

## **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 discount store (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.**