, it appears that Quality Oil is paying 3.76 cents per barrel more for the same transportation service that shippers qualifying for Wolverine's interstate rate pay. However, in order to get the lower interstate rate, a shipper must have tankage at Niles, and all the tankage at Niles is owned by four of the owners of Wolverine. As a result, it appears that the owners of Wolverine receive the same service as other shippers, but at a lower price.[344]

In subsequent testimony, a FERC staff member concluded that Wolverine's two-step rate assessment failed to comply with the requirements of the ICA:

> I conclude Wolverine has not met the requirements to comply with Section 2 of the ICA with respect to the transportation rates charged to shippers. Wolverine chooses to charge separate, not through rates, for identical services, which discriminates against and disadvantages the non-affiliated shippers bound for Holland.[345]

At the same time, Wolverine used this two-step rate assessment to benefit shippers who used the Ferrysburg/Holland terminals - both of which are owned by Wolverine affiliates. The interstate through rate for transportation from Hammond to Ferrysburg/Grand Haven (which is

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[344] *Wolverine Pipeline Company*, Order on Application for Market Power Determination and Establishing A Hearing, 92 FERC ¶ 61,277, at p. 21.

[345] Prepared Testimony and Exhibits of Commission Staff Witness Robert T. Machuga in Wolverine Pipeline Company, Docket No. OR99-15, Submittal 20010315-0230, pp. 23-24.

25 miles north of Holland) was 45.31 cents per barrel. Yet, the combined interstate/intrastate rate that Wolverine charged shippers was 44.88 cents per barrel - a cost that is .43 cents per barrel less than the interstate through rate. While shippers who transported product from Hammond to Holland paid a rate 3.76 cents higher than the interstate through rate, shippers who transported product to Ferrysburg/Grand Haven paid a rate .43 cents less than the interstate through rate.[346]

According to Wolverine, it has employed this practice for over twenty years, even though it is proscribed by the ICA, yet it was unable to articulate the basis for its actions. In response to inquiries made by FERC, Wolverine stated:

> Currently, and for a number of years, the only rate available for outbound movements from Niles to Grand Haven and Holland have been an intrastate rate. Hence, that rate applies and has applied to such movements in all circumstances... To the best of Wolverine's knowledge and belief, this has been the custom and practice for over twenty years. Wolverine does not know what reasons giving rise to this custom and practice were. One possible explanation is that it was believed that the movement of petroleum products into proprietary, non-common carrier tankage disrupted the interstate nature of the transportation."[347]

FERC staff dismissed Wolverine's argument that all shippers were charged the two step rates, noting:

> Instead of looking only at rates that were charged, it is equally important to look at the rates that are available, but were not charged for a service for like kinds of

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[346] The FERC staff also pointed out that shippers at Grand Haven/Ferrysburg (terminals owned by Wolverine affiliates) were better off paying the two step rate than the interstate rate, so there had been no reason for the shippers using the Grand Haven/Ferrysburg terminals to complain. However, the two step rate worked to the disadvantage of shippers who used the Holland terminal. Prepared Testimony and Exhibits of Commission Staff Witness Robert T. Machuga in Wolverine Pipeline Company, Docket No. OR99-15, Submittal 20010315-0230, pp. 22-23.

[347] Wolverine responses to FERC data request, cited in Ibid., pp. 24.

> traffic under substantially similar circumstances and conditions. That type of differing treatment is prohibited under Section 2 of the ICA. Indeed, Wolverine could have tendered a virtually identical service using the relatively lower through rates to Holland posted in its currently effective tariff.
>
> . . .Additionally, to the extent that Wolverine simply abandons its posted through rate service to destination points at Holland and Grand Haven, Michigan, that action should be construed as an attempt to circumvent Wolverine's duties under the ICA.[348]

v. Conclusion

A FERC staff witness summarized how Wolverine and its affiliates circumvented the requirements of the ICA and impaired competition through the way they structured the ownership of the breakout tankage at Niles and applied their tariff rates:

> The lack of access to tankage is directly related to the behavior of Wolverine and its constituent owners. Although Wolverine claims it operates independently of its affiliates, together they have created a patchwork of regulated and non-regulated facilities which circumvents the intent of ICA. The use and control of tankage storage is an essential element since it drives the need for and use of many of the product transaction arrangements; e.g., exchanges, swaps, and buy/sell arrangements, which then effectively creates the need for separate transportation transactions, in lieu of using the through rates posted in the tariff. Tankage storage is used as a barrier by which Wolverine can withhold common carrier service from shippers. Wolverine, as the pipeline entity, does not claim control over all of the facilities essential for transportation movements into its northern spur line, namely, the breakout storage tanks near its Niles pump and meter station. For example, the tariff requires shippers to make their own arrangements for facilities, such as tankage storage at Niles, before Wolverine will accommodate any request for transportation to destinations (Exhibit No. S-3, page 2, Item No. 3S (b)). Also, see Exhibit No. S-2, page 4, Item No. 35(b). Wolverine relies on these practices and policies to affect the interstate movement of refined petroleum products.
>
> Q: What is the competitive effect of limited or no access to Niles storage tanks?

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[348] Prepared Testimony and Exhibits of Commission Staff Witness Robert T. Machuga in Wolverine Pipeline Company, Docket No. OR99-15, Submittal 20010315-0230, pp. 22-24.

A. Wolverine asserts that its owners and/or affiliates have no obligation to allow a shipper to use the privately owned tanks constructed at Niles. As a result, this lack of assurance that shippers can obtain access to tanks restricts competition. It fetters shippers' access not just to the northern spur line, but also access to the pipeline from either Hammond to Holland or Grand Haven. Wolverine's owners have an economic incentive to restrict Quality Oil and others from access to the northern spur line by using access to Niles tankage storage as an impediment. Wolverine and its owners stand to gain by lessening the competition from Quality Oil at Holland. This may allow them to drive up the product price they charge in the Grand Rapids market.

The inability to acquire some assured commitment from Wolverine to access the tankage storage precludes the use of the through rates posted in the tariff and discourages shippers not affiliated with Wolverine from entering into long term purchases of the commodity products which could lower procurement costs. This prejudice towards shippers without storage tanks disadvantages them vis-a-vis the shippers owning storage tanks, which are Wolverine's affiliates, and therefore is discriminatory. The Commission has not limited the issue of ICA violations just to Wolverine, rather as the Commission said, the issue is also relevant to its constituent owners.[349]

In June of 2001, Wolverine reached a settlement on its case. Among the provisions of the settlement, Wolverine agreed to:

– Withdraw its application for Market-based rates in the Grand Rapids market;

– Establish a new tariff that it will provide common carrier access to breakout storage at Niles and make reasonable efforts to obtain a lease for 30,000 barrels of common carrier tankage, and offer Quality Oil the use of 75% of that capacity;

– Negotiate with FERC to establish a common carrier rate for use of the Niles storage tanks;

– Establish transportation rates based on service tariffs and eliminate affiliate preferences; and

– Negotiate with FERC to establish new tariff terms and conditions to eliminate unspecific provisions identified by the staff during the proceedings.

[349] Prepared Testimony and Exhibits of Commission Staff Witness Robert T. Machuga in Wolverine Pipeline Company, Docket No. OR99-15, Submittal 20010315-0230, pp. 16-18.

The case study reveals how control of supply is not the only way in which oil companies and pipelines may influence market competition. Control of critical transportation and storage facilities are a less visible and very effective way to influence cost, supplies and market competition. The laws and regulations governing access and control to such critical facilities are complicated and often not well understood - even by the parties most affected by them. Although on the surface common carriage appears to be a neutral means of transporting supplies, this case demonstrated that parties who control the transportation and storage facilities can take advantage of the complexity of the laws and regulations to circumvent the requirements of the law and limit competition in the market, at least until such practices are revealed. In this case that took 20 years.

g) Upcoming Pipeline Expansions

The Explorer Pipeline is owned by Marathon, Chevron, Shell and Sun, Conoco, CITGO and Phillips. For years, Marathon, Citgo, and Sun objected to a proposed expansion of the Explorer pipeline, effectively preventing the expansion during this period.[350] "There's plenty of capacity in the Midwest to get the products out from the Gulf Coast," a Citgo spokesman stated. "For the forseeable future, our people say we don't need it."[351] However, following a lawsuit by the minority shareholders of the pipeline, the pipeline is being expanded. When construction is completed, which is now anticipated to be later this year, it will provide the capacity for an

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[350] As a result of a lawsuit initiated by several of the pipeline's other owners, construction has begun on the expansion, which is now expected to be completed by the end of 2002.

[351] *Explorer Pipeline Expansion Set for 2002, After Courtroom; Pipeline Company Wins Stockholder Suit*, Oil Daily, July 31, 2001. Steve Everly, *Block of Pipeline Expansion Contributes to Fuel Prices*, The Kansas City Star, Aug. 31, 2001.

additional 100,000 barrels per day to be shipped from the Gulf Coast to the Midwest. Prior to this expansion the Explorer Pipeline had a capacity of 700,000 barrels per day and was nearly always fully subscribed.

The Centennial Pipeline is owned by Panhandle Easter Pipe Line Company, a subsidiary of CMS Energy, Marathon, and the Texas Eastern Products Pipeline Company. In early April of this year, the Centennial Pipeline began operation. Initially, this pipeline has the capacity to carry 200,000 barrels a day from both Texas and Louisiana to Illinois and, from there, through connecting pipelines, to other Midwestern destinations.

This additional pipeline capacity should improve the supply/demand balance in the Midwest and help avoid product shortages. Should a shortage occur, this new capacity could also facilitate the shipment of additional gasoline into the Midwest in a more timely manner than by barge.[352] Thus, this new capacity may help alleviate price spikes once they occur.

Marathon also is attempting to get permits for the Cardinal Pipeline, which would transport gasoline from its refinery in Catlettsburg, Kentucky, to Columbus, Ohio. This pipeline would further improve the supply/demand situation in a number of Midwestern markets and could lessen the effects of supply disruptions.

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[352] If the supply disruption is significant enough, prices still may rise to the amount at least necessary to bring in additional shipments by barge. However, with this additional pipeline capacity the amount of shipments by barge may be much less than has been the case. This would have the effect of shortening the duration of the price spike.

EXHIBIT IV.1

III. WEST COAST MARKET FUNDAMENTALS

This section highlights, from an industry perspective, keys to success on the West Coast: crude supply, manufacturing, product supply and commercial marketing of jet fuel, diesel and coke. Section IV puts APC's situation in each of these fundamentals into perspective.

The West Coast has historically been a unique business environment for oil companies. This uniqueness stems from the isolation of the region— bordered on the west by water and on the east by mountain ranges, and with no significant pipeline access for product or crude into the region and governed by strict environmental regulations which do not apply elsewhere. For example with the important exception of the All American and Line 90 crude pipelines, ocean going tanker is the only way to move large volumes of product or crude into or out of the West Coast. As a result, the market fundamentals impacting all major aspects of the downstream business are different from those in other major refining centers.

Crude prices are at a discount to the Gulf Coast. West Coast manufacturing infrastructure is the most complex and sophisticated in the world—driven in part by high gasoline demand, limited local markets for residual fuel oil, tremendous demand for light products the relatively heavy crudes which are abundant in the region, and tight environmental regulations. The West Coast has historically been short light products leading to prices which trade at premium to the Gulf Coast. As a result, West Coast margins have historically exceeded Gulf Coast levels. Commercial and wholesale marketing on the West Coast is complicated by *differing supply/demand balances and product specifications up and down the coast, as well as an increasingly sophisticated customer base.*

In addition to geographic isolation, unique product specifications in California for both diesel fuel and gasoline create a form of product isolation. Though refiners outside of the West Coast can and do make product which meets California specifications (e.g. Neste in Finland makes CARB gasoline for export), our local specifications create additional costs for refiners trying to serve the West Coast market.

Crude Supply

West Coast refineries process 2.5 million barrels/day of crude. In 1995, ANS provided 52% of the crude slate, and California crudes 38%. Only 10% of all refinery crude runs were foreign barrels, as compared to 73% in the Gulf Coast. Chevron, Exxon, Tosco and APC provide the primary demand for ANS. Though on the West Coast ANS is often referred to as a "light" crude, from a world wide standpoint ANS is closer to a medium/sour crude. A variety of refiners, including Mobil (Torrance), Shell (Martinez), Texaco (Wilmington and Bakersfield), and Unocal (Rodeo) run primarily California heavy crudes, which are among the heaviest in the world.

The West Coast's distance from other major petroleum markets has historically kept crude prices - especially California's heavy crude prices lower than the Gulf Coast. The reason is simple: petroleum prices are set at a world level, with netbacks typically determined by the marginal (last) barrel. During the 1980s, the West Coast was crude long. Since it was

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(and still is) expensive to transport crudes to the Gulf Coast or alternative refinery centers, West Coast producers were (and are) willing to sell their production in local markets at a price which gives them a netback equal to or above their next best export alternative. In practice, this has resulted in California crudes priced attractively versus imported crudes, corrected for quality. Both ANS and California crude prices were are considered to be at "export parity".

However, as ANS declined, BP was able to drive the price of ANS toward "import parity" by exporting excess barrels to the Gulf. By 1993, ANS was pricing at parity with imported crudes from Latin America and the Middle East. In contrast, California heavy crudes continue to price at a discount because San Joaquin and OCS production still exceed local demand. The marginal barrel of California heavy crude still ends up in the mid-continent via the All American Pipeline or reaches Los Angeles by truck.

Looking ahead, the decline in ANS production will gradually drive the West Coast into a crude short position. Since ANS is already trading at parity with imported crude oil from Latin America, we do not expect ANS pricing on the West Coast to increase relative to world prices. As long as crude transportation costs remain on a level playing field, the West Coast should remain the most attractive market for ANS producers. If export transportation economics become more advantaged than they are currently, exports of ANS could begin to threaten the availability and relative pricing of ANS to West Coast refiners.

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We expect the California heavy crude discount will tend to evaporate over the next few years as the region goes increasingly short of heavy crude, and

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the amount of California heavy crude "exported" to the Gulf Coast via the All American Pipeline diminishes. Efforts to increase heavy crude pipeline capacity to Los Angeles could accelerate this trend.

An additional factor affecting West Coast crude markets is crude quality. The West Coast, and [redacted] in particular, produce a substantial volume of calcined coke for use in the aluminum industry. The ability to make this high value product is highly dependent on the quality of ANS crude. Specifically, sulfur and metals content affect the useability and value of the calcined coke to aluminum smelters. As ANS quality continues to decline over time, the amount of "trim" crudes of higher quality needed to supplement ANS in calcined coke manufacturing will gradually increase. The challenge is to identify the trim crudes which can land on the West Coast most economically. Unfortunately, many high quality calcinable crudes do not land on the West Coast at economic prices today.

Manufacturing

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The West Coast has one of the world's most complex refining infrastructures. The complexity of its refineries is driven by the high demand for gasoline, the low demand for resid/distillates, the heavier crudes produced here and tight environmental rules. Of the 1.8 million barrels per day of capacity in California, for example, 1.6 million barrels per day is processed in coking refineries compares this 90% California coking conversion rate to Texas, where only 65% of 3.9 million barrels per day of refining capacity is in coking refineries.

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As a result, the West Coast's margin curve is fairly flat. There is very little marginal capacity on the West Coast because simple, high-cost refiners such as Goldenwest and Pacific Refining have already closed. In addition, there is a high degree of balance across the West Coast refinery system, which means there is marginal capacity within any of the existing complex refineries. As a result, West Coast prices can be very volatile. Excess capacity can produce intense price wars while shortages can create attractive margins.

For a refinery of any given complexity, margins are the key to profitability and return on assets. Breakeven refining margins tend to move together in much the same way as crude prices, with transportation economics between marginal product supply and demand setting prices and margins across refining centers. The Gulf Coast light/heavy product differential (expressed as the average of gasoline and diesel prices minus the price of residual fuel oil) is the key benchmark for global refining margins.

Historically this light/heavy product differential has been extremely volatile over time, typically trading in a range bounded by FCC (fluidized catalytic cracking) re-investment economics and operating cost breakeven ($5/barrel). As a result, most of the time there is limited incentive to build additional complex refining capacity, but likewise limited incentive to remove capacity from the market.

Over the last decade, light/heavy differentials have traversed the entire range from $5 to $12/barrel.

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The light/heavy product differential translates into actual refining margins based on the upgrading capability being utilized and the crude being run. On the West Coast, coking margins are the best reflection of each refinery's gross financial performance. They ranged from $5.00/barrel to $11.00/barrel from 1991 to 1995, with an average of $7.50/barrel. However, since the complexity of the refining base on the West Coast is similar across refiners, differences in individual performance are not explained solely by margins. Differences in safety, reliability, cost performance, throughput increases and scale tend to determine which refineries are most profitable over time. On the West Coast, these differences lead to a substantial range of overall profitability across refineries that have essentially similar upgrading capabilities.

Product Supply

On the products side, since the Gulf Coast is the nearest source of incremental products, the marginal barrel of products barrel commands a price high enough to cover the transportation costs from the Gulf. West Coast product prices thus tend to be at "import parity". This is one of the major reasons why manufacturing margins on the West Coast are significantly higher than those on the Gulf Coast.

Historically, the West Coast has been short light product, particularly gasoline, creating a situation where prices are stable at levels 5 to 6 cents per gallon above the Gulf Coast. However, in 1991 the supply/demand balance shifted from short supply to excess, and has stayed slightly long ever since. During this transition period, West Coast light product prices fell to levels 2-3 cents per gallon below the Gulf Coast, stayed at that level for slightly over a year. Towards the end of the time period, a significant increase in exports of light products out of the West Coast (combined with the shut down of some non-economic capacity in various West Coast refineries), has allowed supply and demand to remain in close balance. However, the West Coast light product balance remains a precarious one. The overall balance shifts seasonally, with the summer months in close balance and the excess product long in winter months. These supply/demand balance swings make the West Coast prices far more volatile than in other world markets.

Looking ahead, light product demand is expected to continue to grow at a rate of 2% per year through 2005, with the majority of this growth driven by gasoline. Gasoline demand is strongly driven by population and by vehicle miles traveled, which are expected to grow by up to 2% per year over the next decade, according to state and government forecasts. And when the impact of higher speed limits, consumer preferences for larger cars and sport utility vehicles, and a more robust economy are factored in, the demand outlook becomes even more positive.

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At the same time, the West Coast's capacity to manufacture light products has recently increased due to major environmental investments to make CARB gasoline at most West Coast refineries, and it is expected to continue to grow due to ongoing capacity creep (low capital capacity increases). Historically, light product make on the West Coast has grown 2.2% annually due to capacity creep, and this level of growth is expected to continue over the next five to ten years. If demand and supply growth meet expected levels, the historical pattern of balance in the summer and length in the winter will likely continue, though any significant recession or change in demand growth could result in significant additional increases in West Coast product excess supply, putting pressure on both prices and margins, and necessitating additional exports

Exports from the West Coast to maintain the balance between supply and demand have historically been made by refiners who have some remaining, less economic refining capacity which could be used to cut crude runs and by refiners who have excess product and the ability to export that product economically. As the table below shows, this incentive is strongest for Chevron and Shell, though others have the excess supply to export product if necessary.

Further complicating light product supply on the West Coast is the existence of several distinct "micro-markets". Regionally, the West Coast is short on light product in southern California, long on light product in northern California and balanced to long in the Pacific Northwest. Additionally, CARB gasoline and diesel specifications reduce the fungibility of products within PADD V. As a result, we experience significant volatility of product pricing within PADD V as well as pricing versus the Gulf Coast. The existence of a handful of players with large supply positions in specific West Coast regions and/or products, such as APC's CARB diesel position in southern California or APC's high sulfur diesel position in the Pacific Northwest, add further to this volatility. Close monitoring ~~of~~ supply and demand within these micro-markets is needed to ensure that refiners react to imbalances and prevent wide volatility in the premiums realized for specific products.

EXHIBIT IV.2

CHEVRON U.S.A. PRODUCTS COMPANY

STRATEGIC ASSESSMENT STUDY

TEAM

[redacted]

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March 5, 1993

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U.S. DOWNSTREAM INDUSTRY PROFILE - GENERAL

- Highly competitive, low margin commodity business.
- Non customer-driven specification changes are requiring major mandatory investments.
- Selected product reformulations such as LAD and JP8 (from JP4) offer profit opportunities for well-positioned competitors.
- Entry barriers are high restricting entrance of new competitors; however, high exit barriers encourage survival of weaker refiners.
- Industry average returns approximate cost of capital; however, the best performers earn acceptable returns, i.e. >12%.
- Industry will generate long-term, sustained cash flow, although mandatory investments will absorb much of the cash over the next few years.
- Marginal refiners/marketers recover cash costs even in poor times; however, earnings are insufficient to cover capital requirements without borrowing.
- Mogas demand is growing, although at less than historic rates.
- Continued marketing restructuring with majors retreating to core markets and independents exiting business.

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U.S. DOWNSTREAM INDUSTRY PROFILE - USGC

- Large, highly-competitive refining system with relatively high yield of higher value products (chemicals, lubes).
- Refineries linked to a large market by efficient, non-proprietary, inter-regional distribution system.
- Active spot market with ready access to offshore markets lessens need for integrated refining and marketing system.
- Significant amount of least efficient capacity has shut down.
- Refining capacity is spread over many competitors.

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U.S. DOWNSTREAM INDUSTRY PROFILE - USWC

- USWC market appears to allow better average returns than USGC. The better performers generate ROCEs greater than 12%.
- Relatively isolated market; California product specification changes may create additional import barriers and opportunities for well positioned refiners (jet, LAD).
- Refining and marketing closely linked; thinly traded spot market.
- Market is dominated by limited number of large, committed refiner/marketers whose individual actions can have significant market impact.
- Exports becoming a more important factor in balancing light product supply and demand.
- With the exception of Chevron, all major refiners process a large % of equity crude; some indication of integrated upstream/downstream economics by some California heavy crude producers.

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EXHIBIT IV.3

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Energy Briefing Note

PIRA

[redacted]

January 17, 1996

CARB 2 GASOLINE: COSTLY, COMPLEX, AND TIGHT

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Summary

The deadline for California's new mandated gasoline, CARB 2, is fast approaching. The gasoline is more difficult to manufacture than Federal RFG but is designed to accomplish the same task -- reduce ozone precursors and toxics emissions. California's refiners have invested over $3 billion to be ready for the program's March 1, 1996 start. Will there be enough capacity? Based on a PIRA survey, Californian capability to produce CARB2 gasoline is around 900 ±50 MB/D. This contrasts with estimated demand of around 915 MB/D. Hence, the balance appears tight. Early inventory building coupled with supplies of either finished product or components from outside the state will likely be necessary. Prices would need to increase to attract the additional out-of-state materials. The California gasoline market should witness extensive price volatility and refiners could have an opportunity to earn a return on their investment, which has rarely occurred with other U.S. refiner environmental investments. Prices 10-15 c/gal above conventional West Coast gasoline are likely, with spikes above this at times. Such a sharp increase in California's pump prices carries risks for the industry which it needs to minimize.

Introduction

The New Year is bringing with it another new fuel, California Air Resources Board (CARB) reformulated gasoline, aka CARB 2, the costliest and most complex gasoline yet. This Briefing Note outlines the program, reviews California refiners' readiness, and assesses the implications for margins. The review is based on a refiner survey that PIRA conducted by phone between September and November 1995. The results from this follow-up to our third quarter 1993 survey cover around 90% of crude distillation capacity and nearly all the upgrading units, with just one instance where PIRA had to incorporate earlier estimates, updated using other sources.

Program Timing

The CARB 2 gasoline program was adopted in November 1991 for 1996 implementation. There were significant startup problems associated with the 1993 introduction of California's special low sulfur diesel program. To avoid that happening again, CARB has been working closely with refiners as the deadline approaches, monitoring their readiness. One consequence of this is that the program has been delayed and switched to a phased-in startup that allows ample

MOB 17199

time for inventories to be built. Thus, the mandated dates for the different industry segments to move to the year round CARB 2 gasoline program are now:

- Refiners: March 1, 1996 (from January 1).
- Terminals: April 15, 1996.
- Retail: June 1, 1996.

The state has also been testing whether the new fuel will damage car components, as low "S" diesel did. So far, there have been no statistically significant problems. However, consumers only care that *their* car runs. Even a few problems, if magnified by press coverage, could present difficulties for regulators and the industry, especially in an election year.

CARB 2 Specifications

Specific Limits

CARB 2 gasoline has more restrictive quality specifications than any gasoline introduced or planned for anywhere in the world, although British Columbia (Canada) has just announced a program modeled on CARB 2 and RFG, albeit toned down and with no oxygenate mandate. California has taken the federal rules for RFG a significant step further with the substitution of specific (and generally tighter) limits for five properties that are either formula based (aromatics), performance based (sulfur, olefins, T90), or not even defined (T50) for simple model Federal RFG (Figure 1).

Figure 1

SUMMER REFORMULATED GASOLINE: CALIFORNIA IS MORE RESTRICTIVE (PIRA)

	U.S. BASELINE	PER GALLON LIMITS PHASE I U.S. 1995*	PHASE II CALIF. 1996
RVP, psi	8.7	7.2/8.1	7
OXYGEN, wt%	0	2	2**
AROMATICS, vol%	32	Formula	25
BENZENE, vol%	1.53	1	1
OLEFINS, vol %	9.2	'90 avg (10.8)	5
T90, deg. F	330	'90 avg (332)***	300
T50, deg. F	218		210
SULFUR, ppm	338	'90 avg (338)	40

CARB has again given small refiners some compliance latitude, allowing them a two year extension, until March 1, 1998, for meeting the new sulfur, olefins, T50 and T90 specifications. Compliance on aromatics, benzene, oxygen and RVP is required at the same time for all refiners, large or small. Because of closures, there are now only two gasoline producing refineries that qualify as small: Paramount and Kern. This compliance latitude therefore has little bearing on either CARB 2 supply or on air quality.

Figure 2

CALIFORNIA PHASE 2 REFORMULATED GASOLINE STANDARDS (PIRA)

	FLAT LIMIT	AVERAGE	CAP.
RVP, psi	7	—	7
OXYGEN, wt%	1.8-2.2	—	2.7*
AROMATICS, vol%	25	22	30
BENZENE, vol%	1.0	0.8	1.2
OLEFINS, vol%	6.0	4.0	10.0
T90, deg. F	300	290/310	330
T50, deg. F	210	200	220
SULFUR, ppm	40	30	80

* Winter

As with RFG, companies can take an averaging approach, but the specification limits are then tightened considerably and maximum values are introduced. (Figure 2). The rolling semi-annual averaging can be applied to any or all components with the sole exception of RVP, which always retains its flat 7 p.s.i. limit.

Predictive Model Adds Flexibility

The manufacturing flexibility for CARB 2 goes beyond this averaging. The key feature of California's program is that it is emission reduction driven, with the set limits in effect a fallback option. Any gasoline that, according to CARB's mathematical model, is predicted to equal or better the emissions from a gasoline with CARB 2's specific limits becomes a complying gasoline, even if the levels of some properties deviate from the set flat or averaging limits. This approach puts California almost two years ahead of the EPA, which will not change to its predictive model for RFG, the Complex Model, until 1998.

CARB's model, developed with refiner involvement, is particularly sensitive to sulfur and T50. Lowering these can result in gasolines that are CARB 2 compliant but could have too little oxygen to be RFG compliant too, an issue in Southern California and Sacramento (see later).

PIRA Survey Results

Capital Investment

The surveyed refiners have invested a staggering $3.4 billion, or $4,000/daily gasoline barrel, to achieve CARB 2 compliance,. This total is around $500 million lower than previously expected due to aggressive cost reduction programs, with the main savings coming from the cancellation of several alkylation facilities. Companies cited the predictive model as substantially aiding their ability to make savings. This confirms the cost effectiveness of this more flexible approach. Companies continue to study how the model can help, so further reductions in operating costs or future capex are likely.

Investment levels were quite disparate among companies, varying from as little as $100 million to as much as $1 billion, depending on the type and number of new process units required. Companies at the high end of the cost range were extensively modifying their refinery(ies), including adding new alkylation, isomerization, and/or coking, and generally going beyond simple CARB 2 compliance. In the survey as a whole, process unit choices included:

- Fractionators for naphtha feed, reformate, T90 control, cat naphtha or RVP control.
- Benzene saturation.
- Alkylation and/or C_5/C_6 isomerization.
- Hydrotreating for one or more component streams, in some cases accompanied by hydrogen units and even sulfur recovery units too.
- Oxygenate capacity.

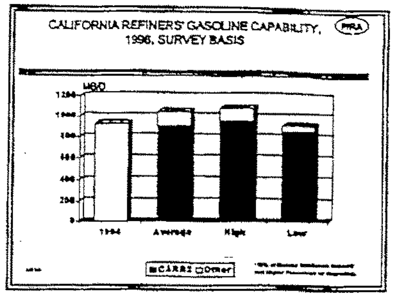
In addition, utility and offsite improvements were necessary in many cases, as were more sophisticated blending operations

Another reason for the range of investment levels is the difference in the percentage of gasoline targeted to be CARB 2. This varied from 50 to 100% with an average of around 85%. California will still have conventional gasoline for markets outside the state.

CARB 2 Supply Potential

The surveyed California refiners should be able to produce around 900±50 MB/D of CARB gasoline, (before allowing for turnarounds or accidents) with the variation depending upon relative economic incentives to produce different refined products, operational constraints or requirements, and the performance of new units (Figure 3). This estimate is based on the survey participants' plans for oxygenate concentration and includes baseload volumes of components, such as MTBE, from outside the state. It excludes three possible additional sources of CARB 2 supply. Firstly, supplies from California refiners not surveyed. Secondly, contingency in-system volumes that California refiners could supply from outside the state. Thirdly, finished spec gasoline or components from non-Californian refiners. Supplies from these latter two categories are dependent on there being an economic incentive to compensate for their costly movement. PIRA has not performed a detailed analysis of all these additional sources but estimates they could expand CARB supplies by around 15-50 MB/D, at a price. Offsetting this increment are accidents and planned turnarounds, which have not been allowed for in what is really a stream day estimate.

Figure 3



There will be seasonal variations in the supply potential. Higher RVP and oxygenate standards in the Winter result in 5-10 % more supply capability then versus the summer. However, because of RVP limitations, winter grade material cannot be stored for summer use.

Conventional Gasoline Supply Holds Steady

The surveyed refiners should be able to produce around 1050 ± 40 MB/D of gasoline in total in 1996, an increase of around 80 MB/D from their pre-RFG 1994 capacity levels. Thus, investments have been designed to make up for the volumes lost due to recent refinery closures and allow for demand growth.. Subtracting the planned RFG volumes shows conventional gasoline capability of 140±10 MB/D. Adding in an allowance for non-surveyed refiners raises this to around 150 MB/D. These volumes confirm that refiners plan on maintaining their out of state market position either directly or via exchanges. In one widely publicized long term arrangement, Chevron will supply Tosco with 30 MB/D of CARB 2 in exchange for an equal volume of conventional gasoline.

Demand Growth

California's economy is bouncing back after a long slump. Rapid growth is occurring in entertainment, advanced technology and trade oriented industries. This has offset most if not all, of the massive employment decline resulting from the downsizing of the military and other sectors. The pace of outward migration of the middle and upper middle class has abated. According to various analysts, the state's economic growth should outpace the nation's in 1996. The state has also just raised speed limits.

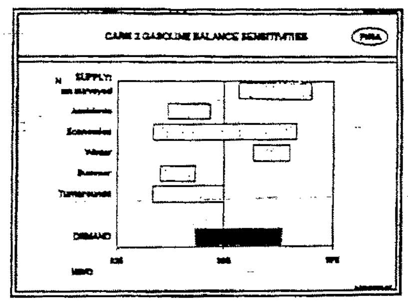
Offsetting these growth positives are efforts to reduce vehicle use for environmental reasons, growth in telecommuting, and higher retail prices resulting from the use of the costlier CARB2 gasoline. Nonetheless, the net result is growth. PIRA estimates Californian gasoline demand will be around 910 MB/D in 1996, 1% higher than in 1995. As is the case elsewhere in the States, demand is summer peaking.

A Tight CARB 2 Balance

The CARB 2 gasoline market will be tight. Our survey indicates the market is balanced on a steady state basis (Figure 4). However, refiners will need to produce in the upper half of the range of their capabilities and/or out of state supplies will be needed in the summer, (which in California starts in March/April and extends to the end of October), during turnaround seasons, or when there are refinery problems. The tightness of the balance suggests that turnarounds will never be planned for the summer.

To overcome potential problems in the introductory phases, refiners will need to build inventories during the phase-in period and hope that all units function without problem. The spring turnaround season (see PIRAFAX on U.S. Refinery Turnarounds, Jan-June 1996) should be largely completed around the time the program starts, so should not further complicate CARB 2's introduction.

Figure 4



Supplying Conventional Gasoline

California refiners have played a key role in supplying Arizona, Nevada and Oregon, conventional gasoline markets that have little or no indigenous supply. Around two-thirds of Arizona's supply (65-70 of 110 MB/D) and nearly all of Nevada's (50 MB/D) comes from California. The balance of Arizona is supplied by Santa Fe Pacific Pipeline from El Paso, Texas, fed by New Mexico and west Texas refiners. Recently, Diamond Shamrock started a new pipeline from Mckee, Texas (Panhandle) to El Paso. Also, Longhorn plans to reverse an Exxon crude oil pipeline and put it into product service by 1997 and extend it to El Paso, enhancing Gulf Coast refiners' ability to ship west. There will inevitably be more competition in the Arizona market, but indications are that California refiners are not ready to cede this nearby market. This implies downward pressures on conventional gasoline, particularly from next year on, with the fortunes of the Californian and Gulf Coast refiners more closely tied together.

What If Something Goes Wrong? . . . Variances

What happens if a refiner has a problem supplying CARB 2? Many CARB officials now believe that the market place should be the final arbiter to the extent possible, i.e., if a company has a supply problem, it should attempt to obtain complying gasoline from others first. This might work in an oversupplied market, but what happens if the market is steady state balanced? Supply disruptions result in price spikes that the public, and ultimately politicians, react negatively to. Yet allowing non-complying supplies to be used raises issues of equity and fairness to those companies that make investments, follow the rules and are ready to supply complying product. This is the same dilemma refiners, marketers and CARB confronted during the introduction of CARB diesel in October 1993.

CARB's response has been to propose a variance procedure that will likely be finalized soon. Variances, if granted, would be for a very specific time period and volume and cost 15c/gal; 10c for CARB's estimate of the highest relative production cost of CARB gasoline plus a 5c penalty. Under the proposal, a variance to supply non-complying gasoline would only be granted if:

- The supply problem is due to conditions beyond a company's reasonable control.
- The company has explained its reasons, publicly and privately, established when it will be able to supply complying material, and submitted a detailed compliance plan. Indications are that the burden of proof will be quite rigorous.
- The economic consequences for the company and the public outweigh the air quality effects.

Situations where the need for a variance is not immediate and emergency situations due to accidents or other "physical catastrophes" are treated differently. The former would involve sufficient notice (10 days) to interested parties, and public hearings, while the latter, theoretically, could be accomplished within 24 hours through conference calls with affected parties.

The Largest Oxygenate Market

With CARB gasoline, California's oxygenate use will rise by around 35%, to some 100 MB/D of MTBE equivalent. This enhances California's position as the largest U.S. oxygenate market, (it is also the largest gasoline market), raising its market share to almost one quarter, with its share of the MTBE market even higher. With CARB 2, the California oxygenate market will also move from winter to summer peaking because year-round use becomes statewide instead of just applying in southern California, as has been the case since the introduction of

RFG at the beginning of 1995. For over two years prior to that, the market was highly winter peaking due to the October 1993 start of the oxy-gasoline program.

This estimate of oxygenate demand is based primarily on the survey responses on concentration. Potential health effect issues are still overhanging the whole U.S. ethers market, implying some downside risk to the estimate. Additional downside risk comes from the question of whether the oxygen requirements for RFG in California will continue to be mandated.

MTBE has been the dominant oxygenate. With little local capability, most is imported, primarily from the Gulf Coast and Canada. Ethanol also plays a role, especially in the north, but it is mainly suitable for winter use due to its high volatility. Although several companies have installed ether capability in preparation for CARB 2, imports will continue to predominate

Oxygen Content - Can The Rules Change?

While the state, via CARB, has authorized the use of a predictive model which, theoretically, makes it possible to manufacture a complying gasoline without the need for an oxygenate, there are other applicable rules that take precedence. For example, during the winter carbon monoxide (CO) control periods, a 1.8-2.2 wt% oxygen level, equal to the nominal CARB spec, will continue to apply. These periods are:

- Oct. 1 - Feb. 28: Los Angeles area and Ventura County
- Oct. 1 - Jan. 31: Northern California
- Nov. 1 - Feb. 28: San Diego and other Southern and Central areas.

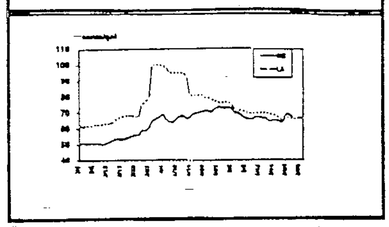
In addition, Federal RFG rules mandate oxygenate use in Southern California and are scheduled to apply to Sacramento too, due to its growing ozone problem. The refining industry and CARB are trying to get this RFG oxygenate standard lessened to voluntary from mandated. EPA does not believe it has the authority to make this change but it has received a legal brief from the Western States Petroleum Association (WESPA), justifying why it could. EPA is now in the process of evaluating this, but the possibility of a decision before the start of the CARB gasoline program is receding, in view of the government's recent shutdown.

Some refiners already plan to cut the concentration of oxygenates in CARB gasoline in the summer in the region north of Sacramento, where RFG is not required. This again underscores the scale of the economic benefit offered by the Predictive Model since the additional grade makes distribution complex. Should EPA agree that the oxygen limit in RFG is voluntary in relation to CARB 2, PIRA expects other refiners to cut back too. Refiners will not stop using oxygenates since they provide multiple benefits through their quality – high octane, no sulfur, no olefins and favorable T50 blending, – and their potential as volume extenders. These potential oxygenate reductions further raise the probability of CARB 2 tightness.

Margin Implications

Will California refiners achieve something that has rarely been seen in the U.S.- a reasonable return on new capital investment related to environmental programs? Generally, the U.S. refining industry has overbuilt, whether for oxygenates, low "S" diesel or RFG. This time may be different. The CARB 2 balance appears to be tight in California. Add in the remoteness of the California market, the unique characteristics of CARB 2, the requirement for domestic shippers to use higher cost Jones Act shipping, and the small number of companies involved, all of whom share a motivation to recoup costs and not undermine the market. The implication is that prices on average will do quite a bit more than cover marginal costs, which will mainly comprise the incremental oxygenate cost, although not during the extended phase-in period. Will companies raise pump prices before June 1st?

Figure 5


PRICE MOVEMENT OF GASOLINE
MARCH-MAY 1989

The market is not without options, at the right price. There is a steady trade of MTBE from the Gulf that would be used for incremental supply. Likewise a price spike would attract either finished product or components from unexpected places. Remember what happened to California gasoline prices after the Valdez oil spill in the Spring of 1989 closed the port and refiners could not quickly obtain alternative crude supplies. Spot gasoline prices jumped to around $1/gallon, when the Gulf Coast was trading around 65c/gallon. Sufficient incentives were created to attract product from new locales, quickly eroding prices (Figure 5). Thus the combination of variances and market forces will act to dampen a price spike but nevertheless leave those Californians able to supply complying product amply remunerated.

Could all this be too good to be true for refiners? Possibly. CARB's expectations seem to be for a CARB 2 gasoline differential to non-RFG averaging around 8c/gal. Differentials of that magnitude when RFG was introduced contributed to the wave of opt-outs, yet CARB believes they would be manageable in a Californian context. However, CARB's assessment of the differential between CARB 2 and conventional gasoline looks conservative. A 10 to 15c gal difference is likely, with the spread wider at times. Even if conventional gasoline prices soften, this implies a sharp increase in Californian pump prices in an election year. The industry's P.R. machine needs to be ahead of the curve on this issue so that there is an appreciation of the benefits and not just the cost of CARB 2 gasoline.

Note: *Additional coverage of gasoline and oxygenate related issues can be found on PIRA Online.*

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EXHIBIT IV.4

COMPETITOR INTELLIGENCE INFORMATION
FOR THE DECEMBER 14 EL SEGUNDO REGIONAL COORDINATION MEETING

Note: This information is gleaned from industry publications and employee contacts with outside companies and may not be entirely accurate. (All of this month's data is sourced from OPIS unless otherwise noted.)

General

- **Refining/Marketing/S&D**: A senior energy analyst at the recent API convention warned that if the U.S. petroleum industry doesn't reduce its refining capacity, it will never see any substantial increase in refining margins, pointing out the recent volatility in refining margins over the past 12 months. U.S. average refining margins were sitting at the break-even point of $3/bbl in March, surged to $6/bbl in May, then dropped to 50cts/bbl in September before crawling up to the present margin of $2/bbl. In the last nine months, gasoline demand has been healthy and inventories have remained close to record lows, factors that should normally lead to higher prices. However, refining utilization has been rising, sustaining high levels of operations, thereby keeping prices low. ***Implication: in what alternate modes can the refinery operate given low-margin economics?***

Unocal

- **RefiningMarketing**: Unocal is exploring sale of three refineries and 1,441 gasoline stations in California due to low West Coast refining margins and high capital expenditures required to comply with stringent environmental regulations. Unocal is also exploring introduction of an unbranded mogas supply to move incremental mogas from their refineries. They would provide this to existing branded jobbers who now turn to suppliers like Ultramar, Tesoro and Tosco for supplemental mogas supply.

Ultramar

- **Marketing/S&D**: Ultramar approached our S&D traders to see if we would give them CARB PUL in exchange for CARB RUL and a differential. We told them that we cannot commit to any deal until we have experience manufacturing CARB mogas. ***Implication: this could be a profitable way to use any excess octane strength at El Segundo.***
- **Marketing**: Ultramar announced on Sep 12 that they plan to spend $125 million to add 125 company-owned outlets to their existing 146 in California, according to Platt's. This growth plan will leverage off their refining strength, where they have excess production capability compared to branded sales volume.

Tosco

- **Marketing/S&D**: Tosco will attempt to increase market share and expand into new retail markets over the next three years, according to a Tosco report given to financial anlaysts. They will invest $200 million to build 50 new state-of-the-art retail outlets on the West Coast by 1998, and upgrade 350 existing West Coast sites with 'pay at the pump' card readers, car washes, new imaging, and C-stores.

Tomen-Pacific

- **Marketing/S&D**: Tomen-Pacific, once a very large presence in the West Coast (WC) cargo market, is planning to shut its WC operation by the end of the year. Evidently, poor WC economics, coupled with decreased cargo activity from the Pacific Rim and the WC have prompted their decision. Tomen is the latest in a series of high-profile companies to retreat from the WC (e.g. Wickland, EOTT, Tosco, Powerine, and Pacific Refining). ***Implication: consolidation of trading offices could reduce spot market liquidity and affect pricing. Also, weak West Coast margins may continue to force industry rationalization.***

EXHIBIT IV.5

212

To: [redacted]
From: [redacted] Tim
Date: May 16, 1995
Subject: CARB Outlet Strategy Meeting

Attached are several background items and a couple of in-progress spreadsheets regarding outlet opportunities for CARB mogas. I thought you might want to review the data prior to our meeting Thursday. I would like to use our meeting discussion to expand / complete the spreadsheets for management review.

The CARB Mogas Outlet spreadsheet identifies CARB production, existing contract commitments and remaining avails. It also lists a number of potential outlets for the available barrels and attempts to capture positive and negative sensitivities about each outlet. For our discussion, I would be interested if you have ideas on any additional outlet opportunities or additional sensitivities.

The Strategy Cases spreadsheet is mostly incomplete at this stage, however, what it attempts to depict is how we would prioritize our outlet opportunities in various market scenarios, I am not necessarily convinced that we will have drastically different outlet strategies , however, I think we should consciously address how we would want to react in various markets. I attempted to fill in some data that seemed obvious but its all up for discussion at the meeting.

Look forward to seeing you Thursday, thanks.

TOWER
250 KBM - Tower
250 KBM - Shell N/S - rack
100 KBM - Trade/Sell

Tesoro CARB in SFB ?
Chk Seariver or W. Coast Ships

EXX00001625

Supply Operations - West Coast
CARB Mogas Outlet - DP&A Outlook
Discussion with [redacted] 5/15

Overall Supply / Demand Balance

- California net short of CARB mogas / components
- Price outlook driven by cost of imports from Carib basin; outlook +10¢ versus current conventional (16¢ versus future conventional due to conventional price drop)
- California producability roughly in balance but unbalanced component makeup

Inbound	Outbound
CARB Mogas	Conventional mogas
ALK8	T-90
MTBE	

- Full investment in conversion of capacity would make California balanced
- CARB will likely come in from the PNW since marginal economic performers there (Shell Anacortes, Tosco Ferndale) will press to find ways to squeeze margins up; may be as much as 30-35% producability without impact to their statutory baselines

SFB Supply / Demand Balance

- SFB remains net long in mogas - both CARB and conventional
- **BE** likely to be primary spot market producer based on investment and marketing strategy of other SFB players
  Chevron - significant investment - net long; balanced with sale to Tosco
  Unocal - balanced to slightly short
  Pacific - no investment, no known outlet
  Tosco - permits received with no investment progressing; entered into 30kBD purchase from Chevron; outcome of Arco processing deal in doubt
  Arco - Appears very short in SFB; may have done N/S trade with Shell but still shopping for a large barrel SFB deal; may be leverage - still has option on Tosco processing agreement
  Shell - long SFB but balanced overall on WC - may have traded with Arco although probably still short in LA

Conventional Mogas Valuation

- Conventional mogas will go north, likely from SFB, to backfill CARB mogas brought in from PNW; not likely to be 1 for 1 since PNW net long mogas when in full conversion; marginal conventional mogas price will fall to its export value (-6¢ versus current conventional)
- SFB is likely to be lowest value market, as it currently is, caused by greatest length; expect current price to drop to Far East export but North / South price relationships should remain (SFB -3¢ vs LA/PNW)

EXX00001626

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General Strategy Considerations

- Should not do deals that supports other's importing barrels to West Coast
- Desire to build ALK8 for contingency should be weighed against market revenue factor impact from ALK8 sales if end up with ALK8 length (ALK8 sales = + CARB mogas)
- Purchase marginal strategy may not be beneficial if we already dominate spot market supply; we would essentially chase self
- Strategic benefit from long-term participation in LA market; stronger chance LA will experience periods above transportation parity; shrinks SFB market; creates alternate price basis for some barrels; establishes ongoing infrastructure to capture price run-up opportunities; serve to minimize on-going presence of Carib basin refiners
- Outlet of T-90 onto West Coast would have same impact as plus mogas; export to Far East would help overall West Coast mogas market although naphtha markets weak in Far East versus distillate; strongest value for T-90 may be to HCU with backed out LCCO combined into a higher value distillate for Far East export

EXHIBIT IV.6

215

From: [redacted] CCFXGTW1
Date: 5/26/95 8:58 AM
Priority: Normal
Receipt Requested
TO: [redacted]
TO: [redacted] at [redacted]
TO: [redacted] at [redacted]
TO: [redacted] at [redacted]
TO: [redacted] at [redacted]
TO: [redacted] at [redacted]
Subject: CARB GASOLINE

HIGHLY CONFIDENTIAL

------------------------------- Message Contents -------------------------------

To: [redacted]
cc: [redacted]

FROM: [redacted]
Subject: CARB GASOLINE
Got [redacted] of the Business Optimization Team working up a spec sheet. Will forward when that's done.

However, believe that most economic import will be alkylate. We expect that the USWC will be long conventional gasoline and that alkylate imports could work to blend those components to CARB. Have been talking to Fairfax about avails ex Beaumont and Yanbu.

Wow More Customers, Have More Fun
[redacted]
Team Mobil West Supply & Logistics
Torrance [redacted]
*** Forwarding note from [redacted] 95/05/23 18:51 ***

From: [redacted]1995/05/23 18:51
cc: [redacted]
cc: [redacted]
Subject: CARB GASOLINE
To: [redacted]
cc: [redacted]
------------------------------- Message Contents -------------------------------
[redacted]

From : [redacted] Subject: CARB GASOLINE Roger,
any chance you could fax a spec sheet or whatever you have on CARB gasoline qualities...we're looking to see if Coryton could help out in any way!

Regards
[redacted]
MEL Manufacturing,Room [redacted].
[redacted]

=========================REPLY=========================

[redacted]

Through the various conversations, I think the message has gotten a little confusing between what we saw as a current opportunity for CHM or BMT CARB diesel, and possibly a future opportunity for CARB Gasoline components. I will elaborate for a few paragraphs and probably tell you more than you want to know.

To my mind, the discussion is really this:

Depending upon the S/D balance, it probably will NOT make sense to import finished CARB into what has historically been an isolated, near balanced/long market. As you probably know, US West Coast margins are on average more attractive than most other US regions. Flooding the market and depressing margins on the base volume we market would likely be a big hit and not in Mobil's interest.

However, since there is uncertainty about CARB supply/demand in the market, and

MOB 02378

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We will soon have unique fuels formulations. I anticipate a high probability of market upsets when there is a WC Refinery problem, etc. Coincident with market perturbations, I think it would make sense for Mobil to have plans in place to react ASAP and capture forward sales (while drawing from finished inventory) if there is sufficient reward, and I think there will be.

As opposed to importing finished CARB, I would think a strategic plan to relocate key components (namely alkylate) MAY make sense, particularly if we ca identify an economic backhaul. If the logistics of such a plan work and make sense on a low volume/infrequent basis, we could be set to react if the market dictates, both to cover our committments in case we are the ones with the Refinery/Supply problem, or quickly lock up any lucrative opportunities when th market is upset.

CARB SPECIFICATIONS
As to the CARB specifications, there is still uncertainty but I think it will work as follows:

Here in Torrance, we will have flexibility within the CARB model to vary/trade-off some of the components based upon equations in the model. Basically, the model predicts/controls VOC's, Toxics, NOx, O3, and CO. Because we will produce lower Sulphur and Benzene we should be able to have some flexibility in our benzene, MTBE and T90 and stay within the model. We are working on understanding all of that now.

However, for fuel not produced within California, it is likely the regulations will impose a more strict standard. Current thinking is that the limits for imports will be as follows:

RVP, (max, psi)	7.0
Sulphur, (max ppm)	40
Benzene, (max vol%)	1.0
Aromatics, (max vol%)	25.0
Olefins, (max vol%)	6.0
Distillation (max deg F)	
T90	300
T50 (min/max)	170/210
Oxygen, (wt%)	
min	1.8
max	2.2

Having said all of this, I am happy to hear all ideas, but really depend upon our S&L folks in Torrance to work the issues. We have discussed here a number of times and they clearly feel accountability for covering our marketing demand and being prepared for any openings the market gives up. Therefore, I am copying this note to Messrs [redacted] in Torrance as I know they are currently identifying and considering options. Also, if I have misstated any of the facts I will ask Dave to make the necessary corrections an clarify our understanding.

In order for this to make sense for both paries, one of the keys (and pehaps a show-stopper) is that there needs to be an economic backhaul arrangement to defray part of the transportation expense. That may not be feasible, but should be explored.

[redacted]

EXHIBIT IV.7

DEC 03 '92 10:45 TEXACO SACRAMENTO P.1 217

Texaco

WESTERN REGION
Manufacturing & Marketing
Action:
Handle DEC 03 '92
Read

[redacted]

Final Handling File Destroy

DATE: December 3, 1992

TO: [redacted]
Universal City

FROM: [redacted]
Sacramento

SUBJECT: CARB Phase 2

This letter is a follow up to our phone conversation of last week where I briefed you on a recent conversation I had with Shell's California Government Relations Manager.

His comments centered around Shell's intended $1.8 billion investment to modernize their Martinez refinery. He indicated this expenditure is necessary to comply with the 1996 CARB Phase 2 RFG requirement. You indicated that the $1.8 billion was inordinately high for RFG compliance and that the figure likely included other necessary improvements and modernization projects at the refinery.

He went on to say that Shell and the other oil companies are extremely concerned about Texaco's silence and lack of activity concerning our plans toward CARB Phase 2 compliance. He said Texaco is positioning itself to be the "wild card" on this issue and "we are nervous about it". He said Texaco or any other company could easily import compliant fuel from outside of California for considerably less cost than those companies that intend to retool their refineries. He went on to talk about the various scenarios that would occur if a company was able to import RFG for 5-10 cents less per gallon than what it would cost other companies that retooled. He said it would be virtually impossible for a company to recover their investment.

He went on to say that if such a scenario was to evolve, Shell would be at the California legislature and CARB immediately asking for relief. He specifically referred to a fee, tax or penalty assessed for imported RFG. He suggested that such an approach would be necessary to "level the playing field" thus, protecting Shell's investment.

I am not certain what CARB's authority is relative to levying an assessment on imported fuel. However, if necessary, a piece of legislation could be introduced to provide CARB with the necessary authority. Such legislation would likely be actively supported by oil companies which intend to refine RFG in California, and opposed by those that plan to import. No doubt the labor unions would support the proposal because of potential construction jobs.

CONFIDENTIAL
TEX 0095246

[redacted]
December 3, 1992
Page 2

Currently, ARCO, Chevron, Shell, Exxon, Tosco and Ultramar have either announced plans to modernize their refineries for clean fuel projects or have begun taking steps to secure the necessary permits to retool their refineries.

I brought this to your attention because of the specific reference to Texaco, and because I am convinced that at least Shell intends to address this issue if necessary. As you remember, similar concerns were echoed by the ARCO plant manager from Carson at a refinery managers meeting in April.

We will keep you abreast on any further developments on this matter and will closely monitor new bill introductions which begin the first week of December. If you should have any questions, please don't hesitate to contact me.

[redacted] [redacted]

cc: [redacted]

CONFIDENTIAL
TEX 0095247

EXHIBIT IV.8

219

APC MUST BECOME AN ACTIVE MARKET PLAYER, PREPARED TO EXPORT WHEN EXPORT PARITY THREATENS

- APC's manufacturing profitability depends critically on maintaining import parity—APC and Chevron have the most to lose from a price war
  - $8 million/week for APC manufacturing
  - Potential retail overflow
- Since APC is short in the Bay, and short overall, APC should not export first—others should be forced to behave rationally
- Most of the time, APC believes others will act rationally and ensure market balance
- APC must monitor conditions to anticipate potential collapse to export parity
- Should the market move to export parity, APC should be prepared to export to help balance the market
  - If others are already behaving rationally ...
  - ... and if APC's contribution can make a difference

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ARC 000011672

- From time to time, APC may need to endure brush fires to discipline the market

THE ALTERNATE APPROACH WOULD BE TO PUSH THE MARKET TO RATIONALIZE

- Since APC has high margins and relatively low cost, APC can endure a sustained spot price war
- APC should use this winter as an opportunity to enhance market discipline
  - Drive down spot prices to export levels
  - Produce resid to the detriment of marginal players
- As the market stays at export parity levels, others will be forced to rationalize
  - Chevron, Shell, Texaco Anacortes, and Tosco will cut runs
  - Exxon, Tosco, Chevron, Shell, Mobil and Texaco will export
  - Tosco NW and Shell NW will evaluate closure
- However, we believe that the cost of driving rationalization could easily top $300MM
- Moreover, since the market understands APC's incentive to export, they may take the fight to the street before they comply

ARC 000011673

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WE BELIEVE THIS APPROACH IS TOO EXPENSIVE AND OFFERS TOO LITTLE LIKELIHOOD OF SUCCESS TO PURSUE.

APC WILL ALSO NEED TO BE AN AGGRESSIVE MARKET PLAYER AT THE MICRO-MARKET LEVEL

- Focus barrels in strategic micro-markets
  - Product: e.g. CARB diesel, high sulfur diesel, CARB gasoline
  - Geographic: e.g. south vs. north, specific supply points, etc.
- Manage local supply/demand balance on an integrated basis to maximize APC profitability
  - Channel selection
  - Price/volume trade-offs for region
  - Optimal product slate to fit strategic market view
- Create/capture opportunities across markets
  - Move product between markets to capture or maintain uplift
  - Move product between refineries to manufacture uplift
- Exchange and trade selectively to preserve market discipline

ARC 000011674

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APC SHOULD APPROACH THE SPOT MARKET STRATEGICALLY

Spot Trading Guidelines

- APC may profitably sell into the spot when majors are short due to disruptions in normal supply and when the market is net short
- We should look for the price to move 1-2 cpg above import parity before we act
- In these cases, APC should trade the barrels into the market gradually to capture upside
- APC should also use these opportunities as leverage during winter months, balancing barrels at attractive differentials
- APC can also take advantage of discrepancies across markets, to the extent manufacturing flexibility allows
- APC should participate in the market in ways that limit pure trading play
- We should develop performance measures to evaluate both trading effectiveness and market impact

ARC 000011675

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SPECIFICALLY, PRODUCT SUPPLY HAS A ROLE TO PLAY IN MONITORING AND MAINTAINING BALANCE IN THE WEST COAST

MONITOR SUPPLY / DEMAND	TRACK COMPETITOR ACTIVITY / BEHAVIOR	TAKE ACTION
• Track pricing trends and movements • Understand competitors market position (i.e., who is long / short in specific products) and strategies • Forocast changes In market supply and demand	• Monitor export activity • Understand trading behavior	• Export to keep the market tight • Execute appropriate spot sales if APC is long in tight market

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ARC 000011676

PRODUCT SUPPLY WILL ALSO NEED TO DEVELOP THE ABILITY TO TRACK AND MANAGE MICRO-MARKETS

CAPABILITY	DESCRIPTION
• Competitive Intelligence	• Manufacturing volumes by product spec • Turnaround activity • Barrel movement tendencies (spot, retail, unbranded rack, etc.)
• Export Activity	• Exports by product / grade • Who's exporting and why? • Volumes • Product movement timing
• Import Activity	• Imports by product / grade • Who's bringing it in and why? • Prices • Who moves the product locally?
• Demand	• Track product disposition by grade • Stay abreast of demand levels and changes

ARC 000011677

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EXHIBIT IV.9

225
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Author: Charles R. Morgan at TORMFG-PO1
Date: 2/3/96 3:20 PM
Priority: Normal
TO: Carolin A. Keith
Subject: Re[2]: POWERINE CARB SMALL REFINER STATUS
---------------------------- Message Contents ----------------------------

Carolin.......Good response. Just one small correction- the small refiner can only get a max of 2 years exemption- one year at a time. Must meet all CBG specs by March 1998.

Chuck

______________________________ Reply Separator ______________________________
Subject: Re: POWERINE CARB SMALL REFINER STATUS
Author: Carolin A. Keith at TORMFG-PO1
Date: 2/3/96 3:09 PM

Anne,
We were wrong in our explanation regarding the small refiners exemption. If a small refinery is granted a 3-year exemption, it will still be allowed to produce AND sell in California. It must meet 4 of the 8 exemptions and then it can be sold in California along with the CBG. Regarding testing of CBG...most of the enforcement will take place on the refinery end of things. If, however, a station is tested and their product exceeds the cap (there is an allowance for averaging gasoline produced, so a cap has been set to determine a point above which a gasoline cannot go and stay within the CBG averaging allowances), they and their producer/provider will have to show a papertrail on the product to determine if any of the "exempted" refineries's product explains for exceeding the cap.

To date, none of the small refineries have been exempted....we should know within the next week or two if any are granted.

And, all refineries can still produce non CBG to sell in other markets (e.g., we will not sell CBG in Phoenix).

I plan to correct this and answer a few other questions in a followup mime that will go out to all briefing attendees sometime between now and the 15th..

QUESTION: I will be providing "camera" ready pieces for both mailings to SBC and dealers. Who should I deal with in your department for copying and distribution? Also have the pocket cards now and suggest that they be included in the SBC mailing. Marie Mull suggested that Denise Sofka was looking for additional work...but that's entirely your call. Don't want to get in the way of your plans there. I could probably get someone started now if they had time and then feed them the pieces as they get finalized. Let me know what you think.

Thanks!
CAK

MOB 17682

226
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Author: Anne M. Fetsch at TORMFG-PO1
Date: 2/6/96 10:53 AM
Priority: Normal
TO: Carolin A. Keith
Subject: Re[2]: POWERINE CARB SMALL REFINER STATUS

------------------------------ Message Contents ------------------------------

Carolin,

Thanks for the update...Denise can work on that for now. Thanks for your assistance. Anne

Anne,
We were wrong in our explanation regarding the small refiners exemption. If a small refinery is granted a 3-year exemption, it will still be allowed to produce AND sell in California. It must meet 4 of the 8 exemptions and then it can be sold in California along with the CBG. Regarding testing of CBG...most of the enforcement will take place on the refinery end of things. If, however, a station is tested and their product exceeds the cap (there is an allowance for averaging gasoline produced, so a cap has been set to determine a point above which a gasoline cannot go and stay within the CBG averaging allowances), they and their producer/provider will have to show a papertrail on the product to determine if any of the "exempted" refineries's product explains for exceeding the cap.

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Thanks!
CAK

______________________________ Forward Header ______________________________
Subject: Re: POWERINE CARB SMALL REFINER STATUS
Author: Jim E. Horner at TORMFG-PO1
Date: 2/3/96 2:44 PM

Mark,

We've got some sources pretty familiar with the goings on over at Powerine. Despite what the press has been

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reporting, our sources believe that Powerine's chances of restarting this year (or ever) are very low for the following reasons:

1) The refinery process units and equipment is still under contract to Vas Kenyan whose intentions were to ship it to India. The group that bought the refinery land must first buy the equipment back from Kenyan before it gets on a boat. Kenyan may already have contracts in India that may not be broken or are more valuable than a sellback to the new Powerine group.

2) They estimate the start up expenses to be rather high ~$20MM; sounds steep but even at half that, it's a big number. There are serious doubts that financing can be acquired for the startup plus any low margin periods.

Even if they restart and they get a 7cent exemption, with current conventional refining margins so bad, the exemption may not be enough to make money for them on an operating basis. When we looked over their books last year, their operating expenses were about 5cpg of G&D higher than ours so they don't have alot of comfort zone if they have any operating problems in the restart.

Alot of big if's need to come through for Powerine to restart.

Bottom line: I'd bet Barry Switzer gets 'coach of the year' before Powerine restarts.

Jim

____________________ Reply Separator
____________________ Subject: POWERINE CARB SMALL REFINER STATUS
Author: Mark J. Dizio at TORMFG-PO1
Date: 2/3/96 2:06 PM

JIM, ANY COMMENTS AS TO WHETHER POWERWINE WOULD EVEN STARTUP? REGARDS MARK

LUCILLE,
IF POWERINE RE-STARTS AND GETS THE SMALL REFINER EXEMPTION , I BELIEVE THE CARB MARKET PREMIUM WILL BE IMPACTED. COULD BE BY AS MUCH AS 2 -3 CPG.

AS BACKGROUND, WE HAVE BEEN PROJECTING THE CAL CARB POSITION TO BE BALANCED TO
SHORT IN THE SUMMER AND LONG IN THE WINTER. THE POTENTIAL SUMMER SHORTFALL WOULD PROBABLY BE MET VIA GULF COAST ALKYLATE IMPORTS WHICH WE ESTIMATE WOULD EQUATE TO CARB PLUS A 10-12 CPG PREMIUM TO CONVENTIONAL. IN THE WINTER, WE WOULD EXPECT THE CARBS PREMIUM WOULD BE NO LESS THAN THE REFINERS INCRMENTAL COST OF PRODUCTION , OR ABOUT 7-8 CPG. ON AVERAGE , WITHOUT ANY SUPPLY DISRUPTIONS THIS WOULD MEAN AN AVERAGE CARB PREMIUM OF ABOUT 9-10CPG VERSUS CONVENTIONAL.

MOB 17684

CONFIDENTIAL 228

THE RE-START OF POWERINE , WHICH RESULTS IN 20-25 TBD OF GASOLINE SUPPLY AT A COST OF ONLY 4-5 CPG VERSUS CONVENTIONAL (COST OF MTBE BLENDING), COULD BACK OUT SUMMER ALKYLATE IMPORTS AND EFFECTIVELY SET THE CARB PREMIUM A COUPLE CPG LOWER (ADVANTAGE OF 6-8CPG VERSUS IMPORTS). IN THE WINTER , THE POWERINE INCREMENTAL COST IS 2-3 CPG LOWER THAN OTHER REFINERY INCREMENTAL COSTS. REGARDING THE OTHER TO SMALL REFINERS , KERN AND PARAMOUNT, I DONT SEE ANY REAL IMPACT . EACH REFINER CAN PROBABLY SUPPLY MAX 5TBD, AND KERN IS UP NORTH.

NEEDLESS TO SAY, WE WOULD ALL LIKE TO SEE POWERINE STAY DOWN. FULL COURT PRESS IS WARRANTED IN THIS CASE AND I KNOW BRIAN AND CHUCK ARE WORKING THIS HARD. ONE OTHER THOUGHT, IF THEY DO START UP, DEPENDING ON CIRCUMSTANCES , MIGHT BE WORTH BUYING OUT THEIR PRODUCTION AND MARKETING OURSELVES. ESPECIALLY IF THEY START TO MARKET BELOW OUR INCREMENTAL COST OF PRODUCTION. LAST YEAR WHEN THEY WERE DUMPING RFG AT BELOW COST OF MTBE , WE PURCHASED ALL THEIR AVAILS AND MARKETED OURSELVES WHICH I BELIEVE WAS A MAJOR REASON THAT THE RFG PREMIUM LAST YEAR WENT FROM 1 CPG IN JAN TO 3-5CPG THRU TO THEIR SHUTDOWMN. WE'LL HAVE TO SEE HOW THIS PLAYS OUT , HOWEVER, IF THEY DO START UP, I'D SERIOUSLY CONSIDER THIS TACTIC. REGARDS MARK

Please develop response. Thanks.

________________________ Forward Header ________________________ Subject: POWERINE CARB SMALL REFINER STATUS
Author: MCCOOL/RJ (NECCVMD.RJMCCOOL) at CCFXGTW1
Date: 2/2/96 2:39 PM

To: LJCAVANA--TOR1 LJ CAVANAUGH
cc: GWBERRY --NECCVMA GW BERRY MDDIMEZZ--NECCVMD MD DIMEZZA

From: Bob McCool
Subject: POWERINE CARB SMALL REFINER STATUS
if they get ok, what impact
bob

________________________Bob
*** Forwarding note from RJMCCOOL--NECCVMD 02/02/96 13:41 ***
To: EARENNA --FFX1 EA RENNA
cc: DMSHERMA--FFX1 DM SHERMAN

From: Bob McCool
Subject: POWERINE CARB SMALL REFINER STATUS
fyi
bob

________________________Bob
*** Forwarding note from BMHARNEY--FFX7 96/02/02 14:31 ***

From: Brian M. Harney at FFXMFG-P01 1996/02/02 14:31
To: MCCOOL/RJ (NECCVMD.RJMCCOOL) at CCFXGTW1
cc: Charles R. Morgan at TORMFG-P01, Randy T. Smith at FFXMFG-P01
Subject: POWERINE CARB SMALL REFINER STATUS
To: Lucille J. Cavanaugh at TORMFG-P01
cc: Vickie S. Jones at FFXMFG-P01
-------------------------------- Message Contents
------------------------------ ------------------------------ Forwarded with Changes ------------------------------ From: Charles R. Morgan at TORMFG-P01

MOB 17685

229

Date: 2/2/96 8:41AM
To: Randy T. Smith at FFXMFG-PO1
cc: Brian M. Harney at FFXMFG-PO1
cc: Vickie S. Jones at FFXMFG-PO1
Subject: POWERINE CARB SMALL REFINER STATUS
---------------------------------- Forwarded
---------------------------------- From: John F. Faulstich at TORMFG-PO1
Date: 2/1/96 6:52AM
To: Charles R. Morgan
To: Joseph V. Waldinger
cc: Jim E. Horner
cc: Wee T. Yee
cc: HACKETT/DJ* (NECCVMA.DJHACKET) at CCFXGTW1
cc: MERGOTTI/GA (NECCVMD.GAMERGOT) at CCFXGTW1
*cc: #Business Leadership Team
Subject: POWERINE CARB SMALL REFINER STATUS

FYI-We vigorously opposed the small refiner exemption when it was proposed back in 1993. We also participated in a law suit with other majors to oppose the exemption.

While the exemption was adopted and the law suit was not successful, Chuck Morgan was able to get some significant requirements put into the regs that had to be met before an exemption could be granted.

Chuck and Randy are working the issue of these applications now with CARB and we're contacting our lobbyist to see what else can be done. WSPA is not involved because of antitrust issues.

Brian

______________________________ Forward Header
______________________________ Subject: POWERINE CARB SMALL REFINER STATUS
Author: Charles R. Morgan at TORMFG-PC1
Date: 2/2/96 8:41 AM

CARB DECISION ON POWERINE WAIVER WON'T COME UNTIL NEXT WEEK

96-01-31 14:31:07 EST
CARB DECISION ON POWERINE WAIVER WON'T COME UNTIL NEXT WEEK

A decision from the California Air Resources Board (CARB) on whether or not to grant a small refiner waiver to Powerine won't come until next week, say CARB officials. A board of ARB members is still weighing whether or not to grant the waiver not only to Powerine, but also to Kern and Paramount as well.

If the ARB grants the waiver to Powerine, it would have considerable effect on the market. It would mean that for one year, Powerine could produce a fuel that would have only four of the eight properties that CARB mandates be in all gasoline produced after March 1, 1996. That means as much as 7ct gal price advantage for Powerine, versus other L.A. refiners such as Chevron and Texaco. In addition, if the waiver is granted, Powerine would also have the right to reapply for another one-year waiver.

Sources on the West Coast note that the market is less concerned about the Paramount and Kern applications, since neither of those refiners are big shippers on the SFP pipeline system. Powerine, if they resume operations, would be a big shippers into the L.A. basin,

MOCD 17586

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and into San Diego.
Officials with the ARB tell OPIS that a decision on Powerine's 230
application should arrive sometime next week.

-- Scott Berhang

POWERINE Oil Company

12354 Lakeland Road, P.O. Box 2108
Santa Fe Springs, California 90670-3857

(310) 944-9861
(310) 944-6111

TLX No. 4720404
AB Powerine
Facsimile (310) 944-8522

April 24, 1996

Mr. M. R. Diaz
General Manager, Supply & Distribution
Texaco Refining and Marketing, Inc.
10 Universal City Plaza, 6th Floor
Universal City, CA 91608

Dear Mr. Diaz:

Powerine Oil Company is attempting to restart its Santa Fe Springs, California, refinery which has been down since last July. We plan to resume a limited operation in May 1996, with the refinery back in full production by summer. When the refinery is in full production, Powerine plans to produce 20,000 barrels per day of CARB reformulated gasoline and 20,000 barrels per day of CARB and EPA diesel fuel and jet fuel.

In order to ease the current tight supply of gasoline, we propose accelerating our restart by offering your company a portion or all of Powerine's refinery production capacity under a processing agreement arrangement with terms and conditions that I believe you will find very favorable. Powerine is aware that the introduction of CARB reformulated gasoline combined with refinery operating problems in California has resulted in product demand not being met by the California refiners. This situation is forcing the industry to import product into California from refining centers outside the West Coast. A processing arrangement with your company would enable Powerine to resume full production much sooner, contribute to meeting CARB product demand and ensure that CARB reformulated gasoline standards are upheld. In addition, a processing arrangement with Powerine would provide your company with additional products to meet your marketing requirements.

If you are interested in discussing a processing arrangement with Powerine, please contact me as soon as possible. Powerine is prepared to meet with your company immediately to negotiate a processing arrangement with mutually agreeable terms for a portion or all of Powerine's refinery production. Powerine will enter into a processing agreement with the first company willing to proceed on acceptable terms.

I look forward to your timely response to our offer.

Very truly yours,

A. L. Gualtieri

A. L. Gualtieri
Chief Operating Officer

ALG/mjs

/ut

TRMI S&D
APR 2 7 '96
MRD | R.P
RJG | WST
JDM |
| DEC
DUE DATE
FOLLOW UP
FILE

SPEC 2 TX 000566

EXHIBIT IV.10

232

Texaco

TRMI REFINING	
ACTION: X Handle ✓ Read	MAR 11 '96
CTW ✓	RSH
ASA	RFM
CAF	CAR
DRH	VMP
RCS	RAC
DKG	JAA
JCC	RHM
	MAR
TRACE DATE:	
Final Handling ☐ File ☐ Destroy	

DATE: March 7, 1996

TO: Messrs. J. F. Boles
C. T. Walz
P. W. Tomlinson
A. S. Abay
C. A. Flagg
D. R. Hall
R. C. Sheffield
R. A. Pourciau

FROM: L. D. Hopkins

SUBJECT: FUTURE GASOLINE SPECIFICATIONS

There is a fuels issue of national significance which continues to gather momentum. The issue, being doggedly pursued by the American Automobile Manufacturers Association (AAMA), is one of: 1) altering ASTM gasoline specifications, and 2) finding a more 'efficient' process for making changes to fuel specifications.

From a long-range perspective, it appears that the AAMA are seeking benefits of tighter fuel standards that will come from: a) reducing the variability in gasoline that motorists purchase, and b) restricting key fuel parameters that are perceived to be costly or troublesome to vehicle control systems. Although perhaps presumptive, one could conclude that if the auto companies had their wish, gasoline would be defined as having a very narrow boiling range, be of constant density, be of constant energy content, and not contain any non-hydrocarbon compounds. In this manner, it is alleged, vehicle systems could be designed, built and operated at lowest cost and maximum emissions benefits, notwithstanding the fact that the gasoline suppliers would incur unbearable costs that the Auto's had avoided.

The natural instincts of fuel suppliers (API) to the above issue is a strong, unified defensive posture of taking action to see that the burden of 'fixing' a vehicle problem is not shifted to the oil industry. However, given the trend in recent years and the global drive for cleaner fuels, it is inevitable that the gasoline industry will continue to be regulated and/or pressured toward tighter gasoline specifications. Some suppliers may even voluntarily accede to the desires of the Auto's if they perceive a niche opportunity for competitive advantage.

TEX 0018675

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SPEC 1 TX 011237
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The above situation was discussed at a Puget Sound Plant strategic planning meeting in January. From those discussions it became clear that this was not the most critical strategic challenge facing PSP. It was not even determined definitively to be a 'negative', given the business environment on the West Coast as discussed below.

As observed over the last few years and as projected well into the future, the most ciritcal factor facing the refining industry on the West Coast is the surplus refining capacity, and the surplus gasoline production capacity. (The same situation exists for the entire U. S. refining industry.) Supply significantly exceeds demand year-round. This results in very poor refinery margins, and very poor refinery financial results. Significant events need to occur to assist in reducing supplies and/or increasing the demand for gasoline. One example of a significant event would be the elimination of mandates for oxygenate addition to gasoline. Given a choice, oxygenate usage would go down, and gasoline supplies would go down accordingly. (Much effort is being exerted to see that this happens in the Pacific Northwest.)

Within this context, the question was raised as to whether any parts of the AAMA fuel specification proposal (see 'Attachment 1' of the attached letter) would serve to benefit our most critical problem on the West Coast. For example, on the surface it would appear that a reduction in T90 maximum would serve to reduce gasoline supplies since it would drop the heavy end of gasoline down into the distillate pool (as one solution). But such a proposal raises many questions concerning the over-all impact on the refining markets, on Texaco and Star Enterprise, and on our competitive posture. In addition, the two examples used here would only incrementally serve to reduce supplies, whereas large adjustments are necessary. But they may be directionally beneficial.

The attached paper is a response to this issue raised during the PSP strategic planning session. It gives more in-depth treatment to the technical issues than it does to the business issues, but both require a lot more analysis, discussion and consensus-building before a conclusion can be reached for TRMI or Star Enterprise.

I would appreciate your review of this issue and advice as to whether you think we should put together a small work-group to assess the issue, identify opportunities, and develop a consensus on the proper position for Texaco/TRMI/Star Enterprise. From your responses, I will provide further direction. Please provide your reply by March 22, 1996.

LDH:

Copies for information: MDRedemer,GTJones

TEX 0018676

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CONFIDENTIAL

SPEC-1-TX 011238
CONFIDENTIAL

Texaco

DATE: February 14, 1996

TO: Mr. Keith Kraft

FROM: L. D. Hopkins

SUBJECT: PSP STRATEGY TEAM ASSIGNMENTS

Attached herewith is a report that addresses the issue to which I was assigned concerning the effect of gasoline specification changes on the supply of gasoline in the West Coast market.

I am assuming you will make copies of this report available to the PSP personnel as you see fit. Note that I have copied staff in UCP.

Please give me a call if you have any questions.

L D Hopkins

LDH:

Copies: RSHancock, RFMillar, BBoldt, MAColby

IMPACT OF FUTURE GASOLINE SPECIFICATION CHANGES

BACKGROUND

The American Automobile Manufacturers Association (AAMA) has for over a year been proclaiming to the oil industry that ASTM fuel specification changes were not keeping pace with the needs of the automobile systems as tighter and tighter vehicle emissions standards were being implemented. The oil industry, through API, argued for continuing the present ASTM process as the forum for establishing fuel standards that address the needs of all constituencies. After some unsuccessful attempts by the AAMA to get distillation and driveability index changes through the ASTM process, they began to criticize the slow, cumbersome ASTM process as being unresponsive to our mutual customers' needs. About mid-1995, the AAMA surfaced a draft set of gasoline specifications they referred to as 'national unleaded gasoline specifications'. That list of specifications has been slightly modified several times since then. The current list of specifications proposed are as shown in Attachment 1. A more detailed listing is shown as Attachment 2.

During this time of discussions, API developed an industry position on the procedures for setting gasoline standards. This policy position is shown as Attachment 3.

Because of a lack of interest by the oil companies to consider the AAMA proposal, the AAMA companies have recently threatened to publish the proposed specifications in owners' manuals and the name of marketers who have agreed to provide fuels meeting those specifications. They claim that some companies are already meeting or very close to meeting these specs. Ward's Automotive published a listing of branded gasoline qualities developed from AAMA's national gasoline survey program (Attachment 4). This may be a bold 'divide and conquer' strategy being deployed by the AAMA against the oil companies. If this is successful, it is unlikely that API could maintain its current consensus policy position on this issue.

Ford recently presented a paper calling for a new procedure for setting gasoline standards, referred to as the 'cowboy' approach. The way this approach would work is that the auto manufacturer would place a specification into immediate use while the document is routed through the formal standards-setting system (ASTM/CRC). They argue that this will greatly accelerate the standards-setting process and be more responsive to global demands. How to address the inevitable disagreements that will occur was not discussed.

More recently, the Auto/Oil Steering Committee, represented by five oil companies and the three domestic automakers, agreed to form an *ad hoc* team with members from the auto and oil companies to study the options for streamlining the ASTM standards-setting process and report back to the Steering Committee. Subsequently, the API Downstream Committee, representing all API companies, agreed to the proposed joint study, notwithstanding the strong API position on maintaining the existing process.

SPECIFICATIONS THAT MAY CHANGE

As shown in Attachment 1, the most significant specification changes being proposed are as follows:

Sulfur, wt % max	1000 ppm —> TBD
T50 max	250 F ———> 220 F
T90 max	374 F ———> 350 F
Driveability Index *	none———> 1200 max

* Driveability Index (D.I.) = 1.5 x T10 + 3 x T50 + T90 ; an adjustment for the presence of oxygenates is under development.

SULFUR: The information in Attachment 5 has been reviewed and still presents a valid scenario on the issue of sulfur in gasoline. *(Note: It has been suggested that the recent Memorandum of Agreement (MOA) negotiated between CARB and individual auto companies, which contains a requirement that the auto companies will introduce a national LEV no later than model year 2001, may change the timing of the scenario. This is not the case because, in my scenario, the national LEV was not the main driver for low sulfur gasoline since the Autos and EPA have both acknowledged that no special fuel will be required for the national LEV. The Autos state that the current limit is too high, and they will be looking at experimental results to justify a lower spec at a later date. Accounting for years for the regulatory and/or standard-setting process to occur and a four year lead time for refinery construction, 2003 - 2004 still seems reasonable to me.)*

T50 MAX: The Autos agrue that the T50 max of 220 is technically feasible since CARB Phase 2 has a 200 - 210 F range. Further, they state that if a D.I. of 1200 max is met, then the T50 will likely be below 220 F. Also, it is likely that by lowering the T90 (following) that the T50 will automatically be reduced to some extent.

T90 MAX: Not many gasolines exceed the 350 F max currently, and T90 values are expected to be considerably less when the D.I. spec of 1200 max is met. In addition, heavier components in the gasoline are more difficult to combust and more readily form carbonaceous deposits. Thus, the lower T90 can help reduce the deposit forming tendencies of gasolines. In addition, the Auto/Oil research identified a T90 reduction as generally a positive step in reducing tailpipe emissions of both hydrocarbons and Nox, and therefore ozone formation.

DRIVEABILITY INDEX: The Autos claim that a number of studies have determined that the number of customers dissatisfied with the driveability of their vehicle increases as the DI exceeds 1200. Current experiments are underway that the Autos believe will provide additional evidence to support their claim. A DI offset for oxygenates is considered to be very important to the Autos, but the specific adjustment has not been quantified. The Oil industry does not agree that the research evidence identifies 1200 as the maximum level for customer satisfaction. This issue will continue to be debated between our industries, but the Autos are not likely to relent.

IMPLICATIONS OF THE PROPOSED SPECIFICATION CHANGES TO TEXACO

The impact that the above specification changes would have on TRMI if implemented has to be evaluated within the context of the effect on the industry at-large. This is beyond the scope of this paper. However, it is appropriate and instructive to look at the effect these specification changes may have on the supply and/or demand for product on the U. S. West Coast. From that view, it may be possible to deduce some findings on the directional effect on PSP's financial health.

1. Any of the proposed spec changes would increase the cost of manufacturing gasoline. (If it didn't, refiners would already be doing it.)

2. A marginal increase in cost, if recovered, will have a marginal downward effect on demand (elasticity).

3. From a theoretical standpoint, an increase in refining cost will make marginal supply uneconomical, thereby incrementally reducing supply volumes.

4. With the possible exception of sulfur, all other proposed specification changes will result in a reduction in gasoline supply from the refineries, and results primarily from removing the heavier-ends through distillation. This is the single largest impact and the largest potential benefit to improving West Coast margins. *(Note: The effect on mogas production from PSP can best be estimated by the refinery. No attempt is made to do that here.)*

5. One result of 4. is that there will be additional Avjet/middle distillate produced, thereby adding to supplies of these products.

TEX 0018680

6. The proposed changes will affect each refinery differently. To illustrate, Attachment 6 is included to show the DI scatter on samples obtained from the Southwest Research Institute's monthly retail surveys in 1994, both for Texaco gasolines and the entire industry gasolines. It is true that many of these samples could be from fungible product supplies, but the variability is still quite significant.

7. As for RVP, it is not apparent that summer RVP max levels will go much lower, if any. There is no motive at this time. Lowering winter-time RVP's could occur in certain metro areas, especially desert cities such as Phoenix, Las Vegas, etc. The auto companies seem to be concerned by lowing RVP much lower as it would begin to increase driveability problems, especially cold start problems.

8. On a separate but related matter, a reiteration of TRMI's fundamental policy on oxygenates is that we oppose mandated oxygenate useage where the environmental benefits are not commensurate with the cost. For example, the use of oxygenates to reduce ozone in non-attainment areas is not cost-effective; the use of oxygenates to reduce CO emissions in non-attainment areas is cost-effective. Further, there should be no biases favoring any specific oxygenate over another, but use should be based on performance criteria and free-market economics. This policy also serves to remove the oxygenate swell from the gasoline supply pool where it is not needed and not economical.

<u>SUMMARY</u>

Both the Texaco position and the API position currently is to fight the proposed specification changes because it will increase fuel cost and not deliver commensurate benefits to the consumers nor the environment. Thus it is not cost-effective.

Incremental improvements to refinery margins from reducing supplies or increasing demand can be achieved in a number of ways. One way would be to promote the more restrictive mandated specification changes to reduce supply of product; another would be to continue the poor financial performance by the industry until some weak performer dropped out; another would be for refiners to voluntarily reduce refinery production without incurring added costs or suffering attrition (admittedly unreasonably idealistic, but the best option).

Advocacy of a Texaco position on issues with industry groups or any regulatory agency should be consistent with those actions that will benefit TRMI vis-a-vis competition, or hurt TRMI less than competition.

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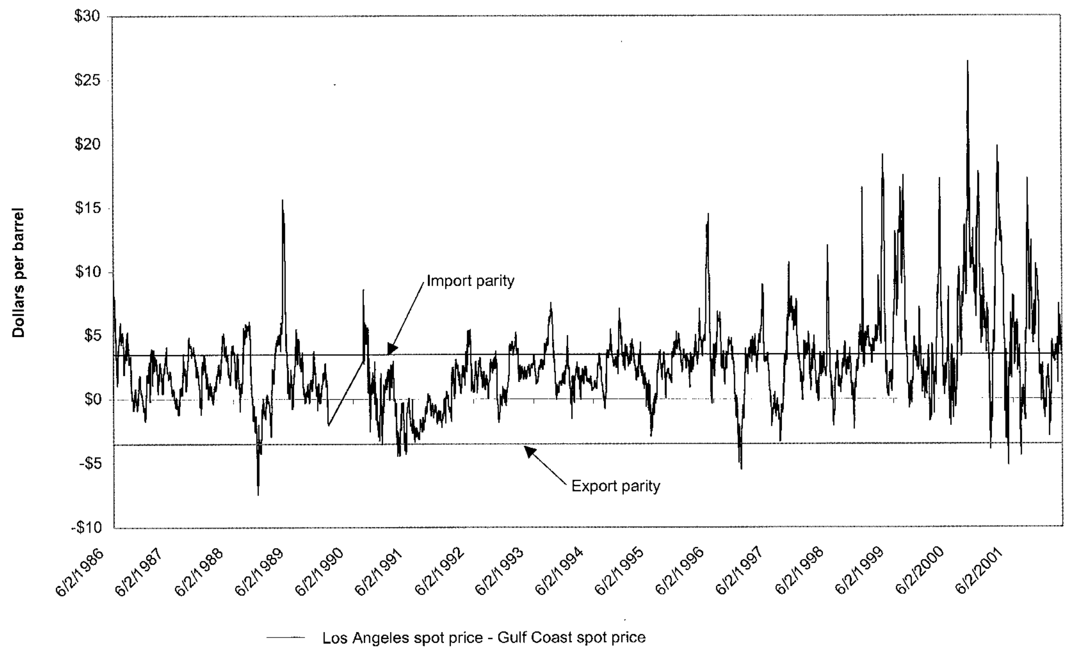
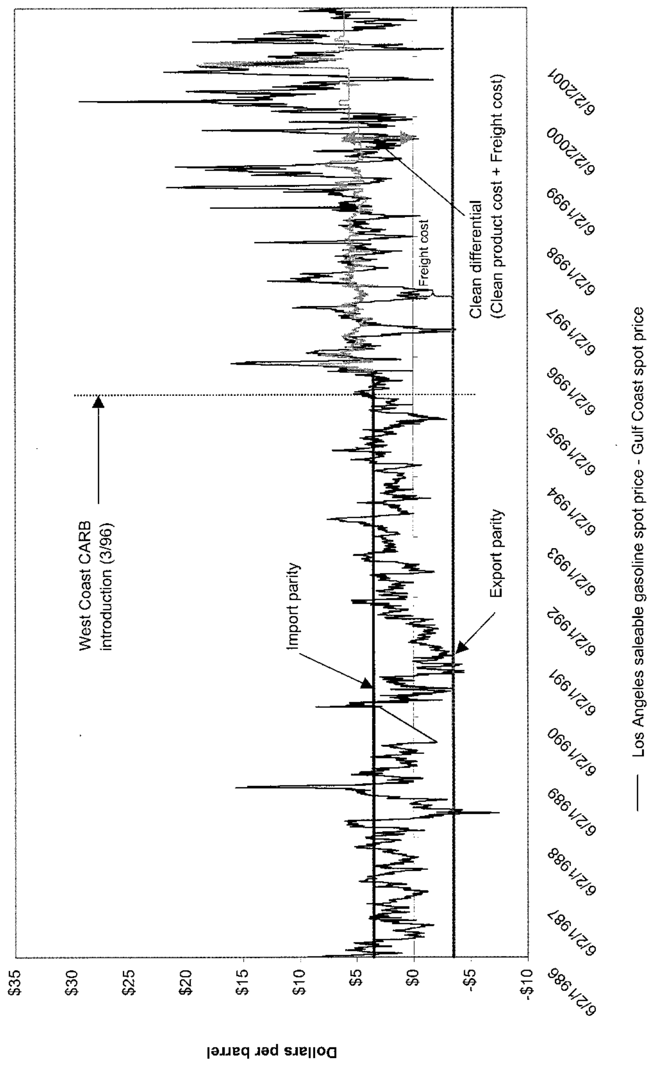
If after careful consideration the PSP strategy team decides to recommend support for more restrictive fuel specifications such as those proposed by AAMA to help reduce the surplus supply of product on the West Coast. it should be brought to the attention of TRMI Headquarters Refining and EH&S Fuels staff for discussion within TRMI and the corporation.

Figure IV.1: West Coast to Gulf Coast Conventional Gasoline Spot Prices, June 1986 - March 2002



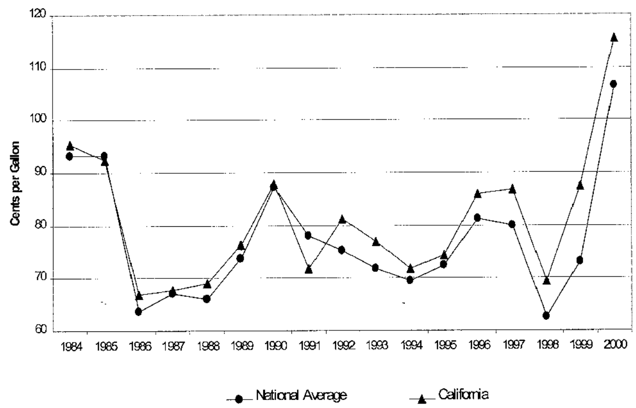
Source: DOE/EIA and Document in Subcommittee files.

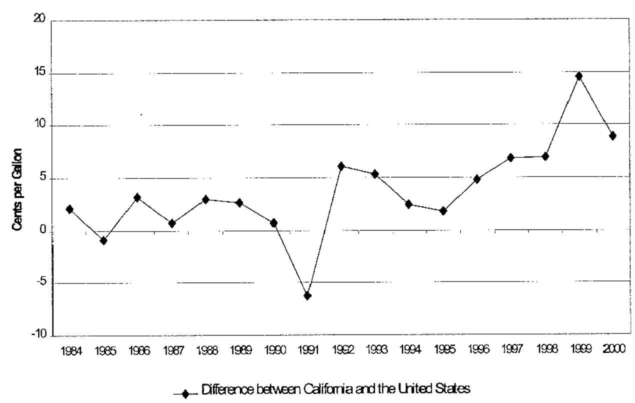
Figure IV.2: West Coast to Gulf Coast Saleable Gasoline Spot Prices, June 1986 - March 2002



Source: DOE/EIA and Document in Subcommittee files.

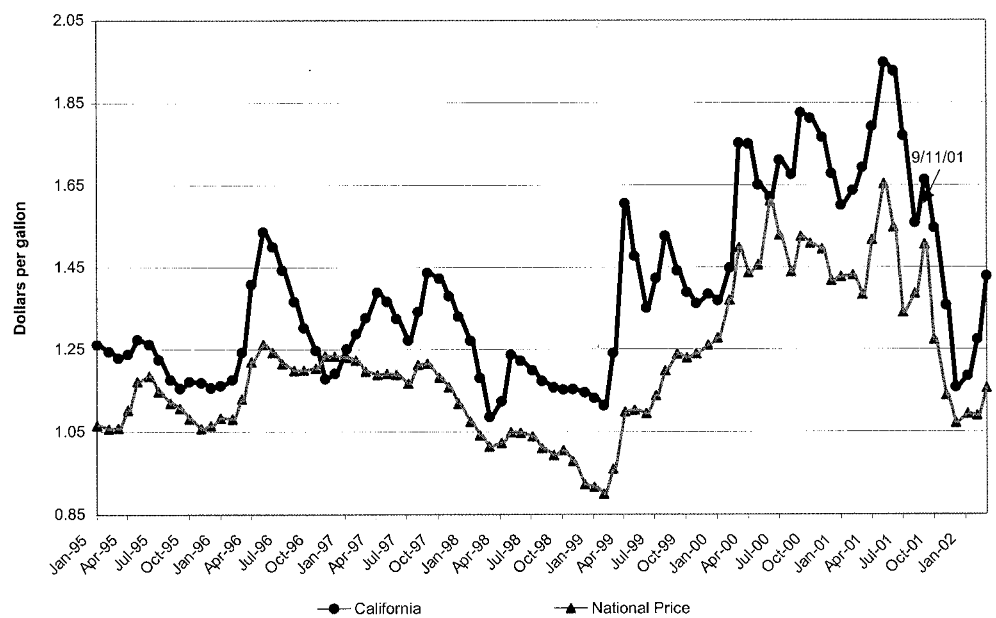
Figure IV.3: Annual Average Retail Gasoline Prices for California and the United States, 1984-2000





Source : DOE/EIA.

Figure IV.4: Retail Gasoline Prices -- California Compared to United States Average, January 1995 - March 2002



Source: DOE/EIA.

EXHIBIT IV.11

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WEST COAST PRODUCT
PRICE FORMATION

HIGHLY CONFIDENTIAL

THE OVERALL WEST COAST PRODUCT SUPPLY/DEMAND BALANCE HAS MAJOR IMPLICATIONS FOR MARKETING MARGINS

Executive Summary

- The West Coast is unique – supply/demand balance oscillates between net short and net long
- When West Coast supply exceeds demand, pricing moves to export parity; when demand exceeds supply, pricing is driven to import parity
- Export parity in the spot market can compress margins all the way to the street
- The key is to strike the right balance both at the wholesale and retail level
  - Maintain spot balance versus the Gulf
  - Preserve competitive position on the street

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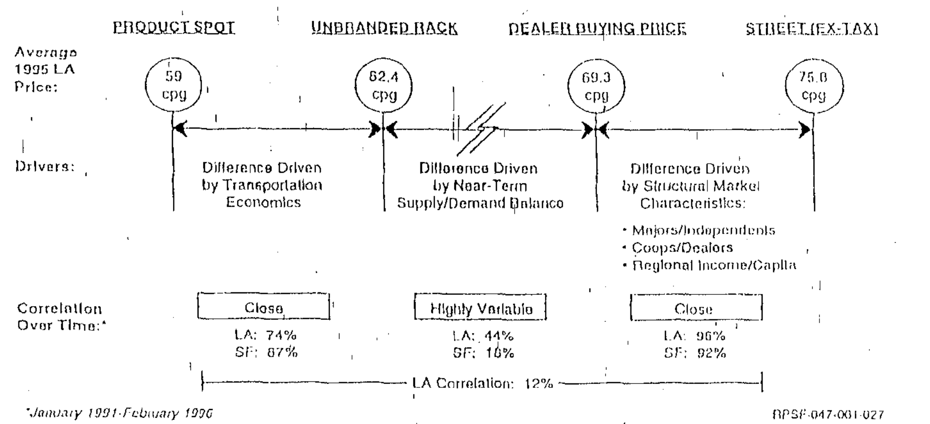
CONFIDENTIAL

CHANGES IN THE SUPPLY/DEMAND BALANCE HAVE AN IMPACT ON SPOT TO STREET MARGINS IN THE WEST COAST



*January 1991-February 1996

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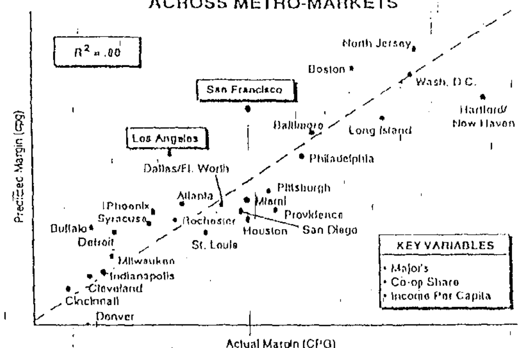
IN OTHER MARKETS, THESE MARGINS ARE DRIVEN BY STRUCTURAL FUNDAMENTALS

CORRELATION OF RACK-STREET MARGINS ACROSS METRO-MARKETS



Source: OPIS Spot; Lundberg Retail; Whitney Leigh; MPSI; New Image; BA&H analysis

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THUS, IN MOST MARKETS, SPOT AND UNBRANDED RACK ACTIVITY DOES NOT IMPACT RETAIL MARGINS

ARCO PRODUCTS COMPANY 23 [redacted]

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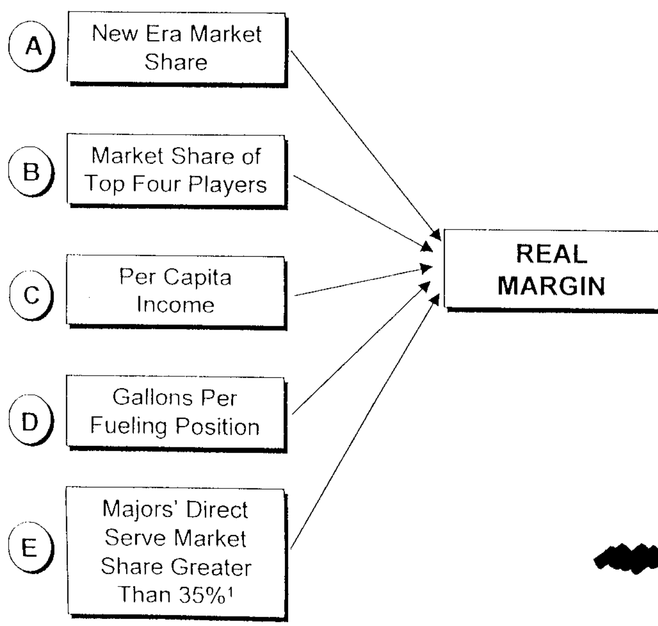
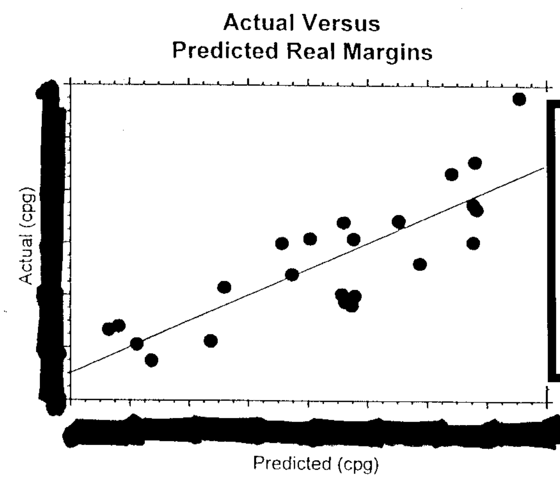
EXHIBIT IV.12

Preliminary analysis suggests five main factors have significant influence on real margins in a market





[redacted]

1. Major Direct Serve = Major COCO, CODO, and DODO

[redacted]

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EXHIBIT IV.13

Pick Poc Speech TOO

TOSCO SLIDE

THANK YOU FOR THE FLATTERING INTRODUCTION. I'M PLEASED TO BE HERE TODAY REPRESENTING TOSCO CORPORATION.

I'VE TRIED TO STRUCTURE MY PRESENTATION SO IT'S RELEVANT TO WHAT THE PACIFIC OIL CONFERENCE IS ALL ABOUT AND WHAT YOU'RE INTERESTED IN. I'LL LIMIT MY REMARKS TO ABOUT 25 MINUTES THUS LEAVING PLENTY OF TIME FOR QUESTIONS.

MY DEFINITION OF RELEVANCE REVOLVES AROUND PROFIT AND I SUSPECT IT'S NOT FAR FROM ANY BUSINESS PERSONS MIND. WHILE MY REMARKS ARE WELL RESEARCHED, THEY SHOULD BE TAKEN AS THE OPINION OF TOSCO AND TOM O'MALLEY. OTHERS WILL UNDOUBTEDLY RELY ON DIFFERING INPUT AND MAY COME TO DIFFERENT CONCLUSIONS. I'M GOING TO TALK ABOUT CRUDE OIL PRODUCTION REFINING AND MARKETING, PARTICULARLY AS THEY RELATE TO PADD V AND TOSCO.

LET'S START OFF WITH A BRIEF DESCRIPTION OF TOSCO.

OIL REFINING SLIDE

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WE'RE A REFINER WITH OVER 500 MBD OF CAPACITY LOCATED ON BOTH THE EAST AND WEST COASTS OF THE USA.

WHOLESALE MARKETING SLIDE

WE'RE A WHOLESALER OF PETROLEUM PRODUCTS WITH EXTENSIVE TERMINAL OPERATIONS ON BOTH COASTS.

RETAIL MARKETING SLIDE

WE'RE A RETAIL MARKETER ON THE WEST COAST WITH THE EXCLUSIVE RIGHT TO USE THE BP BRAND IN A 9 STATE REGION.

WE EXPECT TO HAVE SALES EXCEEDING $6 BILLION IN 1994 WHICH WILL PUT US IN THE FORTUNE 100.

BASED ON OUR POSITION IN THE INDUSTRY, I BELIEVE WE'RE QUALIFIED TO REVIEW ITS PROSPECTS OVER THE BALANCE OF THE CENTURY.

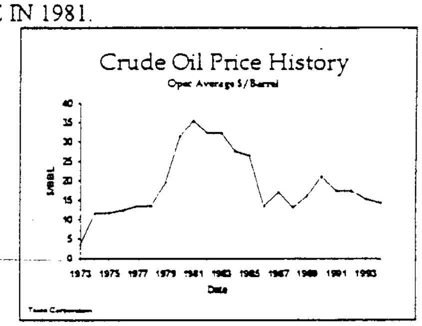
LET'S START WITH THE BASE RAW MATERIAL.

CRUDE OIL IS WHERE THE CYCLE STARTS. WE ENTERED THE OPEC ERA IN ABOUT 1973 AND ULTIMATELY PUSHED PRICES OVER $36 / BBL. OPEC

TS0013422

HAD A GREAT ASISST FROM US GOVERNMENT REGULATIONS WHICH KEPT PRICES ARTIFICIALLY HIGH THROUGHOUT THE 2ND HALF OF THE 1970'S. RONALD REGAN TOOK OFFICE IN JAN OF 1981, REMOVED PRICE CONTROLS IN FEB OF 1981 AND SINCE THEN THE LAWS OF SUPPLY AND DEMAND AS OUTLINED BY ADAM SMITH OVER 200 YEARS AGO TOOK OVER.

SLIDE 1: SHOWS THE AVERAGE OPEC PRICE HISTORY SINCE 1973 AND THE START OF PRECIPITOUS DECLINE IN 1981.



THE LATE 80's AND EARLY 90's, WITH THE EXCEPTION OF THE GULF WAR, WERE A PERIOD OF RELATIVELY DECLINING CRUDE OIL PRICES.

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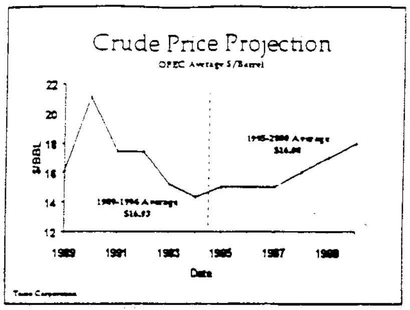
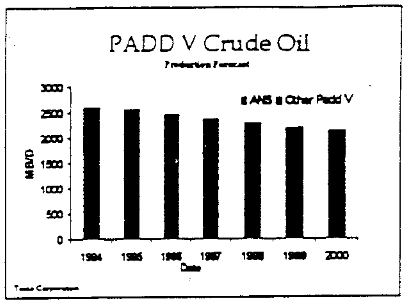


THE SLIDE SHOWS THE LAST 6 YEARS PLUS OUR PROJECTION FOR THE 2ND HALF OF THE 90's. WE ONCE AGAIN USE OPEC AVERAGE PRICES. WE THINK THE YEARS 95 THRU 98 WILL BE STABLE AROUND TODAY's LEVELS AND THEN WE PROJECT ESCALATION AT $1 YEAR THRU THE END OF THE CENTURY. REGRETFULLY, I HAVE TO TELL YOU THERE IS NO SUCH THING AS AN ACCURATE LONG TERM CRUDE OIL PRICE PROJECTION. MANY THINGS COULD HAPPEN BUT SHORT OF A MAJOR WAR IN THE MIDDLE EAST, IT'S HARD TO SEE A LONGER TERM PRICE SPIKE.

CRUDE OIL PRICES WILL BE MAINLY DRIVEN BY THE SUPPLY DEMAND BALANCE. THE STRONG PACIFIC BASIN ECONOMIES WILL PROBABLY PUT A FLOOR UNDER THE PRICE SINCE WE EXPECT WORLDWIDE OIL PRODUCT CONSUMPTION GROWTH TO AVERAGE 1,500,000 BBLS PER DAY PER YEAR. THE WORLDWIDE SYSTEM IS RELATIVELY WELL BALANCED NOW BUT WE STILL HAVE AN OVERHANG IN IRAQ. WE THINK THIS IRAQI PRODUCTION WILL START TO COME TO

MARKET DURING THE 2ND HALF OF 1995 AND THAT IT WILL TAKE 2 TO 3 YEARS TO ABSORB IT.

LET'S FOCUS FOR A MINUTE ON PADD V, THE WESTERN U.S.:



THIS SLIDE SHOWS ANS PRODUCTION IN BLUE AND OTHER PADD V PRODUCTION IN RED. PADD V HAS BEEN SURPLUS SINCE NORTH SLOPE PRODUCTION CAME ON STREAM. THE NORTH SLOPE HAS DECLINED ABOUT 300 MBD SINCE IT REACHED ITS PEAK IN THE MID 80's AND IS EXPECTED TO CONTINUE TO SLOWLY DECLINE BY A TOTAL OF ABOUT 400 MBD IN THE 6 YEAR PERIOD THRU THE YEAR 2000. CALIFORNIA PRODUCTION WILL PROBABLY FALL OFF BY 50 MBD IN THE SAME TIME PERIOD. PADD V REFINERS, WILL BE IMPORTING MORE FOREIGN CRUDE IN THE FUTURE. HIGHER FREIGHT COSTS AND DIFFICULT PORT CONDITIONS, PARTICULARLY IN THE SAN FRANCISCO BAY AREA, WILL CAUSE PADD V CRUDE OIL COSTS TO ESCALATE EVEN MORE THAN THE WORLD MARKET.

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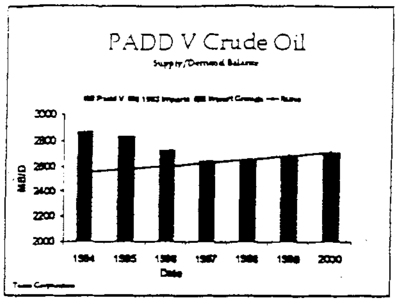

THIS SLIDE SHOWS THE PADD V PRODUCTION DECLINE IN BLUE, PRESENT IMPORTS AS A CONSTANT IN RED AND IMPORT GROWTH STARTING IN 2 OR 3 YEARS IN YELLOW. IF I WAS TO GUESS, HIGHER CRUDE IMPORTS AND EXPENSIVE TRANSPORTATION WILL ADD ANOTHER 2 CENTS / GAL TO THE COST OF PADD V PRODUCTS.

SUMMARIZING THE VIEW TOSCO HAS ON THE CRUDE OIL OUTLOOK IN THE WORLD AND PADD V TELLS US 2 THINGS:

1. CRUDE PRODUCERS WILL HAVE TO LIVE WITH LOW PRICES FOR SEVERAL MORE YEARS.
2. CRUDE OIL COSTS SHOULD NOT CAUSE SIGNIFICANT INFLATION IN THE VALUE OF OIL PRODUCTS.

TOSCO CURRENTLY HAS NO CRUDE OIL PRODUCTION AND PRESENTLY HAS NO PLANS TO ENTER THIS BUSINESS.

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LET'S NOW SWITCH OVER TO THE NEXT STEP IN THE CYCLE REFINING. TOSCO HAS A GREAT INTEREST IN THIS SINCE WE OWN 500, BPD OF REFINING CAPACITY IN THE UNITED STATES. I'M GOING TO CONCENTRATE TODAY ON CALIFORNIA WHICH WILL IN ESSENCE CHANGE FROM A COMMODITY REFINING MARKET TO A SPECIALITY CHEMICAL BUSINESS DETACHED TO A GREAT DEGREE FROM REFINING IN THE REST OF THE US, AND TO AN EVEN GREATER DEGREE, FROM THE REST OF THE WORLD.

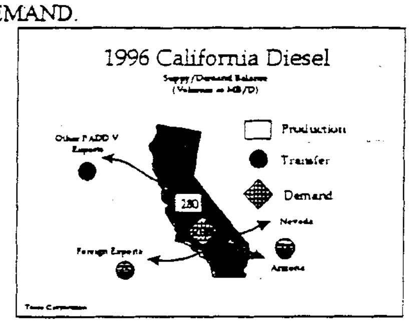
WE ARE EXPERIENCING AND WILL CONTINUE TO SEE INFLATION IN THE COST OF OIL PRODUCTS AS A RESULT OF NEW GOVERNMENT REGULATION.

CALIFORNIA, BY FAR THE LARGEST CONSUMER OF PRODUCTS IN PADD V, HAS PUT IN PLACE SPECIFICATIONS FOR DIESEL AND GASOLINE THAT ARE DIFFERENT THAN ANYWHERE ELSE IN THE WORLD. OTHER STATES, AND EVENTUALLY COUNTRIES, MAY FOLLOW, BUT I DOUBT IF ANYONE WILL IMPLEMENT CALIFORNIA SPECS MUCH BEFORE THE YEAR 2000.

THE CALIFORNIA AIR RESOURCES BOARD, BETTER KNOWN AS CARB ESTABLISHED SPECIFICATIONS FOR DIESEL WHICH RESULTED IN A PRICE INCREASE OF 5 TO 9 CENTS/GAL SINCE INCEPTION IN OCT OF 1993. I'M, OF COURSE, OMITTING THE BRIEF START UP PERIOD WHEN WE SAW VERY HIGH PREMIUMS OR 30 TO 40 CENTS / GAL.

CARB DIESEL NOW TRADES AT A PREMIUM OVER REGULAR GRADE IN THE 5 TO 8 CENTS RANGE. I THINK

THIS PREMIUM WILL STAY IN PLACE AND COULD GROW SUBSTANTIALLY IF WE EXPERIENCE A MAJOR LONGER TERM UPSET AT ONE OF CALIFORNIA'S LARGE DIESEL REFINERIES. TOSCO IS CALIFORNIA'S 3RD LARGEST DIESEL PRODUCER. WE MAKE UP TO 55 MBD OF THIS TRANSPORTATION FUEL AND SUPPLY ABOUT 25% OF CARB DEMAND.



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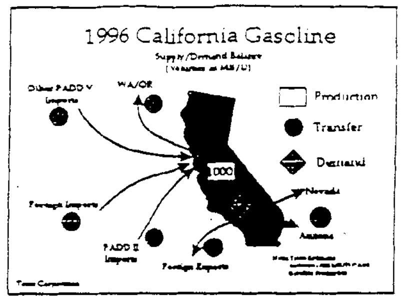
THIS SLIDE SHOWS CALIFORNIA DIESEL BALANCES. ACCURATE STATISTICS ARE DIFFICULT TO OBTAIN. WE BELIEVE ~~CARB~~ CONSUMPTION IS ABOUT ~~190~~ MBD AND ~~THAT~~ PRODUCTION IS VERY CLOSE TO THAT NUMBER. THIS IS AN INSTANCE WHERE THE INDUSTRY COULDN'T ECONOMICALLY CONVERT 100% OF THEIR PRODUCTION TO THE NEW SPECIFICATION AND HAD TO EXPORT. THIS RESULTED IN A FIRM CARB DIESEL PRICE. WE MAY SEE THE SAME SITUATION IN GASOLINE.

CARB PHASE II GASOLINE IS DUE TO ARRIVE IN APRIL OF 1996, I.E. ABOUT 1-1/2 YEARS FROM NOW.



THIS SLIDE SHOWS WHAT WE THINK GASOLINE FLOWS IN CALIFORNIA WILL BE STARTING IN MARCH OF 1996. REMEMBER THESE ARE TOSCO ESTIMATES AND OTHERS MAY HAVE A DIFFERING VIEW.

AT THE RIGHT PRICE THERE WILL BE ENOUGH CARB GASOLINE. WHY PREFACE THE SUPPLY ISSUE WITH PRICE? WELL, WE BELIEVE THE CALIFORNIA REFINING INDUSTRY WILL NOT MAKE SUFFICIENT CARB GASOLINE TO FULLY SUPPLY CALIFORNIA CONSUMPTION IN 1996. OBVIOUSLY ANY PROJECTION NEEDS A DEMAND FORECAST. OUR CALIFORNIA DEMAND ESTIMATE OF 945,000 BBl's PER DAY GASOLINE CONSUMPTION IS BASED ON A 1.5% PER ANNUM AVERAGE DEMAND INCREASE FROM 1993 TO 1996. WE ALSO INCLUDE THE IMPACT FROM LOWER MILEAGE FROM CARB PHASE II GASOLINE. RESEARCH RESULTS PUBLISHED BY THE SOCIETY OF AUTOMOTIVE ENGINEERS INDICATES MILEAGE DEGRADATION OF ABOUT 4% WHEN COMPARED TO CONVENTIONAL NON OXY GASOLINE TODAY. WE ESTIMATE THERE WILL BE

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A SHORT FALL OF OVER ~~140~~ 160 MBD WHICH WILL HAVE TO BE IMPORTED.

IMPORTS WILL COME EITHER FROM OTHER U.S. REFINERIES OR FROM OFFSHORE. ALMOST ANY COMPLEX REFINERY CAN MAKE SOME QUANTITY OF CARB GASOLINE. THE COSTS, HOWEVER, OF SEGREGATING HIGH QUALITY COMPONENTS, THUS IMPACTING THE QUALITY OF THE BALANCE OF THE REFINERS GASOLINE POOL ARE SUCH THAT NON CALIFORNIANS WILL NEED A REAL FINANCIAL INCENTIVE TO PRODUCE CARB GASOLINE. HOW MUCH? I WOULD GUESS MINIMUM 4 CENTS / GAL FOR THE MOST COMPETITIVE GROUP. THIS NUMBER ONLY DEALS WITH THE MANUFACTURING COST. THERE IS ALSO THE QUESTION OF FREIGHT TO CALIFORNIA. WE THINK THE MINIMUM FREIGHT COST IS 2 CENTS / GAL WHICH WOULD BE TODAY'S LOWEST COST FROM THE NORTHWEST. MORE DISTANT IMPORT SOURCES WOULD CARRY A FREIGHT COST OF 4 TO 6 CENTS / GAL. THE COMBINATION OF QUALITY AND FREIGHT TOTALS MINIMUM 6 CENTS / GAL. THIS EXCLUDES OXYGENATES FOR THE GASOLINE. CARB GASOLINE MUST BE OXYGENATED YEAR ROUND AND MEET AN RVP LIMIT OF 7.2 IN THE SUMMER. WE ESTIMATE THAT THE COMBINATION OF OXYGENATE AND LOWER RVP WILL ADD ANOTHER 4 CENTS / GAL TO THE COST OF CALIFORNIA GASOLINE. THIS EXTRA 4 CENTS WILL BE A YEAR ROUND FACTOR IN SOUTHERN CALIFORNIA STARTING IN 1995 WHEN FEDERAL REFORMULATED GASOLINE KICKS IN. IT'S A COST THAT OTHER AREAS OF THE COUNTRY WILL HAVE TO PAY IF THEY ARE DESIGNATED NON ATTAINMENT AREAS. THIS

PREMIUM IS BASED ON TODAY'S OXYGENATE PRICES IT WILL SHRINK OR EXPAND DEPENDING ON WHAT HAPPENS TO OXYGENATE PRICES.

LET'S EXAMINE FOR A MOMENT THE REASON WHY TOSCO THINKS THERE WILL BE A NEED TO IMPORT GASOLINE INTO CALIFORNIA. THE SITUATION IS SIMILIAR TO WHAT WE HAVE SEEN ON CARB DIESEL. THE COST OF MANUFACTURING CARB GASOLINE GOES UP AS THE % OF CARB GASOLINE TO A REFINERIES TOTAL GASOLINE PRODUCTION INCREASES. THUS THE FIRST 50% OF CARB PHASE II COSTS X, WHILE EACH ADDITIONAL 10% IS X PLUS UNTIL YOU GET TO THE LAST 10% WHICH MAYBE 2 X. THE X WILL DIFFER FOR EACH REFINERY BUT I DOUBT IF ANYONE HAS AN X MUCH BELOW 4 CENTS/GAL. WE THINK THIS RISING COST FACTOR WILL RESULT IN THE INDUSTRY CONVERTING ONLY 80% OF ITS CURRENT GASOLINE TO CARB QUALITY WITH THE BALANCE OF 20% MEETING CURRENT SPECS. THE 80% FACTOR LEADS US TO THE DATA SHOWN ON THIS SLIDE, I.E. IMPORTS OF 145,000 MBD AND EXPORTS OF 200 MBD. THERE WILL BE SOME SEASONAL SWING WITH HIGHER CARB PRODUCTION IN THE WINTER AND LOWER IN THE SUMMER. THE PRIME FACTOR FOR THIS SWING IS HIGHER RVP IN WINTER.

Possible Scenario

California S/D Balance 1996
(Volumes in MB/D)

Production 1000

Imports		Exports	
PADD V	25	PADD V	30
PADD III	60	NV and AZ	140
Foreign	60	Foreign	30
Total Imports	145	Total Exports	200

Demand 945

THIS SLIDE SHOWS CALIFORNIA PRODUCTION AND CONSUMPTION IN TABULAR FORM.

MARKET FORCES WILL SET THE PRICE FOR CARB GASOLINE AND THESE FORCES WILL INVOLVE AN INTERESTING MIX OF CAPITAL INVESTMENT ECONOMICS AND IMPORT INCENTIVE. FROM OUR PERSPECTIVE, EXCLUDING OXYGENATE COSTS, WHICH HAVE SEPARATE MARKET DYNAMICS, THE TWO SEEM TO BE COMING TOGETHER AROUND THE 6 CENTS / GAL MARK. IF A REFINER CAN'T MAKE A REASONABLE PROFIT AT THAT NUMBER, WE FEEL THE INVESTMENT MAY NOT WORK OUT WELL.

OUR PROJECTIONS ON INCREASED PRICES FOR THE NEW CALIFORNIA GASOLINE OF 6 CENTS FOR MANUFACTURING AND 4 CENTS FOR OXYGENATE ARE REASONABLY IN LINE WITH CARBS PROJECTIONS BUT BELOW LEVELS INDICATED BY OTHERS IN THE INDUSTRY THERE IS AN IMPORTANT QUALIFICATION, THIS IS A VERY FINELY BALANCED SYSTEM.

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IF ANY OF THE LARGE REFINERS IN CALIFORNIA EXPERIENCES AN UNPLANNED SHUTDOWN, THE PREMIUM OF 6 CENTS COULD EASILY BE TWO OR THREE TIMES THAT NUMBER FOR SOME PERIOD OF TIME. ALSO, THE 1ST MONTHS OF OPERATION WILL PROBABLY SEE LARGER PREMIUMS AND SUMMER DUE TO LOWER PRODUCTION AND HIGHER CONSUMPTION WILL BE TIGHTER THAN THE WINTER.

WHAT WILL TOSCO DO?

TOSCO WILL MAKE LESS THAN 100% OF OUR CURRENT PRODUCTION INTO CARB PHASE II GASOLINE. WE EXPECT TO START OFF WITH SOMEWHAT MORE THAN 50% OR OVER 50,000 MBD ON AN ANNUAL BASIS. WE'RE INVESTING ABOUT $100,000,000 TO REACH THIS PERCENTAGE. WE'RE CONFIDENT, BASED ON OUR SUPPLY ANALYSIS, AND THE PREMIUMS WE MENTIONED EARLIER, THAT THIS WILL PROVE TO BE A REASONABLE INVESTMENT FOR TOSCO. ADDITIONALLY, YOU MAY HAVE SEEN OUR PRESS RELEASE YESTERDAY WHERE WE INDICATED WE'VE MADE ARRANGEMENTS WITH CHEVRON TO SWAP, FOR MINIMUM 7 YEARS, 30 MBD OF REGULAR GASOLINE INTO CARB PHASE II. THUS TOSCO WILL HAVE ABOUT 80% OF ITS CURRENT GASOLINE PRODUCTION AVAILABLE IN APRIL OF 1996 AS CARB PHASE II. IF THERE IS AN ECONOMIC INCENTIVE THAT GIVES US A BETTER PROFIT THAN OUR SWAP, WE MAY MAKE FURTHER INVESTMENTS TO INCREASE OUR PROCESSING CAPABILITY BUT FOR NOW WE'RE TAKING A WAIT AND SEE CONSERVATIVE APPROACH.

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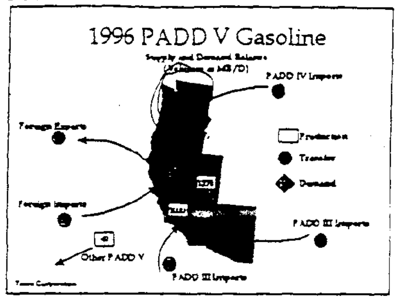
LET'S NOW TALK ABOUT THE BALANCE OF PADD V REFINING CAPACITY, WHICH IS PRIMARILY WASHINGTON STATE.



THIS SLIDE SHOWS GASOLINE FLOWS THRUOUT PADD V.

TOSCO's, FERNDALE, WASHINGTON, REFINERY, HAS NO PLANS AT PRESENT TO MAKE CARB GASOLINE. WE SELL ALL THE GASOLINE MADE AT FERNDALE IN WASHINGTON AND OREGON THROUGH OUR RETAIL SYSTEM. WE CURRENTLY SELL AN ADDITIONAL VOLUMN AT WHOLESALE THAT IS USUALLY EXCHANGED TO THE NORTHWEST. WE INTEND TO CONTINUE TO SUPPLY THESE OUTLETS WITH NON CARB GASOLINE, PROBABLY NOT VIA EXCHANGE BUT THROUGH ACTUAL SHIPMENT TO THE NORTHWEST. WE DON'T THINK THE MARKET CAN RELY ON THE NORTHWEST FOR SIGNIFICANT VOLUMNS OF CARB GASOLINE. WE DON'T KNOW OF ANY NON CALIFORNIA PADD V REFINER WHO HAS ANNOUNCED PLANS TO MAKE CARB PHASE II GASOLINE. IN SPITE OF NOT HAVING SPECIFIC INFORMATION, WE HAVE SHOWN 25

TS0013434

MBD OF CARB PHASE II GASOLINE FLOWING FROM THE NORTHWEST TO CALIFORNIA ON OUR ANALYSIS.

NOW THAT WE'VE DISCUSSED CALIFORNIA CARB PHASE II, LET'S SPEND A MINUTE ON REFINING IN GENERAL. IF, AS WE EXPEXT, PRODUCT CONSUMPTION ON A WORLD WIDE BASIS GROWS FASTER THAN THE ADDITION OF NEW REFINING CAPACITY, REFINING WILL BECOME A BETTER BUSINESS. ADDING A LITTLE EXTRA DIMENSION IS THE PROBABILITY THAT SMALL, INEFFICIENT REFINERS WILL CONTINUE TO CLOSE DOWN.

SUMMARIZING MY REMARKS ON REFINING:

1. COSTS FOR CARB OXYGENATED GASOLINE WILL ESCALATE BY A TOTAL OF MINIMUM 10 CENTS / GAL.

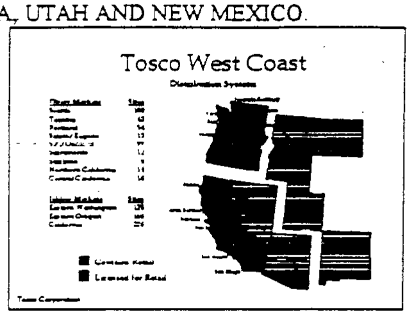
2. REFINERS MAY SEE BETTER PROFITS IN THE 2ND HALF OF THE 90's. BUT WE WILL CONTINUE TO SEE VERY COMPETITIVE MARKETS.

3. WE CONTINUE TO BELIEVE SMALL REFINERS, I.E. 50 MBD OR LESS, CAN'T SURVIVE IN THE LONG TERM.

LET'S MOVE ON TO TOSCO'S CURRENT GROWTH AREA - RETAIL. WE HAD NO RETAIL OUTLETS UNTIL 9 MONTHS AGO, WHEN WE TOOK OVER BP's SYSTEM IN THE NORTHWEST.

TS0013435

I THINK ALL OF YOU KNOW WE PROMPTLY EXPANDED BY ACQUIRING BP's CALIFORNIA SYSTEM ON AUG 1, 1994. WE CONTRACTED AT THE SAME TIME FOR THE EXCLUSIVE RIGHT TO MARKET UNDER THE BP BRAND FOR THE NEXT 12 YEARS IN CALIFORNIA, WASHINGTON, OREGON, ARIZONA, NEVADA, IDAHO, MONTANA, UTAH AND NEW MEXICO.



Tosco's and the wholesale marketing system

THIS SLIDE SHOWS TOSCO's BP BRAND SYSTEM AS IT EXISTS TODAY.

WE ARE CURRENTLY SELLING ABOUT 2.6 MILLION GALLONS OF GASOLINE PER DAY AT RETAIL UNDER THE BP BRAND. THIS REPRESENTS OVER 43% OF TOSCO's PADD V PRODUCTION. TOSCO HOPES TO ADD TO ITS BP BRAND SYSTEM OVER THE NEXT FEW YEARS. WE'RE INTERESTED IN JOBBER AND DEALER EXPANSION AND WE'RE ALSO IN THE MARKET TO BUY OIL COMPANY, JOBBER OR DEALER SITES. WE WOULD ADDITIONALLY CONSIDER LEASES OF SUCH FACILITIES ON A VERY LONG TERM BASIS. TOSCO WANTS TO EXPAND IN RETAILING SO OBVIOUSLY WE FEEL A PROFIT CAN BE MADE. WE DON'T, HOWEVER, BELIEVE

WE'RE ENTERING A PERIOD OF FAT MARGINS.WE BELIEVE THE TREND OF THE LAST 20 YEARS WILL CONTINUE, I.E. LARGER AND FEWER STATIONS WILL SERVICE A SLOW INCREASE IN VOLUMN. RETAILING IS A MAJOR LEAGUE BUSINESS WHERE INDIVIDUAL UNITS THAT CAN SURVIVE IN THE LONG TERM HAVE A VALUE OVER $1,000,000 WITH ANNUAL FUEL AND CONVENIENCE SALES OVER $5,000,000. THIS IS SIMPLY NOT A MOM AND POP BUSINESS ANYMORE!

AS WITH EVERYTHING ELSE, THERE WIL BE A DIFFERENCE BETWEEN CALIFORNIA AND THE OTHER STATES IN PADD V. THE PRICE INCREASE IN CALIFORNIA IN APRIL OF 1996 COULD CAUSE ER~~R~~OSION OF MARGINS AT RETAIL FOR SOME PERIOD OF TIME. CARB GASOLINE WILL, ON THE OTHER HAND, INCREASE EVERYONE'S VOLUMNS BY 3% OR 4% DUE TO ITS LOW MILEAGE CHARACTERISTICS. THERE IS ALSO A REAL POTENTIAL FOR SHORT TERM INTERRUPTION OF LARGE VOLUMNS OF CARB PHASE II GASOLINE SUPPLY. IF ONE OF THE BIG CAT CRACKERS OR OTHER KEY UNITS IN CALIFORNIA GOES DOWN UNEXPECTEDLY, WE COULD SEE ~~A~~ SPOT MARKET PRICE SPIKES OF LARGE DIMENSION AND SERIOUS SHORT TERM SUPPLY DIFFICULTY. THIS SHOULD GIVE ANYONE WHO RELIES ON THE SPOT MARKET AN INCENTIVE TO TIE UP SUPPLY WITH A LARGE REFINER.

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Current Gasoline Production

Company	PADD V	California
ARCO	215	135
Chevron	210	195
Tosco	140	100
Texaco	135	70
Shell	130	80
Union	125	125
Exxon	105	105
Mobil	95	95
Ultramar	50	50

TOSCO ESTIMATES PER THIS SLIDE THAT IT IS THE 3RD LARGEST GASOLINE PRODUCER IN PADD V AND THE 5TH LARGEST IN CALIFORNIA. TOSCO INTENDS TO DEVOTE ITS PADD V SUPPLY TO OUR RETAIL SYSTEM AND CUSTOMERS WHO WANT A LONG TERM ARRANGEMENT WE WANT TO AVOID AS MUCH AS POSSIBLE SPOT SUPPLY ARRANGEMENTS. IF I WERE A CALIFORNIA RETAILER AND DIDN'T HAVE A WIDELY RECOGNIZED BRAND WITH A STRONG PADD V REFINING SYSTEM BEHIND IT I'D BE WORRIED. WE ARE HERE TO ELIMINATE WORRIES!!

ON THAT NOTE, I'LL BE HAPPY TO ANSWER YOUR QUESTIONS.

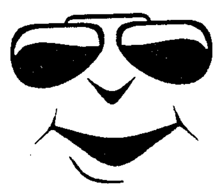

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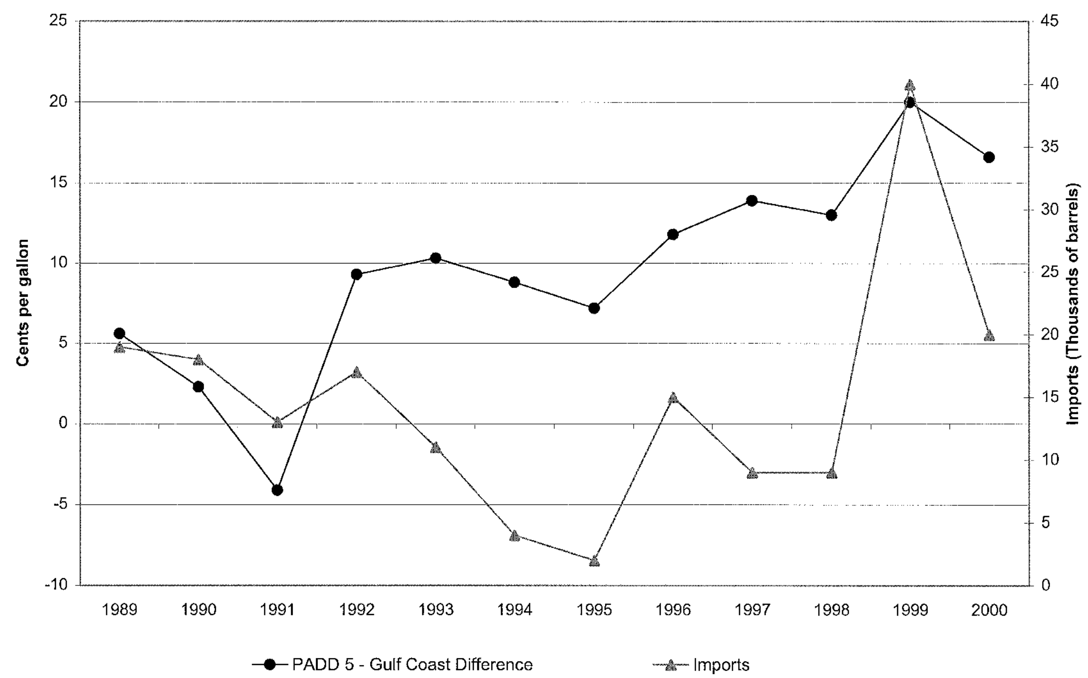
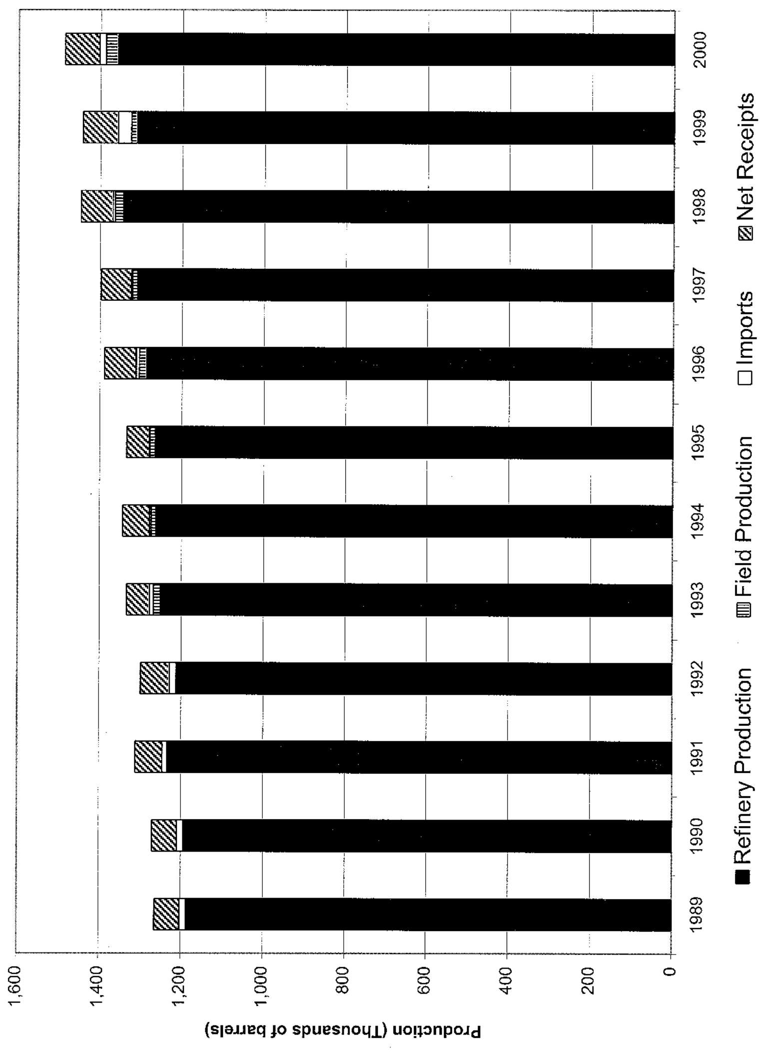
Figure IV.5: West Coast - Gulf Coast Price Differences and West Coast Foreign Imports, 1989 - 2000



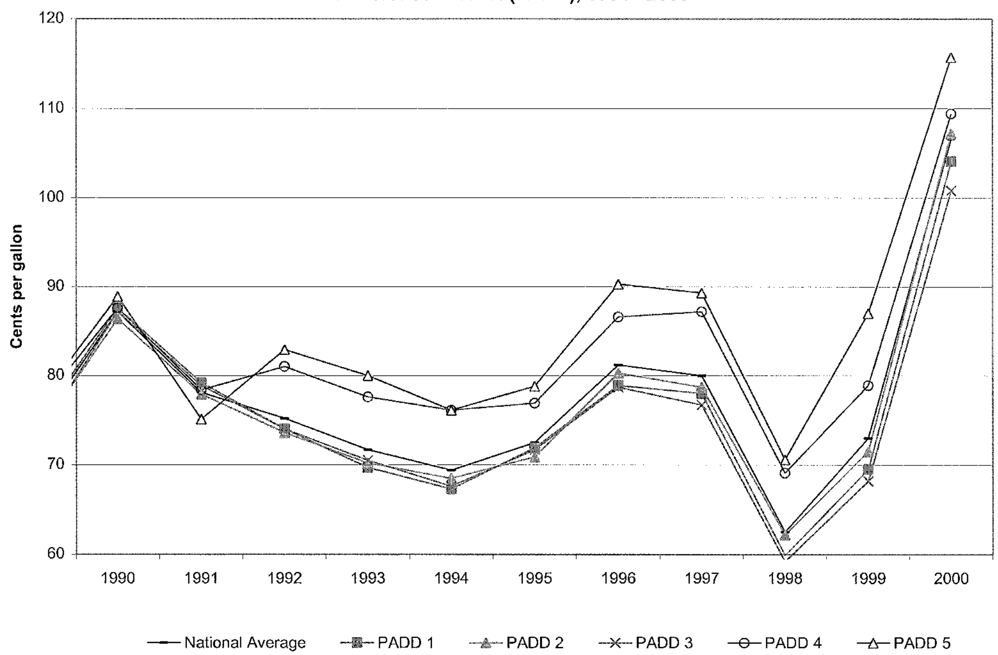
Note: Gulf Coast price difference based on average retail price in Texas.
Source: DOE/EIA.

Figure IV.6: PADD 5 Gasoline Production



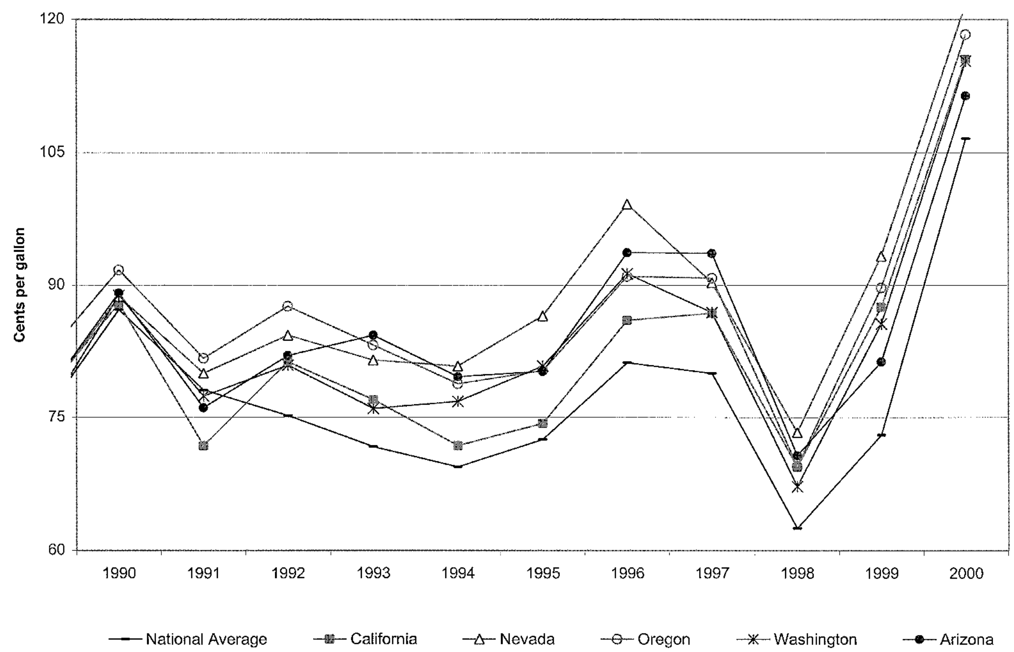
Source: DOE/EIA.

Figure IV.7: Average Annual Price Net Federal and State Taxes by Petroleum Administration for Defense District (PADD), 1984 - 2000



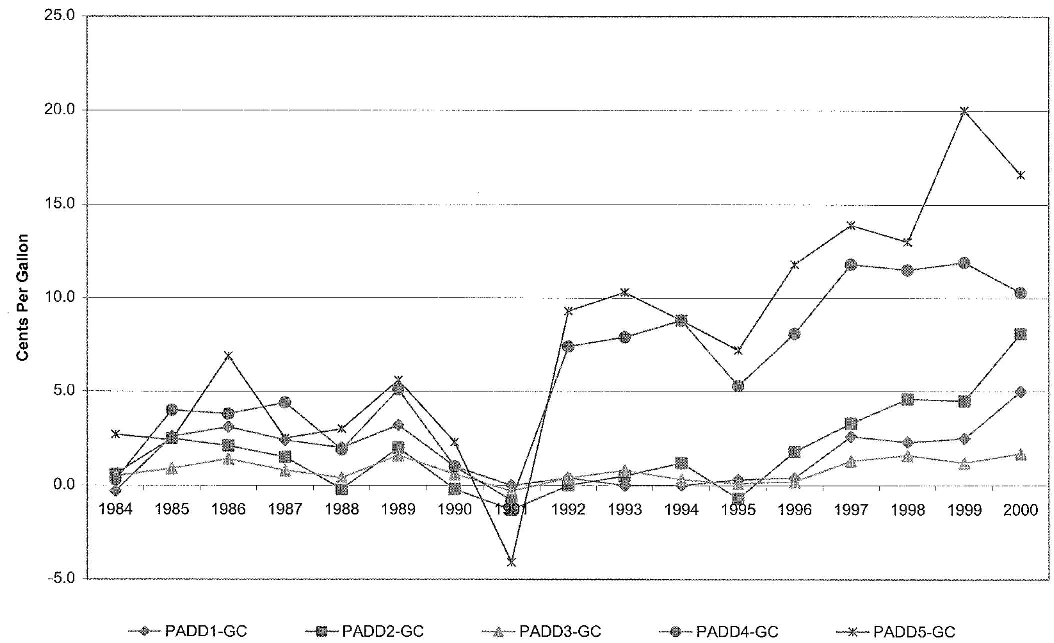
Source: DOE/EIA.

Figure IV.8: PADD 5 Gasoline Prices Net Federal and State Taxes, 1990 - 2000



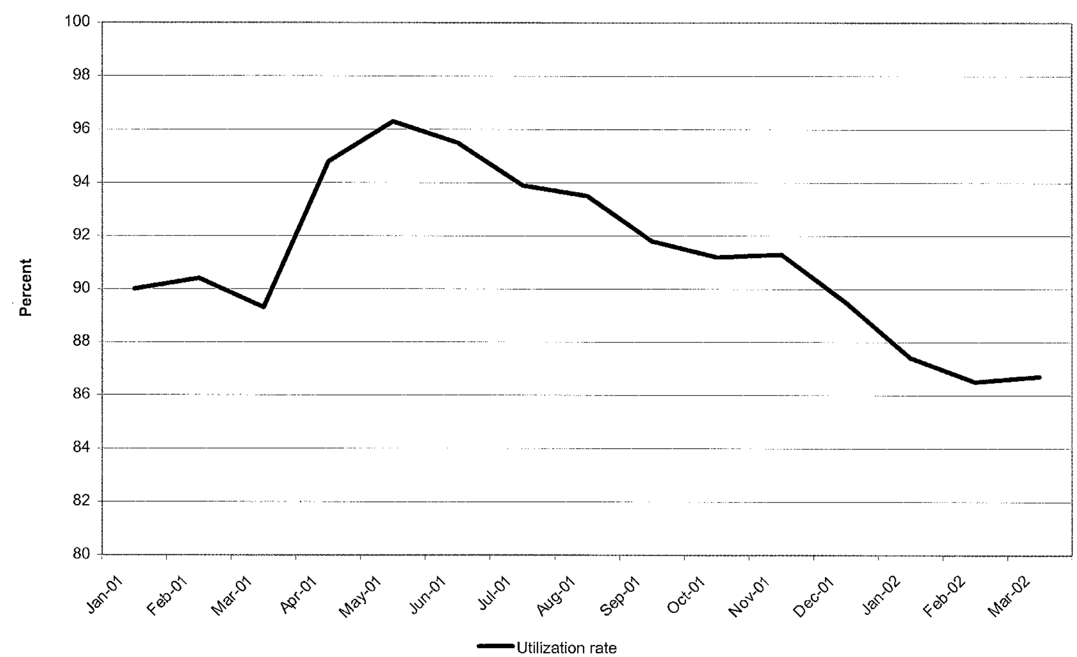
Source: DOE/EIA.

Figure IV.9: U.S. Regional Differences in Prices (Net Taxes) for Regular Unleaded Gasoline, 1984 - 2000



Note: Gulf Coast price reflects average retail price in Texas.
Source: DOE/EIA.

Figure IV.10: Refinery Capacity Utilized, January 2001 - March 2002



Source: EIA

EXHIBIT IV.14

SUMMARY: SHORT-TERM PRICE OUTLOOK

Marathon Oil Company *Economics*

As OPEC and other exporters' efforts to rein in output began bearing fruit, Nature stepped in to lend the oil producers a helping hand in the form of Hurricane Georges, which caused some major refinery closures, threatened off-shore oil production and imports, and generally lent some bullishness to the oil futures markets. However, this storm induced optimism is likely to prove temporary, leading to some pullback in prices prior to the heavier worldwide demands for crude in late Fall and early Winter.

OPEC compliance with the agreed reductions in output this year have been estimated in a range of 80% to 85%, which means the organization is acting as much like an effective cartel as it ever has. A $2 per barrel price increase in the first half of last month is the result of their resolve, but also a demonstration of the remaining bearishness and demand-side weakness in the market. In more typical times, the price reaction to a removal of over 2 million b/d from the world oil market would have been more significant.

Growth in U.S. oil demand remains favorable, with gasoline up almost 2 %, year-do-date, when upward revisions to data from the second quarter are included. Distillate and residual fuel demands are likewise well ahead of a year ago, with only kerojet among the major products suffering from inexplicable weakness. Other oil demand suffered from a warm first quarter, weakening in the petrochemical industry, and the delay in the reauthorization of the Intermodal Surface Transportation Efficiency Act, which has now been signed into law. Final figures are likely to show healthy growth in U.S. demand this year, but this cannot make up for the loss of oil demand growth from East ʼa, and the market remains skeptical that exporters have reduced sales sufficiently after their monumental ..scalculation early this year.

The onset of heavier world-wide crude runs in the fourth quarter in preparation for the Northern Hemisphere winter should tighten crude supplies noticeably, lifting the WTI spot price to $16.50 per barrel in January and February, after the initial post-storm pullback.

Year-over-year gasoline demand growth in August is reported to have been 4.3%, and has not slowed much in September. Gasoline stocks do not appear to have begun an upward climb, as they can do at a time of seasonally lower demand and rising output potential with the advent of higher allowable RVP, which facilitates greater NGL blending. Indeed, the difference of the gasoline stock level over last year has now narrowed to 14 million barrels. Turnarounds and other refinery shutdowns have not had their expected impact on gasoline output as yet, but there is normally a lag between the two, and output should slide soon even with higher NGL input. Hence, we expect little additional weakening of gasoline relative to crude until December, when runs pick up once more. Gulf Coast spot unleaded regular gasoline is forecast to average 41cents per gallon this month, rising less than crude to 42 cents in December. The price differential for 93 octane gasoline over regular has narrowed to 3.5 cents per gallon, and should remain close to this value through the forecast. The differential for RFG will average under 2 cents a gallon through February.

Distillate demand is preliminarily reported to have settled down to a more sustainable 3% growth rate in September, after the 12% of August. Because of unusually heavy demand last October, it is even conceivable that distillate demand will be lower this month than a year ago. Nonetheless, distillate demand continues strong, which together with an imminent decline in output due to refinery shut-downs, offsets the impact of inventories that remain ʼbout 17 million barrels above last year. Assuming normal weather, distillate prices are forecast to increase only ghtly relative to crude oil, with the Gulf Coast spot high sulfur distillate price averaging 41cents per gallon in October, and rising to a high of 45 cents in January. The price premium for low sulfur diesel is expected to contract from just over 2 cents per gallon recently to about 1 cent per gallon around year end, as the market's focus turns toward heating oil.

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Oct. 1, 1998

EXHIBIT IV.15

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BP Amoco

Midwest / Mid Continent Strategy

Meeting with BULs

1st June 1999

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BPAmoco

Agenda

- Introductions
- Events leading to today's meeting
- Today's objective
- What we know
  - BUL interviews - common and divergent views
  - brief recap of 4/30 presentation
  - other initiatives underway/Market threats
  - market levers
- Case study [redacted]
- Value creation
- The way forward
  - process
  - terms of reference - deliverables

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BPAmoco

Recap of 4/30 presentation -

Key learnings on niche structure

We can influence niche value (1-3cpg) but our actions need to be significant (>50 mbbl/d) to be sustainable (3 years+)

- There are several drivers which work together to determine the value of the niche :
  - Prices (and therefore asset value) in the Midwest / MidCon are set by the supply / demand in relation to logistics capability
  - Supply / demand balances are driven by macro-economic issues such as crude prices, crude field decline rates, economic growth
- When the niche is not present, Midwest refiners need to be able to compete on a cost and operational basis with the GC refiners.
- Opportunities exist for differentiation by improving business outside mainstream fungible products. [redacted]
- There are significant opportunities to influence the crude supply / demand balance
- Good market intelligence is critical to understanding market behavior

Recap of 4/30 presentation -

Niche characterization - summary

BPAmoco

Historical Observations :

- **Products**
  - In the summer (May thru Sept), MW / MC product prices are set by incremental barge economics.
  - A barge-related price is not sustainable - pipeline capacity can / will increase over time
  - In the winter, local refinery economics set product prices
- **Crudes**
  - In the winter, heavy Canadian crude costs into the MW / MC tend to be lower than GC crude plus transportation
  - Costs of heavy Canadian crude in the summer, and other crudes year-round, are likely to be rational with GC crude costs plus transportation in a low crude cost environment
  - Canadian heavy crude production is sensitive to overall crude price levels (with recent months an example of production cutbacks)

BP Amoco

Recap of 4/30 presentation -

Summary

- Niche value potential varies widely over time. It is reasonable to expect that incremental value can be extracted by BP Amoco in the future.
- Markets are not constant. There are numerous supply / demand balance dislocations within an environment of finite transportation options. We can benefit by pro-actively managing our response to dislocations in real time.
- Creating value through market "knowledge" and integrated market actions is consistent with our desire to move to a knowledge based organization. Additional value creation may be independent of capital employed.

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BPAmoco

Market levers - product short (1)

- **Shut down niche internal supply**
  - – Offer supply agreements in exchange for capacity shutdown
  - – Purchase capacity and shut it down
  - – Lobby for elimination of oxygenates/tax breaks for same
  - – Seasonal (winter)idling of capacity/corresponding winter import of product
    - Firms winter market AND secures large summer import volume
  - – Low sulfur product requirements reduce production.
    - Eliminate exemptions for small Refiners.
    - Patent formulations to make niche production more expensive re: CARB fuels
  - – Compliment shutdown of internal niche supply with investment in import pipeline
- **Increase product demand**
  - – Lower prices
  - – Convince swing cities on Gulf Coast supply to require reformulation that is not readily available from Gulf Coast
  - – Incent "boundary" areas to buy supply from niche
    - Sell out western V system by using Milan line.

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BP Amoco

Market levers - product short (2)

- **Export products from Midwest niche**
  - Create "Koch" style fly wheel markets
    - Kansas City, Pittsburgh, St.. Louis, Indianapolis
  - Move product into southern Ontario
  - Use Xylene line or others to move product south or out of area
- **Fill import logistics**
  - Ship crude substitutes and/or intermediates/blendstocks on product lines
    - Condensate, naphtha, light gasoil, BTX, oxygenates, raffinate, alkylate, etc.
  - Don't incent pipeline conversions to products
    - Threat of swing or seasonal production to deter
  - Incent Koch not to ship into Chicago market??
  - Lobby for elimination of DRA for environmental reasons
- **Change behavior of shippers to support niche uplift**
  - Implement market based tariffs.
  - Raise tariffs
- **Reduce product inventory in niche**

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V. HOW GASOLINE PRICES ARE SET

- **Oil companies do not set wholesale (rack) or retail prices based solely upon the cost to manufacture and sell gasoline; rather wholesale (rack) and retail prices are set on the basis of market conditions, including the prices of competitors. Most oil companies and gasoline stations try to keep their prices at a constant price difference with respect to one or more competitors. As a result of these interdependent practices, gasoline prices of oil companies tend to go up and down together. (F-9)**

- **In Michigan and Ohio, these interdependent and parallel retail pricing practices have led to sharp daily increases in retail prices across the states. (F-10)**

- **Oil companies use zone pricing to charge different prices for gasoline to different station operators, some of which are in nearby geographic areas, in order to confine price competition to the smallest area possible and to maximize their prices and revenues at each retail outlet. (F-11)**

- **For the many stations owned or leased by the major oil companies, it is the major oil company rather than the local dealer that determines the competitive price position of the local station and that benefits from higher prices and profit margins. (F-12)**

- **The "hypermarket" is rapidly expanding as a highly competitive format for selling gasoline. (F-13)**

The price of gasoline that is paid by consumers at the gasoline pump reflects the cost of crude oil that is purchased by the refiner; the refiner's processing and distribution costs and profits; the retail distribution, marketing and station operating costs and profits (and sometimes losses); and federal, state, and local taxes. On average, in 2000, the percentage of each of these components of the retail price of a gallon of regular grade gasoline was:

- Crude oil: 46 percent;

- Refining costs and profits: 14 percent;

- Retail distribution, marketing, and station operations: 12 percent; and.
- Taxes (not including county and local taxes): 28 percent.[353]

(See Figure V.1 on page 325.)

Although retail prices can be broken down into these various components, neither refining nor retail prices are established on a cost-plus-profit basis. The wholesale price a refiner can obtain for refined gasoline is determined largely by the factors influencing the then-current supply and demand situation, including the market's outlook for the future. Competitors' prices also are considered. Similarly, the price a retailer will charge for gasoline on any given day will reflect prevailing market conditions, including the retail prices of nearby competitors. Thus, the profit margin a refiner or retailer obtains depends on the current market conditions.

A. <u>The Crude Oil Market</u>

The price of crude oil is determined by the supply and demand conditions in the global oil market and reflects many transactions between buyers and sellers taking place around the world. Three types of transactions are common in oil markets. Contract arrangements cover most of the oil that is purchased. Oil is also sold through spot market acquisitions, which are cargo-by-cargo arrangements. There also is a very active futures market for crude oil. Futures markets are designed to distribute risk among participants (buyers and sellers) and are rarely

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[353] DOE/EIA, *A Primer on Gasoline Prices*, at http://tonto.eia.doe.gov/FTPROOT/other/petbro.html. Federal excise taxes are 18.4 cents per gallon and state excise taxes average about 20 cents per gallon. Also, some states levy additional state sales taxes, some of which are applied to the federal and state excise taxes. Additional local county and city taxes can have a significant impact on the price of gasoline. Energy Information Administration, "Weekly Petroleum Status Report",October 19, 2001, Table S1.e

used to deliver physical volumes of oil.[354] Prices in the spot and futures markets serve as daily indicators of the overall conditions in the marketplace, including the current and future levels of supply and demand for crude oil and petroleum products. As a result, spot and futures prices are often used as references for crude oil and petroleum product contracts.[355] Generally, spot and futures prices for all crude oils are based on the prevailing prices for certain grades of crude oil produced in the U.S. Gulf Coast, Northwest Europe, or Dubai in the Middle East.

1. Crude Oil Contract Purchases

Much of the world's crude oil is supplied under contract. Contracts specify the volumes to be delivered for the duration of the contract and state the price to be paid.[356] Contract prices are flexible, usually tied to the spot and/or futures market.[357] For example, most of the crude oil contract prices are based on a formula: a base price, usually based on one of the three types of crude oil used as a pricing benchmark, plus or minus a quality adjustment. Thus, for example, crude oil delivered into the U.S. Gulf Coast is priced against the base price of West Texas Intermediate crude oil (WTI), a benchmark for crude oils bought and sold in North and South America. The price of Brent – crude oil produced in the North Sea – is used as the benchmark price for most European and African crudes. The price of crude oil produced in Dubai (called "Fateh") is used as a benchmark for crude oil bought and sold in Asia. Alaskan North Slope oil

[354] Energy Information Administration, Oil Market Basics, at http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/oil_market_basics/default.htm

[355] GAO/RCED-93-17, 28.

[356] The US General Accounting Office found a wide variance in the length of these supply contracts – from one month to five years.

[357] GAO/RCED-93-17, 38-39.

is sometimes used as a benchmark. The quality adjustment is a negotiated amount reflecting the difference in quality between the oil being purchased and the quality of the benchmark oil.[358] Credit and delivery terms – such as where delivery is to be made and the time at which the benchmark price is to be calculated – also affect the price calculation.[359]

Contracts can cover a period as short as one shipment of oil or last as long as one year. Contract terms may also specify different amounts to be delivered at different times in the contract period.

In the United States some domestically produced crude oil is sold at a "posted price." Refiners "post" the prices they are willing to pay to the producers of crude oil. Posted prices generally apply to a crude oil "stream," a crude oil or blend of oil of a standardized quality, with quality adjustments when the oil varies from the posted standard. Posted prices closely reflect changes in the spot and futures markets, but posted prices fluctuate less because they are not widely disseminated and transactions may not occur daily. Companies may also add a temporary premium to a posted price to account for short-lived market conditions or for specific delivery terms.[360]

2. The Crude Oil Spot Market

The spot market is not a formal exchange like the New York Stock Exchange but rather an informal network of buyers and sellers. A spot market transaction is an agreement to buy or

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[358] The value of a crude oil is based on the ease with which it can be refined into high value products. Usually, a denser crude oil with a higher sulfur content would be worth less than a lighter, low sulfur one.

[359] Energy Information Administration, *Oil Market Basics*.

[360] Energy Information Administration, *Oil Market Basics* and GAO/RCED-93-17, 39.

sell one shipment of oil at a price negotiated at the time of the agreement.[361] The spot market provides a market to dispose of or buy the incremental supply of crude oil not covered by contractual agreements at flexible prices in response to the market's current supply and demand conditions. Rising prices on the spot market indicate that more supply is needed, and falling prices indicate that there is too much supply for the current market's demand level. The spot prices of the four benchmark crudes – WTI, Brent, Dubai's Fateh, and Alaskan North Slope oil – thus serve as indicators for all of the crude oils bought and sold on the spot market.[362] The spot price is typically guided by references to the prices quoted on the New York Mercantile Exchange (NYMEX) for WTI or on the International Petroleum Exchange (IPE) in London for North Sea Brent for futures contracts which specify the earliest upcoming date of delivery. Since the middle of the 1980's, more and more crude oil has been bought and sold on the worldwide spot market.[363]

A number of industry publications and reporting services track and report prevailing prices on the spot market. These publications report the prices of transactions their reporters are able to learn from traders.

[361] There are also forward contracts, which have features of both the spot and the futures markets. A forward contract is a one-time agreement between a buyer and seller to deliver a certain quantity of a particular type of crude oil at a specified future date. The price may be agreed upon in advance of or on the date of delivery of the oil.

[362] One energy information service told us that Alaskan North Slope crude oil spot prices are a benchmark only for California crude oil sales, but it is not a particularly strong benchmark. One oil company told us that they do not consider Alaskan North Slope crude oil a spot market benchmark.

[363] Before 1979, only 1-3 percent of all crude oil traded worldwide was delivered on the spot market. By 1989, it was estimated that about 33 percent of all crude oil was traded on the spot market. (GAO/RCED-93-17, 37; Platt's Oilgram Price Report, November 28, 2001; and DOE/EIA).

3. The Crude Oil Futures Market

While spot markets involve the trade of physical barrels of oil, futures markets are paper markets where contracts for crude oil and some petroleum products are bought and sold.

A futures contract is an agreement by a buyer to accept and a seller to deliver a given quantity of a standardized commodity at a specified place, price, and time in the future. On the NYMEX, all crude oil contracts specify 1,000 barrels of West Texas Intermediate crude oil to be delivered at Cushing, Oklahoma, as a standard.[364] West Texas Intermediate crude oil is a light sweet (low sulfur) crude oil. Light, sweet crude oils are preferred by refiners because of their relatively high yields of high-value products such as gasoline, diesel fuel, heating oil, and jet fuel.

A single futures contract can be traded many times before the actual delivery date specified on the contract, each time at a new price as the market's supply and demand situation is reevaluated. Therefore, the futures price should approach the spot (market) price as it gets closer to the delivery date.

Futures prices act as a barometer of the actual supply and demand and the expectation about market conditions in the future. The two primary economic functions of the futures market are to: (1) transfer risk and (2) "discover" prices. The first function occurs as producers and consumers pursue a financial strategy that transfers the risk inherent in volatile prices to those parties most willing to bear it. (Risk is transferred from hedgers to speculators.) Crude oil

[364] The contract actually provides for the delivery of several grades of domestic and internationally traded foreign crudes, although the seller will receive either a per barrel discount or premium based on the specific foreign crude the seller delivers. The light sweet crude contract lists the specifications of the deliverable grades of oil with the discounts and premiums delineated.

producers and refiners are most likely to use the futures market for hedging by locking in the prevailing price for future deliveries. For example, an oil producer can establish a sales price for oil that will be produced later by selling a futures contract. Then, if a drop in market price causes the value of the oil to decline, this loss will be borne by the holder of the futures contract. Similarly, a refiner may want to fix the price that must be paid for crude oil that will be needed in the future by buying a futures contract. If the price of crude oil increases in the cash market, the refiner would not have to pay this higher price because he holds a futures contract with a lower price for delivery. By limiting the uncertainty over future costs, the hedge allows companies to offer fixed price arrangements to its customers for its products and to plan and budget for the future without having to bear all of the risks of price changes.[365]

The second function of futures markets occurs as the free flow of information in a futures market provides a means for buyers and sellers to determine the market prices. The futures market includes geographically dispersed sellers and buyers, thus minimizing regional biases in pricing. Also, the participants in the futures market utilize a substantial amount of information to form their opinions about supply and demand and ultimately, the price of oil. As a result, prices change frequently, as market participants revise or reevaluate their expectations on the basis of new information.

The NYMEX is the leading futures market for trading energy futures in the world. Petroleum futures are also traded at the IPE in London and at the Singapore International Monetary Exchange ("SIMEX"). Futures trading of crude oil on NYMEX began in 1983. Crude oil is the world's most actively traded commodity, and the NYMEX's light, sweet crude oil

[365] Of course, a hedger is not able to benefit by favorable price changes either.

futures contract is the world's largest volume futures contract trading on a physical commodity. For example, in 2001 over 37.5 million crude oil futures contracts – each for 1,000 barrels of crude oil – were traded on the NYMEX.[366] Since the futures market is largely used as a means to hedge against future price changes or speculate on these change rather than buy or sell oil, less than one-tenth of 1- percent of these oil futures contract results in the actual delivery of crude oil. Over the 7 years that the December 2001 NYMEX light sweet crude oil contract was traded – 5 billion barrels were traded, but only 31,000 barrels were actually delivered on those contracts.[367] Also, many more contracts are traded than oil is produced. The total volume of crude oil accounted for in open NYMEX light sweet crude oil contracts is approximately 110 times the daily production of all crude grades deliverable under the contract.[368]

Each time a transaction is completed on the floor of the exchange, the exchange records the pairing of buyers and sellers and reports the transaction price. These prices are available throughout the day from the exchanges via the Internet[369], are published in specialty trade publications and daily newspapers, and are reported on a weekly basis by the Department of Energy's Energy Information Administration (EIA). The timely availability of contract prices helps "price transparency," the ability of any market participant to see the prevailing price level,

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[366] Data obtained from NYMEX.

[367] Information provided to Subcommittee staff. The light, sweet crude oil contract traded may be dated any month during the 30 month period (2 ½ years) prior to the date of delivery. There are also long-dated futures dated 3, 4, 5, 6, and 7 years prior to delivery. (http://www.nymex.com.

[368] Data obtained from NYMEX.

[369] http://www.nymex.com.

and makes futures market contracts a price reference for negotiations in the spot and contract markets.[370]

Several additional factors are important in determining the price of crude oil. Most of the world's crude oil is located within the geographic boundaries of the Organization of Petroleum Exporting Countries (OPEC), and OPEC has nearly all of the world's estimated excess production capacity. As a result, members' decisions (or their influence on other crude oil producing country's decisions) about the supply of oil can have a significant impact on world oil prices. Also, crude oil producers realize that there are few substitutes for petroleum products in the near-term, and the price of crude oil reflects this lack of substitutes.[371] Finally, the level of supply is also indicated by the level of inventories. When inventories are high, they represent incremental supply immediately available, so prices tend to decline, while lower inventories will be reflected by rising prices to indicate that more supply is needed.[372]

B. The Gasoline Wholesale Market

Following the purchase of crude oil, gasoline goes through multiple levels of additional pricing as it refined and distributed. Refined gasoline, like crude oil, is bought and sold in large quantities at the wholesale level in three markets: contract, spot, and futures. Integrated refiners use these markets not only to sell the gasoline they produce at a refinery, but also to purchase gasoline from other oil companies if their own production is inadequate to meet their contractual

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[370] DOE/EIA-0545(99), "Petroleum: An Energy Profile: 1999," July 1999, 54-55, Energy Information Administration, *Oil Market Basics*, GAO/RCED-93-17, 34-37, NYMEX website, at http://www.nymex.com, and information provided to Subcommittee staff.

[371] GAO/RCED-93-17, 4-6.

[372] Energy Information Administration, *Oil Market Basics*.

commitments to supply gasoline. Wholesale prices of gasoline, like crude oil prices, are determined by the amount of supply and demand, inventory levels and the futures market.

1. Most wholesale gasoline is sold by contract.

Most of the gasoline sold at the wholesale level is sold under contract – prearranged agreements between refiners and jobbers or other oil companies to provide a specified amount of gasoline at a specified price, usually using a prearranged pricing formula. Under a contract, the buyer pays a premium (higher price) for the security of having a guaranteed supply of gasoline. Contracts can cover a period of from one day to one year, although they often allow an option to extend the contract. Refiners and oil companies view their contract obligations as a priority and ensure they produce or purchase enough gasoline to meet these obligations.

Contract prices are determined using either a flat rate or a formula based on gasoline prices in the futures or spot markets. As with contracts for the purchase of crude oil, these rates may be adjusted based on the time, manner, and place of delivery.

2. Exchange agreements are used to transfer gasoline between refining companies.

Exchange agreements are a common method for a refiner to get product to a market it serves far from its refineries or to a location where it does not have space at the local terminal. In an exchange, refiner A obtains gasoline from refiner B in a particular location, and refiner A provides its product at another location for refiner B. Refiners may exchange different grades or types of gasoline needed for a specific market and then make "differential" payments to account for the product, transportation, or market differentials. These agreements may be changed over time due to market conditions and are reevaluated regularly to determine if the current agreement is the most cost efficient. All of the major oil companies we interviewed have established refined product exchanges with other refiners. On occasion, exchange agreements are negotiated to cover for an unexpected event causing a shortfall in supplies.

During the investigation, the Majority Staff asked one company official why a company would agree to supply gasoline to a competitor in the event the competitor had a shortfall in production and thereby forego an opportunity to increase market share at the expense of the competitor with the shortfall. The company official explained that even the best refineries are susceptible to unexpected outages, and therefore if a company refuses to supply its competitors when it experiences problems, that company would not be able to secure supplies in the event it has a problem:

> Although we believe we can operate our refineries very reliably and efficiently, because they are such complicated systems, we don't believe we can eliminate all risks that something might go wrong. There is not enough certainty to go-it-alone. The other players are very large. You don't want to poke them in the eye. You may need them someday. It's just not worth it for what may be a relatively small gain.[373]

3. The spot market reflects current market conditions.

The spot market is used by wholesalers to purchase gasoline not covered by contracts or exchange agreements. It provides a readily available channel to sell and buy gasoline for immediate delivery in response to the prevailing demand and supply. Participants in the wholesale market typically use the spot market when faced with surpluses or shortages that may arise from their contractual transactions. Refiners use the spot market to sell gasoline that they produce above the level needed to fulfill contracts or to purchase gasoline when their contract requirements exceed their supply. On the spot market, the buyer is free to shop around for the

[373] Documents in Subcommittee files.

lowest price but has no guarantee of supply. The spot market doesn't have a specific location; it is an informal network of buyers and sellers who carry out individual sales and purchases of gasoline.

The spot price can vary significantly day to day. It is typically guided by references to the prices quoted for future contracts, particularly those closest to maturity or those specifying the earliest upcoming date for delivery. Changes in the spot prices for crude oil are quickly and almost completely reflected in the spot prices for wholesale gasoline.

The spot market generally offers the lowest price for wholesale gasoline under normal market conditions, because there is no binding, ongoing supply contract between buyer and seller. Despite the apparent advantage the spot market offers in having the lowest prices during normal market conditions, most gasoline distributors and dealers prefer the security that contractual arrangements offer over the risk that the supply available on the spot market may be inadequate or may cost more, especially during a market shock.

4. The futures market provides critical price information for both the contract and spot markets.

The futures market for gasoline operates in the same manner as the futures market for crude oil. As with crude oil, the futures market is largely used as a means to hedge against future price changes or speculate on such changes rather than to buy or sell gasoline. Also, gasoline futures prices are available almost instantaneously from a variety of sources. Therefore, daily movements in the wholesale prices for gasoline on the futures market serves as the basis for price negotiations for gasoline in the spot and contract markets.

The NYMEX began unleaded gasoline futures trading in 1984.[374] The New York Harbor unleaded gasoline futures contract is based on delivery at petroleum products terminals in the Harbor, the major East Coast trading center handling a substantial share of imported and domestic shipments. Domestic shipments can come from refineries in the New York Harbor area or from the Gulf Coast refining centers via pipeline. The contract specifications conform to industry standards for Phase II Complex Model Reformulated Gasoline.[375] In 2001, approximately 9.2 million unleaded gasoline futures contracts were traded, about 1/4 of the number of crude oil contracts traded at the NYMEX during the same year. Less than one-half of one percent of these futures contracts results in the actual delivery of gasoline.

Because of the variety of fuel specifications in the United States, the unleaded gasoline futures contract does not always match the commodity being hedged. The market for a particular boutique fuel may or may not be highly correlated with the market for unleaded RFG. This segmented gasoline market causes uncertainty as to how closely the gasoline futures price will follow the spot price of the gasoline being hedged. There may be no direct relationship due to regional supply and demand differences. NYMEX unleaded gasoline futures contracts, though, are still used as a market benchmark in many companies' gasoline purchase and sales transactions. Additionally, some major types of fuels, such as California's CARB, do not have an established exchange for futures contracts as a result of the divergence between the market for CARB and the market for unleaded regular gasoline in the rest of the United States.

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[374] Leaded gasoline futures were traded on NYMEX from 1981 to 1986. (DOE/EIA-0545(99), 55).

[375] For a description of reformulated gasoline, see section III E.

5. Rack price

The rack price refers to the price of gasoline charged by wholesalers at their refineries or company terminals to jobbers or independent dealers. The rack price is not available to dealers who are supplied directly by an oil company. Rack prices can be either contract or non-contract prices, but commonly are the former. Typically, rack prices are set daily by refiners and are generally influenced by prices in the spot and futures markets, as well as the extent of competition among refiners within a particular market. Rack prices for the same brand of gasoline may differ from terminal to terminal. Rack prices are communicated to jobbers or independent dealers electronically. Many refiners use a satellite communication system called the Data Transmission Network ("DTN"), operated by a private company in Omaha, Nebraska, to communicate rack prices. Some oil companies set the daily rack price at all of their terminals from one central office. In other companies, regional offices set the prices for the terminals in that region.

Rack prices tend to track the spot prices. As with contract prices, rack prices include a certain premium associated with the relative certainty of the supply and their stability in comparison to spot prices. Therefore, average rack prices are generally higher than spot prices under normal market conditions. But quoted rack prices may be higher than the actual price paid by purchasers, because suppliers may offer actual purchasers rebates and discounts.

There are two types of rack prices – branded and unbranded. The branded rack price is the price paid by jobbers or independent dealers for gasoline purchased using the trademark of a major oil company such as "Shell" or "Exxon." The unbranded rack price is the price paid for gasoline that does not carry a trademark name purchased from branded or independent refiners.

(Unbranded gasoline, if purchased from a branded refiner, will not contain the additive that marks the gasoline as associated with a specific brand.)

Unbranded rack prices tend to be lower than branded rack prices, because (a) the unbranded gasoline is generic gasoline while the branded gasoline includes a premium reflecting a recognized brand name, and (b) branded gasoline is usually sold under a long term contract where delivery is guaranteed, while unbranded gasoline may or may not be sold under contract and may or may not be available. Thus branded rack prices also include a premium for this additional security of supply. Therefore, a purchaser of unbranded gasoline may not be guaranteed a secure supply or lower prices, particularly during a market shock. In addition, branded prices generally include costs for using brand trademarks, credit cards and advertising resulting in a higher cost for branded rack than unbranded rack.[376] One major oil company stated that it provides the following nine services to its branded jobbers that make it worthwhile for a jobber to pay the premium to purchase branded gasoline: (1) a wider variety of grades of gasoline than unbranded, which leads to higher gross profit margins,[377] (2) access to oil company credit card at no fee, (3) oil company third party fee discount for VISA and MasterCard, (4) "subsidies" in the form of soft loans and investments, (5) marketing assistance, (6) rebates based on incremental volume, (7) training and support on how to run a profitable gasoline station, (8) technical support and station startup design, and (9) security of supply.[378]

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[376] DOE/EIA, *Motor Gasoline Assessment, Spring 1997*, p. 33.

[377]Oil company officials told the Majority Staff that the amount of gross profit increases as the grade of gasoline increases. Regular grade gasoline sales have the lowest level of per gallon profit margin while premium grade gasoline sales include the highest per gallon profit margin.

[378] Document in Subcommittee files.

Another oil company was planning on expanding its limited sales of unbranded gasoline, but was very concerned about the impact of marketing unbranded sales on the sales of its branded product. The company decided that it needed to develop a capability to market unbranded gasoline because the unbranded market was growing, i.e. the growth of unbranded gasoline retailers such as supermarkets and convenience stores, which sell gasoline with a generic additive. As a result, the company decided to test the marketing of unbranded product in two markets. To protect its branded sales and to assure sufficient product for its branded customers (the company's system was short gasoline overall), the company decided that the marketing of its unbranded gasoline would be a purchase-for-resale business (could only be sold to retail outlets or jobbers and not to other refiners). Also, the unbranded product would be offered at the rack on an "as available" basis, and there would be no contractual sales of unbranded product.[379]

Refiners' rack pricing strategies are highly interdependent. Most refiners have contractual commitments to sell certain volumes of gasoline; their refining, distribution and marketing systems are designed to move a certain amount of volume through their refining and distribution system on a daily basis. Because of the lead time necessary to acquire crude oil, refine gasoline, and distribute it to other wholesalers and to retail marketers, fluctuations in throughput volumes can be inefficient and costly. Accordingly, rack pricing strategies usually are designed to maintain the refiner's share and niche of the market. Thus, the rack prices a

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[379] Document in Subcommittee files.

refiner sets are frequently established by using other rack prices as benchmarks. In this manner a refiner maintains its throughput volumes and market share relative to the other refiners.

In fact, refiners are as averse to gaining market share through rack pricing as they are to losing market share. If a refiner prices a product too high too frequently, jobbers may complain and seek to switch to other brands when their term contract with the refiner expires. If a refiner prices a product too low, jobbers may seek to lift additional volumes and the refiner may run out of product prematurely, leaving other distributors with insufficient supplies. Hence, branded rack prices tend to move together and stay within the same relative price differences.

As explained in Section IV, refiners used to talk directly with each other to facilitate the setting of rack prices. After the Supreme Court held that such direct communication was prohibited, the refiners relied on public postings of rack prices to learn of each others' rack prices.[380] After the U.S. Court of Appeals for the Ninth Circuit ruled that public posting was prohibited, the refiners increased their reliance on trade publications and data services to ascertain the prices of competitors.[381] Multi-branded jobbers and distributors also pass along comparative price information to the refiners as part of their strategy to obtain the lowest rack price possible for their purchases.

6. Gasoline spot prices do not necessarily reflect crude oil prices, but they are reflected almost immediately in rack and retail prices.

The Majority Staff analyzed the Department of Energy's Energy Information Administration's (EIA) crude oil spot price data and regional gasoline spot price data, and the

[380] *United States v. Container Corp. of America*, 393 U.S. 333 (1969).

[381] *In re Coordinated Pretrial Proceedings in Petroleum Products Antitrust Litigation v. Standard Oil Co.*, 906 F.2d 432 (9th Cir. Cal. 1990)

Oil Price Information Service's (OPIS) rack and retail price data for five states – Michigan, Ohio, Illinois, California and Maine. (The methodology the Majority Staff used can be found in Appendix 1 on page 337; the figures referred to in this section can be found in Appendix 2 on page 339.)

Rack and retail prices moved closely with gasoline spot prices. In 2000, when gasoline prices began to rise in the five states during the spring price peak, the margins between gasoline spot and rack prices and between rack and retail prices was small. (See Figures A2.1-A2.5 on pages 340-344.) Notably, in California, during the March and September price spikes, the daily gasoline spot price level was higher than either rack or retail price in the state for at least a week. With relatively stable crude oil prices in 2001 gasoline spot prices in all three regions increased – earlier in Los Angeles than in Chicago and New York. (See Figures A2.6-A2.10 on pages 345-349.) The rack and retail prices in the three Midwest states and Maine largely moved in relationship with the gasoline spot price. When the prices were going up, gasoline spot, rack and retail were very close; when the prices were going down, the margins between these prices were larger. Notably, California's rack and retail prices continued to increase for a number of months as the gasoline spot price fell in 2001.

7. Dealer Tank Wagon (DTW) price

The DTW price is the price paid, pursuant to contract, by those dealers serviced directly by a major oil company for branded gasoline delivered to their outlets.[382] Some oil companies set the DTW prices for all of their company-owned and operated stations across the nation from one central office, while others set the prices from regional offices. Price changes are

[382] Both lessee and open dealers who are directly serviced by the refiners pay a DTW. Jobbers who own or lease out their own branded stations do not pay a DTW.

communicated to the retail outlets electronically or by facsimile. DTW prices are less volatile and normally are higher than spot and rack prices. Oil companies set their DTW prices using the futures and/or spot prices for gasoline as a reference, as well as the retail prices at other gasoline stations in the market area.

Even though the gasoline is the same and the transportation costs comparable, oil companies routinely charge different DTW prices to retail outlets in neighboring geographic areas. Dealers in the Washington, D.C. metropolitan area told the Majority Staff that this is one of the most vexing problems they face. (See discussion of zone pricing at Section V C 3.) The contractual agreement between the oil company and the dealer generally stipulates, among other things, an exclusive supply arrangement and a minimum purchase, which usually allows the dealer no flexibility to shop around for lower prices. Dealers pay the premium attached to DTW prices in exchange for the security of the supply, the use of the brand trademark, promotional support, such as credit cards and advertising, as well as the higher price that a brand may command at the retail level. Quoted DTW prices may be higher than the actual prices paid by an individual dealer because of rebates and discounts offered by suppliers.

During a market shock, such as a supply disruption, wholesale prices may rapidly rise (particularly spot prices) because the market anticipates that with less supply than normal, the region may end up short of gasoline. As a result, the branded rack price may end up being higher than the DTW price paid by lessee dealers supplied with gasoline directly by refiners. In times of shortages, unbranded rack prices also may be greater than the branded rack prices, as refiners seek to conserve gasoline for their contractual and branded customers. When the unbranded rack price is higher than the branded rack price, it is termed an inversion. As the supply and demand balance in many markets has tightened, inversions have become more frequent. These inversions have severely affected the independents as they cannot maintain their normally competitive low-cost position without suffering a loss of margin.

8. Rebates and discounts given to branded outlets may help them compete with low priced retailers.

Many refiners provide either rebates or discounts to jobbers and retail outlet owners. These discounts off of posted rack or DTW prices are used to help the outlets maintain a reasonable profit margin and compete with the increasing number of retail outlets that price their gasoline with little or no margin, such as hypermarkets. In addition, some companies institute these discounts because other branded companies in the same sales area provide these discounts to their jobbers and retailers. The companies providing these discounts have found that they can maintain sales volume or recoup volume by offering these discounts.

Oil companies that seek to remain competitive in areas where hypermarkets have penetrated the retail gasoline market may suggest street prices to their branded gasoline retailers that are the same as or only slightly above those of the hypermarkets. Without a discount or rebate in the rack or DTW price, there would be little or no margin for the dealers. These rebates and discounts are usually temporary and may be withdrawn at any time, often with little notice. When provided to jobbers it is done directly one-on-one; these discounts do not show up on the rack purchase invoices. Thus, the oil company's branded rack price will not be affected by the discounts.[383] This allows the refiner to provide allowances to specific retail outlets without affecting the rack price charged to others.[384]

The level of the price rebate is based on the company's determination of a price level that will enable the jobber (and the dealers supplied by that jobber) to post a price that is competitive with the low priced retailer and still maintain an adequate profit margin as determined by the company. These discounts often are reviewed on a daily basis. A number of oil companies have enabled a number of their jobbers to remain competitive with hypermarkets and other low priced competitors through this type of support.[385]

With respect to rebates or allowances for dealers that are charged a DTW price, the oil company will either charge a lower DTW price so the dealer can obtain a determined margin or provide a rebate or a reimbursement from the invoiced DTW price. The margin guarantee may apply either to all grades of gasoline or only to unleaded regular.

C. <u>The Retail Gasoline Market</u>

1. How retail prices are set.

Two-thirds of all gas stations are associated with a brand.[386] About one-quarter of these branded stations are company-owned and operated. Federal and state law provide that oil-

[383] For retail outlets supplied by jobbers, the oil company assumes that these discounts will be passed on to the retail outlets.

[384] Jobbers and retail outlet owners may receive longer term discounts off of rack or DTW prices. Some oil companies provide fixed discounts over 2-10 years (depending on the contract terms) if the jobber will build a new station under the oil company's brand name or if a dealer will convert an existing station to the oil company's brand.

[385] Documents in Subcommittee files.

[386] National Petroleum News, *Market Facts*.

company owned and operated stations are the only stations for which the oil company may set the retail price. Even though the oil companies cannot set prices for stations they do not own and operate, the oil company directly affects the retail price the branded open dealers or lessee dealers charge through the DTW price it sets. The DTW price is generally developed by the oil company based on the company's determination of an appropriate margin (depending on the company) for a specific retail outlet or outlets in a region/zone. The "margin" is the difference between the DTW and the retail price that the dealers receive for each gallon of gas that they sell. Retail prices will generally not fall below a certain level, because a station must, at a minimum, cover its costs and taxes. Also, retail prices will not go much higher than the nearby competition to ensure that the station maintains a certain volume of sales. During interviews with gas station owners and operators, the Majority Staff found that generally the branded dealers' margins ranged from a few cents per gallon to 8 -10 cents per gallon.[387]

[387] Some state laws require that oil companies charge a DTW price that enables dealers to achieve a fair return. In *Wilson v. Amerada Hess*, 168 N.J. 236, 773 A.2d 1121, 2001 N.J. LEXIS 681 (2001), the Supreme Court of New Jersey held that although the agreements between defendant Amerada Hess and its lessee dealers gave Hess the sole authority to determine the DTW prices charged to the lessee dealers, the covenant of good faith and fair dealing "is implied in every contract in New Jersey." Hess, therefore did not have the authority to set the DTW at a price that would not allow the dealers to cover operating expenses and achieve profit. "A party exercising its right to use discretion in setting price under a contract breaches the duty of good faith and fair dealing if that party exercises its discretionary authority arbitrarily, unreasonably, or capriciously, with the objective of preventing the other party from receiving its reasonably expected fruits under the contract." 168 N.J. at 239. The New Jersey Supreme Court noted that in some other states, such as Illinois and South Carolina, the courts have found no such restrictions on the DTW that could be charged. See, e.g., *Abbott v. Amoco Oil Co.*, 249 Ill.App. 3d 774, 619 N.E.2d 789, 795-6, 189 Ill.Dec. 88 (Ill.App.Ct. 1993) ("the dealers cannot complain when Amoco merely exercises the discretion the dealers allowed Amoco to possess."); *Adams v. G.J. Creel and Sons, Inc.*, 320 S.C. 274, 465 S.E.2d 84, 85 (S.C. 1995) (there can be no breach of the implied covenant of good faith and fair dealing where a party to the contract has done what the provisions of the contract allow).

Oil companies often "suggest" a retail price to all of their dealers.[388] Usually these suggestions are given verbally by oil company representatives sent out to counsel lessee and open dealers on how they should price the branded gasoline. There has been at least one instance when an oil company put these suggestions in writing. In 1999 this oil company sent all of its branded dealers, regardless of class of trade, a daily facsimile with recommended retail prices for all grades of gasoline. The company stated that it was doing this to offer customers consistent pricing across the brand within a competitive price zone. The company included a disclaimer stating that "this recommendation was not a guarantee that performance under this recommendation will result in a specific outcome." The note ended with the reiteration that "any dealer is an independent business person who makes the final decision as to the retail prices that will be set."[389]

Most oil companies focus their retail pricing policies on the retail pricing of their competitor's outlets. In years past, companies would know or could ascertain the DTW price their competitors would charge and would use those DTW prices as benchmarks for their own prices. Today, however, not all competitors' wholesale prices are available from price reporting services, and even the wholesale prices that are available may not reflect rebates and discounts jobbers and station owners receive. It is easier to obtain competitors' retail as opposed to wholesale prices, since they are posted on the street. So companies collect the data themselves or purchase the information from a price reporting or consulting service. Exhibit V.1 (page 326)

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[388] Compilation of information obtained from Subcommittee staff interviews with gasoline retail outlet owners and lessees.

[389] Documents in Subcommittee files.

illustrates one company's frustration with trying to use reported DTW prices "to know if our prices are competitive," and its rationale for moving to retail-based pricing.

Each company's formula for determining an appropriate retail or "street" price is different, but companies rely on a system of identifying which competitors are market drivers for a particular price zone. One type of pricing system prices directly against a specific market driver, usually a low priced competitor, such as Company X's price + 3 cents per gallon. Another method for pricing is to price at the average of the prices of all major market drivers. Sometimes the price is determined using a combination of both methods. [390] For example, one company decided that its stations in a Los Angeles zone should price the lower of (1) ARCO stations + 6 cents per gallon, or (2) the average price of major branded drivers in the zone.[391] Once the recommended retail price is determined, the DTW is "backed-out" by taking this estimated recommended retail price and subtracting both the taxes (federal, state, and local) and the company's level of support (margin) for the region.[392] Other companies may price their stations at a predetermined relative position to a set of identified key competitors, rather than pricing against one specific market driver station. The particular strategy adopted will depend on the particular market conditions and competitors. Both strategies, however, use the street prices of the competitors in a particular area and place and maintain the oil company's dealers at a certain level within that pricing structure.

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[390] Document in Subcommittee files.

[391] Document in Subcommittee files. For years, ARCO has been recognized as a low-price leader on the West Coast.

[392] Document in Subcommittee files.

In the late 1980's one oil company described its pricing strategy for the Metropolitan Washington, D.C. area. This description demonstrates how pricing strategies are established for specific markets and that those strategies involve a relationship among the particular competitors.

"Baltimore

Very high direct refiner presence (including Crown) and all dealer (by law)...only 4 key brands...Crown, Amoco, Shell, and Exxon...very little price segment except when Crown provides. There is more...jobber etc. as one moves out into Maryland...but Baltimore dictates all Maryland prices due to uniform price change law...so big price decision.

"Very high rack to retail margins, rack of no consequence. [DTW] strategy is to set [DTW] as high as reasonable given overall industry conditions, and interface problems with surrounding states. We will initiate upward, we will follow Amoco, Shell quickly..we will be slow to come down in a dropping market...but will respond to Amoco, Shell, or Crown if they seek to gain ad edge. Unlike in [New Jersey] etc. Amoco will not sit high in this market.

"High prices set by Baltimore may create problem in Salisbury...where [REDACTED] jobbers have from time to time served direct dealers.

"D.C.

Similar to Baltimore in that majors dominate the market. Key difference is that Amoco has almost half the market and we have almost half the remainder...there is no Crown and Shell is less dominant. Strategies are similar to Baltimore. Boundary conditions are a problem since as one goes over to [Northern Virginia] and as one goes south conditions are more competitive...and prices have to be lower.

"Northern [Virginia]...Fairfax, etc.

A hybrid market or area...between the high priced [Maryland]/D.C...the low priced [Pennsylvania] and the low priced South [Virginia]/[North Carolina]. Tends to be major brand refiner direct dominated...rack to retail margins have been high...rack prices not too significant. Exxon and Shell are neck and neck, followed by Amoco, Texaco, Mobil, Crown...the last tends to take up the price segment...although a few independent stores surface.

"[DTW] strategy...price as high as reasonable, watch retail for way price segment is moving and how low they are sitting...adjust if needed to stay competitive further south. We will initiate upward but when conditions are right we are usually already high versus the southern [Virginia] and that market is usually not quite ready. Our [DTW] position over time is usually in line with Amoco, Mobil, Shell."

Because many oil companies and gasoline retailers set their retail price on the basis of the prices of their retail competitors, prices in each specific market tend to go up and down together. Moreover, most oil companies and retailers will try to maintain a certain price position in a particular market – namely a fixed price difference with respect to one or more other retailers. Hence, it will often appear that, over time, gasoline prices in that market move together in a "ribbon-like" manner – so that as a brand moves up and down it nonetheless remains at a constant differential with respect to the other brands. Figures A2.38 (page 377) (Illinois: June 2001); A2.56 (page 395) (California: January - August, 2001); and A2.57 (page 396) (Maine: January - August, 2001) illustrate this effect.

All of the companies interviewed consider their pricing strategies confidential, business sensitive information. Many companies also are concerned that public discussion of these policies may be "misconstrued" as facilitating parallel pricing. The companies interviewed by the Majority Staff generally stated their policy was to charge prices that would allow them or their dealers to obtain a fair return and to remain competitive with the other retailers they considered the main competition. Some admitted, privately, that on occasion, depending on the market conditions, they set their prices based on a differential from one or more competitors; others would not state that they ever used such policies.

Exhibit V.2 (page 327) illustrates how a public communication of a pricing policy may not fully reflect a company's actual policy. In an initial e-mail that appears to have been generated to reflect one company's pricing strategy, the listed strategies include the following. "Use Chevron and Aloha as benchmarks." "Price on a site by site comparative basis, not on price alone." "Optimize profitability by avoiding price wars and undercutting prices unnecessarily."

"Optimize profitability and margins by pricing gasoline at the highest achievable price to volume point." As a result of concerns expressed in response to that e-mail over the appearance of "conscious parallelism," all references to specific competitors and avoiding price wars were deleted from the next draft of the written strategy, although the response stated that "The oral discussions of this strategy can go into greater detail."[393]

Because most companies determine the DTW by backing it out from the recommended retail price with a fixed margin, most branded dealers receive a fixed margin, regardless of the retail price they charge. The net result of this practice is that the oil company rather than the dealer captures most of the profits in times when prices rise.

Several branded lessee dealers told us if they tried to increase their margins over that "recommended" by the oil company, the increase would be reflected in their next DTW price, calling into question the degree to which the price is actually recommended.

During the summer of 2001, as wholesale prices were dropping following the spring price spike, members of the public believed retail gasoline dealers were price-gouging when they failed to lower the retail prices to match the declines in the wholesale prices. "Dealers say they're frustrated;" OPIS reported in early August, "they're accused of highway robbery by motorists who've heard about the plunge in global gasoline values, and those customers don't

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[393]As the California courts noted in *Aguilar*, concscious parallelism does not violate the antitrust laws, as long as the market participants are acting independently. "Uniform pricing is most frequently seen in oligopolistic industries producing standardized goods. Often, the industry leader will set a price which is consciously followed by its competitors. Absent any additional factors, the resultant price uniformity throughout the industry does not constitute an antitrust offense, even though the effect is the same as if price fixing had been involved. Conscious parallelism, i.e., a pattern of following the industry leader in pricing, continues to be recognized as unilateral and hence lawful behavior." Von Kalinowki on Antitrust, §13.05, at 13-24.

understand that DTW prices have been virtually disconnected from sweeping trends in the big bulk markets. Motorists inaccurately calculate that dealers are reaping record margins; if street prices have dropped by only 10-20 cents per gallon, then somebody must be pocketing the additional 30-50 cents per gallon decline that has been witnessed in spot markets."[394]

As the OPIS article correctly notes, refiners generally set the wholesale price of gasoline they will charge one of their lessee dealers by calculating an appropriate competitive retail price for the dealer–which is done by surveying the competitive prices in the retailer's local market–and then subtracting a fixed margin, usually between 7 and 10 cents per gallon.[395] Although retail prices fluctuate, the dealer's margin stays fixed. As retail prices rises or falls, it is the refiner, rather than the retailer, that receives either the profit or the loss.

Figures V.2 (page 329) - V.5 (page 332) show how retail-wholesale margins have varied in the United States and a number of markets over the past three years.[396] These charts demonstrate that the retail-DTW margins, which are the margins realized by lessee and some open dealers, have exhibited the least volatility over the past three years. Although there has been some fluctuation of a few cents per gallon during periods of extreme volatility, the retail-DTW margins have remained within a relatively narrow band throughout this period. In California, for example, although retail-rack differentials have fluctuated by as much as 35 cents,

[394] OPIS, *Gasoline Dealers Battle Market Disadvantage and Angry Public*, July 2001.

[395] Jobbers, or distributors, generally purchase branded gasoline at the branded rack price, which is set by the refiner in relation to other wholesale prices.

[396] EIA Data.

the retail-DTW margin has stayed within a narrow band of 5 to 10 cents for the entire period, with an average margin of about 7 cents.

Most of the focus on retail pricing is for regular grade (usually 87 octane) unleaded gasoline. Approximately three-fourths of all gasoline sold by retail outlets is regular grade.[397] Each company determines if its target price for mid-grade and premium grades of gasoline will be priced by a fixed differential compared to its regular grade gasoline or a floating differential based on what competitors are charging. Some companies use a mix of both methods depending on the region being priced. For example, the retail price spreads between regular, midgrade, and premium for one company's stations in Northern Virginia were fixed: midgrade = regular + 6 cents per gallon and premium = regular + 13 cents per gallon. The same company had a floating differential for these premium grades in the Richmond, Virginia, area because the company recommended pricing all grades against the prices charged for those grades by a private brand (such as Sheetz, Wawa, or RaceTrak). The general company rules for pricing premium grades against a private brand are:

- intermediate = private brand's intermediate price + 5 cents per gallon, and
- premium = private brand's premium price + 5 cents per gallon.[398]

Regional factors also affect the retail price of gasoline. First, the retail price is affected by the distance between the retail outlet and the source of its supply of gasoline. For example, the further the station is from the nearest terminal, the higher the cost of transportation, which is

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[397] DOE, Energy Information Administration, Petroleum Marketing Monthly, March 2002 (DOE/EIA-0380(2002/03), 19-20.

[398] Document in Subcommittee files.

passed on to the consumer. Second, disruptions in the regional supply of gasoline, such as breaks in a pipeline that serves the local terminal, will usually increase prices temporarily. The prices will not decline until alternative supply can be brought into the region or the problem with the supply delivery system can be fixed. Third, state or local regulations may adversely affect the ability for new stations to enter the market to increase competition or for current stations to increase their size to become more cost efficient. Fourth, differences in operating costs affect retail prices. Land costs or lease payments may differ based on the location of an outlet. Urban areas tend to have higher real estate costs than rural areas, and these higher costs are passed on to the consumer. One oil company official stated that a station's DTW price may take into account that the outlet's lease rate from the company for the station's property may not give the company an adequate return on the property. The DTW price then may include some return element for the property.[399]

As explained in Section IV, the nature and extent of the competition significantly affects retail prices, too. Generally the greater the degree of competition, the lower the rack-retail margin.

The retail pricing strategies of jobbers and independents also are interdependent with other retailers. Jobbers and independents will try to establish a particular niche in the marketplace – be it as a location with brand value or as a low-cost high volume independent outlet – and price relative to the competition in order to achieve such objectives.

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[399] Document in Subcommittee files.

2. Retail price trends vary by region with the Midwest experiencing a high degree of price volatility.

The Majority Staff analyzed the Oil Price Information Service's (OPIS) rack and retail price data for five states – Michigan, Ohio, Illinois, California and Maine – from January 2000 to August 2001. (The methodology the Majority Staff used can be found in Appendix 1 on page 337; the figures referred to in this section can be found in Appendix 2 on page 339.) During this time period, retail price trends varied by region for both 2000 and 2001, with retail prices for regular unleaded gasoline experiencing significantly more fluctuations in the Midwest than in California or Maine.

The fluctuations in price for regular unleaded gasoline in Illinois, Michigan, and Ohio (referred to in this analysis of OPIS data as the "Midwest") generally followed the same patterns. The price trends for both Maine and California (referred to in this analysis of OPIS data as the "Coasts"), while different than the Midwest, generally followed patterns somewhat similar to each other.

<u>The Midwest:</u> In both 2000 and 2001, the Midwest experienced one significant price spike in the spring/early summer. (See Figures A2.11-A2.16 on pages 350 - 355.)

– In 2000, Midwest prices started to rise at the beginning of May and peaked mid-June.

– In 2001, Midwest prices started to rise in March and peaked at the end of May.

– In 2001, Michigan's retail prices began to rise 1 ½ weeks earlier than Illinois or Ohio and kept increasing 1 ½ weeks longer.

The Coasts:

– In 2000, both California and Maine prices peaked in mid-March, early July, and in the middle of September. (See Figures A2.17 on page 356 and A2.18 on page 357.) While California's prices gradually dropped after the September peak, Maine's prices stayed fairly even at the peak until December. Just prior to the September peak in California, the average rack prices were significantly higher than the state's average retail prices.

– In 2001, prices remained relatively high in both California and Maine, peaking during May, and then falling through the beginning of August. (See Figures A2.19 on page 358 and A2.20 on page 359.)

In the Midwest the retail price of gasoline rose from 20 to 35 cents per gallon from January 2000 to August 2001; on the Coasts, the increase was 10 to 15 cents per gallon.

The Midwest experienced greater volatility in retail prices than either California or Maine during the period of time reviewed by the Majority Staff. During 2000, retail prices in the Midwest varied from 60 to 70 cents per gallon as compared to a 50 cent per gallon variation in California and a 30 cent variation in Maine. In 2001, the retail prices in the Midwest ranged from about 85 cents per gallon to over $1.40 per gallon, a variation of approximately 55 cents. Maine's retail prices in 2001 ranged from 90 cents to $1.20 per gallon, a variation of 30 cents, while California's retail prices fluctuated from $1.05 to $1.45 per gallon or a variation of 40 cents.

Although the variation in prices in 2001 was smaller than in 2000 in the Midwest, the prices consumers paid each week for gasoline in 2001 varied more frequently. Particularly noteworthy are the weekly mini retail price spikes in the Midwest in 2001. In 2001 in most weeks in Michigan and Ohio, and to a lesser extent in Illinois, retail prices were pushed up significantly (7-10 cents per gallon) over 1 or 2 days, only to fall over a slightly longer period of time. (See Figures A2.14-A2.16 on pages 353 - 355.) These mini price spikes are not evident with respect to the rack prices.

In Michigan, although rack prices had 4 major price spikes as seen in Figure A2.21 (page 360), with the price trend heading up by the end of August 2001, there were 4 times as many significant price increases in retail prices than rack prices. These mini price spikes can be seen in Figure A2.22 (page 361). Speedway (owned by Marathon) was the price leader in most cases, bringing retail prices up every one to two weeks. (See Figures A2.23-A2.25 on pages 362 - 364.)

– In Ohio, retail price volatility was even greater. Like Michigan, Ohio rack prices had 4 major price spikes in 2001, but Ohio's branded retail prices had 5 times as many retail price peaks. (See Figures A2.27-A2.28 on pages 366 - 367.) Speedway was not only the price leader for these short price spikes, but Speedway usually ended up with the highest and then the lowest prices for each significant price fluctuation interval. (See Figures A2.29-A2.31 on pages 368 - 370.)

– Illinois's price volatility was not as great as either Michigan's or Ohio's, nor was price leadership apparent. Illinois had half as many branded retail price spikes as Ohio, but Marathon has only about 9 percent of the retail gasoline market in Illinois, as compared to 14 percent in Michigan and 26 percent for Ohio. Retail price spikes in 2001 were still greater than the 4 peaks in rack prices for the state. (See Figures A2.33-A2.37 on pages 372 - 376.)

The only time in 2001 where this weekly volatility didn't appear was in June when prices fell from the May peak, and retail margins were approximately 12-24 cents per gallon. This Midwest retail price volatility can most easily be seen by comparing the rack-to-retail margins for the Midwest (Figures A2.39-A2.41 on pages 378 - 380) to the margins on the Coasts (Figures A2.42 and A2.43 on pages 381 and 382).

Section IV of this report discusses the effect of concentration in the market in determining retail price margins.

3. Zone Pricing

Most oil companies follow the practice of grouping their retail outlets into geographic or market zones and charging retail outlets in different zones different DTW prices for the same brand and grade of gasoline. This practice is called "zone pricing."[400] Companies create zones, they told the Subcommittee, to account for differences in such factors as demand for their product and competition. Almost all of the companies interviewed by the Majority Staff

[400] In 1936 Congress amended the Clayton Antitrust Act by passing the Robinson Patman Anti-discrimination Act, which makes it illegal to "discriminate in price between different purchasers of commodities of like grade and quality . . . and where the effect of such discrimination may be substantially to lessen competition or tend to create a monopoly in any line of commerce, or to injure, destroy, or prevent competition . . ." 15 U.S.C. 13(a). The Act allowed, however, price differentials that "make only due allowance for differences in the cost of manufacture, sale, or delivery," that result from "changing conditions affecting the market for or marketability of the goods concerned," or that were established "in good faith to meet an equally low price of a competitor." 15 U.S.C. 13(a),(b).

One company explained the effect of this Act on its zones. "The Robinson-Patman Act prohibits discrimination in price to competing resellers of the same product. Therefore, when a district proposes new or adjusted price zones, the district must check to see that price zone boundaries for each market are drawn so that (brand name) stations that receive DTWs do not compete with each other...The question is, will a DTW differential across any zone boundary create significant competition between any two (brand name) stations in different zones? If yes, then the zone boundary must be adjusted to include the competing locations (or the differential reduced)." Document in Subcommittee files.

indicated they employed some form of zone pricing so they could respond to local competitive conditions.[401]

Each company has its own zones. The number of outlets in a zone, the shape of a zone and the number of zones in a particular area vary from zone to zone and company to company. Zones can be very small; some contain only one retail outlet. According to the Connecticut Attorney General, in 1997 representatives of Mobil Oil testified that the company had 46 zones in Connecticut.[402] A Maryland task force report on zone pricing reported that in Maryland refiners appeared to have at least 10 but not more than 200 zones per company.[403] One Maryland refiner indicated that it typically had 5 to 8 outlets in a zone.

Some companies employ independent firms to help establish the parameters used to define zones and identify the outlets that belong in the defined zones.[404] Complex computer models and techniques are sometimes used to design zones. Factors such as location, geographic characteristics, traffic volume, population, strength of demand for a product and competition are considered.

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[401] The companies contend that by pricing according to market areas or zones that group together outlets facing similar local conditions and/or competitive environments (that differ from conditions confronting outlets in another area) they can be more responsive to the particular conditions of each area and therefore more competitive. Critics of zone pricing maintain that the practice does not increase competitiveness, but rather it impairs the ability of some outlets to compete with other outlets and enables companies to confine the areas in which they establish competitive prices and to set higher prices in nearby areas that aren't as competitive.

[402] Statement of the Honorable Richard Blumenthal, Attorney General, State of Connecticut. Hearings on "Solutions to Competitive Problems in the Oil Industry." The Committee on the Judiciary, House of Representatives, Friday, April 7, 2000. Serial No. 127.

[403] Document in Subcommittee files.

[404] Document in Subcommittee files.

In a recent trade publication, an official from the most widely used industry consultant on the creation of pricing zones, MPSI, Systems, Inc. (MPSI), explained MPSI's approach to zone pricing:

> Pricing has been looked at as an art in the petroleum industry; something you determine by gut feel reacting to what everybody else is doing, "said Don Spears, MPSI managing director, pricing systems and consulting. "If you raise or lower prices, it's usually a couple of cents across the board for all grades of gasoline. However, with technology you can begin to look at pricing as a science and get greater returns for your efforts."
>
> The concept is based on gasoline sales forecasting and price elasticity, which is the price range a specific customer will accept for his or her favored grade of gasoline before he or she looks elsewhere.
>
> "The majority of people can figure out that if they are buying 12 gallons of gas, at one cent extra, the fill up will cost them an extra 12 cents," says Spears. "How convenient is it to find that 12-cent savings and how much gasoline will they burn trying to find it?
>
> In general, Spears said there are three types of customers: pricers, who will switch for a penny difference; switchers, who will do the same for two to three cents' difference; and loyalists who follow the same patterns and may not even look at price.
>
> People exhibit specific pricing behaviors linked to the grade of gasoline. . . MPSI has researched to find out the point at which customers start to react to a higher price for a specific grade of gasoline. Although it varies by site, in a typical elasticity curve a 1 percent change in price will result in a 6 percent loss in volume for regular, a 4.5 percent loss in volume for mid-grade, and a 3 percent loss for premium. Spears notes gasoline is not as elastic as people think, even for regular grade.[405]

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[405] Keith Reid, National Petroleum News, *Which Price is Right?* February 2000. In a 1997 presentation before the Society of Independent Gasoline Marketers of America (SIGMA), Spears explained that MPSI's "Price Optimization Model" calculates a variety of elasticity curves for different grades of gasoline at a particular filling station (the volume gain or loss that results from a change in price), and the cross elasticity of supply (how much a competitor will gain from that change in price). The Price Optimization Model then calculates the equilibrium range – "a range in price where consumers will buy the same volume." According to MPSI, a

In its promotional materials, MPSI states, "To maximize profits, you need to establish a large number of price zones. To maintain good dealer relationships, you need objective zones that can be successfully defended against legal challenges. Finally, you need to actively manage the pricing process for these zones." MPSI states its models will allow price managers "to set DTW prices to each zone without adversely affecting dealers in neighboring zones. You will be able to charge more in areas that can support higher prices and separate the areas of heavy competition."[406]

Similarly, companies may apply many of the factors and modeling techniques that are used to determine the size and shape of a zone to determine how to price the DTW in each particular zone.[407] Studies have shown that the DTW price for the same brand and type of

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dealer's goal should be to set prices in the upper end of the equilibrium range. Presentation by Don Spears, MPSI, *Improve Profits While Maintaining Sales Volumes!*, 1997 Sigma Annual Meeting.

[406] Documents in Subcommittee files. MPSI's Price Tracker, Equilon Documents.

MPSI claims that its model is flexible enough to allow for multiple price changes in one day, depending on the market conditions at those times. "The theory is simple. During the two daily rush hours, commuters will be less conscious of cost and more conscious of convenience. These customers can be charged more because they are less likely to shop around. In between the rush hours, the stay-at-home population is less rushed and more price-conscious. Prices should be lower to keep volume up. In overnight hours, when the station may be the only place open for miles, the price can be much higher." *Which price is right?*, supra.

However, it is reported, this concept "is approached with extreme caution due to the potential emotional backlash among local consumers over the perception of 'price-gouging.' This is particularly the case with the after-hours increase. . . . In October, 1999, Coca-Cola announced it was considering deploying a vending machine that adjusted the price for soft drinks based on outside temperature – the hotter the day, the higher the price. This casual disclosure generated considerable media coverage, mostly negative." *Id.*

[407] Sometimes the result of the modeling is not a fixed number, but a formula based on a relationship to other zones. For example: "the price in zone 42 should be set at 3 cents above the price for zone 41."

gasoline may vary by as much as 10 cents per gallon between zones. As previously stated in setting DTW prices, companies regularly track the prices charged by competitors. Some companies contract with firms to survey competing prices up to 2 or 3 times per week. Other refiners use their own employees to survey the competition on a daily basis.

Companies regard information about the configuration of their zones, the criteria used to establish zones, the criteria used to establish prices in the different zones and the price differentials between zones as proprietary. They do not inform their dealers of zone configurations or the factors used to define zones or set zone prices. Zone assignment and pricing can have a significant affect on consumers and on the competitiveness and income of retail outlets, particularly outlets that are located near other outlets of the same brand but are in a different zone and are charged a different DTW price. For example, a retailer in one zone may be charged a higher DTW price than a nearby retailer who is in a different zone, even though both are purchasing the same type and brand of gasoline. The retailer who pays the higher DTW will likely have to charge customers a higher price to maintain the same margin as the competitor who pays a lower DTW. The retailer charging the higher price may lose customers to the nearby retailer charging a lower price. Interviews with refiners and representatives of companies that assist in establishing zones indicate that the zone modeling process takes into account the strength of demand for a particular brand, the impact of price differentials on sales volume, and the level of competition in the particular zone.

The Majority Staff interviewed several retailers in the Washington, D.C., area who felt they were not able to compete with other stations due to their zone positioning. Several dealers spoke of their frustration that in the zone system, a dealer must pay the DTW set for him/her according to zone pricing, with the result that a dealer in the same area – maybe just across the street – selling the same brand of gasoline has a lower DTW price, because that dealer is in a different zone. Dealers felt they could not be as competitive as they want to be, because of the limitations on DTW prices according to zones. [408] One dealer stated, "In a perfect world, there would be no zoning" and an entire state would have one price of gasoline.[409]

4. How retail prices are changed.

There are a number of different explanations of how retail prices change. At the most basic, qualitative level, however, the descriptions of how prices change are very similar. Because retail prices reflect interactions in at least three different markets – crude oil, wholesale gasoline, and retail gasoline – it is not surprising that retail prices change almost daily and, in times of high volatility, may change several times per day. Because prices at all levels within the market are based on the market conditions at that instant, rather than costs for production or delivery, price changes can occur very quickly, as both retailers and their suppliers, including refiners, continually monitor market conditions at all levels of the market and have sophisticated data transmission systems to pass along price changes electronically.

Changes in the price of crude oil, for example, are not always transmitted directly to the pump, but pass through the intermediate pricing stages of the gasoline spot market and the branded and unbranded rack or DTW before they are reflected in the pump price. In some cases there is a slight "lag" in each step of the process as these price changes are transmitted up the pricing chain: first, wholesale gasoline spot prices change, then rack prices change, and then

[408] Document in Subcommittee files.

[409] Document in Subcommittee files.

retail prices change.[410] According to this view, as wholesalers and retailers are reluctant to increase prices too quickly, lest they lose market share, or too slowly, lest they run out of product, market participants will not respond immediately to price changes; rather they will change prices slowly, in step with each other. In this view, it may take several days before changes in the price of crude oil are fully felt at the pump. As a result of the time lag between rack price changes and retail price changes, retail-wholesale margins are compressed as wholesale prices rise. (See Figure V.6. on page 333.)

However, the converse is true as crude prices decline. As crude prices fall and margins expand, marketers and retailers will be reluctant to lower their prices and lose the opportunity to at least recapture the revenue lost as prices were rising. Retail-wholesale margins will then expand as wholesale prices decline.[411]

Another explanation notes that price changes are not necessarily passed through the distribution change on a penny-for-penny basis: as one moves up the distribution chain these changes in price are "flattened out." (See Figures V.7 and V.8 on pages 334 and 335.) Thus, it is not necessarily a time lag that leads to the compression and expansion of margins, but rather the fact that as one moves up the distribution chain the price cycles are less pronounced. The

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[410] See, e.g. John Cook, *Energy Information Administration, Factors Impacting Gasoline Prices and Areas for Further Study*, FTC Public Conference, August 2, 2001 ("retail price changes lag spot prices").

[411] It is unclear whether the retail – wholesale price lag that occurs when prices rise is symmetrical with the lag that occurs as prices decrease – i.e. whether gasoline prices "go up like a rocket and down like a feather." See e.g., Energy Information Administration, *Price Changes in the Gasoline Market, Are Midwestern Gasoline Prices Downward Sticky?,* February 1999; Borenstein, Cameron, and Gilbert, *Do Gasoline Price Respond Asymmetrically to Crude Oil Price Changes?*, Quarterly Journal of Economics, February 1997.

resulting "stratification" of price cycles thus produces the same result as does the time-lag explanation.[412]

In other cases, price changes along the pricing chain for gasoline can be instantaneous. One industry executive interviewed by the Majority Staff stated that the spot and futures markets for gasoline are "immediately" affected by any changes in crude oil markets. These changes are immediately reflected in rack price changes and in retail price changes at company-owned stores, as well as in DTW prices.

Of course, not all price changes are precipitated by changes in the price of crude oil. A pipeline disruption or a refinery outage will alter the perception or reality of the supply/demand balance and therefore affect prices. The mechanism by which these events alter the retail price is no different from the mechanism by which crude oil price changes alter the retail price, but it starts further downstream. Thus, a significant refinery outage or other supply disruption will immediately affect the spot price of gasoline in the affected area. The changes in the spot price will then affect rack and DTW prices in the same manner as previously discussed.

5. Midwestern retail gas prices changed quickly and often in 2001.

The day-to-day changes in retail prices in Michigan, Ohio, and Illinois during 2001 can be seen in Figures A2.44-A2.55 (pages 383 - 394).[413] These charts show the day-to-day changes in retail price by brand for selected weeks in each of the three Midwest states. Michigan's, Ohio's, and to some degree Illinois', weekly price increases were led by Speedway, but other brands increased significantly as well. Speedway's big price increases usually occurred in one

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[412] These hypotheses are not mutually exclusive; elements of both explanations may be accurate.

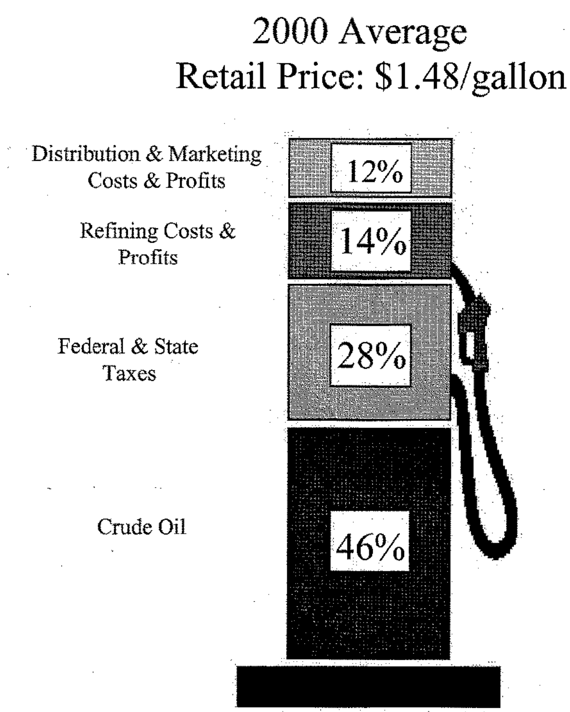
[413] The figures referred to in this chapter can be found in Appendix 2.

day (sometimes two), while the other brands' increases took at least two days. For example, as seen in Figure A2.44 (page 383), in Michigan, Speedway's average retail price increased by over 16 cents per gallon between March 27th and 28th. During the two-day period of March 27th and 29th, Shell and Marathon's average prices increased by about 12 cents and BP's and Mobil's average retail prices increased over 9 cents. These rapid price jumps usually occurred on Wednesday or Thursday, followed by a slower decline in prices. This pattern was typical for these brands in the Midwest in 2001.

The declines in retail prices, even for these small price peaks, were more gradual than the preceding increases, taking 4-5 days as the overall price trend continued its steady climb upward, or up to two weeks when prices were relatively stable. For example, in Ohio, Speedway's average retail price increased about 7.5 cents per gallon between April 18th and 19th, with a small increase the following day of 2 cents. Afterwards, prices fell for 8 consecutive days. All of the competing brands – BP, Marathon, Shell and Sunoco – had price increases over the same two days, followed by 7 or 8 days where the price either declined or remained the same. By May 2nd, all of the retail prices were about to peak again.

Officials at one oil company told us that Speedway/Marathon believes that the rack-to-retail margins in the Midwest (where most of their operations are concentrated) are too low. According to this official, in an effort to increase these margins, Speedway/Marathon tries to lead the competing brands up in price by increasing its prices in the hope that the competition will follow their lead. This official also stated that the market did not support most of these substantial price increases, because the prices fell shortly after they were increased.

Figure V.1: Costs Included in the Retail Price of Gasoline



Source: DOE/EIA.

EXHIBIT V.1

326

JUNE 18, 1991

PRIVATE & CONFIDENTIAL

FROM: [redacted]

TO: [redacted]

SUBJECT: [redacted]

Our current information system for pricing [redacted] is rapidly becoming obsolete. The wholesale prices reported by Lundberg do not reflect actual prices to dealers because of the increasing number of rebates, TVA's and special retail programs. Some competitors no longer publish their wholesale prices to price reporting services. The net result is, it is very difficult to know if our prices are competitive. The [redacted] report, which takes Lundberg wholesale prices and adjusts them to be comparable to [redacted] price basis, is no longer a viable tool for pricing. The wholesale prices and adjustments required can no longer be monitored with any degree of certainty.

It is now necessary to set up a new information system for gathering competitive price data so that we can meet competition on the wholesale and retail level. Rather than attempt to collect wholesale prices and then monitor all the adjustments that come and go, the new system will collect competitive street prices which already include the effects of all special pricing programs and are readily apparent to anyone driving down the street. The attachments give a brief overview of a new price analysis system along with a proposed action plan.

We will begin development and testing immediately with a target completion date of August 24. Final review and approval is targeted for August 25 to September 15.

[redacted]

Attachments

[redacted]

[redacted]

EXHIBIT V.2

327

[redacted]

From: [redacted]
To: [redacted]
Subject: FW: Pricing Strategy
Date: Friday, December 05, 1997 11:42AM
Priority: High

[redacted] let's discuss on Monday.

From: [redacted]
To: [redacted]
Cc: [redacted]
Subject: Pricing Strategy
Date: Friday, December 05, 1997 11:18AM
Priority: High

I took a look at the Pricing Strategy statement from [redacted] and also ran the list past [redacted] Here are some comments:

The theory of "conscious parallelism" among competitors is a type of circumstantial evidence that may be used to infer the existence of a conspiracy among competitors to fix prices. Unfortunately, it is an amorphous area of antitrust law with no clear-cut guidelines for assessing when parallel conduct or acts facilitating parallel prices are illegal. As a result, we must be sensitive to generating documents which would need to be produced in any pricing investigation, and may be misconstrued.

If you want to articulate our pricing strategy in writing that will not be privileged, I recommend that you consider the following that deletes any reference to areas of conscious parallelism. The oral discussions of this strategy can go into greater detail.

1. ~~Maximize profit, not volume.~~

2. Offer product at a retail price that is fair, competitive and consistent with our value proposition.

3. Price for long term profitability, not short term increase in market share.

4. Optimize profitability and margins by pricing product at the highest achievable price to volume point.

5. Price on a location-by-location basis with consideration of all competitive factors for that specific location.

Please let me know if I can be of further assistance.

[redacted]

From: [redacted]
To: [redacted]
Subject: Pricing Strategy
Date: Monday, November 17, 1997 2:24PM

1. ~~Use Chevron and Aloha as benchmarks.~~ w/consid. of all comp. factors for that specific loc.
2. Price on a ~~site-by-site~~ ~~comparative~~ basis~~, not on price alone.~~
3. ~~Optimize profitability by avoiding price wars and undercutting prices unnecessarily.~~
4. Optimize profitability and margins by pricing ~~gasoline~~ fuel at the highest achievable price to volume point.
5. Offer ~~gasoline~~ fuel at a retail price that is fair, competitive and ~~supportive of~~ consistent with our value proposition.
6. Price for long term profitability, not short term increase in market share.
7. ~~Adjust price down when diminished volume is sustained, unexplainable and likely to not be followed by major competitors.~~
8. ~~Separate retail and fleet volumes and monitor on an individual as well as combined basis.~~

7. Max. profit, not volume.

Figure V.2: U.S. Regular Gasoline Price Differentials by Sales Type, January 1999 - April 2001

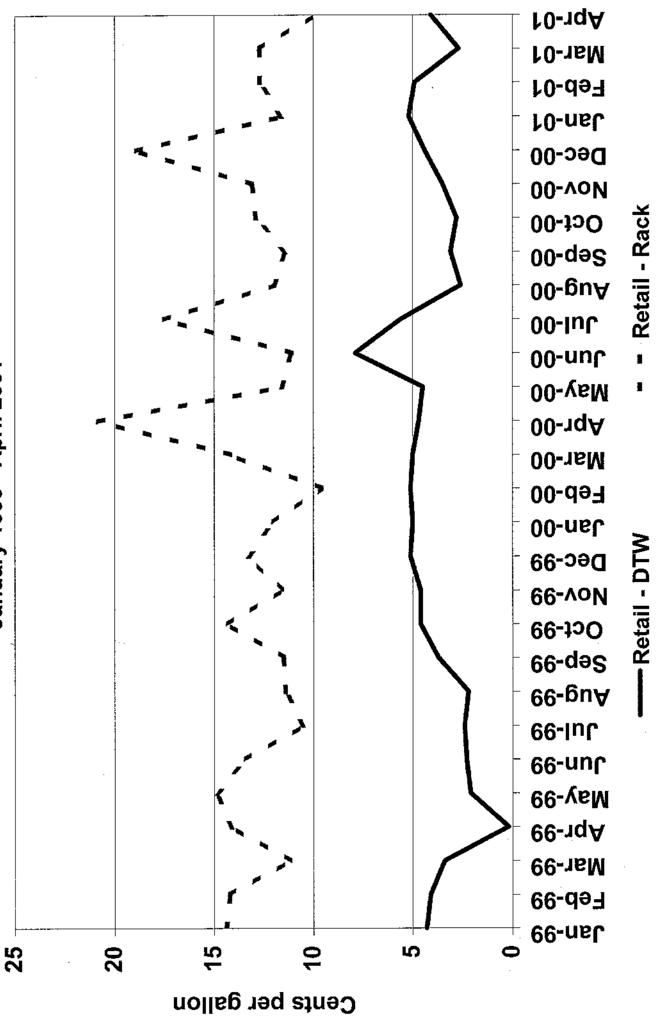
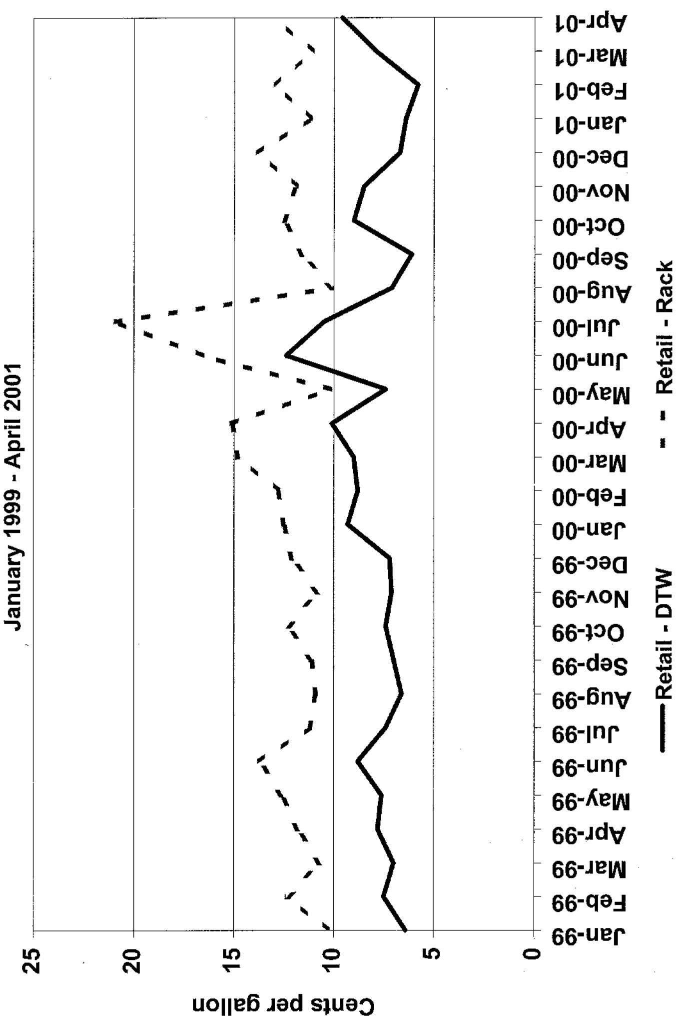
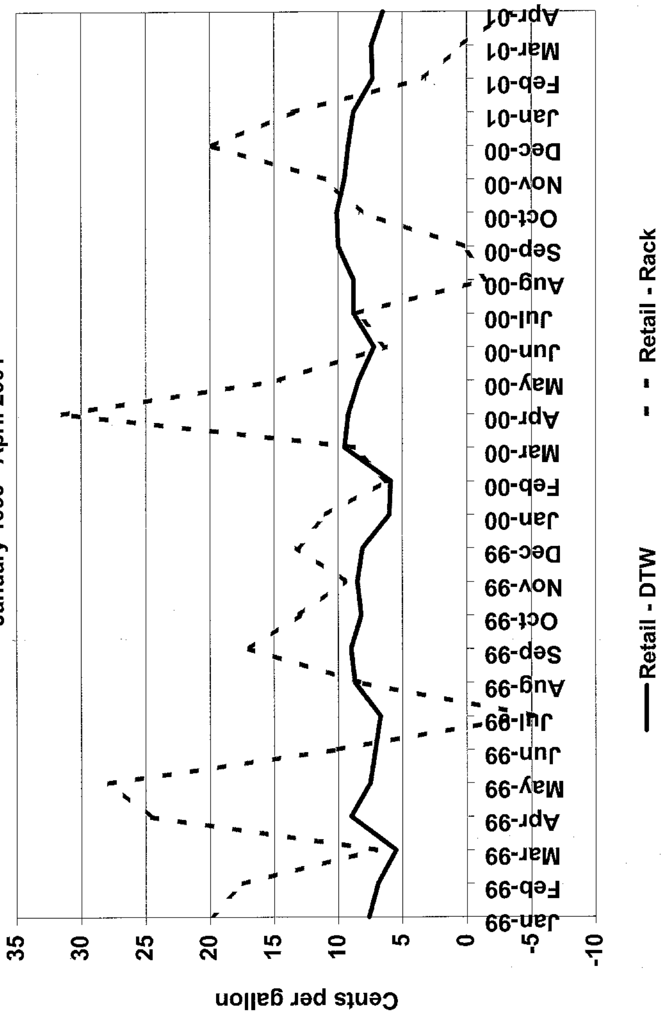


Figure V.3: Michigan Regular Gasoline Price Differentials by Sales Type, January 1999 - April 2001



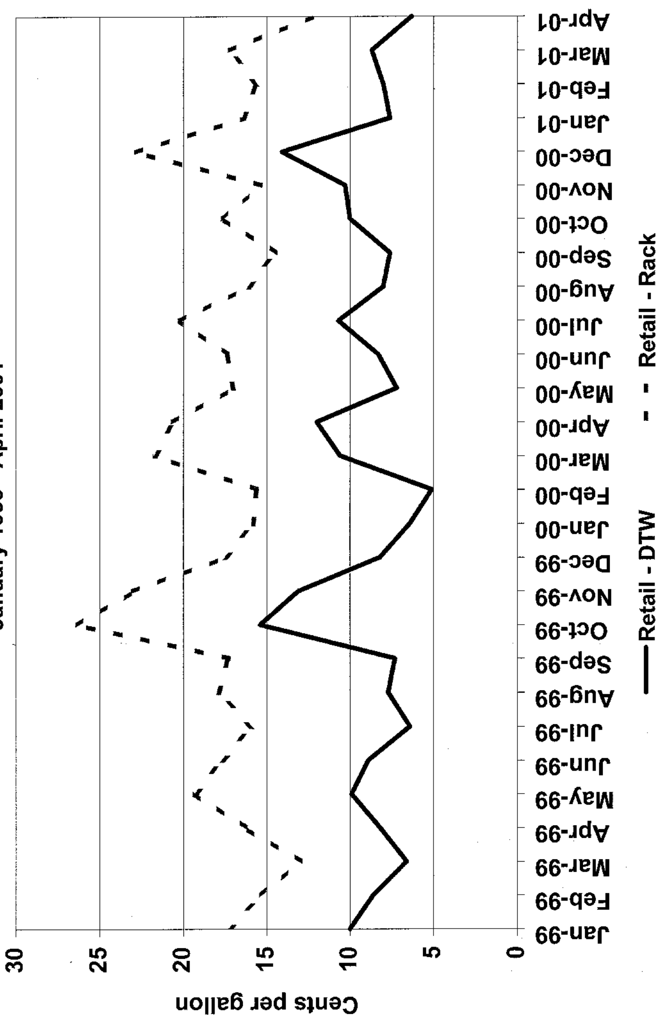
Source: DOE/EIA.

Figure V.4: California Regular Gasoline Price Differentials by Sales Type, January 1999 - April 2001



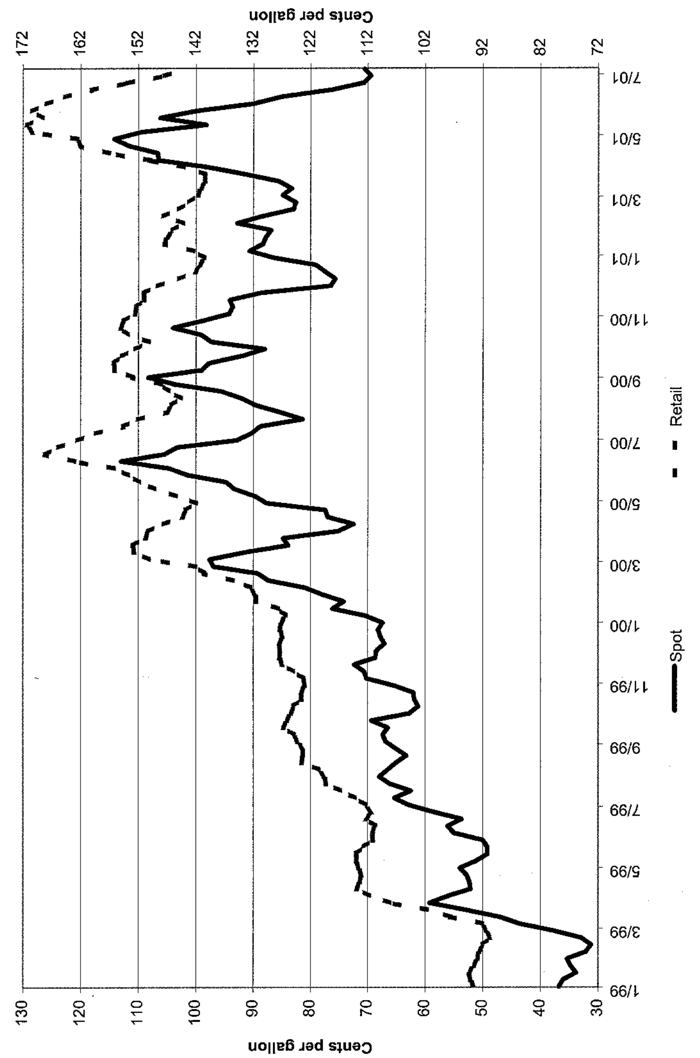
Source: DOE/EIA.

Figure V.5: Maine Regular Gasoline Price Differentials by Sales Type, January 1999 - April 2001



Source: DOE/EIA.

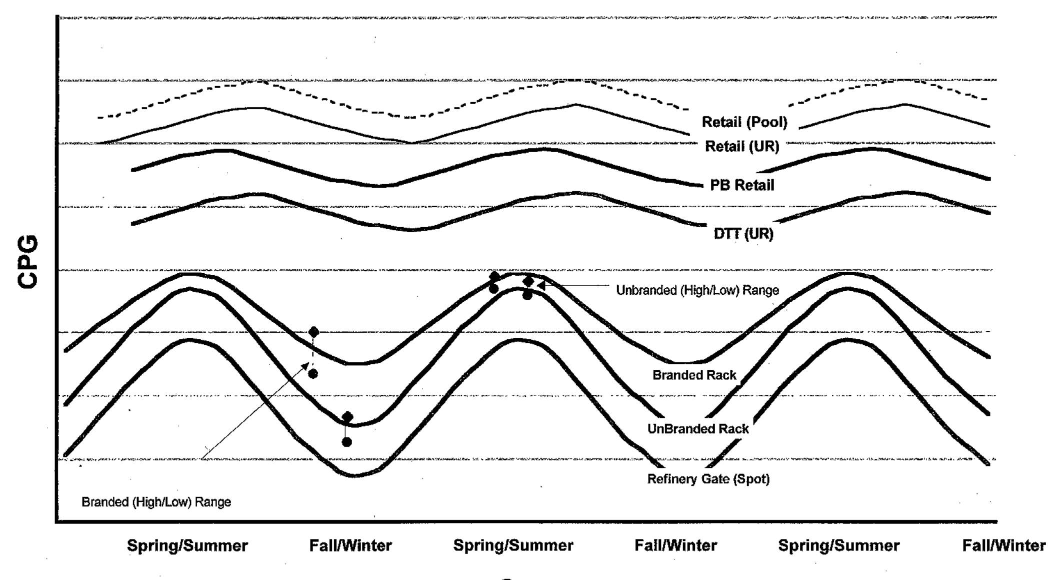
Figure V.6: Retail Prices Lag Spot Prices



Source: DOE/EIA.

Figure V.7:

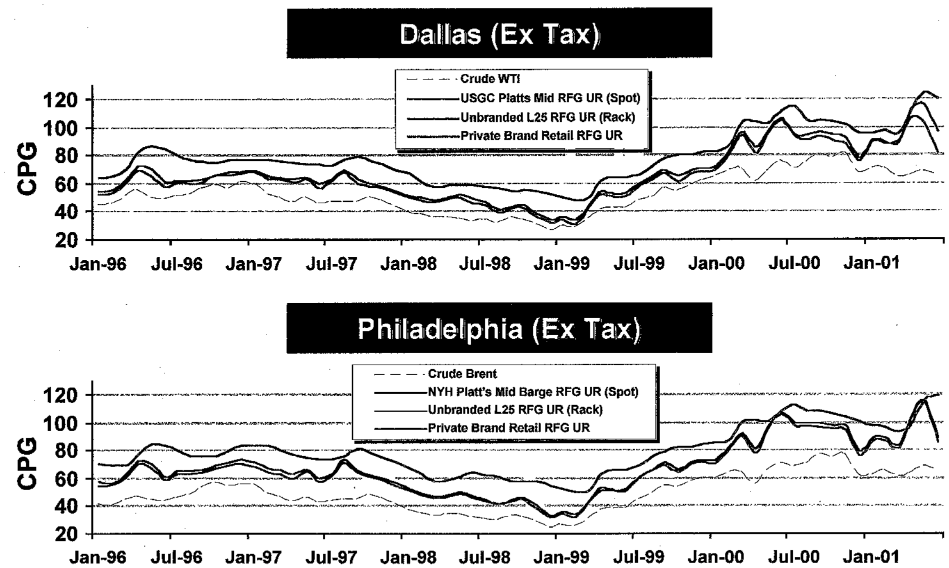
Pricing Simplified, Price Cycles, Stratifications



Source: Document in Subcommittee files.

Figure V.8A:

Examples of of How Gasoline Prices Respond to Market Conditions

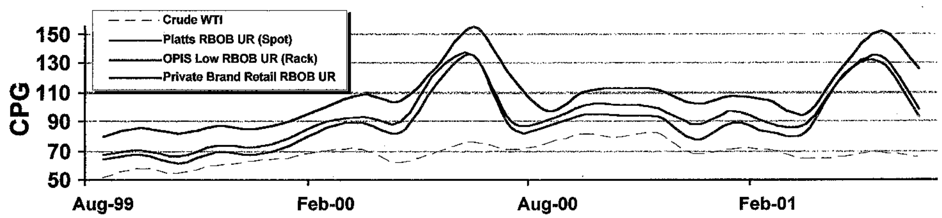


Source: Document in Subcommittee files.

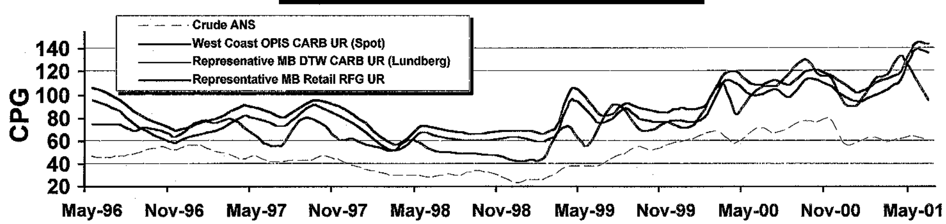
Figure V.8B:

Examples of of How Gasoline Prices Respond to Market Conditions *(Cont.)*

Chicago (Ex Tax)



Los Angeles (Ex Tax)



Source: Document in Subcommittee files.

APPENDIX 1.

METHODOLOGY USED FOR ANALYSIS OF WHOLESALE AND RETAIL PRICE DATA

The Subcommittee purchased from the Oil Price Information Service (OPIS) rack (wholesale terminal) price and retail price data for regular unleaded gasoline. The Subcommittee obtained daily data for all of 2000 and the first eight months of 2001 (January 1-August 23) for five states – California, Illinois, Maine, Michigan, and Ohio. The Majority Staff completed analyses of state average rack prices, state average retail prices (net of federal and state taxes), and the resulting rack-to-retail margins for both 2000 and 2001. The Majority Staff also compared branded average rack prices and branded average retail prices (net of federal and state taxes) for each of the five states for 2001. Finally, the Majority Staff reviewed the daily branded retail price changes in Illinois, Michigan, and Ohio for selected weeks in 2001. The brands the Majority Staff chose to compare in each state varied based on which brands generally had the largest market shares in each state.

OPIS obtains its rack prices each day from all of the major jobbers in each region where there is a terminal. To calculate a state's daily average rack price, OPIS averages all of the rack prices in all of the terminals in the state each day. The branded rack prices for each state are developed by weighting the daily regional rack prices for each brand based on the number of times the Wright Express LLC fleet card[1] is swiped for each brand in each region in a state. For example, if on a specific day, Wright Express fleet cards are swiped at Brand X rack terminals only in 3 regions of a state -- 5 times in region A, 3 times in region B, and one time in region C, the following calculation would be made. Brand X's rack price in region A would be added 5 times, Brand X's rack price in region B would be added 3 times, and Brand X's rack price in region C would be added one time, and then the final amount would be divided by 9 to get the "weighted average" rack price for Brand X in that state.[2]

OPIS collects the retail price data using the Wright Express LLC fleet card as well. Each morning OPIS gets an electronic transfer of actual per gallon transactions for up to 85,000 individual gasoline stations across the country from transactions that occurred over the previous few days. The OPIS database will only accept data that comes from transactions where the fleet card was swiped either inside the store at a register or at a filling pump. The fleet card separates gasoline purchases from all other purchases at a gasoline station (such as purchases of soda and snacks), so OPIS is assured that the price per gallon data is not skewed. The OPIS database is run through a "scrubbing program" that removes any price data that is 30 percent higher or lower than the average prices of other retail outlets in its zip code.[3]

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[1] Wright Express LLS is the largest fleet card provider in the United States. (OPIS website: www.opisnet.com)

[2] Teleconference with Fred Rozell, OPIS, November 6, 2001.

[3] OPIS website and discussions with Fred Rozell, OPIS, November 6 and 8, 2001.

The Majority Staff also compared the rack and retail prices for each state to the daily regional conventional gasoline spot prices and the national crude oil spot prices to see how the wholesale and retail prices of gasoline were affected by changes in the spot market. The Majority Staff obtained these spot market prices from the Department of Energy's Energy Information Administration's the web site, www.doe/eia.gov. The Majority Staff used the Chicago conventional gasoline spot price for the analyses of Illinois, Michigan, and Ohio; the New York conventional gasoline spot price for Maine; and the Los Angeles conventional gasoline spot price for California.

The table below shows which brands the were used for brand prices comparisons in each of the five states the Majority Staff reviewed. These brands the were chosen largely on the basis of our information on which brands had the leading market shares in each state. When the market shares for each brand are summed, the Majority Staff's analyses of rack and retail data cover approximately 50 percent of the market, except for Maine.[4] The Majority Staff had to remove Mobil from the retail brand price analysis in California, Illinois, and Maine because the Mobil retail data the Subcommittee received from OPIS was not representative of the brand's prices across the state. Speedway brand was used only in the retail price analyses because all of the outlets are company owned and operated by Marathon Ashland LLC, and therefore the brand was not sold at terminals.

Table 1. Brands Used in Analysis of State Branded Rack and Retail Prices

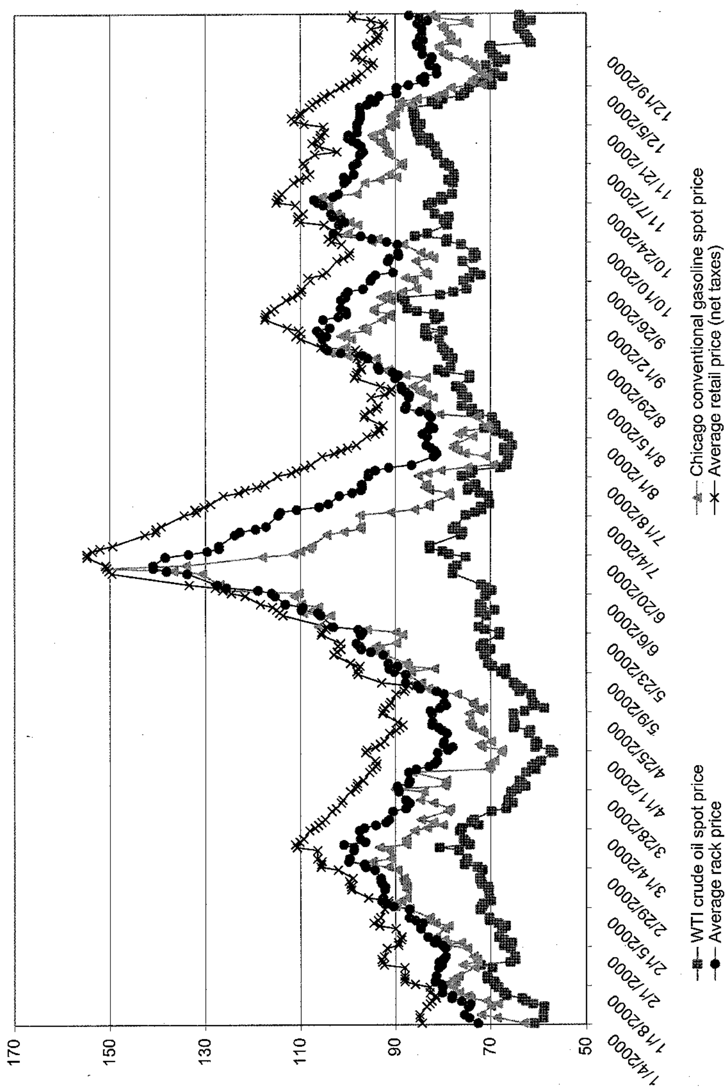
California	Illinois	Maine	Michigan	Ohio
BP	BP	Citgo	BP	BP
Chevron	Citgo	Gulf	Marathon	Marathon
Shell	Marathon	Mobil (rack only)	Mobil	Shell
Texaco	Mobil (rack only)	Texaco	Shell	Speedway (retail only)
	Shell		Speedway (retail only)	Sunoco
	Speedway (retail only)			

[4] Mobil maintains over ¼ of the market share in Maine, so when it is removed in our analysis of retail pricing by brand, the remaining brands constitute approximately 30 percent of the market.

APPENDIX 2.

FIGURES RELATING TO MAJORITY STAFF ANALYSIS OF WHOLESALE AND RETAIL PRICES REFERRED TO IN SECTION V

Figure A2.1: Michigan Retail, Rack, and Spot Market Prices, January - December 2000



Source: OPIS.

Figure A2.2: Ohio Retail, Rack, and Spot Market Prices, January - December 2000

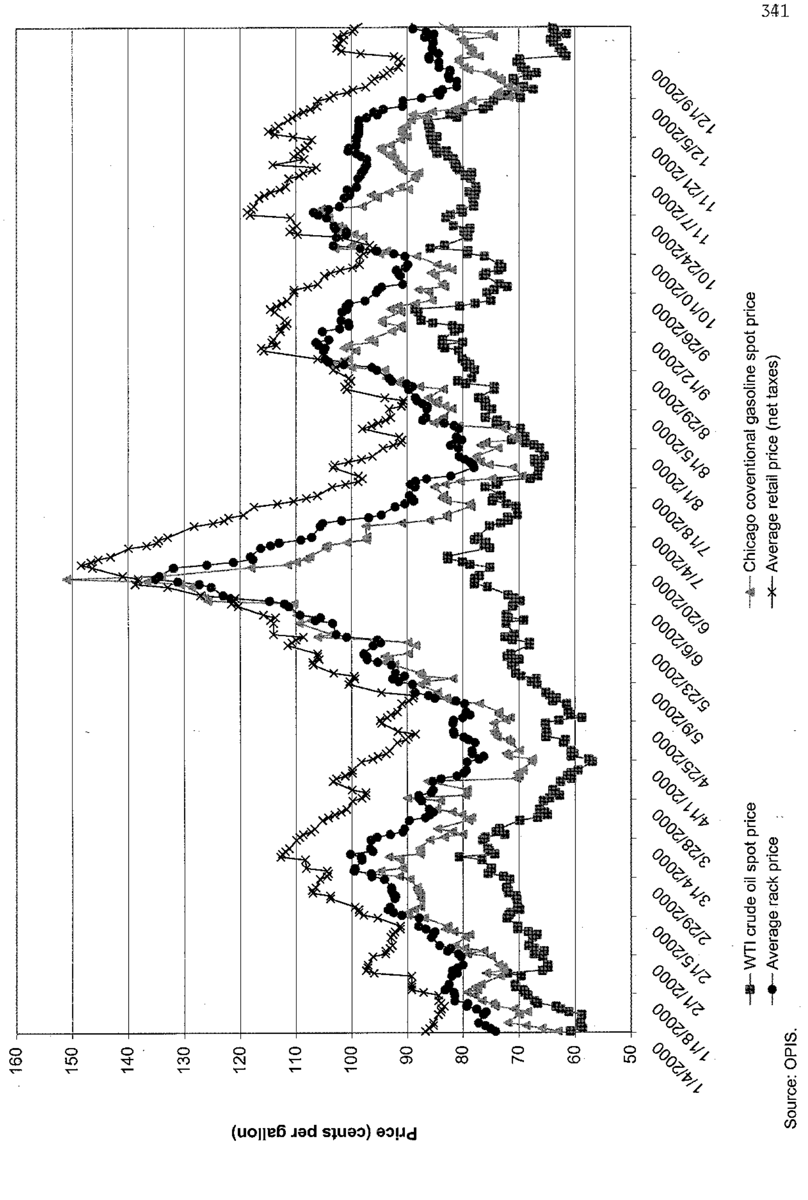
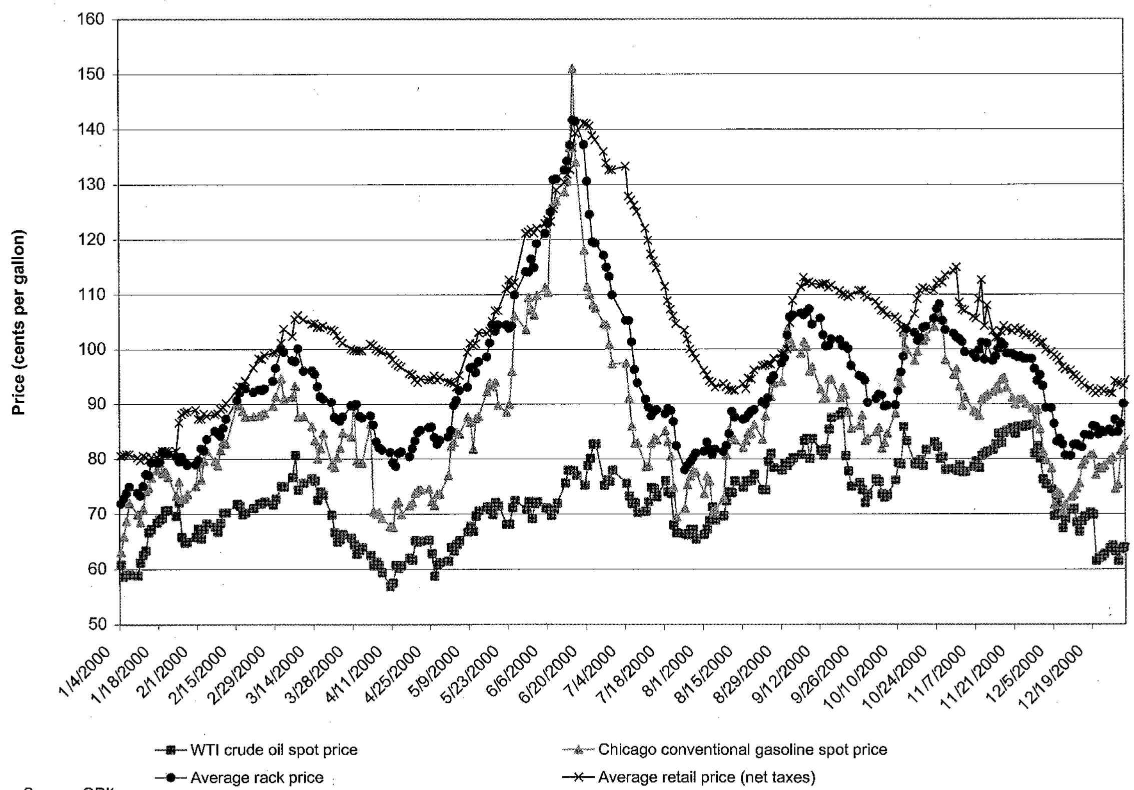
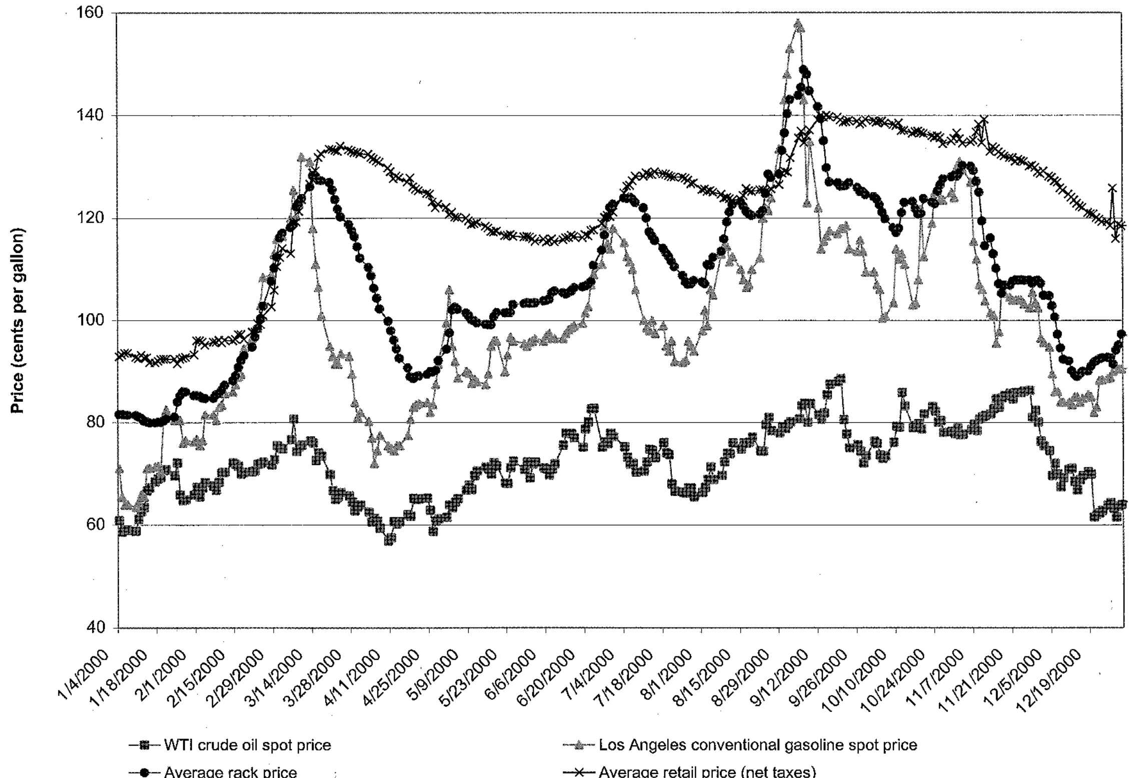


Figure A2.3: Illinois Retail, Rack, and Spot Market Prices, January - December 2000



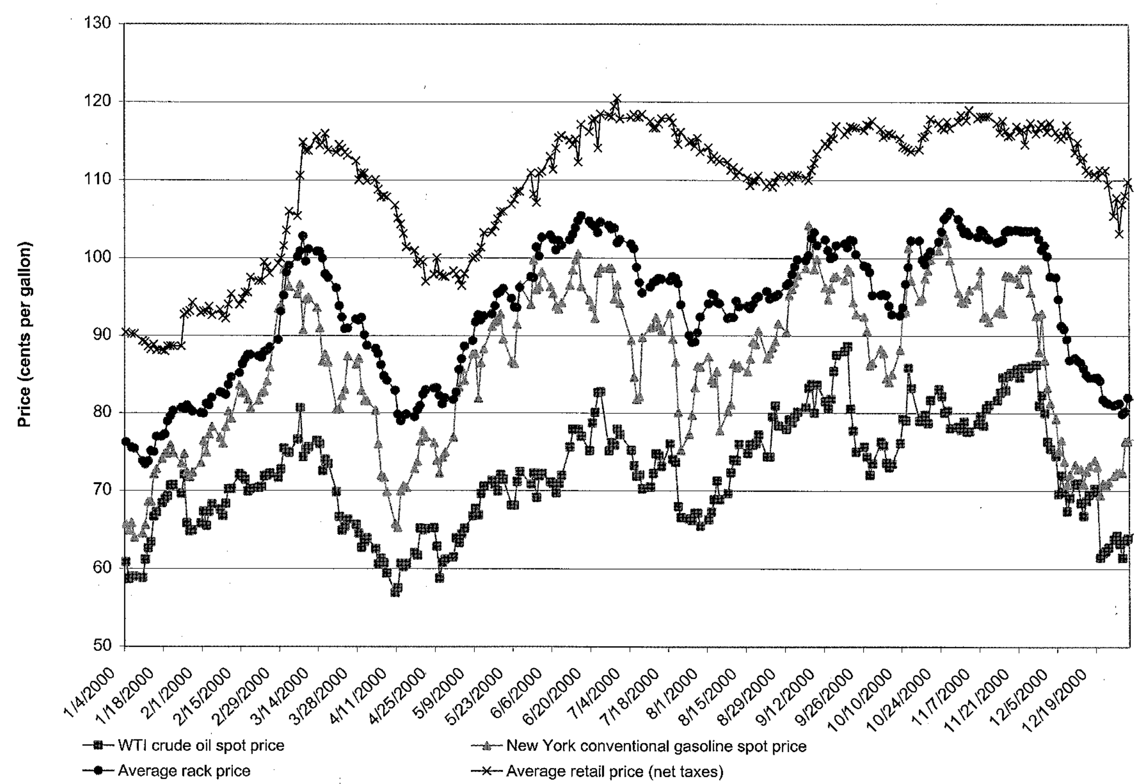
Source: OPIS.

Figure A2.4: California Retail, Rack, and Spot Market Prices, January - December 2000



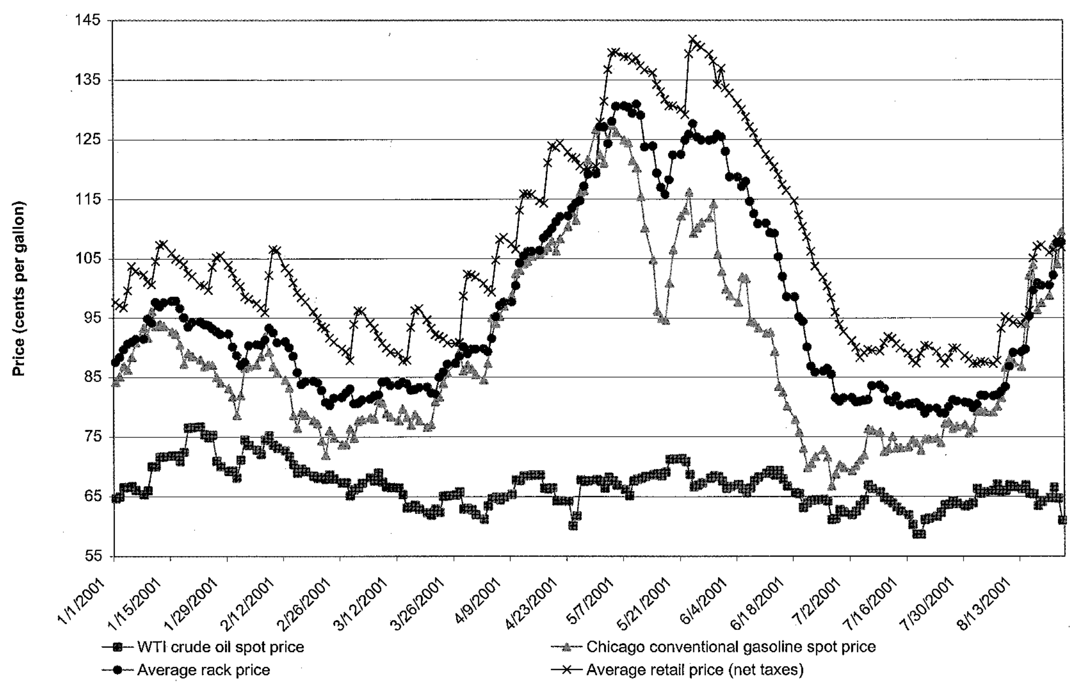
Source: OPIS.

Figure A2.5: Maine Retail, Rack, and Spot Market Prices, January - December 2000



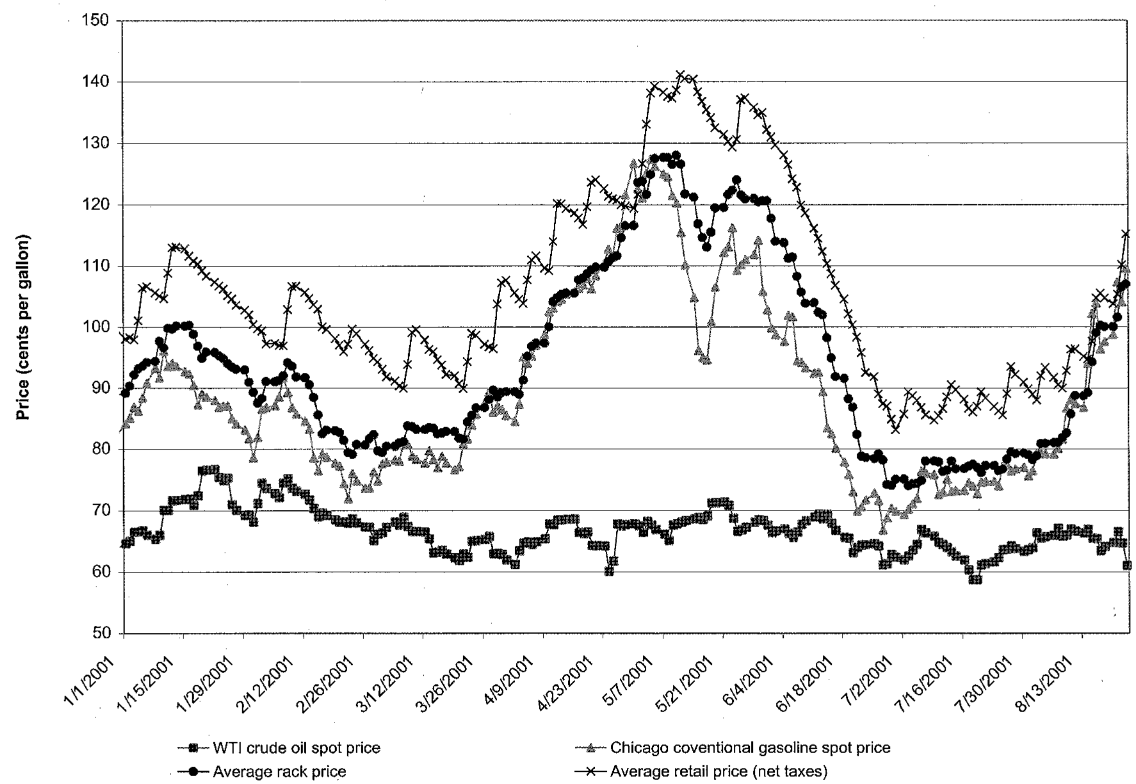
Source: OPIS.

Figure A2.6: Michigan Retail, Rack, and Spot Market Prices, January - August 2001



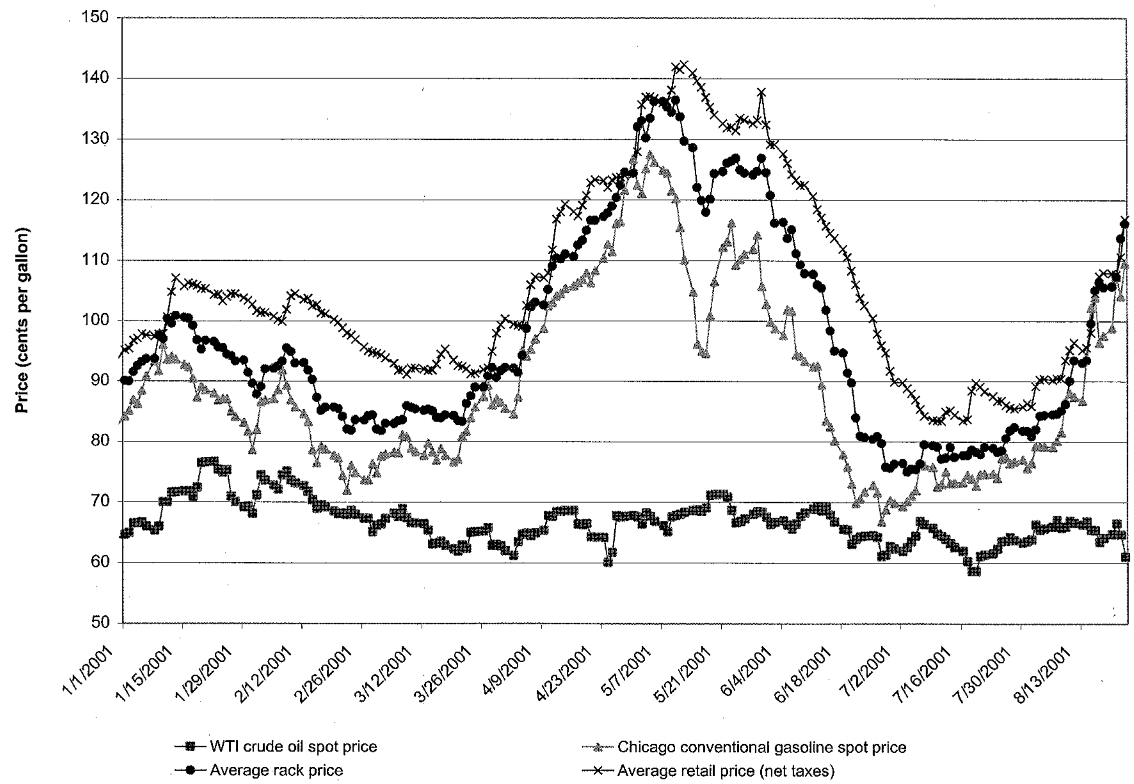
Source: OPIS.

Figure A2.7: Ohio Retail, Rack, and Spot Market Prices, January - August 2001



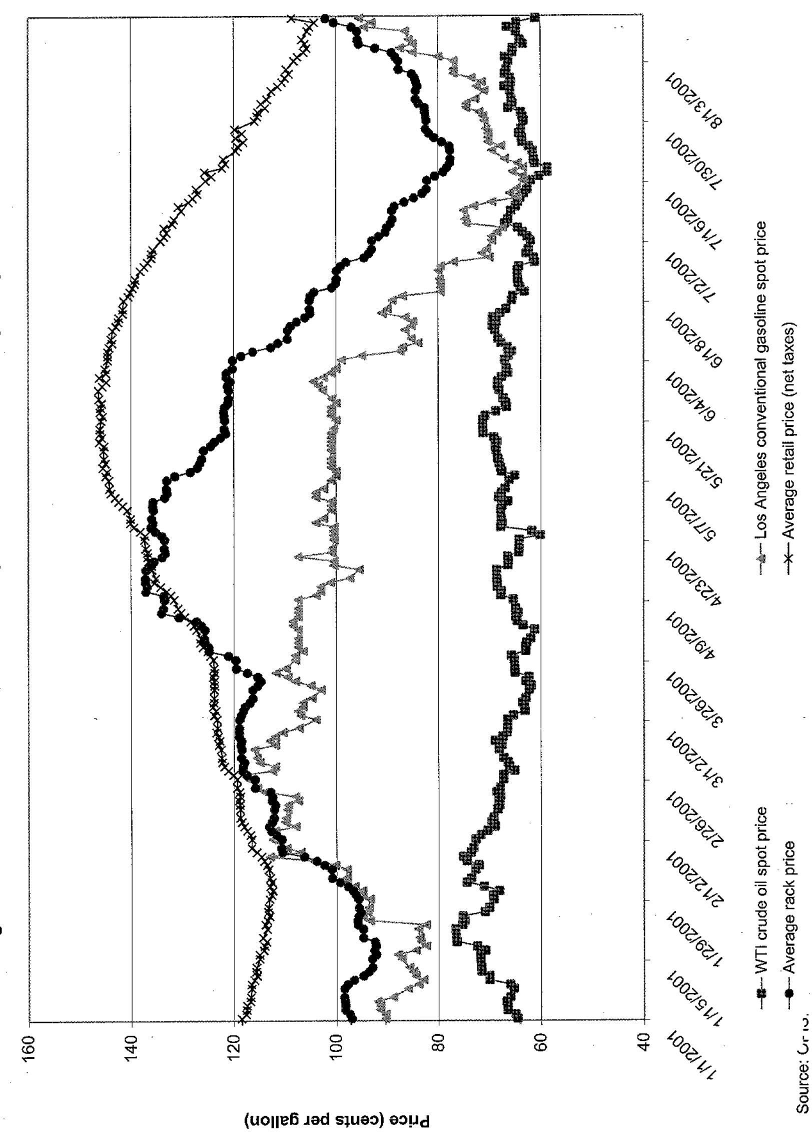
Source: OPIS.

Figure A2.8: Illinois Retail, Rack, and Spot Market Prices, January - August 2001



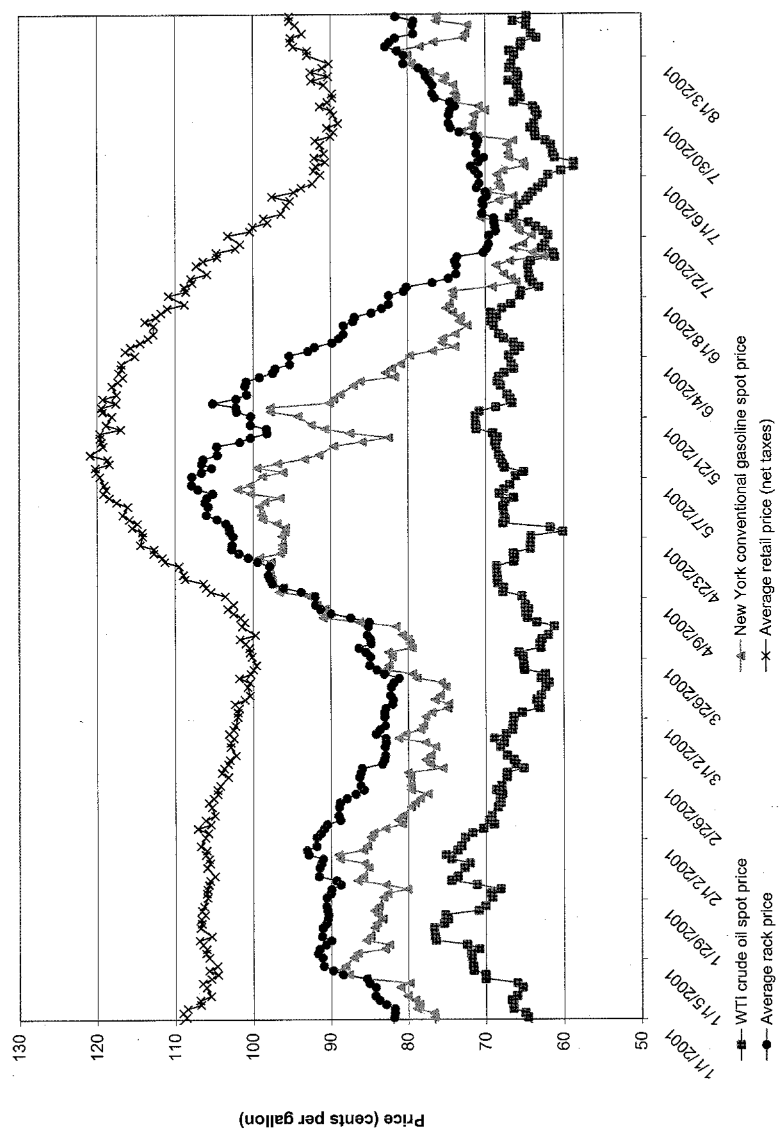
Source: OPIS.

Figure A2.9: California Retail, Rack, and Spot Market Prices, January - August 2001



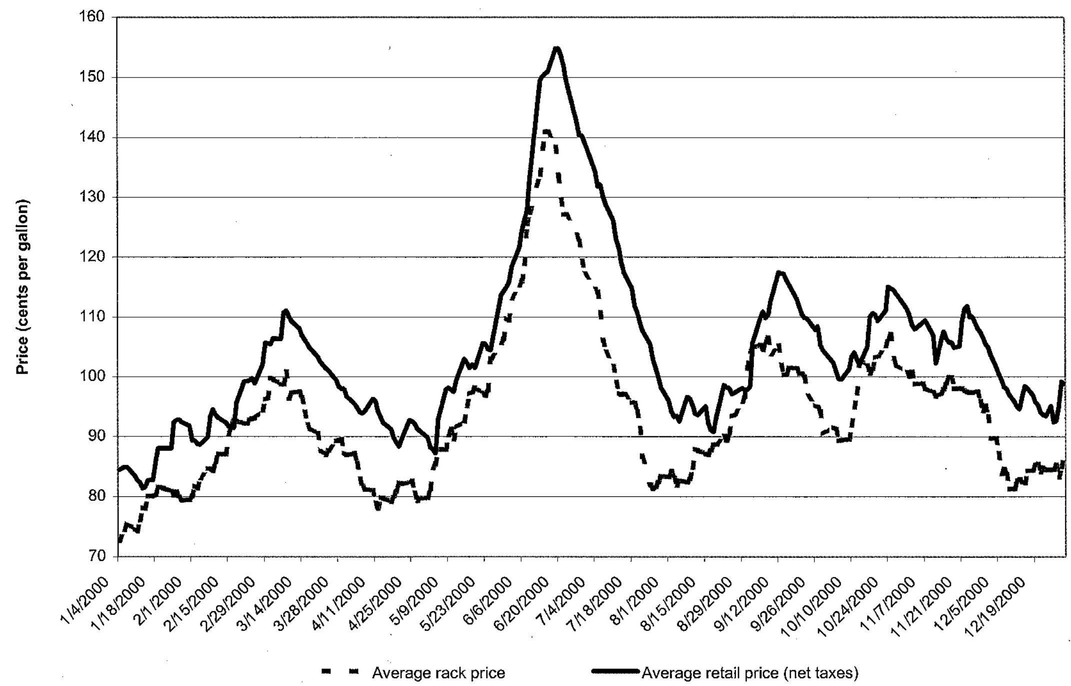
Source: [illegible]

Figure A2.10: Maine Retail, Rack, and Spot Market Prices, January - August 2001



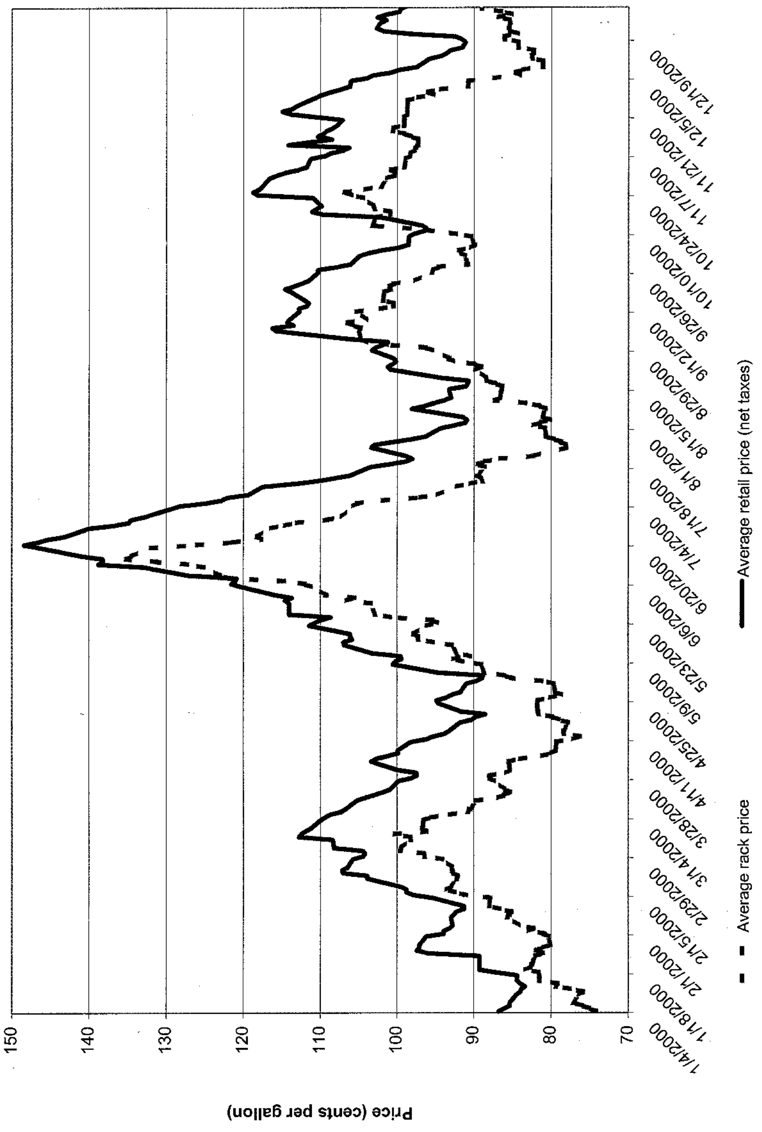
Source: OPIS.

Figure A2.11: Michigan Retail and Rack Prices, January - December 2000



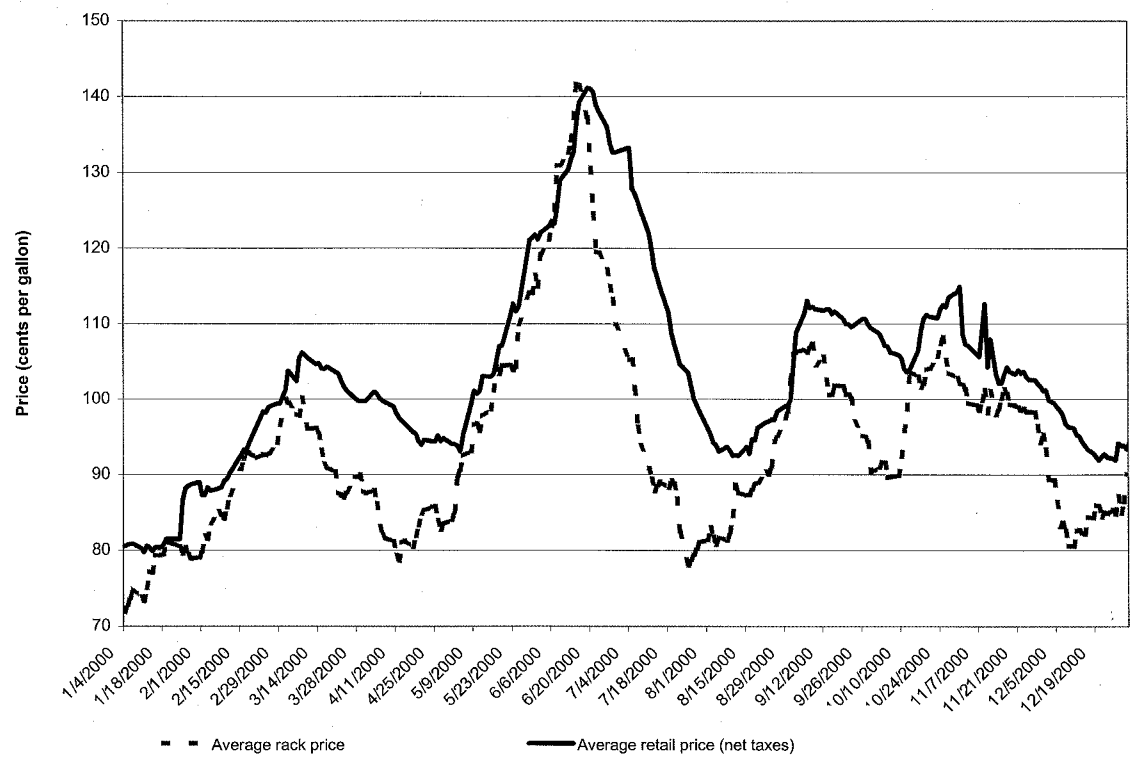
Source: OPIS.

Figure A2.12: Ohio Retail and Rack Prices, January - December 2000



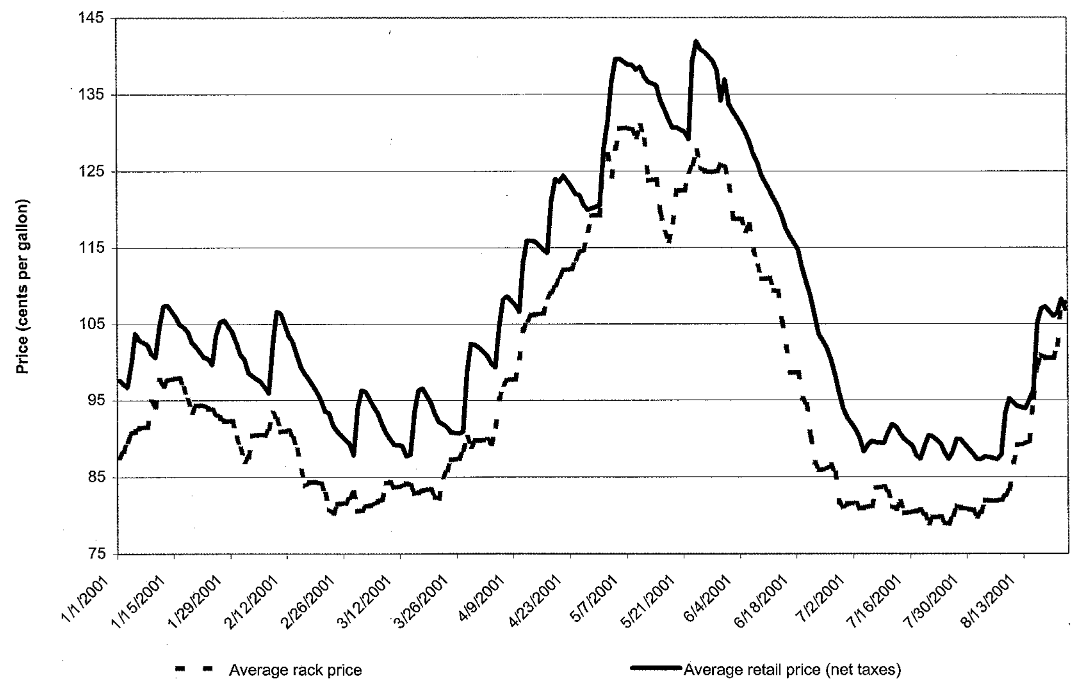
Source: OPIS.

Figure A2.13: Illinois Retail and Rack Prices, January - December 2000



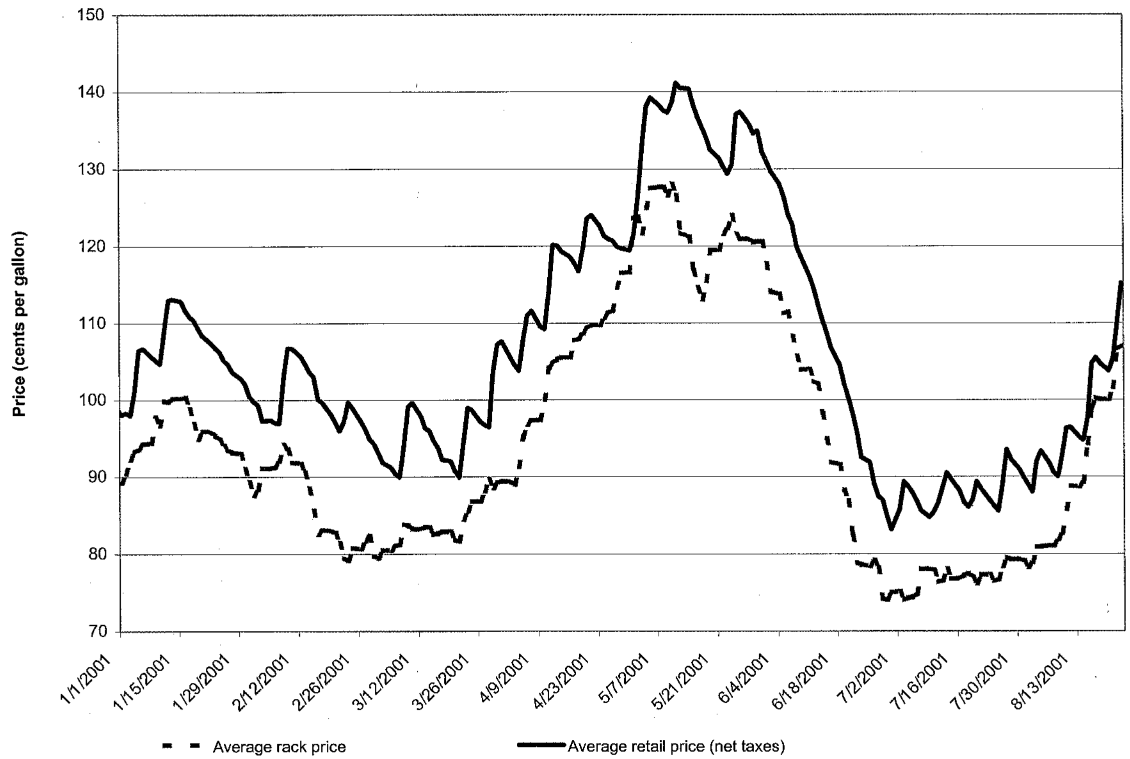
Source: OPIS.

Figure A2.14: Michigan Retail and Rack Prices, January - August 2001



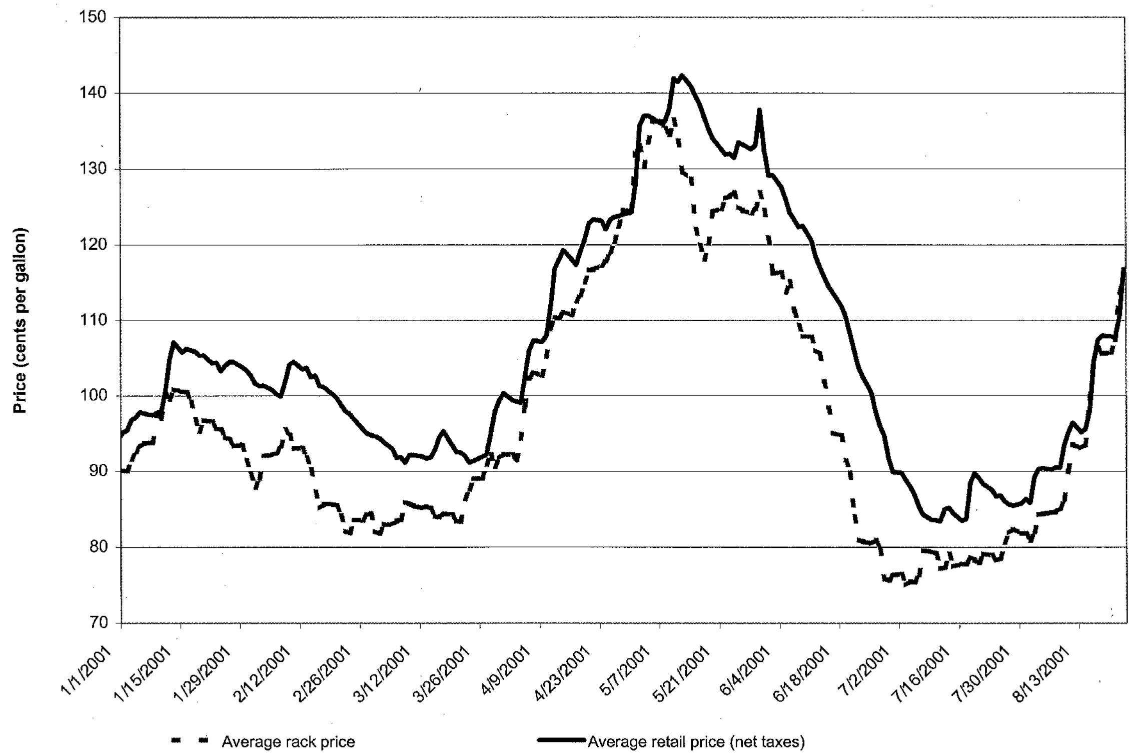
Source: OPIS.

Figure A2.15: Ohio Retail and Rack Prices, January - August 2001



Source: OPIS.

Figure A2.16: Illinois Retail and Rack Prices, January - August 2001



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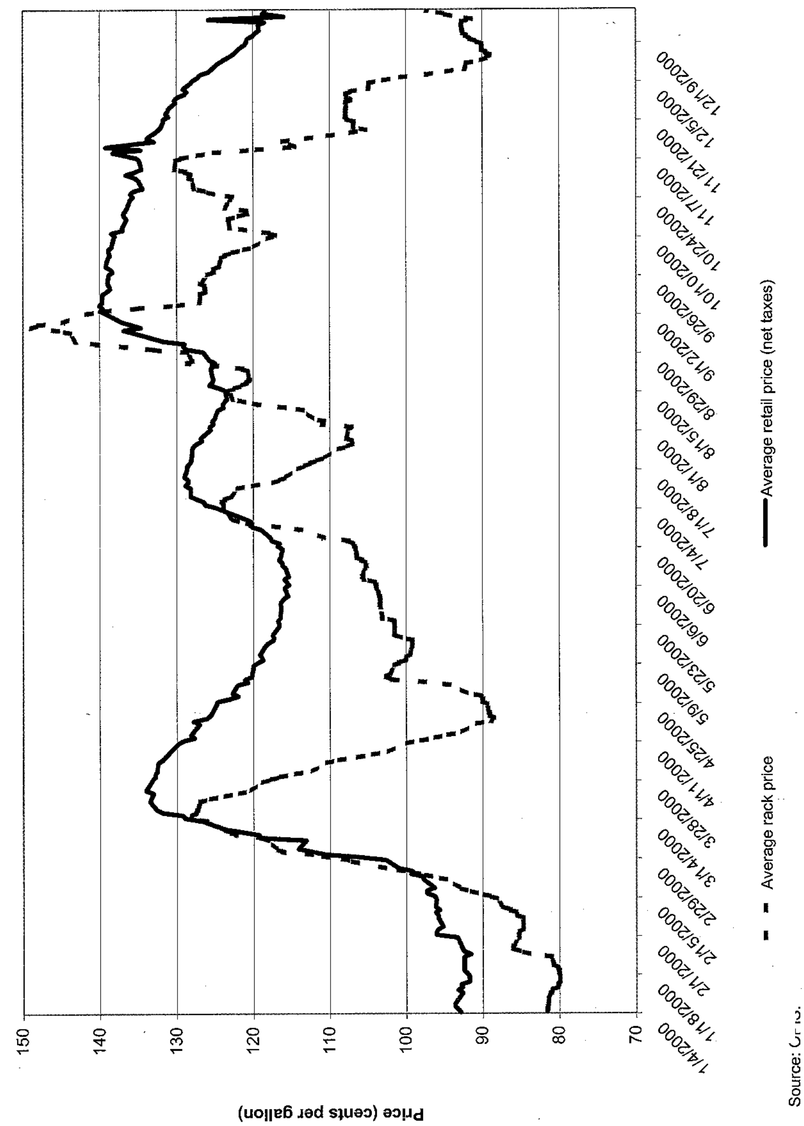

Figure A2.17: California Retail and Rack Prices, January - December 2000

Figure A2.18: Maine Retail and Rack Prices, January - December 2000

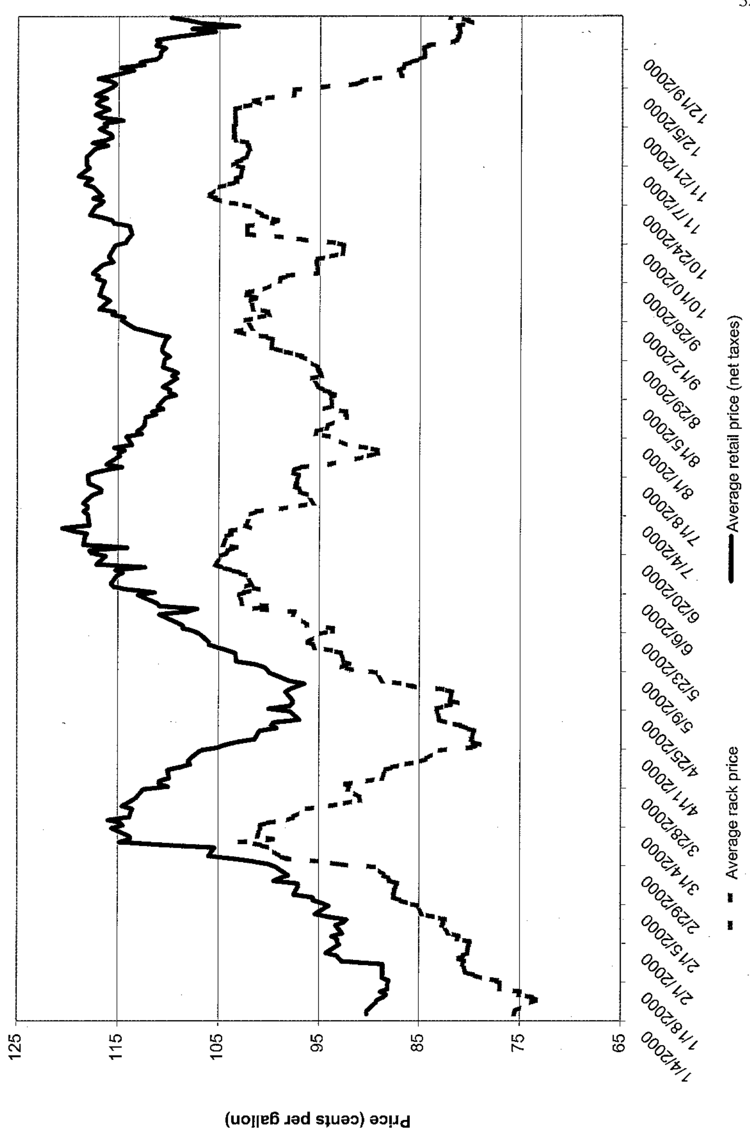

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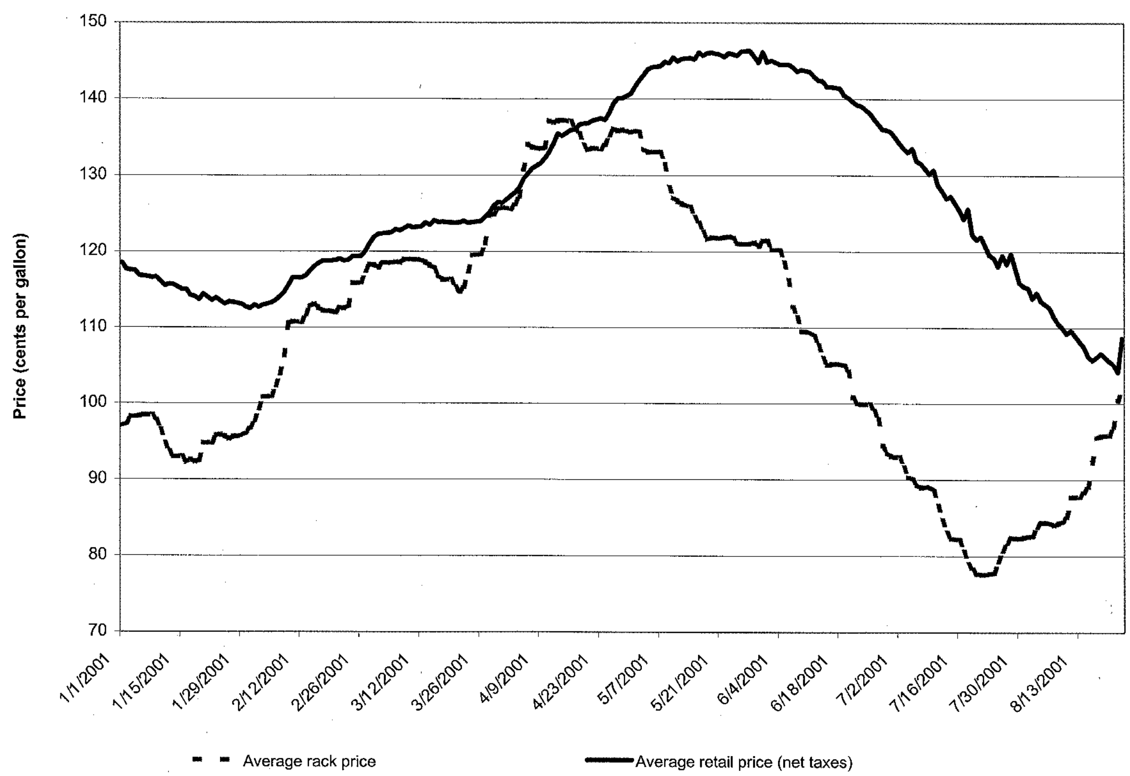
Figure A2.19: California Retail and Rack Prices, January - August 2001



Source: C

Figure A2.20: Maine Retail and Rack Prices, January - August 2001

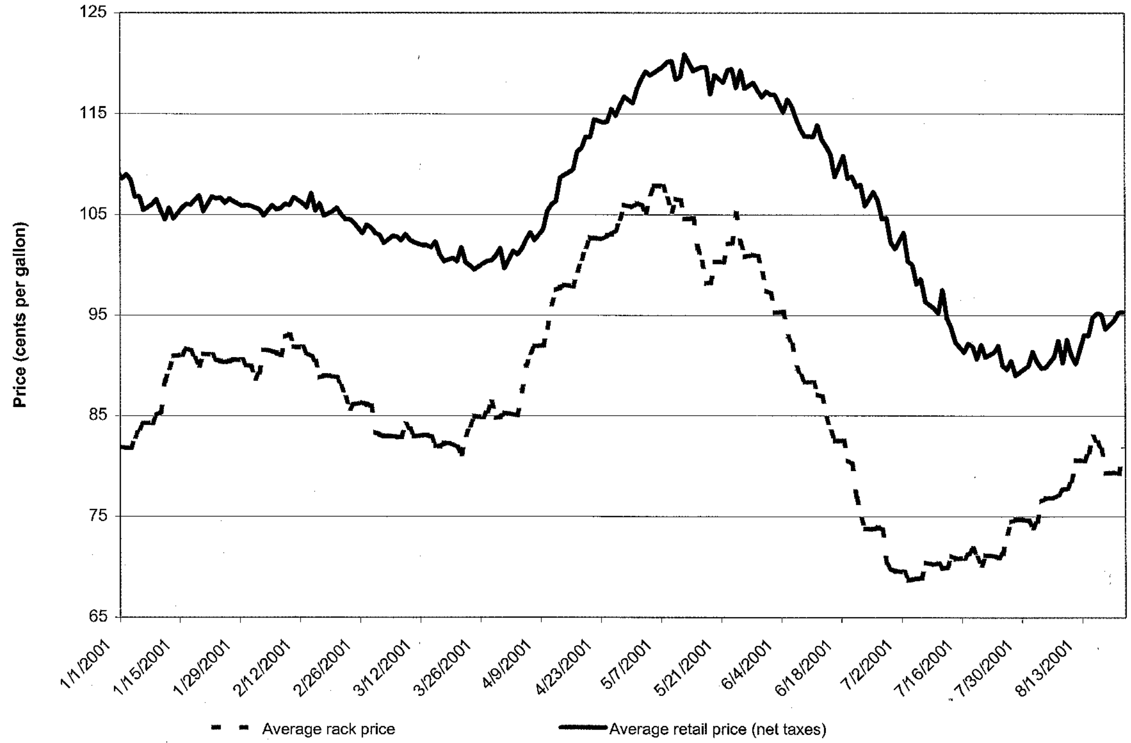


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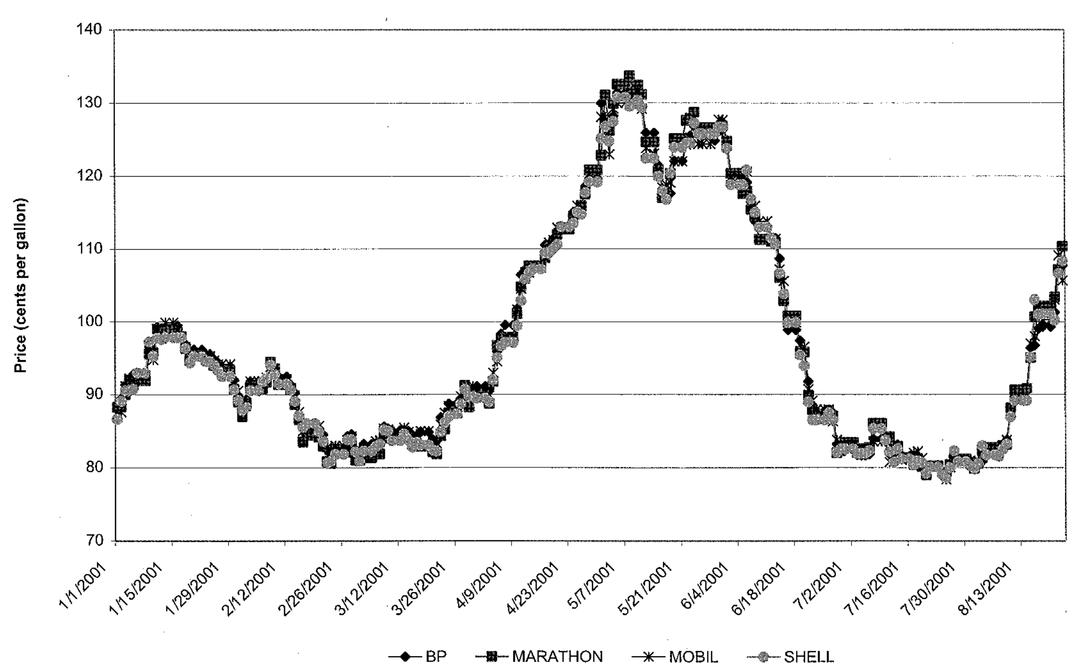
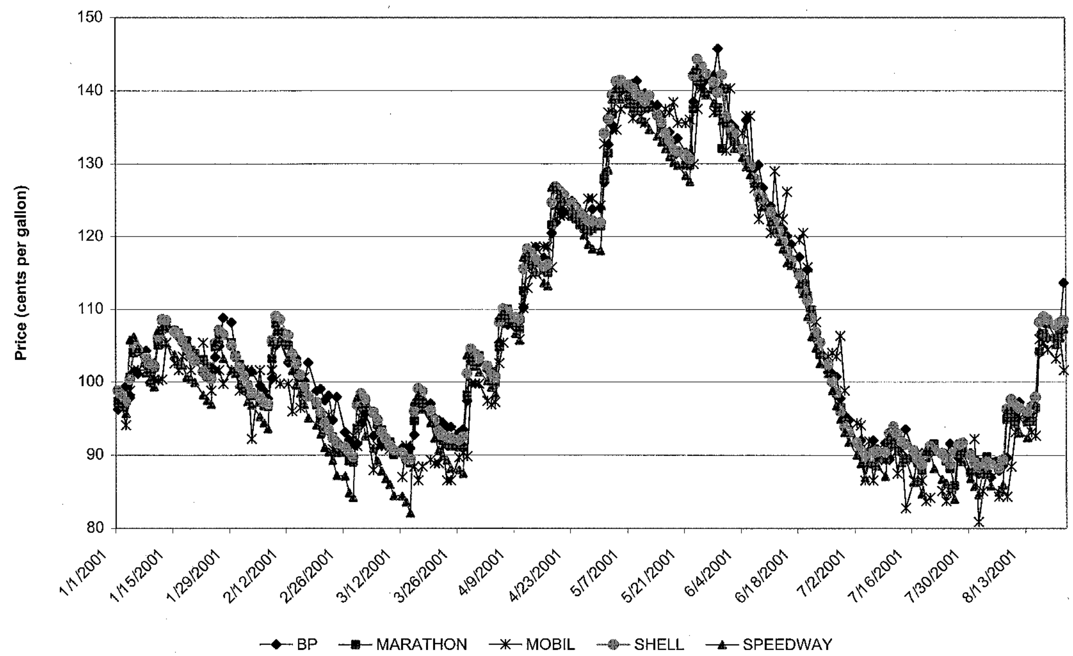
Figure A2.21: Michigan Rack Prices by Brand, January - August 2001



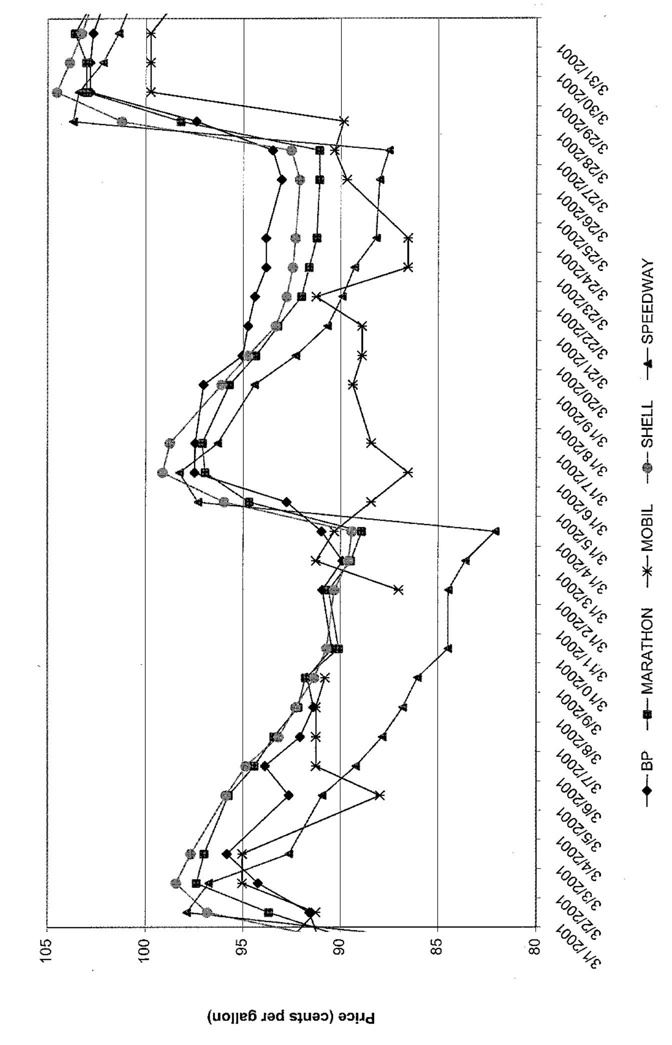
Source: OPIS.

Figure A2.22: Michigan Retail Prices (Net Taxes) by Brand, January - August 2001



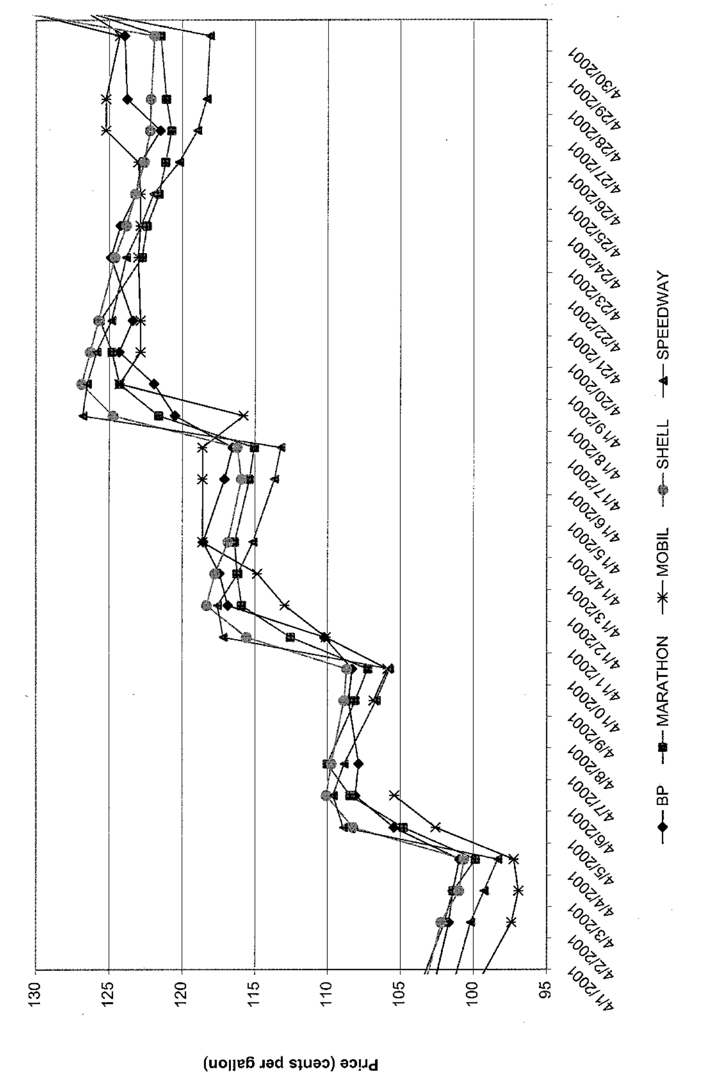
Source: OPIS.

Figure A2.23:Michigan Retail Prices (Net Taxes) by Brand, March 2001



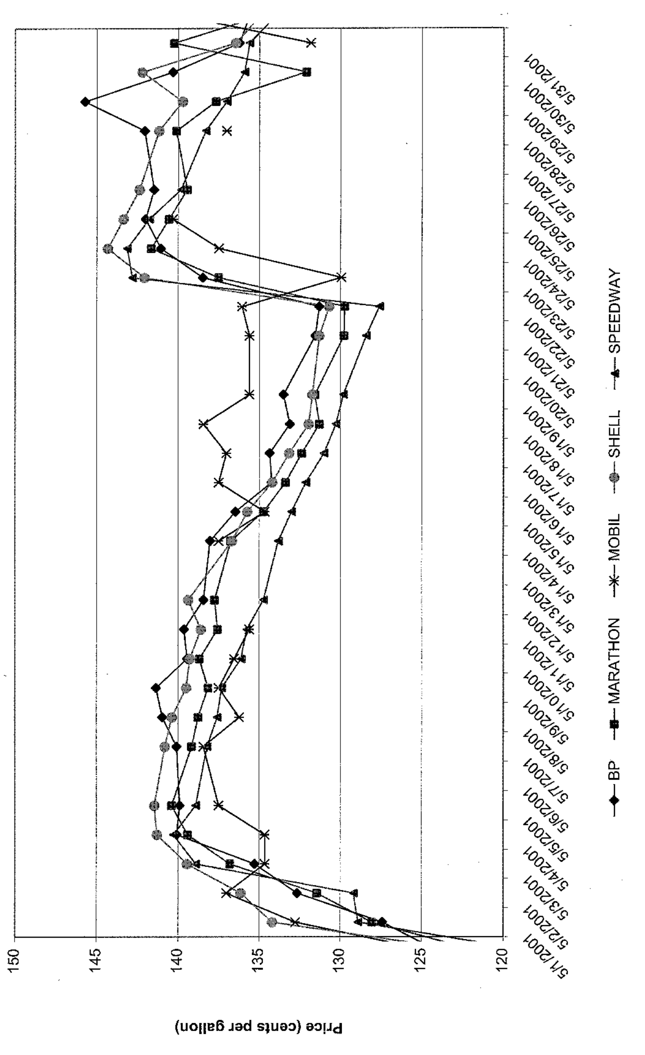
Source: OPIS.

Figure A2.24: Michigan Retail Prices (Net Taxes) by Brand, April 2001



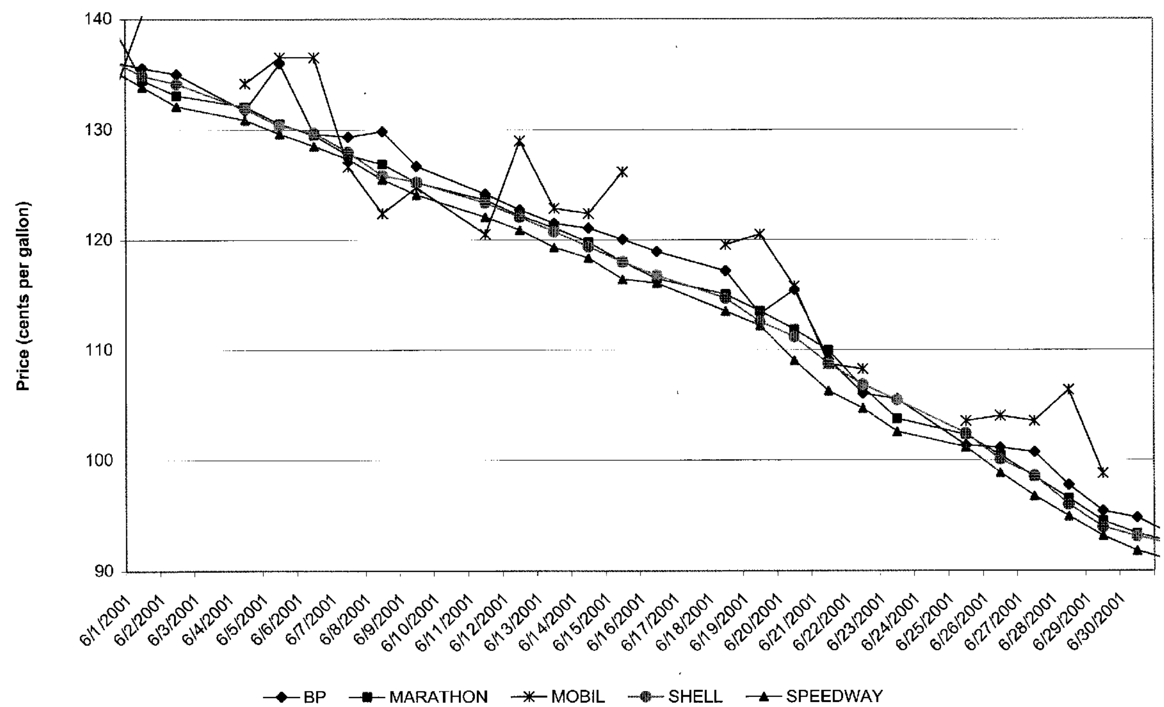
Source: OPIS.

Figure A2.25: Michigan Retail Prices (Net Taxes) by Brand, May 2001



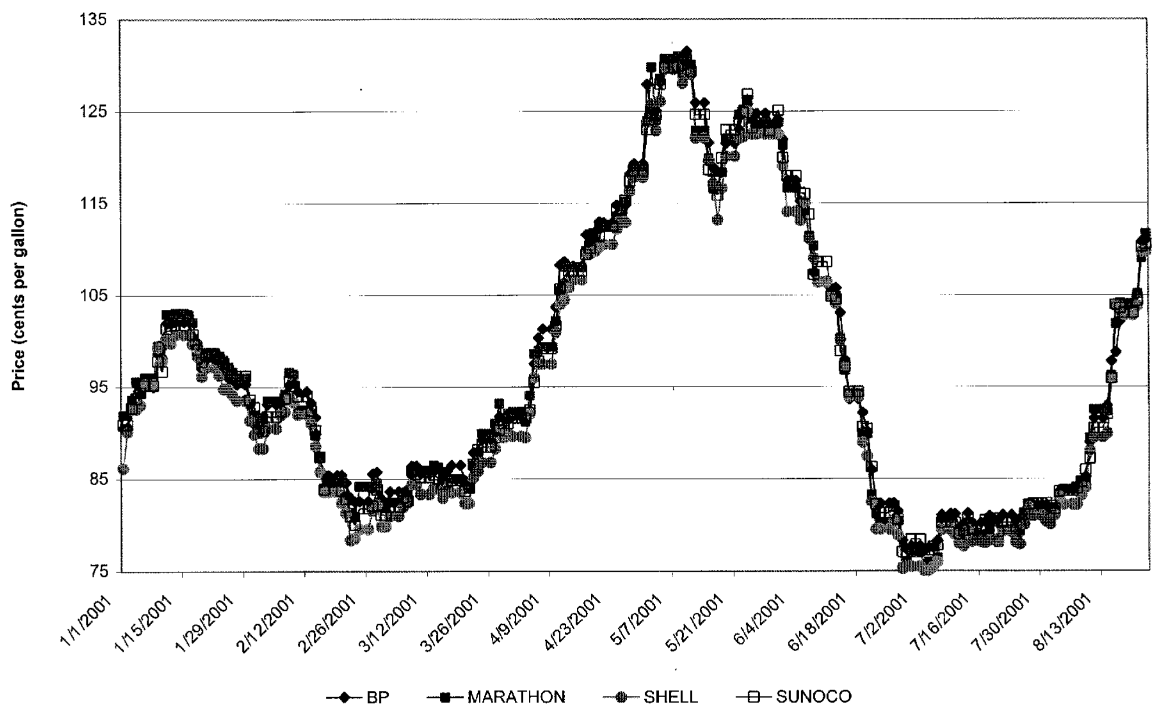
Source: OPIS.

Figure A2.26: Michigan Retail Prices (Net Taxes) by Brand, June 2001



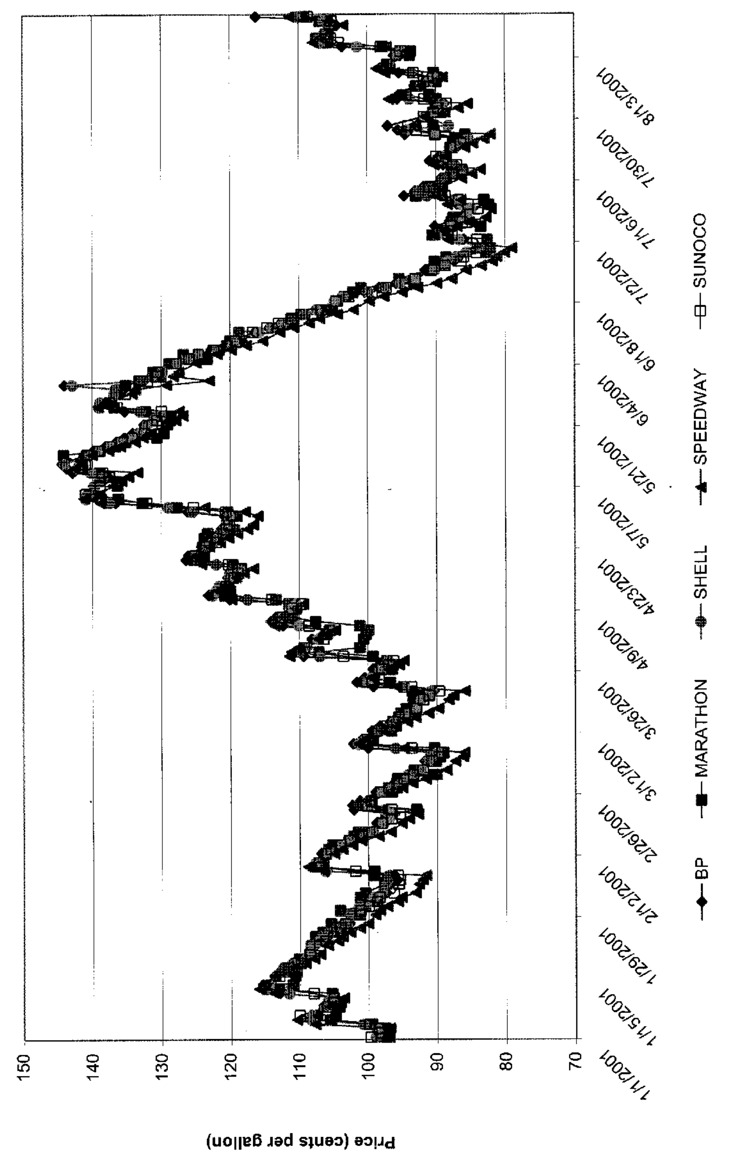
Source: OPIS.

Figure A2.27: Ohio Rack Prices by Brand, January - August 2001



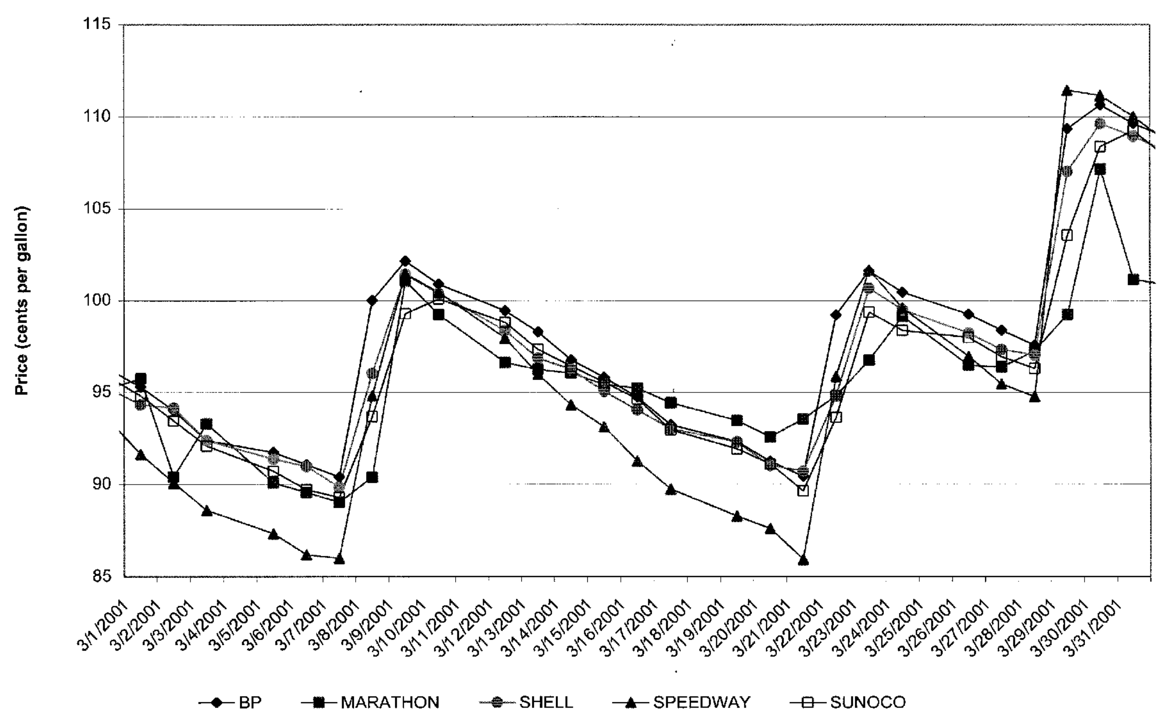
Source: OPIS.

Figure A2.28: Ohio Retail Prices (Net Taxes) by Brand, January - August 2001



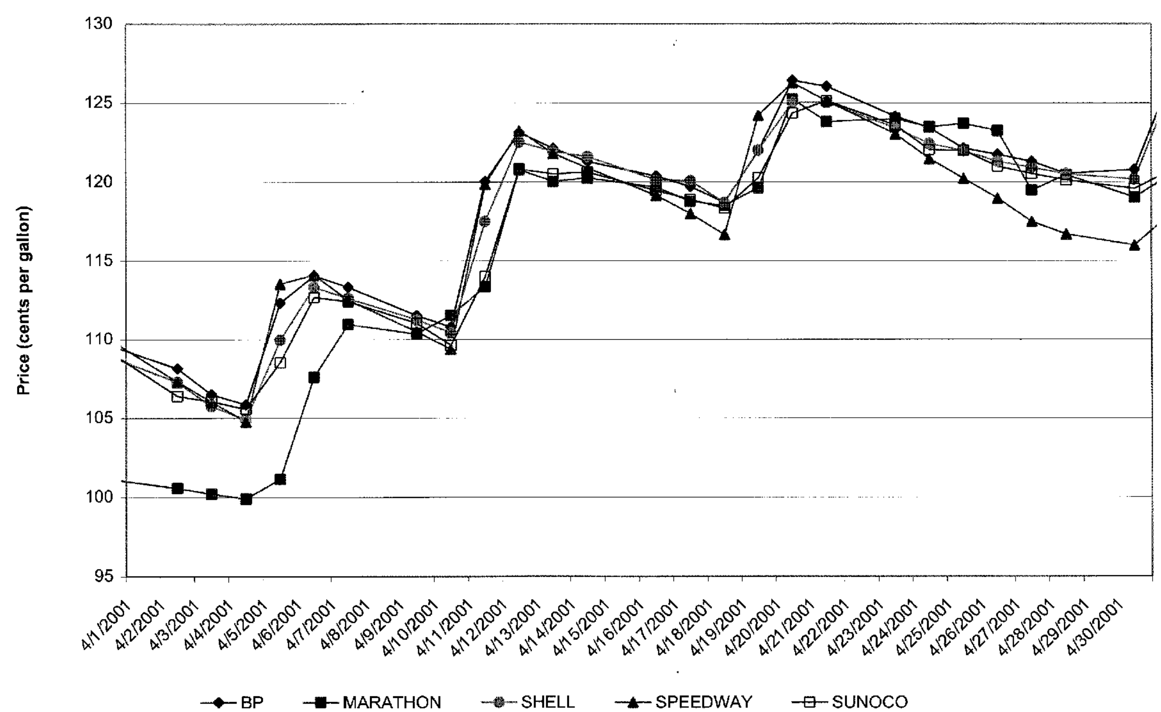
Source: OPIS.

Figure A2.29: Ohio Retail Prices (Net Taxes) by Brand, March 2001



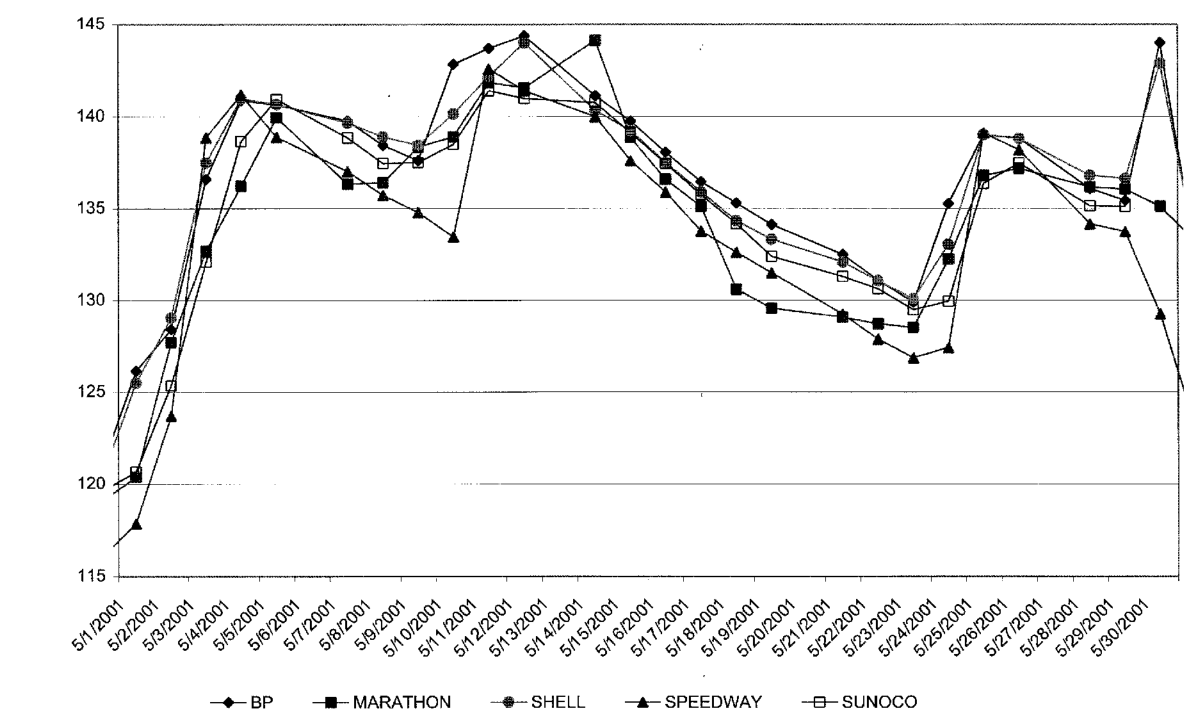
Source: OPIS.

Figure A2.30: Ohio Retail Prices (Net Taxes) by Brand, April 2001



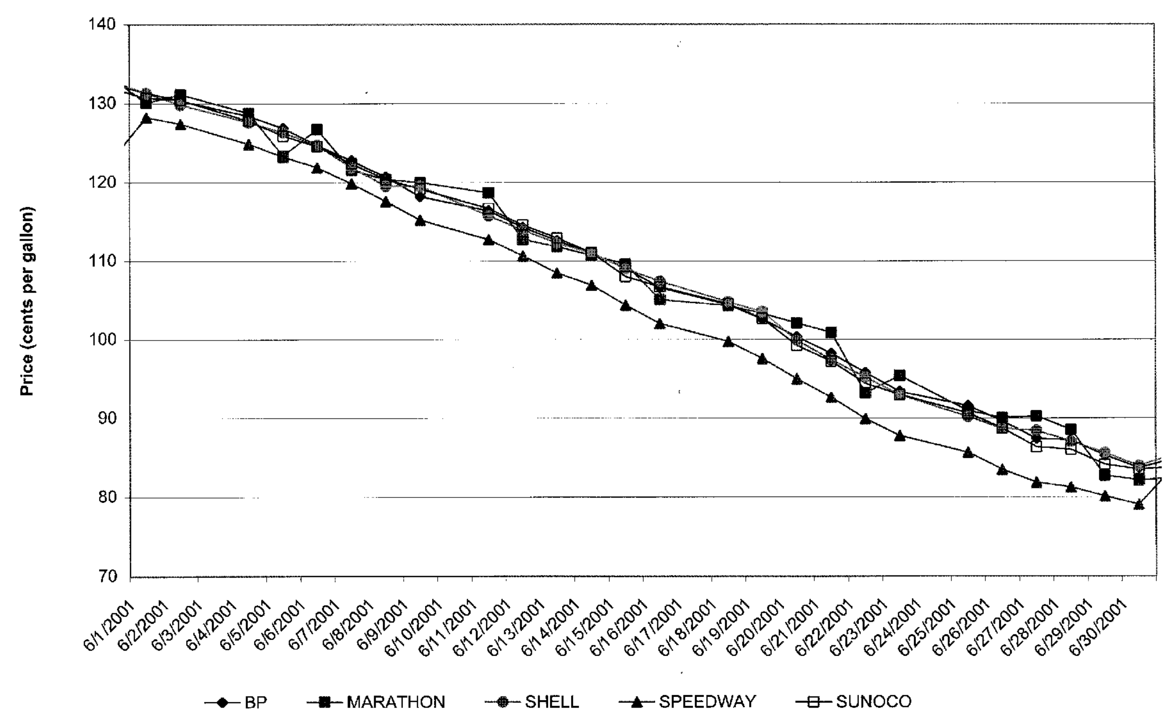
Source: OPIS.

Figure A2.31: Ohio Retail Prices (Net Taxes) by Brand, May 2001



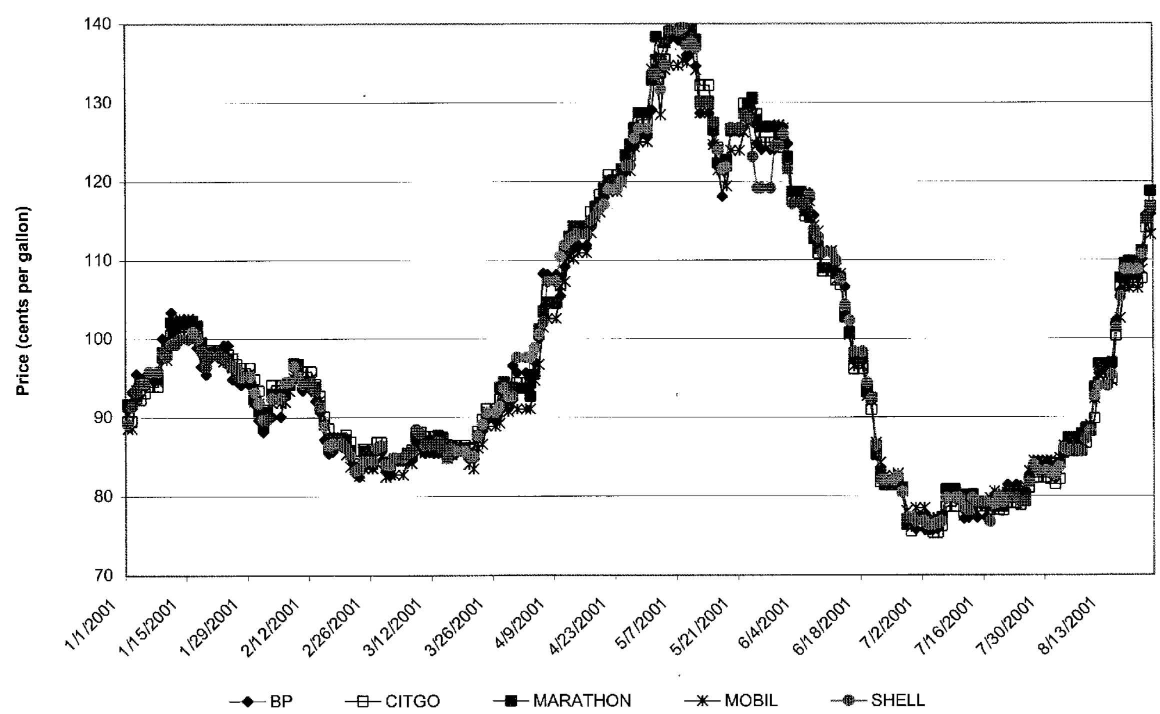
Source: OPIS.

Figure A2.32: Ohio Retail Prices (Net Taxes) by Brand, June 2001



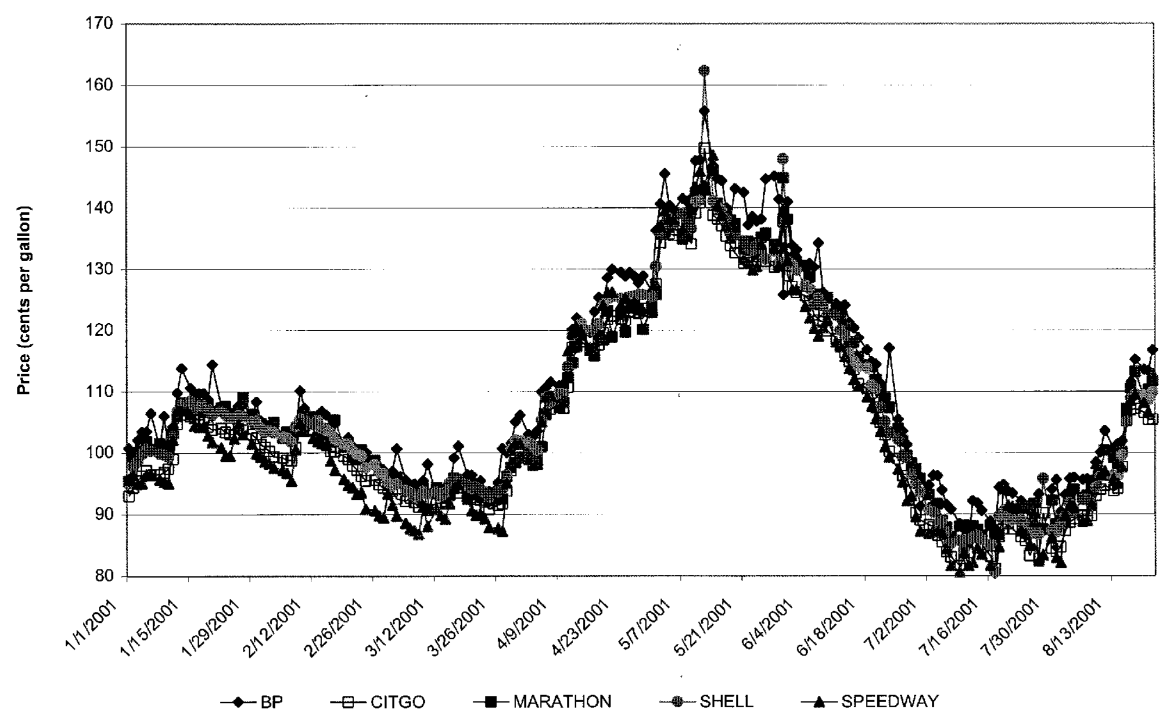
Source: OPIS.

Figure A2.33: Illinois Rack Prices by Brand, January - August 2001



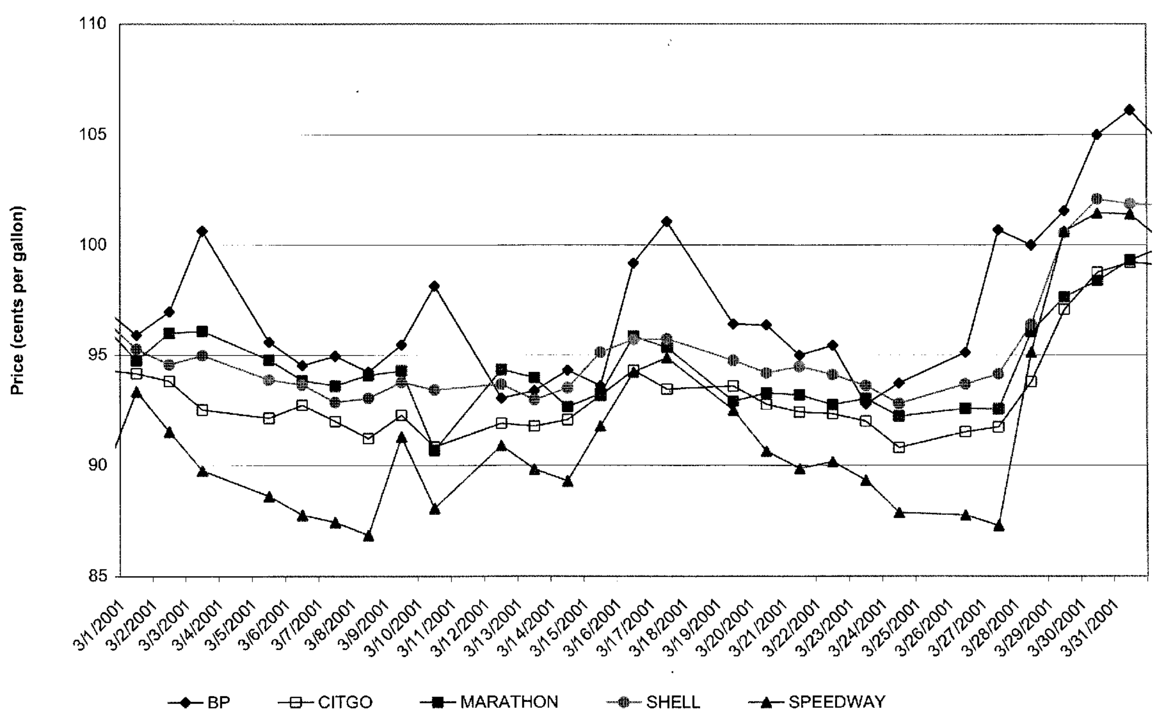
Source: OPIS.

Figure A2.34: Illinois Retail Prices (Net Taxes), January - August 2001



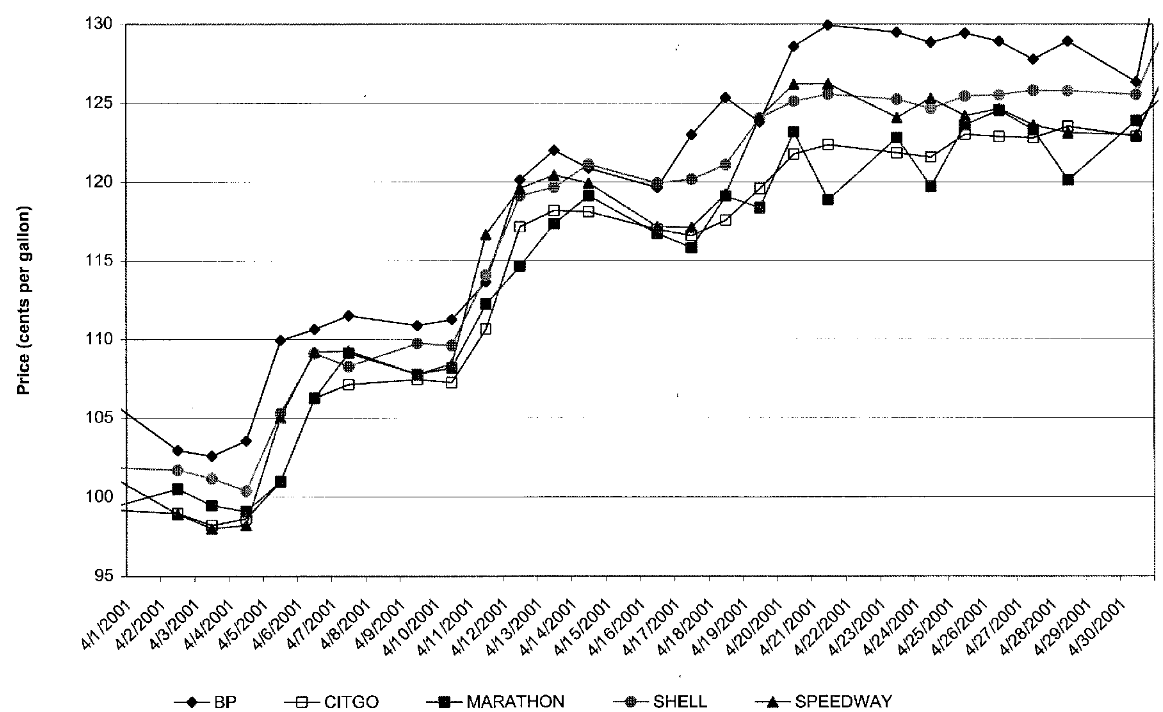
Source: OPIS.

Figure A2.35: Illinois Retail Prices (Net Taxes), March 2001



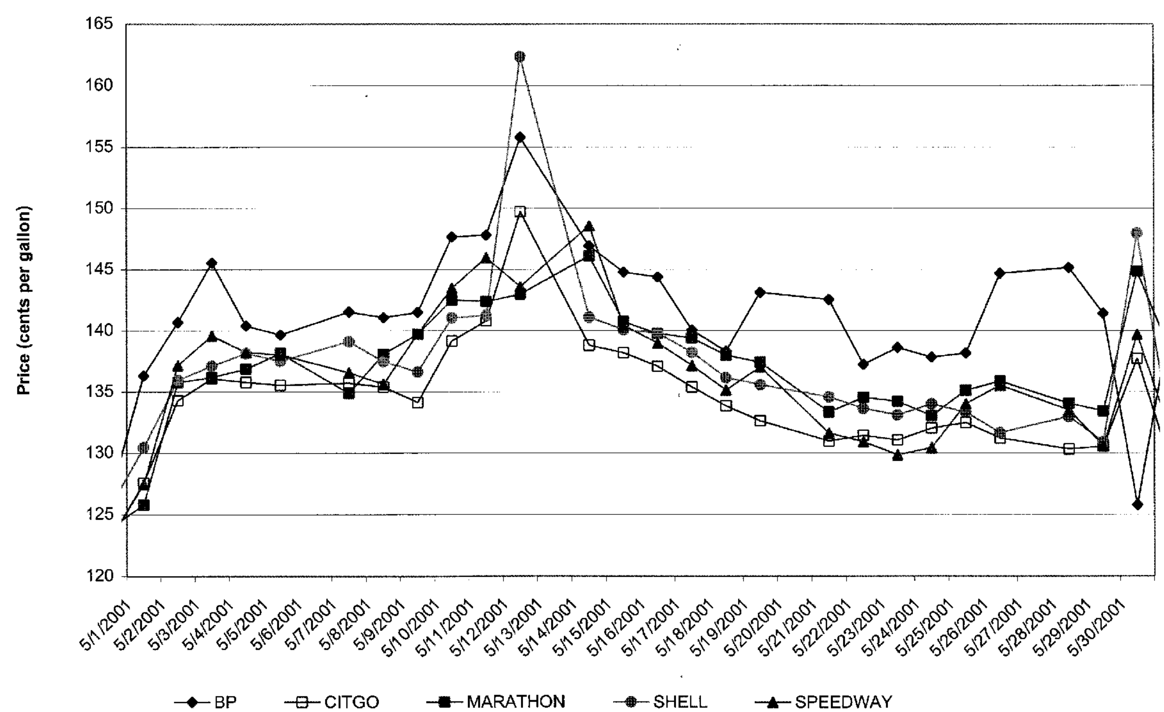
Source: OPIS.

Figure A2.36: Illinois Retail Prices (Net Taxes), April 2001



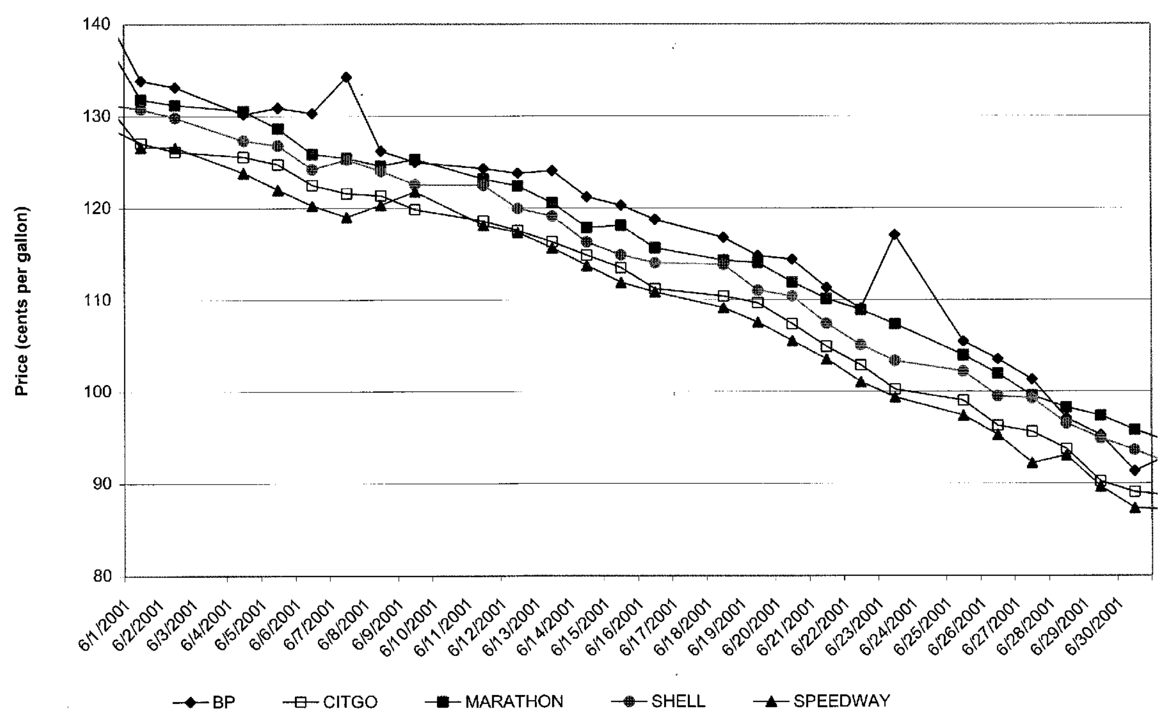
Source: OPIS.

Figure A2.37: Illinois Retail Prices (Net Taxes), May 2001



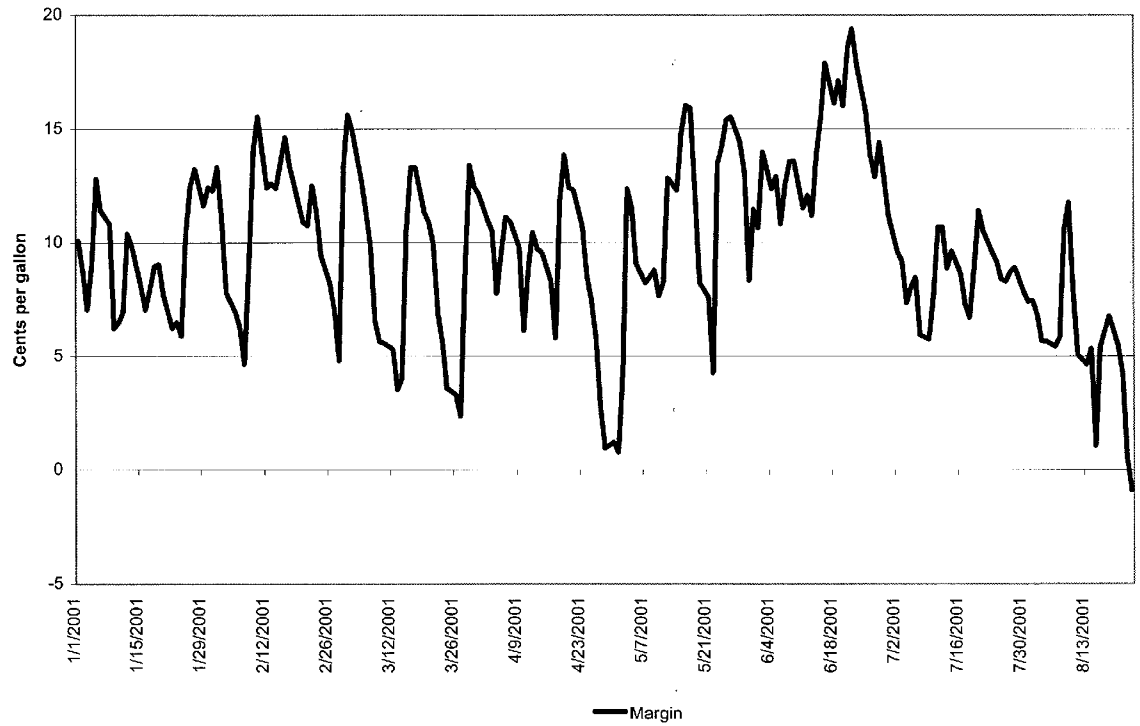
Source: OPIS.

Figure A2.38: Illinois Retail Prices (Net Taxes), June 2001



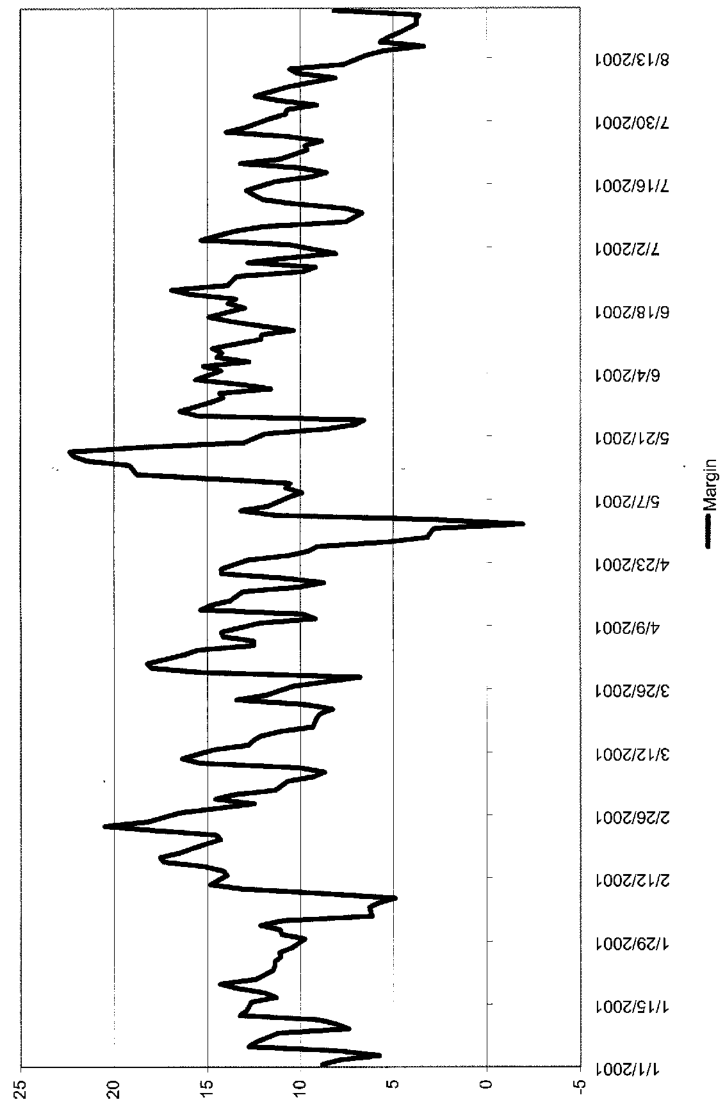
Source: OPIS.

Figure A2.39: Michigan Retail-Rack Price Margins, January - August 2001



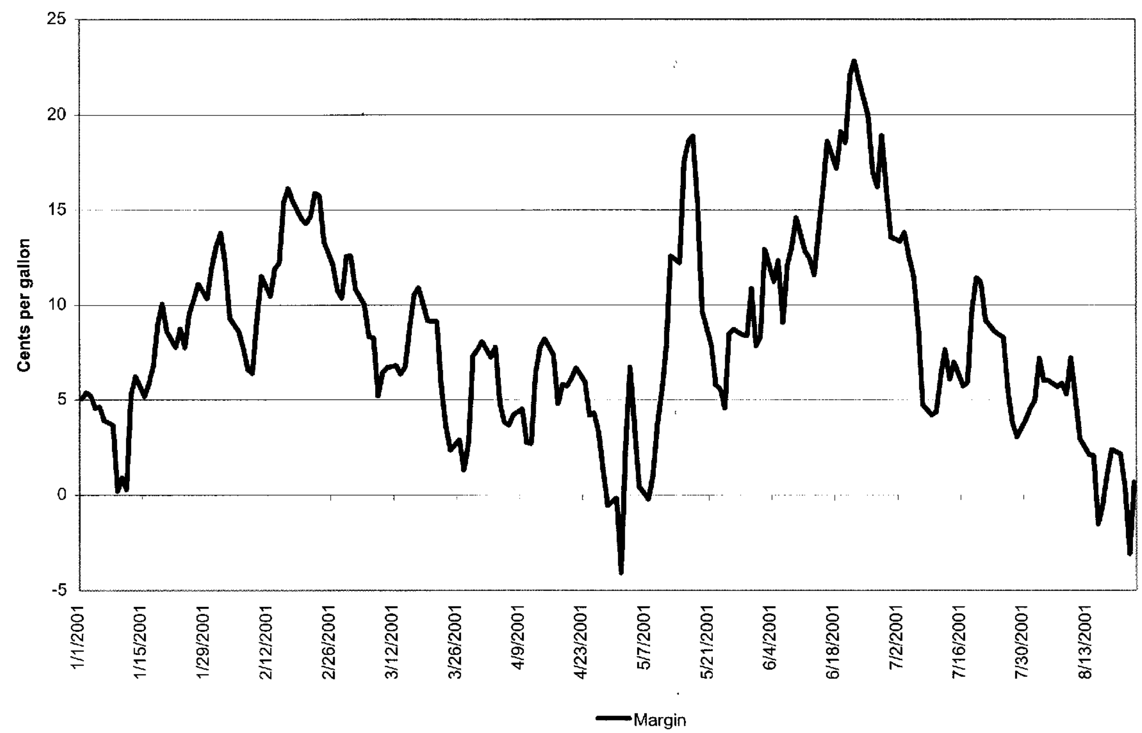
Source: Analysis of OPIs data.

Figure A2.40: Ohio Rack - Retail Price Margins, January - August 2001



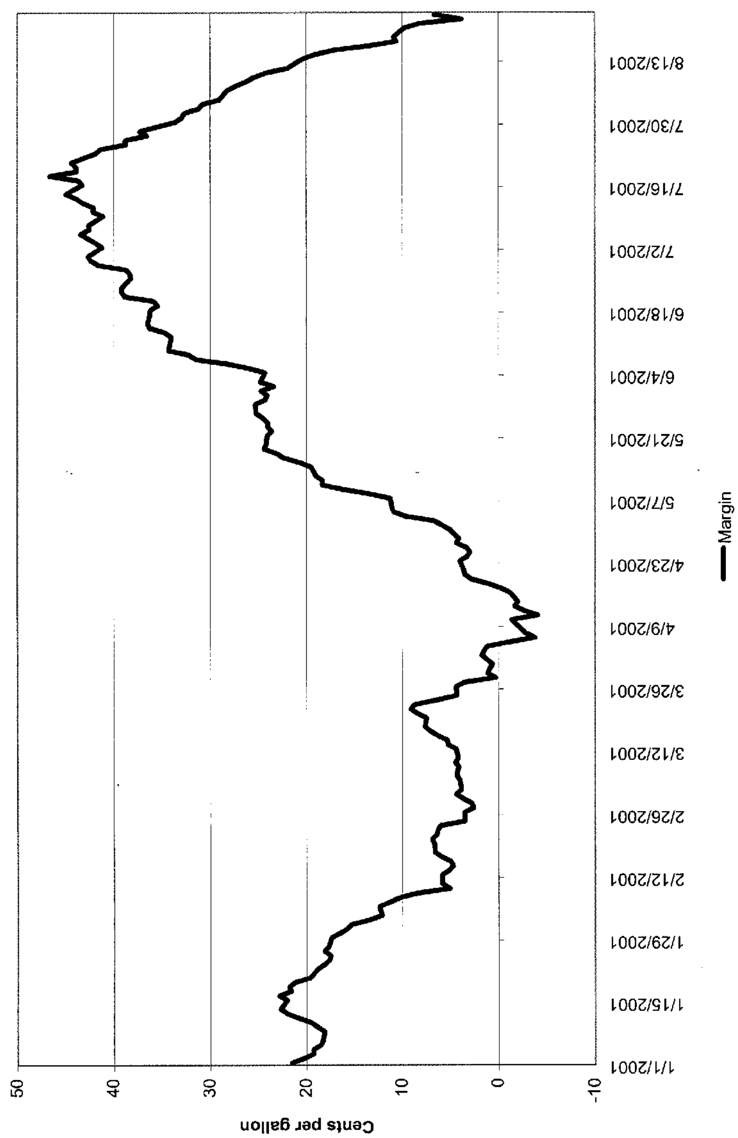
Source: Analysis of OPIS data.

Figure A2.41: Illinois Rack-Retail Price Margins, January - August 2001



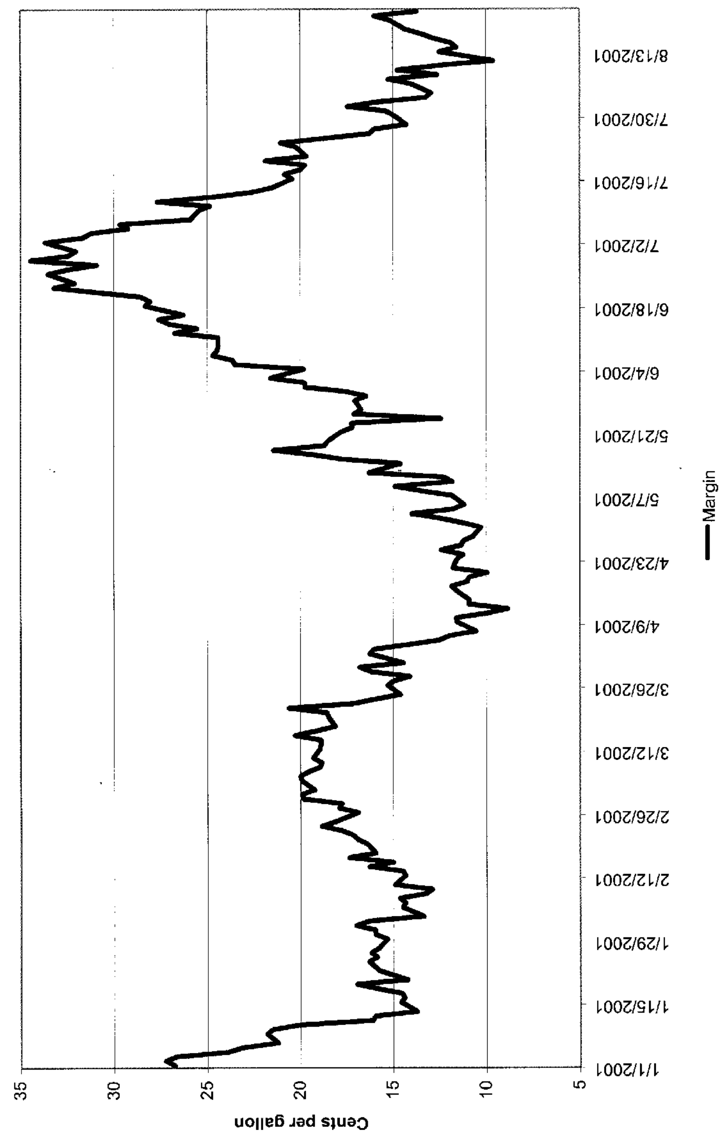
Source: Analysis of OPIS data.

Figure A2.42: California Rack-Retail Price Margins, January - August 2001



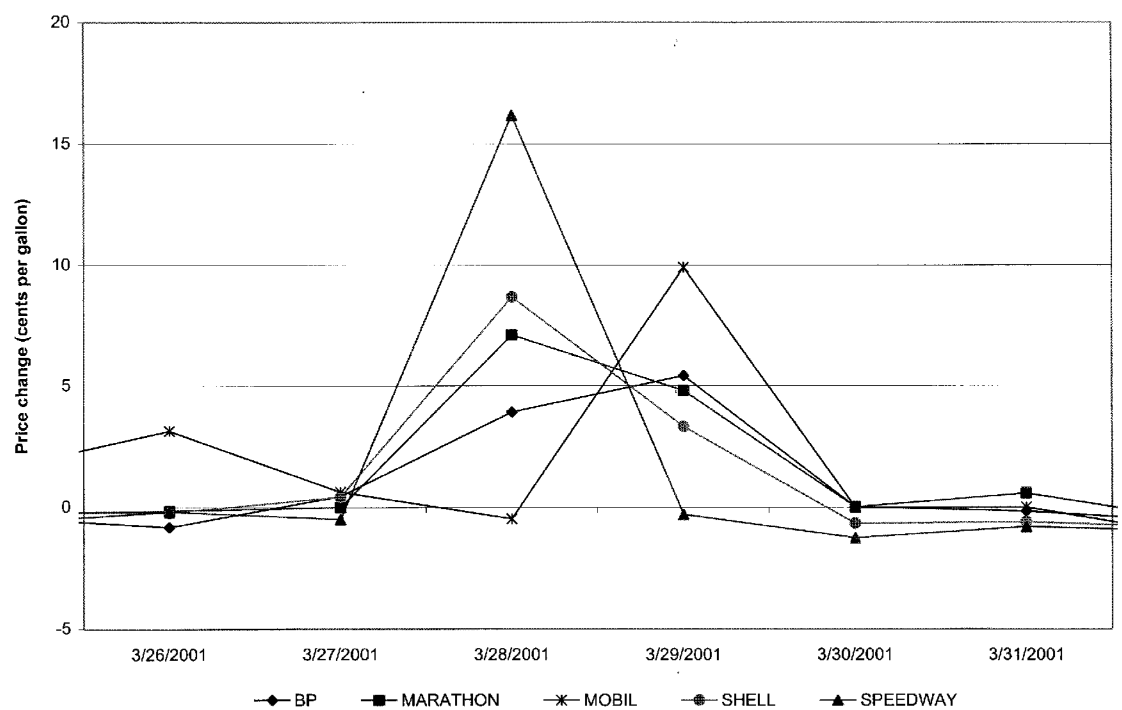
Source: Analysis of OPIS data.

Figure A2.43: Maine Rack-Retail Price Margins, January - August 2001



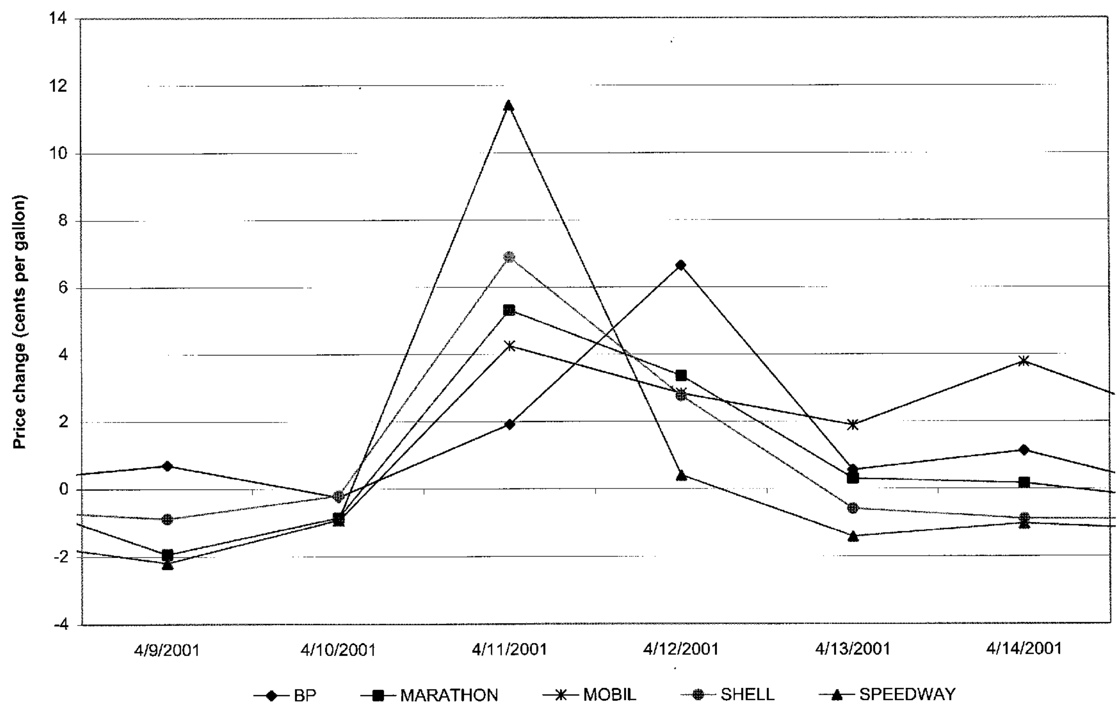
Source: Analysis of OPIS data.

Figure A2.44: Michigan Daily Retail Price Changes (Net Taxes) by Brand, March 26 - 31, 2001



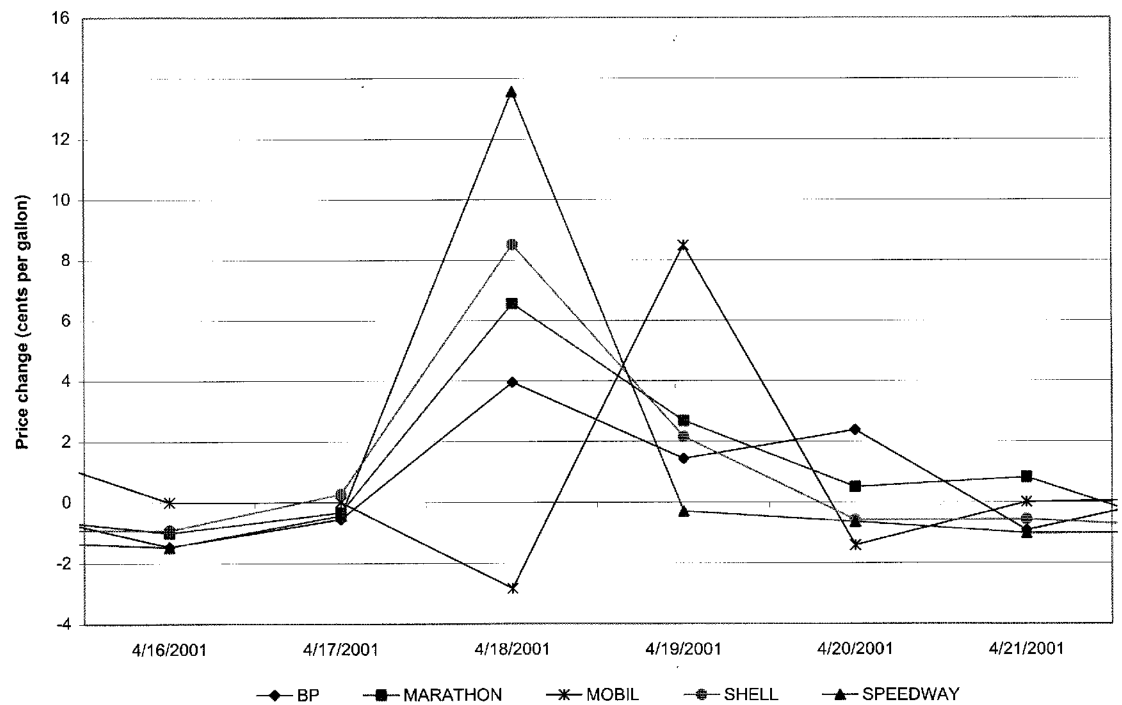
Source: Analysis of OPIS data.

Figure A2.45: Michigan Daily Retail Price Changes (Net Taxes) by Brand, April 9 - 14, 2001



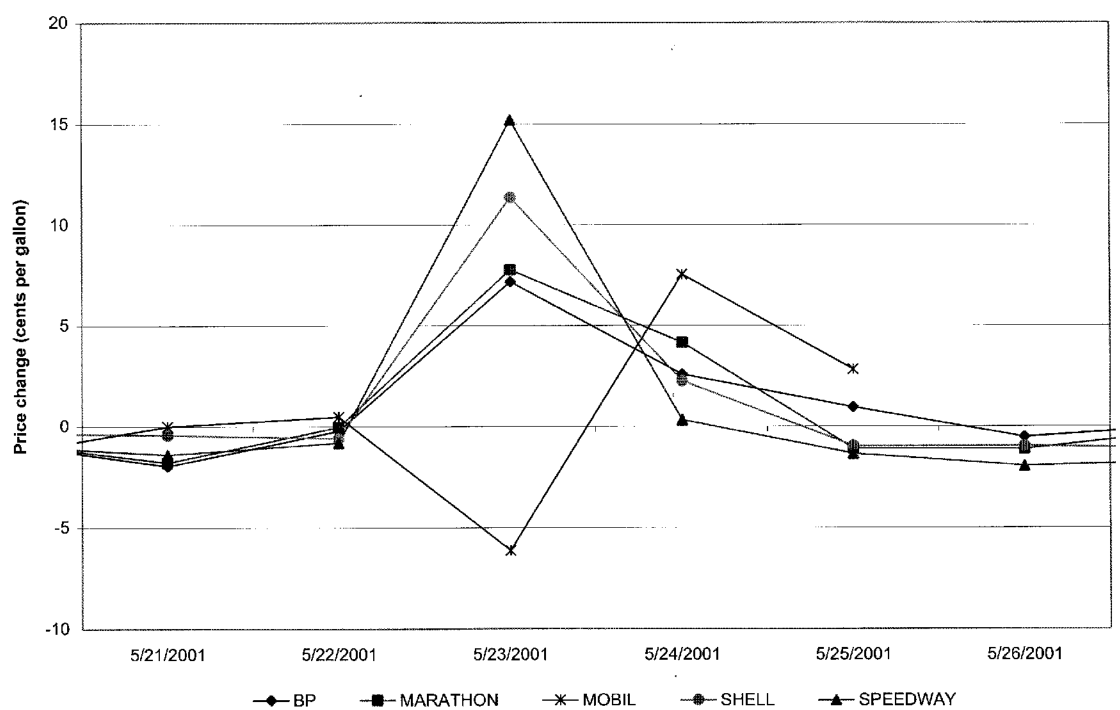
Source: Analysis of OPIS data.

Figure A2.46: Michigan Daily Retail Price Changes (Net Taxes) by Brand, April 16 - 21, 2001



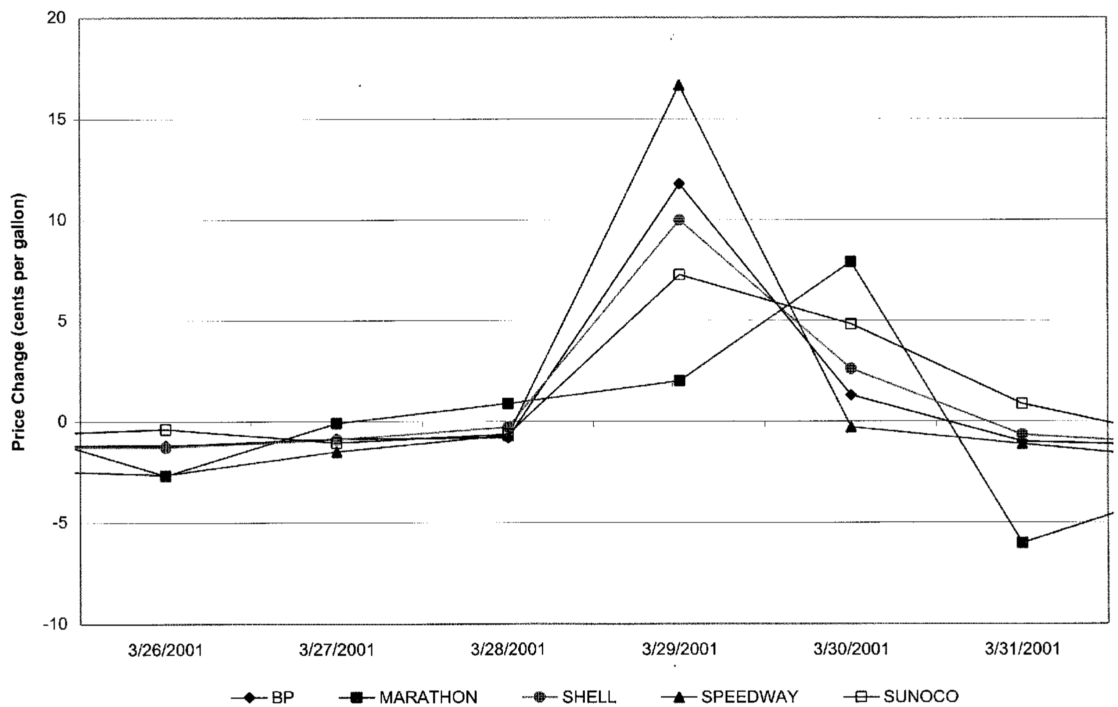
Source: Analysis of OPIS data.

Figure A2.47: Michigan Daily Retail Price Changes (Net Taxes) by Brand, May 21 - 26, 2001



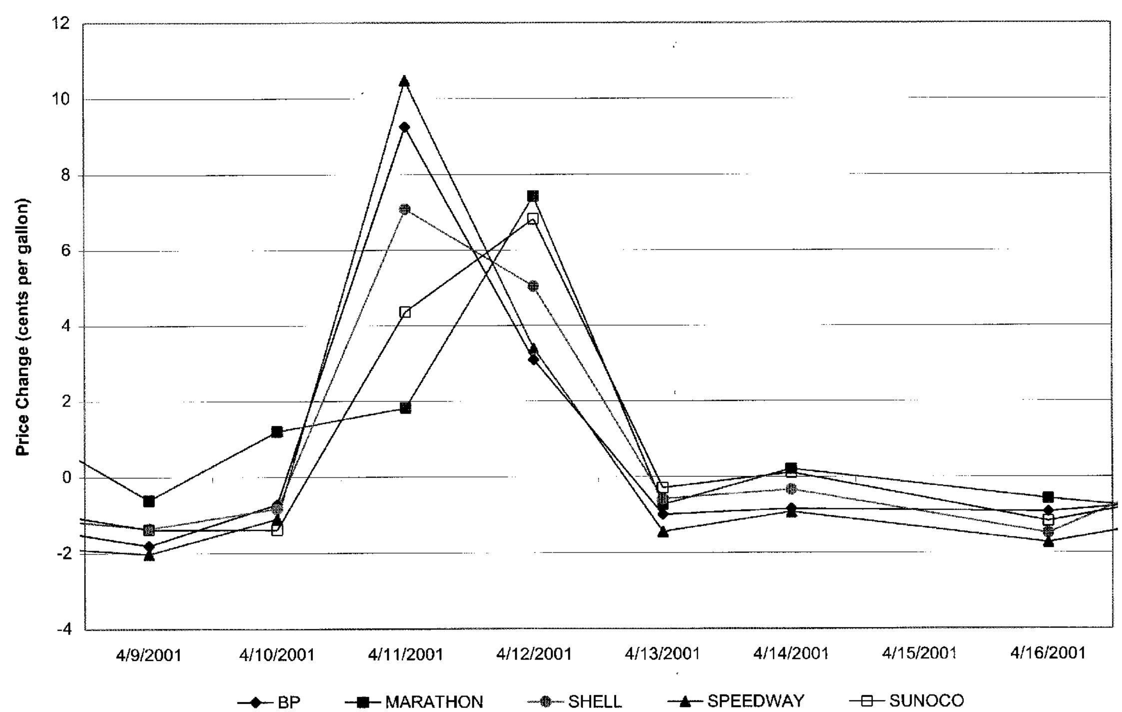
Source: Analysis of OPIS data.

Figure A2.48: Ohio Daily Retail Price Changes (Net Taxes) by Brand, March 26 - 31, 2001



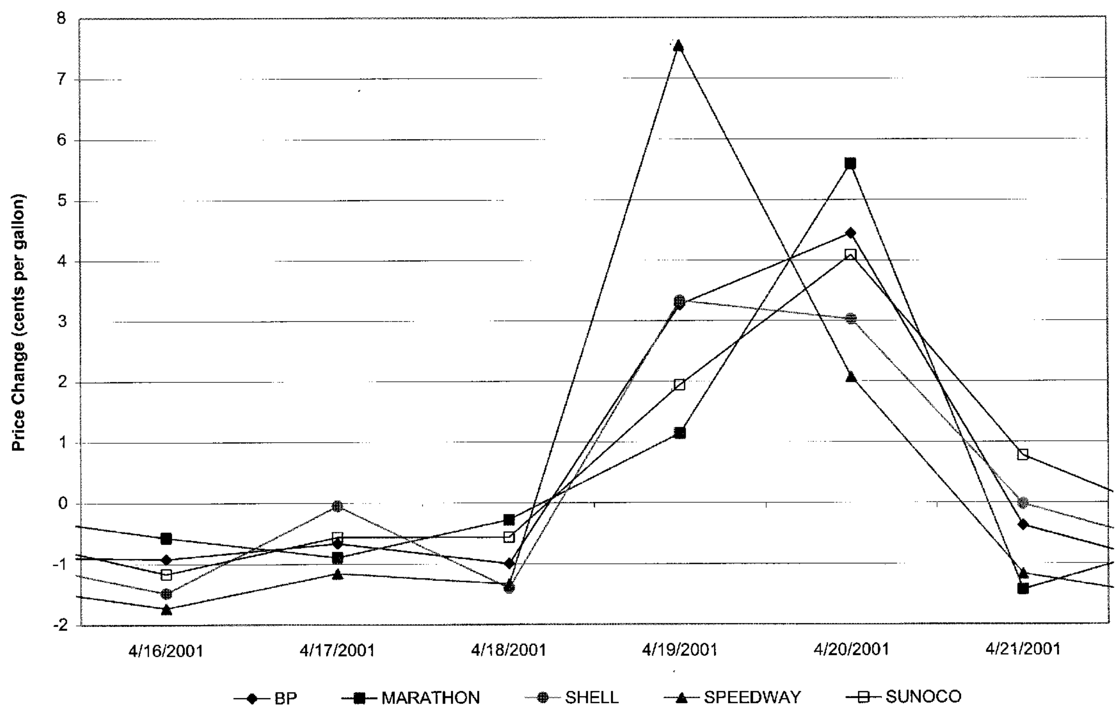
Source: Analysis of OPIS data.

Figure A2.49: Ohio Daily Retail Price Changes (Net Taxes) by Brand, April 9 - 16, 2001



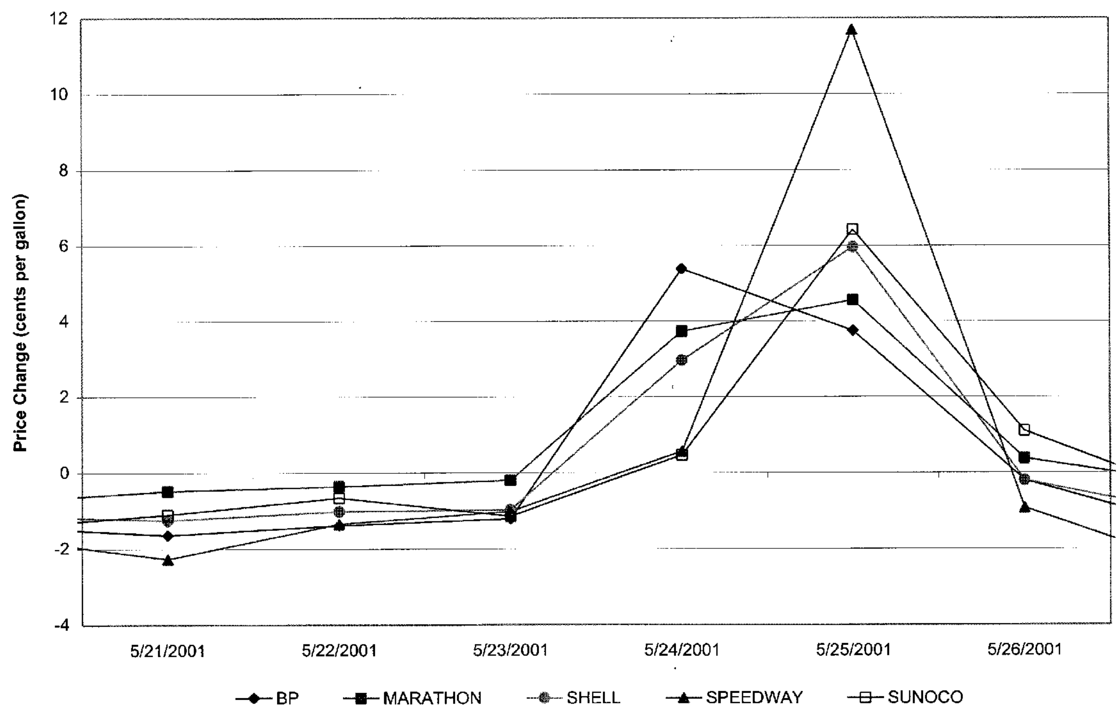
Source: Analysis of OPIS data.

Figure A2.50: Ohio Daily Retail Price Changes (Net Taxes) by Brand, April 16 - 21, 2001



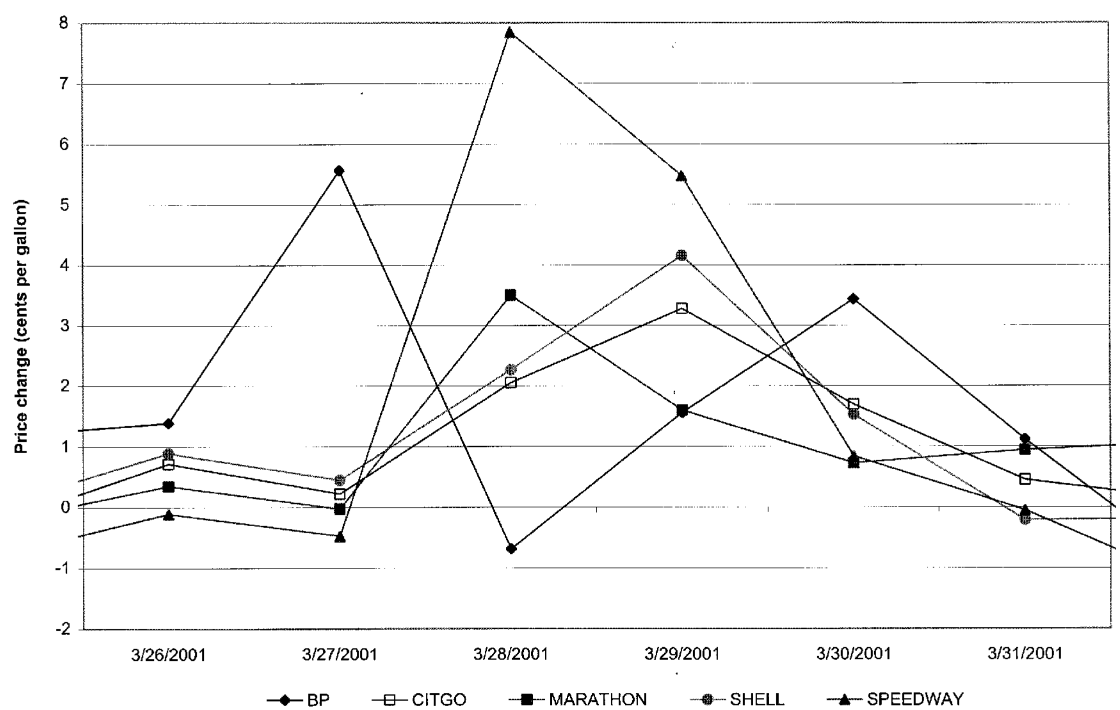
Source: Analysis of OPIS data.

Figure A2.51: Ohio Daily Retail Price Changes (Net Taxes) by Brand, May 21 - 26, 2001



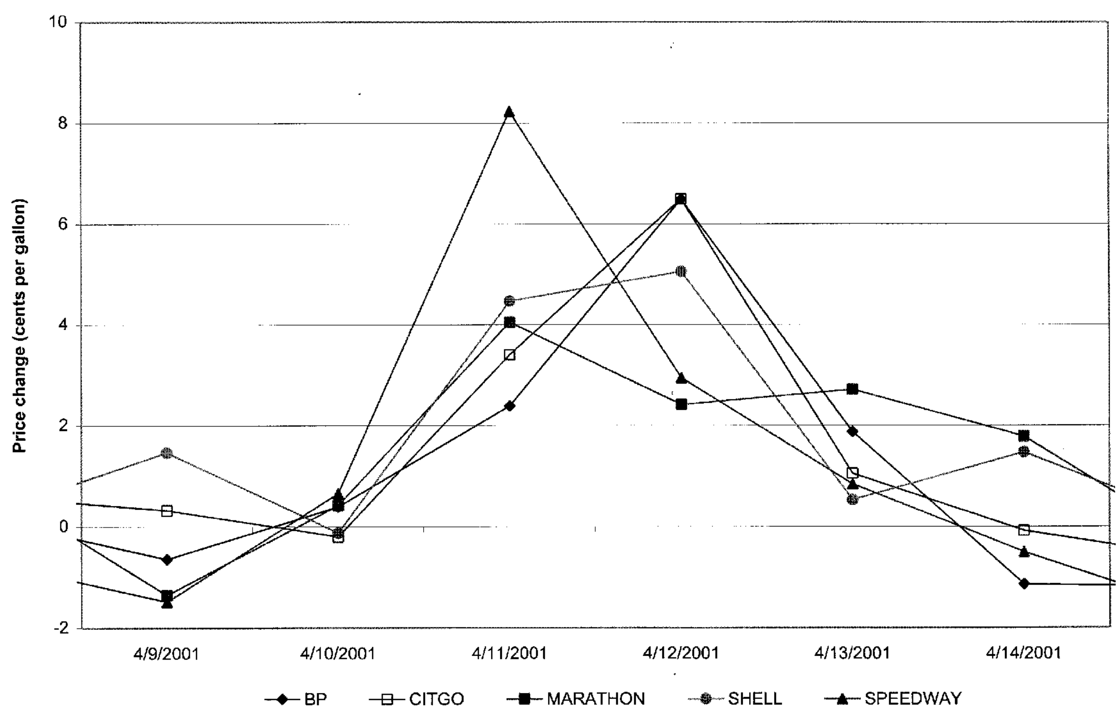
Source: Analysis of OPIS data.

Figure A2.52: Illinois Retail Price Change (Net Taxes) by Brand, March 26 - 31, 2001



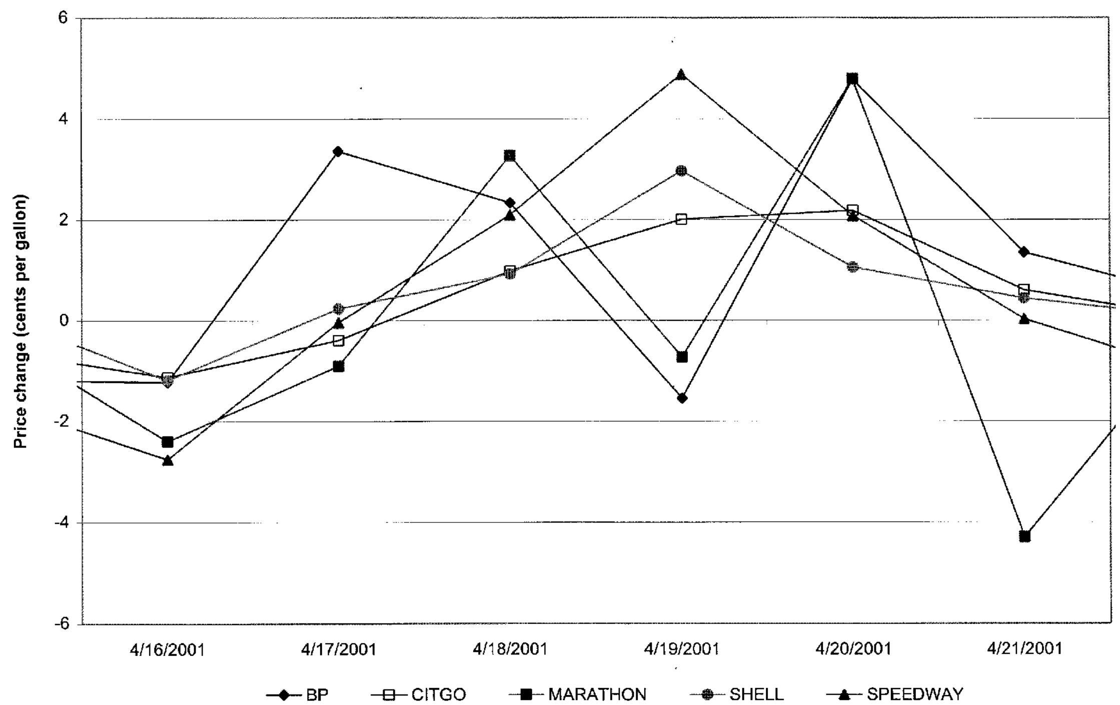
Source: Analysis of OPIS data.

Figure A2.53: Illinois Retail Price Change (Net Taxes) by Brand, April 9 - 14, 2001



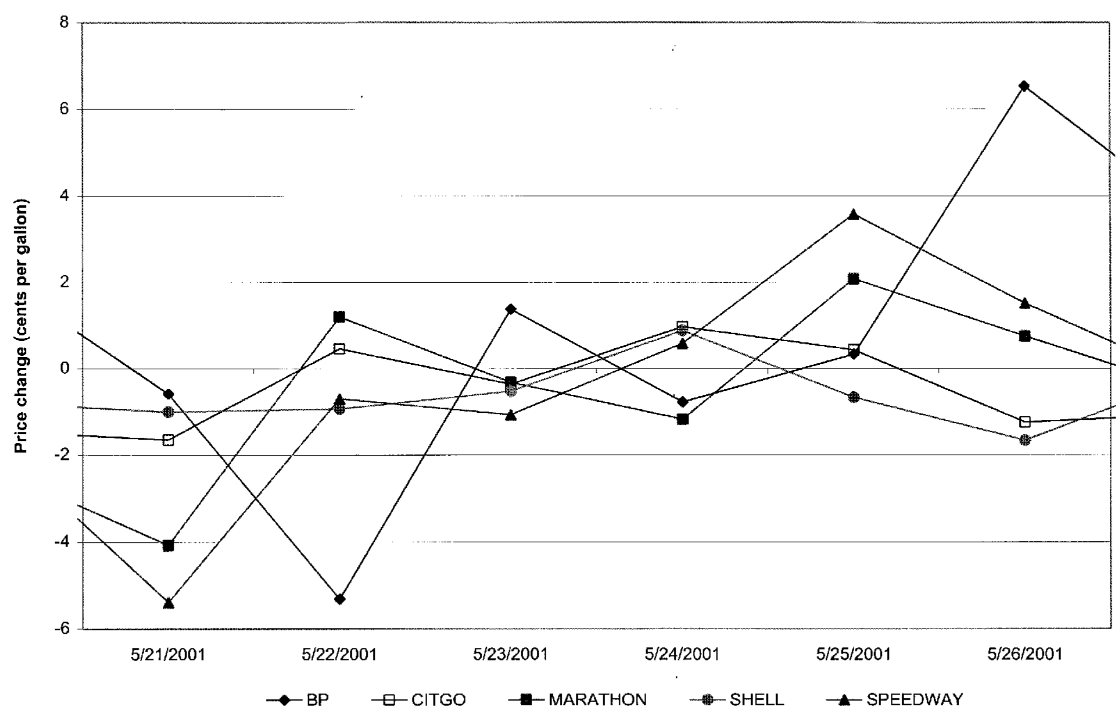
Source: Analysis of OPIS data.

Figure A2.54: Illinois Retail Price Change (Net Taxes) by Brand, April 16 - 21, 2001



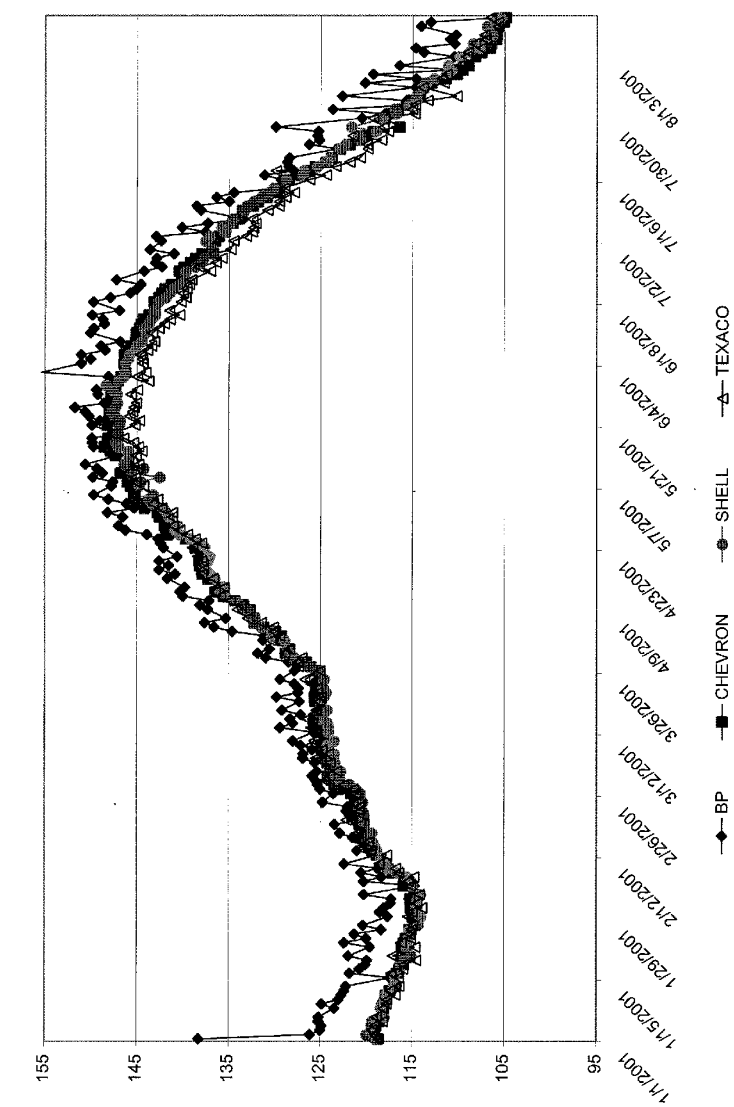
Source: Analysis of OPIS data.

Figure A2.55: Illinois Retail Price Change (Net Taxes) by Brand, May 21 - 26, 2001



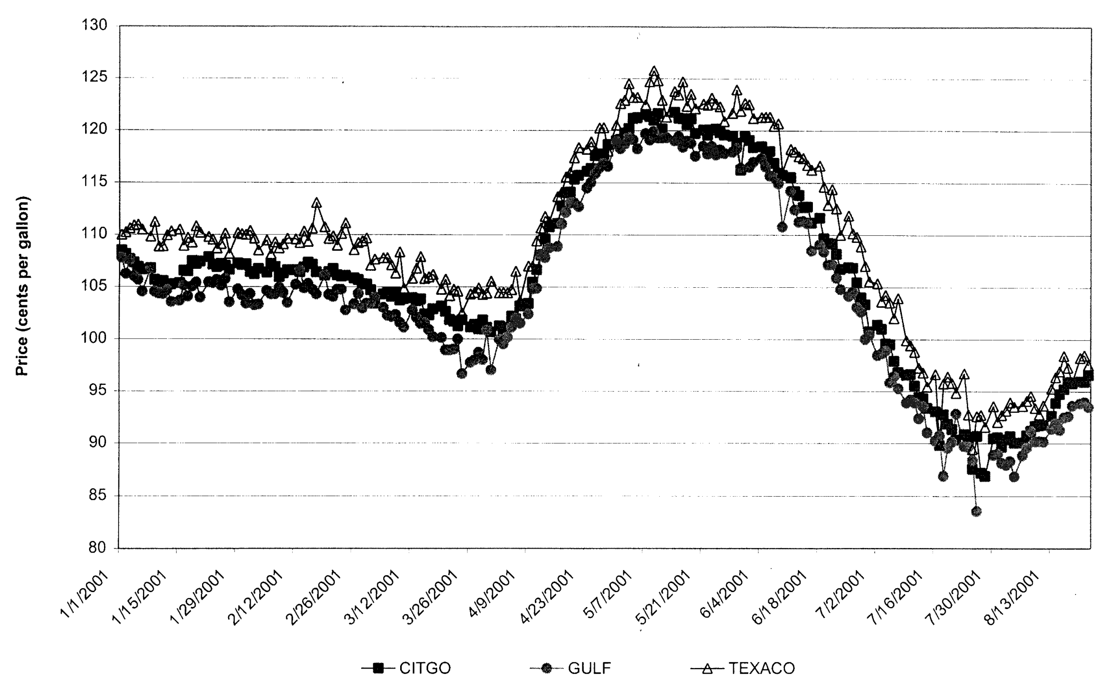
Source: Analysis of OPIS data.

Figure A2.56: California Retail Prices (Net Taxes) by Brand, January - August 2001



Source: OPIS.

Figure A2.57: Maine Retail Prices (Net Taxes) by Brand, January - August 2001



Source: OPIS.